1/22/21 ADDENDUM*
(SEE REVISED AGENDA, PG. 5 - ITEM 1.4, PACKET PG. 1253)

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SOUTHERN CALIFORNIA
ASSOCIATION OF GOVERNMENTS
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Los Angeles, CA 90017
T: (213) 236-1800
www.scag.ca.gov

SPECIAL MEETING

REGIONAL HOUSING NEEDS ASSESSMENT (RHNA) APPEALS BOARD PUBLIC HEARING

Remote Participation Only
Monday, January 25, 2021
10:00 a.m. – 2:00 p.m.

To Participate on Your Computer:
https://scag.zoom.us/j/91702781766

To Participate by Phone:
Call-in Number: 1-669-900-6833
Meeting ID: 917 0278 1766

Please see next page for detailed instructions on how to participate in the meeting.

PUBLIC ADVISORY

Given recent public health directives limiting public gatherings due to the threat of COVID-19 and in compliance with the Governor's recent Executive Order N-29-20, the meeting will be held telephonically and electronically.

If members of the public wish to review the attachments or have any questions on any of the agenda items related to RHNA, please send an email to housing@scag.ca.gov. Agendas and Minutes are also available at: www.scag.ca.gov/committees.

SCAG, in accordance with the Americans with Disabilities Act (ADA), will accommodate persons who require a modification of accommodation in order to participate in this meeting. SCAG is also committed to helping people with limited proficiency in the English language access the agency's essential public information and services. You can request such assistance by calling (213) 236-1959. We request at least 72 hours (three days) notice to provide reasonable accommodations and will make every effort to arrange for assistance as soon as possible.

Instructions for Public Comments

You may submit public comments in two (2) ways:

1. **Submit written comments via email to: housing@scag.ca.gov by 5pm on Friday, January 22, 2021.**

   All written comments received after 5pm on Friday, January 22, 2021 will be announced and included as part of the official record of the meeting.

2. **If participating via Zoom or phone, during the Public Comment Period, use the "raise hand" function on your computer or *9 by phone and wait for SCAG staff to announce your name/phone number. SCAG staff will unmute your line when it is your turn to speak. Limit oral comments to 3 minutes, or as otherwise directed by the presiding officer.**

   If unable to connect by Zoom or phone and you wish to make a comment, you may submit written comments via email to: **housing@scag.ca.gov.**

In accordance with SCAG's Regional Council Policy, Article VI, Section H and California Government Code Section 54957.9, if a SCAG meeting is "willfully interrupted" and the "orderly conduct of the meeting" becomes unfeasible, the presiding officer or the Chair of the legislative body may order the removal of the individuals who are disrupting the meeting.

Instructions for Participating in the Meeting

SCAG is providing multiple options to view or participate in the meeting:

To Participate and Provide Verbal Comments on Your Computer

1. Click the following link: https://scag.zoom.us/j/91702781766
2. If Zoom is not already installed on your computer, click "Download & Run Zoom" on the launch page and press "Run" when prompted by your browser. If Zoom has previously been installed on your computer, please allow a few moments for the application to launch automatically.
3. Select "Join Audio via Computer."
4. The virtual conference room will open. If you receive a message reading, "Please wait for the host to start this meeting," simply remain in the room until the meeting begins.
5. During the Public Comment Period, use the "raise hand" function located in the participants' window and wait for SCAG staff to announce your name. SCAG staff will unmute your line when it is your turn to speak. Limit oral comments to 3 minutes, or as otherwise directed by the presiding officer.

To Listen and Provide Verbal Comments by Phone

1. Call **(669) 900-6833** to access the conference room. Given high call volumes recently experienced by Zoom, please continue dialing until you connect successfully.
2. Enter the **Meeting ID: 917 0278 1766**, followed by **#**.
3. Indicate that you are a participant by pressing **#** to continue.
4. You will hear audio of the meeting in progress. Remain on the line if the meeting has not yet started.
6. During the Public Comment Period, press *9 to add yourself to the queue and wait for SCAG staff to announce your name/phone number. SCAG staff will unmute your line when it is your turn to speak. Limit oral comments to 3 minutes, or as otherwise directed by the presiding officer.

REGIONAL HOUSING NEEDS ASSESSMENT (RHNA) APPEALS BOARD PUBLIC HEARING SPECIAL MEETING AGENDA

RHNA APPEALS BOARD MEMBERS – RHNA 6TH CYCLE

VOTING MEMBERS

Representing Imperial County

Primary: Hon. Cheryl Viegas-Walker, El Centro
Alternate: Sup. Luis Plancarte, Imperial County

Representing Los Angeles County

Primary: **VICE CHAIR** Margaret Finlay, Duarte
Alternate: Hon. Rex Richardson, Long Beach

Representing Orange County

Primary: Hon. Wendy Bucknum, Mission Viejo
Alternate: **CHAIR** Peggy Huang, Yorba Linda, TCA

Representing Riverside County

Primary: Hon. Russell Betts, Desert Hot Springs
Alternate: Hon. Rey SJ Santos, Beaumont

Representing San Bernardino County

Primary: Hon. Deborah Robertson, Rialto
Alternate: Hon. Larry McCallon, Highland

Representing Ventura County

Primary: Hon. Carmen Ramirez, Ventura County
Alternate: Hon. Mike Judge, Simi Valley, VCTC

REGIONAL HOUSING NEEDS ASSESSMENT (RHNA) APPEALS BOARD
PUBLIC HEARING – SPECIAL MEETING AGENDA

Southern California Association of Governments
Remote Participation Only
Monday, January 25, 2021
10:00 AM – 2:00 PM

CALL TO ORDER AND PLEDGE OF ALLEGIANCE
(The Honorable Peggy Huang, Chair)

PUBLIC COMMENT PERIOD
Members of the public are encouraged to submit written comments by sending an email to: housing@scag.ca.gov by 5pm on Friday, January 22, 2021. Such comments will be transmitted to members of the legislative body and posted on SCAG's website prior to the meeting. Written comments received after 5pm on January 22, 2021 will be announced and included as part of the official record of the meeting. Members of the public wishing to verbally address the RHNA Appeals Board will be allowed up to 3 minutes to speak, with the presiding officer retaining discretion to adjust time limits as necessary to ensure efficient and orderly conduct of the meeting. The presiding officer has the discretion to reduce the time limit based upon the number of comments received and may limit the total time for all public comments to twenty (20) minutes.

Click here to access the list of written Public Comments received as of 1/20/2021, or see the attachment.

All comments submitted are posted online at https://scag.ca.gov/rhna-comments.

ACTION ITEM/S

1. Public Hearings to Consider Appeals Submitted by Jurisdictions Related to the 6th Cycle Draft RHNA Allocations

(Kome Ajise, Executive Director)

RECOMMENDED ACTION:
Review the appeals submitted by three (3) jurisdictions regarding their respective 6th cycle Draft RHNA Allocations; review corresponding staff recommendations as reflected in the staff reports; receive public comments; hear arguments by appellants and staff responses; and take action to grant, partially grant, or deny each appeal.

The Chair has the discretion to determine the order of appeals heard.

Schedule
1.1 City of Huntington Beach[#] (continued from January 19, 2021)
1.2 City of Irvine* (continued from January 15, 2021)
1.3 City of Garden Grove* (continued from January 15, 2021)
1.4 City of Pico Rivera[#] (continued from January 22, 2021)*

[#] The Appeals Board will continue discussions regarding Huntington Beach and Pico Rivera's appeals.

[*] For each appeal, the general time allocation is as the following with Chair's discretion to grant extension as needed:

- **Initial Arguments (5 min)**
- **Staff Response (5 min)**
- **Rebuttal (3 min)**

For more information, please see Appeals Hearing Procedures in the Attachment.

ADJOURNMENT

ATTACHMENT - Appeals Hearing Procedures

(Per Adopted 6th Cycle RHNA Appeals Procedures Section G)

The hearing(s) shall be conducted to provide applicants and jurisdictions that did not file appeals but are the subject of an appeal, with the opportunity to make their case regarding a change in their draft regional housing need allocation or another 7 jurisdiction's allocation, with the burden on the applicants to prove their case. The appeals hearings will be organized by the specific jurisdiction subject to an appeal or appeals and will adhere to the following procedures:

1. Initial Arguments

   Applicants who have filed an appeal for a particular jurisdiction will have an opportunity to present their request and reasons to grant the appeal. In the event of multiple appeals filed for a single jurisdiction, the subject jurisdiction will present their argument first if it has filed an appeal on its own draft RHNA allocation. Applicants may present their case either on their own, or in coordination with other applicants, but each applicant shall be allotted five (5) minutes each. If the subject jurisdiction did not file an appeal on its own draft RHNA allocation, it will be given an opportunity to present after all applicants have provided initial arguments on their filed appeals. Any presentation from the jurisdiction who did not appeal but is the subject of the appeal is limited to five (5) minutes unless it is responding to more than one appeal, in which case the jurisdiction is limited to eight (8) minutes.

2. Staff Response

   After initial arguments are presented, SCAG staff will present their recommendation to approve or deny the appeals filed for the subject jurisdiction. The staff response is limited to five (5) minutes.

3. Rebuttal

   Applicants and the jurisdiction who did not file an appeal but is the subject of the appeal may elect to provide a rebuttal but are limited to the arguments and evidence presented in the staff response. Each applicant and the subject jurisdiction that did not file an appeal on its own draft RHNA allocation will be allotted three (3) minutes each for a rebuttal.

4. Extension of Time Allotment

   The Chair of the Appeals Board may elect to grant additional time for any presentation, staff response, or rebuttal in the interest of due process and equity.

5. Appeal Board Discussion and Determination

After arguments and rebuttals are presented, the RHNA Appeals Board may ask questions of applicants, the subject jurisdiction (if present), and SCAG staff. The Chair of the Appeals Board may request that questions from the Appeals Board be asked prior to a discussion among Appeals Board members. Any voting Board member may make a motion regarding the appeal(s) for the subject jurisdiction.

The Appeals Board is encouraged to make a single determination on the subject jurisdiction after hearing all arguments and presentations on each subject jurisdiction. The RHNA Appeals Board need not adhere to formal evidentiary rules and procedures in conducting the hearing. An appealing jurisdiction may choose to have technical staff present its case at the hearing. At a minimum, technical staff should be available at the hearing to answer any questions of the RHNA Appeals Board.

Written Comments Received on the 6th Cycle RHNA (as of 1/20/21)

Date of Letter	Organization	Name	Topic(s)
10/11/2018	City of Beverly Hills	Hon. John Mirisch	Subcommittee membership
12/2/2018	City of Mission Viejo	Gail Shiomoto-Lohr	Subcommittee charter, subregional delegation, growth forecast
1/17/2019	City of Beverly Hills	Hon. John Mirisch	Urban sprawl
2/4/2019	City of Beverly Hills	Hon. John Mirisch	Role of housing supply, single family homes, subcommittee membership
3/11/2019	City of Beverly Hills	Hon. John Mirisch	Subcommittee membership, upzoning, single family homes
3/30/2019	City of Beverly Hills	Hon. John Mirisch	Upzoning, urbanism, density
5/2/2019	Central Cities Association of Los Angeles	Jessica Lall	Regional Determination
5/6/2019	City of Irvine	Marika Poynter	Regional determination, existing need distribution, social equity adjustment
5/20/2019	City of Redondo Beach	Sean Scully	Existing housing need and zoning
5/23/2019	UCLA Luskin School of Public Affairs	Paavo Monkkonen	Zoning, housing prices, and regulation
5/28/2019	Orange County Council of Governments (OCCOG)	Hon. Stacy Berry	Regional determination consultation package
5/29/2019	City of Anaheim	Chris Zapata	Regional determination consultation package
5/31/2019	City of Yorba Linda	David Brantley	Regional determination consultation package
6/1/2019	City of Mission Viejo		Regional determination consultation package; distribution methodology
6/3/2019	City of Newport Beach	Seimone Jurjis	Regional determination consultation package
6/3/2019	UCLA	Paavo Monkkonen	Regional determination consultation package
6/4/2019	City of Tustin	Elizabeth Binsack	Regional determination consultation package
6/4/2019		Henry Fung	Public outreach and engagement; regional determination consultation package
6/5/2019		Hunter Owens	Regional determination consultation package
6/5/2019	City of Santa Ana	Kristine Ridge	Regional determination consultation package
6/5/2019	City of Newport Beach	Seimone Jurjis	Regional determination consultation package
6/5/2019	City of Calabasas	Mayor David Shapiro	RHNA methodology
6/5/2019		Vyki Englert	Regional determination consultation package
6/5/2019		Juan Lopez	Regional determination consultation package
6/5/2019		Louis Mirante	Regional determination consultation package
6/5/2019		Carter Rubin	Regional determination consultation package
6/6/2019		Hon. Meghan Sahli-Wells, City of Culver City	Regional determination consultation package
6/5/2019		Andy Freeland	Regional determination consultation package
6/5/2019		Eve Bachrach	Regional determination consultation package
6/6/2019		Emily Groendyke	Regional determination consultation package
6/6/2019		Timothy Hayes	Regional determination consultation package
6/6/2019		Carter Moon	Regional determination consultation package
6/6/2019		Jesse Lerner-Kinglake	Regional determination consultation package
6/6/2019		Alex Fisch	Regional determination consultation package
6/6/2019		Jed Lowenthal	Regional determination consultation package
6/6/2019	City of Moorpark	Karen Vaughn	Proposed RHNA Methodology
6/6/2019	City of La Habra	Jim Gomez	Regional determination package
6/6/2019	County of Orange	Supervisor Donald Wagner	Regional determination package
6/18/2019		Thomas Glaz	Proposed RHNA methodology
6/18/2019		Brendan Regulinski	Proposed RHNA methodology
6/18/2019		Chris Palencia	Proposed RHNA methodology
6/19/2019		Henry Fung	Action on regional determination; proposed RHNA methodology; public hearing and outreach process
6/21/2019		Glenn Egelko	Subcommittee member remarks
6/22/2019		Donna Smith	Proposed RHNA methodology
6/24/2019		Fred Zimmerman	Regional determination package
6/24/2019		Antoine Wakim	Regional determination package
6/24/2019		Darrell Clarke	Regional determination package

Written Comments Received on the 6th Cycle RHNA (as of 1/20/21)

Date of Letter	Organization	Name	Topic(s)
6/24/2019		Marcos Rodriguez Maciel	Regional determination package
6/24/2019		Taylor Hallam	Regional determination package
6/24/2019		Phil Lord	Regional determination package
6/24/2019		Edwin Woll	Regional determination package
6/24/2019		Steven Guerry	Regional determination package
6/24/2019		Prabhu Reddy	Regional determination package
6/24/2019		Judd Schoenholtz	Regional determination package
6/24/2019		Bret Contreras	Regional determination package
6/24/2019		Mark Montiel	Regional determination package
6/24/2019		Hardy Wronske	Regional determination package
6/24/2019		William Wright	Regional determination package
6/24/2019		Nicholas Burns III	Regional determination package
6/24/2019		Brendan Regulinski	Regional determination package
6/24/2019		Gabe Rose	Regional determination package
6/24/2019		Sean McKenna	Regional determination package
6/24/2019		Lolita Nurmamade	Regional determination package
6/24/2019		Paul Moorman	Regional determination package
6/24/2019		Ryan Welch	Regional determination package
6/24/2019		Gerald Lam	Regional determination package
6/24/2019		Carol Gordon	Regional determination package
6/24/2019		Anthony Dedousis	Regional determination package
6/24/2019		Christopher Cooper	Regional determination package
6/24/2019		Colin Frederick	Regional determination package
6/24/2019		Joe Goldman	Regional determination package
6/24/2019		David Douglass-Jaimes	Regional determination package
6/24/2019		Liz Barillas	Regional determination package
6/24/2019		Andy Freeland	Regional determination package
6/24/2019		Grayson Peters	Regional determination package
6/24/2019		Andrew Oliver	Regional determination package
6/24/2019		Kyle Jenkins	Regional determination package
6/24/2019		Matthew Ruscigno	Regional determination package
6/24/2019		Amar Billoo	Regional determination package
6/24/2019		Joshua Blumenkopf	Regional determination package
6/24/2019		Leonora Camner	Regional determination package
6/24/2019		Ryan Tanaka	Regional determination package
6/24/2019		Partho Kalyani	Regional determination package
6/24/2019		Victoria Englert	Regional determination package
6/24/2019		Josh Albrektson	Regional determination package
6/24/2019		Matt Stauffer	Regional determination package
6/24/2019		Brooks Dunn	Regional determination package
6/24/2019		Nancy Barba	Regional determination package
6/24/2019		Sandra Madera	Regional determination package
6/25/2019		Gregory Dina	Regional determination package
6/25/2019		Brent Gaisford	Regional determination package
6/25/2019		Andrew Kerr	Regional determination package
6/25/2019		Hunter Owens	Regional determination package
6/25/2019		Alexander Murray	Regional determination package
6/25/2019		Eric Hayes	Regional determination package
6/25/2019		Brent Stoll	Regional determination package
6/25/2019		Matthew Dixon	Regional determination package

Written Comments Received on the 6th Cycle RHNA (as of 1/20/21)

Date of Letter	Organization	Name	Topic(s)
6/25/2019		Mark Yetter	Regional determination package
6/25/2019		Chase Engelhardt	Regional determination package
6/25/2019		Hugh Martinez	Regional determination package
6/25/2019		Christopher Palencia	Regional determination package
6/25/2019		Nathan Pope	Regional determination package
6/25/2019		Lauren Borchard	Regional determination package
6/25/2019		Shane Philips	Regional determination package
6/25/2019		Alexander Naylor	Regional determination package
6/25/2019		Andy May	Regional determination package
6/25/2019		Jon Dearing	Regional determination package
6/25/2019		David Barboza	Regional determination package
6/26/2019		Sofia Tablada	Regional determination package
6/26/2019		Amanda Wilson	Regional determination package
6/26/2019		Mike Bettinardi	Regional determination package
6/26/2019		Emily Skehan	Regional determination package
6/26/2019	City of Long Beach	Patrick West	Proposed RHNA methodology
6/27/2019		Jesse Silva	Regional determination package
6/27/2019		Ryan Rubin	Regional determination package
6/27/2019	City of Garden Grove	Mayor Steve Jones	Regional determination package; proposed RHNA methodology
6/27/2019	County of Los Angeles	Amy Bodek	Proposed RHNA methodology
6/28/2019		Maggie Rattay	Regional determination package
6/28/2019		Brittney Hojo	Regional determination package
6/28/2019		Thomas Irwin	Regional determination package
6/28/2019		Steph Pavon	Regional determination package
7/3/2019		Tyler Lindberg	Regional determination package
7/3/2019		Ji Son	Regional determination package
7/3/2019		David Kitani	Regional determination package
7/3/2019		Chase Andre	Regional determination package
7/3/2019		Taily Pulido	Regional determination package
7/5/2019		Stephanie Palencia	Regional determination package
7/6/2019		Charlie Stigler	Regional determination package
7/8/2019		Chris Rattay	Regional determination package
7/9/2019		Holly Osborne	Proposed RHNA Methodology
7/9/2019	City of Ojai	James Vega	Proposed RHNA Methodology
7/10/2019	City of South Gate	Joe Perez	Proposed RHNA Methodology
7/11/2019	City of Malibu	Reva Feldman	Proposed RHNA Methodology
7/16/2019	City of Los Angeles, 15th District	Aksel Palacios	Affordable Housing Solutions
7/17/2019	City of Culver City	Mayor Meghan Sahli-Wells	Regional Determination
7/18/2019	League of Women Voters of Los Angeles	Sandra Trutt	Zoning and Homelessness
7/18/2019	County of Riverside	Juan Perez	Proposed RHNA allocation
7/19/2019	League of Women Voters of Los Angeles County	Marge Nichols	Regional Determination
7/20/2019		Therese Mufic Neustaedter	Regional Determination
7/23/2019	County of Ventura – Board of Supervisors	Supervisor Steve Bennett	Proposed RHNA Methodology
7/25/2019		Jose Palencia	Regional Determination
7/27/2019		Henry Fung	Proposed RHNA Methodology
7/29/2019		Paavo Monkkonen	Proposed RHNA Methodology
7/29/2019		Paavo Monkkonen	Proposed RHNA Methodology
7/29/2019	Endangered Habitats League	Dan Silver	Proposed RHNA methodology
7/31/2019	League of Women Voters Los Angeles County	Marge Nichols	Regional Determination; Proposed RHNA Methodology
7/31/2019	City of Beverly Hills	Mayor John Mirisch	Proposed RHNA Methodology

Written Comments Received on the 6th Cycle RHNA (as of 1/20/21)

Date of Letter	Organization	Name	Topic(s)
7/31/2019	City of Beverly Hills	Mayor John Mirisch	Proposed RHNA Methodology
7/31/2019		Assm. Richard Bloom	Proposed RHNA Methodology
8/1/2019	League of Women Voters Santa Monica	Natalya Zernitskaya	Proposed RHNA Methodology
8/1/2019	City of Malibu	Bonnie Blue	Proposed RHNA Methodology; SB 182
8/1/2019	People for Housing OC	Elizabeth Hansburg	Regional Determination
8/1/2019	City of Big Bear Lake	Jeff Matthieu	Proposed RHNA Methodology
8/2/2019		Donna Smith	?
8/4/2019		Gary Drucker	Proposed RHNA Methodology
8/5/2019		Valerie Fontaine	Proposed RHNA Methodology
8/5/2019		Jay Ross	Proposed RHNA Methodology
8/7/2019		Miriam Cantor	Proposed RHNA Methodology
8/8/2019		Jonathan Baty	Population growth
8/12/2019		City of Yucaipa	Proposed RHNA methodology
8/12/2019		Paul Lundquist	?
8/12/2019		Leonora Camner	Proposed RHNA Methodology
8/12/2019		Ryan Tanaka	Proposed RHNA Methodology
8/12/2019		Jesse Silva	Proposed RHNA Methodology
8/12/2019		Joshua Gray-Emmer	Proposed RHNA Methodology
8/12/2019		Chase Engelhardt	Proposed RHNA Methodology
8/12/2019		Drew Heckathorn	Proposed RHNA Methodology
8/12/2019		Liz Barillas	Proposed RHNA Methodology
8/12/2019		Jonah Bliss	Proposed RHNA Methodology
8/12/2019		Angus Beverly	Proposed RHNA Methodology
8/12/2019		Gregory Dina	Proposed RHNA Methodology
8/12/2019		Eduardo Mendoza	Proposed RHNA Methodology
8/12/2019		Carol Gordon	Proposed RHNA Methodology
8/12/2019		Joanne Leavitt	Proposed RHNA Methodology
8/12/2019		Mark Yetter	Proposed RHNA Methodology
8/12/2019		Meredith Jung	Proposed RHNA Methodology
8/12/2019		Nicholas Burns III	Proposed RHNA Methodology
8/12/2019		Judd Scoenholtz	Proposed RHNA Methodology
8/12/2019		Lee Benson	Proposed RHNA Methodology
8/12/2019		Kate Poisson	Proposed RHNA Methodology
8/12/2019		Joshua Blumenkopf	Proposed RHNA Methodology
8/12/2019		Anthony Dedousis	Proposed RHNA Methodology
8/12/2019		Christopher Tausanovitch	Proposed RHNA Methodology
8/12/2019		Emerson Dameron	Proposed RHNA Methodology
8/12/2019		Grayson Peters	Proposed RHNA Methodology
8/12/2019		Tami Kagan-Abrams	Proposed RHNA Methodology
8/12/2019		Lauren Borchard	Proposed RHNA Methodology
8/12/2019		Alec Mitchell	Proposed RHNA Methodology
8/12/2019		Andy Freeland	Proposed RHNA Methodology
8/12/2019		Michelle Castelletto	Proposed RHNA Methodology
8/12/2019		Brent Gaisford	Proposed RHNA Methodology
8/12/2019		Rebecca Muli	Proposed RHNA Methodology
8/12/2019		Ryan Welch	Proposed RHNA Methodology
8/12/2019		Prabhu Reddy	Proposed RHNA Methodology
8/12/2019		Matthew Dixon	Proposed RHNA Methodology
8/12/2019		Richard Hofmeister	Proposed RHNA Methodology

Written Comments Received on the 6th Cycle RHNA (as of 1/20/21)

Date of Letter	Organization	Name	Topic(s)
8/12/2019		David Barboza	Proposed RHNA Methodology
8/12/2019		Michael Drowsky	Proposed RHNA Methodology
8/12/2019		Allison Wong	Proposed RHNA Methodology
8/13/2019		Justin Jones	Proposed RHNA Methodology
8/13/2019		Yurhe Lim	Proposed RHNA Methodology
8/13/2019		Ryan Koyanagi	Proposed RHNA Methodology
8/13/2019		William Wright	Proposed RHNA Methodology
8/13/2019		Norma Guzman	Proposed RHNA Methodology
8/13/2019		Mary Vaiden	Proposed RHNA Methodology
8/13/2019		Andy May	Proposed RHNA Methodology
8/13/2019		Gerald Lam	Proposed RHNA Methodology
8/13/2019		Kelly Koldus	Proposed RHNA Methodology
8/13/2019		Thomas Irwin	Proposed RHNA Methodology
8/14/2019		Susan Decker	Proposed RHNA Methodology
8/14/2019		Michael Busse	Proposed RHNA Methodology
8/14/2019		Rosa Flores	Proposed RHNA Methodology
8/14/2019		Pedro Juarez	Proposed RHNA Methodology
8/14/2019		Zennon Ulyate-Crow	Proposed RHNA Methodology
8/16/2019		Ron Javorsky	
8/16/2019	County of Riverside	Robert Flores	RHNA Public Outreach
8/17/2019		Marianne Buchanan	
8/17/2019		Carolyn Byrnes	Other
8/17/2019		Sharon Willkins	
8/17/2019		Natalya Zernitskaya	Proposed RHNA Methodology
8/19/2019		Kawauna Reed	
8/19/2019		Hon. Manuel Chavez (Costa Mesa Councilmember, District 4)	Proposed RHNA Methodology
		Cassius Rutherford (Parks Commissioner, Costa Mesa)	
		Chris Gaarder (Planning Commission Chair, Fullerton)	
		Brandon Whalen-Castellanos (Transportation Commission Chair, Fullerton)	
		Luis Aleman (Parks Commission, Santa Ana)	
8/19/2019		Theopilis Hester	Proposed RHNA Methodology
8/20/2019	City of Santa Monica	Rick Cole	Proposed RHNA Methodology
8/20/2019	City of Rancho Palos Verdes	Octavio Silva	Proposed RHNA Methodology
8/20/2019	City of Yorba Linda	Mayor Tara Campbell	Proposed RHNA Methodology
8/22/2019	City of Redondo Beach	Mayor William Brand	Proposed RHNA Methodology
8/22/2019	Orange County Council of Governments (OCCOG)	Marnie O. Primmer	Proposed RHNA Methodology
8/23/2019		Bruce Szekes	Public Outreach
8/23/2019	Center for Demographic Research		Proposed RHNA Methodology
8/23/2019		Laura Smith	Housing Distribution
8/23/2019	City of Beverly Hills	Mayor John Mirisch	Proposed RHNA Methodology
8/24/2019		Sharon Commins	Proposed RHNA Methodology
8/26/2019	City of El Segundo		Proposed RHNA Methodology
8/26/2019		Sean McKenna	Proposed RHNA Methodology
8/26/2019		Mark Chenevey	Proposed RHNA Methodology
8/26/2019		Derek Ryder	Proposed RHNA Methodology
8/26/2019	City of Long Beach	Patrick West	Proposed RHNA Methodology
8/27/2019	City of Mission Viejo	Elaine Lister	Proposed RHNA Methodology data correction
8/27/2019		Shawn Danino	Proposed RHNA Methodology
8/27/2019		Jeffery Alvarez	Proposed RHNA Methodology

Written Comments Received on the 6th Cycle RHNA (as of 1/20/21)

Date of Letter	Organization	Name	Topic(s)
8/27/2019		Claudia Vu	Proposed RHNA Methodology
8/27/2019		Laila Delgado	Proposed RHNA Methodology
8/27/2019		Madeline Swim	Proposed RHNA Methodology
8/27/2019		Nicholas Paganini	Proposed RHNA Methodology
8/27/2019		David Aldama	Proposed RHNA Methodology
8/27/2019		Hannah Winnie	Proposed RHNA Methodology
8/27/2019		Akif Khan	Proposed RHNA Methodology
8/27/2019		Gianna Lum	Proposed RHNA Methodology
8/27/2019		Bradley Ewing	Proposed RHNA Methodology
8/27/2019		Anne Martin	Proposed RHNA Methodology
8/27/2019		Mylen Walker	Proposed RHNA Methodology
8/27/2019		Verity Freebern	Proposed RHNA Methodology
8/27/2019		Ryan Oillataguerre	Proposed RHNA Methodology
8/27/2019		Emma Desopo	Proposed RHNA Methodology
8/27/2019		Elyssa Medina	Proposed RHNA Methodology
8/27/2019		Judith Trujillo	Proposed RHNA Methodology
8/27/2019		Kenia Agaton	Proposed RHNA Methodology
8/27/2019	OC Business Council	Alicia Berhow	Proposed RHNA Methodology
8/27/2019	Palms Neighborhood Council	Eryn Block	Proposed RHNA Methodology
8/27/2019	County of Riverside	Juan Perez	Proposed RHNA Methodology
8/28/2019		Sophia Parmisano	Proposed RHNA Methodology
8/28/2019		Anthony Castelletto	Proposed RHNA Methodology
8/28/2019		Minh Le	Proposed RHNA Methodology
8/28/2019		Carol Luong	Proposed RHNA Methodology
8/28/2019		Chitra Patel	Proposed RHNA Methodology
8/28/2019		Misha Ponnuraju	Proposed RHNA Methodology
8/27/2019		Griffin McDaniel	Proposed RHNA Methodology
8/28/2019		Lauren Walker	Proposed RHNA Methodology
8/28/2019		Robert Flores	Proposed RHNA Methodology
8/28/2019		Hailey Maxwell	Proposed RHNA Methodology
8/28/2019		Carey Kayser	Proposed RHNA Methodology
8/28/2019		Annie Bickerton	Proposed RHNA Methodology
8/29/2019	City of Fullerton	Matt Foulkes	Proposed RHNA Methodology
8/29/2019	City of Norco	Steve King	Proposed RHNA Methodology
8/29/2019	City of Signal Hill	Mayor Lori Wood	Proposed RHNA Methodology
8/29/2019	SCANPH	Francisco Martinez	Proposed RHNA Methodology
8/29/2019		Ross Heckmann	Proposed RHNA Methodology
8/30/2019		Dottie Alexanian	Proposed RHNA Methodology
8/30/2019		Judith Deutsch	Proposed RHNA Methodology
8/30/2019	City of Tustin	Elizabeth Binsack	Proposed RHNA Methodology
8/30/2019	City of Menifee	Cheryl Kitzerow	Proposed RHNA Methodology
8/31/2019		Paavo Monkkonen	Proposed RHNA Methodology
8/31/2019		Paavo Monkkonen and 27 professors	Proposed RHNA Methodology
8/31/2019		Ryan Kelly	Proposed RHNA Methodology
8/31/2019		Hydee Feldstein	Proposed RHNA Methodology
8/31/2019		Alex Ivina	Proposed RHNA Methodology
8/31/2019		Steve Rogers	Proposed RHNA Methodology
8/31/2019		Phil Davis	Proposed RHNA Methodology
8/31/2019		Kathy Hersh	Proposed RHNA Methodology
9/1/2019		Jane Demian	Proposed RHNA Methodology

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Date of Letter	Organization	Name	Topic(s)
9/1/2019		Diana Stiller	Proposed RHNA Methodology
9/1/2019		Paula Bourges	Proposed RHNA Methodology
9/1/2019		Raymond Goldstone	Proposed RHNA Methodology
9/1/2019		Christopher Palencia	Proposed RHNA Methodology
9/2/2019		Doris Roach	Proposed RHNA Methodology
9/3/2019		Judy Saunders	Proposed RHNA Methodology
9/3/2019		Susan Ashbrook	Proposed RHNA Methodology
9/3/2019		Marcelo & Irene Olavarria	Proposed RHNA Methodology
9/3/2019		Margret Healy	Proposed RHNA Methodology
9/3/2019		Genie Saffren	Proposed RHNA Methodology
9/3/2019	City of Rancho Santa Margarita	Cheryl Kuta	Proposed RHNA Methodology
9/3/2019	City of Corona	Joanne Coletta	Proposed RHNA Methodology
9/3/2019	City of Desert Hot Springs	Rebecca Deming	Proposed RHNA Methodology
9/3/2019		Karen Boyarsky	Regional Determination
9/3/2019		Nancee L.	Proposed RHNA Methodology
9/3/2019		Tracy St. Claire	Regional Determination
9/4/2019		Shelly Carlo	Housing Distribution
9/4/2019		Bill Zimmerman	Proposed RHNA Methodology
9/4/2019		Mark Vallianatos	Proposed RHNA Methodology
9/4/2019		Marilyn Frost	Housing Distribution
9/4/2019		Matthew Stevens	Proposed RHNA Methodology
9/4/2019		Georgianne Cowan	Regional Determination
9/4/2019		Lisa Schecter	Regional Determination
9/4/2019		Carol Watkins	Regional Determination
9/4/2019		Mark Robbins	Regional Determination
9/4/2019		Susan Horn	Regional Determination
9/4/2019		Barbara Broide	Regional Determination
9/4/2019		Joseph Sherwood	Regional Determination
9/4/2019		Linda Sherwood	Regional Determination
9/4/2019		Darren Swimmer	Regional Determination
9/4/2019		Lee Zeldin	Regional Determination
9/4/2019		Nancy Rae Stone	Regional Determination
9/4/2019		Rachael Gordon	Regional Determination
9/4/2019		Martha Singer	Regional Determination
9/4/2019		Laurie Balustein	Regional Determination
9/4/2019		Henry Fung	Regional Determination
9/4/2019		Brad Pennington	Regional Determination
9/4/2019		Mike Javadi	Regional Determination
9/4/2019		Lauren Thomas	Regional Determination
9/4/2019		Keith Solomon	Regional Determination
9/4/2019		Linda Blank	Regional Determination
9/4/2019		Valerie Brucker	Regional Determination
9/4/2019		Craig Rich	Regional Determination
9/4/2019		Wansun Song	Regional Determination
9/4/2019		Robert Seligman	Regional Determination
9/4/2019	City of Newport Beach	Seimone Jurjis	Regional Determination
9/4/2019	City of Calabasas	Mayor David Shapiro	Regional Determination
9/4/2019		Paul Soroudi	Regional Determination
9/4/2019		Terrence Gomes	Regional Determination
9/4/2019		Kimberly Fox	Regional Determination

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Date of Letter	Organization	Name	Topic(s)
9/4/2019		Mra Tun	Regional Determination
9/4/2019		Laura Levine Lacter	Regional Determination
9/4/2019		Stephen Resnick	Regional Determination
9/4/2019		Kimberly Christensen	Regional Determination
9/4/2019		Rita Villa	Regional Determination
9/4/2019	City of San Clemente	James Makshanoff	Proposed RHNA Methodology
9/4/2019	City of Beaumont	Julio Martinez	Proposed RHNA Methodology
9/4/2019	City of Hawthorne	Arnold Shadbehr	Proposed RHNA Methodology
9/5/2019	City of Murrieta	Mayor Kelly Seyarto	Proposed RHNA Methodology
9/5/2019	City of Canyon Lake	Jim Morrissey	Proposed RHNA Methodology
9/5/2019		Hunter Owens	Proposed RHNA Methodology
9/5/2019		Stephen Twining	Regional Determination
9/5/2019		Paul Callinan	Regional Determination
9/5/2019		C. McAlpin	Regional Determination
9/5/2019		Isabel Janken	Regional Determination
9/5/2019		Ann Hayman	Regional Determination
9/5/2019		Meg Sullivan	Housing Production
9/5/2019	City of Moreno Valley	Patty Nevins	Proposed RHNA Methodology
9/5/2019		Massy Mortazavi	Regional Determination
9/5/2019		Fred Golan	Regional Determination
9/5/2019		Debbie & Howard Nussbaum	Regional Determination
9/5/2019		Devony Hastings	Regional Determination
9/5/2019	League of Women Voters of Los Angeles County	Marge Nichols	RHNA Methodology
9/5/2019		Larry Blugrind	Housing Distribution
9/5/2019		Terry Tegnazian	Regional Determination
9/5/2019	Gateway Cities Council of Governments (GCCOG)	M. Diane DuBois	RHNA Methodology
9/5/2019		Denson Fujikawa	Other
9/5/2019		Tracy Fitzgerald	Regional Determination
9/5/2019	City of Pomona	Anita Gutierrez	Proposed RHNA Methodology
9/5/2019		Minhlinh Nguyen	Regional Determination
9/5/2019		Anita Gutierrez	Proposed RHNA Methodology
9/5/2019	City of Fountain Valley	Steve Nagel	Proposed RHNA Methodology
9/5/2019	City of Camarillo	Kevin Kildee	Proposed RHNA Methodology
9/5/2019		Denson Fujikawa	Other
9/6/2019	City of Sierra Madre	Gabriel Engeland	Proposed RHNA Methodology
9/6/2019	City of Laguna Hills	Donald White	Proposed RHNA Methodology
9/6/2019		David Oliver	Regional Determination
9/6/2019	City of Chino Hills	Joann Lombardo	Proposed RHNA Methodology
9/7/2019		David Ting	Regional Determination
9/9/2019	City of Azusa	Sergio Gonzalez	Proposed RHNA Methodology
9/9/2019	City of Alhambra	Jessica Binnquist	Proposed RHNA Methodology
9/9/2019	Los Angeles Chamber of Commerce	Maria Salinas	RHNA Methodology
9/9/2019	City of Ranchos Palos Verdes	Octavio Silva	Proposed RHNA Methodology
9/9/2019		Kathy Whooley	Regional Determination
9/9/2019	San Gabriel Valley Council of Governments (SGVCOG)	Cynthia Sternquist	Proposed RHNA Methodology
9/9/2019		Matthew Hinsley	Regional Determination
9/9/2019	City of Agoura Hills	Greg Ramirez	Proposed RHNA Methodology
9/10/2019	City of Redondo Beach	Laura Emdee	Regional Determination
9/10/2019		Jessica Sandoval	Proposed RHNA Methodology

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Date of Letter	Organization	Name	Topic(s)
9/10/2019	City of Redondo Beach	Bill Brand	Proposed RHNA Methodology
9/10/2019		Yesenia Medina	Regional Determination
9/10/2019		Jeannette Mazul	Regional Determination
9/10/2019		Jocelyne Irineo	Proposed RHNA Methodology
9/10/2019		Cristina Resendez	Proposed RHNA Methodology
9/10/2019		Carla Bucio	Proposed RHNA Methodology
9/10/2019	City of Redondo Beach	Bill Brand	Proposed RHNA Methodology
9/10/2019	City of Redondo Beach	Laura Emdee	Proposed RHNA Methodology
9/10/2019	City of Garden Grove	Steve Jones	Proposed RHNA Methodology
9/10/2019		Henry Fung	Overall RHNA Process
9/10/2019	City of San Marino	Aldo Cervantes	Proposed RHNA Methodology
9/10/2019	City of South Gate	Jorge Morales	Proposed RHNA Methodology
9/10/2019	City of Torrance	Patrick Furey	Proposed RHNA Methodology
9/10/2019	City of Rancho Cucamonga	John Gillison	Proposed RHNA Methodology
9/10/2019		Jeannette Mazul	Affordable Housing
9/10/2019		Tina Kim	Proposed RHNA Methodology
9/11/2019	City of South Pasadena	Stephanie DeWolfe	Proposed RHNA Methodology
9/11/2019	City of Glendora	Jeff Kugel	Proposed RHNA Methodology
9/11/2019	City of Ojai	John F. Johnson	Proposed RHNA Methodology
9/11/2019	City of Oxnard	Tim Flynn	Proposed RHNA Methodology
9/11/2019	City of Westlake Village	Ned E. Davis	Proposed RHNA Methodology
9/11/2019	City of Cerritos	Art Gallucci	Proposed RHNA Methodology
9/11/2019	City of Hemet	Christopher Lopez	Proposed RHNA Methodology
9/11/2019	City of La Palma	Laurie Murray	Proposed RHNA Methodology
9/11/2019	City of Bell	Ali Saleh	Proposed RHNA Methodology
9/11/2019		Karen Rivera	Regional Determination
9/11/2019		David Coffin	Regional Determination
9/12/2019	City of Lomita	Alicia Velasco	Proposed RHNA Methodology
9/12/2019	City of Wildomar	Matthew Bassi	Proposed RHNA Methodology
9/12/2019	City of Aliso Viejo	David Doyle	Proposed RHNA Methodology
9/12/2019	City of Commerce	Vilko Domic	Proposed RHNA Methodology
9/12/2019	City of El Monte	Betty Donavanik	Proposed RHNA Methodology
9/12/2019	South Bay Cities Council of Governments (SBCCOG)	Christian Horvath	Proposed RHNA Methodology
9/12/2019	City of Huntington Beach	Dave Kiff	Proposed RHNA Methodology
9/12/2019	City of Rosemead	Gloria Molleda	Proposed RHNA Methodology
9/12/2019	City of Dana Point	Matt Schneider	Proposed RHNA Methodology
9/12/2019	City of Placentia	Rhonda Shader	Proposed RHNA Methodology
9/12/2019	City of Palos Verdes Estates	Carolynn Petru	Proposed RHNA Methodology
9/12/2019	City of Palmdale	Mark Oyler	Proposed RHNA Methodology
9/12/2019	City of Hawthorne	Alejandro Vargas	Proposed RHNA Methodology
9/12/2019	City of Irvine	Mayor Christina L. Shea	Proposed RHNA Methodology
9/12/2019	City of Walnut	Rob Wishner	Proposed RHNA Methodology
9/12/2019	City of Maywood	Jennifer Vasquez	Proposed RHNA Methodology
9/12/2019	City of Culver City	Meghan Sahli-Wells	Proposed RHNA Methodology
9/12/2019	City of Buena Park	Joel Rosen	Proposed RHNA Methodology
9/12/2019	City of Santa Clarita	Thomas Cole	Proposed RHNA Methodology
9/12/2019	City of Temecula	Luke Watson	Proposed RHNA Methodology
9/12/2019	City of Lake Elsinore	Richard MacHott	Proposed RHNA Methodology
9/12/2019	City of San Dimas	Ken Duran	Proposed RHNA Methodology

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Date of Letter	Organization	Name	Topic(s)
9/12/2019	City of Irwindale	William Tam	Proposed RHNA Methodology
9/12/2019	City of Santa Ana	Kristine Ridge	Proposed RHNA Methodology
9/12/2019	City of La Mirada	Jeff Boynton	Proposed RHNA Methodology
9/12/2019	City of Anaheim	Chris Zapata	Proposed RHNA Methodology
9/12/2019	City of Costa Mesa	Lori Ann Farrell Harrison	Proposed RHNA Methodology
9/12/2019	City of Huntington Park	Sergio Infanzon	Proposed RHNA Methodology
9/12/2019	Westside Neighborhood Council	Terri Tippit	Proposed RHNA Methodology
9/12/2019	City of Eastvale	Bryan Jones	Proposed RHNA Methodology
9/12/2019		John Birkett	Regional Determination
9/12/2019		Lourdes Petersen	Regional Determination
9/12/2019		Jesse Silva	Proposed RHNA Methodology
9/12/2019		Anne Hilborn	Proposed RHNA Methodology
9/12/2019		Henry Fung	Proposed RHNA Methodology
9/13/2019		Holly Osborne	Proposed RHNA Methodology
9/13/2019		Niall Huffman	Proposed RHNA Methodology
9/13/2019		Michael Hoskinson	Proposed RHNA Methodology
9/13/2019	San Bernardino County Transportation Authority/Council of Governments (SBCTA/SBCOG)	Darcy McNaboe	Proposed RHNA Methodology
9/13/2019	City of Downey	Aldo Schindler	Proposed RHNA Methodology
9/13/2019	City of Bellflower	Elizabeth Corpuz	Proposed RHNA Methodology
9/13/2019	City of Lakewood	Abel Avalos	Proposed RHNA Methodology
9/13/2019	City of Orange	Rick Otto	Proposed RHNA Methodology
9/13/2019	City of Paramount	John Carver	Proposed RHNA Methodology
9/13/2019	City of Rolling Hills	Jeff Pieper	Proposed RHNA Methodology
9/13/2019	City of San Fernando	Nick Kimball	Proposed RHNA Methodology
9/13/2019	City of Mission Viejo	Dennis Wilberg	Proposed RHNA Methodology
9/13/2019	City of Moorpark	Karen Vaughn	Proposed RHNA Methodology
9/13/2019	American Planning Association (CA Chapter)	Eric Phillips	Proposed RHNA Methodology
9/13/2019	County of Ventura	David Ward	Proposed RHNA Methodology
9/13/2019	City of Chino	Nicholas Liguori	Proposed RHNA Methodology
9/13/2019	One Step A La Vez	Kate English	Housing Development
9/13/2019	American Planning Association (Los Angeles Section)	Ryan Kurtzman	Proposed RHNA Methodology
9/13/2019	City of Laguna Beach	Scott Drapkin	Proposed RHNA Methodology
9/13/2019	Santa Monicans for Renters' Rights	Patricia Hoffman and Denny Zane	Proposed RHNA Methodology
9/13/2019	Western Riverside Council of Governments (WRCOG)	Rick Bishop	Proposed RHNA Methodology
9/13/2019	City of Los Angeles	Mayor Eric Garcetti	Proposed RHNA Methodology
9/13/2019	City of West Hollywood	Mayor John D'Amico	Proposed RHNA Methodology
9/13/2019	City of San Juan Capistrano	Joel Rojas	Proposed RHNA Methodology
9/13/2019	City of Thousand Oaks	Mark Towne	Proposed RHNA Methodology
9/13/2019	City of Newport Beach	Seimone Jurjis	Proposed RHNA Methodology
9/13/2019	City of Laguna Niguel	Jonathan Orduna	Proposed RHNA Methodology
9/13/2019	County of San Bernardino	Terri Rahhal	Proposed RHNA Methodology
9/13/2019	City of Indio	Kevin Snyder	Proposed RHNA Methodology
9/13/2019	City of Avalon	Anni Marshall	Proposed RHNA Methodology
9/13/2019	City of Burbank	Patrick Prescott	Proposed RHNA Methodology
9/13/2019	City of Santa Monica Housing Commission	Michael Soloff	Proposed RHNA Methodology
9/13/2019	City of Riverside	Jay Eastman	Proposed RHNA Methodology

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Date of Letter	Organization	Name	Topic(s)
9/13/2019	City of Whittier	Conal McNamara	Proposed RHNA Methodology
9/13/2019	City of San Gabriel	Arminé Chaparyan	Proposed RHNA Methodology
9/13/2019	City of San Buenaventura (Ventura)	Peter Gilli	Proposed RHNA Methodology
9/13/2019	City of Temple City	Scott Reimers	Proposed RHNA Methodology
9/13/2019	City of Palm Desert	Ryan Stendell	Proposed RHNA Methodology
9/13/2019	City of Monterey Park	Ron Bow	Proposed RHNA Methodology
9/13/2019	LA Thrives Et Al. (19 total organizations)	LA Thrives Et Al. (19 total organizations)	Proposed RHNA Methodology
9/13/2019	Leadership Council for Justice and Accountability Et Al. (7 total organizations)	Leadership Council for Justice and Accountability Et Al. (7 total organizations)	Proposed RHNA Methodology
9/13/2019	Southern California Business Coalition (7 total organizations)	Southern California Business Coalition (7 total organizations)	Proposed RHNA Methodology
9/15/2019		Michelle Schumacher	Other
9/30/2019	Homeowners of Encino	Eliot Cohen	Proposed RHNA Methodology
9/30/2019		Trudy Sokol	Other
10/1/2019	City of Barstow	Michael Massimini	Proposed RHNA Methodology
10/2/2019	County of Orange	Supervisor Donald Wagner	Draft RHNA Methodology
10/3/2019	County of Riverside	Charissa Leach	Draft RHNA Methodology
10/4/2019	City of Irvine	Mayor Christina L. Shea	Draft RHNA Methodology
10/6/2019	UCLA Luskin School of Public Affairs	Paavo Monkkonen	Draft RHNA Methodology
10/7/2019	City of Costa Mesa	Lori Ann Farrell Harrison	Draft RHNA Methodology
10/8/2019	South Bay Cities Council of Governments (SBCCOG)	Christian Horvath	Draft RHNA Methodology
10/9/2019	Del Rey Residents Association	Tara Walden	Other
10/10/2019		Karen Davis Ferlauto	Other
10/11/2019	Abundant Housing LA	David Bonaccorsi	Draft RHNA Methodology
10/11/2019	City of Oxnard	Mayor Tim Flynn	Draft RHNA Methodology
10/16/2019	County of Riverside	Charissa Leach	Draft RHNA Methodology
10/21/2019	City of Newport Beach	Seimone Jurjis	Draft RHNA Methodology
10/21/2019	San Bernardino County Transportation Authority/Council of Governments (SBCTA/SBCOG)	Ray Wolfe	Draft RHNA Methodology
10/23/2019		Barbara Broide	Draft RHNA Methodology
10/23/2019	County of Riverside	Supervisor Kevin Jeffries	Draft RHNA Methodology
10/25/2019		Robert Flores	Draft RHNA Methodology
10/25/2019		Reed Bernet	Draft RHNA Methodology
10/29/2019	Rancho Palos Verdes	Ana Mihranian	Draft RHNA Methodology
10/28/2019		Warren Hogg	Draft RHNA Methodology
10/29/2019	City of Coachella	Luis Lopez	Draft RHNA Methodology
10/31/2019		Marilyn Brown	Purpose of RHNA
11/1/2019		Mayor Rusty Bailey (City of Riverside) Supervisor Karen Spiegel (County of Riverside) Mayor Frank Navarro (City of Colton) Hon. Toni Momberger (City of Redlands)	Draft RHNA Methodology
11/1/2019	City of Los Angeles, 4th District	Hon. David Ryu	Draft RHNA Methodology
11/4/2019	Central Cities Association of Los Angeles	Jessica Lall	Draft RHNA Methodology
11/5/2019	Orange County Council of Governments (OCCOG)	Marnie O. Primmer	Draft RHNA Methodology
11/5/2019	City of Gardena	Mayor Tasha Cerda	Draft RHNA Methodology
11/5/2019	City of Los Angeles	Vincent P. Bertoni and Kevin J. Keller	Draft RHNA Methodology
11/5/2019	City of Huntington Beach	Oliver Chi	Draft RHNA Methodology

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Date of Letter	Organization	Name	Topic(s)
11/6/2019	City of Hemet	Christopher Lopez	Draft RHNA Methodology
11/6/2019	City of Chino	Nicholos S. Liguori	Draft RHNA Methodology
11/6/2019	City of Menifee	Cheryl Kitzerow	Draft RHNA Methodology
11/6/2019	County of Los Angeles	Sachi A. Hamai	Draft RHNA Methodology
11/6/2019	City of Newport Beach	Seimone Jurjis	Draft RHNA Methodology
11/6/2019	City of Fontana	Michael Milhiser	Draft RHNA Methodology
11/6/2019	City of Chino Hills	Joann Lombardo	Draft RHNA Methodology
11/6/2019		Henry Fung	Regional Determination
11/6/2019	City of Costa Mesa	Barry Curtis	Draft RHNA Methodology
11/7/2019	City of Temple City	Scott Reimers	Draft RHNA Methodology
11/8/2019	Gateway Cities Council of Governments (GCCOG)	Nancy Pfeffer	Draft RHNA Methodology
11/20/2019	City of Huntington Beach	Michael Gates, Mayor Erik Peterson, and Mayor Pro Tem Lyn Semeta	Draft RHNA Methodology
12/12/2019		Holly Osborne	Draft RHNA Methodology
12/12/2019	City of Tustin	Allan Bernstein	Draft RHNA Methodology
12/19/2019	City of Fountain Valley	Mayor Cheryl Brothers	Draft RHNA Methodology
12/16/2019	City of Chino Hills	Joann Lombardo	Draft RHNA Methodology
12/20/2019	City of Cerritos	Naresh Solanki	Draft RHNA Methodology
1/23/2020		Karen Farley	Draft RHNA Methodology
1/23/2020		Steve Stowell	Draft RHNA Methodology
1/27/2020		Janet Chang	Draft RHNA Methodology
1/29/2020	City of Downey	Mayor Blanca Pacheco	Draft RHNA Methodology
2/4/2020	City of Cerritos	Mayor Naresh Solanki	Draft RHNA Methodology
2/6/2020		Steve Davey	Draft RHNA Methodology
2/6/2020		Connie Bryant	Draft RHNA Methodology
2/6/2020		Tom Wright	Draft RHNA Methodology
2/10/2020	City of Irvine	Marika Poynter	Draft Appeals Procedures
2/10/2020	City of Laguna Hills	David Chantarangsu	Draft Appeals Procedures
2/10/2020	City of Mission Viejo	Gail Shiomoto-Lohr	Draft Appeals Procedures
2/10/2020	City of Santa Ana	Melanie McCann	Draft Appeals Procedures
2/10/2020	City of Oxnard (amended)	Elyssa Vasquez	Draft Appeals Procedures
2/10/2020		Jennifer Denmark	Draft Appeals Procedures
2/12/2020		Janice and Ricardo Lim	Draft RHNA Methodology
2/18/2020	City of Lakewood	Thaddeus McCormack	Draft RHNA Methodology
2/18/2020	OCCOG	Marnie O. Primmer	Regional Determination Objection
2/18/2020		Nancy Norman	Draft RHNA Methodology
2/18/2020		Sepeedeh Ahadiat	Draft RHNA Methodology
2/18/2020		Nas Ahadiat	Draft RHNA Methodology
2/19/2020		Dave Latter	Draft RHNA Methodology
2/19/2020		Vikki Bujold-Peterson	Draft RHNA Methodology
2/19/2020	City of Yorba Linda	David Brantley	Draft RHNA Methodology
2/21/2020	City of Newport Beach	Will O'Neill	Draft RHNA Methodology
2/20/2020	City of Rancho Santa Margarita	Cheryl Kuta	Draft RHNA Methodology
2/20/2020	City of Huntington Beach	Oliver Chi	Draft RHNA Methodology
2/20/2020	City of South Gate	Joe Perez	Draft RHNA Methodology
2/20/2020	City of West Hollywood	John Leonard	Draft RHNA Methodology
2/20/2020	City of Cerritos	Art Gallucci	Draft RHNA Methodology
2/22/2020		Colleen Johnson	Draft RHNA Methodology
2/23/2020		Nancy Pleskot	Other
2/23/2020		Susan Decker	Draft RHNA Methodology

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Date of Letter	Organization	Name	Topic(s)
2/23/2020		Scott Nathan	Housing Development
2/20/2020	City of Irvine	Pete Carmichael	Draft RHNA Methodology
2/20/2020	City of Anaheim	Ted White	Draft RHNA Methodology
2/24/2020	City of Anaheim	Trevor O'Neil	Draft RHNA Methodology
2/25/2020		Vito Mancini	Draft RHNA Methodology
2/25/2020		Henry Fung	CEHD Meeting Agenda
2/25/2020	City of Rosemead	Margaret Clark and Gloria Molleda	Draft RHNA Methodology
2/26/2020	City of Fullerton	Kenneth Domer	Draft RHNA Methodology
2/26/2020		Henry Fung	Draft RHNA Methodology
2/26/2020	City of Alhambra	Jessica Binnquist	Draft RHNA Methodology
2/26/2020		Holly Osborne	Draft RHNA Methodology
2/26/2020	City of La Mirada	Jeff Boynton	Draft RHNA Methodology
2/26/2020	City of Garden Grove	Steven Jones	Draft RHNA Methodology
2/26/2020		Mehta Sunil	Draft RHNA Methodology
2/26/2020	City of Gardena	Tasha Cerda	Draft RHNA Methodology
2/27/2020		Jaimee Suh	Draft RHNA Methodology
2/27/2020	City of South Pasadena	Robert S. Joe	Draft RHNA Methodology
2/27/2020	City of South Gate	Michael Flad	Draft RHNA Methodology
2/27/2020	City of Walnut	Rob Wishner	Draft RHNA Methodology
2/27/2020	City of La Verne	Eric Scherer	Draft RHNA Methodology
2/28/2020		Kari Geosano	Draft RHNA Methodology
2/28/2020	City of Torrance	Danny E. Santana	Draft RHNA Methodology
2/28/2020	City of Laguna Hills	Janine Heft	Draft RHNA Methodology
3/1/2020		Scott Pisano	Draft RHNA Methodology
3/2/2020	City of Bradbury	Richard T. Hale, Jr.	Draft RHNA Methodology
3/2/2020	City of La Mirada	Jeff Boynton	Draft RHNA Methodology
3/2/2020	City of Norco	Steve King	Draft RHNA Methodology
3/2/2020	City of Seal Beach	Les Johnson	Draft RHNA Methodology
3/3/2020	City of Torrance	Danny E. Santana	Draft RHNA Methodology
3/3/2020	City of Cerritos	Art Gallucci	Draft RHNA Methodology
3/3/2020	City of San Dimas	Ken Duran	Draft RHNA Methodology
3/3/2020	City of La Palma	Peter Kim	Draft RHNA Methodology
3/3/2020	City of Newport Beach	Will O'Neill	Draft RHNA Methodology
3/3/2020	City of Rancho Palos Verdes	Terry Rodrigue	Draft RHNA Methodology
3/4/2020		Brian Johnson	Draft RHNA Methodology
3/4/2020	City of Riverside	William R. "Rusty" Bailey (City of Riverside), Frank Navarro (City of Colton), Larry K. McCallon (City of Highland), Deborah Robertson (City of Rialto), Carmen Ramirez (City of Oxnard), Steve Manos (City of Lake Elsinore), Karen S. Spiegel (County of Riverside)	Draft RHNA Methodology
3/4/2020	City of Monterey Park	Ron Bow	Draft RHNA Methodology
3/4/2020		Holly Osborne	Draft RHNA Methodology
3/4/2020	City of La Puente	Bob Lindsey	Draft RHNA Methodology
3/4/2020	City of Huntington Beach	Oliver Chi	Draft RHNA Methodology
3/4/2020	City of Eastvale	Bryan Jones	Draft RHNA Methodology
3/4/2020	City of Lake Forest	Neeki Moatazedi	Draft RHNA Methodology
3/4/2020	City of Chino Hills	Ray Marquez	Draft RHNA Methodology
3/4/2020	City of La Puente	Bob Lindsey	Draft RHNA Methodology
3/5/2020	City of Costa Mesa	Barry Curtis	Draft RHNA Methodology
3/12/2020	City of Fountain Valley	(unsigned)	Proposed Housing Legislative Amendments
3/14/2020		Amy Wasson	RHNA Methodology

Written Comments Received on the 6th Cycle RHNA (as of 1/20/21)

Date of Letter	Organization	Name	Topic(s)
4/27/2020	OCCOG	Hon. Trevor O'Neil	RHNA Methodology
5/5/2020		Holly Osborne	RHNA Methodology
5/5/2020		Holly Osborne	RHNA Methodology (2nd letter received)
11/4/2020	City of Beverly Hills	Lester J. Friedman	RHNA Litigation Committee
11/9/2020	City of Lakewood	Todd Rogers	RHNA Litigation Committee
11/10/2020	City of Rosemead	Sandra Armenta	RHNA Litigation Committee
11/10/2020	City of Gardena	Tasha Cerda	RHNA Litigation Committee
11/11/2020	City of Cypress	Rob Johnson	Comment from Jurisdiction on filed appeal: City of Santa Ana
11/11/2020	City of Cypress	Rob Johnson	RHNA Litigation Committee
11/12/2020	City of Torrance	Patrick J. Furey	RHNA Litigation Committee
11/13/2020	City of Whittier	Joe Vinatieri	RHNA Litigation Committee
11/16/2020	City of Rancho Santa Margarita	Bradley J. McGirr	RHNA Litigation Committee
11/16/2020	City of Pico Rivera	Gustavo Camacho	RHNA Litigation Committee
11/16/2020	City of Pico Rivera	Steve Carmona	RHNA Litigation Committee
11/16/2020	City of Glendora	Michael Allawos	RHNA Litigation Committee
11/17/2020	City of Beverly Hills	George Chavez	RHNA Litigation Committee
11/17/2020	City of Lawndale	Robert Pullen-Miles	RHNA Litigation Committee
11/17/2020	City of Norwalk	Jennifer Perez	RHNA Litigation Committee
11/17/2020	City of Redondo Beach	William Brand	RHNA Litigation Committee
11/17/2020	City of San Fernando	Joel Fajardo	RHNA Litigation Committee
11/17/2020	City of Fountain Valley	Cheryl Brothers	RHNA Litigation Committee
11/17/2020	City of Laguna Beach	Bob Whalen	RHNA Litigation Committee
11/18/2020	City of Cerritos	Frank Aurelio Yokoyama	RHNA Litigation Committee
11/18/2020	City of Rancho Palos Verdes	Ara Michael Mihranian	RHNA Litigation Committee
11/18/2020	City of Pasadena	Steve Mermell	RHNA Litigation Committee
11/18/2020	City of Lomita	James Gazeley	RHNA Litigation Committee
11/18/2020	City of Westminster	Sherry Johnson	RHNA Litigation Committee
11/18/2020	City of Temple City	Bryan Cook	RHNA Litigation Committee
11/20/2020	South Bay Cities Council of Governments	Olivia Valentine	RHNA Litigation Committee
11/24/2020	City of Calipatria	Jim Spellins	RHNA Litigation Committee
11/24/2020	City of Chino	Nicholas S. Liguori	RHNA Litigation Committee
11/30/2020	City of Irvine	Christina Shea	RHNA Litigation Committee
11/30/2020	City of Signal Hill	Robert Copeland	RHNA Litigation Committee
12/1/2020	City of Yorba Linda	Mark Pulone	Comment from Jurisdiction on filed appeal: City of Yorba Linda
12/1/2020	Orange County Mayors	21 Orange County mayors	RHNA Litigation Committee
12/2/2020	City of Rancho Santa Margarita	Bradley J. McGirr	Comment from Jurisdiction on filed appeal: City of Santa Ana
12/3/2020	City of Long Beach	Christopher Koontz	Comment from Jurisdiction on filed appeal: All appeals
12/4/2020		Kevin Yang	Public comment on filed appeal: City of Yorba Linda
12/9/2020	City of Yorba Linda	Mark Pulone	Comment from Jurisdiction on filed appeal: City of Yorba Linda
12/10/2020	City of Whittier	Jeffrey S. Adams	Comment from Jurisdiction on filed appeal: All appeals
12/10/2020	California Department of Housing and Community Development (HCD)	Megan Kirkeby	Comment from California Department of Housing & Community Development on filed appeal: All appeals
12/10/2020	City of Corona	Joanne Coletta	Comment from Jurisdiction on filed appeal: City of Hemet and County of Riverside
12/10/2020	City of Santa Ana	Kristine Ridge	Comment from Jurisdiction on filed appeal: City of Santa Ana
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Costa Mesa
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: County of Orange
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Fountain Valley
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Fullerton
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Garden Grove

Written Comments Received on the 6th Cycle RHNA (as of 1/20/21)

Date of Letter	Organization	Name	Topic(s)
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Irvine
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: La Palma
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Laguna Beach
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Laguna Hills
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Los Alamitos
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Mission Viejo
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Newport Beach
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Rancho Santa Margarita
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Tustin
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Westminster
12/10/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Yorba Linda
12/18/2020	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Orange County jurisdictions
12/21/2020	City of Yorba Linda	Mark Pulone	Response to comment from Public Law Center (12/10/20)
12/24/2020		Holly Osborne	RHNA Methodology
1/4/2021		Henry Fung	RHNA Litigation Committee
1/5/2021	City of Yorba Linda	Nate Farnsworth	Public comment on filed appeal: Fontana; Pico Rivera; San Dimas; Yorba Linda
1/5/2021	City of Chino Hills	Joann Lombardo	Public comment on filed appeal: Chino Hills
1/6/2021		Henry Fung	RHNA Litigation Committee
1/7/2021	City of Pico Rivera	Luis Rodriguez	Public comment on filed appeal: Pico Rivera
1/8/2021	Eastlake Village Community Association	Susan Janowicz	Public comment on filed appeal: Yorba Linda
1/8/2021		Anonymous	Public comment on filed appeal: Yorba Linda
1/11/2021	City of Pico Rivera	Luis Rodriguez Jr.	Public comment on filed appeal: Pico Rivera
1/12/2021	People for Housing Orange County; The Kennedy Commission; Orange County United Way; Providence; Welcoming Neighbors Home; Tapestry; Habitat for Humanity of Orange County	Elizabeth Hansburg; Cesar Covarrubias; Susan Parks; Barry Ross; Rona Henry; Rev. Kent Doss; Sharon Ellis	Public comment on filed appeals: Orange County Cities
1/12/2021		Katherine Kim	Public comment on filed appeal: Yorba Linda
1/12/2021		Mark Lee	Public comment on filed appeal: Yorba Linda
1/12/2021		Jackie Girgis	Public comment on filed appeal: Yorba Linda
1/12/2021		Denelle Voegtly	Public comment on filed appeal: Yorba Linda
1/12/2021		Arivinder Mann	Public comment on filed appeal: Yorba Linda
1/13/2021	Hollywood Riviera Homeowners Association	Amy Josefek	Public comment on filed appeal: Torrance
1/13/2021	City of Newport Beach	Brad Avery	Response to comment from Public Law Center (12/10/20)
1/13/2021		Chris Dreike	RHNA Methodology
1/13/2021		Russell Khouri	Public comment on filed appeal: Rancho Santa Margarita
1/14/2021		Don Bernstein	Public comment on filed appeal: Yorba Linda
1/14/2021		Rhonda Lundberg	Public comment on filed appeal: Rancho Santa Margarita
1/14/2021	Orange County Business Council	Jennifer Ward	Public comment on filed appeals: Orange County Cities
1/14/2021	City of Yorba Linda	Todd O. Litfin	Public Comment on filed appeal: Yorba Linda
1/14/2021	City of Irvine	Pete Carmichael	Public Comment on filed appeal: City of Irvine
1/14/2021		Cindy Gildersleeve	Public comment on filed appeal: Rancho Santa Margarita
1/14/2021		Merilyn Qian	Public comment on filed appeal: Yorba Linda
1/14/2021		Tiangang Qian	Public comment on filed appeal: Yorba Linda
1/14/2021		Colleen Kirtland	Public comment on filed appeal: Yorba Linda
1/15/2021	City of Huntington Beach	Nicolle Aubé	Public comment on filed appeal: City of Huntington Beach
1/15/2021		Holly Osborne	RHNA Methodology
1/15/2021	City of Rancho Santa Margarita	Cheryl Kuta	Public comment on filed appeal: Rancho Santa Margarita
1/15/2021	Public Law Center	Alexis Mondares and Richard Walker	Public comment on filed appeal: Huntington Beach
1/17/2021		Beth Heard	Public comment on filed appeal: Rancho Santa Margarita
1/18/2021		Alfred Twu	Public comment on RHNA Allocation: Vernon and City of Industry

Written Comments Received on the 6th Cycle RHNA (as of 1/20/21)

Date of Letter	Organization	Name	Topic(s)
1/19/2021		Holly Osborne	RHNA Methodology; Public comment on filed appeal: Redondo Beach

All comments are posted online at https://scag.ca.gov/rhna-comments.
Comments can be submitted to: housing@scag.ca.gov

Southern California Association of Governments
Remote Participation Only
January 25, 2021

To: Regional Housing Needs Assessment Subcommittee (RHNA)

EXECUTIVE DIRECTOR'S APPROVAL

From: Ma'Ayn Johnson, Regional Planner Specialist,
(213) 236-1975, johnson@scag.ca.gov

Kome Ajise

Subject: Appeal of the Draft RHNA Allocation for the City of Huntington Beach

RECOMMENDATION:
Deny the appeal filed by the City of Huntington Beach to reduce the draft RHNA allocation for the City of Huntington Beach.

STRATEGIC PLAN:
This item supports the following Strategic Plan Goal 2: Advance Southern California's policy interests and planning priorities through regional, statewide, and national engagement and advocacy.

SUMMARY OF APPEAL(S):
The City's draft RHNA allocation is 13,337 units. The City does not specify a requested reduction, its appeal is organized around several issues, some of which do specify a reduction, the total of which is in excess of the City's draft RHNA allocation. The City of Huntington Beach requests a reduction of its RHNA allocation based on the following seven issues:

1) Application of the adopted Final RHNA methodology for the 6th Cycle RHNA (2021-2029) - incorrect identification of a high-quality transit area (requested reduction of 3,625 units), use of improper year of forecast data (requested reduction 1,861 units).
2) Existing or projected jobs-housing balance.*
3) Availability of land suitable for urban development or conversion to residential use - impact of sea level rise, coastal inundation, and FEMA-designated flood zones (requested reduction of 2,000 units).
4) Distribution of household growth assumed for purposes of comparable Regional Transportation Plans (RTPs).*
5) The rate of overcrowding - City's lower overcrowding rate should be considered in allocating regional housing need (requested reduction of 6,428 units).
6) Housing needs generated by the presence of a university campus within any jurisdiction - housing needs generated by colleges or universities in the region in general (requested reduction 360 units).

7) The region's greenhouse gas emissions target lower income workers are driving alone, longer commutes because housing would not be placed where it is needed and would not be consistent with the SCS.*

* These issues are checked on the appeals form but are discussed together with the arguments related to application of the methodology.

Other: Huntington Beach also argues that the State's imposition of RHNA allocation requirements on Charter Cities violates the constitution and is in and of itself an illegal act; the City also argues that the residual adjustment is illegal (and requests an associated reduction of 3,442 units); however, this is not a basis for a RHNA appeal. In addition, the City mentions change in circumstances with respect to COVID-19 although this box is not checked on the form.

RATIONALE FOR STAFF RECOMMENDATION:
Staff have reviewed the appeal(s) and recommend no change to the City of Huntington Beach's RHNA allocation. Following Huntington Beach's appeal issues:

Issues 1, 2, 4 and 7, SCAG appropriately identified the Beach Boulevard corridor as constituting an HQTA per its adopted procedures; use of future year HQTAs is not illegal and is a part of SCAG's adopted Final RHNA Methodology. The Final RHNA Methodology does not substitute 2045 forecasts in lieu of 2030 as Huntington Beach attests; data steps using forecasted growth were all conducted consistent with the Final RHNA Methodology and extensive review opportunities were provided to Huntington Beach of these data elements. The regional greenhouse gas reduction targets are met and the distribution of housing need is consistent with the Sustainable Communities Strategy (SCS).

Issue 3, SCAG appropriately considered available land constraints related to sea level rise, coastal inundation, and FEMA-designated flood zones; however, Huntington Beach does not demonstrate why its draft RHNA allocation could not be accommodated in any way in the vast majority of the city's land area which is not subject to such constraints.

Issue 5, the City misinterprets the role of overcrowding in HCD's regional housing needs determination as necessitating inclusion in SCAG's final RHNA allocation methodology. SCAG's Final RHNA Methodology, which was found by HCD to further all necessary statutory objectives, does not and need not include a measure of jurisdiction-level overcrowding; to do so would constitute a change of the methodology which cannot be considered in the appeals process.

Issue 6, Huntington Beach fails to demonstrate why housing need generated by colleges and universities outside the city disproportionately affects Huntington Beach or in any way would reduce the city's housing need.

Other: The residual need component was applied correctly and is a part of SCAG's adopted final RHNA methodology, which was found by HCD to further all statutory objectives, including those related to Affirmatively Furthering Fair Housing (AFFH).

BACKGROUND:

Draft RHNA Allocation

Following the adoption of the Final RHNA Methodology on March 5, 2020 and the adoption of Connect SoCal on September 3, 2020, all local jurisdictions received draft RHNA allocations on September 11, 2020. A summary is below.

Total RHNA for the City of Huntington Beach: 13,337 units
Very Low Income: 3,652 units
Low Income: 2,179 units
Moderate Income: 2,303 units
Above Moderate Income: 5,203 units

Additional background related to the Draft RHNA Allocation is included in Attachment 1.

Summary of Comments Received during 45-day Comment Period

No comments were received from local jurisdictions or HCD during the 45-day public comment period described in Government Code section 65584.05(c) which specifically regard the appeal filed for the City of Huntington Beach. Three comments were received which relate to appeals filed generally:

- HCD submitted a comment on December 10, 2020 delineating the statutory basis for RHNA appeals and the requirement that any appeals granted must include written findings regarding how revisions are necessary to further RHNA's statutory objectives.
- The City of Whittier submitted a comment on December 10, 2020 supporting surrounding cities in their appeals, but expressing concern that additional units may be applied to Whittier if reallocated from cities which are successful in their appeals.
- The City of Long Beach submitted a comment on December 3, 2020 indicating their view that the RHNA allocation process was fair and transparent, their support for evaluating appeals on their merits (specifically those from the Gateway Council of Governments), and their opposition to any action which would result in a transfer of additional units to Long Beach.

ANALYSIS:

Issues 1, 2, 4, 7: *Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029) [Government Code section 65584.05 (b)(2)]; existing or projected jobs-housing balance [Government Code section 65584.04(e)(1)]; distribution of household growth assumed for purposes of comparable Regional Transportation Plans [Government Code section 65584.04(e)(3)]; and the region's greenhouse gas emissions targets [Government Code section 65584.04(e)(12)].*

The City of Huntington Beach contends that the portion of the Beach Boulevard corridor within the City should not be considered an HQTA. The City contends that Orange County Transportation Authority (OCTA) Route 29 does not meet the threshold of 15 minutes' peak service frequency which is necessary for inclusion as an HQTA. The City also contends that since statute does not specify what a future year HQTC/HQTA may be that the definition is illegal and cannot be used in calculation of RHNA.

Huntington Beach contends that SCAG incorrectly projected household growth and employment, introducing growth projections for the year 2045 despite the fact that the RHNA projection period extends only through 2029. Huntington Beach contends that the basis for the entire methodology is fundamentally flawed. The City further contends that SCAG should use 2030 employable population as a factor in allocating housing need.

The City indicates that lower income workers are driving alone, and that longer commutes would occur as a result of housing not being placed where it is needed and allocation of housing to the City would not be consistent with the SCS and this would increase greenhouse gas emissions.

In addition to the above bases for appeal, the City includes identifies the following planning factor:

- *Opportunities to maximize the use of public transportation and existing transportation infrastructure (not an appeal basis).*

SCAG Staff Response: The arguments raised by the City of Huntington Beach in its appeal amount to a challenge to the Final RHNA Methodology, which, as described in Attachment 1, was adopted by the Regional Council on March 5, 2020 after an extensive public development and review process. The issues outlined in the appeal, such as the calculation and distribution of projected and existing need, the use of a 2045 horizon year, and the calculation of job accessibility are arguments against the adopted Final RHNA Methodology itself, and not how the methodology was applied to the City. Development of the Final RHNA Methodology is a separate process from the RHNA appeals process, and it is outside the scope of the appeals process for the Appeals Board to change the adopted methodology. No arguments or supporting evidence is provided in the appeal that indicates that the methodology to determine the City's share of regional housing need was improperly applied.

The statute vests in HCD the authority to assess whether a RHNA methodology furthers statutory objectives[1] [Government Code section 65584.04(i)], and per the attached letter dated January 13, 2020, HCD has found that SCAG's 6th cycle RHNA methodology furthers all of RHNA's statutory objectives. As such, the methodology is not, as Huntington Beach claims, fundamentally flawed.

HQTA Location, Population and Transit Access

The adopted final RHNA methodology includes a component that calculates need based on a jurisdiction's population within an HQTA in 2045 in Connect SoCal, SCAG's 2045 RTP/SCS. For planning and SCS purposes, SCAG identifies a "high quality transit area" as generally a walkable transit village or corridor that is within one-half mile of a major transit stop or High-Quality Transit Corridor (HQTC) as defined in Government Code 21155(b) and 21064.3 excluding freeway transit corridors with no bus stops on the freeway alignment. SCAG's technical methodology for identifying HQTCs and major transit stops is based on input from the Regional Transit Technical Advisory Committee (RTTAC), as well as consultation with local agencies, other large MPOs in California, and the Governor's Office of Planning and Research.

SCAG's definition of high-quality transit corridors is found in Appendix A of Connect SoCal's Transit Technical Report (attached) and indicates that:

> Planned HQTCs and major transit stops are future improvements that are expected to be implemented by transit agencies by the RTP/SCS horizon year of 2045. These are assumed by definition to meet the statutory requirements of an HQTC or major transit stop. SCAG updates its inventory of planned major transit stops and HQTCs with the adoption of a new RTP/SCS, once every four years.

However, transit planning studies may be completed by transit agencies on a more frequent basis than the RTP/SCS is updated by SCAG and as such it is understood that planned transit projects are subject to further project-specific evaluation, but that is the nature of the long-range planning process. While there is an inherent chance that transit agencies may change future plans, SCAG's adopted final RHNA methodology uses this definition of 2045 HQTAs in order to better align future

[1] The objectives are: 1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low-income households. (2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080. (3) Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction. (4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey. (5) Affirmatively furthering fair housing. (Govt. Code § 65584(d).)

housing with anticipated future transit and promote the objectives and strategies of SCAG's adopted 2020 Connect SoCal Plan.

Huntington Beach correctly notes that there is not a specific statutory definition for future year HQTCs or HQTAs. SCAG's adopted RHNA methodology, which uses future year HQTAs as defined above and several other inputs, was reviewed by HCD on January 13, 2020 pursuant to their review authority in Government Code 65584.04(i) and found to further the statutory objectives of RHNA (attached). As a part of the RHNA methodology, the use of future year HQTAs contributed to this finding, specifically relating to RHNA objective #2 related to infill, environmental, and development efficiency.

The attached map shows the 2045 HQTA boundaries for the City of Huntington Beach which were used in Connect SoCal. SCAG worked closely with OCTA to identify the HQTCs in Orange County which form the basis for HQTAs. SCAG and OCTA together identified the Beach Blvd. corridor, including the entire alignment within the City of Huntington Beach, as both an existing and future HQTC. See figure 4.10 in OCTA's 2018 LRTP (attached). The nature of bus services is that routes and service frequency can change periodically, thus a CTC's estimate of future transit service frequency is the best estimate available at a given point in time—in this instance, the point in time required to complete Connect SoCal.

Specifically, OCTA provided data for inclusion in Connect SoCal which indicated a 10-minute AM and PM peak headway for Rapid Route 529 on the Beach Blvd Corridor and is identified in the Connect SoCal Project List as RTP ID 2160008. Thus, it is qualified as an HQTA for Connect SoCal and by extension, the adopted RHNA methodology.

In addition to the arguments related to the inclusion of this specific transit corridor, Huntington Beach also contends that OCTA is experiencing ridership and revenue declines during the COVID-19 pandemic; however, the City has not provided evidence of a specific change in future service which might impact whether the Beach Blvd corridor is designated as an HQTA. The City also suggests that the pandemic is currently impacting public transportation more generally; however, evidence is not provided to indicate that this is a sufficiently lasting trend through the end of the RHNA planning period (2029) and/or the Connect SoCal horizon year (2045).

The Wendell Cox report submitted as an attachment to this appeal also brings up several other issues in the context of HQTAs, including that access to jobs by transit "tends to be considerably less than by driving alone." Recognizing that transit service is uneven across the region, the adopted RHNA methodology also allocates a substantial amount of housing need on the basis of automobile-based job accessibility. The report also contends that transit share is declining amongst low-income workers; however, the policy objective of RHNA is to promote a better jobs-housing balance and this is accomplished by assigning housing to areas with future HQTAs, including Huntington Beach.

Greenhouse Gas Emissions and SCS Consistency

The City argues that the allocation is not consistent with the SCS and workers would be driving further which would increase greenhouse gas emissions. SCAG allocates both "projected need" and "existing need" in a manner that is consistent with the development pattern in the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (Connect SoCal), which includes a GHG emission reduction target for the region. The 6th cycle RHNA does not change the population growth forecast from Connect SoCal for 2029 (end of RHNA period) or any other year including 2035 for which Connect SoCal is required to meet the greenhouse gas emissions target. The Connect SoCal Forecasted Regional Development Pattern is shown on Exhibit 1 of the Sustainable Communities Strategy Technical Report, p. 13. Specifically, the development pattern includes priority growth areas, incorporated areas, job centers, entitled projects and sphere of influence which together would accommodate 95% of the growth till 2045. The development pattern reflects the strategies and policies contained in Connect SoCal.

While RHNA would also require the City to address existing need, those units are intended to serve the existing population and were allocated based on transit and job access measures derived from Connect SoCal data. Therefore, the RHNA methodology for "existing need" also promotes an efficient development pattern in utilizing public transit, reducing commute distance and contribute to further reduce per capita greenhouse gas emissions. Accordingly, the total allocation for regional housing need ("existing need" and "projected need") is aligned with the strategies and policies underlying the development pattern in the Connect SoCal, and the RHNA allocation methodology is consistent with meeting the region's GHG emissions target.

Conclusion

An appeal citing RHNA methodology as its basis must appeal the application of the adopted methodology, not the methodology itself. Notwithstanding the City's arguments, SCAG properly determined the allocation of housing need on the basis of future transit accessibility, HQTA considerations, and other factors pursuant to the adopted RHNA methodology which cannot be altered through the RHNA appeals process. Since the RHNA methodology was applied properly to Huntington Beach and the methodology was found by HCD to further RHNA's statutory objectives including objective 3) related to jobs-housing balance, SCAG staff do not recommend a decrease to Huntington Beach's draft RHNA allocation.

Issue 3: *Availability of land suitable for urban development or for conversion to residential use [Government Code section 65584.04(e)(2)(B)].*

Huntington Beach asserts that SCAG failed to consider the impact of sea level rise, planning for coastal inundation, and FEMA designated flood zones when allocating RHNA to Huntington Beach. Huntington Beach is not appealing on the basis of lands protected from urban development under existing federal or state programs [Section 65584.04(e)(3)].

Huntington Beach cites California Coastal Commission (CCC) documents indicating their role in planning and development approvals, and asserts that the CCC was not sufficiently engaged during the development of SCAG's RHNA methodology. Huntington Beach states that CCC guidelines recommend residential land to be rezoned to open space in order to accommodate managed retreat of areas subject to sea level rise, and that the RHNA methodology failed to include these and related analyses.

SCAG's Data/Map Books include an exhibit depicting 2 foot sea level rise areas; however, the City argues that a 3.5 foot sea level rise analysis would be more appropriate, and that sea level rise data are not used in Connect SoCal or RHNA calculations. The City also attests that data covering potential infill parcels contained in the Data/Map Book are inaccurate.

Huntington Beach argues that coastal cities are explicitly unable to accommodate any development, especially residential development, in sea level rise areas, and that these areas should be fully excluded from all aspects of the RHNA calculation.

SCAG Staff Response: Once again, a challenge to the RHNA methodology is not a basis for appeal. Moreover, it is presumed that planning factors such as lands protected by federal and state programs have already been accounted for prior to the local input submitted to SCAG since such factors are required to be considered at the local level. Attachment 1 describes SCAG's extensive Bottom-Up Local Input and Envisioning Process which provided extensive engagement and review opportunities to ensure that forecasting growth in constrained areas was avoided. An updated version of the draft data/map book originally provided to and discussed with Huntington Beach in March 2018 is available at https://scag.ca.gov/sites/main/files/file-attachments/huntingtonbeach.pdf and specifically includes data on coastal inundation/sea level rise, protected natural lands, and flood hazard zones.

As such, Huntington Beach's forecasted growth – recorded as 517 households during the 2020-2030 period and used as an input to the RHNA methodology – would have reflected the development constraints referenced in the City's appeal. No evidence was submitted that these areas have changed since the most current input provided in August 2018. However, locally-reviewed growth forecasts are not the only part of the RHNA methodology—additional units are assigned on the basis of job and transit accessibility in particular. There is no requirement for each part of the RHNA methodology to consider each local planning factor.

These data/map books also included a draft map which used a rudimentary, region-wide approach to highlight potential infill or refill opportunities based on largely on property value. These were included for research purposes and were not used for growth forecasting or RHNA allocation purposes.

Per Government Code 65584.04(e)(2)(B), "the determination of land available suitable for urban development may exclude lands where the Federal Emergency Management Agency (FEMA) or the Department of Water Resources has determined that the flood management infrastructure designed to protect that land is not adequate to avoid the risk of flooding." While SCAG staff does not dispute that there may be areas at risk of flooding in the jurisdiction, the jurisdiction has not provided evidence that an agency or organization such as FEMA has determined that flood management infrastructure is inadequate to avoid flood risk in these areas. Additionally, the jurisdiction has not provided evidence that it cannot plan for its assigned draft RHNA allocation in other areas of the jurisdiction that are not at risk for floods specifically.

While Huntington Beach explains why it cannot accommodate growth in these areas, the City fails to explain if or why the 94.5% of the city's land area which are not in the coastal zone or the 92.5% of the city's land area which is not in a FEMA-designated flood zone cannot accommodate the additional housing units called for in its draft RHNA allocation. The presence of protected open space alone does not reduce housing need, nor does it preclude a jurisdiction from accommodating its housing need elsewhere. Specifically, Government Code Section 65584.04(e)(2)(B) indicates that:

> "…The council of governments may not limit its consideration of suitable housing sites or land suitable for urban development to existing zoning ordinances and land use restrictions of a locality, but shall consider the potential for increased residential development under alternative zoning ordinances and land use restrictions…"

In response to similar arguments made by the cities of Coronado and Solana Beach in their RHNA allocation appeals earlier this year,

> "Coastal Commission Executive Director Jack Ainsworth said that while there are some constraints in the coastal zone related to increases in housing density around areas vulnerable to sea level rise and erosion, that doesn't mean that there are not areas within the coastal zone where significant increases in housing density are possible. 'To make a blanket statement that the Coastal Commission would not approve increases in housing density is simply not accurate," he wrote. "Over the past year or so, the Commission has demonstrated our commitment to increasing

> housing density through individual permitting actions and our local coastal program planning efforts with local governments.' "[2]

The California Coastal Act encourages the protection of housing opportunities for individuals of low and moderate incomes (Public Resources Code section 30604). Furthermore, the Coastal Act does not allow residential densities to be reduced (including projects making use of density bonuses) unless the density cannot feasibly be accommodated in conformity with the Local Coastal Program (Public Resources Code section 30604(f)). The Coastal Act also encourages the minimization of vehicle miles traveled (Public Resources Code section 30253(e)). In addition, in April 2020, the Coastal Commission recently issued new guidance on the "Implementation of New ADU [accessory dwelling units] Laws".[3]

As such, the City can and must consider other opportunities for development. This includes the availability of underutilized land, opportunities for infill development and increased residential densities, alternative zoning and density, and accessory dwelling units. As indicated by HCD in its December 10, 2020 comment letter (HCD Letter):

> "In simple terms, this means housing planning cannot be limited to vacant land, and even communities that view themselves as built out must plan for housing through means such as rezoning commercial areas as mixed-use areas and upzoning non-vacant land." (HCD Letter at p. 2).

Alternative development opportunities should be explored further and could possibly provide the land needed to zone for the City's draft RHNA allocation. For these reasons, SCAG staff does not recommend a reduction to the jurisdiction's RHNA allocation based on this factor.

Issue 5: *Rate of overcrowding [Government Code section 65584.04(e)(7)].*

Huntington Beach contends that because the city's overcrowding rate (relative to the national rate) is less than that of the SCAG region it should receive a proportionately lower housing need allocation.

The City notes that approximately 34% of HCD's determination of housing need for the SCAG region was based on a regional overcrowding adjustment (459,917 units out of the regional total of 1,341,827 units). The origin of this adjustment is that overcrowding in SCAG region is 6.76% higher

[2] *San Diego County cities push back on state-mandated housing goals*, San Diego Union Tribune, January 14, 2020 (https://www.sandiegouniontribune.com/business/growth-development/story/2020-01-14/sandag-housing).
[3] Memo from John Ainsworth to Planning Directors of Coastal Cities and Counties dated April 21, 2020 re: Implementation of New ADU Laws (https://documents.coastal.ca.gov/assets/rflg/California%20Coastal%20Commission%20ADU%20Memo%20dated%20042120.pdf).

than the national average. Since Huntington Beach's overcrowding rate is only 0.31% higher than the national average, the City contends that its RHNA allocation should reflect this difference and be reduced by 6,428 units.

SCAG Staff Response: Government Code section 65584.01 *et seq.* allows HCD to use the region's level of household overcrowding as a factor in determining regional housing need. HCD elected to use this measure and determined that the region's level of overcrowding merited an adjustment to the region's housing needs based on extent to which the region's overcrowding rate exceeds the rate of the nation. This results in an adjustment of 459,917 units (comprising 34.2% of the total regional housing needs determination of 1,341,827 units). Both the statute and HCD's interpretation thereof frame overcrowding as an issue relevant to the regional housing market and not one limited by jurisdictional boundaries. In other words, overcrowding is a regional issue relevant to jurisdictions with both high and low levels of overcrowding themselves. There is no requirement that SCAG allocate housing units on the same basis HCD assigned housing need to the SCAG region (i.e. allocate to jurisdictions on the basis of their individual overcrowding rates). SCAG's adopted RHNA methodology relies on other factors to distribute housing need – namely job and transit accessibility – which more effectively furthers RHNA's statutory objectives, particularly with respect to increasing the mix of housing types, promoting socioeconomic equity, improving the interregional jobs-housing balance, and affirmatively furthering fair housing (AFFH).

Furthermore, the City mistakenly characterizes its RHNA allocation as being based on a "SCAG overcrowding adjustment" when there is no such adjustment in RHNA methodology. The City then proposes a different RHNA methodology; however, an alternative methodology cannot be considered by the appeals board and is not a basis for appeal. As such, SCAG staff does not recommend a revision to Huntington Beach's RHNA allocation on this basis.

Issue 4: *Housing needs generated by the presence of a university campus within a member jurisdiction [Government Code section 65584.04(e)(9)].*

Huntington Beach argues that the final RHNA methodology does not address the housing needs generated by universities across the region, specifically the needs for off-campus housing, referencing an Executive Summary to the adopted final RHNA methodology. The City alleges illegal political manipulation of the RHNA process with regards to discussions of university housing needs amongst Regional Council members since university housing needs were not discussed at the November 7th Regional Council meeting.

The City cites UCLA and Cal State system student housing documents which indicate housing shortfalls, overcrowding, and homelessness amongst students, and contends that SCAG failed to account for these needs in the development of the RHNA methodology.

The City furnishes a consultant study assessing the regional demand for off-campus housing generated by 13 universities in the SCAG region, citing a total need for housing 27,826 students by 2030. The City suggests that Huntington Beach's total RHNA should be reduced by 360 units based on the ratio of this demonstrated housing need to the regional housing needs determination of 1,341,827 units (alternately listed as 2.7% in the City's appeal letter and 2.07% in the consultant study).

SCAG Staff Response: While the RHNA methodology does not contain an executive summary, it appears as though the City is referring to discussion on page 24 of SCAG's adopted RHNA methodology relating to this local planning factor. This discussion concludes that region-wide, most university housing needs are addressed and met by the institution both on- and off-campus, but a small number of jurisdictions indicated that off-campus student housing is an important issue and that this may be best addressed in individual housing elements. As such, no distinct, additional factor or adjustment was included in SCAG's adopted RHNA methodology related to university housing needs.

RHNA is concerned with the region's and local jurisdictions' population within households and excludes population within group quarters as defined by the US Census Bureau, of which college dormitories are a part. Students living either with family or in other household types (e.g. with roommates) in non-group quarters housing would be included as part of a forecast of regional or local household population[4] and thus would be reflected in the projected need component of the RHNA methodology.

Huntington Beach's local planning factor survey, which would have contributed to the regional assessment of this local planning factor which is referenced, was returned to SCAG (attached) but the City indicated that it was not impacted by university-generated housing needs.

The appeal proposes that this planning factor be applied in a different manner than what was adopted in the Final RHNA Methodology. Again, the City is proposing an alternative RHNA methodology which is outside the scope of the RHNA appeals process and cannot be considered by the Appeals Board. In addition, Huntington Beach fails to establish why the City is disproportionately affected in any way by housing need generated by colleges or universities. Notably, the City does not assert any housing needs generated by universities or campuses which are in Huntington Beach—the analysis provides a *regional* analysis of off-campus housing demand at 13 universities outside of Huntington Beach. Whether, and the extent to which, students at universities elsewhere may choose to live in Huntington Beach more than in other local

[4] Details for how the Connect SoCal forecast treats group quarters population can be found in the Demographics & Growth Forecast Technical Report at https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf

jurisdictions, is not explored in the City's analysis. As such, SCAG staff does not recommend a reduction on this basis.

Other: *Legality of RHNA allocation and residual allocation; change in circumstances – COVID-19.*

The City argues that the State's imposition of RHNA allocation requirements on Charter Cities violates the constitution and is in and of itself an illegal act. Huntington Beach also asserts that the residual reallocation portion of the RHNA methodology is illegal, capricious, is to the detriment of other statutory objectives, and prevents Huntington Beach from promoting socioeconomic equity. The City argues that the cap applied to lower-resourced jurisdictions is arbitrary that Santa Ana's RHNA allocation in particular should be higher as this cap is based on self-reported growth.

The City also argues that COVID-19 has resulted in a change in circumstances that have resulted in a strain on the ability of transit agencies to provide service resulting in a change in transit patterns.

SCAG Staff Response: As noted above in response to Issues 1, 2, 4 and 7, the adopted RHNA methodology is not grounds for an appeal, only its application may be appealed. SCAG's RHNA allocation process is fully consistent with State law.

The RHNA methodology is a complex balance of several regional objectives ranging from jobs-housing balance to Affirmatively Furthering Fair Housing (AFFH). Ultimately, AFFH is one of the RHNA objectives described in Government Code 65584(d) and the residual reallocation is part of the adopted final RHNA methodology. It furthers the AFFH objectives by ensuring that RHNA allocations are not concentrated in jurisdictions with lower opportunity scores, reallocating them to jurisdictions with higher opportunity scores (such as Huntington Beach). Huntington Beach asserts that this reallocation is to the detriment of job and transit access because DAC jurisdictions may not receive allocation on those bases, compromising these statutory objectives.

It is unclear from Huntington Beach's appeal how socioeconomic equity is undermined through this component of the RHNA allocation methodology, specifically given HCD's finding to the contrary. Per their January 13, 2020 letter (attached), HCD provided the finding that SCAG's RHNA methodology furthered all five objectives of State housing law, including the inclusion of the methodology's residual factor's connection to affirmatively furthering fair housing. As discussed in the response to Issue 5, assigning units to jurisdictions based on their own overcrowding rate, which was not part of a methodology found to further socioeconomic equity or other RHNA objectives, is not required and its consideration at this time would constitute a change to the methodology itself which is not possible through an appeal.

SCAG staff does not recommend a reduction to Huntington Beach's draft RHNA allocation based on this issue.

See response to Issues 1, 2, 4 and 7 above regarding HQTAs and changes in transit service as a result of COVID-19. SCAG recognizes that COVID-19 presents unforeseen circumstances. However, Section 65584.05(b) requires that:

> "Appeals shall be based upon comparable data available for all affected jurisdictions and accepted planning methodology, and supported by adequate documentation, and shall include a statement as to why the revision is necessary to further the intent of the objectives listed in subdivision (d) of Section 65584."

As noted above, the City has not provided evidence to indicate that change in transit service related to COVID-19 is a sufficiently lasting trend that will extend through the end of the RHNA planning period (2029) and/or the Connect SoCal horizon year (2045).

SCAG's Regional Council delayed the adoption of its 2020-2045 RTP/SCS by 120 days in order to assess the extent to which long-range forecasts of population, households, and employment may be impacted by COVID-19; however, the document's long-range (2045) forecast of population, employment, and household growth remained unchanged. The Demographics and Growth Forecast Technical Report[5] outlines the process for forecasting long-range employment growth which involves understanding national growth trends and regional competitiveness, i.e., the SCAG's region share of national jobs. Short-term economic forecasts commenting on COVID-19 impacts generally do not provide a basis for changes in the region's long-term competitiveness or the region's employment outlook for 2023-2045. As such, SCAG's assessment is that comparable data would not suggest long-range regional employment declines.

The COVID-19 pandemic has had various impacts throughout Southern California; however, it has not resulted in a slowdown in major construction nor has it resulted in a decrease in a demand for housing or housing need. Southern California home prices continue to increase (+2.6 percent from August to September 2020) led by Los Angeles (+10.4 percent) and Ventura (+6.2 percent) counties. Demand for housing as quantified by the RHNA allocation is a need that covers an 8-year period, not simply for impacts that are in the immediate near-term. Moreover, impacts from COVID-19 are not unique to any single SCAG jurisdiction and no evidence has been provided in the appeal that indicates that housing need within Huntington Beach is disproportionately impacted in comparison to the rest of the SCAG region. For these reasons, SCAG staff does not recommend a reduction to the jurisdiction's draft RHNA allocation.

FISCAL IMPACT:
Work associated with this item is included in the current FY20-21 Overall Work Program (300-4872Y0.02: Regional Housing Needs Assessment).

[5] See https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Demographics-And-Growth-Forecast.pdf

ATTACHMENT(S):

1. Local Input and Development of Draft RHNA Allocation (City of Huntington Beach)
2. HQTA Job Access Local Input Survey Form (City of Huntington Beach)
3. Comments Received During the Comment Period (General)
4. Appeal Form and List of Attachments (City of Huntington Beach)
5. Attachment No. 1 - Description of City's Appeal, Desired Outcome and Statements
6. Attachment No. 2 - Wendell Cox Expert Report
7. Attachment No. 3 - City of Huntington Beach Comment Letters
8. Attachment No. 4 - SCAG Technical Working Group Meeting_HighQualityTransitCorridorsand MajorTransitStops
9. Attachment No. 5a - OCTA Oct. 2019 Bus Book pages 1-2
10. Attachment No. 5b - OCTA Oct. 2019 Bus Book pages 3-4
11. Attachment No. 5c - OCTA Oct. 2020 Bus Book
12. Attachment No. 6 - SCAG Connect SoCal Master Response 1_page92
13. Attachment No. 7 - Figure 4.1 2018 OCTA LRTP
14. Attachment No. 8 - June22_2020_OCTABoardAgendaItem22_BusOperationsPerformanceMeasurements
15. Attachment No. 9 - ITS_SCAG_Transit_Ridership_Falling Transit Ridership_CaliforniaandSouthernCalifornia
16. Attachment No. 10a - American Public Transportation Ridership Report (4th Quarter_2008)
17. Attachment No. 10b - American Public Transportation Ridership Report (4th Quarter_2019)
18. Attachment No. 11 - HCD Regional Determination Letter August 19 2019
19. Attachment No. 12 - SCAG-Final-RHNA-Methodology-030520
20. Attachment No. 13 - UCLA_Student_Housing_Master_Plan_2016-26
21. Attachment No. 14 - UCLA_LRDP_Amendment_Final_SEIR-January2018
22. Attachment No. 15 - Cal State University Basic Needs Initiative Study
23. Attachment No. 16 - Terra Nova Planning and Research Inc. Memorandum
24. Attachment No. 17a - Making California's Coast Resilient to Sea Level Rise_Principles for Aligned State Action
25. Attachment No. 18 - Chapter 5 CCC SLR Policu Guidance SLR in LCPs
26. Attachment No. 19 - Chapter 7 CCC SLR Policy Guidance Adaptation Strategies
27. Attachment No. 20 - SCAG Data Map Book
28. Attachment No. 21 - CCC SLR Adopted Policy Guidance 2018
29. Attachment No. 22 - Declaration of Wendell Cox in Support of Petitioner
30. Attachment No. 17b - Exhibits

Southern California Association of Governments
Remote Participation Only
City of Huntington Beach RHNA Appeal
January 25, 2021

Attachment 1: Local Input and Development of the Draft RHNA Allocation

This attachment sets forth the nature and timing of the opportunities which the City of Huntington Beach had to provide information and local input on SCAG's growth forecast, the RHNA methodology, and the Growth Vision of the 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or Connect SoCal). It also describes how the RHNA Methodology development process integrates this information in order to develop the City of Huntington Beach's Draft RHNA Allocation.

1. Local input

a. Bottom-Up Local Input and Envisioning Process

On October 31, 2017, SCAG took the first step toward developing draft RHNA allocations by initiating the Bottom-Up Local Input and Envisioning Process. At the direction of the Regional Council, the objective of this process was to seek local input and data to prepare for Connect SoCal and the 6th cycle of RHNA.[1] Each jurisdiction was provided with a package of land use, transportation, environmental, and growth forecast data for review and revision which was due on October 1, 2018.[2] While the local input process materials focus principally on jurisdiction-level and Transportation Analysis Zone (TAZ) level growth, input on specific parcels, sites, and project areas were welcomed and integrated into SCAG's growth forecast as well as data on other elements. SCAG met one-on-one with all 197 local jurisdictions between November 2017 and July 2018 and provided training opportunities and staff support. Following input from SCAG's Technical Working Group (TWG), the Connect SoCal growth forecast reflected precisely the jurisdiction-level growth totals provided during this process.

Forecasts for jurisdictions in Orange County were developed through the 2018 Orange County Projections (OCP-2018) update process conducted by the Center for Demographic Research (CDR) at Cal State Fullerton. Jurisdictions were informed of this arrangement by SCAG at the kickoff of the Process. For the City of Huntington Beach, the anticipated number of households in 2020 was 79,048 and in 2030 was 79,565 (growth of 517 households). In March 2018, SCAG staff and CDR staff met with staff from the City of Huntington Beach to discuss the Bottom-Up Local Input and Envisioning Process and answer questions.

[1] While the RTP/SCS and RHNA share data elements, they are distinct processes. The RTP/SCS growth forecast provides an assessment of reasonably foreseeable future patterns of employment, population, and household growth in the region given demographic and economic trends, and existing local and regional policy priorities. The RHNA identifies anticipated housing need over a specified eight-year period and requires that local jurisdictions make available sufficient zoned capacity to accommodate this need. A further discussion of the relationship between these processes can be found in Connect SoCal Master Response 1 at https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Public-Participation-Appendix-2.pdf.

[2] A detailed list of data during this process reviewed can be found in each jurisdiction's Draft Data/Map Book at https://scag.ca.gov/local-input-process-towns-cities-and-counties

b. *RHNA Methodology Surveys*

On March 19, 2019, SCAG distributed a packet of methodology surveys, which included the local planning factor survey (formerly known as the AB2158 factor survey), Affirmatively Furthering Fair Housing (AFFH) survey, and replacement need survey, to SCAG jurisdictions' Community Development Directors. Surveys were due on April 30, 2019. SCAG reviewed all submitted responses as part of the development of the draft RHNA methodology. The City of Huntington Beach submitted the following surveys prior to the adoption of the draft RHNA methodology:

☒ Local planning factor survey
☐ Affirmatively Furthering Fair Housing (AFFH) survey
☒ Replacement need survey
☐ No survey was submitted to SCAG

c. *Connect SoCal Growth Vision and Additional Refinements*

Beginning in May 2018, SCAG's Sustainable Communities Working Group began the process of developing growth scenarios for the SCAG region. The culmination of this work was the development of the Connect SoCal Growth Vision, which directly uses jurisdictional-level growth projections from the Bottom-Up Local Input and Envisioning process, and also features strategies for growth at the TAZ-level that help to reduce greenhouse gas emissions (GHG) from automobiles and light trucks to achieve Southern California's GHG reduction target, approved by the California Air Resources Board (CARB) in accordance with state planning law. Additional detail regarding the Connect SoCal Growth Vision, specifically the Transportation Analysis Zone (TAZ, or neighborhood) level projections is found at https://www.connectsocal.org/Documents/DataMapBooks/Growth-Vision-Methodology.pdf.

As a result of these strategies, in some jurisdictions growth at the TAZ-level differed from locally anticipated growth conveyed during the Bottom-Up Local Input and Envisioning Process.

As such, SCAG provided two additional opportunities for all local jurisdictions to make TAZ-level technical refinements on the topics of general plan capacities and entitlements. During the release of the draft Connect SoCal Plan, jurisdictions were notified on October 31, 2019 that SCAG would accept additional refinements until December 11, 2019. Following the Regional Council's decision to delay full adoption of Connect SoCal for 120 days due to the COVID-19 pandemic, all jurisdictions were again notified on May 26, 2020 that SCAG would accept additional refinements until June 9, 2020.

Connect SoCal Growth Vision data have been available to local jurisdiction staff during the entirety of this process through SCAG's Scenario Planning Model Data Management Site (SPM-DM) at http://spmdm.scag.ca.gov and updates were shared with local jurisdictions on technical refinements to the data in February 2020 and August 2020 to share the results of both review opportunities. SCAG

received additional technical corrections from the City of Huntington Beach and incorporated them into the Growth Vision in December 2019.

2. Development of the Final RHNA Methodology

SCAG convened the first meeting of the RHNA Subcommittee in October 2018. In their subsequent monthly meetings, this body reviewed and advised on the development of SCAG's 6th cycle RHNA process, including the development of the RHNA methodology. Per Government Code 65584.04(a), SCAG must develop a RHNA methodology which furthers the five statutory objectives of RHNA:

> *(1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households.*
>
> *(2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.*
>
> *(3) Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.*
>
> *(4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.*
>
> *(5) Affirmatively furthering fair housing (Govt. Code § 65584(d)).*

As explained in more detail below, the Draft RHNA Methodology (which was adopted as the Final RHNA Methodology) set forth the policy factors, data sources, and calculations which would be used to generate draft RHNA allocations for all local jurisdictions. Following extensive debate and public comment, SCAG's Regional Council voted to approve the Draft RHNA Methodology on November 7, 2019 and provide it to HCD for review. Per Government Code 65584.04(i), HCD is vested with the authority to determine whether a methodology furthers the objectives set forth in Government Code section 65584(d). On January 13, 2020, HCD found that the Draft RHNA Methodology furthers these five statutory objectives of RHNA. Specifically, HCD noted that:

> *"This methodology generally distributes more RHNA, particularly lower income RHNA, near jobs, transit, and resources linked to long term improvements of life outcomes.*

In particular, HCD applauds the use of the objective factors specifically linked the statutory objectives in the existing need methodology." (Letter from HCD to SCAG dated January 13, 2020 at https://scag.ca.gov/sites/main/files/file-attachments/hcd-review-rc-approved-draft-rhna-methodology.pdf?1602190239).

On March 5, 2020, again following extensive debate and public comment, the Regional Council voted to approve the Draft RHNA Methodology as the Final RHNA Methodology. Unlike SCAG's 5th cycle RHNA methodology which relies almost entirely on the household growth component of the RTP/SCS, SCAG's 6th cycle RHNA methodology consists of two primary elements: "projected need" which includes the number of housing units required to accommodate anticipated population growth over the 8-year RHNA planning period and "existing need," which refers to the number of housing units required to accommodate excess or unsatisfied housing demand experienced by the region's current population.[3] Furthermore, the Final RHNA methodology utilizes measures of 2045 job accessibility and High Quality Transit Area (HQTA) population measures based on TAZ-level projections in the Connect SoCal Growth Vision.

More specifically, the Final RHNA Methodology considers three primary factors in determining a local jurisdiction's total housing need which are primarily based on data from Connect SoCal's aforementioned Bottom-Up Local Input and Envisioning Process:

- Forecasted growth over 2020-2030 (projected need)
- Transit accessibility in 2045 (existing need)
- Job accessibility in 2045 (existing need)

The methodology is described in further detail at http://scag.ca.gov/programs/Documents/RHNA/SCAG-Final-RHNA-Methodology-030520.pdf.

3. Draft RHNA Allocation for the City of Huntington Beach

Following the adoption of the Final RHNA Methodology on March 5, 2020 and the 120 day delay due to the COVID-19 pandemic, SCAG adopted Connect SoCal on September 3, 2020, and the City of Huntington Beach received its draft RHNA allocation on September 11, 2020. Application of the RHNA methodology yields the draft RHNA allocation for the City of Huntington Beach as summarized in the data and calculations in the tables below.

[3] Legislative changes in 2018 modified the nature of the regional housing need determination for the 6th cycle of RHNA by adding measures of household overcrowding and housing cost burden to the list of factors to be considered by HCD for the determination of housing need. These new measures are not included in the Connect SoCal Growth Forecast because they are not direct inputs to the growth forecasting process and are independent of employment and population projections. In contrast, they reflect additional latent housing needs in the current population (i.e. "existing need") and would not result in a change in regional population. For further discussion see Connect SoCal Master Response 1 at https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Public-Participation-Appendix-2.pdf.

Huntington Beach city statistics and inputs:	
Forecasted household (HH) growth, RHNA period: *(2020-2030 Household Growth * 0.825)*	427
Percent of households who are renting:	42%
Housing unit loss from demolition (2009-18):	2
Adjusted forecasted household growth, 2020-2045: *(Local input growth forecast total adjusted by the difference between the RHNA determination and SCAG's regional 2020-2045 forecast, +4%)*	1,309
Percent of regional jobs accessible in 30 mins (2045): *(For the jurisdiction's median TAZ)*	17.56%
Jobs accessible from the jurisdiction's median TAZ (2045): *(Based on Connect SoCal's 2045 regional forecast of 10.049M jobs)*	1,765,000
Share of region's job accessibility (population weighted):	1.32%
Jurisdiction's HQTA population (2045):	74,765
Share of region's HQTA population (2045):	0.73%
Share of population in low/very low-resource tracts:	7.76%
Share of population in very high-resource tracts:	37.53%
Social equity adjustment:	150%

Calculation of Draft RHNA Allocation for Huntington Beach city	
Forecasted household (HH) growth, RHNA period:	427
Vacancy Adjustment *(5% for renter households and 1.5% for owner households)*	13
Replacement Need	2
TOTAL PROJECTED NEED:	441
Existing need due to job accessibility (50%)	5534
Existing need due to HQTA pop. share (50%)	3059
Net residual factor for existing need *(Negative values reflect a cap on lower-resourced community with good job and/or transit access. Positive values represent this amount being redistributed to higher-resourced communities based on their job and/or transit access.)*	4304
TOTAL EXISTING NEED	12896
TOTAL RHNA FOR HUNTINGTON BEACH CITY	**13337**
Very-low income (<50% of AMI)	3652
Low income (50-80% of AMI)	2179
Moderate income (80-120% of AMI)	2303
Above moderate income (>120% of AMI)	5203

The transit accessibility measure is based on the population anticipated to live in High-Quality Transit Areas (HQTAs) in 2045 based on Connect SoCal's designation of high-quality transit areas and population forecasts. With a forecasted 2045 population of 74,765 living within HQTAs, the City of Huntington Beach represents 0.73% of the SCAG region's HQTA population, which is the basis for allocating housing units based on transit accessibility.

Job accessibility is defined as the jurisdiction's share of regional jobs accessible within a 30-minute drive commute. Since over 80 percent of the region's workers live and work in different jurisdictions, the RHNA methodology uses a measure based on Connect SoCal's travel demand model output for the year 2045 rather than assigning housing units based on the number of jobs with a specific jurisdiction. Specifically, the share of future (2045) regional jobs which can be reached in a 30-minute

automobile commute from the local jurisdiction's median TAZ is used as to allocate housing units based on transit accessibility. From the City of Huntington Beach's median TAZ, it will be possible to 17.56% of the region's jobs in 2045 within a 30-minute automobile commute (1,765,000 jobs, based on Connect SoCal's 2045 regional job forecast of 10,049,000 jobs).

An additional factor is included in the methodology to account for RHNA Objective #5 to Affirmatively Further Fair Housing (AFFH). Several jurisdictions in the region which are considered disadvantaged communities (DACs) on the basis of access to opportunity measures (described further in the RHNA methodology document), but which also score highly in job and transit access, may have their total RHNA allocations capped based on their long-range (2045) household forecast. This additional housing need, referred to as residual, is then reallocated to non-DAC jurisdictions in order to ensure housing units are placed in higher-resourced communities consistent with AFFH principles. This reallocation is based on the job and transit access measures described above, and results in an additional 4,304 units assigned to the City of Huntington Beach.

Please note that the above represents only a partial description of key data and calculations which result in the draft RHNA allocation.

APPENDIX 1 OF 1

High Quality Transit Corridors and Major Transit Stops

BACKGROUND

The Sustainable Communities and Climate Protection Act of 2008, Senate Bill (SB) 375, requires that Metropolitan Planning Organizations (MPOs) develop a Sustainable Communities Strategy (SCS) to reduce per capita greenhouse gas emissions through integrated transportation, land use, housing and environmental planning. SB 375 creates incentives for residential or mixed–use residential projects that may be exempt from, or subject to a limited review of, the California Environmental Quality Act (CEQA), provided they are consistent with the MPO's adopted SCS. These "transit priority projects" must, among other criteria, be located within one–half mile of a major transit stop or high–quality transit corridor (HQTC).

SB 743, signed into law in 2013, provides further opportunities for CEQA exemption and streamlining to facilitate transit oriented development (TOD). Specifically, certain types of projects within "transit priority areas" (TPAs) can benefit from a CEQA exemption if they are consistent with an adopted specific plan and the SCS. A TPA is an area within one–half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Federal Transportation Improvement Program (FTIP).

STATUTORY DEFINITIONS

Definitions of "major transit stop" and "high quality transit corridor" are set forth under California law as follows:

CA Pub. Res. Code § 21155(b)

For purposes of this chapter, a transit priority project shall (1) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 percent and 50 percent nonresidential uses, a floor area ratio of not less than 0.75; (2) provide a minimum net density of at least 20 dwelling units per acre; and (3) be within one–half mile of a major transit stop or high–quality transit corridor included in a regional transportation plan. A major transit stop is as defined in Section 21064.3, except that, for purposes of this section, it also includes major transit stops that are included in the applicable regional transportation plan. For purposes of this section, a high–quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. A project shall be considered to be within one–half mile of a major transit stop or high–quality transit corridor if all parcels within the project have no more than 25 percent of their area farther than one–half mile from the stop or corridor and if not more than 10 percent of the residential units or 100 units, whichever is less, in the project are farther than one–half mile from the stop or corridor.

CA Pub. Res. Code § 21064.3

"Major transit stop" means a site containing any of the following:
(a) An existing rail or bus rapid transit station.

(b) A ferry terminal served by either a bus or rail transit service.

(c) The intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

CA Pub. Res. Code § 21060.2

(a) "Bus rapid transit" means a public mass transit service provided by a public agency or by a public-private partnership that includes all of the following features:

(1) Full-time dedicated bus lanes or operation in a separate right-of-way dedicated for public transportation with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

(2) Transit signal priority.

(3) All-door boarding.

(4) Fare collection system that promotes efficiency.

(5) Defined stations.

(b) "Bus rapid transit station" means a clearly defined bus station served by a bus rapid transit.

METHODOLOGY

SCAG's technical methodology for identifying HQTCs and major transit stops is based on input from the Regional Transit Technical Advisory Committee (RTTAC), as well as consultation with local agencies, other large MPOs in California, and the Governor's Office of Planning and Research. The methodology and assumptions are discussed below. This methodology may be periodically updated to incorporate revisions or clarifications. Questions should be directed to Steve Fox, at fox@scag.ca.gov, or Philip Law, at law@scag.ca.gov.

SCAG maps and data depicting HQTCs and major transit stops are intended for planning purposes only. SCAG shall incur no responsibility or liability as to the completeness, currentness, or accuracy of this information. SCAG assumes no responsibility arising from use of this information by individuals, businesses, or other public entities. The information is provided with no warranty of any kind, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.

For the methodology SCAG uses to identify "high quality transit areas," see the Sustainable Communities Strategies Technical Report.

EXISTING HQTCS AND MAJOR TRANSIT STOPS

SCAG updates its inventory of existing major transit stops and HQTCs with the adoption of a new Regional Transportation Plan (RTP) and SCS, once every four years. Data for the existing ("base year") condition for the RTP/SCS are typically obtained several years before plan adoption. The base year transit network for *Connect SoCal*, the 2020 RTP/SCS, is based primarily on data for 2016. This inventory of existing major transit stops and HQTCs is therefore only a snapshot in time as of 2016, and does not reflect the existing levels of transit service for any other timeframe.

See **EXHIBIT 7**, *2016 Base Year "existing" major transit stops and high quality transit corridors.*

Transit agencies make adjustments to bus service on a regular basis. Therefore, given the limitations of the RTP/SCS base year transit network, local jurisdictions should consult with the appropriate transit provider(s) to obtain the latest information on existing transit routes, stop locations, and service intervals before making determinations regarding CEQA exemption or streamlining. It is the responsibility of the lead agency under CEQA to determine if a project meets statutory requirements.

STOP–BASED ANALYSIS

SCAG calculates peak commute bus service intervals at the stop level using schedule data published by transit agencies in the General Transit Feed Specification (GTFS) format (see for example, www.transitfeeds.com). An HQTC therefore comprises or is determined by the qualifying stops on an individual bus route.

PEAK PERIOD BUS SERVICE INTERVAL (FREQUENCY)

To determine whether the peak commute bus service interval (also called frequency) meets the statutory threshold of 15 minutes or less, SCAG uses the peak period defined in its regional travel demand model. The morning peak is defined as 6am to 9am and the afternoon peak is defined as 3pm to 7pm. A transit operator may have a different, board–adopted or de facto peak period; in such cases SCAG will accept requests to use operator–specific peak–hour periods on a case–by–case basis.

SCAG uses the total population of bus trips during the combined seven–hour morning and afternoon peak periods to determine the peak frequency at a bus stop. This is done for each bus route, by direction. The peak frequency is calculated by dividing 420 minutes (the seven–hour peak converted to minutes) by the total peak bus trips. This average frequency should be 15 minutes or less in order to qualify. The threshold is strict, at 15.0 minutes.

DIRECTIONAL FREQUENCY

A bus route must only meet the 15–minute service interval threshold in one direction to qualify as an HQTC. This is based on RTTAC feedback that transit agencies often operate very peak–directional service or operate predominantly one–way service on a corridor.

CORRIDORS WITH MULTIPLE OVERLAPPING BUS ROUTES

Separate but overlapping bus routes that do not individually meet the 15–minute threshold may not be combined in order to qualify as an HQTC. However, based on RTTAC feedback, there are certain corridors where overlapping "line families" or local/bus rapid transit (BRT) lines are intended to function as one bus route. On these corridors, transit riders typically board the first bus available, whether it be a local, express, or BRT line. For these line families or local/BRT corridors, SCAG uses the combined routes to calculate the frequency.

ROUTE ALIGNMENT

The entire alignment of a bus route, based on the stops that meet the 15–minute peak frequency threshold, is considered an HQTC. This would include,

for example, express bus services that operate along freeways where there are no stops along the freeway right–of–way.

BUS RAPID TRANSIT

As defined in statute, a BRT must include full-time dedicated bus lanes. In the SCAG region, there are existing and proposed BRT projects that have only a portion of their alignment in a full-time dedicated bus lane. For these BRT projects, only those stations that are adjacent to a full-time dedicated bus lane are considered major transit stops. For the BRT projects that have a full-time dedicated bus lane on their entire route, all of the stations are considered major transit stops.

MAJOR TRANSIT STOPS AND INTERSECTING SERVICE TRANSFER ZONES

As defined in statute, major transit stops include the intersection of two or more HQTCs. For purposes of transferring between intersecting service, SCAG uses a 500–foot buffer to determine a major transit stop. In other words, two intersecting HQTCs must have stops that are within 500 feet of each other to qualify as a major transit stop. A 500–foot buffer is assumed to be a reasonable limit to the distance that a transit patron would walk to transfer between bus routes. It is also consistent with the Metro Transfers Design Guide definition of a transfer zone.

AMTRAK STATIONS AND FERRY STATIONS

Amtrak intercity passenger rail stations with only limited long–distance service are not automatically included as a major transit stop unless requested by a local agency. Similarly, ferry stations with seasonal and/or non–commuter based service (and that are served by bus or rail transit) are not automatically included as a major transit stop unless requested by a local agency.

PLANNED HQTCS AND MAJOR TRANSIT STOPS

Planned HQTCs and major transit stops are future improvements that are expected to be implemented by transit agencies by the RTP/SCS horizon year of 2045. These are assumed by definition to meet the statutory requirements of an HQTC or major transit stop. SCAG updates its inventory of planned major transit stops and HQTCs with the adoption of a new RTP/SCS, once every four years. However, transit planning studies may be completed by transit agencies on a more frequent basis than the RTP/SCS is updated by SCAG. Local jurisdictions should consult with the appropriate transit provider(s) to obtain the latest information on planned transit routes, stop locations, and service intervals/frequencies before making determinations regarding CEQA exemption or streamlining.

See **EXHIBIT 14**, *planned (year 2045) major transit stops and high quality transit corridors.*

ID	Comment	Response
Submitted by	**City of Costa Mesa**	Submittal 0001527 **Related Documents** Link
0001527.01	Dear Connect SoCal Team:The City of Costa Mesa appreciates the time and effort undertaken by the Southern California Association of Governments (SCAG) staff in its efforts to develop a RTP/SCS of our large and diverse metropolitan planning area. The City of Costa Mesa remains committed to doing its fair share in addressing regional issues and appreciate the comment and review period provided by SCAG for the Connect SoCal Plan and its associated PEIR.	Thank you for your comments on the Draft Connect SoCal and associated PEIR. Comment noted. For responses related to the Connect SoCal Program Environmental Impact Report (PEIR), please refer to Chapter 9.0, Responses to Comments, of the Final Connect SoCal PEIR.
0001527.02	The City would like to express its support of recommendations and comments submitted by the Orange County Council of Governments, Orange County Transportation Authority, and Center for Demographic Research. We strongly recommend that all comments and concerns from these bodies be implemented into the Connect SoCal Plan and the associated PEIR.	Comment noted. For responses related to the Draft Connect SoCal Program Environmental Impact Report (PEIR), please refer to Chapter 9.0, Responses to Comments, and Chapter 10, Corrections and Additions, of the Final Connect SoCal PEIR.
Submitted by	**City of Huntington Beach**	Submittal 0001393 **Related Documents** Link
0001393.01	Thank you for the opportunity to submit comments on the Draft Connect SoCal plan and Program EIR. The City of Huntington Beach appreciates SCAG's public outreach efforts for this process and offers the following comments and concerns for your consideration.	Thank you for your comments on the Draft Connect SoCal and associated PEIR.
0001393.02	High Quality Transit Areas (HQTA). HQTAs are defined as "corridors that have at least a fifteen minute headway (time in between the next scheduled service) during peak hours bus service." According to RTP/SCS maps, all of Beach Boulevard within the City of Huntington Beach is defined as a HQTA. However, based on the October 13, 2019 Orange County Transportation Authority (OCTA) Bus Schedule 1, there are no bus stops on Beach Boulevard within the City of Huntington Beach with headway times of 15 minutes or less. Route 29 services Beach Boulevard from the City of La Habra to PCH in Huntington Beach. The shortest headway time during peak hours for bus service is on the Route 29 stop at PCH/1 51 Street (not a stop on Beach Boulevard) traveling southbound with an average headway time of 18.23 minutes during the PM peak hours. Most stops have an average peak hour headway time of approximately 19-25 minutes. Some stops, such as the Beach Boulevard/Talbert Avenue stop, have peak hour headway times of 40-49 minutes. One stop (Beach Boulevard/Atlanta Avenue) did not list any stop times as part of any route for this stop. It must also be noted that OCTA eliminated Route 211 in October 2019, which serviced Huntington Beach to Irvine (a major Orange County job center) due to low ridership.Further, OCTA's 2018 Long Range Transportation Plan (LRTP)2 includes Figure 4.1 - Local, Community, and Bravo! Final Route Recommendations. This figure recommends that Route 29 receive a reduction in frequency of service. This will add further delay to the 19-25 minute average peak hour headway service times on Beach Boulevard.	SCAG worked closely with the Orange County Transportation Authority (OCTA) to identify the high quality transit corridors (HQTCs) in Orange County which form the basis for high quality transit areas (HQTAs). SCAG and OCTA together identified the Beach Blvd corridor, including the entire alignment within the City of Huntington Beach, as both an existing and future HQTC. See Figure 4.10 in OCTA's 2018 Long Range Transportation Plan.The nature of bus services is that routes and service frequency can change periodically, thus a County Transportation Commission's (CTC) estimate of future transit service frequency is the best estimate available at a given point in time. For the 6th cycle of RHNA, SCAG is assigning a portion of housing unit need on the basis of 2045 HQTAs. These HQTAs will be consistent with those developed for Connect SoCal. CTCs including OCTA have provided SCAG with the most likely future service scenario in order to assist with our long-range planning efforts.

Regional Housing Needs Assessment (RHNA) Local Planning Factor Survey

The RHNA process requires that SCAG survey its jurisdictions on local planning factors (formerly known as "AB 2158 factors") prior to the development of a proposed RHNA methodology, per Government Code 65584.04 (b). Information collected from this survey will be included as part of the proposed RHNA methodology.

Between October 2017 and October 2018, SCAG included these factors as part of the local input survey and surveyed a binary yes/no as to whether these factors impacted jurisdictions. If your jurisdiction answered this part of the survey, your reply has been pre-populated in the table. Please review each factor and provide any information that may be relevant to the RHNA methodology. You may attach additional information to the survey. Please keep in mind that recent housing-related legislation has updated some of the factors listed, which were not included in the prior survey.

Per Government Code Section 65584.04 (g), there are several criteria that **cannot** be used to determine or reduce a jurisdiction's RHNA allocation:

(1) Any ordinance, policy, voter-approved measure, or standard of a city or county that directly or indirectly limits the number of residential building permits issued by the jurisdiction
(2) Underproduction of housing units as measured by the last RHNA cycle allocation
(3) Stable population numbers as measured by the last RHNA cycle allocation

The planning factors in the table below are abbreviated. For the full language used, please refer to Government Code Section 65584.04 (e) or the attached reference list.

Please review and submit the survey by 5 p.m. April 30, 2019 to housing@scag.ca.gov.

Jurisdiction	Huntington Beach
County	Orange

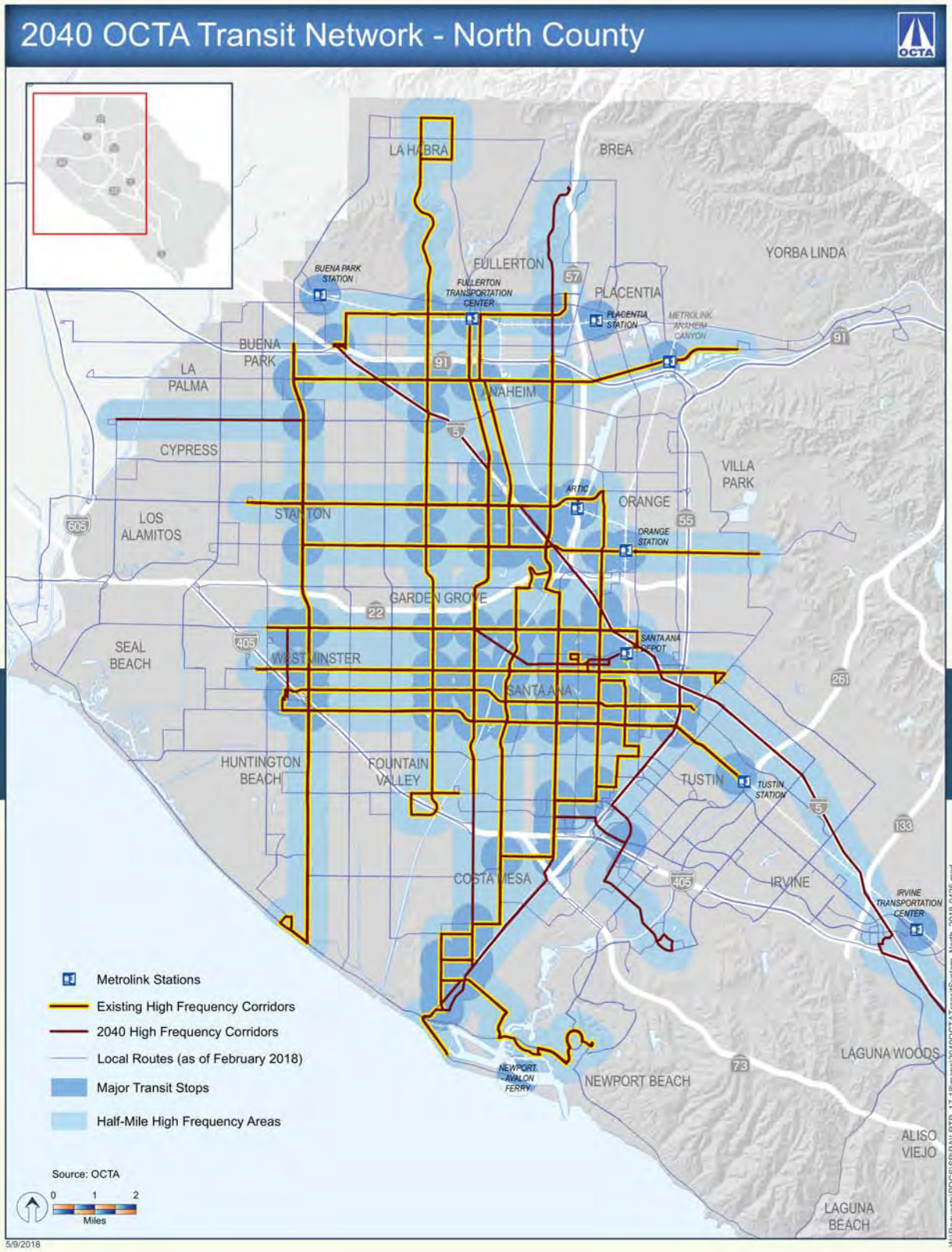
Planning Factor	Impact on Jurisdiction
Existing and projected jobs and housing relationship, particularly low-wage jobs and affordable housing	No
Lack of capacity for sewer or water service due to decisions made outside of the jurisdiction's control	No
Availability of land suitable for urban development	Yes

Lands protected from development under Federal or State programs	Yes
County policies to preserve agricultural land	No
Distribution of household growth assumed for regional transportation planning and opportunities to maximize use of public transportation	No
Agreements between a county and cities to direct growth to incorporated areas of the county	No

Loss of low income units through contract expirations	No
[NEW] Percentage of households that pay more than 30% and more than 50% of their income on rent	No
[NEW] Rate of overcrowding	No
Farmworker housing needs	No

Housing needs generated by the presence of a university campus within the jurisdiction	No
[NEW] Loss of units during a declared state of emergency that have yet to rebuilt at the time of this survey	No
[NEW] The region's greenhouse gas emission targets provided by the California Air Resources Board	No
Other factors	

FIGURE 4.10



Data Input and Verification Form

Bottom-Up Local Input and Envisioning Process

2020 Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS)

Date: 8/21/18

From the Jurisdiction of HUNTINGTON BEACH to SCAG

A - Contact & Background Information

Jurisdiction Contact Person: RICKY RAMOS

Position: SENIOR PLANNER

Email: RRAMOS@SURFCITY-HB.ORG

Phone: (714) 536-5271

Background Information:

- ☐ I am my Jurisdiction's City Manager/County Administrative Officer, Community Development/Planning Director, or City Clerk (submitting on behalf of a jurisdiction's governing body)
- ☑ I am a staff person from a local jurisdiction, submitting input under supervision of one of the persons identified above (see appropriate signature below)

Additional Background, if any, based upon Previous Communications:

B - Action Items

We are seeking to (select all that apply):

Submit to SCAG:

- ☑ Provide Input on SCAG's Core Geographic Data
- ☐ Provide Input on SCAG's Core Demographic Data
- ☐ Provide Input on Supplemental Data Elements
- ☐ Other, please specify

C - Data Type

Core Geographic Data:

- ☑ General Plan Land Use
- ☑ Zoning
- ☑ Existing Land Use Specific Plan
- ☐ Land Use Endangered Species
- ☐ and Plants* Open Space and
- ☑ Parks*
- ☐ Flood Areas*
- ☐ Natural Community and Habitat Conservation Plans*
- ☐ Farmland*
- ☐ Coastal Inundation (Sea Level Rise)*
- ☐ Major Stops and High Quality Transit Corridors*
- ☐ Transit Priority Areas*
- ☑ Regional Bikeways
- ☑ Regional Truck Routes
- ☑ City Boundary*
- ☐ Sphere of Influence*
- ☐ Census Tracts**
- ☐ Transportation Analysis Zone (TAZ) Boundaries**
- ☐ Entitlements
- ☑ Potential Infill Sites

* These data elements are maintained by local, state, or federal entities, and SCAG will forward input received from jurisdictions to the appropriate source

** These data elements are being provided as reference information as they are not open to revision (TAZ Boundaries and Census Tracts)

Core Demographic Data:

- ☐ Population
- ☐ Households
- ☐ Employment

Year:

- ☐ 2016
- ☐ 2020
- ☐ 2030 (Input needed at jurisdictional level only)
- ☐ 2035
- ☐ 2045

Geographic Level:

- ☐ Jurisdictional Level
- ☐ Transportation Analysis Zone (TAZ)
- ☐ Other Geographic Level (Please Specify):

Supplemental Data Elements (available for review June 2018):

- ☐ Zoning Overlay Areas
- ☐ Community Design Overlays
- ☐ Community Land Trusts
- ☐ Historic Preservation Areas
- ☐ Bike Sharing Facilities
- ☐ Bike Stations
- ☐ Car-Sharing Parking Sites
- ☐ Joint Public/Private Developments for Affordable Housing
- ☐ Areas with Reduced Parking Minimums and Maximums
- ☐ Corridor Plans
- ☐ Special Districts
- ☐ Bike/Ped Volume Data***
- ☐ Ped Trails/Sidewalk Data***
- ☐ Public Health Data***

*** For these elements, SCAG is looking to obtain any available data; local review not needed

Input on SCAG's Core Geographic Data (select all that apply):

- [ ] We have reviewed the selected Core Geographic Data and verify their accuracy
- [x] We cannot verify the accuracy of certain data items at this time and would like to suggest the revisions described above

X _ Signature (to be executed by City Manager/County Administrative Officer, Community Development/Planning Director, or City Clerk (on behalf of a jurisdiction's governing body)

Input on SCAG's Core Demographic Data (select all that apply):

- [ ] We have reviewed SCAG's Jurisdictional Level Demographic Data and can provide official approval
- [ ] We have reviewed SCAG's Tier 2 TAZ Demographic Data and can provide official approval
- [ ] We cannot provide official approval at this time, and would like to suggest revisions to the jurisdictional-level figures listed below with the following considerations (please select a reason and provide comments below. Optionally, documentation can also be submitted to SCAG)

  - [ ] Infrastructure Capacity (e.g. sewer or water capacity)
  - [ ] Available Land Capacity
  - [ ] Special Housing Needs (e.g. farmworkers, student dormitories, etc.)
  - [ ] Market Conditions (e.g. high number of residential vacancies)
  - [ ] Historical Trends (e.g. Census and/or historical data)
  - [ ] Economic Constraints (e.g. retail center closure)
  - [ ] Other Factors (please specify)**** _____

	2016	2020	2030	2035	2045
Population					
Households					
Employment					

- [ ] We cannot provide official approval at this time, and would like to suggest revisions to the TAZ-level figures with the following considerations (please submit TAZ-level figures as an attachment to this form, select a reason, and provide comments below. Optionally, documentation can also be submitted to SCAG)

  - [ ] Infrastructure Capacity (e.g. sewer or water capacity)
  - [ ] Available Land Capacity
  - [ ] Special Housing Needs (e.g. farmworkers, student dormitories)
  - [ ] Market Conditions (e.g. high number of residential vacancies)
  - [ ] Historical Trends (e.g. Census and/or historical data)
  - [ ] Economic Constraints (e.g. retail center closure)
  - [ ] Other Factors (please specify)**** _____

**** Per State housing law, jurisdictions cannot use any ordinance, policy, voter-approved measure, or standard to justify a determination or reduction in share of regional housing need

X _ Signature (to be executed by City Manager/County Administrative Officer, Community Development/Planning Director, or City Clerk (on behalf of a jurisdiction's governing body)

D - Description of Action Items

Input on SCAG's Supplemental Data Elements (select all that apply):

- [ ] We have reviewed the selected Supplemental Data Elements and verify their accuracy
- [ ] We cannot verify the accuracy of the data at this time and would like to suggest the revisions described above
- [ ] We would like to submit supplemental data items for SCAG's database

X _____

Signature (to be executed by City Manager/County Administrative Officer, Community Development/Planning Director, or City Clerk (on behalf of a jurisdiction's governing body)

Comments (if applicable):

DEMOGRAPHIC DATA SUBMITTED TO CENTER FOR DEMOGRAPHIC RESEARCH AS PART OF OCP 2018.

PLEASE REPLACE THE MAPS IN THE SCAG DATA/MAP BOOK WITH CITY OF HUNTINGTON BEACH MAPS THAT HAVE BEEN SUBMITTED TO SCAG. PLEASE DELETE ALL VACANT AND INFILL PARCELS FROM SCAG'S POTENTIAL INFILL PARCELS MAP AND REPLACE WITH THE VACANT PARCELS SUBMITTED BY THE CITY OF HUNTINGTON BEACH.

Input was Submitted to SCAG via (select all that apply):

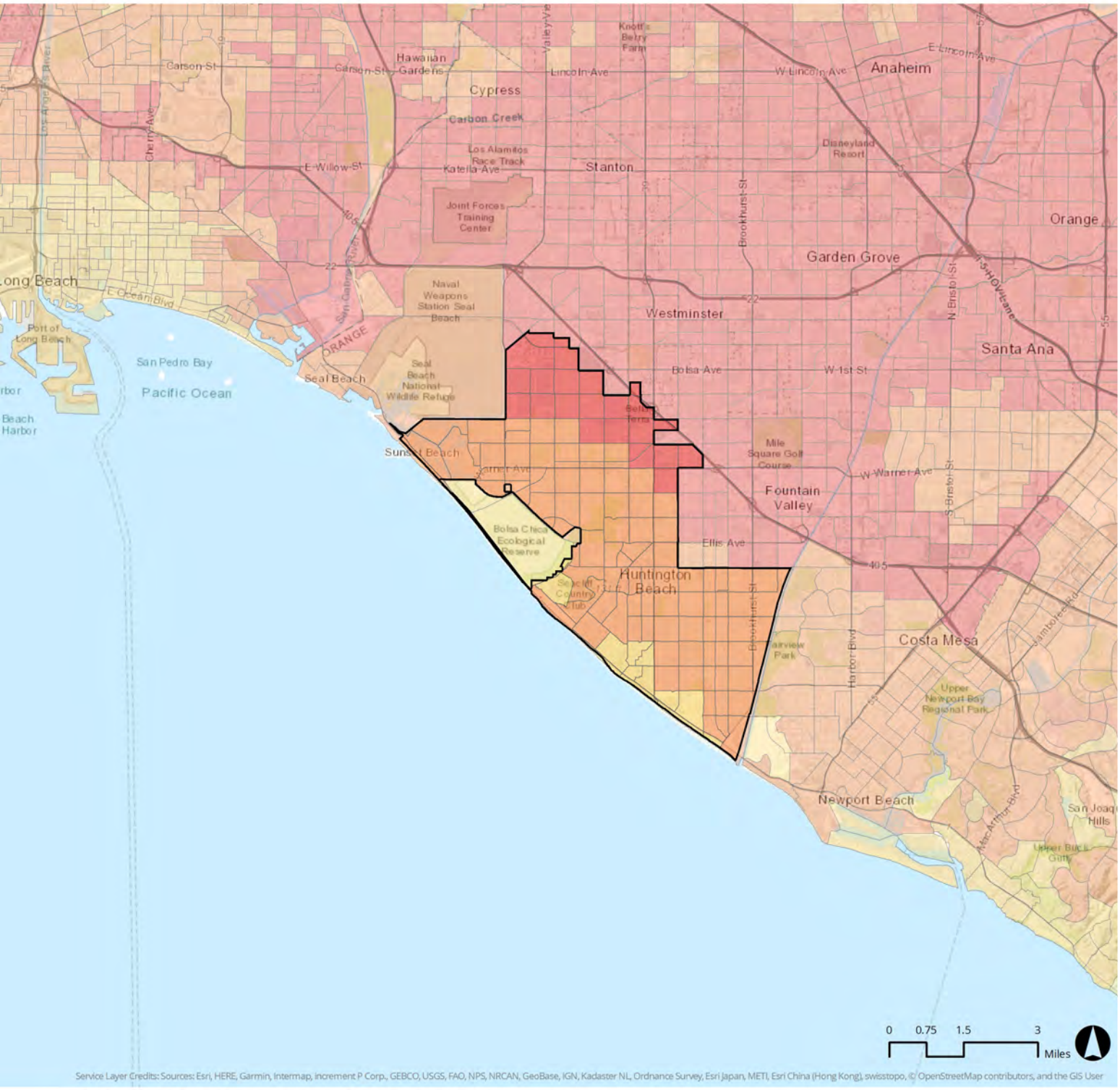
- [ ] SCAG's Scenario Planning Model - Data Management Site
- [x] Email to SCAG's RTPLocalInput@scag.ca.gov
- [ ] In person communication with SCAG staff
- [ ] Hard copies that have been mailed to SCAG's offices
- [x] Other, please specify GIS SHAPEFILES SENT TO SCAG FTP SITE.

X _____

Signature (to be executed by City Manager/County Administrative Officer, Community Development/Planning Director, or City Clerk (on behalf of a jurisdiction's governing body)

E - Method of Submission

Attachment: HQTA Job Access Local Input Survey Form (City of Huntington Beach) (Appeal of the Draft Allocation for the City of Huntington



Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User

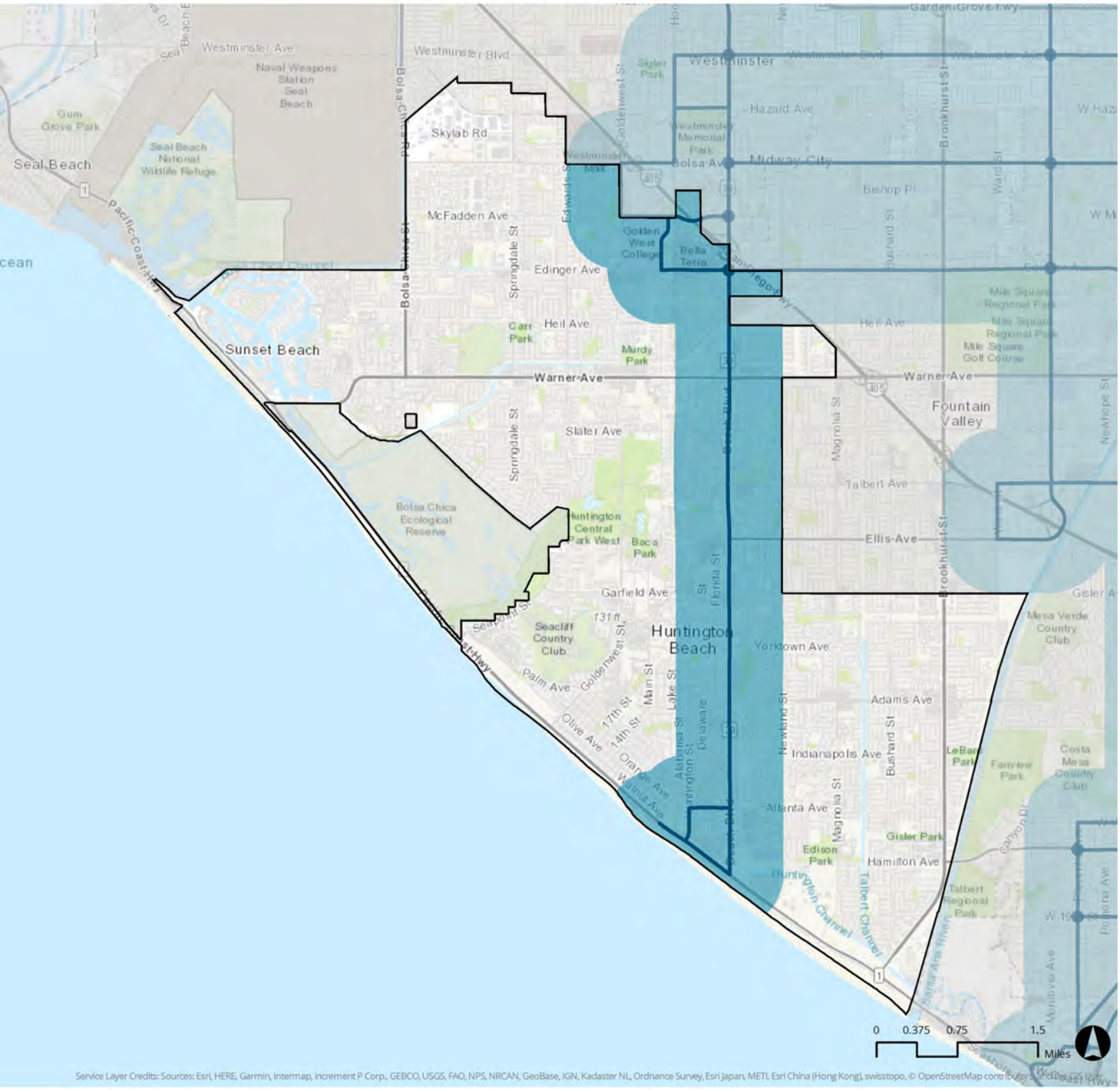
TAZ-level job accessibility in and around: City of Huntington Beach [Year 2045]

0% - 2.3% | 2.4% - 7.8% | 7.9% - 11.7% | 11.8% - 15.5% | 15.6% - 19.6% | 19.7% - 32.3

Note: These data represent the share of jobs in the SCAG region accessible by automobile commute in 30 minutes in 2045 during the peak AM commute (6-9am). Further detail on the job accessibility measure can be found in SCAG's Final RHNA Methodology. Note that since the SCAG region's total employment forecast for 2045 is 10,049,000 jobs, the number of jobs available can be measured by multipling the percentage found on the map by this number. For example, a TAZ-level job accessibility measure of 10.0% means that 1,049,000 future jobs could be reached in 30 minutes.

Data Source: SCAG, 2020 | Map Created: 10/22/2020

Disclaimer: The data underlying the information shown on this map reflect jurisdiction's input submitted during the Local Input and Envisioni... Connect SoCal. SCAG shall not be responsible for user's misuse or misrepresentation of this map. For the details regarding the sources, meth... of this map, please refer to the SCAG Data/Map Book at https://www.connectsocal.org/Pages/Local-Input-Process.aspx or contact RTPLocalInp...



Service Layer Credits: Sources: Esri, HERE, Garmin, intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User

Major Transit Stops and High Quality Transit Areas in City of Huntington Beach [Year 2045]

● Major Transit Stops ∿ High Quality Transit Corridors (HQTCs) ▭ High Quality Transit Areas (HQTAs)

Note: SCAG identifies Major Transit Stops and High Quality Transit Corridors (HQTCs), and their surrounding areas in one-half mile radius distance as specified in Section 21155.(b)(3). Major transit stops and HQTCs are extracted from 2045 plan year data of Connect SoCal.
SCAG's High Quality Transit Area (HQTA) is within one-half mile from Major Transit Stops and HQTCs and developed based on the language in SB375; however, freeway transit corridors with no bus stops on the freeway alignment do not have a directly associated HQTA. The RHNA process, per Section 65584 et seq., specifies that SCAG's housing needs allocation plan shall further several objectives including those related to infill development and jobs-housing balance. To that end, SCAG's Regional Council-adopted 6th Cycle Final RHNA Methodology relies on a jurisdiction's forecasted 2045 population within HQTAs to allocate housing need.

Data Source: SCAG, County Transportation Commissions, 2020 | Map Created: 10/22/2020

Disclaimer: The information shown on this map reflect jurisdiction's input submitted during the Local Input and Envisioning Process for the C
SCAG shall not be responsible for user's misuse or misrepresentation of this map. For the details regarding the sources, methodologies and c
please refer to the SCAG Data/Map Book at connectsocal.org/Pages/Local-Input-Process.aspx or contact RTPLocalInput@scag.ca.gov.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF HOUSING POLICY DEVELOPMENT
2020 W. El Camino Ave
Sacramento, CA 95833-1829
916) 263-2911 FAX: (916) 263-7453
www.hcd.ca.gov

December 10, 2020

Kome Ajise, Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

Dear Executive Director Ajise:

RE: Comment on Appeals of the Draft Regional Housing Need Allocation (RHNA) Plan

Thank you for the opportunity to comment on the 52 appeals Southern California Association of Governments (SCAG) has received regarding the draft RHNA plan. The appeal process is an important phase in the development of a RHNA plan that ensures that all relevant factors and circumstances are considered.

The only circumstances under which a jurisdiction can appeal are:

- 65584.05(b)(1): The council of governments failed to adequately consider the information regarding the factors listed in subdivision (e) of section 65584.04.
- 65584.05(b)(2): The council of governments failed to determine the share of the regional housing need in a manner that furthers the intent of the objectives listed in subdivision (d) of section 65584.
- 65584.05(b)(3): A significant unforeseen change in circumstances occurred in the local jurisdiction that merits a revision of the information submitted pursuant to subdivision (e) of Section 65584.04.

The California Department of Housing and Community Development (HCD) urges SCAG to only consider appeals that meet these criteria.

Per Government Code section 65584.05(e)(1), SCAG's final determination on whether to accept, reject, or modify any appeal must be accompanied by written findings, including how the final determination is based upon the adopted RHNA allocation methodology, and how any revisions are necessary to further the statutory objectives of RHNA described in Government Code section 65584(d).

Among the appeals based on Government Code section 65584.05(b)(1), several appeals state that SCAG failed to consider the factor described in Government Code section 65584.04(e)(2)(B), citing the lack of land suitable for development as a basis for the appeal. However, this section states the council of governments may not limit its consideration of suitable housing sites to existing zoning and land use restrictions and must consider the potential for increased development under alternative zoning and

land use restrictions. Any comparable data or documentation supporting this appeal should contain an analysis of not only land suitable for urban development, but land for conversion to residential use, the availability of underutilized land, and opportunity for infill development and increased residential densities. In simple terms, this means housing planning cannot be limited to vacant land, and even communities that view themselves as built out must plan for housing through means such as rezoning commercial areas as mixed-use areas and upzoning non-vacant land.

With regard to appeals submitted related to Government Code section 65584.05(b)(2), that SCAG failed to determine the RHNA in a manner that furthers the statutory objectives, it should be noted that HCD reviewed SCAG's draft allocation methodology and found that the draft RHNA allocation methodology furthered the statutory objectives described in Government Code section 65584.

Among the appeals based on Government Code section 65584.05(b)(2), several contend that the cap on units allocated to extremely disadvantaged communities (DACs) does not further RHNA's statutory objectives. This cap furthers the statutory objective to affirmatively further fair housing by allocating more units to high opportunity areas and fewer units to low resource communities, and concentrated areas of poverty with high levels of segregation. Due to the inclusion of this factor, as well as the use of TCAC/HCD Opportunity Maps, SCAG's methodology allocates 14 of the top 15 highest shares of lower-income RHNA to jurisdictions with over 99.95 percent High and Highest Resource areas. With the exceptions of two jurisdictions, the 31 jurisdictions with the highest share of lower-income RHNA are all over 95 percent High and Highest Resource areas. Any weakening of these inputs to the methodology could risk not fulfilling the statutory objective to affirmatively further fair housing.

Several appeals argue that SCAG's RHNA allocation methodology does not adequately promote access to jobs and transit, as required in objectives two and three. HCD's review of SCAG's RHNA methodology found the allocation does further the environmental principles of objective two. SCAG's overall allocation includes significant weight related to the location of high-quality transit areas and the regional distribution of jobs that can be accessed within a 30-minute driving commutes. Regarding objective three, HCD's analysis as to whether jobs-housing fit was furthered by SCAG's draft methodology found that across all jurisdictions there is generally good alignment between low-wage jobs and lower-income RHNA, with all but 15 jurisdictions within a half percent plus or minus difference between their share of lower-income RHNA for the region and their percentage low-wage jobs for the region.

Several appeals are based upon the provision described in Government Code section 65584.05(b)(3), arguing that the COVID-19 pandemic represents a significant and unforeseen change in circumstances that will affect future population and job growth. Ensuring everyone has a home is critical to public health. Reducing and preventing overcrowding and homelessness are essential concerns for every community. The COVID-19 pandemic has only increased the importance that each community is planning for sufficient affordable housing.

Lastly, several appeals state that the Regional Housing Needs Determination (RHND) HCD provided to the SCAG region is too large. SCAG submitted an objection to the RHND at the appropriate time and through the appropriate process. HCD considered those objections and determined the final RHND for 6th Housing Element Cycle for the SCAG region on October 15, 2019. There are no further appeal procedures available to alter the SCAG region's RHND for this cycle. Government Code section 65584.05(b) does not allow local governments to appeal the RHND during the 45-day period following receipt of the draft allocation.

HCD acknowledges that many local governments will need to plan for more housing than in the prior cycle to accommodate a RHND that more fully captures the housing need and as the statutory objectives of RHNA shift more housing planning near jobs, transit, and resources. The Southern California region's housing crisis requires each jurisdiction to plan for the housing needs of their community and the region. In recognition of this effort there are more resources available than ever before to support jurisdictions as they prepare to update their 6th cycle housing elements:

- SB 2 Planning Grants – $123 million one-time allocation to cities and counties
- SB 2 Planning Grants Technical Assistance offered to all jurisdictions
- Regional and Local Early Action Planning Grants – $238 million one-time allocation for local and regional governments
- SB 2 Permanent Local Housing Allocation – approximately $175 million annually in ongoing funding for local governments to increase affordable housing stock

If HCD can provide any additional assistance, or if you, or your staff, have any questions, please contact Megan Kirkeby, Deputy Director, megan.kirkeby@hcd.ca.gov.

Megan Kirkeby
Deputy Director

City of Whittier

13230 Penn Street, Whittier, California 90602-1716
(562) 567-9320 Fax (562) 567-2872 www.cityofwhittier.org

Electronically Transmitted to: Housing@scag.ca.gov

December 10, 2020

RHNA Appeals Committee
Southern California Association of Governments
900 Wilshire Blvd, Suite 1700
Los Angeles, CA 90017

SUBJECT: City of Whittier's Comments on Appeals to the Sixth Cycle Regional Housing Needs Assessment (RHNA) Allocation

Honorable Chair and Honorable Committee Members:

The City of Whittier ("City") appreciates the challenges that are inherent in allocating 1,341,827 housing units by the thousands (a 226% increase above the baseline 412,137 unit) to cities across Southern California, especially in built-out cities. However, the City is deeply concerned its housing allocation of 3,431 units from the State Department of Housing and Community Development ("HCD") and the Southern California Association of Government's ("SCAG") unit distribution methodology, along with recent housing legislation will fundamentally abridge the City's ability to develop effective land-use policies that are appropriate for managing the community's actual needs. The 878 units in the 5th cycle RHNA allocation has been increased by 290%to 3,431 units in the current 6th cycle. Particularly challenging in the 6th cycle, is the number of low and very low-income units (1,558) which combined with the moderate and above moderate unit totals forces unplanned and unnecessary residential densification of the community.

The affordable units are an unfunded mandate with very limited regional or State financial support for their development. Considering the affordable housing subsidies typically range from $50,000 to $250,000 per unit, the overall funding requirements could range from $78,000,000 to $390,000,000 which is clearly beyond the reach of the City of Whittier in that the City's general fund budget is just $72,000,000 which already include $2,000,000 annually to house the City's unsheltered residents in transitional housing. Additionally, the City only receives 7.5%of each property tax dollar to provide general services including police and library services.

The City is currently in the process of updating its Housing Element as well as the General Plan to incorporate the current RHNA allocation, so Whittier is acutely aware of the various housing needs as well as the potential obstacles, such as aging infrastructure and unplanned density, to creating the requisite housing within a city that

is essentially built out. The changes in the State's housing laws (SB 35, SB 166 and AB 1397) have created additional constraints for the agencies and may severely impact the City's ability to accomplish our regional and local housing goals.

Since development in Whittier began more than 130 years ago, the City is virtually built-out with little developable vacant land outside of its designated open space areas that are dedicated to accommodating existing and future residents. While the City has made significant efforts through its specific plans to densify existing corridors and districts, the majority of Whittier's remaining single-family residential neighborhoods cannot accommodate similar densification. Furthermore, the hills north of Whittier contain regional open space, sensitive habitat and wildlife areas that must be preserved in perpetuity. There are also significant infrastructure and water service constraints that impact Whittier's ability to produce significantly more housing. Although these facts may not be desirable, they must be pragmatically accounted for and mitigated by not further increasing Whittier's share of housing units contained in SCAG's 6th Cycle RHNA. The final RHNA allocation and methodology must be fair and equitable while reflecting the capacity for reasonable housing unit construction.

As with many other cities, the City is concerned about the current allocation, but an even greater concern is that additional units may be applied to the City if reallocated from cities that are successful in their appeals. To that end, the City believes the appeal process itself was unclear as to the potential ramifications to other cities and not fully understood.

Although we fully support the surrounding cities in their appeals, the potential for additional units being applied to the City would exacerbate the problems described herein and in Whittier's September 13, 2019 letter to SCAG.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Jeffery S. Adams
Director of Community Development

File

[redacted]

From: Christopher Koontz <Christopher.Koontz@longbeach.gov>
Sent: Thursday, December 3, 2020 11:14 AM
To: Regional Housing
Subject: RHNA Appeals

Categories: Response Required, Record

Good morning,

The purpose of this email is to provide the City of Long Beach's position in regards to pending RHNA appeals before SCAG. The City of Long Beach seeks to meet its housing needs and obligations for the benefit of Long Beach residents and the region. Our allocation was extremely large and presents a planning and financing challenge for the City. Nonetheless we chose not to appeal our allocation because the allocation process was fair and transparent including taking the City of Long Beach's input into consideration.

We oppose and will not accept any transfer of additional allocation due to the pending appeals. We note that within our area, the Gateway COG, appeals are pending from Bellflower, Cerritos, Downey, Huntington Park, La Mirada, Lakewood, Pico Rivera, and South Gate. Each of these appeals should be evaluated by SCAG on the merits, however Long Beach opposes any transfer of allocation to our City. It would be inappropriate to transfer a further burden to Long Beach when we have already accepted a large allocation and have done more than many cities in the region to accommodate housing growth under the current RHNA cycle, including fully meeting our market-rate RHNA allocation.

The City of Long Beach will continue to work with SCAG and our neighbor jurisdictions to address the housing needs of our residents.

We thank you for consideration and please do not hesitate to contact the City regarding our position.

Christopher Koontz, AICP
Deputy Director

Development Services
411 W. Ocean Blvd., 3rd Floor | Long Beach, CA 90802
Office: 562.570.6288 | Fax: 562.570.6068

Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal Request Form

All appeal requests and supporting documentation must be received by SCAG October 26, 2020, 5 p.m.
Appeals and supporting documentation should be submitted to housing@scag.ca.gov.
Late submissions will not be accepted.

Date:

10/26/20

Jurisdiction Subject to This Appeal Filing:
(to file another appeal, please use another form)
Huntington Beach

Filing Party (Jurisdiction or HCD)

Jurisdiction - Huntington Beach

Filing Party Contact Name

Michael E. Gates

Filing Party Email:

michael.gates@surfcity-hb.org

APPEAL AUTHORIZED BY:

Name: Lyn Semeta

PLEASE SELECT BELOW:

- [x] Mayor
- [ ] Chief Administrative Office
- [ ] City Manager
- [ ] Chair of County Board of Supervisors
- [ ] Planning Director
- [ ] Other: _____

BASES FOR APPEAL

- [x] Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029)
- [x] Local Planning Factors and/or Information Related to Affirmatively Furthering Fair Housing (See Government Code Section 65584.04 (b)(2) and (e))
  - [x] Existing or projected jobs-housing balance
  - [ ] Sewer or water infrastructure constraints for additional development
  - [x] Availability of land suitable for urban development or for conversion to residential use
  - [ ] Lands protected from urban development under existing federal or state programs
  - [ ] County policies to preserve prime agricultural land
  - [x] Distribution of household growth assumed for purposes of comparable Regional Transportation Plans
  - [ ] County-city agreements to direct growth toward incorporated areas of County
  - [ ] Loss of units contained in assisted housing developments
  - [ ] High housing cost burdens
  - [x] The rate of overcrowding
  - [ ] Housing needs of farmworkers
  - [x] Housing needs generated by the presence of a university campus within a jurisdiction
  - [ ] Loss of units during a state of emergency
  - [x] The region's greenhouse gas emissions targets
  - [ ] Affirmatively furthering fair housing
- [ ] Changed Circumstances (Per Government Code Section 65584.05(b), appeals based on change of circumstance can only be made by the jurisdiction or jurisdictions where the change in circumstance occurred)

FOR STAFF USE ONLY:
Date_____ Hearing Date: _____ Planner: _____

Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal Request Form

All appeal requests and supporting documentation must be received by SCAG October 26, 2020, 5 p.m.
Appeals and supporting documentation should be submitted to housing@scag.ca.gov.
Late submissions will not be accepted.

Brief statement on why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584 (please refer to Exhibit C of the Appeals Guidelines):

Please include supporting documentation for evidence as needed, and attach additional pages if you need more room.

Please refer to Attachment No. 1 for statements on why the revisions are necessary to further the intent of the objectives listed in Government Code Section 65584.

Brief Description of Appeal Request and Desired Outcome:

Please refer to Attachment No. 1 for a full and detailed description of the appeal request, desired outcome and statements on why the revisions are necessary to further the intent of the objectives listed in Government Code Section 65584.

Number of units requested to be reduced or added to the jurisdiction's draft RHNA allocation (circle one):

Reduced See Attachment No. 1 for specific reduction numbers **Added** _____

List of Supporting Documentation, by Title and Number of Pages
(Numbers may be continued to accommodate additional supporting documentation): See attached index for full list of Attachments

1. Description of Appeal Request, Desired Outcome and Statements on why the
2. City of Huntington Beach Proposed Appeals to City Allocations in the Regional
3. Copy of All Letters Submitted to SCAG During RHNA Process, 29 Pages

FOR STAFF USE ONLY:
Date_____ Hearing Date: _____ Planner: _____

List of Attachments

Attachment No.	Title	No. of Pages
1.	Description of Appeal Request, Desired Outcome and Statements on why the revisions are necessary to further the objectives listed in Government Code Section 65584	33 pages
2.	City of Huntington Beach Proposed Appeals to City Allocations in the Regional Housing Needs Assessment Allocation to the Southern California Association of Governments (SCAG), Prepared by Wendell Cox	34 pages
3.	Copy of all communication submitted to SCAG from the City of Huntington Beach during the RHNA and Connect SoCal process	29 pages
4.	SCAG Meeting of the Technical Working Group, "High Quality Transit Corridors and Major Transit Stops," (Agenda item 1-d)	18 pages
5.	Pages from October 2019 OCTA Bus Book Full October 2020 OCTA Bus Book	148 pages
6.	SCAG, "Connect SoCal: Community Input: Public Participation and Consultation: Master Response No. 1: Regional Housing Needs Assessment" (page 92)	1
7.	OCTA Long Range Transportation Plan, Figure 4.1	1
8.	OCTA June 22, 2020 Board Agenda Packet - Item 22: Bus Operations Performance Measurement	32 pages
9.	Michael Manville, Bryan Taylor and Evelyn Blumenberg, "Falling Transit Ridership: California and Southern California," January 2018	83 pages
10.	American Public Transportation Association Fourth Quarter Ridership Reports	73 pages
11.	HCD Regional Housing Need Determination Letter, August 22, 2019	5 pages
12.	SCAG Final RHNA Methodology	32 pages
13.	UCLA Student Housing Master Plan 2016-2026	20 pages
14.	UCLA Long Range Development Plan Amendment and Student Housing Projects SEIR (2018)	2,353 pages
15.	California State University System Basic Needs Initiative	53 pages
16.	Terra Nova Planning and Research Inc. Memorandum	7 pages
17.	Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action, California Coastal Commission	14 pages
18.	CCC Sea Level Rise Policy Guidance Chapter 5: Addressing Sea Level Rise in Local Coastal Programs	29 pages
19.	CCC Sea Level Rise Policy Guidance Chapter 7: Adaptation Strategies	42 pages
20.	SCAG Data Map Book	48 pages
21.	California Coastal Commission Sea Level Rise Policy Guidance	307 pages
22.	Declaration of Wendell Cox in Support of CHB.s Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal	3 pages

Description of the City's Appeal, Desired Outcome and Statements on Why Huntington Beach's Requested Revision is Necessary to Further the Intent of State Law

The City of Huntington Beach (City) appeals the Draft 6th Cycle (2021-2029) RHNA allocation to the City (City RHNA Allocation) totaling 13,337 units, which consists of 3,652 very-low income units, 2,179 low income units, 2,303 moderate income units, and 5,203 above-moderate income units. This Appeal is based upon empirical data that is comparable to the data used by Southern California Association of Governments (SCAG) and California Department of Housing and Community Development (HCD), and which is supported by evidence, including expert reports.

A revision to the City RHNA Allocation is necessary to further the intent and objectives of State law, and to further sound and established principles of planning and land use, such as placing housing where it is actually needed. As the State legislature has found:

> [I]nsufficient housing in job centers hinders the state's environmental quality and runs counter to the state's environmental goals. In particular, when Californians seeking affordable housing are forced to drive longer distances to work, an increased amount of greenhouse gases and other pollutants is released and puts in jeopardy the achievement of the state's climate goals....

(California Government Code Section 65584(a)(3).)

The City RHNA Allocation is not consistent with the development pattern included in the sustainable communities strategy, or with preventing urban sprawl by encouraging efficient development patterns (i.e., placing housing in or near adequate job centers, ensuring adequate infrastructure including water supply, and protecting environmental and open space resources and reducing greenhouse gases). SCAG's determination of the City RHNA Allocation does not further the objectives of State Planning Law. SCAG did not reasonably apply the methodology and requisites of state law, but instead created an illegal, arbitrary and capricious methodology of allocation. For each of the arguments set forth below, SCAG and HCD failed to create and apply a methodology that supports the legally mandated objectives of state law. Instead, these agencies used a political process, adopting and abusing unfettered discretion to hap-hazardously determine the City RHNA Allocation.

In addition, the State's attempt to impose RHNA allocation upon Charter Cities violates the State Constitution. For over 120 years, the California Constitution has recognized and advanced "the principle that the municipality itself knew better what it wanted and needed than the state at large...." (*Fragley v. Phelan* (1899) 126 Cal. 383, 387 (Garroutte, J.).) "The state constitution is... the highest expression of the will of the people of the state,

and so far as it speaks, represents the state." (*Ex Parte Braun* (1903) 141 Cal. 204, 211.) Article XI, section 5 of the California Constitution authorizes municipalities to organize themselves under city charters and further provides: "City charters adopted pursuant to this Constitution ***shall supersede*** any existing charter, ***and with respect to municipal affairs shall supersede all laws inconsistent therewith***." (Cal. Const., art. XI, § 5(a) (emphasis added).)

For nearly quite as long as charter city home rule has been established in our Constitution, the Legislature has consistently recognized charter cities' local control and home rule over their land use and zoning decisions. The State is now using a housing crisis and environmental greenhouse gas reduction goals to force one-size-fits-all land use policies upon Charter Cities. However, it is the City's contention, consonant with the California Constitution, that the City knows best how to manage the use of its land and resources to meet local needs. The State's attempt to impose RHNA allocation requirements is in and of itself an illegal act.

As detailed in a letter sent to SCAG by the City of Huntington Beach, SCAG failed to follow the process outlined in California Government Code Section 65584.04(b)–(f) when it voted to follow an arbitrary and capricious formula that incorrectly allocated approximately 6,000 additional RHNA units to the City of Huntington Beach. This vote was not based upon any empirical data, and was not based on the rule of law, but was instead based on last minute political wrangling. Government Code 65584.3(a) requires that actions taken by SCAG be done according to a vote provided for in established rules following general principles of due process. Huntington Beach was not provided due process in participating in this vote. This new formula had no corresponding analysis as to access to high quality transit or access to jobs. This allocation undermines and does not promote the critical objectives of socioeconomic equity, placement of housing that can be reached quickly by transit, and achievement of statewide greenhouse gas emissions reduction goals. Housing Law requires that RHNA should be allocated based upon empirical data, not political determinations. The result of this arbitrary and capricious allocation of RHNA is to over exaggerate the actual need for housing in Huntington Beach and corresponding Cities.

The City requests its allocation of Housing units be reduced as described below.

II. Huntington Beach Issues on Appeal

A. Appeal Issue #1 – The portion of Beach Boulevard within the City is incorrectly identified as a High Quality Transit Area.

1. Bases for Appeal:

a. Pursuant to California Government Code Section 65584.05(b)(1) SCAG failed to adequately consider the information the City of Huntington Beach submitted to address existing or projected jobs housing balance, the region's greenhouse gas emissions targets, and the distribution of a comparable period of regional transportation plans and opportunities to maximize the use of public transportation and existing transportation infrastructure .

b. Pursuant to California Government Code Section 65584.05(b)(2) SCAG failed to determine the City's share of the regional housing need in a manner that furthers and does not undermine the following objectives listed in Section 65584(d):

- Promoting socioeconomic equity and the achievement of the region's greenhouse gas reduction targets (Section 65584(d)(2))
- Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction (Section 65584(d)(3))

As noted in multiple public comments from the City,[1] the portion of Beach Boulevard within the City is incorrectly identified as a High Quality Transit Area (HQTA). Government Code Section 65584.04(e)(3) requires the RHNA methodology to include "the distribution of household growth assumed for purposes of a comparable period of regional transportation plans and opportunities to maximize the use of public transportation and existing transportation infrastructure." SCAG's Final RHNA Allocation Methodology explains that HQTAs "are based on state statutory definitions of high-quality transit corridors (HQTCs) and major transit stops." SCAG's RHNA Methodology to determine a jurisdiction's existing housing need "assigns 50 percent of regional existing need based on a jurisdiction's share of the region's population within the high quality transit areas (HQTAs) based on future 2045 HQTAs." However, SCAG's application of HQTC is incorrect. Public Resources Code Section 21155(b) defines a high-quality transit corridor (HQTC) as "a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours." Public Resources Code Section 21155(b) ***does***

[1] A copy of each letter sent by the City is attached hereto – refer to Attachment No. 3.

not include future planned facilities within the definition. SCAG's RHNA methodology creates its own definition of HQTC as inclusive of planned HQTC, which conflicts with the statutory definition. This new definition is illegal and cannot be used in calculation of RHNA.

SCAG's RHNA methodology designates all of Beach Boulevard within the City as a HQTA. According to SCAG[2]:

> Peak Period Bus Service Interval (Frequency)
>
> To determine whether the peak commute bus service interval (also called frequency) meets the statutory threshold of 15 minutes or less, SCAG uses the peak period defined in its regional travel demand model. The morning peak is defined as 6am to 9am and the afternoon peak is defined as 3pm to 7pm. A transit operator may have a different, board-adopted or de facto peak period; in such cases SCAG will accept requests to use operator-specific peak-hour periods on a case-by-case basis.
>
> SCAG uses the total population of bus trips during the combined seven-hour morning and afternoon peak periods to determine the peak frequency at a bus stop. This is done for each bus route, by direction. The peak frequency is calculated by dividing 420 minutes (the seven hour peak converted to minutes) by the total peak bus trips. This average frequency should be 15 minutes or less in order to qualify. The threshold is strict, at 15.0 minutes.

Beach Boulevard in Huntington Beach has failed to meet the HQTA definition at any time during the RHNA process, including the baseline year 2016. During 2016, 2017 and 2018, Route 29 met the HQTA threshold only northbound during the morning peak and southbound during the evening peak. Additionally, based on the October 13, 2019 Orange County Transportation Authority (OCTA) Bus Schedule[3], there are no bus stops on Beach Boulevard within the City of Huntington Beach with headway times of 15 minutes or less. Route 29 services Beach Boulevard from the City of La Habra to PCH in the City. The shortest headway time during peak hours for bus service is on the Route 29 stop at PCH/1st Street (which is clearly not a stop on Beach Boulevard) traveling southbound with an average headway time of 18.23 minutes during the PM peak hours. Most stops have an average peak hour headway time of approximately 19-25 minutes. Some stops, such as the Beach Boulevard/Talbert Avenue stop, have peak hour headway times of 40-49 minutes. One stop (Beach Boulevard/Atlanta Avenue) did not list any stop times as part

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[2] SCAG Meeting of the Technical Working Group, "High Quality Transit Corridors and Major Transit Stops," (Agenda item 1-d)
http://www.scag.ca.gov/committees/CommitteeDocLibrary/twg101619fullagn.pdf
[3] OCTA Bus Book http://www.octa.net/ebusbook/CompleteBusBook.pdf

of any route for this stop. It must also be noted that OCTA eliminated Route 211 in October 2019, which serviced Huntington Beach to Irvine (a major Orange County job center) due to low ridership.

Peak period service on Route 29 was reduced 19% from 2018 to 2019. In 2018, a total of 102 buses served the two stops, which was reduced to 83 buses in 2019. This service reduction was maintained in the February 2020 schedule. Route 29 has failed to meet the HQTA frequency threshold during either peak period as of the February 9, 2020 (pre-COVID19) bus schedule (Table 1-1). Route 29 does not meet the HQTA service frequency threshold in any of the peak periods in the City, south of Heil Avenue[4]. For this reason as well, the area from Heil Avenue south to the southern route terminal at Pacific Coast Highway and First Street in the City is wrongly designated as an HQTA.

Although Route 29 has been indicated as an HQTA in the "2018 OCTA Long Range Transportation Plan (LRTP)" in Figure 4.10, reaffirmed by SCAG in response to a request for correction by the City of Huntington Beach[5], OCTA's 2018 LRTP[6] Figure 4.1 – *Local, Community, and Bravo! Final Route Recommendations* recommends that Route 29 receive a ***reduction*** in frequency of service. This will add further delay to the 19-25 minute average peak hour headway service times on Beach Boulevard. In addition, the City of Huntington Beach has engaged with OCTA regarding implementation of their 2018 Long Range Transportation Plan, including the Final Beach Boulevard Corridor Feasibility Study (Study). The suggested improvement elements within the Study are conceptual and are not developed into any specific project to be implemented on any specific timeline. It is at the discretion and capability of the local jurisdiction to coordinate implementation and infrastructure improvements with all relevant agencies, such as CalTrans. For example, if Bus Rapid Transit (BRT) to achieve service at 15 minute intervals is hypothetically chosen to be implemented for a portion of Beach Boulevard, a subsequent specific BRT study is required to determine potential alignments, project limits, and other details. There is no requirement upon any City within the Study or OCTA to implement any particular recommendation of the study or the LRTP, and no evidence that Beach Boulevard is currently, or will be in 2045, an HQTA.

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[4] Peak periods are defined by SCAG as 6:00 am to 9:00 am and 3:00 pm to 7:00 pm. SCAG, "Connect SoCal: Community Input: Public Participation and Consultation: Master Response No. 1: Regional Housing Needs Assessment," page 92, https://www.connectsocal.org/Documents/Proposed/pfConnectSoCal_Public-Participation-Appendix-2.pdf.http://www.scag.ca.gov/committees/CommitteeDocLibrary/twg101619fullagn.pdf

[5] SCAG, "Connect SoCal: Community Input: Public Participation and Consultation: Master Response No. 1: Regional Housing Needs Assessment," page 92, https://www.connectsocal.org/Documents/Proposed/pfConnectSoCal_Public-Participation-Appendix-2.pdf.

[6] OCTA Long Range Transportation Plan, Figure 4.1 http://www.octa.net/pdf/OCTALRTP111618FINAL.pdf

Finally, the OCTA Board of Directors wrote a letter dated March 23, 2020 to Governor Newsom discussing the impact of COVID19 on their operations. The following excerpt describes the changes in circumstances that have created a substantial strain on the ability of OCTA to provide transit service:

> The COVID-19 response has fundamentally changed the way people interact, and the resulting collapse of nonessential economic activity will have a dramatic impact on the availability of federal, state, and local funding. Short-term revenue decreases will cause extraordinary budgetary constraints. OCTA collects approximately $48 million annually in transit fares, which partially fund bus operations that help our agency maintain ridership. Transit fares are expected to decrease significantly as a result of our current ridership decline. OCTA will also see a severe decline in revenues from Orange County's half-cent sales tax dedicated to transportation improvements, Measure M2. ***During the Great Recession, OCTA saw a 20 percent decrease in sales tax revenue and ridership levels never fully recovered. If the impacts are similar from COVID-19, long-lasting impacts will be felt systemwide.*** Similarly, gas tax revenues are likely to fall as people across the country heed social distancing guidance, which will only exacerbate the Highway Trust Fund's on-going structural revenue deficit. Given the likelihood of long-term revenue instability, ***OCTA is planning for an uncertain future while maintaining our long-standing commitment to fiscal responsibility***. (Emphasis Added)

SCAG must acknowledge that the COVID19 pandemic has truly shifted mobility methods, transit patterns, and the way people utilize public transportation within the region. Decreased OCTA funding and reduced on-time performance reliability[7] demonstrates not only that the identification of HQTA in the City is inaccurate.

2. Requested Revision

It is estimated that only 7.2% of the City's population lives in HQTAs that are not appealed. (Attachment No. 2 - Wendell Cox Expert Report) This is a reduction from the 36.4% incorrectly determined by SCAG to reside in an HQTA in the City. This requires an estimated reduction of 80.7%, or 2,455 units from the City's HQTA allocation of 3,059 units and an additional 1,170 units from the residual adjustment. ***The total requested reduction due to inaccurate HQTA data is 3,625 units.***

/ / /

[7] OCTA June 22, 2020 Board Agenda Packet - Item 22: Bus Operations Performance Measurement https://octa.legistar.com/View.ashx?M=E1&ID=749492&GUID=340A1A00-DE29-4B85-845E-B1697E8B9FB7

3. Statement as to why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584

This revision is necessary to further the intent of the objectives listed in Government Code Section 65884 because the present allocation method undermines and does not promote socioeconomic equity. (Government Code § 65584(d)(2).) The present allocation method also undermines and does not promote an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction. (Government Code § 65584(d)(3).)

In addition, SCAG's incorrect assumptions for HQTA in Huntington Beach undermine and do not promote important intentions of SCAG's *Connect SoCal 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy*, such as housing construction in transit rich areas (page 4), strategies that result in reduced demand for single occupancy vehicle use (page 10) and land use patterns that facilitate multimodal access to work (page 25).[8]

Generally, the objectives of state law and SCAG's Sustainable Communities Strategy would be served by a larger share of solo drivers being attracted from their cars to transit and other non-motorized modes. Minimization of solo driving commutes requires considerably better transit job access. State and regional policies have been adopted to seek these objectives by constructing housing units close to jobs that can be filled by nearby resident workers.

The higher number of units incorrectly allocated to Huntington Beach will also have related consequences, because the city has more limited transit job access measures than other jurisdictions and areas of Orange County, Los Angeles County and the 5-county Los Angeles-Long Beach combined statistical area (CSA).[9]

The City has virtually no 30-minute transit access to the richest job centers in the CSA. (Attachment No. 2 – Wendell Cox Expert Report.) This is unlikely to change materially in the foreseeable future. This is in contrast to the huge transit investments in urban rail and busways have been and are being further developed in Los Angeles County, with the intent of materially increasing transit access and creating a more compact urban form.

The promotion of socioeconomic equity is undermined by the overestimate of residents in HQTAs in the City, which results in a higher RHNA Allocation to the city of Huntington Beach than is warranted. Potential new residents will have considerably less economic

[8] Page numbers refer to the Sustainable Communities Strategy within the *Connect SoCal 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy*.
[9] This analysis uses the Los Angeles-Long Beach combined statistical area (the SCAG area, without Imperial County), which is the largest labor market definition by the U.S. Office of Management and Budget. As a labor market area, the CSA is also a housing market.

opportunity due to the limited transit job access. As a result, low-income residents moving to the City are likely to face significant impediments to socioeconomic advancement. The higher allocation to the City will undermine the intraregional relationship between jobs and housing because transit access is so limited. Conversely, the interregional relationship between jobs and housing would be promoted by allocating a smaller number of units to the City. Consistent with trends already evident in research prepared for SCAG (Attachment No. 2 – Wendell Cox Expert Report), the limited transit job access from the City is likely to require workers to purchase cars to access far-flung employment opportunities. This means higher incidence of solo commuting and high commuting expenses. The longer transit commutes significantly reduce the incentive for some potential workers to seek employment and imposes a substantial drag on socioeconomic advancement for those that do.

Relatively short commute times are crucial for transit to maintain its market share. In the United States, the average drive alone time is less than 30 minutes and is 26.8 minutes in Orange County. By comparison, transit commute times average 53.6 minutes[10] in Orange County, nearly double the drive alone time.

Around the country, a 30-minute standard is increasingly being used to evaluate transit and automobile commuting. SCAG uses a 30-minute standard for auto trips, though uses 45-minutes for transit trips in its RHNA allocation. The Puget Sound Regional Council (Seattle area) uses a 30-minute standard for both auto and transit trips. The Center for Neighborhood Technology (CNT) publishes comprehensive 30-minute transit commute data within many metropolitan areas, including estimates from virtually any address (below). The University of Minnesota Accessibility Observatory publishes 30-minute transit and car job access estimates for 50 of the nation's largest metropolitan areas.

As the data below indicates, access to jobs by transit tends to be considerably lower than by driving alone. For RHNA to encourage transit commuting rather than driving alone, affordable housing needs to be built in jobs-rich areas, where transit can be more competitive with the auto.

However, the transit trends in the SCAG region are working against any such policy objective. Low-income workers are buying cars, and they are abandoning transit.
A SCAG sponsored research report noted:[11]

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[10] Derived from American Community Survey, 2013/2017.
[11] Michael Manville, Bryan Taylor and Evelyn Blumenberg, "Falling Transit Ridership: California and Southern California," January 2018.
https://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf.

> Driving is relatively easy, while moving around by means other than driving is not. These circumstances give people strong economic and social incentives to acquire cars, and — once they have cars — to drive more and ride transit less.

With its below average transit job access, residents of the allocated housing are likely to obtain vehicles to improve their employment prospects.

The following facts are asserted in support of the appeal analysis:

(1) Lower Income Worker Transit Commuting is Declining

Low income residents are far more likely to drive alone than to commute by transit and this is becoming increasingly so. In Orange County, workers with earnings below the poverty line are 12 times as likely to drive alone than to commute by transit. In the last seven years (2006/2010) to 2013/2017) transit commuting by workers below the poverty line has decreased by 41%. By comparison, in Los Angeles County, below poverty line commuters are only four times as likely to drive alone, while, in the 5-county CSA, workers below the poverty line are six times as likely to drive alone (Table 1-2). A similar downward trend in low-income commuting is evident in both Los Angeles County and the CSA (Figure 1).

The very demographic that is the primary target of affordable housing under RHNA drives alone at a rate similar to that of all workers and is increasingly abandoning transit.

Table 1-2
Commuting by Workers Earning Less than 100% of the Poverty Line

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Los Angeles County	58.8%	14.4%	4
Orange County	68.2%	5.9%	12
Los Angeles-Long Beach CSA	62.2%	10.7%	6

Derived from American Community Survey, 2013/2017

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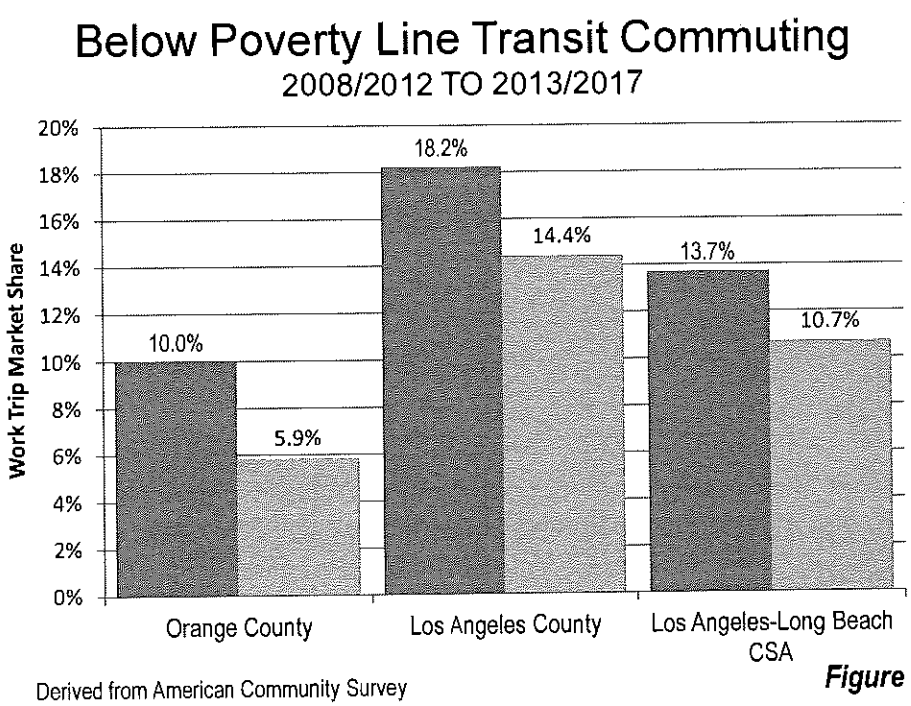

Figure 1

(2) Huntington Beach residents are far more likely to drive alone than to use transit.

Among the City's residents, driving alone accounts for 80% of commuting, while transit's market share (1.1%) is less than one half that of Orange County overall (2.3%). About 75 times (7,500%) as many workers from the City drive alone as use transit. This is more than twice the rate of Orange County overall (36x) and more than six times the rate of Los Angeles County (12x). The drive alone-to-transit ratio in the City is also well above that of the five-county CSA average of 57 times (Table 1-3).

Table 1-3
Driving Alone & Transit Commuting: 2013/2017

	Drive Alone	Transit	Drive Alone times Transit
Huntington Beach	79.7%	1.1%	75
Los Angeles County	73.7%	6.3%	12
Orange County	78.6%	2.2%	36
Los Angeles-Long Beach CSA	77.2%	1.3%	57

Derived from American Community Survey, 2013/2017

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Further, as previously noted, bus ridership is declining in Orange County. OCTA bus ridership dropped 46 percent, from 68.9 million in 2008 to 37.3 million in 2019.[12] The COVID19 pandemic has led to even greater ridership losses and uncertainty with respect to when or even if, ridership will return to previous levels. It is inconceivable that there will be a sufficient increase in Huntington Beach transit service to sustain a materially larger share of workers.

(3) 30-minute transit access to jobs from Huntington Beach is materially less than the CSA, Los Angeles County and Orange County.

Estimates of 30-minute transit jobs access are reported by the Alltransit.cnt.org website (Alltransit), sponsored by the Center for Neighborhood Technology (CNT). Estimates are provided at the metropolitan, county, and city levels for much of the United States, and specific street address inquiries are available.

Alltransit data indicates that transit employment access from the City is far below that of Orange County, Los Angeles County and a number of constituent jurisdictions (Table 1-4).[13]

- Approximately 134,000 jobs, overall, can be reached by transit within 30 minutes from the City. By comparison, 30-minute job access was 2.4 times higher in Los Angeles County (322,000) and 1.3 times higher, on average, in Orange County (173,000). On average, 217,000 jobs can be reached by transit within the SCAG region, 1.6 times that from the City.

- Approximately 40,000 jobs requiring no more than a high school education were accessible by transit in 30 minutes from the City. By comparison, 30-minute job access was 2.4 times higher in Los Angeles County (97,000), 1.3 times higher, on average, in Orange County (52,000) and 1.6 times higher overall in the SCAG region.

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[12] From American Public Transportation Association Fourth Quarter Ridership Reports (https://www.apta.com/wp-content/uploads/Resources/resources/statistics/Documents/Ridership/2008_q4_ridership_APTA.pdf and https://www.apta.com/wp-content/uploads/2019-Q4-Ridership-APTA.pdf).
[13] Data downloaded October 11, 2019.

Table 1-4
30-Minute Transit Access to Jobs (Average Household)

	All Jobs	Jobs Requiring High School Education or Less
Huntington Beach	133,743	39,989
Los Angeles County	321,664	96,821
Orange County	172,595	51,261
SCAG Region	216,605	65,198

Source: Alltransit.cnt.org

30-minute transit access is even lower in Huntington Beach compared to jobs rich areas, especially in central Los Angeles County. Examples are indicated in Table 1-5. This is largely due to proximity to the most transit oriented major job center in the SCAG region (downtown Los Angeles).

- In three of the areas, near the densest employment center in the CSA, where much of the regional transit system converges (downtown Los Angeles), more than 1,000,000 jobs can be accessed within 30-minutes. This is between eight and nine times the transit access from the City. Residents of a number of other areas have 30-minute transit access to more than 500,000 jobs, which is far greater than the City's transit access of 134,000 jobs.

- In these three areas, more than 330,000 jobs requiring a high school education or less can be accessed in 30-minutes, which is from 8.5 to 9.2 times the transit access from the City. Residents of a number of other areas have 30-minute transit access to more than 150,000 of these jobs, which is far greater than the City's transit access of 40,000 jobs (Table 1-5).

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Table 1-5
30-Minute Transit Access to Jobs (Average Household)
Huntington Beach & Jobs/Transit Rich Area Examples

	All Jobs	Jobs Requiring High School Education or Less
Huntington Beach	133,743	39,989
Los Angeles Historic Core	1,186,787	367,904
Los Angeles Bunker Hill	1,144,474	354,787
Los Angeles Civic Center	1,100,441	338,936
Mid-Wilshire	928,498	259,051
Westlake-Dockweiler	909,290	272,787
Silver Lake	837,378	243,677
Echo Park	832,655	247,299
Hollywood	768,614	210,600
Pico-Union	767,775	229,565
Boyle Heights	682,286	221,743
Westwood	654,120	177,267
Culver City	566,368	156,318
East Los Angeles	485,477	156,809

Source: Alltransit.cnt.org

CNT does not produce similar data for driving alone.

Comparative transit and drive alone employment access data is available from the University of Minnesota Accessibility Observatory (http://access.umn.edu/) for 50 of the largest metropolitan areas. In 2017, the average resident of the Los Angeles metropolitan area (Los Angeles and Orange County) could reach 33 times (3,300%) as many jobs in 30 minutes driving alone as by transit.[14]

(4) Actual transit access to jobs in much of the 5-county CSA, measured by commuting behavior, is considerably higher than that of Huntington Beach.

Among the City's commuters reaching work in less than 30 minutes, 133 times as many drive alone as use transit. This is five times the 5-county CSA rate (26x), eight times the Los Angeles County rate (17x) and more than double that of Orange County (59x) (Table 1-6).

[14] CNT and the University of Minnesota use different criteria for transit access.

Table 1-6
Commuters Reaching Jobs in Less than 30 Minutes (of all commuters)

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Huntington Beach	45.3%	0.3%	133
Los Angeles County	40.2%	2.4%	17
Orange County	49.4%	0.8%	59
Los Angeles-Long Beach CSA	43.6%	1.7%	26

Derived from American Community Survey, 2013/2017

Transit is far more competitive in other parts of the SCAG region than in the City. This is illustrated by ACS data for Public Use Microdata Areas (PUMAs).[15] In the SCAG PUMA with the lowest drive alone to transit ratio, only 2.3 times as many commuters drive alone as use transit (Los Angeles County [Central]--LA City [Central/Koreatown PUMA]) Huntington Beach's 133 drive alone to transit 30 minute commute ratio is 58 times that figure.

Among the nation's more than 2,300 PUMAs, the Los Angeles County [Central]--LA City [Central/Koreatown PUMA] had the 27th highest population density in 2013/2017. It also has the highest transit market share (27.3%) of any PUMA in the CSA. This PUMA also contains some of the most intense transit service in the SCAG region. The region's only station serving two fully grade separate subway lines is in the Los Angeles County [Central]--LA City [Central/Koreatown PUMA].

Another 17 PUMA's have 30-minute drive alone to transit commute ratios no greater than one-tenth that of Huntington Beach (Table 1-7).

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[15] PUMAs are analysis zones designated by the Census Bureau that divide the United States into areas of similar population, averaging 130,000. PUMAs are especially helpful for examining somewhat smaller area data within large jurisdictions, such as the cities of Los Angeles, Anaheim and Santa Ana.

Table 1-7
Local Areas (PUMAs) with Less than 1/10th Huntington Beach Drive Alone to Transit Commuting Ratio
Commuters Reaching Jobs in Less than 30 Minutes (of all commuters)

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Huntington Beach	45.3%	0.3%	133.2
Los Angeles County (Central)--LA City (Central/Koreatown) PUMA	25.3%	11.0%	2.3
Los Angeles County--LA City (East Central/Silver Lake, Echo Park & Westlake) PUMA	27.9%	11.5%	2.4
Los Angeles County (Central)--LA City (Southeast/East Vernon) PUMA	28.9%	9.5%	3.0
Los Angeles County--LA City (Central/Univ. of Southern California & Exposition Park) PUMA	22.8%	6.2%	3.7
Los Angeles County (Central)--LA City (East Central/Central City & Boyle Heights) PUMA	30.6%	7.4%	4.1
Los Angeles County (Central)--LA City (East Central/Hollywood) PUMA	31.7%	7.6%	4.2
Los Angeles County (Central)--Huntington Park City, Florence-Graham & Walnut Park PUMA	32.1%	4.4%	7.2
Los Angeles County (South Central)--LA City (South Central/Watts) PUMA	28.6%	3.8%	7.5
Los Angeles County (Central)--East Los Angeles PUMA	37.8%	4.4%	8.6
Los Angeles County (South)--Long Beach City (Southwest & Port) PUMA	36.5%	4.1%	8.8
Los Angeles County (North)--LA City (North Central/Mission Hills & Panorama City) PUMA	37.1%	4.1%	9.1
Los Angeles County--LA City (Mount Washington, Highland Park & Glassell Park) PUMA	35.3%	3.7%	9.6
Los Angeles County (Southeast)--Long Beach (Central) & Signal Hill Cities PUMA	40.5%	3.7%	11.0
Los Angeles County (South Central)--LA City (South Central/Westmont) PUMA	29.8%	2.7%	11.2
Los Angeles County (Northwest)--LA City (North Central/Van Nuys & North Sherman Oaks) PUMA	34.6%	2.9%	11.8
Los Angeles County (West Central)--LA City (West Central/Westwood & West Los Angeles) PUMA	45.5%	3.7%	12.4
Los Angeles County (West Central)--LA City (Central/Hancock Park & Mid-Wilshire) PUMA	40.7%	3.2%	12.7
Los Angeles County (Central)--LA City (Central/West Adams & Baldwin Hills) PUMA	34.2%	2.6%	13.2

Derived from American Community Survey, 2013/2017

B. Appeal Issue #2 – SCAG Incorrectly Projected Household Growth and Employable Population

1. Bases for Appeal:

a. Pursuant to California Government Code Section 65584.05(b)(1) SCAG failed to adequately consider the information regarding the City's existing and projected jobs and housing relationship.

b. Pursuant to California Government Code Section 65584.05(b)(2) SCAG failed to determine the City's share of the regional housing need in a manner that furthers and does not undermine the following objectives listed in Section 65584(d):

- Promoting socioeconomic equity and the achievement of the region's greenhouse gas reduction targets (Section 65584(d)(2))
- Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction (Section 65584(d)(3))

California Government Code 65584.01(a) uses a projection year as the basis for the development of housing need. SCAG defines the "projection period" as that period between July 1, 2021 and October 1, 2029. On that basis, SCAG should have limited its analysis to regional growth projections for that period. However, because SCAG's projections for the period ending in 2030 did not generate sufficient household formation to justify the HCD's allocation to the Southern California region, SCAG improperly introduced growth projections to 2045 in order to be able to reach "total housing need in excess of household growth…." In other words, as stated in SCAG's methodology, HCD's determination of 1,341,827 housing units needed between 2021 and 2029 exceeds SCAG's own projection of housing unit demand. SCAG appears to have determined that the only way to reconcile the disparity was to include projections to 2045. The basis for the methodology SCAG has implemented, therefore, is fundamentally flawed.

SCAG has used this flawed basis to differentiate between Projected Need and Existing Need. The Projected Need calculation is presented as that need for each jurisdiction for the planning period of 2021 to 2029. For the City, that calculation results in a RHNA allocation of 441 housing units, which is consistent with the projected household growth for the planning period. However, since the Projected Need calculations for all SCAG jurisdictions, calculated based on 2030 growth projections, did not add up to HCD's allocation of 1.3 million units, SCAG improperly determined that the difference between the HCD's allocation and the Projected Need should be assumed to be Existing Need. This backwards presumption, unsupported in the methodology, is that there are 836,857

households in the SCAG region that are currently unhoused. Further, in order to allocate this backwards-reasoned assumed Existing Need, and because SCAG's own growth forecasts did not support the HCD allocation, SCAG used growth projections all the way out to 2045. This presumption, especially as the basis for the calculation of the current and future regional housing needs for all SCAG jurisdictions, is unfounded and unsupported.

SCAG projected the City's household growth to reach 79,565 in 2030[16]. By 2045, there are expected to be 80,309 households in the City[17]. By substituting the 2045 household data for the period through 2030, the methodology over-estimates household growth in the planning period by 744 units, and population by 1,905.

In addition, the methodology bases Job Accessibility on total population, not on employable population. According to the US Census, 66.7% of the City's population is in the labor force (both employed and unemployed)[18]. The City will have a 2030 total population of 203,405. Its employable population will be 135,671. This population should have been the basis for job accessibility by population, not the inflated gross population.

The City's corrected dataset should reflect:

- Total 2030 Population: 203,405 (not 205,310 as shown in the Methodology Worksheet)
- Total 2030 Employable Population: 135,671 (not 205,310 as shown in the Methodology Worksheet)
- Total Job Accessibility by Population: 23,824 (not 36,052 as shown in the Methodology Worksheet)
- Existing Job Need: 3,673 (not 5,534 as shown in the Methodology Worksheet).

2. Requested Revision

On the basis of the above analysis, the requested reduction based on the inaccurate application of the household growth and employment population is a reduction of 1,861 units.

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[16] Draft RHNA Methodology Data Appendix, prepared by SCAG.
[17] Ibid.
[18] 2018 American Community Survey 5-Year Estimates Data Profiles, US Census Bureau

3. Statement as to why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584

The requested reduction is necessary to further the RHNA objectives of increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner; and promoting an improved intraregional relationship between jobs and housing.

The use of longer term projections results in an inequitable RHNA allocation because the data is so unreliable. This is illustrated by the downward revisions in state Department of Finance population forecasts. In 2007, the DOF projected a state population of 59.7 million by 2050. The DOF January 2020 revised projection is 44.9 million. This reduction of almost 15 million residents is more people than live in all but four states (California, Texas, Florida and New York).

The current 2045 DOF population projection for the six SCAG counties combined is 20.5 million, approximately 9 % below the SCAG figure for the same year (22.5 million), as indicated in the RHNA Allocation spreadsheet. Household projections generally also show the same pattern. Taking Los Angeles County as an example, in 2007, the ***DOF projected*** it would have ***13.1 million residents*** by 2050. The ***DOF's latest 2050 projection*** is ***10.1 million residents***, which is below the DOF's current estimate of10.3 million residents (indicating that population is projected to decrease).

The changing demographic trends in California make longer term projections particularly unreliable. To use them in calculating and allocating the Existing Need is arbitrary and illogical, resulting in RHNA allocations that are unreasonably high and inequitable. In addition, the use of 2045 projections is inconsistent with state law and the legislative intent.

C. Appeal Issue #3 – The SCAG allocation of the regional housing need fails to account for the low rate of housing overcrowding in the City

1. Bases for Appeal:

a. Pursuant to California Government Code Section 65584.05(b)(1) SCAG failed to adequately consider the information regarding the rate of overcrowding.

b. Pursuant to California Government Code Section 65584.05(b)(2) SCAG failed to determine the City's share of the regional housing need in a manner that furthers and does not undermine the following objectives listed in Section 65584(d):

- Promoting socioeconomic equity and the achievement of the region's greenhouse gas reduction targets (Section 65584(d)(2))
- Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction (Section 65584(d)(3))

In 2018, the Legislature required the addition of an overcrowding measure to the determination of housing need by HCD. Approximately 34% of the RHNA allocation for the SCAG region is attributable to the overcrowding measure. However, the SCAG RHNA methodology did not reflect the level of overcrowding in the City.

HCD describes the overcrowding adjustment as follows:

> Overcrowding Adjustment: In regions where overcrowding is greater than the U.S overcrowding rate of 3.35%, HCD applies an adjustment based on the amount the region's overcrowding rate (10.11%) exceeds the U.S. overcrowding rate (3.35%) based on the 2013-2017 5-year ACS data. For SCAG that difference is 6.76%.[19]

However, the SCAG allocation formula does not reflect the differences in overcrowding rates by jurisdiction. The City has a far lower overcrowding rate than the SCAG region, at 3.66%, which is little more than the US overcrowding rate of 3.35%, a difference of 0.31%. SCAG's failure to specifically adjust the RHNA allocation for overcrowding, effectively imposing a blanket allocation for overcrowding, applies the regional average excess overcrowding rate of 6.76% to the City. This is more than ***20 times the City's actual*** excess overcrowding rate.[20]

[19] Calculated from data in HCD Regional Housing Need Determination Letter, August 22, 2019.
[20] Note: By an alternative measure, which defines overcrowding based on multiple households occupying the same housing unit (additional households are called "subfamilies" (ACS 2013-2017 table C-11014)

2. Requested Revision

As noted, the Huntington Beach overcrowding rate (relative to the national rate) is considerably less than that of the SCAG region. Approximately 34% of the overall SCAG allocation is attributable the HCD overcrowding adjustment. At this rate, the overall Huntington Beach allocation includes 4,564 units due to the blanket application of the SCAG overcrowding adjustment. The Huntington Beach RHNA allocation should reflect an overcrowding adjustment of 0.31%, rather than the SCAG overall overcrowding adjustment of 6.76%, which results in a requested reduction of 4,354 units and an additional 2,074 units residual reduction. ***The total requested reduction due to inaccurate overcrowding rate application is 6,428.***

3. Statement as to why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584

As discussed, this revision is necessary to further the intent of the objectives listed in Government Code Section 65884 because the present allocation method undermines and does not promote socioeconomic equity" (Section 65584(d)(2)). The present allocation method also undermines and does not promote an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction (Section 65584(d)(3)).

The promotion of socioeconomic equity is undermined by failing to apply the City's actual overcrowding rate instead of the SCAG region average rate. Residents of the City will have considerably less economic opportunity due to the limited transit job access. As a result, low-income residents moving to Huntington Beach are likely to face significant impediments to socioeconomic advancement.

The higher allocation to Huntington Beach will undermine the intraregional relationship between jobs and housing because transit access is so limited. Conversely, the interregional relationship between jobs and housing would be promoted by allocating a smaller number of units to Huntington Beach.

In addition, SCAG's failure to adjust the RHNA Allocation for the actual level of overcrowding in the City undermines and does not promote important intentions of SCAG's *Connect SoCal 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy*, such as housing construction in transit rich areas (page 4), strategies that result in reduced demand for single occupancy vehicle use (page 10) and land use patterns that facilitate multimodal access to work (page 25).

Huntington Beach's overcrowding rate is 19% below the national average (3.66% compared to the US average of 3.26%).

Generally, the objectives of state law and SCAG's Sustainable Communities Strategy would be served by a larger share of solo drivers being attracted from their cars to utilize transit and other nonmotorized modes. Minimization of solo driving commutes requires considerably better transit job access. State and regional policies have been adopted to seek these objectives by constructing housing units close to jobs that can be filled by nearby resident workers.

Additionally, the same four justification assertions from the City's HQTA (Issue #1) are made in support of a revision to adjust for overcrowding rate to ensure that the RHNA allocation furthers the RHNA objectives in furthering socioeconomic equity and improving the intraregional relationship between jobs and housing. (Wendell Cox Expert Report – Attachment No. 2)

D. Appeal Issue #4 – The Final RHNA methodology does not address the housing needs generated by the presence of public or private universities in Huntington Beach.

1. Bases for Appeal:

> Pursuant to California Government Code Section 65584.05(b)(1) SCAG failed to adequately consider information submitted regarding the housing needs generated by the presence of a private university or a campus of the California State University or the University of California within any member jurisdiction.

The Final RHNA methodology[21] does not address the housing needs generated by the presence of public or private universities, which does not comply with the Government Code Section 65584.04(e)(9). SCAG's Executive Summary of the RHNA methodology indicates that "evaluation of survey responses that indicated a presence of a university within their boundaries, SCAG staff concludes that most housing needs related to university enrollment are addressed and met by dormitories provided by the institution both on- and off-campus." Additionally, some SCAG jurisdictions "have indicated outside of the survey that off-campus student housing is an important issue within their jurisdictions and are in dialogue with HCD to determine how this type of housing can be integrated into their local housing elements." SCAG ultimately recommends that "housing needs generated by a public or private university be addressed in the jurisdiction's housing element if it is applicable" because "this circumstance only applies to a handful of jurisdictions."

It must be noted that the SCAG survey sent to university jurisdictions and any communications from those jurisdictions about university housing "outside of the survey" is another example of illegal political manipulation of the RHNA process by Riverside and Los Angeles County. Prior to the November 7th Regional Council meeting, Mayor Bailey of Riverside repeatedly brought up concerns during public meeting discussions regarding university housing and its marked impact on Riverside's inability to meet its RHNA. Mayor Bailey suddenly ceased to bring up university housing at the November 7th meeting, likely as he was informed that the housing needs generated by universities would only ensure that Riverside's RHNA would increase to accommodate this real, quantifiable need for housing.

[21] Final RHNA methodology http://www.scag.ca.gov/programs/Documents/RHNA/SCAG-Final-RHNA-Methodology-030520.pdf

Additionally, SCAG's own conclusion notes that only most, not all housing needs related to university enrollment are addressed and met by dormitories provided by the institution both on- and off-campus. The topic of off-campus housing provided by each institution is a vital topic for the RHNA methodology. Many universities develop their own long range housing and expansion plans in order to define their growth within the campus and vicinity. For example, the UCLA Student Housing Master Plan[22] notes that between 2014-2019 their off-campus apartment inventory increased by 736 beds through university acquisition of existing housing units. Universities are removing existing housing units from the market available to the general population and reserving them solely for students.

Further, UCLA's 2018 Long Range Development Plan Amendment and Student Housing Projects SEIR[23] concludes the following:

> The current demand for housing on campus exceeds existing supply. Even with the additional beds from new developments, redevelopments, conversion of faculty buildings, and renovations, UCLA Housing is meeting current guarantees for undergraduate and transfer students by maintaining higher than desired triple occupancy percentages (putting three students in rooms designed for two students).

SCAG area universities are acquiring private market properties for student conversions and it is ***still not enough housing*** to meet the demand generated by their housing needs. Universities are contributing to an issue that is also included in the RHNA methodology – overcrowding. A university room actually designed for two students only counts for one person based on SCAG's persons per room analysis, and universities are actually housing up to three people per such room. UCLA's Student Housing Master Plan notes that "since the early 1990s, occupancy with triple rooms has exceeded 125 percent." Additionally, the California State University System Basic Needs Initiative[24] found that 10.9% of CSU students had experienced homelessness in the past 12 months. There is an increased demand for housing in university jurisdictions, which in turn increases price and overcrowding among students while simultaneously removing existing housing stock available to the local non-student population.

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[22] UCLA Student Housing Master Plan 2016-2026 http://wscuc.ucla.edu/wp-content/uploads/2019/01/C5_23_UCLA_Student_Housing_Master_Plan_2016-26.pdf

[23] UCLA Long Range Development Plan Amendment and Student Housing Projects SEIR (2018) http://www.capitalprograms.ucla.edu/content/PDF/UCLA_LRDP_Amendment_Final_SEIR-January2018.pdf

[24] California State University System Basic Needs Initiative https://www2.calstate.edu/impact-of-the-csu/student-success/basic-needs-initiative/Documents/BasicNeedsStudy_phaseII_withAccessibilityComments.pdf

It is clear that the housing needs generated by universities in the SCAG region have not been sufficiently considered in previous housing element cycles and have not been considered in the 6th Cycle RHNA, either. An accurate quantitative analysis of housing needs within SCAG university jurisdictions is necessary to affirmatively further fair housing by promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets. Failure to address these needs does not further the five statutory requirements of RHNA, does not comply with the statutory requirements of the RHNA methodology, and does not comply with statutes requiring Connect SoCal and RHNA to be consistent (Government Code Section 65080(b)(2)(B) and Section 65584.04(m)).

2. Requested Revision

The total requested reduction due to failure to consider the housing needs of universities is 360 units.

3. Statement as to why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584.

The RHNA methodology completely ignores its statutory requirement to consider housing needs for universities in compliance with Government Code Section 65584.04(e)(9). Approximately 14% of SCAG's jurisdictions (27 cities out of 197 jurisdictions) have a public or private university presence, which is much greater than a "handful" as characterized by the SCAG Executive Summary. This assumption completely discounts the impact placed on specific jurisdictions by State schools, and improperly spreads the impact to all SCAG jurisdictions.

In order to determine if SCAG's assumptions were valid, the City commissioned an analysis of the published off-campus demand for housing for 13 total University of California and California State University campuses within the SCAG region (Attachment No. 16 – Terra Nova Planning and Research Inc. Memorandum). In order to analyze the future demand for off-campus housing, each school's planning documents were collected and analyzed. Once the total future growth patterns and need for housing was determined, the demand for the period from 2020 to 2030 was developed. The analysis found that a total of 27,826 students will require off-campus housing in the region within these two public university systems by 2030. This represents 2.7% of the total RHNA for the planning period. Since this impact has been spread across the entire SCAG jurisdiction, rather than assigned to those jurisdictions who will be impacted, Huntington Beach's total RHNA should be reduced by 2.7%, (360 units). This reduction is necessary to ensure that RHNA objectives to increase the housing supply and promote intraregional jobs/housing relationship are furthered.

E. Appeal Issue #5 – SCAG failed to consider the impact of sea level rise, planning for coastal inundation and FEMA designated flood zones when allocating RHNA to the City.

1. Bases for Appeal:

a. Pursuant to California Government Code Section 65584.04(e)(2)(B), SCAG failed to adequately consider the City's availability of land suitable for urban development or for conversion to residential use, the availability of underutilized land, and opportunities for infill development and increased residential densities. The determination of available land suitable for urban development may exclude lands where the Federal Emergency Management Agency (FEMA) or the Department of Water Resources has determined that the flood management infrastructure designed to protect that land is not adequate to avoid the risk of flooding.

b. Pursuant to California Government Code Section 65584.05(b)(1) SCAG failed to adequately consider the information the City of Huntington Beach submitted to address existing or projected jobs housing balance and the region's greenhouse gas emissions targets.

c. Pursuant to California Government Code Section 65584.05(b)(2) SCAG failed to determine the City's share of the regional housing need in a manner that furthers and does not undermine the following objectives listed in Section 65584(d):Promoting socioeconomic equity and the achievement of the region's greenhouse gas reduction targets (Section 65584(d)(2))

Sea Level Rise

The State of California is highly concerned with the impact of sea level rise and planning for coastal inundation. The State's Ocean Protection Council adopted its first sea level rise guidance document in March 2013. The California Coastal Commission (CCC) has adopted multiple guidance documents since 2015 regarding climate change, sea level rise, and coastal inundation utilizing the best available data. At their May 13, 2020 meeting, the CCC adopted a document titled, "Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action[25]." This document is a tool for aligned,

[25] https://documents.coastal.ca.gov/reports/2020/5/W6g/w6g-5-2020-report.pdf

https://documents.coastal.ca.gov/reports/2020/5/W6g/w6g-5-2020-exhibits.pdf

consistent state agency action in planning and preparing for a minimum baseline 3.5 feet of sea level rise statewide. The principles are intended to guide unified, effective action towards sea level rise resilience for California's coastal communities, ecosystems, and economies across state agencies in order to improve effectiveness in addressing this immediate challenge.

The development of the RHNA methodology necessitates contributions from all relevant stakeholders throughout the SCAG region. The CCC has not been engaged in the public review process. The CCC is a key stakeholder for jurisdictions in the coastal zone across Ventura, Los Angeles, and Orange counties. Development proposals in the coastal zone are subject to final approval of the CCC even if the jurisdiction has a certified Local Coastal Program. The CCC has the ability to appeal a City's approval of any project within the coastal zone and conduct their own review of the project, which may ultimately result in project disapproval beyond control of the City. Rezoning and associated land use changes required to adequately plan for RHNA allocations will necessitate a Local Coastal Program Amendment for all jurisdictions with certified Local Coastal Programs. Coastal jurisdictions may adopt land use changes to comply with RHNA requirements, but there is no guarantee that those changes will be approved by the CCC.

The authority of the CCC to make decisions based on sea level rise is specifically noted in Public Resources Code Section 30006.5 Legislative findings and declarations; technical advice and recommendations:

> "The Legislature further finds and declares that sound and timely scientific recommendations are necessary for many coastal planning, conservation, and development decisions and that the commission should, in addition to developing its own expertise in significant applicable fields of science, interact with members of the scientific and academic communities in the social, physical, and natural sciences so that the commission may receive technical advice and recommendations with regard to its decision making, especially with regard to issues such as coastal erosion and geology, marine biodiversity, wetland restoration, the question of sea level rise, desalination plants, and the cumulative impact of coastal zone developments."

Further, the CCC's 2018 Sea Level Rise Policy Guidance for development in areas subject to sea level rise requires coastal cities to complete Local Coastal Program Updates/Amendments [26] (which will be necessary as a result of RHNA) to do the following:

---

[26] CCC Sea Level Rise Policy Guidance Chapter 5: Addressing Sea Level Rise in Local Coastal Programs

https://documents.coastal.ca.gov/assets/slr/guidance/2018/5_Ch5_2018AdoptedSLRGuidanceUpdate.pdf

> It is likely that policies throughout the LCP will need to be revised or developed to address impacts from sea level rise. Two major types of updates to the LCP will likely be needed to address sea level rise:
>
> 2. Updated land use and zoning designations, as well as programs to facilitate adaptive community responses, to reduce risks to specific coastal resources. For example, the LCP could modify the zoning of undeveloped land located upland of wetlands from residential to open space in order to provide the opportunity for wetlands to migrate inland, and protect wetlands for the future.

The CCC Guidelines specifically recommend rezoning residential land to open space in order to accommodate managed retreat of areas subject to sea level rise. The associated challenges the City, and other coastal cities, faces result in vast amounts of land that are not suitable or safe for any type of development with permanent structures, including residences.

To further demonstrate the significance of sea level rise in land use planning, Chapter 7 of the CCC Guidelines[27] includes specific adaptation strategies to consider in the planning and development review processes. These strategies include "gradually removing and relocating existing development" within vulnerable areas. This is a challenge unique to coastal cities, which the RHNA Allocation failed to include for analysis. The adaptation strategies also include the following, which will impact all types of development other than protected open space in areas vulnerable to sea level rise, which will have a significant negative impact on the SCAG region's ability to achieve GHG emission reduction goals:

> A.4 Limit new development in hazardous areas: Restrict or limit construction of new development in zones or overlay areas that have been identified or designated as hazardous areas to avoid or minimize impacts to coastal resources and property from sea level rise impacts.
>
> A.7 Limit subdivisions in areas vulnerable to sea level rise: Prohibit any new land divisions, including subdivisions, lot splits, lot line adjustments, and/or certificates of compliance that create new beachfront or blufftop lots unless the lots can meet specific criteria that ensure that when the lots are developed, the development will not be exposed to hazards or pose any risks to protection of coastal resources.
>
> A.9a Develop a plan to remove or relocate structures that become threatened: Require new development authorized through a CDP that is

[27] CCC Sea Level Rise Policy Guidance Chapter 7: Adaptation Strategies
https://documents.coastal.ca.gov/assets/slr/guidance/2018/7_Ch7_2018AdoptedSLRGuidanceUpdate.pdf

subject to wave action, erosion, or other hazards to be removed or relocated if it becomes threatened in the future.

A.10 Ensure that current and future risks are assumed by the property owner: New development should be undertaken in such a way that the consequences from development in high hazard areas will not be passed on to public or coastal resources. Recognize that over time, sea level rise will cause the public trust boundary to move inland. Establish standards, permit conditions, and deed restrictions that ensure that current and future risks are assumed by the property owner. Consider policies that would encourage or require property owners to set aside money, such as in the form of a bond, as a contingency if it becomes necessary to modify, relocate, or remove development that becomes threatened in the future.

Goal: Encourage the removal of development that is threatened by sea level rise

A.15 Use Rolling Easements: The term "rolling easement" refers to the policy or policies intended to allow coastal lands and habitats including beaches and wetlands to migrate landward over time as the mean high tide line and public trust boundary moves inland with sea level rise. Such policies often restrict the use of shoreline protective structures (such as the "no future seawall" limitation sometimes used by the Commission), limit new development, and encourage the removal of structures that are seaward (or become seaward over time) of a designated boundary. This boundary may be designated based on such variables as the mean high tide line, dune vegetation line, or other dynamic line or legal requirement. Despite the term "rolling easements," not all of the strategies related to rolling easements actually involve the use of recorded easements.

A.18 Acquisition and buyout programs: Acquisition includes the acquiring of land from the individual landowner(s). Structures are typically demolished or relocated, the property is restored, and future development on the land is restricted. Such a program is often used in combination with a TDR program that can provide incentives for relocation. Undeveloped lands are conserved as open space or public parks. LCPs can include policies to encourage the local government to establish an acquisition plan or buyout program to acquire property at risk from flooding or other hazards.

The CCC is actively implementing these guidelines. For example, a property within the City's certified LCP has a land use designation of medium density residential. The property owner submitted an entitlement application to the City to permit the development of 48 residential condominiums. This included four deed-restricted moderate income ownership units and payment of approximately $200,000 in fees dedicated towards development of affordable units in the City. The City coordinated a meeting with the

applicant and the CCC in an effort to bring new housing stock, including affordable housing opportunities within 800 feet of the state beach, to the City. The CCC explicitly stated they would not support residential development on this property due to hazard risks from sea level rise even though the existing, approved land use designation is medium density residential. The applicant has subsequently withdrawn their entitlement application. The applicant is now selling the property, which will likely be developed with a commercial parking lot.

SCAG's RHNA methodology has not addressed the impact of sea level rise, coastal inundation, and other coastal issues which affect the ability of coastal jurisdictions to plan for their RHNA Allocations. SCAG's 2017 RTP Data Map Book for Huntington Beach includes an exhibit depicting "Sea Level Rise Impacted Areas (2 feet) 2040 Scenario in Orange County[28]." Nearly all of the lowest lying land in Orange County is within the City and its annexation of Sunset Beach; a small portion affects Newport Beach and Seal Beach. The data from the Map Book does not utilize the best available science/data as the State has since revised SLR analysis to plan for a baseline of 3.5 feet of SLR statewide. It must also be noted that the Map Book contains these exhibits and information regarding SLR, but SCAG does not utilize them for any analysis within Connect SoCal or RHNA.

The Map Book's exhibit for Potential Infill Parcels in City of Huntington Beach also contains errors that do not affirmatively further fair housing. Notably, this exhibit depicts an existing 265 unit mobile home park as a refill parcel (north of PCH and east of Beach Blvd. – 80 Huntington St.). SCAG's own documents undermine the statutory objectives to affirmatively further fair housing by designating a mobile home park, one of the most affordable existing housing developments in the City's coastal zone, as an area desirable for redevelopment. This is another example of the unattainable goals set by SCAG and competing interests created by RHNA that result in a RHNA allocation that is unrealistic for the City to achieve. It should be noted that the City provided input to delete this map from the map data book and use the City's own GIS files for vacant properties.

SCAG fails to address this critical information from the CCC. Coastal cities are explicitly unable to accommodate ***any*** development, especially residential development as it is specifically vulnerable and unable to adapt to managed retreat, within areas of sea level rise. The CCC expects all Local Coastal Programs to recognize that lands adjacent to the Pacific Ocean and harbors will extend inward as a direct result of sea level rise[29]. This information alone indicates that coastal cities will lose land available for development (and land that is currently developed) to the public trust boundary. The CCC recommends that coastal cities purchase land within sea level rise areas and remove all associated structures to conserve the land as open space.

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[28] http://scagrtpscs.net/Documents/DataMapBooks/HuntingtonBeach.pdf

[29] California Coastal Commission Sea Level Rise Policy Guidance
https://documents.coastal.ca.gov/assets/slr/guidance/2018/0_Full_2018AdoptedSLRGuidanceUpdate.pdf

The development challenges faced by coastal cities due to sea level rise are arbitrarily and capriciously ignored by SCAG throughout the RHNA and Connect SoCal process to accommodate political will from other areas of the SCAG region. Connect Socal and its PEIR characterize coastal cities as opposed to new development due to "community resistance to new housing, especially medium and high density projects." In order to serve political will in the LA and Inland areas of SCAG, the RTP/SCS and RHNA purposefully do not acknowledge ***any relevant information*** regarding the significant negative environmental impacts and CCC prohibition on coastal development other than protected open space within areas subject to sea level rise, ***including SCAG's own Data Map Book exhibits produced in 2017***. Excluding this pertinent analysis from the RHNA and RTP/SCS process only serves to enable Connect Socal and RHNA to arbitrarily and capriciously achieve on paper Governor Newsom's admitted "stretch goal" to construct 3.5 million units in California by 2025.

All areas within the SCAG region that are subject to sea level rise, including the City, must be accurately identified in Connect SoCal and RHNA, removed from the model scenarios in each, and also excluded from the RHNA calculation (including but not limited to job accessibility, HQTA proximity, reallocated residual need, and additional social equity adjustments) in order for Connect SoCal and RHNA to be consistent (Government Code Section 65080(b)(2)(B) and Section 65584.04(m)).

FEMA Designated Areas of Flood Hazard Risk

The RHNA allocation does not include any analysis of land areas located in or near a 100-year flood hazard zone. Approximately 2.4 square miles of land within Huntington Beach is within a FEMA designated 100-year flood hazard zone[30]. Exponentially more area of land within the City is located near a 100-year flood hazard zone in MM HYD-4 of Connect SoCal's PEIR. The City's land that is within or near a 100-year flood hazard zone must be excluded from the RHNA calculation (including but not limited to job accessibility, HQTA proximity, reallocated residual need, and additional social equity adjustments).

The analysis presented above regarding sea level rise and FEMA flood zone areas demonstrates the environmental challenges faced by the City. These challenges result in the City's inability to accommodate any type of development other than protected open space in these areas, which will have a significant negative impact on the region's ability to achieve statewide GHG emission reduction goals.

2. Requested Revision

Residential uses in the coastal zone represent 34% of the land area in the coastal zone, 15% of the total residential acreage in the City, and 6.5% of the total land area of the City. ***The total requested reduction based on failure to account for areas unavailable due***

[30] https://msc.fema.gov/portal/search?AddressQuery=huntington%20beach%2C%20ca#searchresultsanchor

to hazards from sea level rise impacts is 866 units (6.5% of the draft RHNA allocation).

Approximately 2.4 square miles of land within the City is located in a FEMA-designated flood zone. This equates to approximately 8.5% of the City's total land area. ***The total requested reduction based on failure to account for areas unavailable due to hazards from FEMA designated flood zones is 1,134 units (8.5% of the draft RHNA allocation).***

3. Statement as to why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584

As discussed, this revision is necessary to further the intent of the objectives listed in Government Code Section 65884 because the present allocation method undermines and does not promote "***infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.***" (Section 65584(d)(2) (emphasis added).) The present allocation method also undermines and does not promote an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction (Section 65584(d)(3)).

The promotion of socioeconomic equity is undermined by failing to correctly consider ***the availability of land suitable for urban development or for conversion to residential use, the availability of underutilized land, and opportunities for infill development and increased residential densities*** in compliance with Government Code Section 65584.04(e)(2)(B), because SCAG has not considered areas subject to sea level rise, FEMA designated flood zones, or areas of tsunami hazard. The City has considerably less land available for urban development than analyzed in the RHNA process, resulting in reduced economic opportunity due to the City's limited ability to increase the housing supply and the mix of housing types, tenure, and affordability. The RHNA Allocation does not further an increase in housing supply in all cities and counties within the region ***in an equitable manner*** in that it unreasonably allocates units to the City that would either never be approved due to CCC actions or put new residents (including lower-income peoples and at-risk populations) in an substantial physical and economic danger due to environmental hazards.

F. Appeal Issue #6 – Residual Adjustment

1. Bases for Appeal

The "Residual Adjustment" is not found in State law, and is therefore an illegal and arbitrary and capricious methodology. The SCAG residual adjustment is so high that it materially undermines and fails to promote other substantial statutory objectives, which may be of greater importance given state and regional policy priorities (Wendell Cox Expert Report – Attachment No. 2).

Approximately one-third (32%) of the City RHNA Allocation is attributable to the SCAG residual adjustment (redistribution methodology), comprising 4,303 of the 13,337 units allocated to the City. Subdivision (d)(2) of Section 65584 requires a RHNA allocation to further an objective of "socioeconomic equity," addressing fundamental human economic needs and upward mobility. By basing such a large portion of the RHNA allocation to lower "the proportion of housing need when a jurisdiction already has a disproportionately high share of households in that income category..." the potential to promote "socioeconomic equity" is materially diminished. The methodology substantially increases the City RHNA Allocation irrespective of, and detrimental to, the City's ability to promote socioeconomic equity, in comparison to other jurisdictions.

The promotion of socioeconomic equity is undermined by failing to apply the City's overcrowding rate instead of the SCAG region average rate. Under the current City RHNA Allocation, residents will have considerably less economic opportunity due to limited transit job access, in both absolute and relative terms. As a result, low-income residents moving to the City are likely to face significant impediments to socioeconomic advancement. The higher allocation to the City will undermine the intraregional relationship between jobs and housing because transit access is so limited.

Santa Ana has one of the best Jobs Accessibility and HQTA shares of all the Orange County cities. Santa Ana's share of the regional HQTA 2045 population is 3.11% and the share of job accessibility is 2.66%, which represent the highest and second highest shares in Orange County respectively. As such, they should have a much higher RHNA allocation in order to truly reflect the statutory objectives. According to the current SCAG methodology, Santa Ana should have an additional 23,168 units. However, Santa Ana's RHNA allocation is arbitrarily capped at 3,087 due to its reported 2045 household growth. Because they are identified as a disadvantaged community, their share of the RHNA allocation is redistributed within the County to cities, such as the City, with significantly worse transit and jobs access. This is not only contrary to the RHNA objectives, it conflicts with many of the preferred policies of the state, California Air Resources Board, HCD, and the recently approved Connect SoCal (2020 RTP/SCS). This arbitrary household growth cap is based on Santa Ana's self-reported growth, which is outdated and misleading. According to the City of Santa Ana website, over 10,000 units are either under construction, approved or currently under review and should be counted toward their 2045

household growth. This also doesn't include additional growth that would be permitted under their General Plan Update, which is the final phases of approva.

A more modest residual adjustment allocation to the City would better promote socioeconomic equity by taking into account the capacity of the City's transit job access to support residents' efforts to obtain jobs and socioeconomic security and advancement, while still easing the challenges faced by disadvantaged cities. For example, a residual adjustment allocation one-fifth that of the current method to jurisdictions with richer transit and jobs environments could benefit a large number of households by placing housing where the opportunities for upward mobility are better, while moderating the allocations for disadvantaged cities. (Expert report Wendell Cox)

2. Requested Revision

The total reduction based on the suggested residual adjustment is 3,442 units.

3. Statement as to why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584.

As discussed, this revision is necessary to further the intent of the objectives listed in Government Code Section 65884 because the present allocation method undermines and does not promote "***infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080***" (Section 65584(d)(2) (emphasis added).) The present allocation method also undermines and does not promote an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction (Section 65584(d)(3)).

CITY OF HUNTINGTON BEACH
PROPOSED APPEALS TO CITY ALLOCATIONS
IN THE
REGIONAL HOUSING NEEDS ASSESSMENT ALLOCATION
TO THE
SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS (SCAG)

Report prepared for the
City of Huntington Beach
By Wendell Cox

October 20, 2020

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Proposed Appeal Requests (Draft)
Prepared for the City of Huntington Beach

October 20, 2020

Introduction

This report includes three proposed Regional Housing Needs Assessment (RHNA) Sixth Cycle Appeal requests from the city of Huntington Beach to the Southern California Association of Governments (SCAG). The calculations for estimates in the appeal requests are in the Appendix: Calculation of Estimates.

Issue #1: Over-Estimation of HQTA Allocation

Part of the SCAG RHNA allocation includes the extent of high quality transit areas (HQTAs) in a city. SCAG defines its HQTAs based on the state high quality transit corridor (HQTC) definition.[1] The SCAG HQTC based Huntington Beach allocation is higher than appropriate.

The higher number of units incorrectly allocated to Huntington Beach will also have related consequences, because the city has more limited transit job access measures than other jurisdictions and areas of Orange County, Los Angeles County and the 5-county Los Angeles-Long Beach combined statistical area (CSA).[2]

Approximately 23% of the Huntington Beach RHNA allocation is attributable to the HQTA population, which comprises 3,059 of the 13,337 units.

Principal Justification: A high-quality transit corridor (HQTC) is defined as a corridor with fixed route bus service containing service intervals no longer than 15 minutes during peak commute hours (California Public Resources Code Section 21155(b)).

[1] SCAG Meeting of the Technical Working Group, "High Quality Transit Corridors and Major Transit Stops," (Agenda item 1-d) http://www.scag.ca.gov/committees/CommitteeDocLibrary/twg101619fullagn.pdf.
[2] This analysis uses the Los Angeles-Long Beach combined statistical area (the SCAG area, without Imperial County), which is the largest labor market definition by the U.S. Office of Management and Budget. As a labor market area, the CSA is also a housing market.

The population within the HQTA is a principal factor used to determine the city's RHNA existing need. Part of the RHNA Allocation for the Huntington Beach is based upon an assumption that 36.43% of the population of will be in a HQTA in 2045.

The SCAG RHNA Allocation to the city of Huntington Beach assumes that the entirety of OCTA Route 29 is a high-quality transit corridor (HQTC). However, as of the last pre-Covid bus timetable, Route 29 did not meet the criteria for an HQTA south of Heil Avenue.

According to SCAG:[3]

> *Peak Period Bus Service Interval (Frequency)*
>
> *To determine whether the peak commute bus service interval (also called frequency) meets the statutory threshold of 15 minutes or less, SCAG uses the peak period defined in its regional travel demand model. The morning peak is defined as 6am to 9am and the afternoon peak is defined as 3pm to 7pm. A transit operator may have a different, board-adopted or de facto peak period; in such cases SCAG will accept requests to use operator-specific peak-hour periods on a case-by-case basis.*
>
> *SCAG uses the total population of bus trips during the combined seven-hour morning and afternoon peak periods to determine the peak frequency at a bus stop. This is done for each bus route, by direction. The peak frequency is calculated by dividing 420 minutes (the sevenhour peak converted to minutes) by the total peak bus trips. This average frequency should be 15 minutes or less in order to qualify. The threshold is strict, at 15.0 minutes.*

Route 29 is included in the RHNA as an HQTA by SCAG. Route 29 has been indicated as an HQTA in the "2018 OCTA Long Range Transportation Plan" in Figure 4.10 and reaffirmed by SCAG in response to a request for correction by the City of Huntington Beach.[4]

However, Route 29 fails to meet the "strict" service frequency threshold defined above, as of the February 9, 2020 (pre-Covid) bus schedule (Table 1-1 and Exhibit). Route 29 does not meet the HQTA service frequency threshold in any of the peak periods at two bus stops in Huntington Beach, south of Heil Avenue.[5]The bus stops are the southern terminus, at Pacific Coast Highway/First Street and Beach Boulevard/ Garfield.

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[3] SCAG Meeting of the Technical Working Group, "High Quality Transit Corridors and Major Transit Stops," (Agenda item 1-d) http://www.scag.ca.gov/committees/CommitteeDocLibrary/twg101619fullagn.pdf

[4] SCAG, "Connect SoCal: Community Input: Public Participation and Consultation: Master Response No. 1: Regional Housing Needs Assessment," page 92, https://www.connectsocal.org/Documents/Proposed/pfConnectSoCal_Public-Participation-Appendix-2.pdf.

[5] Peak periods are defined by SCAG as 6:00 am to 9:00 am and 3:00 pm to 7:00 pm. SCAG, "Connect SoCal: Community Input: Public Participation and Consultation: Master Response No. 1: Regional Housing Needs Assessment," page 92, https://www.connectsocal.org/Documents/Proposed/pfConnectSoCal_Public-Participation-Appendix-2.pdf.http://www.scag.ca.gov/committees/CommitteeDocLibrary/twg101619fullagn.pdf

Table 1-1
Route 29 Service Frequencies in Minutes During Peak Periods (Weekdays)
Huntington Park Area Bus Stops
February 9, 2020 Schedule

	Northbound		Southbound	
	AM (6-9)	PM (3-7)	AM (6-9)	PM (3-7)
PCH-1st	20.0	21.8	20.0	20.0
Beach Bl./Garfield	20.0	20.0	20.0	20.0

Note: Service frequency must meet the statutory frequency of 15 minutes or less (see text)

The result is that the area from Heil Avenue south to the southern route terminal at Pacific Coast Highway and First in Huntington Beach is wrongly designated as an HQTA. North of Heil Avenue, Beach Boulevard is considered an HQTA because Routes 66 and 70 are defined as HQTAs.

Finally, the OCTA "2018 Long Range Transportation Plan" Figure 4.1 indicates that a service reduction is recommended for Route 29.

In short, Route 29 in the city of Huntington Beach does not qualify as an HQTA south of Heil Avenue. As a result, the HQTA designation is incorrect and should be reversed.

Related Consequences: The following factors undermine the objectives above, as follows:

The promotion of socioeconomic equity is undermined by the overestimate of residents in HQTAs, which results in a higher RHNA allocation to the city of Huntington Beach.

Residents of the new Huntington Beach housing will have considerably less economic opportunity due to the limited transit job access. As a result, low-income residents moving to Huntington Beach are likely to face significant impediments to socioeconomic advancement.

The higher allocation to Huntington Beach will undermine the intraregional relationship between jobs and housing because transit access is so limited. Conversely, the interregional relationship between jobs and housing would be promoted by allocating a smaller number of units to Huntington Beach.

Consistent with trends already evident in research prepared for SCAG (below[6]), the limited transit job access from Huntington Beach is likely to create incentives to workers to purchase cars. More often than not, this is likely to mean solo commuting by car and higher commuting expenses..

The longer transit commutes could significantly reduce the incentive for some potential workers to seek employment.

The Importance of Short Transit Commutes: Relatively short commute times are crucial for transit to maintain its market share. In the United States, the average drive alone time is less than 30 minutes and is 26.8 minutes in Orange County. By comparison, transit commute times average 53.6 minutes[7] in Orange County, nearly double the drive alone time.

Around the country, a 30-minute standard is increasingly being used to evaluate transit and automobile commuting. SCAG uses a 30-minute standard for auto trips, though uses 45-minutes for transit trips in its RHNA allocation. The Puget Sound Regional Council (Seattle area) uses a 30-minute standard for both auto and transit trips. The Center for Neighborhood Technology (CNT) publishes comprehensive 30-minute transit commute data within many metropolitan areas, including estimates from virtually any address (below). The University of Minnesota Accessibility Observatory publishes 30-minute transit and car job access estimates for 50 of the nation's largest metropolitan areas (below).

As the data below indicates, access to jobs by transit tends to be considerably less than by driving alone. For RHNA to encourage transit commuting rather than driving alone, affordable housing needs to be built in jobs-rich areas, where transit can be more competitive with the auto.

However, the transit trends in the SCAG region are working against any such policy objective. Low-income workers are buying cars, and they are abandoning transit.

A SCAG sponsored research report noted:[8]

> "Driving is relatively easy, while moving around by means other than driving is not. These circumstances give people strong economic and social incentives to acquire cars, and — once they have cars — to drive more and ride transit less."

With its below average transit job access, residents of the allocated housing are likely to have cars or will have significant incentive to obtain vehicles improve to their employment prospects and standards of living.

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[6]Michael Manville, Bryan Taylor and Evelyn Blumenberg, "Falling Transit Ridership: California and Southern California," January 2018. https://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf.

[7] Derived from American Community Survey, 2013/2017.

[8]Michael Manville, Bryan Taylor and Evelyn Blumenberg, "Falling Transit Ridership: California and Southern California," January 2018. https://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf.

Assertions

The following facts are asserted in support of the appeal request:

(1) Lower Income Worker Transit Commuting is Declining

Low income residents are far more likely to drive alone than to commute by transit and this is becoming increasingly so. In Orange County, workers with earnings below the poverty line are 12 times as likely to drive alone than to commute by transit. In the last seven years (2006/2010) to 2013/2017) transit commuting by workers below the poverty line has decreased by 41%. By comparison, in Los Angeles County, below poverty line commuters are only four times as likely to drive alone, while in the 5-county CSA workers below the poverty line are six times as likely to drive alone (Table 1-2). A similar downward trend in low-income commuting is evident in both Los Angeles County and the CSA (Figure 1-1).

The very demographic that is the primary target of affordable housing under RHNA drives alone at a rate similar to that of all workers and is increasingly abandoning transit.

Table 1-2
Commuting by Workers Earning Less than 100% of the Poverty Line

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Los Angeles County	58.8%	14.4%	4
Orange County	68.2%	5.9%	12
Los Angeles-Long Beach CSA	62.2%	10.7%	6

Derived from American Community Survey, 2013/2017

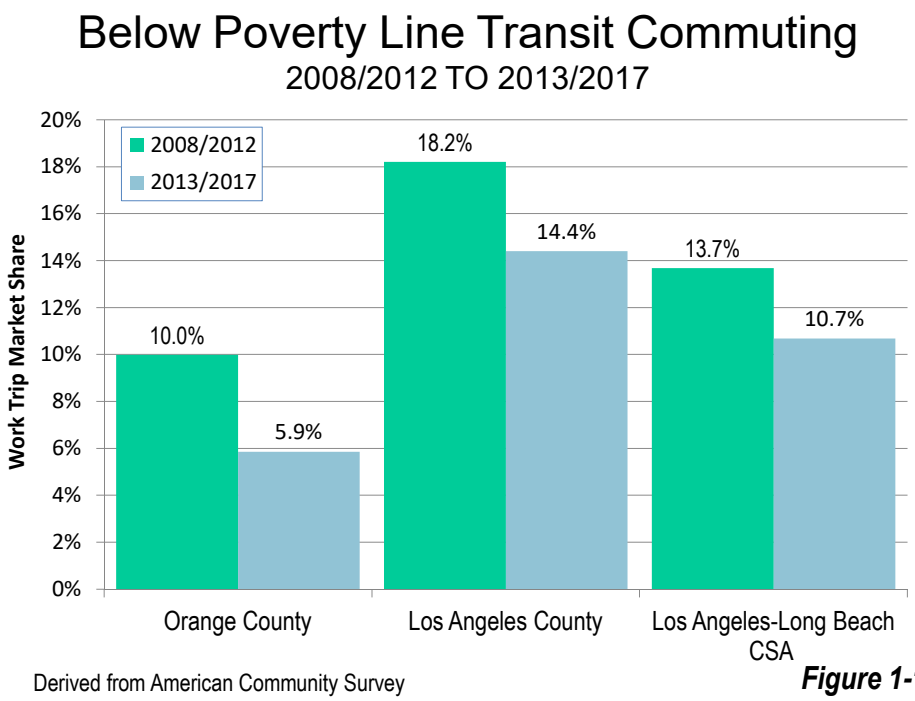


Figure 1-1

(2) Huntington Beach residents are far more likely to drive alone than to use transit.

Among Huntington Beach residents, driving alone accounts for 80% of commuting, while transit's market share (1.1%) is less than one half that of Orange County (2.3%). About 75 times (7,500%) as many workers from Huntington Beach drive alone as use transit. This is more than twice the rate of Orange County (36) and more than six times the rate of Los Angeles County (12). The drive alone to transit ratio in Huntington Beach is also and well above that of the five-county CSA average of 57 times (Table 1-3).

Table 1-3
Driving Alone & Transit Commuting: 2013/2017

	Drive Alone	Transit	Drive Alone times Transit
Huntington Beach	79.7%	1.1%	75
Los Angeles County	73.7%	6.3%	12
Orange County	78.6%	2.2%	36
Los Angeles-Long Beach CSA	77.2%	1.3%	57

Derived from American Community Survey, 2013/2017

Further, bus ridership is declining in Orange County. Orange County Transportation Authority bus ridership dropped 46 percent, from 68.9 million in 2008 to 37.3 million in 2019.[9] The COVID-19 pandemic has led to even greater ridership losses and uncertainty with respect to when or even if, ridership will return to previous levels. It is inconceivable that there will be a sufficient increase in Huntington Beach transit service to attract a materially larger share of workers.

(2) 30-minute transit access to jobs from Huntington Beach is materially less than the CSA, Los Angeles County and Orange County.

Estimates of 30-minute transit jobs access are reported by the Alltransit.cnt.org website, sponsored by the Center for Neighborhood Technology (CNT). Estimates are provided at the metropolitan, county, and city levels for much of the United States and specific street addresses inquiries are available.

Alltransit.cnt.org data indicates that transit employment access from Huntington Beach is far below that of Orange County, Los Angeles County and a number of constituent jurisdictions (Table 1-4).[10]

- Approximately 134,000 jobs, overall, can be reached by transit within 30 minutes from Huntington Beach. By comparison, 30-minute job access was 2.4 times as high in Los Angeles County (322,000) and 1.3 times as high, on average, in Orange County (173,000). On average 217,000 jobs can be reached by transit within the SCAG region, 1.6 times that of Huntington Beach.

- Approximately 40,000 jobs requiring no more than a high school education were accessible by transit in 30 minutes from Huntington Beach. By comparison, 30-minute job access was 2.4 times as high in Los Angeles County (97,000) 1.3 times as high, in Orange County (52,000) and 1.6 times as high overall in the SCAG region.

Table 1-4
30-Minute Transit Access to Jobs (Average Household)

	All Jobs	Jobs Requiring High School Education or Less
Huntington Beach	133,743	39,989
Los Angeles County	321,664	96,821
Orange County	172,595	51,261
SCAG Region	216,605	65,198

Source: Alltransit.cnt.org

[9] From American Public Transportation Association Fourth Quarter Ridership Reports (https://www.apta.com/wp-content/uploads/Resources/resources/statistics/Documents/Ridership/2008_q4_ridership_APTA.pdf and https://www.apta.com/wp-content/uploads/2019-Q4-Ridership-APTA.pdf).
[10] Center for Neighborhood Technology, *All Transit,* https://alltransit.cnt.org/, Data downloaded October 11, 2019.

30-minute transit access is even less in Huntington Beach compared to jobs rich areas, especially in central Los Angeles County. Examples are indicated in Table 1-5. This is largely due to the higher population density and proximity to the most transit oriented major job center in the SCAG region (downtown Los Angeles).

- In three of the areas, near the densest employment center in the CSA, where much of the regional transit system converges (downtown Los Angeles), more than 1,000,000 jobs can be accessed in 30-minutes, This is between eight and nine times the transit access from Huntington Beach. Residents of a number of other areas have 30-minute transit access to more than 500,000 jobs, which is far greater than Huntington Beach transit access of 134,000.

- In these three areas, more than 330,000 jobs requiring a high school education or less can be accessed in 30-minutes by households, which is from 8.5 to 9.2 times the transit access from Huntington Beach. Residents of a number of other areas have 30-minute transit access to more than 150,000 jobs, which is far greater than Huntington Beach transit access of 40,000 (Table 1-5).

Table 1-5
30-Minute Transit Access to Jobs (Average Household)
Huntington Beach & Jobs/Transit Rich Area Examples

	All Jobs	Jobs Requiring High School Education or Less
Huntington Beach	133,743	39,989
Los Angeles Historic Core	1,186,787	367,904
Los Angeles Bunker Hill	1,144,474	354,787
Los Angeles Civic Center	1,100,441	338,936
Mid-Wilshire	928,498	259,051
Westlake-Dockweiler	909,290	272,787
Silver Lake	837,378	243,677
Echo Park	832,655	247,299
Hollywood	768,614	210,600
Pico-Union	767,775	229,565
Boyle Heights	682,286	221,743
Westwood	654,120	177,267
Culver City	566,368	156,318
East Los Angeles	485,477	156,809

Source: Alltransit.cnt.org

CNT does not produce similar data for driving alone.

Comparative transit and drive alone employment access data is available from the University of Minnesota Accessibility Observatory for 50 of the largest metropolitan areas. In 2017, the average resident of the Los Angeles metropolitan area (Los Angeles and Orange County) could reach 33 times (3,300%) as many jobs in 30 minutes driving alone as by transit.[11] The University of Minnesota does not develop estimates below the metropolitan area level, such as for counties, municipalities or specific addresses.[12]

(3) Actual transit access to jobs, measured by commuting behavior, is considerably higher than that of Huntington Beach in much of the 5-county CSA.

Among Huntington Beach commuters reaching work in less than 30 minutes, 133 times as many drive alone as use transit. This is five times the 5-county CSA rate (26), eight times the Los Angeles County rate (17) and more than double that of Orange County, at 59 (Table 1-6).

Table 1-6
Commuters Reaching Jobs in Less than 30 Minutes (of all commuters)

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Huntington Beach	45.3%	0.3%	133
Los Angeles County	40.2%	2.4%	17
Orange County	49.4%	0.8%	59
Los Angeles-Long Beach CSA	43.6%	1.7%	26

Derived from American Community Survey, 2013/2017

Transit is far more competitive than in Huntington Beach in other parts of the SCAG region. This is illustrated by ACS data for Public Use Microdata Areas (PUMAs).[13] In the SCAG PUMA with the lowest drive alone to transit ratio, only 2.3 times as many commuters drive alone as use transit (Los Angeles County [Central]--LA City [Central/Koreatown PUMA]) Huntington Beach's 133 drive alone to transit 30 minute commute ratio is 58 times that figure.

Among the nation's more than 2,300 PUMAs, the Los Angeles County [Central]--LA City [Central/Koreatown PUMA] had the 27th highest population density in 2013/2017. It also has the highest transit market share (27.3%) of any PUMA in the CSA. This PUMA also contains some of the most intense transit service in the SCAG region. The region's only station serving two fully grade separate subway lines is in the Los Angeles County [Central]--LA City [Central/Koreatown PUMA].

[11] Derived from data in Andrew Owen and Brendan Murphy, University of Minnesota Center for Transportation Accessibility Laboratory, *Auto Access Across America: 2017*, 2018, http://cts-d8resmod-prd.oit.umn.edu:8080/pdf/cts-18-16.pdf and *Transit Access Across America: 2017,* 2018, http://cts-d8resmod-prd.oit.umn.edu:8080/pdf/cts-18-12.pdf.

[12] CNT and the University of Minnesota use different criteria for transit access.

[13] PUMAs are analysis zones designated by the Census Bureau that divide the United States into areas of similar population, averaging 130,000. PUMAs are especially helpful for examining somewhat smaller area data within large jurisdictions, such as the cities of Los Angeles, Anaheim and Santa Ana.

Another 17 PUMA's have 30-minute drive alone to transit commute ratios no greater than one-tenth that of Huntington Beach (Table 1-7).

Each of these PUMAs has an urban form and transit service characteristics that reflect the underlying philosophy of Senate Bill 375, the RHNA and SCAG policies.

Table 1-7
Local Areas (PUMAs) with Less than 1/10th Huntington Beach Drive Alone to Transit Commuting Ratio
Commuters Reaching Jobs in Less than 30 Minutes (of all commuters)

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Huntington Beach	45.3%	0.3%	133.2
Los Angeles County (Central)--LA City (Central/Koreatown) PUMA	25.3%	11.0%	2.3
Los Angeles County--LA City (East Central/Silver Lake, Echo Park & Westlake) PUMA	27.9%	11.5%	2.4
Los Angeles County (Central)--LA City (Southeast/East Vernon) PUMA	28.9%	9.5%	3.0
Los Angeles County--LA City (Central/Univ. of Southern California & Exposition Park) PUMA	22.8%	6.2%	3.7
Los Angeles County (Central)--LA City (East Central/Central City & Boyle Heights) PUMA	30.6%	7.4%	4.1
Los Angeles County (Central)--LA City (East Central/Hollywood) PUMA	31.7%	7.6%	4.2
Los Angeles County (Central)--Huntington Park City, Florence-Graham & Walnut Park PUMA	32.1%	4.4%	7.2
Los Angeles County (South Central)--LA City (South Central/Watts) PUMA	28.6%	3.8%	7.5
Los Angeles County (Central)--East Los Angeles PUMA	37.8%	4.4%	8.6
Los Angeles County (South)--Long Beach City (Southwest & Port) PUMA	36.5%	4.1%	8.8
Los Angeles County (North)--LA City (North Central/Mission Hills & Panorama City) PUMA	37.1%	4.1%	9.1
Los Angeles County--LA City (Mount Washington, Highland Park & Glassell Park) PUMA	35.3%	3.7%	9.6
Los Angeles County (Southeast)--Long Beach (Central) & Signal Hill Cities PUMA	40.5%	3.7%	11.0
Los Angeles County (South Central)--LA City (South Central/Westmont) PUMA	29.8%	2.7%	11.2
Los Angeles County (Northwest)--LA City (North Central/Van Nuys & North Sherman Oaks) PUMA	34.6%	2.9%	11.8
Los Angeles County (West Central)--LA City (West Central/Westwood & West Los Angeles) PUMA	45.5%	3.7%	12.4
Los Angeles County (West Central)--LA City (Central/Hancock Park & Mid-Wilshire) PUMA	40.7%	3.2%	12.7
Los Angeles County (Central)--LA City (Central/West Adams & Baldwin Hills) PUMA	34.2%	2.6%	13.2

Derived from American Community Survey, 2013/2017

Conclusion: The city of Huntington Beach has virtually no 30-minute transit access to the richest job centers in the CSA. This is unlikely to change materially in the foreseeable future. This is in contrast to the huge transit investments in urban rail and busways have been and are being further developed in Los Angeles County, with the intent of materially increasing transit access and creating a more compact urban form.

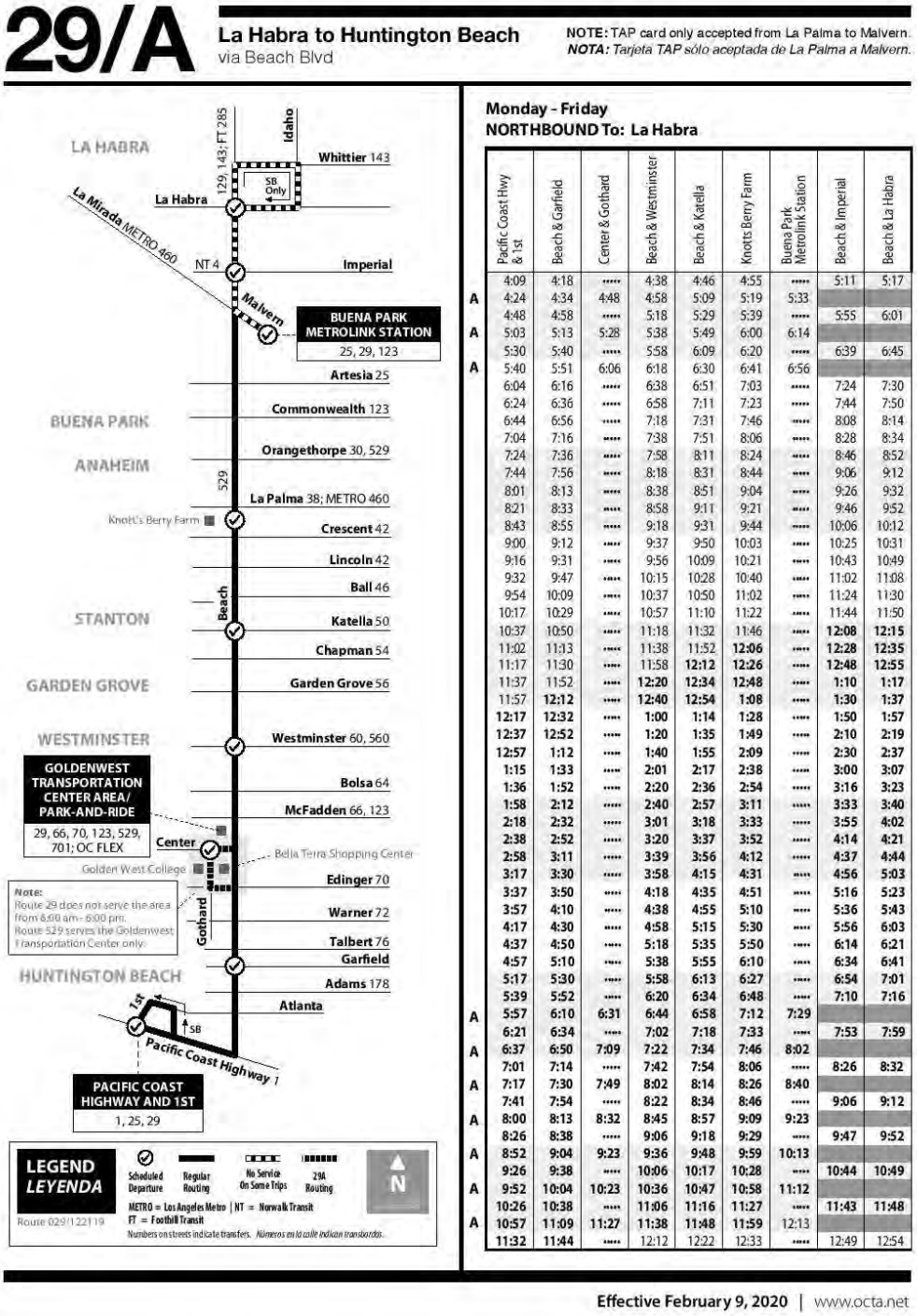
It is estimated that only 7.2% of the Huntington Beach population lives in HQTAs that are not appealed.[14] This is a reduction from the 36.4% shown by SCAG to be in HQTA's. This would

[14] Based on a tentative analysis of census tract and city population data from the 2014-2018 American Community Survey. The estimate finds that the maximum extent of HQTAs in the city of Huntington Beach is as follows:

result in an estimated reduction of 80.3%, or 2,455 units from the Huntington Beach HQTA allocation of 3,059.When adjusted for the related reduction in the residual adjustment (1,170 units), a gross reduction of 3,625 units is requested.

Orange County census tracts 99.406, 99.410 and 99.605 in their entirety and portions of census tracts 99.241 (20%), 99.702 (10%) and 99.703 (20%)

Exhibit
Route 29 Schedule



La Habra to Huntington Beach
via Beach Blvd

29/A

Monday - Friday
SOUTHBOUND To: Huntington Beach

	Beach & La Habra	Beach & Imperial	Buena Park Metrolink Station	Knotts Berry Farm	Beach & Katella	Beach & Westminster	Gothard & Center	Beach & Garfield	Pacific Coast Hwy & 1st
A			4:46	5:02	5:13	5:24	5:32	5:45	5:56
	4:54	5:04	·····	5:22	5:33	5:46	·····	6:07	6:18
A			5:27	5:43	5:53	6:06	6:13	6:26	6:36
	5:33	5:43	·····	6:01	6:13	6:26	·····	6:47	7:00
A			6:04	6:21	6:33	6:46	6:55	7:11	7:24
	6:11	6:21	·····	6:40	6:53	7:06	·····	7:27	7:41
	6:25	6:38	·····	6:58	7:13	7:31	·····	7:55	8:10
	6:45	6:58	·····	7:18	7:33	7:51	·····	8:15	8:30
	7:02	7:15	·····	7:38	7:53	8:11	·····	8:35	8:52
	7:22	7:35	·····	7:58	8:13	8:31	·····	8:56	9:13
	7:42	7:55	·····	8:18	8:33	8:51	·····	9:16	9:33
	8:04	8:17	·····	8:38	8:53	9:10	·····	9:35	9:49
	8:24	8:37	·····	8:58	9:13	9:28	·····	9:53	10:07
	8:44	8:57	·····	9:18	9:32	9:47	·····	10:12	10:26
	9:04	9:17	·····	9:38	9:52	10:07	·····	10:32	10:46
	9:24	9:37	·····	9:58	10:12	10:27	·····	10:52	11:06
	9:44	9:57	·····	10:18	10:32	10:47	·····	11:12	11:26
	10:04	10:17	·····	10:38	10:52	11:07	·····	11:32	11:46
	10:24	10:37	·····	10:58	11:12	11:27	·····	11:52	**12:06**
	10:43	10:56	·····	11:17	11:31	11:46	·····	**12:12**	**12:26**
	11:02	11:15	·····	11:37	11:51	**12:06**	·····	**12:32**	**12:46**
	11:20	11:33	·····	11:56	**12:10**	**12:25**	·····	**12:51**	**1:05**
	11:41	11:54	·····	**12:16**	**12:30**	**12:45**	·····	**1:10**	**1:24**
	12:02	**12:15**	·····	**12:36**	**12:50**	**1:08**	·····	**1:34**	**1:47**
	12:21	**12:34**	·····	**12:55**	**1:09**	**1:27**	·····	**1:53**	**2:07**
	12:41	**12:54**	·····	**1:15**	**1:30**	**1:45**	·····	**2:11**	**2:26**
	1:01	**1:14**	·····	**1:35**	**1:50**	**2:05**	·····	**2:31**	**2:46**
	1:21	**1:34**	·····	**1:55**	**2:10**	**2:25**	·····	**2:50**	**3:05**
	1:41	**1:54**	·····	**2:15**	**2:30**	**2:45**	·····	**3:10**	**3:25**
	2:01	**2:14**	·····	**2:35**	**2:50**	**3:05**	·····	**3:30**	**3:45**
	2:21	**2:34**	·····	**2:55**	**3:10**	**3:25**	·····	**3:50**	**4:05**
	2:37	**2:50**	·····	**3:13**	**3:28**	**3:44**	·····	**4:09**	**4:25**
	2:56	**3:09**	·····	**3:32**	**3:47**	**4:04**	·····	**4:29**	**4:45**
	3:18	**3:31**	·····	**3:53**	**4:08**	**4:25**	·····	**4:50**	**5:06**
	3:34	**3:49**	·····	**4:12**	**4:28**	**4:45**	·····	**5:10**	**5:26**
	3:57	**4:10**	·····	**4:31**	**4:47**	**5:04**	·····	**5:29**	**5:45**
	4:12	**4:27**	·····	**4:51**	**5:09**	**5:27**	·····	**5:52**	**6:06**
	4:36	**4:51**	·····	**5:15**	**5:31**	**5:47**	·····	**6:12**	**6:26**
	4:58	**5:13**	·····	**5:35**	**5:52**	**6:08**	·····	**6:33**	**6:47**
	5:15	**5:32**	·····	**5:56**	**6:12**	**6:27**	·····	**6:52**	**7:06**
	5:39	**5:54**	·····	**6:18**	**6:33**	**6:48**	·····	**7:13**	**7:27**
A			**6:19**	**6:39**	**6:52**	**7:07**	**7:18**	**7:37**	**7:49**
	6:23	**6:36**	·····	**7:00**	**7:13**	**7:28**	·····	**7:50**	**8:02**
A			**7:01**	**7:20**	**7:33**	**7:48**	**7:59**	**8:18**	**8:30**
	7:06	**7:19**	·····	**7:41**	**7:53**	**8:08**	·····	**8:29**	**8:41**
A			**7:43**	**8:01**	**8:13**	**8:27**	**8:38**	**8:55**	**9:07**
	7:46	**7:59**	·····	**8:21**	**8:33**	**8:48**	·····	**9:09**	**9:21**
A			**8:33**	**8:51**	**9:03**	**9:18**	**9:28**	**9:45**	**9:57**
	8:50	**9:01**	·····	**9:21**	**9:33**	**9:45**	·····	**10:06**	**10:18**
A			**9:35**	**9:53**	**10:05**	**10:17**	**10:26**	**10:41**	**10:53**
	9:52	**10:03**	·····	**10:23**	**10:35**	**10:47**	·····	**11:08**	**11:20**
A			**10:35**	**10:51**	**11:03**	**11:15**	**11:24**	**11:39**	**11:51**
	10:52	**11:03**	·····	**11:23**	**11:35**	**11:47**	·····	12:08	12:20
	11:32	**11:43**	·····	12:03	12:15	12:27	·····	12:48	1:00

Saturday
NORTHBOUND To: La Habra

	Pacific Coast Hwy & 1st	Beach & Garfield	Center & Gothard	Beach & Westminster	Beach & Katella	Knotts Berry Farm	Buena Park Metrolink Station	Beach & Imperial	Beach & La Habra
	4:11	4:18	·····	4:35	4:45	4:54	·····	5:10	5:14
A	4:46	4:53	5:05	5:15	5:25	5:34	5:49		
	5:28	5:36	·····	5:55	6:06	6:18	·····	6:36	6:41
A	6:00	6:10	6:25	6:35	6:47	6:59	7:14		
	6:46	6:56	·····	7:15	7:27	7:39	·····	7:58	8:04
A	7:10	7:20	7:35	7:45	7:57	8:09	8:24		
	7:43	7:53	·····	8:15	8:28	8:41	·····	9:01	9:06
A	8:06	8:16	8:33	8:45	8:59	9:12	9:29		
	8:42	8:52	·····	9:15	9:29	9:42	·····	10:02	10:07
A	8:58	9:09	9:30	9:45	9:58	10:11	10:28		
	9:26	9:37	·····	10:05	10:18	10:31	·····	10:52	10:58
A	9:41	9:52	10:13	10:26	10:39	10:52	11:07		
	10:08	10:19	·····	10:45	10:58	11:11	·····	11:31	11:36
A	10:18	10:29	10:50	11:03	11:16	11:29	11:44		
	10:44	10:56	·····	11:23	11:36	11:50	·····	**12:13**	**12:20**
A	10:55	11:07	11:30	11:42	11:55	**12:09**	**12:24**		
	11:20	11:32	·····	**12:01**	**12:16**	**12:30**	·····	**12:50**	**12:57**
A	11:29	11:41	**12:04**	**12:19**	**12:34**	**12:48**	**1:05**		
	11:58	**12:10**	·····	**12:39**	**12:54**	**1:08**	·····	**1:28**	**1:35**
A	**12:08**	**12:20**	**12:43**	**12:58**	**1:13**	**1:27**	**1:44**		
	12:38	**12:50**	·····	**1:19**	**1:34**	**1:48**	·····	**2:08**	**2:15**
A	**12:49**	**1:01**	**1:24**	**1:39**	**1:54**	**2:08**	**2:25**		
	1:16	**1:29**	·····	**1:59**	**2:14**	**2:28**	·····	**2:49**	**2:57**
A	**1:27**	**1:40**	**2:04**	**2:19**	**2:34**	**2:48**	**3:04**		
	1:57	**2:10**	·····	**2:40**	**2:55**	**3:09**	·····	**3:30**	**3:38**
A	**2:08**	**2:20**	**2:44**	**2:59**	**3:15**	**3:28**	**3:42**		
	2:37	**2:49**	·····	**3:19**	**3:35**	**3:48**	·····	**4:08**	**4:15**
A	**2:50**	**3:02**	**3:25**	**3:39**	**3:55**	**4:07**	**4:22**		
	3:18	**3:30**	·····	**3:59**	**4:15**	**4:27**	·····	**4:47**	**4:54**
A	**3:28**	**3:41**	**4:04**	**4:18**	**4:33**	**4:46**	**5:03**		
	3:56	**4:10**	·····	**4:37**	**4:52**	**5:04**	·····	**5:25**	**5:31**
A	**4:08**	**4:22**	**4:44**	**4:57**	**5:12**	**5:24**	**5:40**		
	4:36	**4:50**	·····	**5:17**	**5:32**	**5:44**	·····	**6:05**	**6:11**
A	**4:43**	**4:57**	**5:23**	**5:37**	**5:51**	**6:03**	**6:21**		
	5:15	**5:29**	·····	**5:57**	**6:11**	**6:23**	·····	**6:44**	**6:50**
A	**5:26**	**5:41**	**6:05**	**6:17**	**6:30**	**6:43**	**7:01**		
	5:58	**6:13**	·····	**6:39**	**6:52**	**7:04**	·····	**7:24**	**7:31**
A	**6:17**	**6:30**	**6:50**	**7:02**	**7:15**	**7:25**	**7:40**		
	6:57	**7:08**	·····	**7:33**	**7:46**	**7:56**	·····	**8:12**	**8:19**
A	**7:19**	**7:30**	**7:50**	**8:02**	**8:15**	**8:25**	**8:40**		
	7:55	**8:06**	·····	**8:31**	**8:44**	**8:54**	·····	**9:10**	**9:17**
A	**8:18**	**8:29**	**8:49**	**9:01**	**9:14**	**9:24**	**9:39**		
	8:55	**9:06**	·····	**9:31**	**9:44**	**9:54**	·····	**10:10**	**10:17**
A	**9:22**	**9:33**	**9:50**	**10:01**	**10:13**	**10:24**	**10:39**		
	9:58	**10:09**	·····	**10:31**	**10:43**	**10:54**	·····	**11:10**	**11:16**
A	**10:25**	**10:36**	**10:51**	**11:01**	**11:13**	**11:23**	**11:38**		
	11:00	**11:11**	·····	**11:31**	**11:43**	**11:53**	·····	12:09	12:15
A	**11:25**	**11:36**	**11:51**	12:01	12:13	12:23	12:38		
	12:00	12:11	·····	12:31	12:43	12:53	·····	1:09	1:15

A = These trips serve the Goldenwest Transportation Center.
Estos viajes se detienen en el Centro de Transporte Goldenwest.

29/A La Habra to Huntington Beach

via Beach Blvd

Saturday
SOUTHBOUND To: Huntington Beach

	Beach & La Habra	Beach & Imperial	Buena Park Metrolink Station	Knotts Berry Farm	Beach & Katella	Beach & Westminster	Gothard & Center	Beach & Garfield	Pacific Coast Hwy & 1st
	4:30	4:39	·····	4:55	5:04	5:14	·····	5:29	5:41
A			5:22	5:35	5:44	5:54	6:01	6:14	6:26
	5:43	5:53	·····	6:11	6:22	6:34	·····	6:53	7:06
A			6:37	6:51	7:02	7:14	7:23	7:38	7:51
	6:53	7:06	·····	7:29	7:40	7:55	·····	8:16	8:30
A			7:39	7:58	8:09	8:24	8:35	8:50	9:04
	7:46	7:59	·····	8:22	8:36	8:52	·····	9:14	9:29
A			8:36	8:55	9:08	9:23	9:34	9:50	10:06
	8:46	8:59	·····	9:22	9:35	9:50	·····	10:11	10:27
A			9:24	9:43	9:56	10:10	10:21	10:37	10:50
	9:24	9:37	·····	10:01	10:15	10:30	·····	10:53	11:07
A			10:01	10:21	10:35	10:50	11:01	11:20	11:34
	10:03	10:17	·····	10:42	10:55	11:10	·····	11:36	11:52
A			10:40	11:00	11:15	11:30	11:42	**12:08**	**12:23**
	10:41	10:55	·····	11:20	11:35	11:50	·····	**12:19**	**12:34**
A			11:20	11:40	11:55	**12:10**	**12:22**	**12:48**	**1:03**
	11:21	11:35	·····	**12:00**	**12:15**	**12:30**	·····	**12:59**	**1:14**
A			11:56	**12:16**	**12:32**	**12:48**	**1:02**	**1:28**	**1:45**
	11:58	**12:13**	·····	**12:40**	**12:55**	**1:10**	·····	**1:39**	**1:53**
A			**12:37**	**1:00**	**1:14**	**1:30**	**1:42**	**2:05**	**2:20**
	12:38	**12:53**	·····	**1:20**	**1:34**	**1:50**	·····	**2:17**	**2:32**
A			**1:17**	**1:40**	**1:54**	**2:10**	**2:22**	**2:45**	**3:00**
	1:17	**1:32**	·····	**1:59**	**2:14**	**2:30**	·····	**2:58**	**3:15**
A			**1:56**	**2:19**	**2:34**	**2:50**	**3:02**	**3:26**	**3:43**
	2:00	**2:14**	·····	**2:40**	**2:55**	**3:10**	·····	**3:37**	**3:53**
A			**2:37**	**2:59**	**3:14**	**3:29**	**3:41**	**4:04**	**4:20**
	2:40	**2:54**	·····	**3:20**	**3:33**	**3:48**	·····	**4:12**	**4:28**
A			**3:18**	**3:39**	**3:52**	**4:07**	**4:18**	**4:38**	**4:54**
	3:18	**3:32**	·····	**3:58**	**4:11**	**4:26**	·····	**4:50**	**5:06**
A			**3:58**	**4:19**	**4:32**	**4:45**	**4:55**	**5:13**	**5:30**
	3:58	**4:12**	·····	**4:38**	**4:51**	**5:04**	·····	**5:26**	**5:43**
A			**4:35**	**4:55**	**5:09**	**5:22**	**5:32**	**5:48**	**6:03**
	4:37	**4:50**	·····	**5:15**	**5:29**	**5:42**	·····	**6:03**	**6:18**
A			**5:15**	**5:35**	**5:49**	**6:02**	**6:12**	**6:28**	**6:43**
	5:16	**5:29**	·····	**5:55**	**6:09**	**6:22**	·····	**6:43**	**6:56**
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	5:56	**6:09**	·····	**6:35**	**6:49**	**7:02**	·····	**7:23**	**7:36**
A			**6:37**	**6:55**	**7:09**	**7:22**	**7:32**	**7:49**	**8:02**
	6:36	**6:49**	·····	**7:15**	**7:29**	**7:42**	·····	**8:03**	**8:16**
A			**7:28**	**7:45**	**7:59**	**8:12**	**8:22**	**8:37**	**8:50**
	7:38	**7:51**	·····	**8:15**	**8:29**	**8:42**	·····	**9:02**	**9:15**
A			**8:28**	**8:45**	**8:59**	**9:12**	**9:22**	**9:37**	**9:50**
	8:44	**8:56**	·····	**9:18**	**9:30**	**9:42**	·····	**10:00**	**10:12**
A			**9:31**	**9:48**	**10:00**	**10:12**	**10:21**	**10:35**	**10:47**
	9:44	**9:56**	·····	**10:18**	**10:30**	**10:42**	·····	**11:00**	**11:12**
A			**10:29**	**10:46**	**10:58**	**11:10**	**11:19**	**11:33**	**11:45**
	10:44	**10:56**	·····	**11:18**	**11:30**	**11:42**	·····	12:00	12:12
A			**11:34**	**11:51**	12:02	12:12	12:20	12:33	12:44
	11:51	12:02	·····	12:21	12:32	12:42	·····	12:58	1:09

Sunday & Holiday
NORTHBOUND To: La Habra

	Pacific Coast Hwy & 1st	Beach & Garfield	Center & Gothard	Beach & Westminster	Beach & Katella	Knotts Berry Farm	Buena Park Metrolink Station	Beach & Imperial	Beach & La Habra
	5:11	5:20	·····	5:37	5:47	5:58	·····	6:14	6:19
A	5:45	5:54	6:08	6:17	6:27	6:38	6:52		
	6:30	6:40	·····	6:57	7:08	7:21	·····	7:38	7:44
A	6:57	7:08	7:24	7:37	7:49	8:02	8:16		
	7:34	7:45	·····	8:07	8:19	8:32	·····	8:50	8:55
A	8:04	8:15	8:31	8:44	8:56	9:09	9:23		
	8:41	8:52	·····	9:14	9:26	9:39	·····	9:57	10:02
A	8:53	9:04	9:20	9:33	9:45	9:58	10:12		
	9:19	9:30	·····	9:52	10:04	10:17	·····	10:35	10:40
A	9:29	9:41	9:58	10:11	10:24	10:36	10:51		
	9:48	10:00	·····	10:32	10:45	10:57	·····	11:19	11:26
A	10:10	10:22	10:39	10:52	11:05	11:17	11:32		
	10:28	10:40	·····	11:12	11:25	11:37	·····	11:59	**12:06**
A	10:49	11:01	11:18	11:31	11:44	11:56	**12:11**		
	11:08	11:20	·····	11:52	**12:05**	**12:17**	·····	**12:39**	**12:46**
A	11:31	11:43	**12:00**	**12:13**	**12:26**	**12:38**	**12:53**		
	11:47	**12:00**	·····	**12:32**	**12:45**	**12:57**	·····	**1:20**	**1:27**
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	1:08	**1:21**	·····	**1:53**	**2:06**	**2:18**	·····	**2:41**	**2:48**
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A	**3:31**	**3:43**	**4:00**	**4:13**	**4:26**	**4:36**	**4:54**		
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	4:29	**4:41**	·····	**5:13**	**5:26**	**5:36**	·····	**5:56**	**6:03**
A	**4:51**	**5:03**	**5:20**	**5:33**	**5:46**	**5:56**	**6:14**		
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A	**5:31**	**5:43**	**6:00**	**6:13**	**6:26**	**6:36**	**6:54**		
	5:49	**6:01**	·····	**6:33**	**6:46**	**6:56**	·····	**7:16**	**7:23**
A	**6:11**	**6:23**	**6:40**	**6:53**	**7:06**	**7:16**	**7:34**		
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	10:27	**10:39**	·····	**10:59**	**11:11**	**11:21**	·····	**11:40**	**11:44**
	10:51	**11:03**	·····	**11:23**	**11:35**	**11:45**	·····	12:04	12:08

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Estos viajes se detienen en el Centro de Transporte Goldenwest.

Effective February 9, 2020 | www.octa.net

La Habra to Huntington Beach
via Beach Blvd

29/A

Sunday & Holiday
SOUTHBOUND To: Huntington Beach

	Beach & La Habra	Beach & Imperial	Buena Park Metrolink Station	Knotts Berry Farm	Beach & Katella	Beach & Westminster	Gothard & Center	Beach & Garfield	Pacific Coast Hwy & 1st
	5:12	5:21	·····	5:36	5:48	5:58	·····	6:15	6:29
A			6:02	6:17	6:29	6:39	6:47	7:01	7:15
	6:30	6:40	·····	6:58	7:10	7:21	·····	7:39	7:53
A			7:22	7:37	7:49	8:00	8:10	8:24	8:38
	7:37	7:47	·····	8:05	8:17	8:28	·····	8:46	9:00
A			8:17	8:33	8:45	8:56	9:06	9:20	9:34
	8:26	8:38	·····	8:59	9:11	9:24	·····	9:45	10:00
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	9:11	9:23	·····	9:44	9:56	10:09	·····	10:30	10:45
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A			10:27	10:42	10:55	11:09	11:20	11:38	11:51
	10:28	10:40	·····	11:02	11:15	11:29	·····	11:51	**12:04**
A			11:01	11:18	11:32	11:47	11:59	**12:20**	**12:37**
	11:03	11:17	·····	11:39	11:53	**12:08**	·····	**12:32**	**12:49**
A			11:42	11:59	**12:13**	**12:28**	**12:40**	**1:01**	**1:18**
	11:43	11:57	·····	**12:19**	**12:33**	**12:48**	·····	**1:12**	**1:29**
A			**12:22**	**12:39**	**12:53**	**1:08**	**1:20**	**1:41**	**1:58**
	12:25	**12:39**	·····	**1:01**	**1:15**	**1:30**	·····	**1:54**	**2:11**
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A			**8:10**	**8:27**	**8:38**	**8:49**	**8:59**	**9:15**	**9:29**
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	11:06	**11:17**	·····	**11:37**	**11:49**	**11:59**	·····	12:15	12:29

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- Rediseño de la interfaz
- Pago con Google Pay o Apple Pay
- Facilidad de compras repetidas
- Simplificación de los boletos para varios pasajeros
- Seguridad a través de identificación táctil o facial
- Fácil transferencia de boletos si cambia de teléfono
- Botones más prominentes
- Nuevo boleto a pantalla completa y código de barras más grande

Actualice la aplicación el 10 de febrero para disfrutar de todas estas nuevas y fantásticas funciones.

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Issue #2: Failure to Apply a Specific Huntington Beach Overcrowding Adjustment

The SCAG allocation of the regional housing need fails to account for the low rate of housing overcrowding in the city of Huntington Beach. This increases the allocation to Huntington Beach.

In 2018, the legislature required the addition of an overcrowding measure to the determination of housing need by the California Housing and Community Development Department (HCD). Approximately 34% of the resulting RHNA allocation for the SCAG region is attributable to the addition of overcrowding. However, the SCAG RNHA allocation methodology did not reflect the level of overcrowding in the city of Huntington Beach.

SCAG's failure to adjust the RHNA allocation for overcrowding in Huntington Beach undermines and does not promote SCAG's *Connect SoCal 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy*, such as housing construction in transit rich areas (page 4), strategies that result in reduced demand for single occupancy vehicle use (page 10) and land use patterns that facilitate multimodal access to work (page 25).[15]

Generally, the objectives of state law and SCAG's Sustainable Communities Strategy would be served by a larger share of solo drivers being attracted from their cars to transit and other non-motorized modes. Minimization of solo driving commutes requires considerably better transit job access. State and regional policies have been adopted to seek these objectives by constructing housing units close to jobs that can be filled by nearby resident workers.

HCD describes the overcrowding adjustment as follows:

> "6. Overcrowding Adjustment: In regions where overcrowding is greater than the U.S overcrowding rate of 3.35%, HCD applies an adjustment based on the amount the region's overcrowding rate (10.11%) exceeds the U.S. overcrowding rate (3.35%) based on the 2013-2017 5-year ACS data. For SCAG that difference is 6.76%."[16]

However, the SCAG allocation formula does not reflect the differences by jurisdiction in overcrowding rates. The city of Huntington Beach has a far lower overcrowding rate than the SCAG region, at 3.66, which is little more (9%) than the US overcrowding rate of 3.35%, a difference of 0.31%. SCAG's failure to specifically adjust the RHNA allocation for overcrowding effectively blanket allocation of overcrowding has the inherent effect of allocating the entire regional average of 6.76% to Huntington Beach. This is more than 20 times the Huntington Beach overcrowding rate (the regional average of 6.76% compared to the 0.31% of Huntington Beach).[17]

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[15] Page numbers refer to the Sustainable Communities Strategy within the *Connect SoCal 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy.*

[16] Calculated from data in HCD Regional Housing Need Determination Letter, August 22, 2019.

[17] Note: By an alternative measure, which defines overcrowding based on multiple households occupying the same housing unit (additional households are called "subfamilies" (ACS 2013-2017 table C-11014) Huntington Beach's overcrowding rate is 19% below the national average (3.66% compared to the US average of 3.26%).

Consequences: The following factors undermine the objectives above, as follows:

The promotion of socioeconomic equity is undermined failing to apply the Huntington Beach overcrowding rate instead of the SCAG region average rate. Residents of the new Huntington Beach housing will have considerably less economic opportunity due to the limited transit job access. As a result, low-income residents moving to Huntington Beach are likely to face significant impediments to socioeconomic advancement.

The higher allocation to Huntington Beach will undermine the intraregional relationship between jobs and housing because transit access is so limited. Conversely, the interregional relationship between jobs and housing would be promoted by allocating a smaller number of units to Huntington Beach.

Consistent with trends already evident in research prepared for SCAG (below[18]), the limited transit job access from Huntington Beach is likely to create incentives to workers to purchase cars. More often than not, this is likely to mean solo commuting by car and higher commuting expenses.

The longer transit commutes could significantly reduce the incentive for some potential workers to seek employment.

The Importance of Short Transit Commutes: Relatively short commute times are crucial for transit to maintain its market share. In the United States, the average drive alone time is less than 30 minutes and is 26.8 minutes in Orange County. By comparison, transit commute times average 53.6 minutes[19] in Orange County, nearly double the drive alone time.

Around the country, a 30-minute standard is increasingly being used to evaluate transit and automobile commuting. SCAG uses a 30-minute standard for auto trips, though uses 45-minutes for transit trips in RHNA allocations. The Puget Sound Regional Council (Seattle area) uses a 30-minute standard for both auto and transit trips. The Center for Neighborhood Technology (CNT) publishes comprehensive 30-minute transit commute data within many metropolitan areas, including estimates from virtually any address (below). The University of Minnesota Accessibility Observatory publishes 30-minute transit and car job access estimates for 50 of the nation's largest metropolitan areas (below).

As the data below indicates, access to jobs by transit tends to be considerably less than by driving alone. For RHNA to encourage transit commuting rather than driving alone, affordable housing needs to be built in jobs-rich areas, where transit can be more competitive with the auto.

However, the transit trends in the SCAG region are working against any such policy objective. Low-income workers are buying cars, and they are abandoning transit.

[18]Michael Manville, Bryan Taylor and Evelyn Blumenberg, "Falling Transit Ridership: California and Southern California," January 2018. https://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf.
[19] Derived from American Community Survey, 2013/2017.

A SCAG sponsored research report noted:[20]

> "Driving is relatively easy, while moving around by means other than driving is not. These circumstances give people strong economic and social incentives to acquire cars, and — once they have cars — to drive more and ride transit less."

With its below average transit job access, residents of the allocated housing are likely to have cars or will have significant incentive to obtain vehicles improve to their employment prospects and standards of living.

Assertions

The following facts are asserted in support of the appeal request:

(1) Lower Income Worker Transit Commuting is Declining

Low income residents are far more likely to drive alone than to commute by transit and this is becoming increasingly so. In Orange County, workers with earnings below the poverty line are 12 times as likely to drive alone than to commute by transit. In the last seven years (2006/2010 to 2013/2017) transit commuting by workers below the poverty line has decreased by 41%. By comparison, in Los Angeles County, below poverty line commuters are only four times as likely to drive alone, while in the 5-county Los Angeles-Long Beach combined statistical area (CSA).[21]workers below the poverty line are six times as likely to drive alone (Table 2-1). A similar downward trend in low-income commuting is evident in both Los Angeles County and the CSA (Figure 2-1).

The very demographic that is the primary target of affordable housing under RHNA drives alone at a rate similar to that of all workers and is increasingly abandoning transit.

Table 2-1
Commuting by Workers Earning Less than 100% of the Poverty Line

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Los Angeles County	58.8%	14.4%	4
Orange County	68.2%	5.9%	12
Los Angeles-Long Beach CSA	62.2%	10.7%	6

Derived from American Community Survey, 2013/2017

[20]Michael Manville, Bryan Taylor and Evelyn Blumenberg, "Falling Transit Ridership: California and Southern California," January 2018. https://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf.
[21] This analysis uses the Los Angeles-Long Beach combined statistical area (the SCAG area, without Imperial County), which is the largest labor market definition by the U.S. Office of Management and Budget. As a labor market area, the CSA is also a housing market.

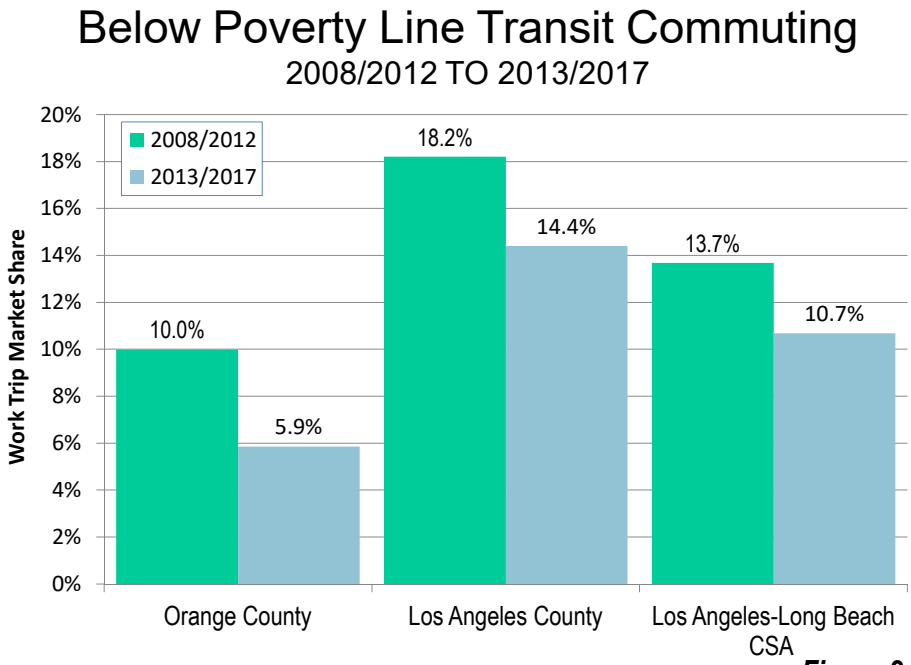


Figure 2-1

(2) Huntington Beach residents are far more likely to drive alone than to use transit.

Among Huntington Beach residents, driving alone accounts for 80% of commuting, while transit's market share (1.1%) is less than one half that of Orange County (2.3%). About 75 times (7,500%) as many workers from Huntington Beach drive alone as use transit. This is more than twice the rate of Orange County (36) and more than six times the rate of Los Angeles County (12). The drive alone to transit ratio in Huntington Beach is also and well above that of the five-county CSA average of 57 times (Table 2-2).

Table 2-2
Driving Alone & Transit Commuting: 2013/2017

	Drive Alone	Transit	Drive Alone times Transit
Huntington Beach	79.7%	1.1%	75
Los Angeles County	73.7%	6.3%	12
Orange County	78.6%	2.2%	36
Los Angeles-Long Beach CSA	77.2%	1.3%	57

Derived from American Community Survey, 2013/2017

Further, bus ridership is declining in Orange County. Orange County Transportation Authority bus ridership dropped 46 percent, from 68.9 million in 2008 to 37.3 million in 2019.[22] The COVID-19 pandemic has led to even greater ridership losses and uncertainty with respect to when or even if, ridership will return to previous levels. It is inconceivable that there will be a sufficient increase in Huntington Beach transit service to attract a materially larger share of workers.

(2) 30-minute transit access to jobs from Huntington Beach is materially less than the CSA, Los Angeles County and Orange County.

Estimates of 30-minute transit jobs access are reported by the Alltransit.cnt.org website, sponsored by the Center for Neighborhood Technology (CNT). Estimates are provided at the metropolitan, county, and city levels for much of the United States and specific street addresses inquiries are available.

Alltransit.cnt.org data indicates that transit employment access from Huntington Beach is far below that of Orange County, Los Angeles County and a number of constituent jurisdictions (Table 2-3). [23]

- Approximately 134,000 jobs, overall, can be reached by transit within 30 minutes from Huntington Beach. By comparison, 30-minute job access was 2.4 times as high in Los Angeles County (322,000) and 1.3 times as high, on average, in Orange County (173,000). On average 217,000 jobs can be reached by transit within the SCAG region, 1.6 times that of Huntington Beach.

- Approximately 40,000 jobs requiring no more than a high school education were accessible by transit in 30 minutes from Huntington Beach. By comparison, 30-minute job access was 2.4 times as high in Los Angeles County (97,000) 1.3 times as high, in Orange County (52,000) and 1.6 times as high overall in the SCAG region.

Table 2-3
30-Minute Transit Access to Jobs (Average Household)

	All Jobs	Jobs Requiring High School Education or Less
Huntington Beach	133,743	39,989
Los Angeles County	321,664	96,821
Orange County	172,595	51,261
SCAG Region	216,605	65,198

Source: Alltransit.cnt.org

[22] From American Public Transportation Association Fourth Quarter Ridership Reports (https://www.apta.com/wp-content/uploads/Resources/resources/statistics/Documents/Ridership/2008_q4_ridership_APTA.pdf and https://www.apta.com/wp-content/uploads/2019-Q4-Ridership-APTA.pdf).
[23] Center for Neighborhood Technology, *All Transit,* https://alltransit.cnt.org/, Data downloaded October 11, 2019.

30-minute transit access is even less in Huntington Beach compared to jobs rich areas, especially in central Los Angeles County. Examples are indicated in Table 2-4. This is largely due to the higher population density and proximity to the most transit oriented major job center in the SCAG region (downtown Los Angeles).

- In three of the areas, more than 1,000,000 jobs can be accessed in 30-minutes, which is between eight and nine times the transit access from Huntington Beach. Residents of a number of other areas have 30-minute transit access to more than 500,000 jobs, which is far greater than Huntington Beach transit access of 134,000.

- In three areas near the densest employment center in the CSA (downtown Los Angeles), more than 330,000 jobs can be accessed in 30-minutes, which is from 8.5 to 9.2 times the transit access from Huntington Beach. Residents of a number of other areas have 30-minute transit access to more than 150,000 jobs, which is far greater than Huntington Beach transit access of 40,000 jobs.

Table 2-4
30-Minute Transit Access to Jobs (Average Household)
Huntington Beach & Jobs/Transit Rich Area Examples

	All Jobs	Jobs Requiring High School Education or Less
Huntington Beach	133,743	39,989
Los Angeles Historic Core	1,186,787	367,904
Los Angeles Bunker Hill	1,144,474	354,787
Los Angeles Civic Center	1,100,441	338,936
Mid-Wilshire	928,498	259,051
Westlake-Dockweiler	909,290	272,787
Silver Lake	837,378	243,677
Echo Park	832,655	247,299
Hollywood	768,614	210,600
Pico-Union	767,775	229,565
Boyle Heights	682,286	221,743
Westwood	654,120	177,267
Culver City	566,368	156,318
East Los Angeles	485,477	156,809

Source: Alltransit.cnt.org

CNT does not produce similar data for driving alone.

Comparative transit and drive alone employment access data is available from the University of Minnesota Accessibility Observatory for 50 of the largest metropolitan areas. In 2017, the

average resident of the Los Angeles metropolitan area (Los Angeles and Orange County) could reach 33 times (3,300%) as many jobs in 30 minutes driving alone as by transit.[24] The University of Minnesota does not develop estimates below the metropolitan area level, such as for counties, municipalities or street addresses.[25]

(3) Actual transit access to jobs, measured by commuting behavior, is considerably higher than that of Huntington Beach in much of the 5-county CSA.

Among Huntington Beach commuters reaching work in less than 30 minutes, 133 times as many drive alone as use transit. This is five times the 5-county CSA rate (26), eight times the Los Angeles County rate (17) and more than double that of Orange County, at 59 (Table 2-5).

Table 2-5
Commuters Reaching Jobs in Less than 30 Minutes (of all commuters)

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Huntington Beach	45.3%	0.3%	133
Los Angeles County	40.2%	2.4%	17
Orange County	49.4%	0.8%	59
Los Angeles-Long Beach CSA	43.6%	1.7%	26

Derived from American Community Survey, 2013/2017

Transit is far more competitive than in Huntington Beach in other parts of the SCAG region. This is illustrated by ACS data for Public Use Microdata Areas (PUMAs).[26] In the SCAG PUMA with the lowest drive alone to transit ratio, only 2.3 times as many commuters drive alone as use transit (Los Angeles County [Central]--LA City [Central/Koreatown PUMA]) Huntington Beach's 133 drive alone to transit 30 minute commute ratio is 58 times that figure.

Among the nation's more than 2,300 PUMAs, the Los Angeles County [Central]--LA City [Central/Koreatown PUMA] had the 27th highest population density in 2013/2017. It also has the highest transit market share (27.3%) of any PUMA in the CSA. This PUMA also contains some of the most intense transit service in the SCAG region. The region's only station serving two fully grade separate subway lines is in the Los Angeles County [Central]--LA City [Central/Koreatown PUMA].

[24] Derived from data in Andrew Owen and Brendan Murphy, University of Minnesota Center for Transportation Accessibility Laboratory, *Auto Access Across America: 2017*, 2018, http://cts-d8resmod-prd.oit.umn.edu:8080/pdf/cts-18-16.pdf and *Transit Access Across America: 2017,* 2018, http://cts-d8resmod-prd.oit.umn.edu:8080/pdf/cts-18-12.pdf.

[25] CNT and the University of Minnesota use different criteria for transit access.

[26] PUMAs are analysis zones designated by the Census Bureau that divide the United States into areas of similar population, averaging 130,000. PUMAs are especially helpful for examining somewhat smaller area data within large jurisdictions, such as the cities of Los Angeles, Anaheim and Santa Ana.

Another 17 PUMA's have 30-minute drive alone to transit commute ratios no greater than one-tenth that of Huntington Beach (Table 2-6).

Each of these PUMAs has an urban form and transit service characteristics that reflect the underlying philosophy of Senate Bill 375, the RHNA and SCAG policies.

Table 2-6
Local Areas (PUMAs) with Less than 1/10th Huntington Beach Drive Alone to Transit Commuting Ratio
Commuters Reaching Jobs in Less than 30 Minutes (of all commuters)

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Huntington Beach	45.3%	0.3%	133.2
Los Angeles County (Central)--LA City (Central/Koreatown) PUMA	25.3%	11.0%	2.3
Los Angeles County--LA City (East Central/Silver Lake, Echo Park & Westlake) PUMA	27.9%	11.5%	2.4
Los Angeles County (Central)--LA City (Southeast/East Vernon) PUMA	28.9%	9.5%	3.0
Los Angeles County--LA City (Central/Univ. of Southern California & Exposition Park) PUMA	22.8%	6.2%	3.7
Los Angeles County (Central)--LA City (East Central/Central City & Boyle Heights) PUMA	30.6%	7.4%	4.1
Los Angeles County (Central)--LA City (East Central/Hollywood) PUMA	31.7%	7.6%	4.2
Los Angeles County (Central)--Huntington Park City, Florence-Graham & Walnut Park PUMA	32.1%	4.4%	7.2
Los Angeles County (South Central)--LA City (South Central/Watts) PUMA	28.6%	3.8%	7.5
Los Angeles County (Central)--East Los Angeles PUMA	37.8%	4.4%	8.6
Los Angeles County (South)--Long Beach City (Southwest & Port) PUMA	36.5%	4.1%	8.8
Los Angeles County (North)--LA City (North Central/Mission Hills & Panorama City) PUMA	37.1%	4.1%	9.1
Los Angeles County--LA City (Mount Washington, Highland Park & Glassell Park) PUMA	35.3%	3.7%	9.6
Los Angeles County (Southeast)--Long Beach (Central) & Signal Hill Cities PUMA	40.5%	3.7%	11.0
Los Angeles County (South Central)--LA City (South Central/Westmont) PUMA	29.8%	2.7%	11.2
Los Angeles County (Northwest)--LA City (North Central/Van Nuys & North Sherman Oaks) PUMA	34.6%	2.9%	11.8
Los Angeles County (West Central)--LA City (West Central/Westwood & West Los Angeles) PUMA	45.5%	3.7%	12.4
Los Angeles County (West Central)--LA City (Central/Hancock Park & Mid-Wilshire) PUMA	40.7%	3.2%	12.7
Los Angeles County (Central)--LA City (Central/West Adams & Baldwin Hills) PUMA	34.2%	2.6%	13.2

Derived from American Community Survey, 2013/2017

Conclusion: The city of Huntington Beach has virtually no 30-minute transit access to the richest job centers in the CSA. This is unlikely to change materially in the foreseeable future. This is in contrast to the huge transit investments in urban rail and busways have been and are being further developed in Los Angeles County, with the intent of materially increasing transit access and creating a more compact urban form.

As noted above, the Huntington Beach overcrowding rate (relative to the national rate) is considerably less than that of the SCAG region. Approximately 34% of the overall SCAG allocation is attributable the HCD overcrowding adjustment. At this rate, the overall Huntington Beach allocation includes 4,564 units due to the blanket application of the SCAG overcrowding adjustment. The Huntington Beach RHNA allocation should reflect an overcrowding adjustment of 0.31%, rather than the SCAG overall overcrowding adjustment of 6.76%, which results in a

requested reduction of 4,354 units. When adjusted for the related residual adjustment (2,074 units), a gross reduction of 6,428 units is requested.

Issue #3: Excessive Residual Adjustment

The SCAG residual adjustment undermines and does not promote the critical objective of socioeconomic equity and placement of housing that can be reached more quickly by transit. This has resulted in a higher Huntington Beach RHNA allocation. The basis of this appeal request is that the SCAG allocation undermines and does not further the following objectives listed in subdivision (d) of Section 65584[27] with respect to:

- "promoting … socioeconomic equity" (Section 65584[d2]), and
- "promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction (Section 65584[d3])."

An objective of Subdivision (d) of Section 65584, is "Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category." However the SCAG residual adjustment to meet this objective is so high that it materially undermines and fails to promote other objectives, which may be of greater importance given state and regional policy priorities.

In addition, SCAG's residual method undermines and does not promote important intentions of SCAG's *Connect SoCal 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy*, such as housing construction in transit rich areas (page 4), strategies that result in reduced demand for single occupancy vehicle use (page 10) and land use patterns that facilitate multimodal access to work (page 25).[28]

Generally, the objectives of state law and SCAG's Sustainable Communities Strategy would be served by a larger share of solo drivers being attracted from their cars to transit and other non-motorized modes. Minimization of solo driving commutes requires considerably better transit job access. State and regional policies have been adopted to seek these objectives by constructing housing units close to jobs that can be filled by nearby resident workers.

Approximately one-third (32%) of the Huntington Beach RHNA allocation is attributable to the SCAG residual adjustment (redistribution methodology), comprising 4,303 of the 13,337 units.

Alone among the objectives listed in subdivision (d) of Section 65584, "socioeconomic equity" addresses fundamental human economic needs and upward mobility. By basing such a large portion of the RHNA allocation to lower "the proportion of housing need when a jurisdiction

[27] Government code 65584(d)(4).
[28] Page numbers refer to the Sustainable Communities Strategy within the *Connect SoCal 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy.*

already has a disproportionately high share of households in that income category…" the potential to promote "socioeconomic equity" is materially diminished.

The methodology increases the RHNA allocation for Huntington Beach, which has little potential to contribute to the cited objectives in comparison with other jurisdictions.

Consequences: The following factors undermine the objectives above, as follows:

The promotion of socioeconomic equity is undermined failing to apply the Huntington Beach overcrowding rate instead of the SCAG region average rate. Residents of the new Huntington Beach housing will have considerably less economic opportunity due to the limited transit job access. As a result, low-income residents moving to Huntington Beach are likely to face significant impediments to socioeconomic advancement.

The higher allocation to Huntington Beach will undermine the intraregional relationship between jobs and housing because transit access is so limited. Conversely, the interregional relationship between jobs and housing would be promoted by allocating a smaller number of units to Huntington Beach.

Consistent with trends already evident in research prepared for SCAG (below[29]), the limited transit job access from Huntington Beach is likely to create incentives to workers to purchase cars. More often than not, this is likely to mean solo commuting by car and higher commuting expenses.

The longer transit commutes could significantly reduce the incentive for some potential workers to seek employment.

The Importance of Short Transit Commutes: Relatively short commute times are crucial for transit to maintain its market share. In the United States, the average drive alone time is less than 30 minutes and is 26.8 minutes in Orange County. By comparison, transit commute times average 53.6 minutes[30] in Orange County, nearly double the drive alone time.

Around the country, a 30-minute standard is increasingly being used to evaluate transit and automobile commuting. SCAG uses a 30-minute standard for auto trips, though uses 45-minutes for transit trips in RHNA allocations. The Puget Sound Regional Council (Seattle area) uses a 30-minute standard for both auto and transit trips. The Center for Neighborhood Technology (CNT) publishes comprehensive 30-minute transit commute data within many metropolitan areas, including estimates from virtually any address (below). The University of Minnesota Accessibility Observatory publishes 30-minute transit and car job access estimates for 50 of the nation's largest metropolitan areas (below).

[29]Michael Manville, Bryan Taylor and Evelyn Blumenberg, "Falling Transit Ridership: California and Southern California," January 2018. https://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf.
[30] Derived from American Community Survey, 2013/2017.

As the data below indicates, access to jobs by transit tends to be considerably less than by driving alone. For RHNA to encourage transit commuting rather than driving alone, affordable housing needs to be built in jobs-rich areas, where transit can be more competitive with the auto.

However, the transit trends in the SCAG region are working against any such policy objective. Low-income workers are buying cars, and they are abandoning transit.

A SCAG sponsored research noted:[31]

> "Driving is relatively easy, while moving around by means other than driving is not. These circumstances give people strong economic and social incentives to acquire cars, and — once they have cars — to drive more and ride transit less."

With its below average transit job access, residents of the allocated housing are likely to have cars or will have significant incentive to obtain vehicles improve to their employment prospects and standards of living.

Assertions

The following facts are asserted in support of the appeal request:

(1) Lower Income Worker Transit Commuting is Declining

Low income residents are far more likely to drive alone than to commute by transit and this is becoming increasingly so. In Orange County, workers with earnings below the poverty line are 12 times as likely to drive alone than to commute by transit. In the last seven years (2006/2010 to 2013/2017) transit commuting by workers below the poverty line has decreased by 41%. By comparison, in Los Angeles County, below poverty line commuters are only four times as likely to drive alone, while in the Los Angeles-Long Beach combined statistical area (CSA)[32] workers below the poverty line are six times as likely to drive alone (Table 3-1). A similar downward trend in low-income commuting is evident in both Los Angeles County and the CSA (Figure 3-1).

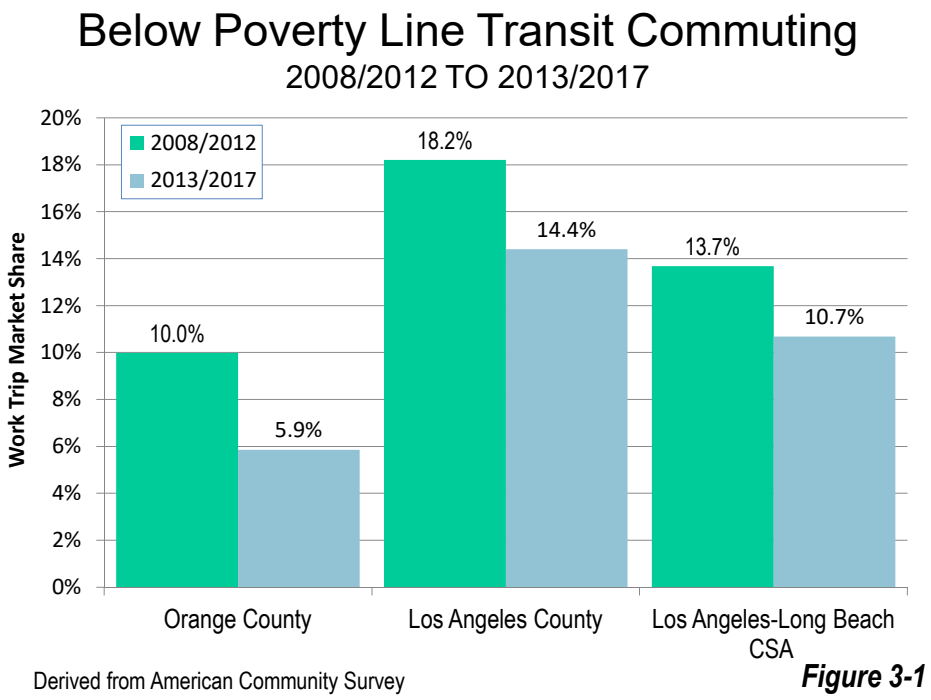
The very demographic that is the primary target of affordable housing under RHNA drives alone at a rate similar to that of all workers and is increasingly abandoning transit.

[31] Michael Manville, Bryan Taylor and Evelyn Blumenberg, "Falling Transit Ridership: California and Southern California," January 2018. https://www.scag.ca.gov/Documents/ITS_SCAG_Transit_Ridership.pdf.
[32] This analysis uses the Los Angeles-Long Beach combined statistical area (the SCAG area, without Imperial County), which is the largest labor market definition by the U.S. Office of Management and Budget. As a labor market area, the CSA is also a housing market.

Table 3-1
Commuting by Workers Earning Less than 100% of the Poverty Line

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Los Angeles County	58.8%	14.4%	4
Orange County	68.2%	5.9%	12
Los Angeles-Long Beach CSA	62.2%	10.7%	6

Derived from American Community Survey, 2013/2017



Derived from American Community Survey

Figure 3-1

(2) Huntington Beach residents are far more likely to drive alone than to use transit.

Among Huntington Beach residents, driving alone accounts for 80% of commuting, while transit's market share (1.1%) is less than one half that of Orange County (2.3%). About 75 times (7,500%) as many workers from Huntington Beach drive alone as use transit. This is more than twice the rate of Orange County (36). Huntington Beach also has the highest ratio of drive alone commuting to transit commuting among the larger Orange County cities (Table 3-2).

Table 3-2
Driving Alone & Transit Commuting: 2013/2017
Huntington Beach and Other Large Orange County Cities

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Huntington Beach	79.7%	1.1%	75
Anaheim	76.9%	3.4%	22
Costa Mesa	77.4%	2.4%	32
Fullerton	77.9%	2.6%	31
Garden Grove	79.8%	2.3%	35
Irvine	77.2%	1.2%	62
Orange	80.3%	1.7%	46
Santa Ana	73.4%	5.8%	13

Derived from American Community Survey, 2013/2017

Further, bus ridership is declining in Orange County. Orange County Transportation Authority bus ridership dropped 46 percent, from 68.9 million in 2008 to 37.3 million in 2019.[33] The COVID-19 pandemic has led to even greater ridership losses and uncertainty with respect to when or even if, ridership will return to previous levels. It is inconceivable that there will be a sufficient increase in Huntington Beach transit service to attract a materially larger share of workers.

(3) Thirty minute transit access to jobs from Huntington Beach ranks the lowest among the eight largest cities of Orange County, and well below many other areas of the CSA, according to data from the Center for Neighborhood Technology (Table 3-3).[34]

- Approximately 134,000 jobs, overall, can be reached by transit within 30 minutes. By comparison, the average for the other seven largest cities in Orange County (246,000) was 1.8 times that of Huntington Beach. Transit commuters could access an average of 403,000 jobs in 30 minutes from Santa Ana (403,000), a rate three times that of Huntington Beach.

- Approximately 40,000 jobs requiring no more than a high school education were accessible by transit in 30 minutes from Huntington Beach. By comparison, the average for the other seven largest cities in Orange County (79,000) was 1.8 times that of Huntington Beach. Transit commuters could access an average of 119,000 jobs in 30 minutes from Santa Ana (403,000), a rate three times that of Huntington Beach.

[33] From American Public Transportation Association Fourth Quarter Ridership Reports (https://www.apta.com/wp-content/uploads/Resources/resources/statistics/Documents/Ridership/2008_q4_ridership_APTA.pdf and https://www.apta.com/wp-content/uploads/2019-Q4-Ridership-APTA.pdf).
[34] Center for Neighborhood Technology, *All Transit,* https://alltransit.cnt.org/, Data downloaded October 11, 2019.

CNT does not produce similar data for driving alone. CNT does not produce similar data for driving alone.

Comparative transit and drive alone employment access data is available from the University of Minnesota Accessibility Observatory for 50 of the largest metropolitan areas. In 2017, the average resident of the Los Angeles metropolitan area (Los Angeles and Orange County) could reach 33 times (3,300%) as many jobs in 30 minutes driving alone as by transit.[35] The University of Minnesota does not develop estimates below the metropolitan area level, such as for counties, municipalities or specific addresses.[36]

Table 3-3
30-Minute Transit Access to Jobs (Average Household)
Huntington Beach and Other Large Orange County Cities

	All Jobs	Jobs Requiring High School Education or Less
Huntington Beach	133,743	39,989
Anaheim	219,497	69,800
Costa Mesa	292,009	82,347
Fullerton	169,809	54,339
Garden Grove	227,677	69,669
Irvine	182,345	48,139
Orange	224,776	68,781
Santa Ana	403,380	118,594

Source: Alltransit.cnt.org

(4) Actual transit access to jobs, measured by commuting behavior, is superior to that of Huntington Beach in much of Orange County.

Among Huntington Beach commuters reaching work in less than 30 minutes, 133 times as many drive alone as use transit (Table 3-4). This is more than double the Orange County average of 59 solo driving commuters per transit commuters. Huntington Beach commuters drive alone more in relation to transit commuting than in any of the other seven largest cities in Orange County. Huntington Beach commuters drive alone at 7.5 times the rate of highest ranking Santa Ana, where there are only 18 solo driving commuters per transit commuter (Table 3-4).

[35] Derived from data in Andrew Owen and Brendan Murphy, University of Minnesota Center for Transportation Accessibility Laboratory, *Auto Access Across America: 2017*, 2018, http://cts-d8resmod-prd.oit.umn.edu:8080/pdf/cts-18-16.pdf and *Transit Access Across America: 2017,* 2018, http://cts-d8resmod-prd.oit.umn.edu:8080/pdf/cts-18-12.pdf.

[36] CNT and the University of Minnesota use different criteria for transit access.

Table 3-4
Commuters Reaching Jobs in Less than 30 Minutes (of all commuters)
Huntington Beach and Other Large Orange County Cities

	Drive Alone Share	Transit Share	Drive Alone per Transit Ratio
Huntington Beach	45.3%	0.3%	133
Anaheim	45.4%	1.1%	41
Costa Mesa	59.7%	1.3%	45
Fullerton	43.2%	0.6%	67
Garden Grove	47.2%	0.7%	70
Irvine	57.6%	0.6%	92
Orange	50.9%	0.5%	93
Santa Ana	50.9%	2.9%	18

Derived from American Community Survey, 2013/2017

Conclusion: A more modest residual adjustment would better promote far more socioeconomic equity, while still easing the challenges faced by disadvantaged cities. For example, a residual adjustment to 20% of the current method to jurisdictions with richer transit and jobs environments could benefit a large number of households by placing housing where the opportunities for upward mobility are better, while moderating the allocations for disadvantaged cities.

Based on the above, a reduction in the Huntington Beach RHNA residual adjustment of 3,442 units is appropriate (4,303 units reduced by 80%).

APPENDIX: CALCULATION OF ESTIMATES

Issue #1: Over-Estimation of HQTA Allocation

1	Huntington Beach RHNA Allocation (Table: HQTA Population Share)		3,059
2	Basis of Requested Revision		
3	Population in HQTAs (SCAG): 2045	75,832	
4	Our Estimate: 2045	14,963	
5	Reduction in HQTA Population	-80.3%	
6	Requested Reduction in Units Based on HQTA Population		(2,455)
7	Impact of Reduction on Residual Allocation		(1,170)
8	Total Reduction in Units		(3,625)

Issue #2: Failure to Apply a Specific Huntington Beach Overcrowding Adjustment

1	Huntington Beach RHNA Allocation (Table: Total RHNA)		13,337
2	Basis of Requested Revision		
3	HCD RHNA Allocation: SCAG Region	1,341,827	
4	HCD RHNA Overcrowding Allocation: SCAG Region	459,134	
5	HCD: SCAG Region Allocation Attributable to Overcrowding	34.22%	
6	Portion of Huntington Beach Allocation Attributable to Overcrowding		4,564
7	HCD SCAG Region Overcrowding Factor	6.760%	
8	Huntington Beach Overcrowding Factor	0.310%	
9	Huntington Beach Factor Compared to SCAG	-95.414%	
10	Requested Reduction in Units Based on Overcrowding		(4,354)
11	Impact of Reduction on Residual Allocation		(2,074)
12	Total Reduction in Units		(6,428)

Line 1: From Table: RHNA Allocation inputs for Huntington Beach city: "TOTAL RHNA FOR ..."
Line 6: Line 5 (*) Line 4
Line 7: Excess SCAG Overcrowding Rate Compared to National (ACS 2013-2017)
Line 8: Excess Huntington Beach Overcrowding Rate Compared to National (ACS 2013-2017)
Line 9: Line 8 reduction from Line 7
Line 10: Line 6 (x) Line 9
Line 12: Line 10 (+) Line 12

Issue #3: Excessive Residual Adjustment

Huntington Beach RHNA Allocation (Table: Residual Factor)		4,303
Basis of Allocation		
Proposed Reduction in Units	-80.0%	
Requested Reduction in Units		(3,442)

RHNA Allocation inputs for Huntington Beach city		
Forecasted household (HH) growth, RHNA period:	427	
Vacancy Adjustment	13	
Replacement Need	2	
TOTAL PROJECTED NEED:	441	
Existing need due to job accessibility (50%)	5534	
Existing need due to HQTA pop. share (50%)	3059	
Net residual factor for existing need^	4303	
TOTAL EXISTING NEED	12896	
TOTAL RHNA FOR HUNTINGTON BEACH CITY	**13337**	*Pct of total*
Very-low income (<50% of AMI)	3651	*27.4%*
Low income (50-80% of AMI)	2179	*16.3%*
Moderate income (80-120% of AMI)	2303	*17.3%*
Above moderate income (>120% of AMI)	5204	*39.0%*

^Negative values represent a lower-resourced community with good job and/or transit access having its allocation capped. Positive values represent this amount being redistributed to higher-resourced communities based on their job and/or transit access.

CITY OF HUNTINGTON BEACH
2000 MAIN STREET, HUNTINGTON BEACH, CALIFORNIA 92648-2702

OFFICE OF THE INTERIM CITY MANAGER
DAVE KIFF

September 12, 2019

Mr. Kome Ajise
Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

Submitted via U.S. Mail and email to: housing@scag.ca.gov

RE: CITY OF HUNTINGTON BEACH DRAFT RHNA METHODOLOGY COMMENT LETTER

Dear Mr. Ajise,

The City of Huntington Beach ("City") would like to thank SCAG staff as well as the RHNA subcommittee, the Community, Economic and Human Development Committee (CEHD) and the Regional Council for the opportunity to comment on the 6th cycle Regional Housing Needs Allocation (RHNA) methodology and for all the hard work that has been done to date, including expanded stakeholder engagement in the process.

General Comments

Since the beginning of the 5th RHNA cycle through 2018, the City has issued almost 3,000 permits for housing units, placing Huntington Beach among the top 10 housing producers for the entire SCAG region[1]. The City has exceeded its above moderate allocation, met all of the moderate income RHNA target (mostly through deed restricted units) and has issued permits for nearly 100 very low and low income units with another 50 extremely low and low income units currently in the planning process. Huntington Beach continues to be one of the more affordable coastal communities to live in Orange County.

While the City acknowledges SCAG's willingness to develop the 6th cycle RHNA methodology in a way that it believes will result in a more fair and equitable allocation to the jurisdictions, the City objects to the arbitrary and capricious RHNA process as a whole and as and its applicability to Charter Cities. While we are optimistic that the final RHNA allocation will reflect the State's stated objective to build more housing, this is not

[1] Based on a comparison of the City of Huntington Beach building permit data with the SCAG jurisdictions in the HCD 5th Cycle Annual Progress Report Permit Summary (dated 6/25/19) http://www.hcd.ca.gov/community-development/housing-element/index.shtml

the way to go about it. The City (as we are confident most cities will agree) will insist that SCAG will ensure that the methodology adopted for the 6th cycle will not result in the lopsided jurisdictional allocations that we experienced during the 5th cycle. For example, in 2012, the four cities immediately surrounding Huntington Beach, with a collective population of approximately 323,000, were allocated a combined 11 total RHNA units. The City of Huntington Beach, with a current population of approximately 200,000, was allocated 1,353 units.

In addition, with the recent changes to state housing element law, such as AB 1397, jurisdictions are tasked with identifying eligible RHNA sites and obtaining housing element certification from the California Housing and Community Development Department (HCD) under more stringent site criteria and site analysis requirements. Under new laws such as SB 166, jurisdictions will be challenged with zoning additional sites throughout the planning period if market demand results in a development that does not yield the maximum number of units allowed on a property. Increasing the number of units (in each income category) that cities receive as part of the RHNA process will ultimately create a situation where many cities are unable to comply with the law and ultimately, have their Housing Elements decertified by HCD and/or face draconian State law consequences, including losing the ability to control how and where housing is built within a jurisdiction. With this in mind, input from the local jurisdictions as the primary data source is crucial in determining realistic RHNA numbers as this would provide the most accurate reflection of future growth and need for the 6th cycle.

Local input is critical to the accuracy and legitimacy of the RHNA process. SCAG has acknowledged the importance of using local input in the RHNA process since the beginning of the 6th cycle RHNA process. It was not until 2017, when SCAG consulted with all 197 jurisdictions over the course of a year and a half to collect input on population, housing and employment growth as well as review parcel level data that identified General Plan, zoning, vacant land, potential infill parcels and permanent open space areas. This consultation was critical because the data maps prepared by SCAG for Huntington Beach incorrectly identified private streets within existing multi-family residential areas, open space, developed industrial properties, existing businesses, and existing mobile home parks **as vacant land** available for potential redevelopment. Through SCAG's new Bottom Up Local Input process, the City identified these areas of discrepancy and provided correct GIS data to SCAG.

It should be noted that certain comment letters erroneously suggested that local input should not be used in the methodology. These comment letters appear to be based on faulty assumptions that local input relies on **existing** zoning only. To the contrary, the City based its review on realistic growth potential including possible land use changes if sufficient information was available at the time to make this assumption. The City provided this input as a conservative growth projection to ensure that regional planning efforts are able to adequately plan for improvements to the region's transportation system.

In addition to the comments contained in this letter, the City supports and, by reference, incorporates the comments submitted by the Orange County Council of Governments (OCCOG) and the Center for Demographic Research (CDR) at California State University at Fullerton (CSUF).

Option 1

The City opposes the use of Option 1 as it is currently proposed. To ensure that the most accurate data is utilized, the City recommends that SCAG allow each jurisdiction to review and correct the datasets utilized in this option, if necessary, including verification of land acreage, density calculations and building permit data.

Existing Need

The City opposed the use of a separate existing need calculation as it does not include any local input. Similar to Option 2, existing need is based almost entirely on existing population, which does not meet statutory requirements, and utilizes a one-size-fits-all approach to housing need. RHNA is a response to a statewide housing issue which is implemented on a regional level. The success of the SCAG region depends on the ability of the cities and counties within SCAG to implement their respective RHNA allocation. A one-size fits all approach to housing need that does not include local input will not enable SCAG cities and counties to comply with State law to the extent required, and nor will it successfully produce housing consistent with RHNA targets.

Building Permit Data

The building permit data aspect of Option 1 as currently proposed is flawed and does not logically facilitate developing an accurate RHNA methodology.

For example, using population as the only factor without considering size in land area and capacity appears to create faulty numbers. Using the time period 2006 – 2018 and not including the 4th cycle again appears a faulty methodology. The dates currently proposed include the "Great Recession" years. During the Great Recession, housing production was stagnant in most cities regardless of population. The limited housing unit production during the Great Recession years will have a greater impact on jurisdictions with larger populations when compared to the regional average and result in skewed RHNA outcomes. The 5th cycle should be the only date range used in this calculation and including land area as an additional factor. Without a more detailed analysis and rationale by SCAG, this approach in the methodology is fundamentally flawed.

Redistribution of Above Moderate Category

The City opposes the redistribution of the above moderate income category. Huntington Beach has had inclusionary housing policies in place for 25 years. As a coastal city, land costs can be significantly greater than inland areas. The development

community must be able to build market rate housing in the City to offset additional costs resulting from the provision of affordable inclusionary units. In addition, as identified in the OCCOG letter, the redistribution of the above moderate income category to the three lower income categories would result in unreasonable allocations of lower income RHNA targets to those jurisdictions that already have higher concentrations of very-low income units and those that are already receiving higher allocations of lower-income units due to the social equity adjustments. Further, this approach is not consistent with the State law RHNA objectives, including increasing affordability within each region in an equitable manner and allocating a lower proportion of housing need in income categories in jurisdictions that have a disproportionately high share in comparison to the county distribution.

High Quality Transit Areas (HQTAs)

The City objects to the use of HQTAs as part of the RHNA methodology. The data and assumptions are flawed and terms are not defined, making the use of this factor arbitrary and unreliable.

The most recent RHNA Subcommittee staff report defines a HQTA as "corridors that have at least a fifteen-minute headway (time in between the next scheduled service) during peak hours for bus service." According to SCAG reference maps, all of Beach Boulevard within Huntington Beach is defined as a HQTA.

Based on the June 19, 2019 Orange County Transportation Authority Bus Schedule, there are no bus stops on Beach Boulevard within the City of Huntington Beach with headway times of 15 minutes or less. The shortest headway time during peak hours for bus service is on the Route 29 stop at PCH/1st Street traveling Southbound with an average headway time of 18.23 minutes during the PM peak hours. Most stops have an average peak hour headway time of approximately 19-25 minutes. Some stops, such as the Beach Boulevard/Talbert Avenue stop, have peak hour headway times of 40-49 minutes. One stop (Beach Boulevard/Atlanta Avenue) did not list any stop times as part of any route for this stop.

The Goldenwest Transportation Center (GWTC) is also identified by SCAG as a HQTA. Most of the routes commuting into/out of Huntington Beach here have 15 minutes or less headway during peak hours. However, some of the routes at GWTC do not have stop times that provide service throughout the entirety of the assumed peak commute hours. If bus service ends midway through the peak commute hours, would that meet SCAG's criteria to be considered High Quality Transit? It must also be noted that, starting in October 2019, OCTA will eliminate Route 211, which services Huntington Beach to Irvine (a major Orange County job center), due to low ridership.

If HQTAs is part of any proposed RHNA methodology, SCAG must look at the practical application of HQTAs as they operate - not based on flawed assumptions and data. Otherwise the use of HQTAs to implement the RHNA statute objectives (including promoting an improved intraregional relationship between jobs and housing) is just an

arbitrary factor to be exploited in calculating RHNA allocations. HQTAs must accurately reflect data regarding actual bus service in these areas. Based on SCAG's definition of a HQTA, the entire length of Beach Boulevard in Huntington Beach would not qualify as a HQTA and should be adjusted accordingly.

Local Profile/CIRB Data

In April 2019, the City asked SCAG staff whether the Construction Industry Research Board (CIRB) housing permit data in the SCAG Local Profiles would be utilized in the RHNA methodology. The City was unfamiliar with this data source and unable to verify the accuracy of the data as shown in the Local Profile. SCAG staff confirmed to the City that the CIRB data ***would not*** be utilized for RHNA purposes. Therefore, the City objects to the use of the CIRB data in the RHNA methodology unless all jurisdictions are given an opportunity to review the raw data and confirm or correct the data as necessary.

Option 2

The City objects to any use of Option 2. Option 2 bases RHNA allocation solely on existing population without incorporating any local input or weighing local planning factors as required by State law (Government Code §65584.04[f]). As such, Option 2 should be rejected in its entirety from any further consideration.

However, if this option continues to be explored, a detailed explanation as to how existing population is directly linked to future housing need without consideration for other factors such as geographic area and availability of land must be provided. Additionally, the resulting RHNA allocation[2] under Option 2 would exceed the planned residential growth of our General Plan, which was comprehensively updated in 2017.

Therefore, if Option 2 were utilized, the City's General Plan as well as a recent Environmental Impact Report (EIR) would no longer be valid. Option 2, or any option that is selected cannot require numbers that exceed growth planned in a jurisdiction's General Plan and/or associated infrastructure plans (e.g. – Water Master Plan, Arterial Highway Plan). In addition, if RHNA growth exceeds planned residential growth of a jurisdiction's General Plan, Housing Elements will be out of compliance with state law.

Option 3

Of the three options presented for consideration, Option 3 appears to be the most rational because it relies primarily on local input. However, as discussed, household growth, not population growth, more accurately reflects housing need and is more consistent with the direction provided by the CEHD and Regional Council in their June 6th actions.

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[2] Based on the SCAG RHNA Methodology tool using the HCD Final Determination and the low and high SCAG proposed alternative determination

RHNA Methodology Tool

The City appreciates SCAG's efforts to create a RHNA methodology tool to assist jurisdictions in understanding how the data and methodology approaches relate in calculating realistic potential RHNA allocations for each jurisdiction. Utilization of the tool to obtain the various RHNA allocations for each option based on the HCD Final Determination and the SCAG-proposed alternative determination resulted in a wide variety of potential RHNA allocations for our City as well as for most of the other regional jurisdictions.

The disparity among the potential RHNA allocations highlights how arbitrary the State law that mandates allocating jurisdictional RHNA requirements can be. The process is clearly flawed. As an example, during the current 5th RHNA cycle, the City issued more permits for new housing units in 2016 (a year after State HCD decertified the City's Housing Element based on allegations of the City not meeting its RHNA numbers) than we did in any other year during the planning period. In order for the RHNA process to be truly effective in facilitating the production of housing for all economic segments, we respectfully advise SCAG and its regional members to work together in advocating for RHNA reform at the State level.

Once again, thank you for the opportunity to comment on the draft 6th cycle RHNA methodology options. The City appreciates SCAG's commitment to a fair and transparent process and will continue to be an active participant during this 6th cycle RHNA process.

Sincerely,

Dave Kiff
Interim City Manager
City of Huntington Beach, California

cc: Members of the Huntington Beach City Council

City of Huntington Beach

2000 MAIN STREET CALIFORNIA 92648

DEPARTMENT OF COMMUNITY DEVELOPMENT

Planning Division 714.536.5271

Code Enforcement Division 714.375.5155

Building Division 714.536.5241

November 5, 2019

Honorable Bill Jahn
Regional Council President
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

Submitted via email to: housing@scag.ca.gov

RE: NOVEMBER 7, 2019 AGENDA ITEM NO. 4 – DRAFT RHNA METHODOLOGY

Dear President Jahn,

The City of Huntington Beach would like to comment in writing on the proposed RHNA methodology that will be considered at the November 7, 2019 meeting. While we appreciate the opportunity to participate in the process, the City cannot emphasize enough the potential disastrous ramifications including unnecessary legal action that may result in the RHNA allocation process contemplated by the State and its sub-regions.

Action taken by the Regional Council on November 7th will be the final step in determining a RHNA methodology that, short of litigation, all member jurisdictions may be required to implement over the next eight years. With the recent changes to state housing element law, such as AB 1397 and SB 166, general law cities are tasked with identifying eligible RHNA sites and obtaining housing element certification from the California Housing and Community Development Department (HCD) under more stringent site criteria and site analysis requirements. While the State continues to assert these laws apply to charter cities, the City of Huntington Beach continues to disagree and we are amid litigation over the very issue. With this in mind, the City of Huntington Beach implores the Regional Council to adopt a methodology that utilizes local input as a primary factor.

The City acknowledges SCAG's objective to develop the 6th cycle RHNA methodology in a way that will result in a more fair and equitable allocation to the jurisdictions and we are optimistic that the final RHNA allocation will reflect this goal. However, local input is critical to the accuracy and legitimacy of the RHNA process.

Oppose Alternative Methodologies

The City of Huntington Beach requests that the Regional Council reject alternative methodologies that have been submitted (very late in the process.) These methodologies do not comply with State Law Government Code Title 7, and in addition, largely remove local input from the process.

Support OCCOG 11/5/19 Letter Regarding HCD Regional Determination

The City of Huntington Beach agrees and joins with OCCOG in its letter of November 5, 2019 which correctly asserts that HCD ignored State Law in determining the final regional housing need. The City will support any legal action taken by SCAG to address this blatant violation of state law in order to prevent further and more damaging overreach by HCD.

The City appreciates SCAG's commitment to a fair and transparent process and will continue to be an active participant during this 6th cycle RHNA process. The City thanks SCAG staff as well as the RHNA subcommittee, Community, Economic and Human Development Committee (CEHD) and Regional Council for all of the hard work that has been done as part of the 6th cycle RHNA process.

Sincerely,

for

Oliver Chi
City Manager

CITY OF HUNTINGTON BEACH
OFFICE
of the
CITY ATTORNEY

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November 20, 2019

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Orange, CA 92868

Re: ***SCAG's November 7th Illegal Action to Apportion Excessive, Arbitrary & Capricious RHNA to the City of Huntington Beach for the 6th Planning Cycle***

Dear Messrs. Metcalf, Gilhooley, Ikhrata, and Hon. Viegas-Walker,

We are writing to place into the record an objection to the illegal and blatantly unfair vote that took place at the November 7, 2019, Southern California Association of Governments ("SCAG") Regional Council Meeting. As you know, in a substitute motion, in a 43-19 vote, SCAG took action to approve an "alternative" Regional Housing Needs Allocation ("RHNA") distribution method proposed by, and promoted by, Riverside Mayor Rusty Bailey.

To be abundantly clear, this violates the law both procedurally and substantively.

First, the City of Huntington Beach *did not receive proper or adequate* notice that SCAG would entertain such a vote on such an "alternative" and legally unsupported methodology. It was not clearly part of the advance agenda and there was only a brief, vague letter sent by email two days prior to Huntington Beach that this "alternative" methodology was being contemplated. To the contrary, prior to this meeting, SCAG had consistently and repeatedly set forth certain methodologies upon which the City of Huntington Beach relied.

In addition to the lack of adequate notice of the "alternative" RHNA distribution method that ultimately occurred, the City of Huntington Beach was not allowed to provide any meaningful input, or place any objections on the record at the meeting before the vote. In a blatant disregard of controlling parliamentary rules, the Mayor Pro Tem of Huntington Beach, Lyn Semeta's request to speak to the members was categorically denied – depriving her and the City of Huntington Beach any opportunity to voice an objection to, or provide any input to, the voting members before the vote was taken. Again, a blatant denial to Huntington Beach to participate in the SCAG RHNA process.

Moreover, this illegal vote resulted in a massive shift of RHNA for the 6th Cycle to coastal cities. Prior to the November 7th vote, the City of Huntington Beach had been informed by SCAG to anticipate a RHNA distribution for the 6th Cycle of 3,612 units. After the November 7th vote by SCAG, the City of Huntington Beach has learned that the RHNA distribution will be 13,300 – a nearly 370% increase to the City of Huntington Beach.

This massive shift of RHNA to beach cities, like Huntington Beach, squarely undermines SCAG's long and historical defense of the legality of the RHNA methodology. The City of Huntington Beach on the other hand has long held, and has repeatedly voiced, that the methodology for RHNA determinations has been flawed, wrought with political manipulation, and not based on objective, verifiable real-world empirical data, this latest vote on November 7th proves the very point that Huntington Beach has argued all along, i.e., that there is no rational methodology *at all*.

In fact, peeling back the veil of false pretense, we now see these RHNAs amount to nothing more than an arbitrary and capricious assignment of a zoning/development burdens imposed on cities by a political majority from outside those cities.

SCAG Denied the City of Huntington Beach a Voice, Participation in the Process

For the past year, the SCAG RHNA subcommittee and the City of Huntington Beach have been meeting monthly, parsing through complicated formulas in an effort to determine a reasonable methodology that complies with RHNA statutory law. These formulas appear to provide unbridled discretion regarding options like proximity to jobs, access to transportation, available land to build on and projected household growth when determining RHNA distribution. As the process evolved, many public meetings were held throughout the SCAG region to discuss and obtain public comment on the methodology. All of this input also included the opportunity for individual

jurisdictions to use estimation calculator tools provided by SCAG to ascertain impacts of various proposed methodologies on their city. The jurisdictions each had the opportunity to provide suggestions for changing the proposed formulas and many cities, like Huntington Beach, did provide suggestions.

At the end of this year-long process, SCAG staff proposed a final methodology to be voted on at the November 7th Regional Council Meeting. Although we continue to object to the 1.3 million regional allocation, Huntington Beach and the other Orange County cities were prepared to vote in favor of the SCAG staff-recommended methodology as it appeared to be a fair, equitable formula for distribution based on reasonable factors, i.e., factors set forth by State law. Bear in mind, with each change to the proposed methodology options throughout the process, SCAG staff spent considerable time crunching the numbers, applying the different factors so that at the time the Regional Council voted on the final proposal, the methodology had been thoroughly vetted and analyzed for its impacts and rationale as a "reasonable" methodology.

Unfortunately, at the 11th hour, after ignoring earlier multiple opportunities to give input as to why an alternate formula should be proposed, the elected officials of Riverside and Los Angeles, in an apparent backroom deal, sprung new, "alternative" (irrational) methodology that capriciously and baselessly shifted a massive portion of the RHNA distribution onto Orange County, targeting, specifically, beach cities.

Notably, the day of the meeting, eleven of the fourteen Los Angeles City Council Members, who are all able to cast votes due to their city's size, decided to attend the SCAG's meeting to vote against smaller Orange County. It appears that many of these Council Members never attended prior SCAG meetings. San Bernardino County voted in support of the deal because it benefitted them as well. As a result of the massive, 11th hour, "overnight" shift of RHNA to Orange County pursuant to the vote, Riverside's RHNA went from 235,131 units to 165,696; San Bernardino's was reduced, 181,774 to 135,047; and Orange County's increased dramatically from 107,978 units to 182,194.

It appears that the Los Angeles, Riverside contingent orchestrated the 11th hour vote ahead of time and therefore had time to line up multiple comment letters and multiple public comment speakers in advance to come to the Regional Council Meeting to speak and support the alternative methodology. Orange County, kept in the dark until the last minute, did not.

Setting aside for a moment the procedural violations, the new/alternative methodology was not fully analyzed for impacts by SCAG staff before the vote – in square violation of substantive provisions of State law. This methodology was not previously supported by SCAG staff. The new/alternative method fails to follow applicable State law in part by removing local input and growth forecast data. The time staff from all jurisdictions spent analyzing and providing data regarding the realities of our own individual jurisdictions, in terms of cities' ability to build housing, was completely and illegally disregarded. The current methodology ignores the very real constraints that coastal cities must cope with

such as obtaining Coastal Commission approvals for zoning and development, and the scarcity and lack of available land and other environmental constraints – including Huntington Beach's particular interest in preserving the only large undeveloped and natural portion of the City – its beautiful and highly valued Wetlands.

SCAG *Not* Adhering to State Law, Prescribed Methodology

The Department of Housing and Community Development (HCD) through Council of Governments (COG) and/or Southern California Association of Governments (SCAG) purports to identify certain existing and projected regional housing needs for alleged projected State population and household growth. (Government Code § 65584, *et seq.*) SCAG covers the six-county Southern California region counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura. The COG develops a Regional Housing Need Allocation Plan (RHNA-Plan) allocating the region's share of the Statewide need to cities and counties within the region." The typical scenario is that HCD, in consultation with each COG, such as SCAG, determines the existing and projected housing needs for each region. (Government Code § 65584.01 (describing the manner in which the needs determination shall be made).)

The RHNA plan must be consistent with the following objectives: (1) increasing the housing supply and the mix of housing types, tenure, and affordability within the region in an equitable manner, which must result in each jurisdiction receiving an allocation for low- and very low-income units; (2) promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, and the encouragement of efficient development patterns; (3) promoting an improved intraregional relationship between jobs and housing; and (4) allocating a lower proportion of housing needs to an income category when a jurisdiction already has a disproportionately high share of households in that category. (Government Code § 65584(d).)

According to HCD, "the RHNA-Plan process requires local governments to be accountable for ensuring that projected housing needs can be accommodated and provides a benchmark for evaluating the adequacy of local zoning and regulatory actions to ensure each local government is providing sufficient appropriately designated land and opportunities for housing development to address population growth and job generation." The November 7th vote is in direct violation of State Housing law. Moreover, there is no evidence that the State conducted an adequate constraints analysis such that projects built to accommodate the City's additional RHNA numbers would be in conflict with the new State law and regulation regarding water conservation. (Government Code Section 65584.04 (d)(2).)

In apparent contravention to the above State law authorities, it appears that SCAG is unilaterally determining each jurisdiction's share of RHNA through an arbitrary, capricious, and clearly politically motivated approach that is in contravention to State law. What this does, especially for the 13,300 RHNA assigned to Huntington Beach, in combination with the unconstitutional State mandates under SB 35, SB 166, SB 1333, and AB 101, is create a situation where Huntington Beach and many other cities will

automatically be in violation of the newly passed State Housing laws. Such non-compliance will immediately result, according to recent State laws, in massive monetary damages to the City through the operation AB 101.

A scheme of laws that create an impossible situation for individuals and cities are illegal, unconstitutional, and cannot stand. Clearly, the City of Huntington Beach's concerns with this new proposed RHNA distribution are various, many of which have to do with what this excessive RHNA figure means in the context of the recently-passed untenable, unworkable, impractical, and unconstitutionally overreaching State Housing laws. Those are not the complaints here. However, highlighting what excessive RHNA does to a city in light of these laws is quite illuminating – and quite frankly demonstrates the punitive and destructive nature of the State's grand housing proliferation scheme toward cities.

Based upon the foregoing and as a result of this illegal vote (if fully implemented), the City of Huntington Beach will sustain real, appreciable damages. The November 7th vote by SCAG, which resulted in a massive shift of distribution of RHNA to Huntington Beach in the amount of 13,300 for the 6th Cycle, procedurally and substantively violates State Housing law.

As a result, SCAG must reconsider the November 7th vote in a manner that complies with State law.

Very truly yours,

MICHAEL E. GATES,
City Attorney

ERIK PETERSON,
Mayor

LYN SEMETA,
Mayor Pro Tem
Southern California Association of Governments
Regional Council Member, District 64

City of Huntington Beach

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DEPARTMENT OF COMMUNITY DEVELOPMENT

Planning Division 714.536.5271 | Code Enforcement Division 714.375.5155 | Building Division 714.536.5241

January 23, 2020

Draft Connect SoCal PEIR Comments
Attn: Roland Ok
Southern California Association of Governments
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017

Submitted via email to: 2020PEIR@scag.ca.gov

RE: CITY OF HUNTINGTON BEACH DRAFT CONNECT SOCAL AND PEIR COMMENT LETTER

Dear Mr. Ok,

Thank you for the opportunity to submit comments on the Draft Connect SoCal plan and Program EIR. The City of Huntington Beach appreciates SCAG's public outreach efforts for this process and offers the following comments and concerns for your consideration.

High Quality Transit Areas (HQTA)

HQTAs are defined as "corridors that have at least a fifteen minute headway (time in between the next scheduled service) during peak hours bus service." According to RTP/SCS maps, all of Beach Boulevard within the City of Huntington Beach is defined as a HQTA. However, based on the October 13, 2019 Orange County Transportation Authority (OCTA) Bus Schedule[1], there are no bus stops on Beach Boulevard within the City of Huntington Beach with headway times of 15 minutes or less. Route 29 services Beach Boulevard from the City of La Habra to PCH in Huntington Beach. The shortest headway time during peak hours for bus service is on the Route 29 stop at PCH/1st Street (not a stop on Beach Boulevard) traveling southbound with an average headway time of 18.23 minutes during the PM peak hours. Most stops have an average peak hour headway time of approximately 19-25 minutes. Some stops, such as the Beach Boulevard/Talbert Avenue stop, have peak hour headway times of 40-49 minutes. One stop (Beach Boulevard/Atlanta Avenue) did not list any stop times as part of any route for this stop. It must also be noted that OCTA eliminated Route 211 in October 2019, which serviced Huntington Beach to Irvine (a major Orange County job center) due to low ridership.

[1] OCTA Bus Book http://www.octa.net/ebusbook/CompleteBusBook.pdf

Further, OCTA's 2018 Long Range Transportation Plan (LRTP)[2] includes Figure 4.1 – *Local, Community, and Bravo! Final Route Recommendations.* This figure recommends that Route 29 receive a reduction in frequency of service. This will add further delay to the 19-25 minute average peak hour headway service times on Beach Boulevard.

The Connect SoCal Plan and PEIR must utilize practical application of HQTAs as they operate and are planned for in order to implement the statute objectives of the RTP/SCS, including promoting an improved intraregional relationship between jobs and housing. The City of Huntington Beach recommends revising the HQTAs throughout Connect SoCal and the PEIR to accurately reflect available data regarding actual bus service and planned bus service on Beach Boulevard. Based on SCAG's definition of a HQTA, the entire length of Beach Boulevard in Huntington Beach does not qualify as a HQTA and must be adjusted accordingly.

The Connect SoCal Plan and PEIR also include other transportation related errors in Orange County, as identified by comments made by OCTA. The City of Huntington Beach expresses support for OCTA's comments as they pertain to errors and inconsistencies between the existing and planned Orange County transportation network and the RTP/SCS and PEIR. For example, the OCTA Board has not approved conversion from HOV to tolled express lane for SR-55, SR-73, I-605, or north of I-605 on I-405 as depicted in the proposed regional express lanes network. The potential regional express lane network is currently subject to further study to evaluate right-of-way impacts, community issues, and overall feasibility. Additionally, Connect SoCal regional strategies rely on improvements beyond the projects submitted by OCTA, and implementation of the strategies is subject to availability of new revenue sources, necessary project development, and review processes by the implementing agencies.

RHNA Growth Exceeds General Plan Growth

Section 3.14 – Population and Housing of the Connect Socal PEIR includes four guiding principles related to Growth Forecasts approved by SCAG's Regional Council on August 1, 2019:

Principle #1: The draft plan forecast for Connect SoCal shall be adopted by the Regional Council at the jurisdictional level, thus directly reflecting the employment, population and household growth projections derived from local input and previously reviewed and approved by SCAG's local jurisdictions. The draft plan growth forecast maintains these projected jurisdictional growth totals, **meaning further growth is not reallocated from one local jurisdiction to another.**

Principle #2: The draft plan forecast at the Transportation Analysis Zone (TAZ) level is **controlled to be within the density ranges of local general plans or input received from local jurisdictional** in this most recent round of review.

[2] OCTA Long Rage Transportation Plan, Figure 4.1 http://www.octa.net/pdf/OCTALRTP111618FINAL.pdf

Principle #3: For the purpose of determining consistency for California Environmental Quality Act (CEQA) streamlining, lead agencies such as local jurisdictions have the sole discretion in determining a local project's consistency with the Plan.

Principle #4: TAZ level data or any data at a geography smaller than the jurisdiction is included in the draft plan forecast only to conduct the required modeling analytical work and is therefore, only advisory and non-binding as SCAG's sub-jurisdictional forecasts are not formally adopted as part of the Plan.

The SCAG RHNA methodology is inconsistent with Principle #1 and #2. The currently proposed draft 6th Cycle RHNA methodology reallocates "residual" existing need across jurisdictions within the same county. The reallocation is assigned to jurisdictions based on transit accessibility (50%) and job accessibility (50%), and excludes Disadvantaged Community jurisdictions which have over 50% of their populations in very low resource areas using California Tax Credit Allocation Committee (TCAC)/HCD Opportunity Indices.

Further, the cumulative impacts of the reallocation, projected need, and existing need result in a total RHNA that exceeds 1.0368 times planned household growth from the SCAG region[3]. While 1.0368 is the overall exceeded household growth in the region, each jurisdiction may be given a RHNA allocation that exceeds their General Plan growth even further as a result of the reallocated "residual" existing need calculation.

The PEIR also states that although the existing housing need portion of the 6th cycle RHNA is not included in the SCS growth forecast, the existing need portion will be allocated in a manner to support the goals of Connect SoCal through the RHNA process. The PEIR does not provide any meaningful analysis or supporting evidence to demonstrate how this will be accomplished. The currently proposed draft 6th Cycle RHNA methodology which includes reallocated "residual" need and growth exceeding SCAG local jurisdiction General Plan forecasts is not consistent with the goals of Connect SoCal, including the following:

Goal 2: Improve mobility, accessibility, reliability, and travel safety for people and goods

Goal 4. Increase person and goods movement and travel choices within the transportation system

Goal 9: Encourage development of diverse housing types in areas that are supported by multiple transportation options.

The City of Huntington Beach is unable to accommodate any reallocated growth due to a lack of transportation options, which is not consistent with Connect SoCal Goals 2, 4, or 9. As a result, the SCAG RHNA methodology is wholly inconsistent with Connect SoCal and the PEIR must address this information.

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[3] SCAG 6th Cycle RHNA Draft Allocation Methodology November 7, 2019
http://www.scag.ca.gov/programs/Documents/RHNA/RHNA-Draft-Methodology.pdf

Support for Comments and Recommendations Submitted by Other Groups

The City of Huntington Beach expresses support for comments made by OCTA as they pertain to errors and inconsistencies between the existing and planned Orange County transportation network and the RTP/SCS and PEIR, as noted above. The City also expresses support for comments made by the Center for Demographic Research (CDR) and the Orange County Council of Governments (OCCOG). The City would like to highlight the following comments from CDR and OCCOG that are of the highest level of concern:

1. SCAG must utilize the 2018 Orange County Projections (OCP-2018) dataset provided to SCAG during its Bottom-Up Local Input and Envisioning Process to ensure that general plan capacities are not exceeded and all open space and entitlements are properly reflected for the RTP/SCS and PEIR.
2. CDR PEIR comments #33, #35, and #54 to add the following text: "SB 375 requires the determination to be based upon population projections by the Department of Finance and regional population forecasts used in preparing the regional transportation plan. If the total regional population forecasted and used in the regional transportation plan is within a range of 1.5 percent of the regional population forecast completed by the Department of Finance for the same planning period, then the population forecast developed by the regional agency and used in the regional transportation plan shall be the basis for the determination. If the difference is greater than 1.5 percent, then the two agencies shall meet to discuss variances in methodology and seek agreement on a population projection for the region to use as the basis for the RHNA determination. If no agreement is reached, then the basis for the RHNA determination shall be the regional population projection created by the Department of Finance. Though SCAG's total regional population projections from the regional transportation plan were within 1.5 percent of the Department of Finance projections, HCD rejected the use of SCAG's population projections."
3. CDR RTP/SCS and OCCOG comments which revise text to maintain an objective/unbiased tone, delete sensationalized language, and include meaningful evidence to support generalized claims about the SCAG region.
4. OCCOG comments to revise the definition of a HQTA used in the RTP/SCS and RHNA to be consistent with the definition of a HQTA in SB 375 and the Strategic Growth Council. This is necessary to ensure the SCAG region is able to compete for available funds related to transit-oriented housing.
5. OCCOG comments opposing any alternative in the PEIR that does not utilize local input, including the intensified land use alternative. The RHNA must be consistent with the RTP/SCS as required by Government Code Section 65080(b)(2)(B) and Section 65584.04(m).
6. OCCOG PEIR comments regarding the usage of "can and should" in mitigation measures. Revise all mitigation measures to be "considered where applicable and feasible" to clarify that these mitigation measures are a menu of options and not

requirements. Further, any mitigation measure that includes a new fee or tax to be adopted at the jurisdictional level must be revised to clarify that it is an option for implementation and not a requirement. Also clarify whether the assumed revenue from the suggested new fees were included in the financial plan or economic analysis of the RTP/SCS.

Conclusion

Thank you for the opportunity to comment on the Draft Connect SoCal plan and Program EIR. The City of Huntington Beach appreciates SCAG's commitment to a fair and transparent process and will continue to be an active participant during the RTP/SCS update and 6th cycle RHNA process.

Sincerely,

Nicolle Aubé

Nicolle Aube, AICP
Associate Planner

Cc: Ursula Luna-Reynosa, Director of Community Development
Jennifer Villasenor, Deputy Director of Community Development
Jane James, Planning Manager

City of Huntington Beach

2000 MAIN STREET CALIFORNIA 92648

DEPARTMENT OF COMMUNITY DEVELOPMENT

Planning Division 714.536.5271 | Code Enforcement Division 714.375.5155 | Building Division 714.536.5241

February 10, 2020

Southern California Association of Governments
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017

Submitted via email to: housing@scag.ca.gov

RE: CITY OF HUNTINGTON BEACH DRAFT RHNA APPEALS PROCEDURES COMMENT LETTER

To whom it may concern,

Thank you for the opportunity to submit comments on the Draft RHNA Appeals Procedures. The City of Huntington Beach requests that the draft appeals procedures be amended to address the following questions and comments.

Section IB. Form of Appeal

- Does this section apply to appeals filed by HCD? If not, what is the process for HCD?

Section IC. Bases for Appeal

- Does this section apply to appeals filed by HCD? If not, what is the process for HCD?

Section IE. Comments on Appeals

- When will jurisdictions be notified if an appeal (not filed by their own jurisdiction) is filed against their RHNA?
- The City of Huntington Beach requests that jurisdictions that are the subject of an appeal not filed by their own jurisdiction receive a copy of the appeal within one business day of SCAG's receipt of the appeal. At a minimum, notification that an appeal has been filed against their RHNA should be provided to the jurisdiction within one business day.

Section IF. Hearing Body

- Is SCAG going to allow ex-officio RHNA subcommittee members to participate in the appeal discussion, hearing, and deliberations?

Section IG. Appeal Hearing

- Section G states: "Notice shall be provided to the appealing jurisdictions, commenting jurisdictions, and HCD at least 21 days in advance of the hearing." Will notice also be provided to the jurisdictions for which an appeal was filed against their RHNA by another jurisdiction and HCD? The City of Huntington Beach requests that this notice also include the jurisdiction whose RHNA is being appealed.
- Section G states: "The hearing(s) shall be conducted to provide the appealing jurisdiction (or HCD) with the opportunity to make its case regarding a change in its draft regional housing need allocation or another jurisdiction's allocation..." Will there be a time limit? How much time will be provided to each appealing jurisdiction to present its case?
- Will all appeals be heard back to back and then the public hearing opened for one set of public comments on all appeals? Or, will the public hearing be opened after each appeal to receive all testimony related to that appeal? How much time will be provided for public testimony?
- How far in advance of the public hearing will the SCAG staff report and recommendation be made available to the public?

Section IH. Determination of Appeal

- How long after the public hearing will the Appeals Board issue the final written determination?

Section II Post Appeal Reallocation of Regional Housing Need

- Will jurisdictions with successful appeals be excluded from receiving reallocation of those units (i.e. – getting their own units reallocated back to them)?

General Comments

- If comments/questions on the draft appeals procedures result in substantial changes to the procedures, SCAG should allow for additional time to review the changes.

Sincerely,

Nicolle Aubé

Nicolle Aube, AICP
Associate Planner

Cc: Ursula Luna-Reynosa, Director of Community Development
Jennifer Villasenor, Deputy Director of Community Development
Jane James, Planning Manager

CITY OF HUNTINGTON BEACH

2000 MAIN STREET, HUNTINGTON BEACH, CALIFORNIA 92648-2702

OFFICE OF THE CITY MANAGER
OLIVER CHI

February 20, 2020

Kome Ajise, Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

RE: Request to the Southern California Association of Governments (SCAG) to Amend the Regional Housing Needs Assessment (RHNA) Methodology for the 6th Cycle

Dear Mr. Ajise:

This letter is submitted for the administrative record of the February 24, 2020 SCAG RHNA Subcommittee meeting. City of Huntington Beach has and continues to object to the arbitrary and capricious process being followed by the State in determining and allocating RHNA for Orange County and specifically the City of Huntington Beach. (Including Mayor Semeta being denied the right to speak at the November 7, 2019 Regional Council meeting.)

The City of Huntington Beach incorporates all of its prior arguments both orally and in writing and again additionally requests that SCAG amend the Final RHNA methodology to reinstate local input (a critical) factor in determining actual existing need. The local input/household growth projections are a critical factor because it takes into consideration the unique growth characteristics of each jurisdiction.

Moreover, the local input growth projections were provided to SCAG to be used globally to show growth development patterns supporting the Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS) Connect SoCal as required by state law. The City of Cerritos recently submitted a proposal dated February 4, 2020, which recommends that household growth forecasts be reintroduced back into the calculations for the existing need as follows: household growth (33.3%), job accessibility (33.3%), and population within high quality transit areas (33.3%). While this doesn't address all concerns the City has with the methodology process, we believe it provides a better and more accurate methodology.

Finally, as stated in the SCAG staff-recommended RHNA methodology staff report for the November 7, 2019, Regional Council meeting, the reintroduction of household growth into the existing need would further the five objectives of state housing law.

The City submitted comments regarding the Draft RHNA Appeals Procedure to SCAG on February 10, 2020. However, as of the date of this letter, the City's Appeals Procedures letter has not been posted on SCAG's website or included in the list of comments received during the 6th Cycle in the February 24, 2020 RHNA Subcommittee agenda.

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Office: 714.536.5575

The City advises that SCAG object again to the Department of Housing and Community Development (HCD) because the regional determination did not follow state law [see Government Code Section 65584.01(a)], and mount a legal challenge to this illegal determination.

Finally, the Department of Finance's recently updated population projections show a significant population ***decrease*** since their previous forecast. Governor Newsom has also stated that his commitment to building 3.5 million homes by 2025 was a "stretch goal" and that the state would soon be releasing a more pragmatic estimate of the housing needs by region. The regional determination of 1.34 million housing units combined with an inequitable RHNA methodology adopted through questionable actions and political maneuvering during the November 7, 2019, Regional Council meeting, are legally flawed, following no apparent rational basis and setting up local jurisdictions for failure to comply with state housing law and based on inaccurate data assumptions. As the City has said, the data regarding the assignment of High Quality Transit Areas (HQTA) along Beach Boulevard within the City of Huntington Beach is inaccurate. The existing and 2045 planned bus service does not meet the definition of a HQTA.

We request that the RHNA Subcommittee, CEHD Policy Committee, and Regional Council consider all of the legal and factual arguments made by the City of Huntington Beach including the two above referenced recommendations prior to the adoption of the RHNA. The Regional Housing Needs Allocation will have significant impacts on the City of Huntington Beach over the next decade and thoughtful policy decisions, and more importantly the LAW cannot abandoned in favor of an irrational attempt to solve a complicated problem. It is imperative that the RHNA be finalized in a way that is LEGAL, equitable and attainable in responding to state housing mandates.

Sincerely,

Oliver Chi
City Manager

CITY OF HUNTINGTON BEACH

2000 MAIN STREET, HUNTINGTON BEACH, CALIFORNIA 92648-2702

OFFICE OF THE CITY MANAGER
OLIVER CHI

March 4, 2020

Hon. Bill Jahn, President
Regional Council
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

RE: Request to the Southern California Association of Governments (SCAG) to Amend the Regional Housing Needs Assessment (RHNA) Methodology for the 6th Cycle

Dear President Jahn:

This letter is submitted for the administrative record of the March 5, 2020 SCAG Regional Council meeting. The City of Huntington Beach has and continues to object to the arbitrary and capricious process being followed by the State in determining and allocating RHNA for Orange County and specifically the City of Huntington Beach. (Including Mayor Semeta being denied the right to speak at the November 7, 2019 Regional Council meeting.)

Final RHNA Methodology
The City of Huntington Beach incorporates all of its prior arguments both orally and in writing and again additionally requests that SCAG amend the Final RHNA methodology to reinstate local input (a critical) factor in determining actual existing need. The local input/household growth projections are a critical factor because it takes into consideration the unique growth characteristics of each jurisdiction. In addition, SCAG staff has previously stated (refer to the November 7, 2019, Regional Council staff report on the original SCAG staff-recommended RHNA methodology) that the reintroduction of household growth into the existing need would further the five objectives of state housing law. Moreover, the local input growth projections were provided to SCAG to be used globally to show growth development patterns supporting the Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS) Connect SoCal as required by state law.

Prior to the February 24, 2020 SCAG RHNA Subcommittee meeting, the City of Cerritos submitted an alternate methodology dated February 4, 2020, which recommends that household growth forecasts be reintroduced back into the calculations for the existing need as follows: household growth (33.3%), job accessibility (33.3%), and population within high quality transit areas (33.3%). While this does not address all concerns the City has with the methodology process, we believe it provides a better and more accurate methodology than the staff recommended Final RHNA methodology.

At the February 24, 2020 SCAG RHNA Subcommittee meeting, the Subcommittee voted to have SCAG staff include an analysis of the Cerritos methodology in the March 5, 2020 staff report. The "analysis" of the Cerritos methodology in the staff report consists of a single dismissive paragraph, which concludes that the Cerritos methodology would "perform more poorly" against the staff recommended methodology, would require additional HCD review, and jeopardize SCAG's ability to meet arbitrary state mandated deadlines. However, the staff report fails to mention that the Cerritos

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methodology does in fact further the five RHNA objectives of state housing element law and that the Regional Council can make the findings to adopt this methodology even if HCD, upon review, does not.

Finally, the City would be more supportive of any methodology that utilizes a larger proportion of local input reflecting a more accurate and equitable RHNA allocation over the staff recommended Final RHNA methodology.

Regional Determination

The City advises that SCAG object again to the Department of Housing and Community Development (HCD) because the regional determination did not follow state law [see Government Code Section 65584.01(a)], and mount a legal challenge to this illegal determination. During the February 20, 2020 RHNA symposium in Anaheim, SCAG Executive Director Kome Ajise stated that SCAG would not file a legal challenge against HCD because the state has more money and lawyers to fight a lawsuit. This reason is not acceptable to the City of Huntington Beach and should not be acceptable to any member of the Regional Council. HCD has violated state law and should be held accountable.

Moreover, the Department of Finance's recently updated population projections show a significant population decrease since their previous forecast. Governor Newsom has also stated that his commitment to building 3.5 million homes by 2025 was a "stretch goal" and that the state would soon be releasing a more pragmatic estimate of the housing needs by region...suspiciously in time for the Governor's home region (ABAG) to begin its Housing Element/RHNA process.

The regional determination of 1.34 million housing units combined with an inequitable RHNA methodology adopted through questionable actions and political maneuvering during the November 7, 2019, Regional Council meeting, are legally flawed, following no apparent rational basis and setting up local jurisdictions for failure to comply with state housing law and based on inaccurate data assumptions. As the City has said, the data regarding the assignment of High Quality Transit Areas (HQTA) along Beach Boulevard within the City of Huntington Beach is inaccurate. The existing and 2045 planned bus service does not meet the definition of a HQTA.

We request that the Regional Council consider all of the legal and factual arguments made by the City of Huntington Beach including the two above referenced recommendations prior to the adoption of the RHNA. The Regional Housing Needs Allocation will have significant impacts on the City of Huntington Beach over the next decade and thoughtful policy decisions, and more importantly, the LAW cannot be abandoned in favor of an irrational attempt to solve a complicated problem. It is imperative that the RHNA be finalized in a way that is LEGAL, equitable and attainable in responding to state housing mandates.

Sincerely,

Oliver Chi
City Manager

City of Huntington Beach

2000 MAIN STREET CALIFORNIA 92648

DEPARTMENT OF COMMUNITY DEVELOPMENT

Planning Division 714/536-5271 | Code Enforcement Division 714/375-5155 | Building Division 714/536-5241

September 2, 2020

Kome Ajise
Southern California Association of Governments
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017
Submitted via email to: ajise@scag.ca.gov

Re: CITY OF HUNTINGTON BEACH COMMENT LETTER - SCAG FINAL ADOPTION OF CONNECT SOCAL AND PROGRAM EIR

Dear Mr. Ajise,

The City of Huntington Beach appreciates SCAG's public outreach efforts for the Connect SoCal and RHNA process. The following comments and concerns are offered for your consideration in response to SCAG's 120 day Connect SoCal delay to conduct additional public outreach.

SCAG Disregards Coastal Issues in Connect SoCal and RHNA Methodology

Through its various administrative agencies, the State of California has declared that the impact of sea level rise and planning for coastal inundation is of great concern. The State's Ocean Protection Council (OPC) adopted its first sea level rise guidance document in March 2013. The California Coastal Commission (CCC) has adopted multiple guidance documents since 2015 regarding climate change, sea level rise, and coastal inundation utilizing the best available data. At their May 13, 2020 meeting, the CCC adopted a document titled, "Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action." CCC said that the document is a tool for aligned, consistent state agency action in planning and preparing for a minimum baseline 3.5 feet of sea level rise statewide. The principles outlined in the document are intended to guide unified, effective action towards sea level rise resilience for California's coastal communities, ecosystems, and economies across state agencies in order to improve effectiveness in addressing this immediate challenge.

Despite the declaration by State agencies concerning sea level rise, it is notable that the OPC and the CCC have not been engaged in the public review process. The CCC and the OPC are key stakeholders for jurisdictions in the coastal zone across the State Development proposals in the coastal zone are subject to final approval of the CCC even if the jurisdiction has a certified Local Coastal Program. The CCC has the ability to appeal a City's approval of any project within

the coastal zone and conduct their own review of the project, which may ultimately result in project disapproval beyond control of the City. Rezoning and associated land use changes required to adequately plan for the current RHNA methodology allocations will necessitate a Local Coastal Program Amendment for all jurisdictions with certified Local Coastal Programs. Coastal jurisdictions may adopt land use changes to comply with RHNA requirements, but there is no guarantee that those changes will be approved by the CCC.

SCAG's Connect SoCal and RHNA methodology have not addressed the impact of sea level rise (SLR), coastal inundation, and other coastal issues or the ability of coastal jurisdictions to plan for their RHNA. SCAG's 2017 RTP Data Map Book for Huntington Beach includes an exhibit depicting "Sea Level Rise Impacted Areas (2 feet) 2040 Scenario in Orange County[1]." Nearly all of the lowest lying land in Orange County is within Huntington Beach and its annexation of Sunset Beach; a small portion affects Newport Beach and Seal Beach. The data from the Map Book does not utilize the best available science/data as the State has since revised SLR analysis to plan for a baseline of 3.5 feet of SLR statewide. It must also be noted that the Map Book contains these exhibits and information regarding SLR but SCAG does not utilize them for any analysis within Connect SoCal or RHNA.

SCAG fails to address this critical information from the CCC. Coastal cities are explicitly unable to accommodate any new development (especially residential development) in the Coastal Zone and adjacent areas, as it is specifically vulnerable and unable to adapt to managed retreat within areas of sea level rise. The CCC expects all LCPs to recognize that public lands adjacent to the Pacific Ocean and harbors will extend inward as a direct result of sea level rise[2]. This information alone indicates that coastal cities will lose land available for development (and land that is currently developed) to the public trust boundary. , The CCC also recommends that coastal cities purchase land within areas of sea level rise to remove all associated structures and conserve the land as open space.

The development challenges faced by coastal cities due to sea level rise appear to be completely ignored by SCAG throughout the RHNA and Connect SoCal process and replaced with the politics from other areas of the SCAG region to keep RHNA numbers and housing out of their jurisdictions.

Connect Socal, including the associated Program EIR, characterize coastal cities as resistant to new development due to "community resistance to new housing, especially medium and high density projects." It appears that SCAG purposefully does not acknowledge any relevant information regarding the significant negative environmental impacts and CCC policies on development other than protected open space within areas subject to sea level rise, including SCAG's own Data Map Book exhibits produced in 2017. Excluding this pertinent analysis from the RHNA and RTP/SCS process enables Connect Socal and RHNA to arbitrarily and capriciously achieve Governor Newsom's admitted "stretch goal" to construct 3.5 million units in California by 2025.

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[1] http://scagrtpscs.net/Documents/DataMapBooks/HuntingtonBeach.pdf

[2] California Coastal Commission Sea Level Rise Policy Guidance
https://documents.coastal.ca.gov/assets/slr/guidance/2018/0_Full_2018AdoptedSLRGuidanceUpdate.pdf

All lands within the state of California that are subject to sea level rise, including those within the SCAG region such as Huntington Beach, must be accurately identified in Connect SoCal and the PEIR, removed from the model scenarios in each, and also excluded from the RHNA calculation (including but not limited to job accessibility, HQTA proximity, reallocated residual need, and additional social equity adjustments) in order for Connect SoCal and RHNA to be consistent (Government Code Section 65080(b)(2)(B) and Section 65584.04(m)).

High Quality Transit Areas (HQTA)/High Quality Transit Corridors (HQTC)

As noted in multiple public comments from the City of Huntington Beach, the portion of Beach Boulevard within the City is incorrectly identified as HQTA. Public Resources Code Section 21155 (b) defines a high-quality transit corridor as "a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours." It must be emphasized that Public Resources Code Section 21155 (b) does not include planned HQTC within the definition. Further, Government Code Section 65584.04 (e)(3) requires the RHNA methodology to include "the distribution of household growth assumed for purposes of a comparable period of regional transportation plans and opportunities to maximize the use of public transportation and existing transportation infrastructure." SCAG's Final RHNA Allocation Methodology[3] explains that HQTAs "are based on state statutory definitions of high□quality transit corridors (HQTCs) and major transit stops." However, SCAG's application of HQTC is incorrect. Public Resources Code Section 21155 (b) does not include planned HQTC within its definition. SCAG's RHNA methodology creates its own definition of HQTC as inclusive of planned HQTC which conflicts with the statutory definition. The Public Resources Code identified above does not include future planned facilities in the definition of HQTC. This new definition is illegal and cannot be used in calculation of RHNA.

Again, SCAG's RHNA Methodology to determine a jurisdiction's existing housing need "assigns 50 percent of regional existing need based on a jurisdiction's share of region's population within the high quality transit areas (HQTAs) based on future 2045 HQTAs." This does not adhere to state statutory definitions of high□quality transit corridors and must be revised to accurately reflect Public Resources Code Section 21155 (b).

To correctly calculate RHNA numbers, SCAG must engage OCTA and other transit operators in the region amid the pandemic to discuss the post COVID-19 feasibility of implementing planned public transit improvements due to budget, cleaning, liability, and health/safety issues.

During his August 24, 2020 COVID-19 press conference, Governor Newsom stated the following regarding the new tiered color system for public health:

"We don't put up green because we don't believe that there is a green light that just says go back to the way things were or back to the pre-pandemic mindset."

[3] http://www.scag.ca.gov/programs/Documents/RHNA/SCAG-Final-RHNA-Methodology-030520.pdf

Based on statements made by the Governor, the State of California does not anticipate life in California returning to pre-pandemic conditions through the 6th Cycle planning period.

Despite this, SCAG maintains throughout the September 3, 2020 Regional Council meeting staff report that it has no information regarding the effects of the pandemic. This is misleading and untrue. In addition to the Governors statements, and a host of empirical data regarding COVID-19 and its effects on society, the September 2, 2020 SCAG Executive Administration Committee meeting agenda includes findings and conclusions regarding a SCAG commissioned Housing Production Study that provides updated information regarding the impacts of the pandemic on the region. Despite this new data concerning COVID-19, the State desires to proceed forward with a "pre-pandemic" plan. SCAG should not adopt Connect SoCal until it adequately analyzes the effects of COVID-19 on housing needs in the State. In part, adoption of the pre-pandemic plan in the wake of unprecedented COVID-19 economic downturn and drop in public transit use will not enable the SCAG region to achieve SB 375 reduced GHG emissions goals.

Further, the City of Huntington Beach has engaged the Orange County Transportation Authority (OCTA) regarding implementation of their 2018 Long Range Transportation Plan, including the Final Beach Boulevard Corridor Feasibility Study (Study). OCTA emphasizes the Study is designed to be flexible and adapt to each jurisdiction for their respective needs. The Study lays the foundation for the Beach Blvd. Corridor, but is not used as a rigid implementation arm of the OCTA LRTP. The suggested improvement elements within the Study are conceptual and are not developed into any specific project to be implemented on any specific timeline. It is at the discretion of the local jurisdiction to coordinate implementation and infrastructure improvements with all relevant agencies, such as CalTrans. For example, if Bus Rapid Transit (BRT) to achieve service at 15 minute intervals is hypothetically chosen to be implemented for a portion of Beach Boulevard, a subsequent specific BRT study is required to determine potential alignments, project limits, and other details. There is no requirement upon any City within the Study or OCTA to implement any recommendation of the OCTA LRTP.

Additionally, the OCTA Board of Directors wrote a letter dated March 23, 2020 to Governor Newsom discussing the impact of COVID-19 on their operations. The following excerpt describes the change in circumstances which has created a specific strain on the ability of OCTA to provide transit service:

"The COVID19 response has fundamentally changed the way people interact, and the resulting collapse of nonessential economic activity will have a dramatic impact on the availability of federal, state, and local funding. Short-term revenue decreases will cause extraordinary budgetary constraints. OCTA collects approximately $48 million annually in transit fares, which partially fund bus operations that help our agency maintain ridership. Transit fare are expected to decrease significantly as a result of our current ridership decline. OCTA will also see a severe decline in revenues from Orange County's half-cent sales tax dedicated to transportation improvements, Measure M2. During the Great Recession, OCTA saw a 20 percent decrease in sales tax revenue and ridership levels never fully recovered. If the impacts are similar from COVID-19, long-lasting impacts will be felt systemwide. Similarly, gas tax revenues are likely to

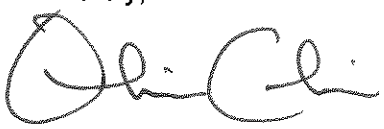
fall as people across the country heed social distancing guidance, which will only exacerbate the Highway Trust Fund's on-going structural revenue deficit. Given the likelihood of long-term revenue instability, OCTA is planning for an uncertain future while maintaining our long-standing commitment to fiscal responsibility."

SCAG must engage OCTA and all other transportation agencies in response to a public health pandemic that has truly shifted mobility methods, transit patterns, and the way people utilize public transportation within the region. Decreased OCTA funding and reduced on-time performance reliability[4] indicates that the identification of HQTA within the SCAG region, including in Huntington Beach, must be reevaluated as part of the RTP/SCS and RHNA process. If the approved RHNA methodology and associated HQTA is implemented, GHG emissions will be increased severely as 1.3 million housing units will be constructed without HQTA service as defined by PRC 21155 (b).

Conclusion

Based upon the foregoing analysis, real and appreciable damages will be sustained by the City of Huntington Beach and current/future Californians if the RHNA and RTP/SCS process do not acknowledge and analyze this information and modify the proposed RHNA numbers. SCAG and HCD must reconsider RHNA and RTP/SCS process in compliance with state law.

Sincerely,



Oliver Chi
City Manager

Cc: Lyn Semeta, Mayor
Michael Gates, City Attorney
Mike Vigliotta, Chief Assistant City Attorney
Ursula Luna-Reynosa, Director of Community Development
Jennifer Villasenor, Deputy Director of Community Development
Nicolle Aube, Associate Planner

[4] OCTA June 22, 2020 Board Agenda Packet - Item 22: Bus Operations Performance Measurement https://octa.legistar.com/View.ashx?M=E1&ID=749492&GUID=340A1A00-DE29-4B85-845E-B1697E8B9FB7

SCAG
INNOVATING FOR A BETTER TOMORROW

SOUTHERN CALIFORNIA
ASSOCIATION OF GOVERNMENTS
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017
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www.scag.ca.gov

MEETING OF THE

TECHNICAL WORKING GROUP

Thursday, October 17, 2019
10:00 a.m. – 12:00 p.m.

SCAG OFFICES
900 Wilshire Blvd., Ste. 1700
Room Policy B
Los Angeles, CA 90017
(213) 236-1800

HOW TO PARTICIPATE IN MEETING ON NEXT PAGE

If members of the public wish to review the attachments or have any questions on any of the agenda items, please contact John Asuncion at (213) 236-1936 or via email at asuncion@scag.ca.gov. Agendas & Minutes for the Technical Working Group are also available at: www.scag.ca.gov/committees

SCAG, in accordance with the Americans with Disabilities Act (ADA), will accommodate persons who require a modification of accommodation in order to participate in this meeting. SCAG is also committed to helping people with limited proficiency in the English language access the agency's essential public information and services. You can request such assistance by calling (213) 236-1908. We request at least 72 hours (three days) notice to provide reasonable accommodations and will make every effort to arrange for assistance as soon as possible.

How to Participate

In Person

SCAG Downtown Office Policy B
900 Wilshire Blvd., 17th Floor
Los Angeles 90017
213-236-1800

Videoconference

San Bernardino County
1170 West 3rd Street, Suite 140
San Bernardino, CA 92410
Telephone: (909) 806-3556

Imperial County
1405 North Imperial Ave, Suite 1
El Centro, CA 92443
Telephone: (760) 353-7800

Ventura County
4001 Mission Oaks Blvd., Ste. L
Camarillo, CA 93012
Telephone: (805) 642-2800

Web Meeting

Join from PC, Mac, Linux, iOS or Android:

https://scag.zoom.us/j/142774637

Teleconference

Telephone:
Dial: 1-669 900 6833
Meeting ID: 142 774 637

Technical Working Group

September 19, 2019

Attendees Los Angeles Office

Lori Huddleston	LA Metro
Deborah Diep	Center for Demographic Research, California State University Fullerton
Warren Whiteaker	OCTA
Stephanie Cadena	Gateway Cities COG
Miles Mitchell	City of Los Angeles
Marika Poynter	City of Irvine
Gail Shiomoto-Lohr	Mission Viejo
Mathew Steig	Mission Viejo

Attendees Web Meeting/Teleconference

Marnie Primmer	OCCOG
Susan Kim	City of Anaheim
Caitlin Brooks	VCTC
Joenne Hwang	Anaheim
Nate Farnsworth	Yorba Linda
Demi Espinoza	Safe Routes to School
Josh Lee	SBCOG/SBCTA
Ariana Briski	City of Los Angeles
Ben Cacatian	VCAPCD
Soyeon Choi	Los Angeles County
Steve Smith	SBCTA
Marisa Creter	SBGCOG
Caitlin Sims	SGVCOG

Technical Working Group

October 17, 2019

10:00 a.m. – 12:00 p.m.

SCAG Downtown Office – Policy Room B

900 Wilshire Blvd., 17th Floor

Los Angeles 90017

Agenda

Introductions

Discussion Items

1.	RHNA Methodology Technical Clarification & Tool Demo		
	a. Introduction and Objectives	Ping Chang	40 mins
	b. Estimate Tool Demo on RHNA Data	Kevin Kane	
	c. Job Accessibility Measure	Kevin Kane & KiHong Kim	
	d. Transit Accessibility Measure	Philip Law & Jung Seo	
2.	Connect SoCal Growth Vision Roll-Out to Local Jurisdictions	Kimberly Clark	10 mins
3.	Local Input Base Case GHG Impact Estimation	Kimberly Clark	15 mins
4.	Connect SoCal Draft Plan Performance Outcomes	Michael Gainor	15 mins

How to Unmute Phone

Press *6 to unmute your phone and speak

To return to mute *6

Technical Working Group

Agenda Item 1 d.

The following will be included in the forthcoming Connect SoCal, Draft 2020 RTP/SCS Transit Technical Appendix.

HIGH QUALITY TRANSIT CORRIDORS AND MAJOR TRANSIT STOPS

BACKGROUND

The Sustainable Communities and Climate Protection Act of 2008, Senate Bill (SB) 375, requires that Metropolitan Planning Organizations (MPOs) develop a Sustainable Communities Strategy (SCS) to reduce per capita greenhouse gas emissions through integrated transportation, land use, housing and environmental planning. SB 375 creates incentives for residential or mixed-use residential projects that may be exempt from, or subject to a limited review of, the California Environmental Quality Act (CEQA), provided they are consistent with the MPO's adopted SCS. These "transit priority projects" must, among other criteria, be located within one-half mile of a major transit stop or high-quality transit corridor (HQTC).

SB 743, signed into law in 2013, provides further opportunities for CEQA exemption and streamlining to facilitate transit oriented development (TOD). Specifically, certain types of projects within "transit priority areas" (TPAs) can benefit from a CEQA exemption if they are consistent with an adopted specific plan and the SCS. A TPA is an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Federal Transportation Improvement Program (FTIP).

STATUTORY DEFINITIONS

California statute defines major transit stop and high quality transit corridor as follows.

> **CA Pub. Res. Code § 21155(b)**
> For purposes of this chapter, a transit priority project shall (1) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 percent and 50 percent nonresidential uses, a floor area ratio of not less than 0.75; (2) provide a minimum net density of at least 20 dwelling units per acre; and (3) be within one-half mile of a major transit stop or high-quality transit corridor included in a regional transportation plan. A major transit stop is as defined in Section 21064.3, except that, for purposes of this section, it also includes major transit stops that are included in the applicable regional transportation plan. For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. A project shall be considered to be within one-half mile of a major transit stop or high-quality transit corridor if all parcels within the project have no more than 25 percent of their area farther than one-half mile from the stop or corridor and if not more than 10

percent of the residential units or 100 units, whichever is less, in the project are farther than one-half mile from the stop or corridor.

CA Pub. Res. Code § 21064.3

"Major transit stop" means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

METHODOLOGY

For planning and SCS purposes, SCAG identifies a "high quality transit area" as generally a walkable transit village or corridor that is within one-half mile of a major transit stop or HQTC as defined in statute. SCAG's technical methodology for identifying HQTCs and major transit stops is based on input from the Regional Transit Technical Advisory Committee (RTTAC), as well as consultation with local agencies, other large MPOs in California, and the Governor's Office of Planning and Research. The methodology and assumptions are discussed below. This methodology may be periodically updated to incorporate revisions or clarifications. Questions should be directed to Steve Fox, at fox@scag.ca.gov, or Philip Law, at law@scag.ca.gov.

SCAG maps and data depicting HQTCs and major transit stops are intended for planning purposes only. SCAG shall incur no responsibility or liability as to the completeness, currentness, or accuracy of this information. SCAG assumes no responsibility arising from use of this information by individuals, businesses, or other public entities. The information is provided with no warranty of any kind, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.

Existing HQTCs and Major Transit Stops

SCAG updates its inventory of existing major transit stops and HQTCs with the adoption of a new Regional Transportation Plan (RTP) and SCS, once every four years. Data for the existing ("base year") condition for the RTP/SCS are typically obtained several years before plan adoption. The base year transit network for *Connect SoCal*, the 2020 RTP/SCS, is based primarily on data for 2016. This inventory of existing major transit stops and HQTCs is therefore only a snapshot in time as of 2016, and does not reflect the existing levels of transit service for any other timeframe.

<insert map of 2016 Base Year "existing" major transit stops and high quality transit corridors>

Transit agencies make adjustments to bus service on a regular basis. Therefore, given the limitations of the RTP/SCS base year transit network, local jurisdictions should consult with the

appropriate transit provider(s) to obtain the latest information on existing transit routes, stop locations, and service intervals before making determinations regarding CEQA exemption or streamlining. It is the responsibility of the lead agency under CEQA to determine if a project meets statutory requirements.

Stop-Based Analysis

SCAG calculates peak commute bus service intervals at the stop level using schedule data published by transit agencies in the General Transit Feed Specification (GTFS) format (see for example, www.transitfeeds.com). An HQTC therefore comprises or is determined by the qualifying stops on an individual bus route.

Peak Period Bus Service Interval (Frequency)

To determine whether the peak commute bus service interval (also called frequency) meets the statutory threshold of 15 minutes or less, SCAG uses the peak period defined in its regional travel demand model. The morning peak is defined as 6am to 9am and the afternoon peak is defined as 3pm to 7pm. A transit operator may have a different, board-adopted or de facto peak period; in such cases SCAG will accept requests to use operator-specific peak-hour periods on a case-by-case basis.

SCAG uses the total population of bus trips during the combined seven-hour morning and afternoon peak periods to determine the peak frequency at a bus stop. This is done for each bus route, by direction. The peak frequency is calculated by dividing 420 minutes (the seven-hour peak converted to minutes) by the total peak bus trips. This average frequency should be 15 minutes or less in order to qualify. The threshold is strict, at 15.0 minutes.

Directional Frequency

A bus route must only meet the 15-minute service interval threshold in one direction to qualify as an HQTC. This is based on RTTAC feedback that transit agencies often operate very peak-directional service or operate predominantly one-way service on a corridor.

Corridors with Multiple Overlapping Bus Routes

Separate but overlapping bus routes that do not individually meet the 15-minute threshold may not be combined in order to qualify as an HQTC. However, based on RTTAC feedback, there are certain corridors where overlapping “line families” or local/bus rapid transit (BRT) lines are intended to function as one bus route. On these corridors, transit riders typically board the first bus available, whether it be a local, express, or BRT line. For these line families or local/BRT corridors, SCAG uses the combined routes to calculate the frequency.

Route Alignment

The entire alignment of a bus route, based on the stops that meet the 15-minute peak frequency threshold, is considered an HQTC. This would include, for example, express bus services that operate along freeways where there are no stops along the freeway right-of-way.

Major Transit Stops and Intersecting Service Transfer Zones

As defined in statute, major transit stops include the intersection of two or more HQTCs. For purposes of transferring between intersecting service, SCAG uses a 500-foot buffer to determine a major transit stop. In other words, two intersecting HQTCs must have stops that are within 500 feet of each other to qualify as a major transit stop. A 500-foot buffer is assumed to be a reasonable limit to the distance that a transit patron would walk to transfer between bus routes. It is also consistent with the Metro Transfers Design Guide definition of a transfer zone.

Amtrak Stations and Ferry Stations

Amtrak intercity passenger rail stations with only limited long-distance service are not automatically included as a major transit stop unless requested by a local agency. Similarly, ferry stations with seasonal and/or non-commuter based service (and that are served by bus or rail transit) are not automatically included as a major transit stop unless requested by a local agency.

Planned HQTCs and Major Transit Stops

Planned HQTCs and major transit stops are future improvements that are expected to be implemented by transit agencies by the RTP/SCS horizon year of 2045. These are assumed by definition to meet the statutory requirements of an HQTC or major transit stop. SCAG updates its inventory of planned major transit stops and HQTCs with the adoption of a new RTP/SCS, once every four years. However, transit planning studies may be completed by transit agencies on a more frequent basis than the RTP/SCS is updated by SCAG. Local jurisdictions should consult with the appropriate transit provider(s) to obtain the latest information on planned transit routes, stop locations, and service intervals/frequencies before making determinations regarding CEQA exemption or streamlining.

<insert map of planned (2045) major transit stops and high quality transit corridors>

Technical Working Group

Agenda Item 4

Draft Connect SoCal

Performance Assessment & Monitoring

Technical Working Group

October 17, 2019

Mike Gainor
Compliance & Performance Monitoring

www.scag.ca.gov

INNOVATING FOR A BETTER TOMORROW

Connect SoCal Performance Management

Connect SoCal is a Performance-Based Plan

- **Regional Goals:** More sustainable, location-efficient communities; improved public health & safety; enhanced mobility & accessibility; better quality of life.
- **Federal Requirements:** MAP-21/FAST Act performance measures & targets; Environmental Justice; transportation/air quality conformity.
- **State Mandates:** Regional greenhouse gas (GHG) reduction targets (ARB)

Connect SoCal Performance Analysis

8 performance outcome categories were designated for evaluating Connect SoCal:

- Location Efficiency
- Mobility & Accessibility
- Safety & Public Health
- Environmental Quality
- Economic Opportunity
- Investment Effectiveness
- Transportation System Sustainability
- Environmental Justice

Connect SoCal Performance Results

Connect SoCal will serve to improve travel conditions and air quality throughout the SCAG region, while ensuring an equitable distribution of benefits among our various communities.

Location Efficiency

Share of Regional Household Growth in HQTAs: +10%

Share of Regional Employment Growth in HQTAs: +24%

Rural Lands Converted to Urban Use: -36%

Daily VMT per capita: -4%

Mobility & Accessibility

Person Delay per capita: -23%

Person Delay (HOV): -70%

Person Delay (Arterials): -19%

Truck Delay (Freeways): -21%

Truck Delay (Arterials): -25%

Connect SoCal Performance Results

Safety & Public Health

Air Pollution Related Health Incidents: -4%

Air Pollution Related Health Costs: -4%

Active Transportation Mode Share: +2%

Daily Driving Time per capita: -7%

Environmental Quality

GHG Emissions Reduction (2020): -8%

GHG Emissions Reduction (2020): -19%

PM 2.5 Daily Emissions: -4%

Carbon Monoxide (CO) Daily Emissions: -5%

Economic Opportunity

Annual New Jobs Generated Due to Improved Economic Competitiveness: 195,000+

Annual New Jobs Generated Due to Connect SoCal Investments: 167,000+

Connect SoCal Performance Results

Investment Effectiveness

Connect SoCal Benefit/Cost Ratio:
$1.00 Investment = $1.54 Benefit

Transportation System Sustainability

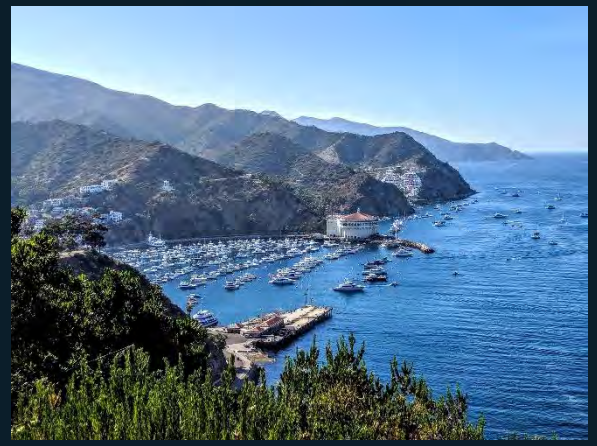
Annual Cost per capita to Maintain System in State of Good Repair: $556 ($1.50 daily)

Environmental Justice

SCAG conducted a comprehensive EJ stakeholder outreach & technical analysis process to ensure that Connect SoCal does not disproportionately impact minority or low income communities & its benefits are equitably distributed

Connect SoCal Co-Benefits

Benefit Category	Comparative Benefit Performance			
	2045 Baseline	Connect SoCal	Savings	% Savings
Local Infrastructure & Services Costs: Capital, operations, & maintenance costs to support new growth: 2016-2045	$39.9 billion	$36.1 billion	$3.8 billion	9.5%
Household Costs: Annual transportation & home energy/water use: 2045	$13,758	$13,225	$533	3.9%
Land Consumption: New (greenfield) land consumed to accommodate new growth: 2016-2045	101 square miles	65 square miles	36 square miles	35.6%
Building Energy Use: Residential & commercial buildings: Cumulative 2016-2045 (British Thermal Units)	15,670 trillion	15,464 trillion	206 trillion	1.3%
Building Energy Costs: Residential & commercial buildings: Cumulative 2016-2045	$678 billion	$670 billion	$8 billion	1.2%
Building Water Use: Residential & commercial buildings: Cumulative 2016-2045 (Acre Feet)	85.7 million	84.7 million	1.0 million	1.2%
Building Water Costs: Residential & commercial buildings: Cumulative 2016-2045	$117.1 billion	$115.7 billion	$1.4 billion	1.2%
Total Annual Vehicle Miles Traveled (VMT): 2045	485.2 million	465.1 million	20.1 million	



Thank you!

Mike Gainor
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(213) 236-1822
www.scag.ca.gov

INNOVATING FOR A BETTER TOMORROW

29/A

La Habra to Huntington Beach
via Beach Blvd

NOTE: TAP card only accepted from La Palma to Midway
NOTA: *Tarjeta TAP solo aceptada de La Palma a Midway*

Monday - Friday
NORTHBOUND To: La Habra

	Pacific Coast Hwy & 1st	Beach & Garfield	Center & Goldenwest	Beach & Westminster	Beach & Katella	Knotts Berry Farm	Beach & Imperial	Beach & La Habra	Buena Park Metrolink Station
	4:03	4:28	----	4:38	4:46	4:55	5:11	5:17	
A	4:24	4:34	4:48	4:58	5:09	5:19	----	----	5:33
	4:48	4:58	----	5:18	5:29	5:39	5:55	6:01	
A	5:03	5:13	5:28	5:38	5:49	6:00	----	----	6:14
	5:30	5:40	----	5:58	6:09	6:20	6:39	6:45	
A	5:40	5:51	6:06	6:18	6:30	6:41	----	----	6:56
	6:04	6:16	----	6:38	6:51	7:03	7:24	7:30	
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	11:32	11:44	----	12:12	12:22	12:33	12:49	12:54	

Monday - Friday
SOUTHBOUND To: Huntington Beach

	Beach & La Habra	Beach & Imperial	Buena Park Metrolink Station	Knotts Berry Farm	Beach & Katella	Beach & Westminster	Gothard & Center	Beach & Garfield	Pacific Coast Hwy & 1st
A			4:46	5:02	5:13	5:24	5:32	5:45	5:56
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	5:33	5:43	----	6:01	6:13	6:26	----	6:47	7:02
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	2:01	2:14	----	2:35	2:50	3:05	----	3:30	3:45
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A			7:43	8:01	8:13	8:27	8:38	8:55	9:07
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A			9:15	9:33	9:45	10:00	10:17	10:26	10:41	10:53
	9:53	10:03	----	10:23	10:35	10:47	----	11:08	11:20
A			10:35	10:51	11:03	11:15	11:24	11:39	11:51
	10:52	11:03	----	11:23	11:35	11:47	----	12:08	12:20
	11:32	11:43	----	12:03	12:15	12:27	----	12:48	1:00

Saturday
NORTHBOUND To: La Habra

	Pacific Coast Hwy & 1st	Beach & Garfield	Center & Goldenwest	Beach & Westminster	Beach & Katella	Knotts Berry Farm	Buena Park Metrolink Station	Beach & Imperial	Beach & La Habra
	4:03	4:18	----	4:35	4:45	4:54	----	5:10	5:14
A	4:46	4:53	5:05	5:15	5:25	5:34	5:49		
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A	7:10	7:20	7:33	7:46	7:57	8:09	8:24		
	7:43	7:53	----	8:13	8:28	8:41	----	9:01	9:06
A	8:09	8:19	8:33	8:46	8:59	9:12	9:29		
	9:42	8:52	----	9:13	9:29	9:42	----	10:02	10:07
A	8:58	9:09	9:30	9:43	9:58	10:11	10:26		
	9:26	9:37	----	10:05	10:18	10:31	----	10:52	10:58
A	9:41	9:52	10:13	10:26	10:39	10:52	11:07		
	10:08	10:19	----	10:45	10:58	11:11	----	11:31	11:36
A	10:18	10:29	10:50	11:03	11:16	11:29	11:44		
	10:44	10:56	----	11:23	11:36	11:50	----	12:13	12:20
A	10:55	11:07	11:30	11:42	11:55	12:09	12:24		
	11:20	11:32	----	12:01	12:16	12:30	----	12:50	12:57
A	11:29	11:41	12:04	12:19	12:34	12:48	1:05		
	11:58	12:10	----	12:39	12:54	1:08	----	1:28	1:35
A	12:08	12:20	12:43	12:58	1:13	1:27	1:44		
	12:38	12:50	----	1:19	1:34	1:48	----	2:08	2:13
A	12:49	1:01	1:24	1:39	1:54	2:08	2:25		
	1:16	1:29	----	1:59	2:14	2:28	----	2:49	2:57
A	1:27	1:40	2:04	2:19	2:34	2:48	3:04		
	1:57	2:10	----	2:40	2:55	3:09	----	3:30	3:38
A	2:08	2:20	2:44	2:59	3:15	3:28	3:42		
	2:37	2:49	----	3:19	3:35	3:48	----	4:08	4:15
A	2:50	3:02	3:25	3:39	3:55	4:07	4:22		
	3:18	3:30	----	3:59	4:15	4:27	----	4:47	4:54
A	3:28	3:41	4:04	4:18	4:33	4:46	5:03		
	3:56	4:10	----	4:37	4:52	5:04	----	5:25	5:31
A	4:08	4:22	4:44	4:57	5:12	5:24	5:40		
	4:36	4:50	----	5:17	5:32	5:44	----	6:05	6:11
A	4:43	4:57	5:23	5:37	5:51	6:03	6:21		
	5:15	5:29	----	5:57	6:11	6:23	----	6:44	6:50
A	5:26	5:41	6:05	6:17	6:30	6:43	7:01		
	5:58	6:13	----	6:39	6:52	7:04	----	7:24	7:31
A	6:17	6:30	6:58	7:02	7:15	7:25	7:40		
	6:57	7:08	----	7:33	7:46	7:56	----	8:17	8:19
A	7:19	7:30	7:50	8:02	8:15	8:25	8:40		
	7:55	8:06	----	8:31	8:44	8:54	----	9:10	9:17
A	8:18	8:29	8:49	9:01	9:14	9:24	9:39		
	8:55	9:06	----	9:31	9:44	9:54	----	10:10	10:17
A	9:22	9:33	9:50	10:01	10:13	10:24	10:39		
	9:58	10:09	----	10:31	10:43	10:54	----	11:10	11:16
A	10:25	10:36	10:51	11:01	11:13	11:23	11:38		
	11:00	11:11	----	11:31	11:43	11:53	----	12:09	12:15
A	11:25	11:36	11:51	12:01	12:13	12:23	12:38		
	12:00	12:11	----	12:31	12:43	12:53	----	1:09	1:15

A = These trips serve the Goldenwest Transportation Center.
Estos viajes se detienen en el Centro de Transporte Goldenwest.

29/A La Habra to Huntington Beach
via Beach Blvd

Saturday
SOUTHBOUND To: Huntington Beach

	Beach & La Habra	Beach & Imperial	Buena Park Metrolink Station	Knotts Berry Farm	Beach & Katella	Beach & Westminster	Gothard & Center	Beach & Garfield	Pacific Coast Hwy & 1st
	4:38	4:39	----	4:55	5:04	5:16	----	5:29	5:41
A			5:22	5:35	5:44	5:56	6:01	6:14	6:26
	5:43	5:53	----	6:11	6:22	6:34	----	6:53	7:06
A			6:37	6:51	7:02	7:14	7:23	7:38	7:51
	6:53	7:06	----	7:29	7:40	7:55	----	8:16	8:30
A			7:39	7:58	8:08	8:24	8:35	8:50	9:04
	7:46	7:59	----	8:22	8:36	8:52	----	9:14	9:29
A			8:36	8:55	9:08	9:23	9:34	9:50	10:06
	8:46	8:59	----	9:22	9:35	9:50	----	10:11	10:27
A			9:24	9:43	9:56	10:10	10:21	10:37	10:50
	9:24	9:37	----	10:01	10:15	10:30	----	10:53	11:07
A			10:01	10:21	10:39	10:50	11:01	11:20	11:34
	10:03	10:17	----	10:42	10:55	11:10	----	11:36	11:52
A			10:40	11:00	11:15	11:30	11:42	**12:08**	**12:23**
	10:51	10:55	----	11:20	11:35	11:50	----	**12:19**	**12:34**
A			11:20	11:40	11:55	**12:10**	**12:22**	**12:48**	**1:03**
	11:21	11:35	----	**12:00**	**12:15**	**12:30**	----	**12:59**	**1:14**
A			11:56	**12:16**	**12:32**	**12:48**	**1:02**	**1:28**	**1:45**
	11:58	**12:13**	----	**12:40**	**12:55**	**1:10**	----	**1:39**	**1:53**
A			**12:37**	**1:00**	**1:14**	**1:30**	**1:42**	**2:05**	**2:20**
	12:38	**12:53**	----	**1:20**	**1:34**	**1:50**	----	**2:17**	**2:32**
A			**1:17**	**1:40**	**1:54**	**2:10**	**2:22**	**2:45**	**3:00**
	1:17	**1:32**	----	**1:59**	**2:14**	**2:30**	----	**2:58**	**3:15**
A			**1:56**	**2:19**	**2:34**	**2:50**	**3:02**	**3:26**	**3:43**
	2:00	**2:14**	----	**2:40**	**2:55**	**3:10**	----	**3:37**	**3:53**
A			**2:37**	**2:59**	**3:14**	**3:29**	**3:41**	**4:04**	**4:20**
	2:40	**2:54**	----	**3:20**	**3:33**	**3:48**	----	**4:12**	**4:28**
A			**3:18**	**3:39**	**3:52**	**4:07**	**4:18**	**4:38**	**4:54**
	3:18	**3:32**	----	**3:58**	**4:11**	**4:26**	----	**4:50**	**5:06**
A			**3:58**	**4:19**	**4:32**	**4:45**	**4:55**	**5:13**	**5:30**
	3:58	**4:12**	----	**4:38**	**4:51**	**5:04**	----	**5:26**	**5:43**
A			**4:35**	**4:55**	**5:09**	**5:22**	**5:32**	**5:48**	**6:03**
	4:37	**4:50**	----	**5:15**	**5:29**	**5:42**	----	**6:03**	**6:18**
A			**5:15**	**5:35**	**5:49**	**6:02**	**6:12**	**6:28**	**6:43**
	5:16	**5:29**	----	**5:55**	**6:09**	**6:22**	----	**6:43**	**6:56**
A			**5:57**	**6:15**	**6:29**	**6:42**	**6:52**	**7:09**	**7:22**
	5:56	**6:09**	----	**6:35**	**6:49**	**7:02**	----	**7:23**	**7:36**
A			**6:37**	**6:55**	**7:09**	**7:22**	**7:32**	**7:49**	**8:02**
	6:36	**6:49**	----	**7:15**	**7:29**	**7:42**	----	**8:03**	**8:16**
A			**7:28**	**7:45**	**7:59**	**8:12**	**8:22**	**8:37**	**8:50**
	7:38	**7:51**	----	**8:15**	**8:29**	**8:42**	----	**9:02**	**9:15**
A			**8:28**	**8:45**	**8:59**	**9:12**	**9:22**	**9:37**	**9:50**
	8:44	**8:56**	----	**9:18**	**9:30**	**9:42**	----	**10:00**	**10:12**
A			**9:31**	**9:48**	**10:00**	**10:12**	**10:21**	**10:35**	**10:47**
	9:44	**9:56**	----	**10:18**	**10:30**	**10:42**	----	**11:00**	**11:12**
A			**10:29**	**10:46**	**10:58**	**11:10**	**11:19**	**11:33**	**11:45**
	10:44	**10:56**	----	**11:18**	**11:30**	**11:42**	----	12:00	12:12
A			**11:34**	**11:51**	12:02	12:12	12:20	12:33	12:44
	11:51	12:02	----	12:21	12:32	12:42	----	12:58	1:09

Sunday & Holiday
NORTHBOUND To: La Habra

	Pacific Coast Hwy & 1st	Beach & Garfield	Center & Gothard	Beach & Westminster	Beach & Katella	Knotts Berry Farm	Beach & Imperial	Beach & La Habra	Buena Park Metrolink Station
	5:11	5:20	----	5:37	5:47	5:56	6:14	6:19	
A	5:49	5:54	6:08	6:17	6:27	6:38	----	----	6:52
	6:30	6:40	----	6:57	7:08	7:21	7:38	7:44	
A	6:57	7:08	7:24	7:37	7:49	8:02	----	----	8:16
	7:34	7:45	----	8:07	8:19	8:32	8:50	8:55	
A	8:04	8:15	8:31	8:44	8:56	9:09	----	----	9:23
	8:41	8:52	----	9:14	9:26	9:39	9:57	10:02	
A	8:53	9:04	9:20	9:33	9:45	9:58	----	----	10:12
	9:19	9:30	----	9:52	10:04	10:17	10:35	10:40	
A	9:29	9:41	9:58	10:11	10:24	10:36	----	----	10:51
	9:48	10:00	----	10:22	10:45	10:57	11:19	11:26	
A	10:10	10:22	10:39	10:52	11:05	11:17	----	----	11:32
	10:28	10:40	----	11:12	11:25	11:37	11:59	**12:06**	
A	10:49	11:01	11:18	11:31	11:44	11:56	----	----	**12:11**
	11:08	11:20	----	11:52	**12:05**	**12:17**	**12:39**	**12:46**	
A	11:31	11:43	**12:00**	**12:13**	**12:26**	**12:38**	----	----	**12:53**
	11:47	**12:00**	----	**12:32**	**12:45**	**12:57**	**1:20**	**1:27**	
A	**12:05**	**12:18**	**12:37**	**12:51**	**1:04**	**1:16**	----	----	**1:34**
	12:27	**12:40**	----	**1:12**	**1:25**	**1:37**	**2:00**	**2:07**	
A	**12:47**	**1:00**	**1:19**	**1:33**	**1:46**	**1:58**	----	----	**2:16**
	1:08	**1:21**	----	**1:53**	**2:06**	**2:18**	**2:41**	**2:48**	
A	**1:27**	**1:40**	**1:59**	**2:13**	**2:26**	**2:38**	----	----	**2:56**
	1:48	**2:01**	----	**2:33**	**2:46**	**2:58**	**3:21**	**3:28**	
A	**2:08**	**2:21**	**2:40**	**2:54**	**3:07**	**3:19**	----	----	**3:37**
	2:28	**2:41**	----	**3:13**	**3:26**	**3:38**	**4:01**	**4:08**	
A	**2:51**	**3:03**	**3:20**	**3:33**	**3:46**	**3:56**	----	----	**4:14**
	3:09	**3:21**	----	**3:53**	**4:06**	**4:16**	**4:36**	**4:43**	
A	**3:31**	**3:43**	**4:00**	**4:13**	**4:26**	**4:36**	----	----	**4:54**
	3:49	**4:01**	----	**4:33**	**4:46**	**4:56**	**5:16**	**5:23**	
A	**4:11**	**4:23**	**4:40**	**4:53**	**5:06**	**5:16**	----	----	**5:34**
	4:29	**4:41**	----	**5:13**	**5:26**	**5:36**	**5:56**	**6:03**	
A	**4:51**	**5:03**	**5:20**	**5:33**	**5:46**	**5:56**	----	----	**6:14**
	5:09	**5:21**	----	**5:53**	**6:06**	**6:16**	**6:36**	**6:43**	
A	**5:31**	**5:43**	**6:00**	**6:13**	**6:26**	**6:36**	----	----	**6:54**
	5:49	**6:01**	----	**6:33**	**6:46**	**6:56**	**7:16**	**7:23**	
A	**6:11**	**6:23**	**6:40**	**6:53**	**7:06**	**7:16**	----	----	**7:34**
	6:29	**6:41**	----	**7:13**	**7:26**	**7:36**	**7:56**	**8:03**	
A	**6:55**	**7:07**	**7:24**	**7:37**	**7:50**	**8:00**	----	----	**8:18**
	7:22	**7:35**	----	**8:07**	**8:18**	**8:26**	**8:46**	**8:53**	
A	**7:51**	**8:04**	**8:20**	**8:34**	**8:45**	**8:53**	----	----	**9:10**
	8:29	**8:41**	----	**9:01**	**9:13**	**9:23**	**9:42**	**9:46**	
A	**8:50**	**9:02**	**9:17**	**9:28**	**9:40**	**9:50**	----	----	**10:06**
	9:25	**9:37**	----	**9:57**	**10:09**	**10:19**	**10:38**	**10:42**	
A	**9:50**	**10:02**	**10:17**	**10:28**	**10:40**	**10:50**	----	----	**11:06**
	10:27	**10:39**	----	**10:59**	**11:11**	**11:21**	**11:40**	**11:44**	
	10:51	**11:03**	----	**11:23**	**11:35**	**11:45**	12:04	12:08	

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Sunday & Holiday
SOUTHBOUND To: Huntington Beach

	Beach & La Habra	Beach & Imperial	Buena Park Metrolink Station	Knotts Berry Farm	Beach & Katella	Beach & Westminster	Gothard & Center	Beach & Garfield	Pacific Coast Hwy & 1st
	5:12	5:21	----	5:36	5:48	5:58	----	6:15	6:29
A			6:02	6:17	6:29	6:39	6:47	7:01	7:15
	6:30	6:40	----	6:58	7:10	7:21	----	7:39	7:53
A			7:22	7:37	7:49	8:00	8:10	8:24	8:38
	7:37	7:47	----	8:05	8:17	8:28	----	8:46	9:00
A			8:17	8:33	8:45	8:56	9:06	9:20	9:34
	8:26	8:38	----	8:59	9:11	9:24	----	9:45	10:00
A			9:08	9:24	9:36	9:49	9:59	10:16	10:31
	9:17	9:23	----	9:44	9:56	10:09	----	10:30	10:45
A			9:48	10:04	10:16	10:29	10:39	10:56	11:11
	9:31	10:03	----	10:24	10:36	10:49	----	11:10	11:23
A			10:27	10:42	10:53	11:09	11:20	11:38	11:51
	10:28	10:40	----	11:02	11:13	11:29	----	11:51	**12:04**
A			11:01	11:18	11:32	11:47	11:59	**12:20**	**12:37**
	11:03	11:17	----	11:39	11:53	**12:08**	----	**12:32**	**12:49**
A			11:42	11:59	**12:13**	**12:28**	**12:40**	**1:01**	**1:18**
	11:43	11:57	----	**12:19**	**12:33**	**12:48**	----	**1:12**	**1:29**
A			**12:22**	**12:39**	**12:53**	**1:08**	**1:20**	**1:41**	**1:58**
	12:25	**12:39**	----	**1:01**	**1:15**	**1:30**	----	**1:54**	**2:11**
A			**1:05**	**1:22**	**1:36**	**1:51**	**2:03**	**2:24**	**2:41**
	1:06	**1:20**	----	**1:42**	**1:56**	**2:11**	----	**2:35**	**2:52**
A			**1:45**	**2:02**	**2:16**	**2:31**	**2:43**	**3:04**	**3:21**
	1:46	**2:00**	----	**2:22**	**2:36**	**2:51**	----	**3:15**	**3:32**
A			**2:25**	**2:42**	**2:56**	**3:11**	**3:23**	**3:44**	**4:01**
	2:26	**2:40**	----	**3:02**	**3:16**	**3:31**	----	**3:55**	**4:12**
A			**3:05**	**3:22**	**3:36**	**3:51**	**4:03**	**4:24**	**4:41**
	3:09	**3:23**	----	**3:45**	**3:58**	**4:11**	----	**4:33**	**4:48**
A			**3:47**	**4:05**	**4:18**	**4:31**	**4:42**	**5:00**	**5:15**
	3:48	**4:02**	----	**4:24**	**4:37**	**4:50**	----	**5:12**	**5:27**
A			**4:25**	**4:43**	**4:56**	**5:09**	**5:20**	**5:38**	**5:53**
	4:27	**4:41**	----	**5:03**	**5:16**	**5:29**	----	**5:51**	**6:06**
A			**5:10**	**5:27**	**5:38**	**5:49**	**5:59**	**6:15**	**6:29**
	5:14	**5:27**	----	**5:47**	**5:58**	**6:09**	----	**6:29**	**6:43**
A			**5:49**	**6:06**	**6:17**	**6:28**	**6:38**	**6:54**	**7:08**
	5:54	**6:07**	----	**6:27**	**6:38**	**6:49**	----	**7:09**	**7:23**
A			**6:30**	**6:47**	**6:58**	**7:09**	**7:19**	**7:35**	**7:49**
	6:34	**6:47**	----	**7:07**	**7:18**	**7:29**	----	**7:49**	**8:03**
A			**7:10**	**7:27**	**7:38**	**7:49**	**7:59**	**8:15**	**8:29**
	7:24	**7:37**	----	**7:57**	**8:08**	**8:19**	----	**8:39**	**8:53**
A			**8:10**	**8:27**	**8:38**	**8:49**	**8:59**	**9:15**	**9:29**
	8:26	**8:37**	----	**8:57**	**9:09**	**9:19**	----	**9:35**	**9:49**
A			**9:12**	**9:27**	**9:39**	**9:49**	**9:58**	**10:10**	**10:24**
	9:26	**9:37**	----	**9:57**	**10:09**	**10:19**	----	**10:35**	**10:49**
A			**10:17**	**10:32**	**10:44**	**10:54**	**11:03**	**11:15**	**11:29**
	10:31	**10:42**	----	**11:02**	**11:14**	**11:24**	----	**11:40**	**11:54**
	11:06	**11:17**	----	**11:37**	**11:49**	**11:59**	----	12:15	12:29

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Estos viajes se detienen en el Centro de Transporte Goldenwest.

OCBUS | OCTA

October 11, 2020

e BUS BOOK

EFFECTIVE THROUGH FEBRUARY 14,
EFECTIVO HASTA EL 14 DE FEBRERO

ROUTES
MINOR SCHEDULE UPDATE
COVID-19 UPDATES

PART OF THE NATIONAL PLEDGE FOR SAFETY

HEALTH & SAFETY COMMITMENTS PROGRAM APTA OCTA

Attachment: Attachment No. 5c - OCTA Oct. 2020 Bus Book (Appeal of the Draft Allocation for the City of Huntington Beach)

INDEX

FARES

OC Bus offers you a variety of ways to pay for your trip, including:

1. **CASH FARE**
2. **PREPAID PASSES**
3. **OC BUS MOBILE APP**

GO MOBILE.
No cash? No problem.
Download today and ride cashless!

PAYING YOUR FARE

- Please have your exact fare, pass, or OC Bus app ready when boarding the bus.
- Exact change is required when paying by cash. Fareboxes do not make change, and drivers do not carry cash or make change.
- OC Bus fareboxes accept all coins (except pennies) and bills $10 and under.

REDUCED FARES

- Reduced fares are available for Seniors (age 60+) and Disabled Persons (including Medicare card holders)[1]. Reduced fares are also available for youth (age 6 through 18).
- If paying a senior or disabled reduced fare, you must show identification each time you purchase a pass and when you board a bus (see page 5).
- Up to three young children (age 5 and under) may ride FREE with each fare-paying customer.

CASH FARES	LOCAL (1-499, 529, 543, 560 & 862)	OC EXPRESS (206 & 213)	EXPRESS (701, 721, 794)
REGULAR	$2.00	$4.00	$7.00
Additional fare if using valid OC Bus pass or transfer		$2.00	$5.00
SENIOR AND DISABLED[1]	$0.75	$3.50	$6.00
Additional fare if using valid OC Bus passs or transfer		$2.75	$5.25
ACCESS ELIGIBLE FIXED-ROUTE (OCTA ACCESS ID Card required)	$0.25	NA	NA

Cost per boarding. No transfers issued. For more information on transfers see page 9.

ONE DAY PASSES	LOCAL (1-499, 529, 543, 560 & 862)	OC EXPRESS (206 & 213)	EXPRESS (701, 721, 794)
REGULAR	$5.00	$8.00	$14.00
SENIOR AND DISABLED[1]	$1.50	$7.00	$12.00

Bus riders may purchase a one-day pass from the bus driver, using cash. The passes are valid until 2:59 AM on the following date of purchase.

PREPAID PASSES

ONE-DAY PASS	
Regular	$4.50
Senior and Disabled[1]	$1.35
30-DAY PASS	
Regular	$69.00
Senior and Disabled[1]	$22.25
Youth (ages 6-18)	$40.00
Youth Summer Pass (ages 6-18) Valid June 1 - August 31	$20.00
OC Express (206, 211, 213 only)	
Regular	$120.00
Senior & Disabled[1]	$105.00
Express (Routes 701, 721, 794)	
Regular	$210.00
Senior & Disabled[1]	$180.00

Prepaid passes are available at over one hundred local retailers plus local Ralphs, Vons, Pavilions and Northgate Markets. Visit ocbus.com/buyapass to purchase prepaid bus passes online, or to find a retailer where you can buy a pass. Passes may also be purchased via phone at 714-560-5932, weekdays between 8:00 am to 2:00 pm.

(1) Must show proof of age, disability or medicare card to operator. Senior citizens (age 60 & older) must show a valid driver's license, California DMV ID card, Medicare card or OCTA Senior Reduced Fare ID card as proof of age. Persons with disabilities see page 5 for a list of accepted Reduced Fare ID Cards.

Fares and policies are subject to change. Some restrictions apply. Passes are non-refundable, non-transferable and subject to OCTA's Schedule of Tar s.

REDUCED FARES

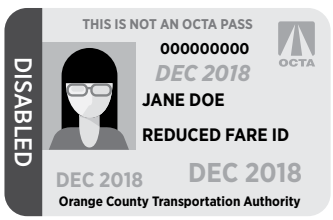
Customers paying a Senior or Disabled bus fare, and customers using a Senior or Disabled bus pass, must show identification each time they purchase and board a bus. Please be prepared to show one of the accepted forms of identification listed on this page or the bottom of page 4. For more information, call the Reduced Fare ID section at 714-560-5596.

ACCEPTABLE ID CARDS

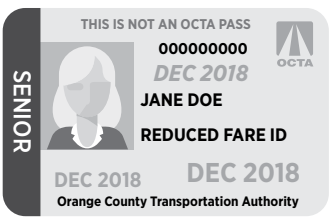
The following Reduced Fare ID cards are ACCEPTED by Coach Operators when boarding the bus. OCTA Coach Operators will also accept other valid transit agencies' persons with disabilities cards or DMV Disabled Person Placard customer receipt copy.

ACCESS ELIGIBLE FIXED-ROUTE REDUCED FARES

The local fare for OC ACCESS eligible riders and Personal Care Assistants (PCAs) while assisting OC ACCESS eligible customers riding the local fixed-route service is $0.25 per boarding. PCA's traveling without OC ACCESS eligible riders pay full fare This does not apply to the purchase of a day pass. The price of a Senior or Disabled Day Pass is $1.50 (see page 4 For more information, please call the OC ACCESS Eligibility Department at 714-560-5956. All buses are accessible to persons with disabilities.

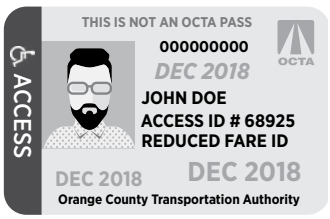


OCTA Reduced Fare ID Card

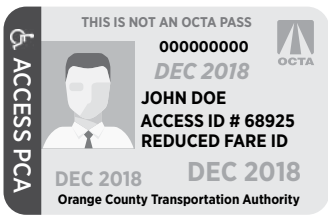


OCTA Senior
Reduced Fare ID Card

Service Connected Veteran ID Card

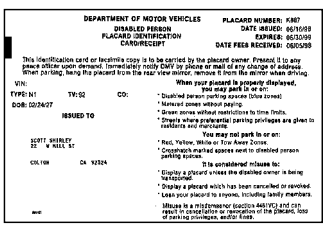


OCTA ACCESS
Reduced Fare ID Card

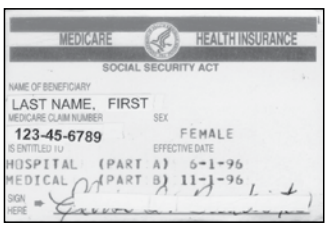


OCTA ACCESS
PCA Reduced Fare ID Card

Braille Institute ID Card



DMV Placard Receipt



Medicare Card

BUS RIDING TIPS

TIMES ARE ESTIMATED

Please arrive at the bus stop at least 10 minutes early. Bus schedules can change. Watch for brightly colored Riders' Alerts in schedule racks on buses.

HAVE EXACT FARE READY

Fareboxes accept all coins except pennies and all bills $10 and under. Fareboxes do not make change. Use quarters instead of smaller coins to avoid delays. Flatten out bills, including corners. You may instead swipe your pass, it's easier to use and saves you money, too. Also show proper ID if using a Senior or Disabled Pass each time you board a bus.

LAUNCH YOUR MOBILE APP

Launch your OC Bus mobile app before boarding and have the pass ready to scan.

PREPARE BEFORE YOU BOARD

- Wait for the bus to stop completely before approaching to board or when exiting.
- Never run after a moving bus.
- Always stay in plain view of the bus operator while using the bike racks; and remove all items from your bike.
- Bring all your items with you when you board. Passengers are not permitted to get on/off the bus multiple times to load personal belongings.
- Have strollers and carts folded and ready to board before the bus approaches. Strollers and carts may not block the aisle and must remain folded until you exit the bus.

BOARD THROUGH FRONT DOORS

When the bus stops, board from the front. All buses are accessible to persons with disabilities.

RIDE SAFELY

- The bus may move before you are seated, always hold on and be prepared.
- When a seat is available, sit; do not remain standing. If standing, always hold on.
- Do not stand near or lean against the back door.
- Always remain behind the yellow or white line near the front of the bus.
- If using a wheelchair, always allow the bus operator to secure your wheelchair.

EXITING AT YOUR STOP

As your bus stop approaches, signal the driver to stop by ringing the chime or pulling the signal cord. When exiting the bus, go to the rear and press and release the yellow strips on the doors. Once the doors open, exit quickly, allowing children to go first.

USING THE BIKE RACK

All OCTA buses are equipped with bike racks. Each bike rack holds two bikes. Racks are available on a first-come, first-served basis. If the rack is full, bikes are not permitted inside buses, except for the last trip of the day, unless it presents a safety concern. Acceptable bicycle specifications:

Wheel Size
20 – 29 inches in diameter

Wheelbase
44 inches maximum axle to axle

Tire Width
No more than 2.35 inches maximum

BUS RIDING COURTESY

Help make bus travel pleasant for everyone by riding smart.

1. **No smoking or eating** on the bus. Electronic smoking devices, such as electronic cigarettes, are prohibited on any OC Bus.
2. **Bringing drinks.** Drinks must be in a spill proof or covered container. No alcohol allowed.
3. **No combustable materials.** No gas powered bicycles, scooters, car batteries, fireworks or other combustible materials are allowed on the bus.
4. **Strollers** must be folded prior to boarding the bus.
5. **Surfboards** are permitted as long as they do not exceed 6 feet, 6 inches in length.
6. **Service animals** are allowed to accompany persons with disabilities. That person is responsible for the actions of the animal while aboard the bus. Service animals cannot occupy seats and must remain on the floor at all times, making sure not to block the aisle, path of travel, access doors, or lift.
7. **Devices with speakers.** All radios, mp3 players, cd players, and cell phones must be used with headphones.
8. **No soliciting.** Handing out any written material, solicitation or advertisement is not allowed.
9. **Front seats.** Please keep front seats available for disabled persons and senior citizens.
10. **Your bus driver.** Do not talk to or distract the bus operator while a bus is moving.

OC BUS MOBILE APP

OC BUS MOBILE APP: EVERYTHING YOU NEED TO RIDE, RIGHT ON YOUR PHONE!

Join the growing number of OC Bus riders using their smartphone, and our convenient mobile ticketing app, to plan, pay and ride. Our app offers riders many security features, payment options, plus an intuitive interface. You'll have access to current bus route information and planning tools that will help you navigate the OC by bus.

To get started simply download from the Apple App Store or Google Play.

KEY FEATURES

- Purchase using Google Pay or Apple Pay
- Make repeat purchases quickly
- Use Touch ID or Face ID security
- Enjoy simplified multi-rider tickets
- Transfer tickets easily when upgrading phones
- Navigate faster with large, simple interface
- Board quickly using full-screen ticket

TYPES OF PASSES AVAILABLE

The OC Bus Mobile App lets you purchase the following passes:

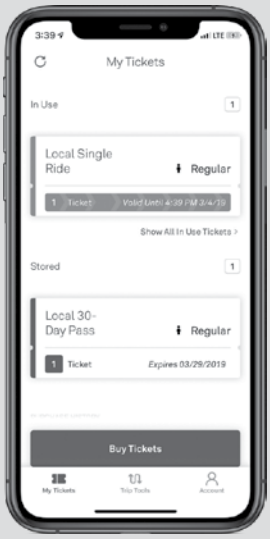
- Local Single Ride
- Local Day Pass
- Local 30-Day Pass
- Youth 30-Day Pass
- Express Single Ride
- Express Day Pass
- Express 30-Day Pass
- OC Express Single Ride
- OC Express Day Pass
- OC Express 30-Day Pass

REDUCED FARES AVAILABLE TOO!

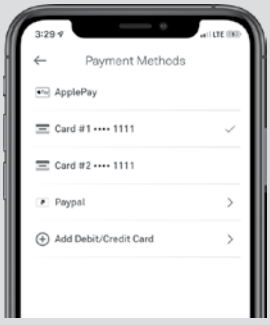
You can purchase reduced college, senior and disabled fares on the OC Bus Mobile Ticketing app. You must have an OCTA issued College, Senior or Disabled Reduced Fare ID Card or electronic mobile number to access the reduced fares.

Need more details?

For information on how to use the OC Bus Mobile App including many frequently asked questions, visit **OCBus.com/mobile**



Use the My Tickets section to keep your tickets and day passes organized.



Enjoy many payment options including Apple Pay, Google Pay, multiple credit cards and debit cards.

Take advantage of your smartphones Touch ID of Face ID security feature to purchase and use tickets.

READING A SCHEDULE

(A) **42/A**

Seal Beach to Orange

via Seal Beach Blvd / Los Alamitos Blvd / Lincoln Ave (B)

(D) **WESTBOUND To: Seal Beach** (E)

Saturday, Sunday & Holiday (C)

	The Village at Orange	Lincoln & State College	Lincoln & Harbor	Lincoln & Euclid	Lincoln & Magnolia	Braille Institute	Lincoln & Valley View	Carson & Norwalk	Norwalk & Civic Center	Los Alamitos & Katella	Leisure World	Electric & Main
	5:36	5:54	6:02	6:08	6:16	.....	6:30	.....	6:40	6:46	6:53	7:03
	6:26	6:44	6:52	6:58	7:06	.....	7:20	.....	7:30	7:36	7:43	7:53
A	7:11	7:29	7:37	7:43	7:51	7:55	8:10	.....	8:20	8:26	8:33	8:43
A	7:46	8:05	8:16	8:23	8:32	8:36	8:51	.....	9:02	9:10	9:19	9:31
	8:26	8:45	8:56	9:03	9:12	.....	9:27	9:41				
A	8:54	9:13	9:24	9:31	9:40	9:44	10:01	.....	10:12	10:20	10:29	10:41

(F)

(G)

(H)

(A) Bus route numbers are identified as:

- 1-99 Local bus routes
- 100-199 Community routes
- 200-299 Intracounty express routes.
- 400-499 StationLink routes
- 500-599 Bravo routes
- 700-799 Intercounty express routes

(B) City destinations and major streets along the route.

(C) Days the schedule is in effect. Holiday schedules only apply to:

- New Year's Day
- Memorial Day
- Fourth of July
- Labor Day
- Thanksgiving Day
- Christmas Day

(D) Direction of travel.

(E) City or landmark where this route ends its trip. If two cities or landmarks are listed, this indicates the route operates short turn trips. See part H for description of short turn trips.

(F) Scheduled departures are from major bus stops listed. The bus departs at the time specified in the schedule. Between major bus stops there are additional designated bus stops where you may board the bus. The stops are located one to three blocks apart. OC Bus stops are identified by a bus stop sign with information on the route(s) stopping there. You'll need to estimate arrival times for these bus stops. Departures from the non-scheduled bus stops may vary. Schedules may change due to unforeseen circumstances (traffic conditions, detours, weather, emergencies or labor issues), but we will do our best to provide bus service as planned.

Below each scheduled departure you'll see a listing of arrival times. By reading the schedule from left to right, you can follow the movement of the bus as it travels along its route. In the example above, if you board Route 42/A at The Village at Orange at 5:36 a.m., you'd arrive at Leisure World at 6:53 a.m.

Note: p.m. times are in bold print.

(G) When you see ellipses (.....), please note that NO SERVICE IS PROVIDED to that stop on that particular trip. In the example shown, Route 42 does not serve the Braille Institute until 7:55 a.m., even though there are earlier trips at other scheduled departure points.

(H) When you see [redacted], please note that this particular trip is operating as a short turn trip and does not offer service along the entire length of the route. Short turn trips either do not start at the beginning of the route or do not go to the end of the route.

TRANSFERRING TO CONNECTING TRANSIT SYSTEMS

OC Bus passes are accepted by most connecting transit systems. For more information call 511, an automated phone system that allows you to connect to over 40 local bus, rail, rideshare, highway and other transportation agencies, including OCTA.

Transferring to Anaheim Resort Transit (ART)

- ART accepts OC Bus passes on routes: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19, 20 at bus stops where ART buses directly connect with OC Bus.

Transferring to Long Beach Transit

- Long Beach Transit accepts OC Bus One-Day passes for one transfer only on connecting routes.
- OC Bus One-Day Passes are not accepted on return trips originating on Long Beach Transit.

Transferring to Los Angeles Metro

- Metro accepts OC Bus One-Day and 30-Day passes on Metro bus routes 62 and 460 that travel into Orange County or connect with OC Bus. An additional fare may be required to travel on some Metro bus routes.
- Metro Rail lines will not honor OC Bus passes as a transfer.

TRANSFERRING TO OC BUS FROM CONNECTING TRANSIT SYSTEMS

OC Bus accepts valid transfers from connecting transit systems at all transfer points. These transfers are valid for one boarding only and have no value towards the purchase of a day pass. The driver will keep your transfer upon boarding an OC Bus.

Additional fare when transferring to Express routes 701, 721, and 794

- Routes 701, 721 and 794 require an additional $5.00 fare for regular, or $5.25 fare for seniors and persons with disabilities, with proper identification.

Additional fare when transferring to OC Express routes 206 and 213

- Routes 206 and 213 require an additional $2.00 fare for regular, or $2.75 fare for seniors and persons with disabilities, with proper identification.

Transferring from Anaheim Resort Transit (ART)

- ART fare media is accepted on OC Bus routes 29, 30, 33, 35, 37, 38, 42, 43, 46, 47, 50, 53, 54, 56, 57, 71, 83, 167, 453 and 543 (all stops where OC Bus directly connect with ART buses).

Transferring from Long Beach Transit

- Long Beach Transit day passes are accepted on connecting OC Bus routes only.

Transferring from Los Angeles Metro

- Metro day passes cannot be used on OC Bus, only monthly passes will be accepted. The Los Angeles County Regional EZ Pass is NOT part of this program.
- OC Bus will honor Metro monthly bus passes, MTA TAP and MTA TAP cards with EZ sticker at all bus stops along the line on the nine OC Bus routes that serve Los Angeles County (1, 30, 38, 42, 46, 50, 60, 701 and 721) or at bus stops where OC Bus directly connect with Metro buses. **NOTE: TAP cards are not accepted as transfers on Bravo Route 529 or 560.**
- For MTA 460 transferring customers OC Bus will honor Metro monthly bus passes, MTA TAP cards, or Interagency Transfers for one boarding at the following locations
  - Fullerton Park-N-Ride: Routes 25, 26, 33 and 35
  - La Palma Ave. stops between Magnolia Ave. and Beach Blvd. on Routes 29, 33, 38
  - Disneyland East Shuttle Area (on Harbor Blvd.): Routes 43, 83 and 543
  - Beach Blvd. stops between La Palma Ave. and La Mirada Blvd. on Routes 25, 29, 30, 38, 12
  - Magnolia Ave. stops between Orangethorpe Ave. and La Palma Ave. on Routes 33, 38

Transferring from Riverside Transit Agency

- OC Bus will honor RTA one-day and 31-day passes on OC Bus directly connecting with RTA routes 200 and 205.

METROLINK AND AMTRAK TRAIN TRANSFERS

OC Bus routes that **directly connect** with Metrolink and Amtrak Pacific Surfliner trains at or near rail stations will honor valid Metrolink and Amtrak tickets and passes.

OC Bus routes 1, 25, 26, 29, 38, 43, 47, 50, 53, 54, 56, 57, 59, 70, 71, 83, 85, 86, 90, 91, 123, 143, 153, 453, 463, 472, 473, 480, 543, 560, 862 accept valid Metrolink tickets as full fare for travel to and from stations. Passengers must show a valid Metrolink or Amtrak pass or ticket, swipe a valid OC Bus pass (additional fare may be required for express routes), or pay the cash fare to board. Metrolink tickets provide a $2.00 fare value towards express and OC Express fares.

INFORMATION

QUESTIONS AND HOURS OF OPERATION

OC Bus is here to help. If you have questions or concerns you can always call the OC Bus Customer Information Center at 714-636-RIDE (7433). Bilingual operators are available to help. Hours of operation are noted to the right.

	Mon-Fri	Sat/Sun	Holidays
Trip Planning	7-7	8-6	8-5
Customer Service	8-5	Closed	Closed
Pass Sales	8-2	Closed	Closed

CONTACTING US

If you have comments, concerns, or suggestions about OC Bus service, contact Customer Relations by:

E-mail: customers@octa.net
Web: octa.net/comment

Phone: Monday – Friday
from 8am to 5pm
714, 949 or 800-636-RIDE
(7433), extension 2

Mail: P.O. Box 14184
Orange, CA 92863

CUSTOMER CONDUCT POLICY

Violent, illegal or disruptive conduct will not be tolerated on board the vehicle. Violators will be prosecuted to the fullest extent of the law in accordance with:

- Penal Code Sections 171.7, 594, 640, 640.5 and 16590
- Public Utilities Code Sections 99155 and 99170
- Vehicle Code Section 407.5

For more information, please visit ocbus.com/customerconduct

CUSTOMER SERVICE POLICY

OCTA is committed to providing safe, reliable, courteous, accessible and user-friendly services to its customers. To ensure quality and fairness, OCTA will make reasonable modifications to its policies, practices, and procedures, where necessary, to avoid discrimination on the basis of disability or where the individual with a disability would otherwise be unable to use OCTA services, programs or activities. For additional information about reasonable modification requests, please visit ocbus.com/reasonablemodification.

ACCESS SERVICE

ACCESS service is OCTA's paratransit service for persons with a disability resulting in functional limitations that prevent them from using the regular bus system. In order to use the service, you must schedule an ACCESS in-person assessment, please call ACCESS Eligibility at 714-560-5956 Ext. 2, and meet the Americans with Disabilities Act (ADA) criteria.

Reserving ACCESS

To reserve or cancel an ACCESS trip, check on the status of a ride, or for general ACCESS information, call ACCESS at:

877-OCTA-ADA (628-2232)

TDD phone for the hearing impaired 800-564-4ADA (4232)

ACCESS Information is also available at ocbus.com.

ACCESS Phone Hours

Monday through Friday
7:00 a.m. – 5:00 p.m.

Saturday, Sunday and Holidays
8:00 a.m. – 5:00 p.m.

For information about older adult programs and services, contact the Office on Aging Information and Assistance Call Center at 800-510-2020 or 714-567-7500. Or visit their website at officeonaging.ocgov.com

CALIFORNIA SERVICE DOG FRAUD LAW

If someone attempts to pose a regular pet as a **service dog**, the maximum **penalty** is a $1,000 fine and up to six months in jail.
• Penal code 365.7

NOTIFICATION OF TITLE VI PROTECTION

Title VI of the Civil Rights Act of 1964 provides that "no person in the United States shall, on the grounds of race, color or nation of origin, be excluded from participation in, be denied the benefits of or be subjected to discrimination under any program or activity receiving federal financial assistance."

Any person who believes that he or she, individually, or as a member of any specific class of persons, has been subjected to discrimination on the basis of race, color, national origin or other protected-class interests may file a written complaint with the Orange County Transportation Authoirty (OCTA), the Federal Transit Administration (FTA) or the Secretary of Transportation. Further, OCTA prohibits intimidation, coercion, or engagement in other discriminatory conduct against anyone because he or she has filed a complaint to secure rights protected by Title VI.

To file a complaint in writing or to request more information contact:

E-mail:
TitleVI-Inquiries@octa.net

Customer Relations:
714-636-RIDE (7433)

Web:
octa.net

Hearing Impaired:
714-636-HEAR (4327) TDD

OCTA LOST & FOUND

Address:
11903 Woodbury Road
Garden Grove, CA 92843
Phone: (714) 560-5934
Hours:
Mon – Thurs: 8:00 a.m. – 12:30 p.m. & 1:30 p.m. – 4:00 p.m.
Friday Pickup by appointment only

CARRY ON RESTRICTIONS

GUIDELINES FOR SAFE TRANSPORTATION OF CARTS, STROLLERS, CARGO AND PACKAGES ON OC BUS

- Riders are limited to two small carry-on items that must fit on their lap or under the seat.
- Carts cannot exceed 30" tall, 18" wide and 18" deep (not including wheels and handle).
- Carts cannot contain loads that exceed the height or capacity of the cart.
- Carry-on items cannot hang off the exterior of carts or wheelchairs.
- Carts, strollers, and carry-ons cannot block aisles, any doors or take seats.
- Carts, strollers, and carry-ons must be loaded in a single trip without assistance.
- No items that are wet, leaking, or considered hazardous will be allowed.
- No large bags of recycled cans or other materials will be allowed.
- Carts, strollers, and carry-ons must be attended and held firmly at all times.
- Carry-on items must stay off wheel wells unless attended and held at all times.
- Passengers with strollers must remove child, collapse the stroller and stay seated with children in their laps at all times.

APPROVED ✓


Smaller than 30" high, 18" wide, 18" deep

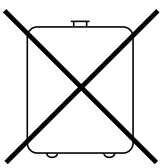

Can be loaded in a single trip


No more than two carry-on items

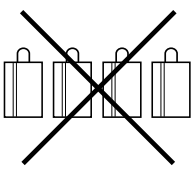

Load does not exceed capacity


Does not block aisle

NOT APPROVED ✗


Larger than 30" high, 18" wide, 18" deep


Cannot be loaded in a single trip


More than two carry-on items


Load exceeds capacity


Blocks aisle


Bags of cans or plastic bottles/ leaking items

TARIFAS

OC Bus ofrece a los clientes una variedad de formas de pagar su viaje en autobús, incluyendo:

1.TARIFAS EN EFECTIVO
2.PASES PREPAGADOS
3.OC BUS MOBILE APP

VAYA MÓVIL.
¿Sin efectivo?
¡No hay problema!
¡Descarga hoy la APP
y viaja sin efectivo!

PAGANDO SU TARIFA

- Por favor, tenga su tarifa exacta, pase, o OC bus App listo cuando embarque en el autobús.
- El cambio exacto es requerido cuando se paga en efectivo. Las cajas de pago no don cambio, y los conductores no llevan efectivo o hacen el cambio.
- Las cajas de pago del OC Bus aceptan todas las monedas (excepto los centavos) y billetes de $10 o menos.

TARIFAS REDUCIDAS

Tarifas reducidas están disponibles para personas mayores (edad 60) o incapacitadas[1]. Las tarifas reducidas también están disponibles para los jóvenes (de 6 a 18 años).

- Si desea pagar las tarifas reducidas para personas mayores (60 años) o incapacitadas, deberá mostrarle al conductor del autobús su identificación cada vez que aborde. (consulte la página 12).
- Pueden viajar GRATIS hasta tres niños de cinco años o menores, si están acompañados por un adulto que haya pagado su tarifa.

TARIFAS EN EFECTIVO	LOCALES (1-499, 529, 543, 560 y 862)	OC EXPRESS (206 y 213)	EXPRESS (701, 721, 794)
TARIFA REGULAR	$2.00	$4.00	$7.00
Tarifa adicional cuando se combina con cualquier pase de autobús válido de OCTA o transferencia válida		$2.00	$5.00
PERSONAS MAYORES Y INCAPACITADAS[1]	$0.75	$3.50	$6.00
Tarifa adicional cuando se combina con cualquier pase de autobús válido de OCTA o transferencia válida		$2.75	$5.25
ACCESS ELEGIBLE PARA LA RUTA FIJA (Necesaría tarjeta de ID de OCTA ACCESS)	$0.25	NA	NA

Costo por viaje: OCTA no emite transbordos. Para obtener más información sobre las transferencias, consulte la página 9.

PASE DE UN DÍA	LOCALES (1-499, 529, 543, 560 y 862)	OC EXPRESS (206 y 213)	EXPRESS (701, 721, 794)
TARIFA REGULAR	$5.00	$8.00	$14.00
PERSONAS MAYORES Y INCAPACITADAS[1]	$1.50	$7.00	$12.00

Los pasajeros en autobús pueden comprar un pase de un día del conductor del autobús, en efectivo. Los pases son válidos hasta 2:59 AM del siguiente día.

PASES PREPAGADOS

PASE DE UN DÍA	
Regular	$4.50
Personas mayores y incapacitadas[1]	
PASE DE 30 DÍAS	
Regular	$69.00
Personas mayores y incapacitadas[1]	$22.25
Jóvenes (años 6-18)	$40.00
Pase de verano para jóvenes (años 6-18) (Válido del 1 de junio al 31 de agosto)	$20.00
OC Express (Rutas 206, 211, 213)	
Regular	$120.00
Personas mayores y incapacitadas[1]	$105.00
Express (Rutas 701, 721, 794)	
Regular	$210.00
Personas mayores y incapacitadas[1]	$180.00

Puede comprar los pases prepagados de autobús en las sucursales locales de los mercados Ralphs, Vons, Pavilions, y Northgate, así como también en más de 100 tiendas minoristas locales. Para comprar su pase por Internet o recibir una lista de sucursales de venta de pases, visite www.octa.net/buyapass o ordene por teléfono al 714-560-5932 de 8:00 a.m. a 2:00 p.m. Lunes a viernes.

(1) SE DEBE MOSTRAR COMPROBANTE DE EDAD, DISCAPACIDAD O TARJETA DE MEDICARE AL CONDUCTOR. Las personas mayores (60 años o más) deben mostrar una licencia de conducir vigente, la tarjeta de identificación del DMV de California, la tarjeta de Medicare o la tarjeta de identificación de tarifa reducida de OCTA (OCTA Senior Reduced Fare ID), como comprobante de edad al comprar y usar tarifas reducidas. Las personas discapacitadas consulte la página 4

Las tarifas y normas para las tarifas son sujetas a cambios. Ciertas restricciones se aplican. Los pases no son reembolsables, transferibles y están sujetos a la lista de Tarifas de OCTA.

TARIFAS REDUCIDAS

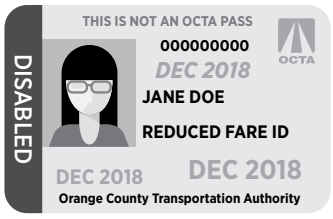
Aquellos clientes que deseen pagar el pasaje de autobús para personas de edad avanzada o discapacitadas, así como aquellos que tengan un pase para personas de edad avanzada o discapacitadas, deberán mostrar identificación cada vez que compran un pase y viaje en el autobús. Favor de estar preparado a mostrar uno de los medios aceptados para la identificación que se detallan en esta página o al pie de página 11. Para obtener más información, llame a la sección de ID de Tarifa Reducida al número 714-560-5596.

TARJETAS DE IDENTIFICACION ACEPTADAS PARA TARIFAS REDUCIDAS

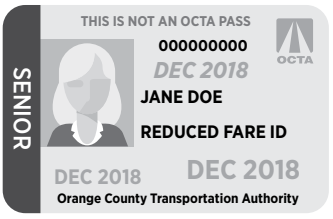
Las siguientes tarjetas de identificación para tarifas reducidas que son ACEPTADAS por el conductor al abordar el autobús. Los conductores de la OCTA también aceptarán las tarjetas de otras entidades de tránsito de personas discapacitadas o el recibo de la placa de DMV para personas discapacitadas.

TARIFAS REDUCIDAS PARA EL SERVICIO DE RUTA FIJA PARA PASAJEROS OCTA ELEGIBLES DE ACCESS:

La tarifa local del servicio de ruta fija para los pasajeros elegibles de ACCESS y asistente personal (PCA) ayudando a los clientes eligibles de ACCESS es $0.25 por cada trayecto. Esto no aplica a la compra de un Pase Diario. El precio de un Pase Diario para personas de edad avanzada y persona discapacitadas es $1.50 (vea la página 11). Para obtener más información, llame al Departamento de Elegibilidad al número 714-560-5956. Todos los autobuses son accesibles para personas discapacitadas.

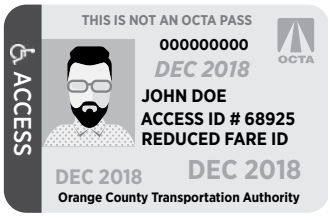


OCTA tarjeta de identificación de tarifa reducida

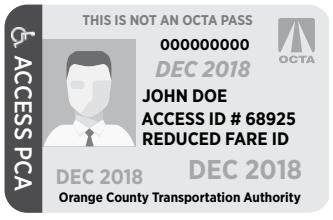


OCTA tarjeta de identificación de tarifa reducida para personas mayores

Tarjeta de identificación de veterano con servicio conectado

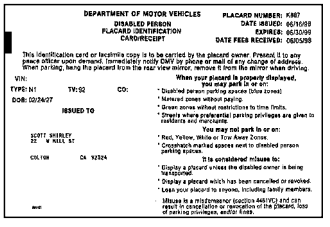


OCTA ACCESS tarjeta de identificación de tarifa reducida

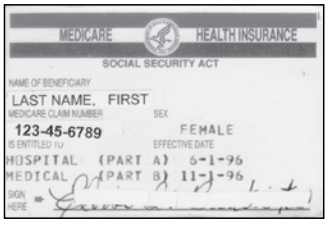


OCTA ACCESS tarjeta de identificación de tarifa reducida

Tarjeta de identificación del Instituto Braille



Recibo del cartel del DMV



Tarjeta de Medicare

CONSEJOS DE VIAJAR EN AUTOBUS

LOS TIEMPOS DE LLEGADA SON ESTIMADOS.

Por favor llegue a la parada con 10 minutos de anticipación por lo menos. Los horarios de autobúses pueden cambiar. Esté atento a las Alertas al Pasajero (Riders' Alerts) de colores vivos en los porta-horarios de los autobúses.

TENGA A LA MANO EL CAMBIO EXACTO.

Las cajas de pago aceptan todas monedas excepto monedas de un centavo y billetes de $10 o menos, pero no regresan cambio. Utilice monedas de 25 centavos en lugar de monedas de menor denominación para evitar demoras. Alise los billetes, incluyendo las esquinas. También puede deslizar su Pase. Los pases son más fáciles de usar, y le ahorran dinero. Si utiliza un Pase para Personas de Edad Avanzada o Incapacitadas, deberá mostrar identificación adecuada cada vez que suba al autobus.

INICIE SU APLICACIÓN MÓVIL

Inicie su aplicación de OC bus móvil antes de abordar y tenga el pase listo para escanear.

PREPÁRESE ANTES DE ABORDAR

- Espere que el autobús se detenga por completo antes de acercarte para subir o bajar.
- Nunca corra tras un autobús en movimiento.
- Siempre permanesca a la vista del conductor del autobús al usar el portabicicletas; retira todos tus artículos de la bicicleta.
- Asegúrese de llevar todas sus pertenencias cuando suba al autobús. No se permite a los pasajeros que suban/bajen del autobús varias veces para cargar sus pertenencias.
- Las carreolas para bebés y los carritos del mandado deben estar cerrados y listos para subir antes de que se acerque el autobús.

ENTRAR POR LAS PUERTAS DELANTERAS

Cuando el autobús se detenga, súbase por las puertas delanteras. Todos los autobuses son accesibles a personas con incapacidad.

VIAJE SEGURAMENTE

- El autobús puede moverse antes de que tomes asiento. Siempre sujétese y este preparado.
- Cuando hay un asiento disponible, siéntese; no se quede parado. Si está de pie, siempre sostengas.
- No se pare cerca de la puerta trasera ni se apoye en ella.
- Siempre quédese detrás de la línea amarilla o blanca cerca de la parte delantera del autobús.
- Si usa silla de ruedas, siempre permita que el conductor asegure su silla.

SALIR EN SU PARADA

Al acercarse a su parada, indíquele al conductor que se detenga, tocando el timbre o jalando la señal. Para salir del autobús, diríjase a la puerta trasera, y presione y suelte las tiras amarillas sobre las puertas. Al abrirse las puertas, salga rápidamente, permitiendo que los niños salgan primero..

UTILIZANDO REJILLAS PARA BICICLETAS

Todos los autobúses de la OCTA estan equipados con rejillas para bicicletas. Cada rejilla puede alojar dos bicicletas. Si las rejillas estan ocupadas, las bicicletas no están permitidas en los autobúses, excepto en el último viaje del dia, cuando es seguro. Especificaciones aceptables de bicicletas:

Tamaño de la rueda
20 a 29 pulgadas de diámetro

Distancia entre ejes
44 pulgadas máxima por eje a eje

Ancho de neumáticos
No más de 2.35 pulgadas máximo

CORTESIA CUANDO VIAJA EN EL AUTOBÚS

Help make bus travel pleasant for everyone by riding smart.

1. **No fumar o comer** en el autobús. Dispositivos electrónicos de fumar, tales como cigarrillos electrónicos, están prohibidos en cualquier autobús de OCTA.
2. **Viajando con bebidas.** Las bebidas deben tener un contenedor cubierto o anti derrames. No se permiten bebidas alcohólicas.
3. Bicicletas motorízadas, patinetas motorízadas, baterías de automóviles, fuegos artificiales u otros materiales combustibles no son permitidos en el autobús.
4. Los carritos de bebé se deben plegar antes de abordar
5. Se permiten las tablas de surfeo siempre y cuando no excedan 6 pies, y 6 pulgadas de largo.
6. Se les permite a personas con incapacidad ser acompañadas por animales que les prestan servicio. Dicha persona se responsabiliz por las acciones del animal mientras esté a bordo del autobús. Los animales guía no pueden ocupar asientos y deben permanecer en el piso en todo momento, asegurando que no bloqueen el pasillo, la trayectoria del viaje, las puertas de acceso, o los elevadores.
7. Todos los radios, reproductores de mp3, cd's y teléfonos celulares deben usarse con audífonos.
8. **No se permite solicitar.** No está permitida la distribución de material escrito, solicitación, o propaganda comercial.
9. **Asientos delantero** Favor de dejar los asientos delanteros disponibles para personas incapacitadas o de edad avanzada.
10. **Su conductor del autobús.** No hable con el conductor ni lo distraiga mientras el autobús está emovimiento.

APLICACIÓN MÓVIL OC BUS

APLICACIÓN MÓVIL OC BUS: ¡TODO LO QUE NECESITAS PARA VIAJAR, EN SU CELULAR!

Únase al sinnúmero usuarios de OC Bus usando su teléfono inteligente y nuestra aplicación móvil conveniente para planificar, pagar y viajar. Nuestra aplicación les ofrece a nuestros usuarios muchas opciones de pago, funciones de protección, más un interfaz intuitivo. Tendrá acceso a información actual de las rutas de autobús y herramientas para planificar que le ayudara viajar a través del condado de Orange por autobús.

Para comenzar, simplemente descargue la aplicación a través del Apple store o Google Play.

ASPECTOS DESTACADOS

- Compra usando Pago por Google o Pago por Apple
- Repetición fácil de compras
- Uso de sistema de seguridad de huella digital y reconocimiento facial
- Disfruta pases simplificados para múltiples viajeros
- Transfiere boletos fácilmente cuando actualice su teléfono
- Navega rápidamente con un interfaz grande y simple
- Aborde rápidamente escaneando su pase usando la pantalla de su teléfono

TIPOS DE PASES DISPONIBLES

La aplicación móvil de OC Bus le permite comprar los siguientes pases:

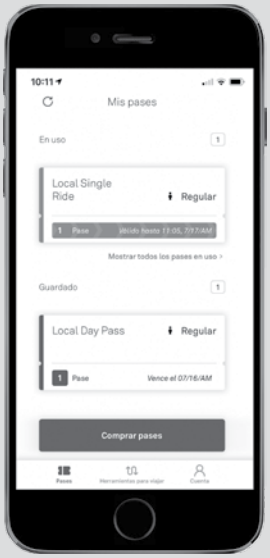
- Pases de un viaje
- Pases de un día
- Pases de 30 días
- Pases de 30 días para jóvenes
- Pases expresos de un viaje
- Pases expresos de un día
- Pases expresos de 30 días
- Pases expresos OC de un viaje
- Pases expresos de OC de un día
- Pases expresos de OC de 30 días

¡TARIFAS A PRECIO REDUCIDO DISPONIBLES TAMBIÉN!

Puede comprar tarifas reducidas de universitario, envejeciente, y discapacitado en la aplicación de OC Bus. Tendrá que tener su tarjeta de identificación de tarifa reducida para universitarios, envejecientes y discapacitados de OCTA o un numero electrónico móvil para acezar la tarifa reducida.

¿Necesita más detalles?

Para más información de cómo usar su aplicación móvil de OC Bus incluyendo una lista de las preguntas más frecuentes (FAQ's) , visite **OCBus.com/movil**



Use the My Tickets section to keep your tickets and day passes organized.

Enjoy many payment options including Apple Pay, Google Pay, multiple credit cards and debit cards.

Take advantage of your smartphones Touch ID of Face ID security feature to purchase and use tickets.

LEYENDO EL HORARIO

(A) **42/A**

Seal Beach to Orange

via Seal Beach Blvd / Los Alamitos Blvd / Lincoln Ave (B)

(D) **WESTBOUND To: Seal Beach** (C) (E)

	The Village at Orange	Lincoln & State College	Lincoln & Harbor	Lincoln & Euclid	Lincoln & Magnolia	Braille Institute	Lincoln & Valley View	Carson & Norwalk	Norwalk & Civic Center	Los Alamitos & Katella	Leisure World	Electric & Main
	5:36	5:54	6:02	6:08	6:16	.....	6:30	.....	6:40	6:46	6:53	7:03
	6:26	6:44	6:52	6:58	7:06	.....	7:20	.....	7:30	7:36	7:43	7:53
A	7:11	7:29	7:37	7:43	7:51	7:55	8:10	.....	8:20	8:26	8:33	8:43
A	7:46	8:05	8:16	8:23	8:32	8:36	8:51	.....	9:02	9:10	9:19	9:31
	8:26	8:45	8:56	9:03	9:12	.....	9:27	9:41				
A	8:54	9:13	9:24	9:31	9:40	9:44	10:01	.....	10:12	10:20	10:29	10:41

(G) (F) (H)

(A) Números de ruta de autobús:
- 1-99 rutas locales
- 100-199 rutas comunitarias
- 200-299 rutas expresas dentro del condado
- 400-499 rutas del StationLink
- 500-599 rutas del Bravo
- 700-799 rutas expresas entre condados

(B) Destinos urbanos y calles principales a lo largo de la ruta.

(C) Días en que el horario aplica. Los horarios de días feriados sólo son valido:
- Año Nuevo
- Memorial Day
- Cuatro de Julio
- Dia del Trabajo
- Día de Acción de Gracias
- Día de Navidad

(D) Dirección del recorrido.

(E) Ciudad o punto de referencia en que esta ruta termina su recorrido. Si aparecen en el listado dos ciudades o puntos de referencia, esto indica que la ruta opera viajes de recorrido corto (short turn trips). Vea la sección H para una descripción de viajes de recorrido corto.

(F) Las salidas programadas son paradas principales de autobús. El autobús sale a la hora especificada en el horario. Se aconseja a los pasajeros deben llegue a la parada de autobús 10 minutos antes de las horas de salida programadas. Entre cada parada principal de autobús hay paradas adicionales donde puede abordar el autobús, ubicadas cada una a tres cuadras. Las paradas de autobuses de la OCTA se identifican por una señal de parada de autobús indicando qué rutas se paran ahí. Los pasajeros tendrán que calcular las horas de llegada estimadas para estas paradas de autobús. También se recomienda a los usuarios que lleguen a todas las paradas de autobús no programadas, como mínimo, a la hora programada de la anterior parada principal. Las salidas de las paradas de autobús no programadas pueden variar. Los horarios pueden variar debido a circunstancias imprevistas (condiciones del tráfico, desvíos, meteorología, emergencias o trabajos en curso), pero haremos todo lo que esté en nuestra mano para proporcionar los servicios de autobús programados.

Debajo de cada salida programada en el horario vera un listado de las horas a las que el autobús estad en esa ubicación. Leyendo el horario de izquierda a derecha, puede seguir el movimiento del autobús a medida que recorre su ruta. En el ejemplo anterior, si usted aborda la ruta 42/A en Village at Orange a las 5:36 a.m., debería llegar a Leisure World a las 6:53 am.
Nota: el horario de las tardes aparece en negrillas.

(G) Cuando vea puntos suspensivos (.....), quiere decir que NO SE DARÁ SERVICIO en esa parada de autobús en ese viaje en específico. En el ejemplo anterior, la Ruta 42 no cubre Braille Institute sino hasta las 7:55 a.m., aún cuando haya viajes más temprano en otros puntos de salida programados.

(H) Cuando vea, ▭ quiere decir que este viaje específico opera como un viaje de recorrido corto, y que no cubre la trayectoria completa de la ruta. Los viajes de recorrido corto pueden no empiezar al inicio de la ruta o no llegar al final de la misma.

TRANSBORDOS

TRANSBORDO A OTROS SISTEMAS DE TRANSITO

Los pases de OC Bus son aceptados por la mayoria de sistemas de conexiones de tránsito. Para mas información llame al 511, un sistema telefónico automatizado que le permite conectarse a 40 autobuses locales, trenes, viajes compartidos, carreteras y otras agencias de transportación, incluyendo la OCTA.

Transbordo a Anaheim Resort Transit (ART)

- ART aceptará los pases de autobús de OC Bus en las rutas: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17 , 18, 19, 20 en las paradas de los autobuses ART que conectan directamente con OC Bus.

Trasferencia a Long Beach Transit

- Long Beach Transit aceptará el pase de un-día de OC Bus para una trasferencia solamente en rutas de conexión.
- Pases de un día de OC Bus no será aceptado en los viajes de vuelta que se origina en Long Beach Transit.

Transbordo a Los Angeles Metro

- METRO acepta pases de OC Bus de 30-días y de un-dia en las rutas de autobús METRO 62 y 460 que viajan al condado de Orange o conectan con OC Bus. Una tarifa adicional puede ser necesaria para viajar en algunas rutas de autobús de METRO.
- Las líneas de tren de METRO no acepta n pases de la OC Bus como transbordo.

TRANSBORDO A AUTOBUSES DE LA OCTA DESDE OTROS SISTEMAS DE TRÁNSITO DE CONEXIÓN

OC Bus aceptará transbordos validos de otros sistemas de tránsito de conexion en todos los puntos de transbordo. Estos transbordos serán válidos para abordar una sola vez y no se pueden aplicar a la compra de un Pase Diario. El conductor se quedará con su boleto de transbordo al subirse usted a un OC Bus.

Tarifa adicional para transbordos a Expresos rutas 701, 721 y 794

- Las rutas 701, 721 y 794 requieren una tarifa de $5.00 adicionales para regualar, o $5.25 para personas mayores de 60 o personas discapacitadas que muestren la apropiada identificación.

Tarifa adicional para transbordos a OC Expresos rutas 206 y 213

- Las rutas 206 y 213 requieren una tarifa de $2.00 adicionales para regualar, o $2.75 para personas mayores de 60 o personas discapacitadas que muestren la apropiada identificación.

Transbordo desde Anaheim Resort Transit (ART)

- Los pases de autobús de ART se aceptaran en las rutas de OC Bus 29, 30, 33, 35, 37, 38, 42, 43, 46, 47, 50, 53, 54, 56, 57, 71, 83, 167, 453 y 543 (en las paradas de OC Bus que conectan directamente con los autobuses de ART).

Transbordo desde Long Beach Transit

- El pase de un dia de Long Beach Transit sera aceptado en rutas con conexión de OC Bus.

Transbordo desde Los Angeles Metro

- Los pases diarios de Metro no son válidos en OC Bus, sólo pases mensuales serán aceptados. Los Angeles County Regional EZ Pass no es parte de este programa.
- OC Bus aceptará los pases mensuales de Metro, las tarjetas MTA TAP y tarjetas MTA TAP con etiqueta EZ en las nueve rutas que prestan servicio al Condado de Los Angeles (1, 30, 38, 42, 46, 50, 60, 701, y 721), o en paradas del autobús donde OC Bus se conectan directamente con autobuses de Metro. **NOTA: Las tarjetas TAP no se aceptan como transbordos en la Ruta Bravo 529 o 560.**
- Los clientes que se trasladan de la Ruta 460 MTA pueden presentar un pase mensual de MTA, la Tarjeta TAP o una transferencia interinstitucional, para un embarqu en las siguientes ubicaciones:
  - Fullerton Park-N-Ride: Rutas 25, 26, 33 y 35
  - La Palma Ave. paradas entre Magnolia Ave. y Beach Blvd. solamente en Rutas 29, 33, 38
  - Disneyland East Shuttle Area (on Harbor Blvd.): Rutas 43, 83 y 543
  - Beach Blvd. paradas entre La Palma Ave. y La Mirada Blvd. solamente en Rutas 25, 29, 30, 38, 123
  - Magnolia Ave. paradas entre Orangethorpe Ave. y La Palma Ave. solamente en Rutas 33, 38

Transbordo desde Riverside Transit Agency

- OC Bus honorará RTA pases de un día y de 31 días en OC Bus que conectan directamente con la rutas 200 y 205 de RTA.

TRANSBORDOS A METROLINK Y AMTRAK

OC Bus rutas que se **conecten directamente** con la estación en o cerca de Metrolink y Amtrak Pacific Surfliner aceptaran los tickets y pases de Metrolink y Amtrak.

Los rutas 1, 25, 26, 29, 38, 43, 47/A, 50, 53, 54, 56, 57, 59, 70, 71, 83, 85, 86, 90, 91, 123, 143, 153, 453, 463, 472, 473, 480, 543, 560, 862 de OC Bus, aceptaran boletos válidos de Metrolin para viajar desde o a las estaciones. Los pasajeros deben mostrar un pase de Metrolink o Amtrak válido o boleto deslizar un pase válido de OC Bus (la tarifa adicional puede ser requerida para las rutas expresas), o pagar la tarifa en efectivo a bordar. Los boletos de Metrolink ofrecen un valor $2 hacia las tarifas express y OC Express.

INFORMACÍON

PREGUNTAS Y HORAS DE OPERACIÓN

OC Bus está aquí para ayudarle. Si usted tiene preguntas o preocupaciones, usted siempre puede llamar a la OC Bus Centro de Información al Cliente al 714-636-Ride (7433). Los operadores bilingües están disponibles para contestar sus preguntas. Las horas de operación se observan a la derecha.

	Mon-Fri	Sat/Sun	Holidays
Planificación de viaje	7-7	8-6	8-5
Servicio de atencíon al cliente del pase	8-5	cerrado	cerrado
Ventas del pase	8-2	cerrado	cerrado

CONTACTE CON NOSOTROS

Si tiene comentarios, algun problema o sugerencia acerca de nuestro servicio, póngase en contacto con El Departamento de relaciones con los clientes por:

Correo Electrónico:
customers@octa.net

La Web: octa.net/comment

Telefono:
Lunes - Viernes de 8am a 5pm
714, 949 or 800-636-RIDE (7433), extension 2

Correo: P.O. Box 14184
Orange, CA 92863

POLÍTICA DE CONDUCTA DEL CLIENTE

La conducta violenta, ilegal o disyuntiva no será tolerada a bordo del vehículo. Los infractores serán perseguidos con todo el rigor de la ley, de acuerdo con:

- Código Penal Secciones 171.7, 594, 640, 640,5 y 16.590
- Código de Servicios Públicos de las Secciones 99155 y 99170
- Código de Vehículos de la Sección 407.5

Para obtener más información, visite ocbus.com/customerconduct

PÓLIZA DE SERVICIO AL CLIENTE

La Autoridad de Transporte del Condado de Orange (OCTA) se compromete a proporcionar servicios seguros, fiables, amables, accesibles y fáciles de usar para sus clientes Para garantizar la calidad y la equidad, la OCTA hará modificaciones razonables a sus políticas, prácticas y procedimientos, cuando sea necesario, para evitar la discriminación por motivos de discapacidad o cuando la persona con discapacidad, de otro modo no podrá utilizar los servicios de OCTA, programas o actividades.

Para obtener información adicional acerca de las solicitudes de modificación razonables, por favor visite: ocbus.com/reasonablemodification.

SERVICIO ACCESS

El servicio ACCESS es el servicio de paratránsito de OCTA para personas con una incapacidad (debido a limitaciones funcionales) que no pueden usar el sistema regular del autobús. Para poder utilizar este servicio, deberá hacer una cita de evalvación en persona con ACCESS, favor de llamar a la linea de elegibilidad de ACCESS al 714-560-5956 Ext. 2, y cumplir los criterios del Acta de Americanos Discapacitados (ADA, Americans with Disabilities Act).

Reservado con ACCESS

Para reservar o cancelar un viaje ACCESS, comprobar el estado del viaje, para obtener información general sobre ACCESS, llame a ACCESS al número: 877-OCTA-ADA (628-2232)

Teléfono TDD para los discapacitados auditivos: 800-564-4ADA (4232)

Solicitudes también disponibles en www.octa.net

Información y Horas de Reservación

Lunes a Viernes 7:00 a.m. – 5:00 p.m.

Sábados, Domingos y Días Feriados 8:00 a.m. – 5:00 p.m.

Para consultar la información sobre servicios y programas para adultos mayores, póngase en contacto con la Oficina de Información y Asistencia para Adultos Mayores (Office on Aging Information and Assistance) al 800-510-2020 ó 714-567-7500. Puede también visitar su sitio web en www.officeonaging.ocgov.com

NOTIFICACIÓN DE PROTECCIÓN BAJO EL TÍTULO VI

El Título VI del Acta de Derechos Civiles de 1964 estipula que "ninguna persona en los Estados Unidos debe, por motivo de su raza, color, origen o nacionalidad, ser excluida de participar, recibir beneficios, o estar sujeta a la discriminación de cualquier programa o actividad que reciba asistencia financiera federal."

Cualquier persona que cree que él o ella, individualmente o como miembro de una clase específica de personas, ha sido objeto de discriminación por motivos de raza, color, origen nacional u otros intereses protegidos puede presentar una queja por escrito al Orange County Transportation Authority (OCTA), la Administración Federal del Tránsito (FTA) o la Secretaría de Transporte. Además, OCTA prohíbe la intimidación, la coerción o la participación en una conducta discriminatoria en contra de cualquiera persona porque él o ella ha presentado una denuncia para garantizar los derechos protegidos por el Título VI.

Para presentar una denuncia por escrito o solicitar más información, contactar a:

Correo Electrónico:
TitleVI-Inquiries@octa.net

Customer Relations:
714-636-RIDE (7433)

La Web:
octa.net

Personas con problemas auditivos:
714-636-HEAR (4327) TDD

EL FRAUDE DE PERROS DE SERVICIO

Según la ley de California, falsear que un perro es un animal de servicio entrenado es un delito punible con hasta seis meses de prisión y lo una muta de hasta $1000.
• Código Penal 365.7

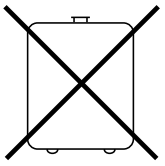
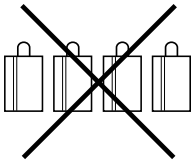
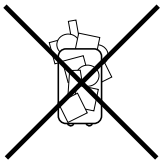
OBJETOS PERDIDOS DE OCTA

Dirección:
11903 Woodbury Road
Garden Grove, CA 92843
Teléfono: (714) 560-5934
Horas:
Lunes a jueves: 8:00 a.m. - 12:30 p.m. y 1:30p.m. - 4:00p.m.
Viernes: Se puede recoger pero solo con cita

RESTRICCTIONES DE ARTÍCULOS PERSONALES

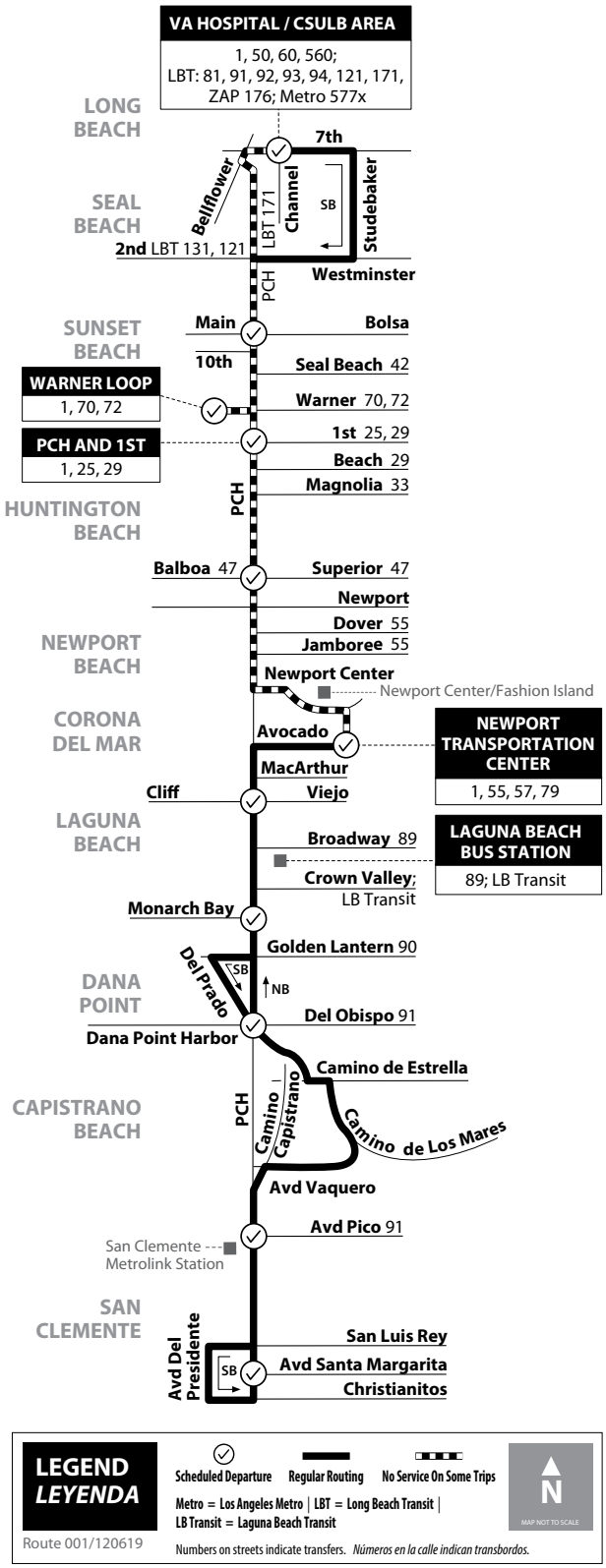
INFORMACIÓN PARA EL TRANSPORTE DE CARREOLAS, CARRETAS, PAQUETES Y EFECTOS EN AUTOBUSES DE OCTA.

- Pasajeros únicamente tiene permitido llevar dos piezas chicas de equipaje de mano que deben caber debajo del asiento o en sus manos.
- Carritos no son permitidos sobrepasar 30" de altura, 18" de ancho y 18" de grueso (no incluye las llantas y agarradera).
- Carritos no son permitidos contener carga que sobrepasa la altura o capacidad del carrito.
- Equipaje de mano no es permitido contener carga que sobrepase la altura o capacidad del carrito.
- Equipaje de mano no es permitido colgar del exterior de los carritos o silla de ruedas.
- Carritos, carriolas, y equipaje de mano no es permitido bloquear los pasillos o las puertas.
- Carritos, carreolas, y equipaje de mano debe cargarse en un solo viaje asin ayuda.
- No se permitirá equipaje que esté mojado, goteando, o es considerado peligroso.
- No se permitirán bolsas grandes de latas u otros materiales reciclables.
- Carritos, carreolas, y equipaje de mano deben estar asegurados firmemente y cuidados a durante el viaje.
- Equipaje de mano no debe ser colocado en las llantas a menos que vaya asegurada y cuidada.
- Los pasajeros con carriolas deben bajar los niños, doblar la carreola, y permanecer sentados con sus hijos durante el viaje.

APPROVED ✓	**NOT APPROVED** ✗
 Menos de 30" de alto, 18" de ancho, 18" de grueso	 Mayor de 30" de alto, 18" de ancho, 18" de grueso
 Se puede cargar en un solo viaje	 No se puede cargar en un solo viaje
 No mas que dos piezos de equipaje de mano	 Más que dos piezos de equipaje de manc
 Catgo no sobrepasa de capacidad	 Cargo sobrepasa de capacidad
 No obstruye el pasillo	 Obstruye el pasillo
	 Bolsa de latas o botellas de plástico/ objetos goteando

1 Long Beach to San Clemente

via Pacific Coast Hwy



All Days
NORTHBOUND To: Long Beach

El Camino & Santa Margarita	El Camino Real & Avd Pico	Pacific Coast Hwyy & Del Obispo	Pacific Coast Hwy & Crown Valley	Pacific Coast Hwy & Viejo	Newport Transportation Center	Pacific Coast Hwy & Superior	Coast Highway & Huntington	Warner & Pacific Coast Hwy	Pacific Coast Hwy & Bolsa	7th & Channel
5:37	5:49	6:03	6:12	6:25	6:43	6:56	7:09	7:21	7:30	7:43
6:37	6:49	7:03	7:12	7:25	7:43	7:56	8:09	8:21	8:30	8:43
7:25	7:39	7:54	8:06	8:26	8:43	8:59	9:13	9:27	9:37	9:50
8:25	8:39	8:54	9:06	9:26	9:43	9:59	10:13	10:27	10:37	10:50
9:25	9:39	9:54	10:06	10:26	10:43	10:59	11:13	11:27	11:37	11:50
10:25	10:39	10:54	11:06	11:26	11:43	11:59	**12:13**	**12:27**	**12:37**	**12:50**
11:16	11:31	11:47	**12:00**	**12:24**	**12:43**	**12:58**	**1:12**	**1:26**	**1:38**	**1:51**
12:16	**12:31**	**12:47**	**1:00**	**1:24**	**1:43**	**1:58**	**2:12**	**2:26**	**2:38**	**2:51**
1:16	**1:31**	**1:47**	**2:00**	**2:24**	**2:43**	**2:58**	**3:12**	**3:26**	**3:38**	**3:51**
2:16	**2:31**	**2:47**	**3:00**	**3:24**	**3:43**	**3:58**	**4:12**	**4:26**	**4:38**	**4:51**
3:17	**3:32**	**3:48**	**4:00**	**4:22**	**4:43**	**4:59**	**5:11**	**5:24**	**5:36**	**5:49**
4:17	**4:32**	**4:48**	**5:00**	**5:22**	**5:43**	**5:59**	**6:11**	**6:24**	**6:36**	**6:49**
5:17	**5:32**	**5:48**	**6:00**	**6:22**	**6:43**	**6:59**	**7:11**	**7:24**	**7:36**	**7:49**
6:17	**6:32**	**6:48**	**7:00**	**7:22**	**7:43**	**7:59**	**8:11**	**8:24**	**8:36**	**8:49**
7:26	**7:39**	**7:54**	**8:06**	**8:23**	**8:44**					

SERVICE TO / SERVICIO A

Long Beach
- VA Hospital
- Cal State Long Beach

Seal Beach
- Seal Beach City Hall

Sunset Beach

Huntington Beach
- Ethel Dwyer Middle School
- Huntington Beach Pier

Newport Beach
- Horace Ensign Intermediate School
- Newport Harbor High School
- Newport Center/Fashion Island
- Newport Transportation Center
- Newport Civic Center and Park
- Hoag Hospital

Corona del Mar
- Emerald Bay

Laguna Beach
- Laguna Beach High School
- Laguna Beach Civic Center
- Monarch Bay
- Mission Hospital

Dana Point
- Salt Creek Beach
- Dana Point Harbor

Capistrano Beach

San Clemente
- Shorecliffs Middle School
- San Clemente High School
- San Clemente (Metrolink Station)

Monday-Friday
SOUTHBOUND To: San Clemente

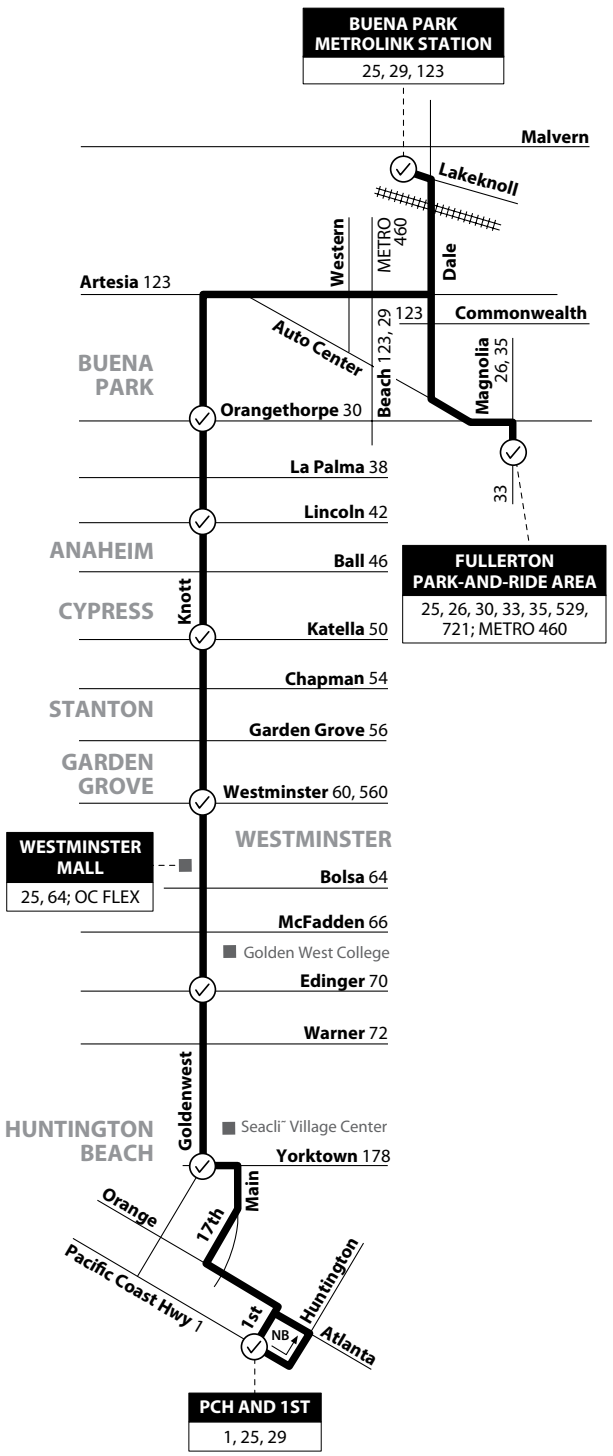
7th & Channel	Pacific Coast Hwy & 10th	Warner & Pacific Coast Hwy	Pacific Coast Hwy & 1st	Pacific Coast Hwy & Balboa-Nwpt Bch	Newport Transportation Center	Pacific Coast Hwy & Cliff	Pacific Coast Hwy & Monarch Bay	Pacific Coast Hwy & Dana Point Harbor	El Camino Real & Avd Pico	El Camino & Santa Margarita
5:19	5:28	5:38	5:49	5:59	6:15	6:32	6:47	6:59	7:13	7:31
					6:55	7:17	7:32	7:42		
6:19	6:28	6:38	6:49	6:59	7:15	7:32	7:47	7:59	8:13	8:31
7:19	7:28	7:38	7:49	7:59	8:15	8:32	8:47	8:59	9:13	9:31
8:14	8:25	8:35	8:49	9:01	9:15	9:36	9:54	10:06	10:20	10:41
9:14	9:25	9:35	9:49	10:01	10:15	10:36	10:54	11:06	11:20	11:41
10:14	10:25	10:35	10:49	11:01	11:15	11:36	11:54	**12:06**	**12:20**	**12:41**
11:11	11:22	11:31	11:47	11:59	**12:15**	**12:36**	**12:55**	**1:09**	**1:24**	**1:44**
12:11	**12:22**	**12:31**	**12:47**	**12:59**	**1:15**	**1:36**	**1:55**	**2:09**	**2:24**	**2:44**
1:11	**1:22**	**1:31**	**1:47**	**1:59**	**2:15**	**2:36**	**2:55**	**3:09**	**3:24**	**3:44**
2:05	**2:17**	**2:27**	**2:43**	**2:56**	**3:15**	**3:40**	**4:00**	**4:13**	**4:27**	**4:46**
3:05	**3:17**	**3:27**	**3:43**	**3:56**	**4:15**	**4:40**	**5:00**	**5:13**	**5:27**	**5:46**
4:05	**4:17**	**4:27**	**4:43**	**4:56**	**5:15**	**5:40**	**6:00**	**6:13**	**6:27**	**6:46**
5:13	**5:25**	**5:34**	**5:49**	**5:59**	**6:15**	**6:33**	**6:48**	**6:58**	**7:11**	**7:28**
6:13	**6:25**	**6:34**	**6:49**	**6:59**	**7:15**	**7:33**	**7:48**	**7:58**	**8:11**	**8:28**
7:13	**7:25**	**7:34**	**7:49**	**7:59**	**8:15**	**8:33**	**8:48**	**8:58**	**9:11**	**9:28**

Saturday, Sunday & Holiday
SOUTHBOUND To: San Clemente

7th & Channel	Pacific Coast Hwy & 10th	Warner & Pacific Coast Hwy	Pacific Coast Hwy & 1st	Pacific Coast Hwy & Balboa-Nwpt Bch	Newport Transportation Center	Pacific Coast Highway & Cliff	Pacific Coast Highway & Monarch Bay	Pacific Coast Hwy & Dana Point Harbor	El Camino Real & Avd Pico	El Camino & Santa Margarita
5:19	5:28	5:38	5:49	5:59	6:15	6:32	6:47	6:59	7:13	7:31
6:19	6:28	6:38	6:49	6:59	7:15	7:32	7:47	7:59	8:13	8:31
7:19	7:28	7:38	7:49	7:59	8:15	8:32	8:47	8:59	9:13	9:31
8:14	8:25	8:35	8:49	9:01	9:15	9:36	9:54	10:06	10:20	10:41
9:14	9:25	9:35	9:49	10:01	10:15	10:36	10:54	11:06	11:20	11:41
10:14	10:25	10:35	10:49	11:01	11:15	11:36	11:54	**12:06**	**12:20**	**12:41**
11:11	11:22	11:31	11:47	11:59	**12:15**	**12:36**	**12:55**	**1:09**	**1:24**	**1:44**
12:11	**12:22**	**12:31**	**12:47**	**12:59**	**1:15**	**1:36**	**1:55**	**2:09**	**2:24**	**2:44**
1:11	**1:22**	**1:31**	**1:47**	**1:59**	**2:15**	**2:36**	**2:55**	**3:09**	**3:24**	**3:44**
2:05	**2:17**	**2:27**	**2:43**	**2:56**	**3:15**	**3:40**	**4:00**	**4:13**	**4:27**	**4:46**
3:05	**3:17**	**3:27**	**3:43**	**3:56**	**4:15**	**4:40**	**5:00**	**5:13**	**5:27**	**5:46**
4:05	**4:17**	**4:27**	**4:43**	**4:56**	**5:15**	**5:40**	**6:00**	**6:13**	**6:27**	**6:46**
5:13	**5:25**	**5:34**	**5:49**	**5:59**	**6:15**	**6:33**	**6:48**	**6:58**	**7:11**	**7:28**
6:13	**6:25**	**6:34**	**6:49**	**6:59**	**7:15**	**7:33**	**7:48**	**7:58**	**8:11**	**8:28**
7:13	**7:25**	**7:34**	**7:49**	**7:59**	**8:15**	**8:33**	**8:48**	**8:58**	**9:11**	**9:28**

25 Fullerton to Huntington Beach

via Knott Ave / Goldenwest St



All Days
NORTHBOUND To: Fullerton

Pacific Coast Hwy & 1st	Goldenwest & Yorktown	Goldenwest & Edinger	Goldenwest & Westminster	Knott & Katella	Knott & Lincoln	Knott & Orangethorpe	Buena Park Metrolink Station	Fullerton Park-and-Ride
7:45	7:57	8:06	8:14	8:26	8:35	8:43	8:55	9:04
8:50	9:02	9:11	9:19	9:31	9:40	9:48	10:00	10:09
9:47	9:59	10:12	10:24	10:37	10:46	10:55	11:07	11:15
10:52	11:04	11:17	11:29	11:42	11:51	**12:00**	**12:12**	**12:20**
11:57	**12:09**	**12:22**	**12:34**	**12:47**	**12:56**	**1:05**	**1:17**	**1:25**
1:01	**1:16**	**1:28**	**1:39**	**1:53**	**2:04**	**2:13**	**2:26**	**2:35**
2:06	**2:21**	**2:33**	**2:44**	**2:58**	**3:09**	**3:18**	**3:31**	**3:40**
3:11	**3:26**	**3:38**	**3:49**	**4:03**	**4:14**	**4:23**	**4:36**	**4:45**
4:16	**4:31**	**4:45**	**4:54**	**5:09**	**5:18**	**5:27**	**5:40**	**5:48**
5:21	**5:36**	**5:50**	**5:59**	**6:14**	**6:23**	**6:32**	**6:45**	**6:53**
6:30	**6:46**	**6:56**	**7:04**	**7:15**	**7:22**	**7:30**	**7:41**	**7:48**

All Days
SOUTHBOUND To: Huntington Beach

Fullerton Park-and-Ride	Buena Park Metrolink Station	Knott & Orangethorpe	Knott & Lincoln	Knott & Katella	Goldenwest & Westminster	Goldenwest & Edinger	Goldenwest & Yorktown	Pacific Coast Hwy & 1st
7:15	7:21	7:31	7:38	7:47	8:01	8:10	8:23	8:30
8:20	8:26	8:36	8:43	8:52	9:06	9:15	9:28	9:35
9:16	9:23	9:34	9:42	9:52	10:06	10:16	10:30	10:42
10:21	10:28	10:39	10:47	10:57	11:11	11:21	11:35	11:47
11:25	11:32	11:43	11:51	**12:01**	**12:15**	**12:25**	**12:39**	**12:51**
12:30	**12:37**	**12:48**	**12:56**	**1:06**	**1:20**	**1:30**	**1:44**	**1:56**
1:39	**1:46**	**1:58**	**2:05**	**2:14**	**2:28**	**2:36**	**2:47**	**3:00**
2:45	**2:52**	**3:04**	**3:11**	**3:20**	**3:34**	**3:42**	**3:53**	**4:06**
3:50	**3:57**	**4:09**	**4:16**	**4:25**	**4:39**	**4:47**	**4:58**	**5:11**
4:59	**5:07**	**5:17**	**5:25**	**5:35**	**5:46**	**5:53**	**6:04**	**6:16**
6:04	**6:12**	**6:22**	**6:30**	**6:40**	**6:51**	**6:58**	**7:09**	**7:21**
7:14	**7:20**	**7:29**	**7:36**	**7:45**	**7:56**	**8:04**	**8:15**	**8:24**

SERVICE TO / SERVICIO A

Fullerton
- Fullerton Park-and-Ride

Buena Park
- Buena Park High School
- Buena Park Junior High School
- Buena Park (Metrolink Station)

Anaheim
- Western High School
- Orangeview Junior High School

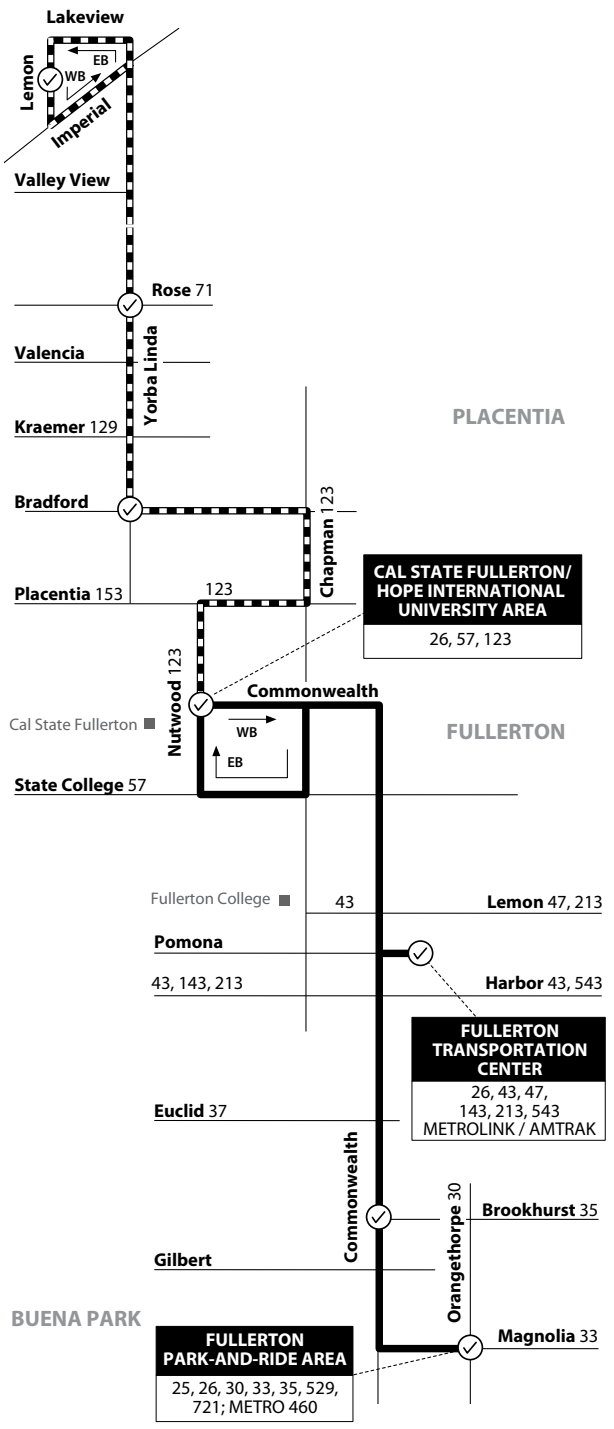
Cypress

Stanton

Garden Grove
- Pacifica High School

Westminster
- Westminster High School
- Westminster Mall

Huntington Beach
- Golden West College
- Ocean View High School
- Mesa View Middle School
- Seacliff Village Center
- Huntington Beach High School
- Ethel Dwyer Middle School
- Huntington Beach Civic Center
- Huntington Beach Pier



All Days
EASTBOUND To: Yorba Linda

Fullerton Park-and-Ride	Commonwealth & Brookhurst	Fullerton Transportation Center	Nutwood & Commonwealth	Bradford & Yorba Linda	Lemon & Lakeview
8:16	8:25	8:34	8:43	8:53	9:10
9:03	9:11	9:19	9:28	9:37	9:54
9:48	9:56	10:04	10:13	10:22	10:39
10:32	10:40	10:48	10:58	11:07	11:24
11:17	11:25	11:33	11:43	11:52	**12:09**
12:02	**12:10**	**12:18**	**12:28**	**12:37**	**12:54**
12:47	**12:55**	**1:03**	**1:13**	**1:22**	**1:39**
1:30	**1:39**	**1:48**	**1:58**	**2:08**	**2:25**
2:15	**2:24**	**2:33**	**2:43**	**2:53**	**3:10**
3:00	**3:09**	**3:18**	**3:28**	**3:38**	**3:55**
3:45	**3:54**	**4:03**	**4:13**	**4:23**	**4:40**
4:31	**4:39**	**4:48**	**4:58**	**5:07**	**5:24**
5:16	**5:24**	**5:33**	**5:43**	**5:52**	**6:09**
6:01	**6:09**	**6:18**	**6:28**	**6:37**	**6:54**
6:46	**6:54**	**7:03**	**7:13**	**7:22**	**7:39**

All Days
WESTBOUND To: Fullerton

Lemon & Lakeview	Bradford & Yorba Linda	Commonwealth & Nutwood	Fullerton Transportation Center	Commonwealth & Brookhurst	Fullerton Park-and-Ride
7:09	7:26	7:34	7:45	7:53	8:01
7:54	8:11	8:19	8:30	8:38	8:46
8:39	8:56	9:04	9:15	9:23	9:31
9:24	9:41	9:49	10:00	10:08	10:16
10:07	10:24	10:34	10:46	10:55	11:05
10:52	11:09	11:19	11:31	11:40	11:50
11:37	11:54	**12:04**	**12:16**	**12:25**	**12:35**
12:22	**12:39**	**12:49**	**1:01**	**1:10**	**1:20**
1:07	**1:24**	**1:34**	**1:47**	**1:56**	**2:05**
1:52	**2:09**	**2:19**	**2:32**	**2:41**	**2:50**
2:37	**2:54**	**3:04**	**3:17**	**3:26**	**3:35**
3:22	**3:39**	**3:49**	**4:02**	**4:11**	**4:20**
4:09	**4:26**	**4:34**	**4:44**	**4:53**	**5:02**
4:54	**5:11**	**5:19**	**5:29**	**5:38**	**5:47**
5:39	**5:56**	**6:04**	**6:14**	**6:23**	**6:32**

SERVICE TO / SERVICIO A

Buena Park
- Buena Park High School

Fullerton
- Fullerton Park-and-Ride
- Fullerton College
- Cal State Fullerton
- Fullerton Union High School
- La Vista High School
- Ladera Vista Junior High School
- Troy High School
- Fullerton Transportation Center (Metrolink/Amtrak)
- Fullerton Civic Center
- Crossroads Shopping Center

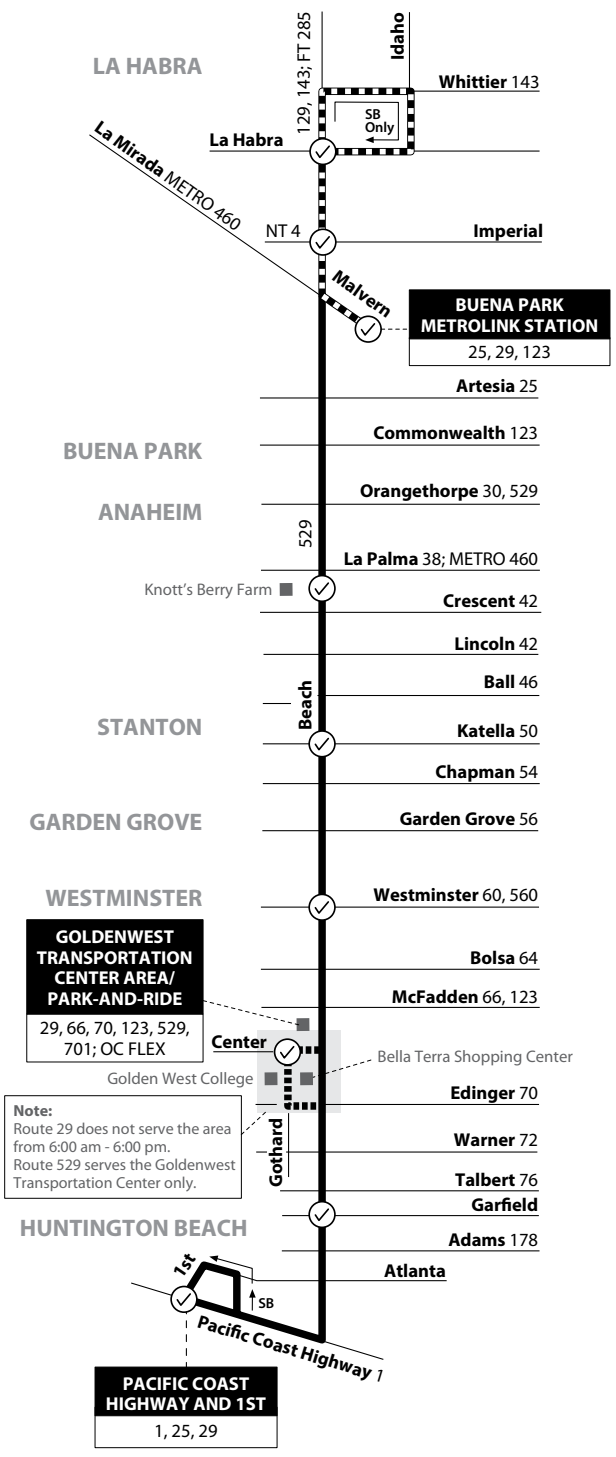
Placentia
- Valencia High School
- Kraemer Middle School
- El Dorado High School

Yorba Linda
- Yorba Linda Middle School
- Richard Nixon Library
- Yorba Linda Civic Center
- Bernardo Yorba Middle School
- Placentia-Yorba Linda Unified School District
- Yorba Linda High School

29/A

La Habra to Huntington Beach
via Beach Blvd

NOTE: TAP card only accepted from La Palma to Malvern.
NOTA: *Tarjeta TAP sólo aceptada de La Palma a Malvern.*



Monday-Friday
NORTHBOUND To: La Habra

	Pacific Coast Hwy & 1st	Beach & Garfield	Center & Gothard	Beach & Westminster	Beach & Katella	Knotts Berry Farm	Buena Park Metrolink Station	Beach & Imperial	Beach & La Habra
	4:11	4:18	·····	4:35	4:45	4:54	·····	5:10	5:14
A	4:46	4:53	5:05	5:15	5:25	5:34	5:49		
	5:28	5:36	·····	5:55	6:06	6:18	·····	6:36	6:41
A	5:42	5:53	6:08	6:15	6:26	6:39	6:54		
A	6:00	6:10	6:25	6:35	6:47	6:59	7:14		
A	6:20	6:30	6:45	6:55	7:07	7:19	7:34		
	6:46	6:56	·····	7:15	7:27	7:39	·····	7:58	8:04
A	7:10	7:20	7:35	7:45	7:57	8:09	8:24		
	7:43	7:53	·····	8:15	8:28	8:41	·····	9:01	9:06
A	8:06	8:16	8:33	8:45	8:59	9:12	9:29		
	8:42	8:52	·····	9:15	9:29	9:42	·····	10:02	10:07
A	8:58	9:09	9:30	9:45	9:58	10:11	10:28		
	9:26	9:37	·····	10:05	10:18	10:31	·····	10:52	10:58
A	9:41	9:52	10:13	10:26	10:39	10:52	11:07		
	10:08	10:19	·····	10:45	10:58	11:11	·····	11:31	11:36
A	10:18	10:29	10:50	11:03	11:16	11:29	11:44		
	10:44	10:56	·····	11:23	11:36	11:50	·····	**12:13**	**12:20**
A	10:55	11:07	11:30	11:42	11:55	**12:09**	**12:24**		
	11:20	11:32	·····	**12:01**	**12:16**	**12:30**	·····	**12:50**	**12:57**
A	11:29	11:41	**12:04**	**12:19**	**12:34**	**12:48**	**1:05**		
	11:58	**12:10**	·····	**12:39**	**12:54**	**1:08**	·····	**1:28**	**1:35**
A	**12:08**	**12:20**	**12:43**	**12:58**	**1:13**	**1:27**	**1:44**		
	12:38	**12:50**	·····	**1:19**	**1:34**	**1:48**	·····	**2:08**	**2:15**
A	**12:49**	**1:01**	**1:24**	**1:39**	**1:54**	**2:08**	**2:25**		
	1:16	**1:29**	·····	**1:59**	**2:14**	**2:28**	·····	**2:49**	**2:57**
A	**1:27**	**1:40**	**2:04**	**2:19**	**2:34**	**2:48**	**3:04**		
	1:57	**2:10**	·····	**2:40**	**2:55**	**3:09**	·····	**3:30**	**3:38**
A	**2:08**	**2:20**	**2:44**	**2:59**	**3:15**	**3:28**	**3:42**		
	2:37	**2:49**	·····	**3:19**	**3:35**	**3:48**	·····	**4:08**	**4:15**
A	**2:50**	**3:02**	**3:25**	**3:39**	**3:55**	**4:07**	**4:22**		
	3:18	**3:30**	·····	**3:59**	**4:15**	**4:27**	·····	**4:47**	**4:54**
A	**3:28**	**3:41**	**4:04**	**4:18**	**4:33**	**4:46**	**5:03**		
	3:56	**4:10**	·····	**4:37**	**4:52**	**5:04**	·····	**5:25**	**5:31**
A	**4:02**	**4:12**	**4:34**	**4:47**	**5:02**	**5:14**	**5:30**		
A	**4:08**	**4:22**	**4:44**	**4:57**	**5:12**	**5:24**	**5:40**		
A	**4:17**	**4:31**	**4:53**	**5:07**	**5:22**	**5:34**	**5:50**		
	4:36	**4:50**	·····	**5:17**	**5:32**	**5:44**	·····	**6:05**	**6:11**
A	**4:43**	**4:57**	**5:23**	**5:37**	**5:51**	**6:03**	**6:21**		
	5:15	**5:29**	·····	**5:57**	**6:11**	**6:23**	·····	**6:44**	**6:50**
A	**5:26**	**5:41**	**6:05**	**6:17**	**6:30**	**6:43**	**7:01**		
	5:58	**6:13**	·····	**6:39**	**6:52**	**7:04**	·····	**7:24**	**7:31**
A	**6:17**	**6:30**	**6:50**	**7:02**	**7:15**	**7:25**	**7:40**		
	6:57	**7:08**	·····	**7:33**	**7:46**	**7:56**	·····	**8:12**	**8:19**
A	**7:19**	**7:30**	**7:50**	**8:02**	**8:15**	**8:25**	**8:40**		
	7:55	**8:06**	·····	**8:31**	**8:44**	**8:54**	·····	**9:10**	**9:17**
A	**8:18**	**8:29**	**8:49**	**9:01**	**9:14**	**9:24**	**9:39**		
	8:55	**9:06**	·····	**9:31**	**9:44**	**9:54**	·····	**10:10**	**10:17**
A	**9:22**	**9:33**	**9:50**	**10:01**	**10:13**	**10:24**	**10:39**		
	9:58	**10:09**	·····	**10:31**	**10:43**	**10:54**	·····	**11:10**	**11:16**
A	**10:25**	**10:36**	**10:51**	**11:01**	**11:13**	**11:23**	**11:38**		
	11:00	**11:11**	·····	**11:31**	**11:43**	**11:53**	·····	12:09	12:15
A	**11:25**	**11:36**	**11:51**	12:01	12:13	12:23	12:38		
	12:00	12:11	·····	12:31	12:43	12:53	·····	1:09	1:15

A = These trips serve the Goldenwest Transportation Center.
Estos viajes se detienen en el Centro de Transporte Goldenwest.

La Habra to Huntington Beach
via Beach Blvd

29/A

Monday-Friday
SOUTHBOUND To: Huntington Beach

	Buena Park Metrolink Station	Beach & La Habra	Beach & Imperial	Knotts Berry Farm	Beach & Katella	Beach & Westminster	Gothard & Center	Beach & Garfield	Pacific Coast Hwy & 1st
A		4:30	4:39	4:55	5:04	5:14	·····	5:29	5:41
	5:22	·····	·····	5:35	5:44	5:54	6:01	6:14	6:26
A		5:43	5:53	6:11	6:22	6:34	·····	6:53	7:06
	6:17	·····	·····	6:31	6:42	6:54	7:03	7:18	7:31
A	6:37	·····	·····	6:51	7:02	7:14	7:23	7:38	7:51
	6:49	·····	·····	7:10	7:21	7:34	7:43	7:58	8:11
A		6:53	7:06	7:29	7:40	7:55	·····	8:16	8:30
	7:39	·····	·····	7:58	8:09	8:24	8:35	8:50	9:04
A		7:46	7:59	8:22	8:36	8:52	·····	9:14	9:29
	8:36	·····	·····	8:55	9:08	9:23	9:34	9:50	10:06
A		8:46	8:59	9:22	9:35	9:50	·····	10:11	10:27
	9:24	·····	·····	9:43	9:56	10:10	10:21	10:37	10:50
A		9:24	9:37	10:01	10:15	10:30	·····	10:53	11:07
	10:01	·····	·····	10:21	10:35	10:50	11:01	11:20	11:34
A		10:03	10:17	10:42	10:55	11:10	·····	11:36	11:52
	10:40	·····	·····	11:00	11:15	11:30	11:42	**12:08**	**12:23**
A		10:41	10:55	11:20	11:35	11:50	·····	**12:19**	**12:34**
	11:20	·····	·····	11:40	11:55	**12:10**	**12:22**	**12:48**	**1:03**
A		11:21	11:35	**12:00**	**12:15**	**12:30**	·····	**12:59**	**1:14**
	11:56	·····	·····	**12:16**	**12:32**	**12:48**	**1:02**	**1:28**	**1:45**
A		11:58	**12:13**	**12:40**	**12:55**	**1:10**	·····	**1:39**	**1:53**
	12:37	·····	·····	**1:00**	**1:14**	**1:30**	**1:42**	**2:05**	**2:20**
A		**12:38**	**12:53**	**1:20**	**1:34**	**1:50**	·····	**2:17**	**2:32**
	1:17	·····	·····	**1:40**	**1:54**	**2:10**	**2:22**	**2:45**	**3:00**
A		**1:17**	**1:32**	**1:59**	**2:14**	**2:30**	·····	**2:58**	**3:15**
	1:56	·····	·····	**2:19**	**2:34**	**2:50**	**3:02**	**3:26**	**3:43**
A		**2:00**	**2:14**	**2:40**	**2:55**	**3:10**	·····	**3:37**	**3:53**
	2:37	·····	·····	**2:59**	**3:14**	**3:29**	**3:41**	**4:04**	**4:20**
A		**2:40**	**2:54**	**3:20**	**3:33**	**3:48**	·····	**4:12**	**4:28**
	3:08	·····	·····	**3:29**	**3:42**	**3:57**	**4:08**	**4:28**	**4:44**
A	**3:18**	·····	·····	**3:39**	**3:52**	**4:07**	**4:18**	**4:38**	**4:54**
	3:28	·····	·····	**3:49**	**4:02**	**4:17**	**4:28**	**4:48**	**5:04**
A		**3:18**	**3:32**	**3:58**	**4:11**	**4:26**	·····	**4:50**	**5:06**
	3:58	·····	·····	**4:19**	**4:32**	**4:45**	**4:55**	**5:13**	**5:30**
A		**3:58**	**4:12**	**4:38**	**4:51**	**5:04**	·····	**5:26**	**5:43**
	4:35	·····	·····	**4:55**	**5:09**	**5:22**	**5:32**	**5:48**	**6:03**
A		**4:37**	**4:50**	**5:15**	**5:29**	**5:42**	·····	**6:03**	**6:18**
	5:15	·····	·····	**5:35**	**5:49**	**6:02**	**6:12**	**6:28**	**6:43**
A		**5:16**	**5:29**	**5:55**	**6:09**	**6:22**	·····	**6:43**	**6:56**
	5:57	·····	·····	**6:15**	**6:29**	**6:42**	**6:52**	**7:09**	**7:22**
A		**5:56**	**6:09**	**6:35**	**6:49**	**7:02**	·····	**7:23**	**7:36**
	6:37	·····	·····	**6:55**	**7:09**	**7:22**	**7:32**	**7:49**	**8:02**
A		**6:36**	**6:49**	**7:15**	**7:29**	**7:42**	·····	**8:03**	**8:16**
	7:28	·····	·····	**7:45**	**7:59**	**8:12**	**8:22**	**8:37**	**8:50**
A		**7:38**	**7:51**	**8:15**	**8:29**	**8:42**	·····	**9:02**	**9:15**
	8:28	·····	·····	**8:45**	**8:59**	**9:12**	**9:22**	**9:37**	**9:50**
A		**8:44**	**8:56**	**9:18**	**9:30**	**9:42**	·····	**10:00**	**10:12**
	9:31	·····	·····	**9:48**	**10:00**	**10:12**	**10:21**	**10:35**	**10:47**
A		**9:44**	**9:56**	**10:18**	**10:30**	**10:42**	·····	**11:00**	**11:12**
	10:29	·····	·····	**10:46**	**10:58**	**11:10**	**11:19**	**11:33**	**11:45**
A		**10:44**	**10:56**	**11:18**	**11:30**	**11:42**	·····	12:00	12:12
	11:34	·····	·····	**11:51**	12:02	12:12	12:20	12:33	12:44
A		**11:51**	12:02	12:21	12:32	12:42	·····	12:58	1:09

Saturday
NORTHBOUND To: La Habra

	Pacific Coast Hwy & 1st	Beach & Garfield	Center & Gothard	Beach & Westminster	Beach & Katella	Knotts Berry Farm	Buena Park Metrolink Station	Beach & Imperial	Beach & La Habra
	4:11	4:18	·····	4:35	4:45	4:54	·····	5:10	5:14
A	4:46	4:53	5:05	5:15	5:25	5:34	5:49		
	5:28	5:36	·····	5:55	6:06	6:18	·····	6:36	6:41
A	6:00	6:10	6:25	6:35	6:47	6:59	7:14		
	6:46	6:56	·····	7:15	7:27	7:39	·····	7:58	8:04
A	7:10	7:20	7:35	7:45	7:57	8:09	8:24		
	7:43	7:53	·····	8:15	8:28	8:41	·····	9:01	9:06
A	8:06	8:16	8:33	8:45	8:59	9:12	9:29		
	8:42	8:52	·····	9:15	9:29	9:42	·····	10:02	10:07
A	8:58	9:09	9:30	9:45	9:58	10:11	10:28		
	9:26	9:37	·····	10:05	10:18	10:31	·····	10:52	10:58
A	9:41	9:52	10:13	10:26	10:39	10:52	11:07		
	10:08	10:19	·····	10:45	10:58	11:11	·····	11:31	11:36
A	10:18	10:29	10:50	11:03	11:16	11:29	11:44		
	10:44	10:56	·····	11:23	11:36	11:50	·····	**12:13**	**12:20**
A	10:55	11:07	11:30	11:42	11:55	**12:09**	**12:24**		
	11:20	11:32	·····	**12:01**	**12:16**	**12:30**	·····	**12:50**	**12:57**
A	11:29	11:41	**12:04**	**12:19**	**12:34**	**12:48**	**1:05**		
	11:58	**12:10**	·····	**12:39**	**12:54**	**1:08**	·····	**1:28**	**1:35**
A	**12:08**	**12:20**	**12:43**	**12:58**	**1:13**	**1:27**	**1:44**		
	12:38	**12:50**	·····	**1:19**	**1:34**	**1:48**	·····	**2:08**	**2:15**
A	**12:49**	**1:01**	**1:24**	**1:39**	**1:54**	**2:08**	**2:25**		
	1:16	**1:29**	·····	**1:59**	**2:14**	**2:28**	·····	**2:49**	**2:57**
A	**1:27**	**1:40**	**2:04**	**2:19**	**2:34**	**2:48**	**3:04**		
	1:57	**2:10**	·····	**2:40**	**2:55**	**3:09**	·····	**3:30**	**3:38**
A	**2:08**	**2:20**	**2:44**	**2:59**	**3:15**	**3:28**	**3:42**		
	2:37	**2:49**	·····	**3:19**	**3:35**	**3:48**	·····	**4:08**	**4:15**
A	**2:50**	**3:02**	**3:25**	**3:39**	**3:55**	**4:07**	**4:22**		
	3:18	**3:30**	·····	**3:59**	**4:15**	**4:27**	·····	**4:47**	**4:54**
A	**3:28**	**3:41**	**4:04**	**4:18**	**4:33**	**4:46**	**5:03**		
	3:56	**4:10**	·····	**4:37**	**4:52**	**5:04**	·····	**5:25**	**5:31**
A	**4:08**	**4:22**	**4:44**	**4:57**	**5:12**	**5:24**	**5:40**		
	4:36	**4:50**	·····	**5:17**	**5:32**	**5:44**	·····	**6:05**	**6:11**
A	**4:43**	**4:57**	**5:23**	**5:37**	**5:51**	**6:03**	**6:21**		
	5:15	**5:29**	·····	**5:57**	**6:11**	**6:23**	·····	**6:44**	**6:50**
A	**5:26**	**5:41**	**6:05**	**6:17**	**6:30**	**6:43**	**7:01**		
	5:58	**6:13**	·····	**6:39**	**6:52**	**7:04**	·····	**7:24**	**7:31**
A	**6:17**	**6:30**	**6:50**	**7:02**	**7:15**	**7:25**	**7:40**		
	6:57	**7:08**	·····	**7:33**	**7:46**	**7:56**	·····	**8:12**	**8:19**
A	**7:19**	**7:30**	**7:50**	**8:02**	**8:15**	**8:25**	**8:40**		
	7:55	**8:06**	·····	**8:31**	**8:44**	**8:54**	·····	**9:10**	**9:17**
A	**8:18**	**8:29**	**8:49**	**9:01**	**9:14**	**9:24**	**9:39**		
	8:55	**9:06**	·····	**9:31**	**9:44**	**9:54**	·····	**10:10**	**10:17**
A	**9:22**	**9:33**	**9:50**	**10:01**	**10:13**	**10:24**	**10:39**		
	9:58	**10:09**	·····	**10:31**	**10:43**	**10:54**	·····	**11:10**	**11:16**
A	**10:25**	**10:36**	**10:51**	**11:01**	**11:13**	**11:23**	**11:38**		
	11:00	**11:11**	·····	**11:31**	**11:43**	**11:53**	·····	12:09	12:15
A	**11:25**	**11:36**	**11:51**	12:01	12:13	12:23	12:38		
	12:00	12:11	·····	12:31	12:43	12:53	·····	1:09	1:15

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La Habra to Huntington Beach
via Beach Blvd

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Saturday
SOUTHBOUND To: Huntington Beach

	Beach & La Habra	Beach & Imperial	Buena Park Metrolink Station	Knotts Berry Farm	Beach & Katella	Beach & Westminster	Gothard & Center	Beach & Garfield	Pacific Coast Hwy & 1st
	4:30	4:39	·····	4:55	5:04	5:14	·····	5:29	5:41
A			5:22	5:35	5:44	5:54	6:01	6:14	6:26
	5:43	5:53	·····	6:11	6:22	6:34	·····	6:53	7:06
A			6:37	6:51	7:02	7:14	7:23	7:38	7:51
	6:53	7:06	·····	7:29	7:40	7:55	·····	8:16	8:30
A			7:39	7:58	8:09	8:24	8:35	8:50	9:04
	7:46	7:59	·····	8:22	8:36	8:52	·····	9:14	9:29
A			8:36	8:55	9:08	9:23	9:34	9:50	10:06
	8:46	8:59	·····	9:22	9:35	9:50	·····	10:11	10:27
A			9:24	9:43	9:56	10:10	10:21	10:37	10:50
	9:24	9:37	·····	10:01	10:15	10:30	·····	10:53	11:07
A			10:01	10:21	10:35	10:50	11:01	11:20	11:34
	10:03	10:17	·····	10:42	10:55	11:10	·····	11:36	11:52
A			10:40	11:00	11:15	11:30	11:42	**12:08**	**12:23**
	10:41	10:55	·····	11:20	11:35	11:50	·····	**12:19**	**12:34**
A			11:20	11:40	11:55	**12:10**	**12:22**	**12:48**	**1:03**
	11:21	11:35	·····	**12:00**	**12:15**	**12:30**	·····	**12:59**	**1:14**
A			11:56	**12:16**	**12:32**	**12:48**	**1:02**	**1:28**	**1:45**
	11:58	**12:13**	·····	**12:40**	**12:55**	**1:10**	·····	**1:39**	**1:53**
A			**12:37**	**1:00**	**1:14**	**1:30**	**1:42**	**2:05**	**2:20**
	12:38	**12:53**	·····	**1:20**	**1:34**	**1:50**	·····	**2:17**	**2:32**
A			**1:17**	**1:40**	**1:54**	**2:10**	**2:22**	**2:45**	**3:00**
	1:17	**1:32**	·····	**1:59**	**2:14**	**2:30**	·····	**2:58**	**3:15**
A			**1:56**	**2:19**	**2:34**	**2:50**	**3:02**	**3:26**	**3:43**
	2:00	**2:14**	·····	**2:40**	**2:55**	**3:10**	·····	**3:37**	**3:53**
A			**2:37**	**2:59**	**3:14**	**3:29**	**3:41**	**4:04**	**4:20**
	2:40	**2:54**	·····	**3:20**	**3:33**	**3:48**	·····	**4:12**	**4:28**
A			**3:18**	**3:39**	**3:52**	**4:07**	**4:18**	**4:38**	**4:54**
	3:18	**3:32**	·····	**3:58**	**4:11**	**4:26**	·····	**4:50**	**5:06**
A			**3:58**	**4:19**	**4:32**	**4:45**	**4:55**	**5:13**	**5:30**
	3:58	**4:12**	·····	**4:38**	**4:51**	**5:04**	·····	**5:26**	**5:43**
A			**4:35**	**4:55**	**5:09**	**5:22**	**5:32**	**5:48**	**6:03**
	4:37	**4:50**	·····	**5:15**	**5:29**	**5:42**	·····	**6:03**	**6:18**
A			**5:15**	**5:35**	**5:49**	**6:02**	**6:12**	**6:28**	**6:43**
	5:16	**5:29**	·····	**5:55**	**6:09**	**6:22**	·····	**6:43**	**6:56**
A			**5:57**	**6:15**	**6:29**	**6:42**	**6:52**	**7:09**	**7:22**
	5:56	**6:09**	·····	**6:35**	**6:49**	**7:02**	·····	**7:23**	**7:36**
A			**6:37**	**6:55**	**7:09**	**7:22**	**7:32**	**7:49**	**8:02**
	6:36	**6:49**	·····	**7:15**	**7:29**	**7:42**	·····	**8:03**	**8:16**
A			**7:28**	**7:45**	**7:59**	**8:12**	**8:22**	**8:37**	**8:50**
	7:38	**7:51**	·····	**8:15**	**8:29**	**8:42**	·····	**9:02**	**9:15**
A			**8:28**	**8:45**	**8:59**	**9:12**	**9:22**	**9:37**	**9:50**
	8:44	**8:56**	·····	**9:18**	**9:30**	**9:42**	·····	**10:00**	**10:12**
A			**9:31**	**9:48**	**10:00**	**10:12**	**10:21**	**10:35**	**10:47**
	9:44	**9:56**	·····	**10:18**	**10:30**	**10:42**	·····	**11:00**	**11:12**
A			**10:29**	**10:46**	**10:58**	**11:10**	**11:19**	**11:33**	**11:45**
	10:44	**10:56**	·····	**11:18**	**11:30**	**11:42**	·····	12:00	12:12
A			**11:34**	**11:51**	12:02	12:12	12:20	12:33	12:44
	11:51	12:02	·····	12:21	12:32	12:42	·····	12:58	1:09

Sunday & Holiday
NORTHBOUND To: La Habra

	Pacific Coast Hwy & 1st	Beach & Garfield	Center & Gothard	Beach & Westminster	Beach & Katella	Knotts Berry Farm	Buena Park Metrolink Station	Beach & Imperial	Beach & La Habra
	5:11	5:20	·····	5:37	5:47	5:58	·····	6:14	6:19
A	5:45	5:54	6:08	6:17	6:27	6:38	6:52		
	6:30	6:40	·····	6:57	7:08	7:21	·····	7:38	7:44
A	6:57	7:08	7:24	7:37	7:49	8:02	8:16		
	7:34	7:45	·····	8:07	8:19	8:32	·····	8:50	8:55
A	8:04	8:15	8:31	8:44	8:56	9:09	9:23		
	8:41	8:52	·····	9:14	9:26	9:39	·····	9:57	10:02
A	8:53	9:04	9:20	9:33	9:45	9:58	10:12		
	9:19	9:30	·····	9:52	10:04	10:17	·····	10:35	10:40
A	9:29	9:41	9:58	10:11	10:24	10:36	10:51		
	9:48	10:00	·····	10:32	10:45	10:57	·····	11:19	11:26
A	10:10	10:22	10:39	10:52	11:05	11:17	11:32		
	10:28	10:40	·····	11:12	11:25	11:37	·····	11:59	**12:06**
A	10:49	11:01	11:18	11:31	11:44	11:56	**12:11**		
	11:08	11:20	·····	11:52	**12:05**	**12:17**	·····	**12:39**	**12:46**
A	11:31	11:43	**12:00**	**12:13**	**12:26**	**12:38**	**12:53**		
	11:47	**12:00**	·····	**12:32**	**12:45**	**12:57**	·····	**1:20**	**1:27**
A	**12:05**	**12:18**	**12:37**	**12:51**	**1:04**	**1:16**	**1:34**		
	12:27	**12:40**	·····	**1:12**	**1:25**	**1:37**	·····	**2:00**	**2:07**
A	**12:47**	**1:00**	**1:19**	**1:33**	**1:46**	**1:58**	**2:16**		
	1:08	**1:21**	·····	**1:53**	**2:06**	**2:18**	·····	**2:41**	**2:48**
A	**1:27**	**1:40**	**1:59**	**2:13**	**2:26**	**2:38**	**2:56**		
	1:48	**2:01**	·····	**2:33**	**2:46**	**2:58**	·····	**3:21**	**3:28**
A	**2:08**	**2:21**	**2:40**	**2:54**	**3:07**	**3:19**	**3:37**		
	2:28	**2:41**	·····	**3:13**	**3:26**	**3:38**	·····	**4:01**	**4:08**
A	**2:51**	**3:03**	**3:20**	**3:33**	**3:46**	**3:56**	**4:14**		
	3:09	**3:21**	·····	**3:53**	**4:06**	**4:16**	·····	**4:36**	**4:43**
A	**3:31**	**3:43**	**4:00**	**4:13**	**4:26**	**4:36**	**4:54**		
	3:49	**4:01**	·····	**4:33**	**4:46**	**4:56**	·····	**5:16**	**5:23**
A	**4:11**	**4:23**	**4:40**	**4:53**	**5:06**	**5:16**	**5:34**		
	4:29	**4:41**	·····	**5:13**	**5:26**	**5:36**	·····	**5:56**	**6:03**
A	**4:51**	**5:03**	**5:20**	**5:33**	**5:46**	**5:56**	**6:14**		
	5:09	**5:21**	·····	**5:53**	**6:06**	**6:16**	·····	**6:36**	**6:43**
A	**5:31**	**5:43**	**6:00**	**6:13**	**6:26**	**6:36**	**6:54**		
	5:49	**6:01**	·····	**6:33**	**6:46**	**6:56**	·····	**7:16**	**7:23**
A	**6:11**	**6:23**	**6:40**	**6:53**	**7:06**	**7:16**	**7:34**		
	6:29	**6:41**	·····	**7:13**	**7:26**	**7:36**	·····	**7:56**	**8:03**
A	**6:55**	**7:07**	**7:24**	**7:37**	**7:50**	**8:00**	**8:18**		
	7:22	**7:35**	·····	**8:07**	**8:18**	**8:26**	·····	**8:46**	**8:53**
A	**7:51**	**8:04**	**8:20**	**8:34**	**8:45**	**8:53**	**9:10**		
	8:29	**8:41**	·····	**9:01**	**9:13**	**9:23**	·····	**9:42**	**9:46**
A	**8:50**	**9:02**	**9:17**	**9:28**	**9:40**	**9:50**	**10:06**		
	9:25	**9:37**	·····	**9:57**	**10:09**	**10:19**	·····	**10:38**	**10:42**
A	**9:50**	**10:02**	**10:17**	**10:28**	**10:40**	**10:50**	**11:06**		
	10:27	**10:39**	·····	**10:59**	**11:11**	**11:21**	·····	**11:40**	**11:44**
	10:51	**11:03**	·····	**11:23**	**11:35**	**11:45**	·····	12:04	12:08

A = These trips serve the Goldenwest Transportation Center.
Estos viajes se detienen en el Centro de Transporte Goldenwest.

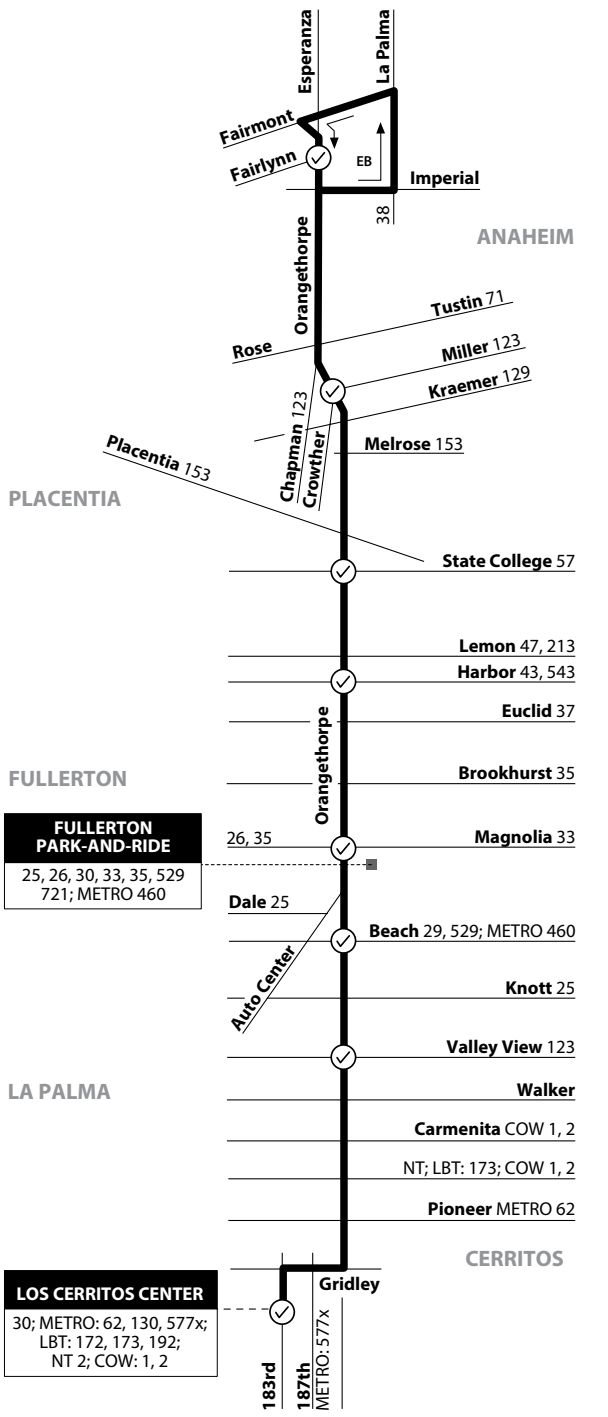
29/A

La Habra to Huntington Beach
via Beach Blvd

Sunday & Holiday
SOUTHBOUND To: Huntington Beach

	Beach & La Habra	Beach & Imperial	Buena Park Metrolink Station	Knotts Berry Farm	Beach & Katella	Beach & Westminster	Gothard & Center	Beach & Garfield	Pacific Coast Hwy & 1st
	5:12	5:21	·····	5:36	5:48	5:58	·····	6:15	6:29
A			6:02	6:17	6:29	6:39	6:47	7:01	7:15
	6:30	6:40	·····	6:58	7:10	7:21	·····	7:39	7:53
A			7:22	7:37	7:49	8:00	8:10	8:24	8:38
	7:37	7:47	·····	8:05	8:17	8:28	·····	8:46	9:00
A			8:17	8:33	8:45	8:56	9:06	9:20	9:34
	8:26	8:38	·····	8:59	9:11	9:24	·····	9:45	10:00
A			9:08	9:24	9:36	9:49	9:59	10:16	10:31
	9:11	9:23	·····	9:44	9:56	10:09	·····	10:30	10:45
A			9:48	10:04	10:16	10:29	10:39	10:56	11:11
	9:51	10:03	·····	10:24	10:36	10:49	·····	11:10	11:25
A			10:27	10:42	10:55	11:09	11:20	11:38	11:51
	10:28	10:40	·····	11:02	11:15	11:29	·····	11:51	**12:04**
A			11:01	11:18	11:32	11:47	11:59	**12:20**	**12:37**
	11:03	11:17	·····	11:39	11:53	**12:08**	·····	**12:32**	**12:49**
A			11:42	11:59	**12:13**	**12:28**	**12:40**	**1:01**	**1:18**
	11:43	11:57	·····	**12:19**	**12:33**	**12:48**	·····	**1:12**	**1:29**
A			**12:22**	**12:39**	**12:53**	**1:08**	**1:20**	**1:41**	**1:58**
	12:25	**12:39**	·····	**1:01**	**1:15**	**1:30**	·····	**1:54**	**2:11**
A			**1:05**	**1:22**	**1:36**	**1:51**	**2:03**	**2:24**	**2:41**
	1:06	**1:20**	·····	**1:42**	**1:56**	**2:11**	·····	**2:35**	**2:52**
A			**1:45**	**2:02**	**2:16**	**2:31**	**2:43**	**3:04**	**3:21**
	1:46	**2:00**	·····	**2:22**	**2:36**	**2:51**	·····	**3:15**	**3:32**
A			**2:25**	**2:42**	**2:56**	**3:11**	**3:23**	**3:44**	**4:01**
	2:26	**2:40**	·····	**3:02**	**3:16**	**3:31**	·····	**3:55**	**4:12**
A			**3:05**	**3:22**	**3:36**	**3:51**	**4:03**	**4:24**	**4:41**
	3:09	**3:23**	·····	**3:45**	**3:58**	**4:11**	·····	**4:33**	**4:48**
A			**3:47**	**4:05**	**4:18**	**4:31**	**4:42**	**5:00**	**5:15**
	3:48	**4:02**	·····	**4:24**	**4:37**	**4:50**	·····	**5:12**	**5:27**
A			**4:25**	**4:43**	**4:56**	**5:09**	**5:20**	**5:38**	**5:53**
	4:27	**4:41**	·····	**5:03**	**5:16**	**5:29**	·····	**5:51**	**6:06**
A			**5:10**	**5:27**	**5:38**	**5:49**	**5:59**	**6:15**	**6:29**
	5:14	**5:27**	·····	**5:47**	**5:58**	**6:09**	·····	**6:29**	**6:43**
A			**5:49**	**6:06**	**6:17**	**6:28**	**6:38**	**6:54**	**7:08**
	5:54	**6:07**	·····	**6:27**	**6:38**	**6:49**	·····	**7:09**	**7:23**
A			**6:30**	**6:47**	**6:58**	**7:09**	**7:19**	**7:35**	**7:49**
	6:34	**6:47**	·····	**7:07**	**7:18**	**7:29**	·····	**7:49**	**8:03**
A			**7:10**	**7:27**	**7:38**	**7:49**	**7:59**	**8:15**	**8:29**
	7:24	**7:37**	·····	**7:57**	**8:08**	**8:19**	·····	**8:39**	**8:53**
A			**8:10**	**8:27**	**8:38**	**8:49**	**8:59**	**9:15**	**9:29**
	8:26	**8:37**	·····	**8:57**	**9:09**	**9:19**	·····	**9:35**	**9:49**
A			**9:12**	**9:27**	**9:39**	**9:49**	**9:58**	**10:10**	**10:24**
	9:26	**9:37**	·····	**9:57**	**10:09**	**10:19**	·····	**10:35**	**10:49**
A			**10:17**	**10:32**	**10:44**	**10:54**	**11:03**	**11:15**	**11:29**
	10:31	**10:42**	·····	**11:02**	**11:14**	**11:24**	·····	**11:40**	**11:54**
	11:06	**11:17**	·····	**11:37**	**11:49**	**11:59**	·····	12:15	12:29

A = These trips serve the Goldenwest Transportation Center.
Estos viajes se detienen en el Centro de Transporte Goldenwest.



LEGEND *LEYENDA*

Scheduled Departure — Regular Routing

COW = Cerritos On Wheels | LBT = Long Beach Transit | NT = Norwalk Transit | METRO = Los Angeles Metro

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

N — MAP NOT TO SCALE

Route 030/122119

Monday-Friday
EASTBOUND To: Anaheim

Los Cerritos Center	Orangethorpe & Valley View	Orangethorpe & Beach	Orangethorpe & Magnolia	Orangethorpe & Harbor	Orangethorpe & State College	Orangethorpe & Crowther	Esperanza & Fairlynn
6:50	7:06	7:13	7:19	7:32	7:40	7:49	8:12
6:51	7:08	7:15	7:19	7:32	7:40	7:47	8:04
7:51	8:08	8:15	8:19	8:32	8:40	8:47	9:04
8:51	9:08	9:15	9:19	9:32	9:40	9:47	10:04
9:48	10:07	10:13	10:17	10:32	10:41	10:49	11:07
10:48	11:07	11:13	11:17	11:32	11:41	11:49	**12:07**
11:48	**12:07**	**12:13**	**12:17**	**12:32**	**12:41**	**12:49**	**1:07**
12:45	**1:06**	**1:14**	**1:19**	**1:32**	**1:41**	**1:48**	**2:06**
1:45	**2:06**	**2:14**	**2:19**	**2:32**	**2:41**	**2:48**	**3:06**
2:45	**3:06**	**3:14**	**3:19**	**3:32**	**3:41**	**3:48**	**4:06**
3:45	**4:06**	**4:14**	**4:19**	**4:32**	**4:41**	**4:48**	**5:06**
4:45	**5:06**	**5:14**	**5:19**	**5:32**	**5:41**	**5:48**	**6:06**
5:45	**6:06**	**6:14**	**6:19**	**6:32**	**6:41**	**6:48**	**7:06**
6:47	**7:08**	**7:15**	**7:19**	**7:32**	**7:40**	**7:47**	**8:03**
7:47	**8:08**	**8:15**	**8:19**	**8:32**	**8:40**	**8:47**	**9:03**

Monday-Friday
WESTBOUND To: Cerritos

Esperanza & Fairlynn	Orangethorpe & Crowther	Orangethorpe & State College	Orangethorpe & Harbor	Orangethorpe & Magnolia	Orangethorpe & Beach	Orangethorpe & Valley View	Los Cerritos Center
6:19	6:29	6:37	6:44	6:55	7:00	7:07	7:23
7:19	7:29	7:37	7:44	7:55	8:00	8:07	8:23
8:18	8:28	8:36	8:44	8:55	9:00	9:07	9:29
9:18	9:28	9:36	9:44	9:55	10:00	10:07	10:29
10:18	10:28	10:36	10:44	10:55	11:00	11:07	11:29
11:17	11:29	11:36	11:44	11:58	**12:04**	**12:12**	**12:37**
12:17	**12:29**	**12:36**	**12:44**	**12:58**	**1:04**	**1:12**	**1:37**
1:18	**1:29**	**1:36**	**1:44**	**1:57**	**2:02**	**2:09**	**2:33**
2:18	**2:29**	**2:36**	**2:44**	**2:57**	**3:02**	**3:09**	**3:33**
2:42	**2:55**	**3:05**	**3:14**	**3:28**	**3:33**	**3:42**	**4:04**
3:18	**3:29**	**3:36**	**3:44**	**3:57**	**4:02**	**4:09**	**4:33**
3:42	**3:55**	**4:05**	**4:14**	**4:28**	**4:33**	**4:42**	**5:04**
4:18	**4:29**	**4:36**	**4:44**	**4:57**	**5:02**	**5:09**	**5:33**
4:37	**4:52**	**5:03**	**5:14**	**5:28**	**5:34**	**5:43**	**6:05**
5:18	**5:29**	**5:36**	**5:44**	**5:57**	**6:02**	**6:09**	**6:33**
6:18	**6:29**	**6:36**	**6:44**	**6:57**	**7:02**	**7:09**	**7:33**
7:20	**7:32**	**7:38**	**7:44**	**7:56**	**8:01**	**8:08**	**8:27**

SERVICE TO / SERVICIO A

Anaheim
- Esperanza High School
- Anaheim Canyon Business Center

Placentia
- El Camino Real High School

Fullerton
- Orangefair Mall
- Fullerton Park-and-Ride
- Nicolas Junior High School

Buena Park
- Buena Park High School
- Buena Park Junior High School

La Palma

Cerritos
- Los Cerritos Center

30 Cerritos to Anaheim

via Orangethorpe Ave

Saturday, Sunday & Holiday
EASTBOUND To: Anaheim

Los Cerritos Center	Orangethorpe & Valley View	Orangethorpe & Beach	Orangethorpe & Magnolia	Orangethorpe & Harbor	Orangethorpe & State College	Orangethorpe & Crowther	Esperanza & Fairlynn
6:51	7:08	7:15	7:19	7:32	7:40	7:47	8:04
7:51	8:08	8:15	8:19	8:32	8:40	8:47	9:04
8:51	9:08	9:15	9:19	9:32	9:40	9:47	10:04
9:48	10:07	10:13	10:17	10:32	10:41	10:49	11:07
10:48	11:07	11:13	11:17	11:32	11:41	11:49	**12:07**
11:48	**12:07**	**12:13**	**12:17**	**12:32**	**12:41**	**12:49**	**1:07**
12:45	**1:06**	**1:14**	**1:19**	**1:32**	**1:41**	**1:48**	**2:06**
1:45	**2:06**	**2:14**	**2:19**	**2:32**	**2:41**	**2:48**	**3:06**
2:45	**3:06**	**3:14**	**3:19**	**3:32**	**3:41**	**3:48**	**4:06**
3:45	**4:06**	**4:14**	**4:19**	**4:32**	**4:41**	**4:48**	**5:06**
4:45	**5:06**	**5:14**	**5:19**	**5:32**	**5:41**	**5:48**	**6:06**
5:45	**6:06**	**6:14**	**6:19**	**6:32**	**6:41**	**6:48**	**7:06**
6:47	**7:08**	**7:15**	**7:19**	**7:32**	**7:40**	**7:47**	**8:03**
7:47	**8:08**	**8:15**	**8:19**	**8:32**	**8:40**	**8:47**	**9:03**

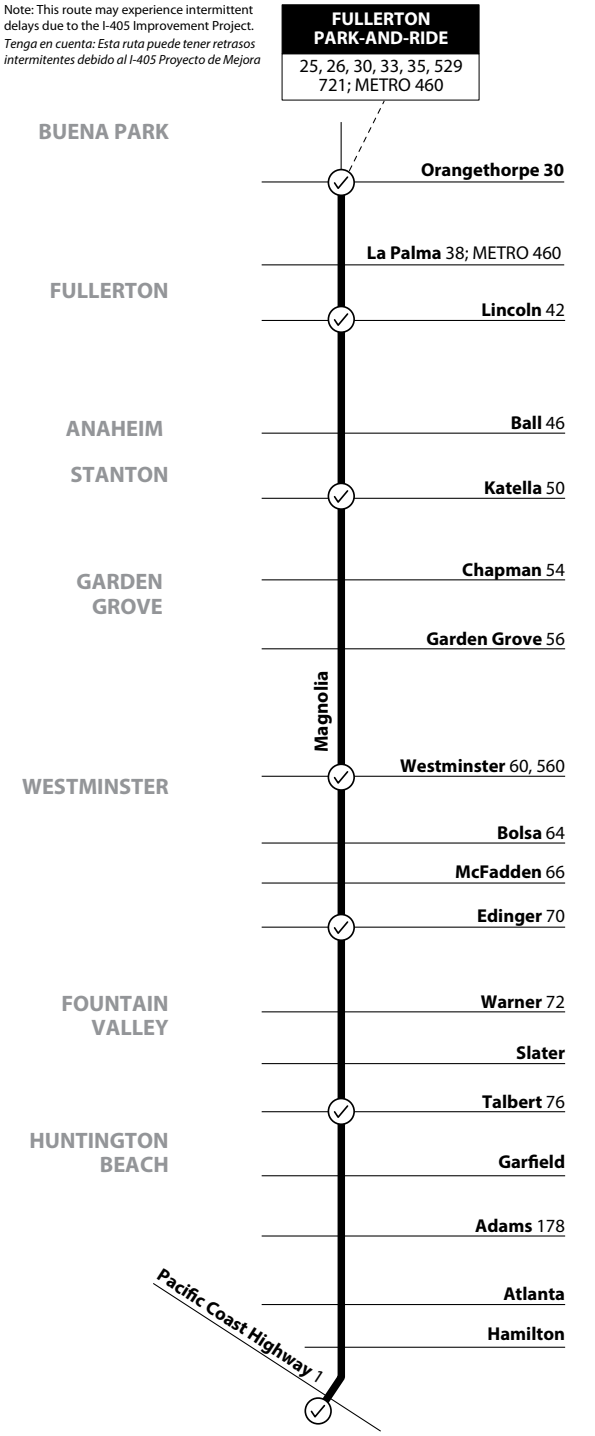
Saturday, Sunday & Holiday
WESTBOUND To: Cerritos

Esperanza & Fairlynn	Orangethorpe & Crowther	Orangethorpe & State College	Orangethorpe & Harbor	Orangethorpe & Magnolia	Orangethorpe & Beach	Orangethorpe & Valley View	Los Cerritos Center
6:19	6:29	6:37	6:44	6:55	7:00	7:07	7:23
7:19	7:29	7:37	7:44	7:55	8:00	8:07	8:23
8:18	8:28	8:36	8:44	8:55	9:00	9:07	9:29
9:18	9:28	9:36	9:44	9:55	10:00	10:07	10:29
10:18	10:28	10:36	10:44	10:55	11:00	11:07	11:29
11:17	11:29	11:36	11:44	11:58	**12:04**	**12:12**	**12:37**
12:17	**12:29**	**12:36**	**12:44**	**12:58**	**1:04**	**1:12**	**1:37**
1:18	**1:29**	**1:36**	**1:44**	**1:57**	**2:02**	**2:09**	**2:33**
2:18	**2:29**	**2:36**	**2:44**	**2:57**	**3:02**	**3:09**	**3:33**
3:18	**3:29**	**3:36**	**3:44**	**3:57**	**4:02**	**4:09**	**4:33**
4:18	**4:29**	**4:36**	**4:44**	**4:57**	**5:02**	**5:09**	**5:33**
5:18	**5:29**	**5:36**	**5:44**	**5:57**	**6:02**	**6:09**	**6:33**
6:18	**6:29**	**6:36**	**6:44**	**6:57**	**7:02**	**7:09**	**7:33**
7:20	**7:32**	**7:38**	**7:44**	**7:56**	**8:01**	**8:08**	**8:27**

Fullerton to Huntington Beach
via Magnolia St

33

Note: This route may experience intermittent delays due to the I-405 Improvement Project.
Tenga en cuenta: Esta ruta puede tener retrasos intermitentes debido al I-405 Proyecto de Mejora



LEGEND *LEYENDA*

Scheduled Departure — Regular Routing

METRO = Los Angeles Metro

N — MAP NOT TO SCALE

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Route 033/010419

All Days
NORTHBOUND To: Fullerton

Pacific Coast Hwy & 1st	Magnolia & Talbert	Magnolia & Edinger	Magnolia & Westminster	Magnolia & Katella	Magnolia & Lincoln	Fullerton Park-and-Ride
8:30	8:44	8:51	8:59	9:11	9:20	9:29
9:44	9:58	10:04	10:14	10:27	10:37	10:46
10:59	11:13	11:19	11:29	11:42	11:52	**12:01**
12:14	**12:28**	**12:34**	**12:44**	**12:57**	**1:07**	**1:16**
1:28	**1:43**	**1:49**	**1:59**	**2:13**	**2:23**	**2:34**
2:43	**2:58**	**3:04**	**3:14**	**3:28**	**3:38**	**3:49**
3:58	**4:13**	**4:19**	**4:29**	**4:43**	**4:53**	**5:04**
5:13	**5:28**	**5:35**	**5:44**	**5:57**	**6:06**	**6:13**
6:31	**6:44**	**6:50**	**6:59**	**7:11**	**7:20**	**7:27**

All Days
SOUTHBOUND To: Huntington Beach

Fullerton Park-and-Ride	Magnolia & Lincoln	Magnolia & Katella	Magnolia & Westminster	Magnolia & Edinger	Magnolia & Talbert	Pacific Coast Hwy & 1st
7:18	7:27	7:35	7:47	7:55	8:02	8:16
8:33	8:42	8:50	9:02	9:10	9:17	9:31
9:45	9:55	10:04	10:17	10:26	10:34	10:48
11:00	11:10	11:19	11:32	11:41	11:49	**12:03**
12:15	**12:25**	**12:34**	**12:47**	**12:56**	**1:04**	**1:18**
1:30	**1:40**	**1:49**	**2:02**	**2:11**	**2:19**	**2:33**
2:45	**2:55**	**3:04**	**3:17**	**3:26**	**3:34**	**3:48**
4:00	**4:10**	**4:19**	**4:32**	**4:41**	**4:49**	**5:03**
5:18	**5:27**	**5:35**	**5:47**	**5:55**	**6:02**	**6:15**

Route 33 Provides Service To / Ruta 33 Proporciona Servicio A

Buena Park
- Buena Park High School

Fullerton
- Fullerton Park-and-Ride

Anaheim
- Dale Junior High School
- Savanna High School
- Magnolia High School

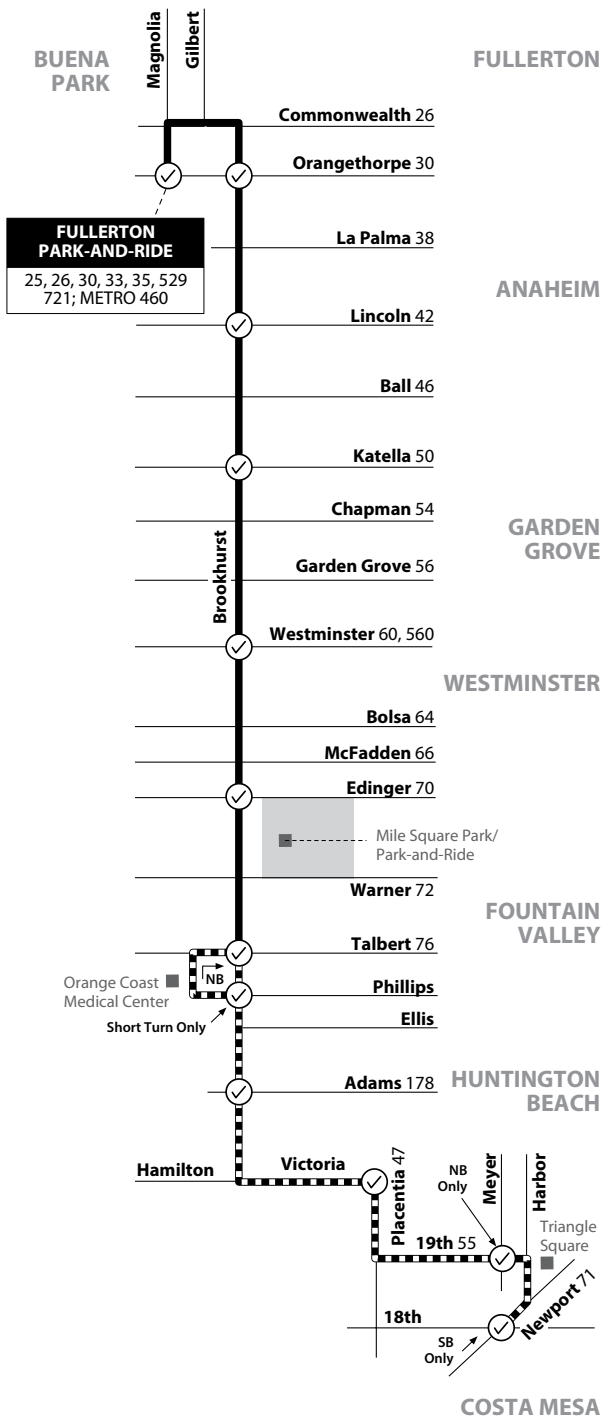
Stanton

Garden Grove
- Marie Hare Continuation School
- Bolsa Grande High School

Westminster
- Little Saigon

Fountain Valley
- Vista View Middle School
- Hisamatsu Tamura Elementary School
- Harry C. Fulton Middle School

Huntington Beach
- Talbert (Samuel E.) Middle School
- Isaac L. Sowers Middle School
- Edison High School
- Huntington State Beach



LEGEND *LEYENDA*

Scheduled Departure | Regular Routing | No Service On Some Trips

N MAP NOT TO SCALE

METRO = Los Angeles Metro

Route 035/081819

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday-Saturday
NORTHBOUND To: Fullerton

19th & Meyer	Victoria & Placentia	Brookhurst & Adams	Brookhurst & Talbert	Brookhurst & Edinger	Brookhurst & Westminster	Brookhurst & Katella	Brookhurst & Lincoln	Brookhurst & Orangethorpe	Fullerton Park-and-Ride
4:43	4:47	4:53	4:59	5:05	5:14	5:25	5:35	5:44	5:54
5:28	5:32	5:38	5:44	5:50	5:59	6:10	6:20	6:29	6:39
6:10	6:15	6:22	6:29	6:36	6:46	6:58	7:07	7:15	7:26
6:55	7:00	7:07	7:14	7:21	7:31	7:43	7:52	8:00	8:11
7:40	7:45	7:52	7:59	8:06	8:16	8:28	8:37	8:45	8:56
8:23	8:28	8:36	8:44	8:52	9:05	9:20	9:30	9:40	9:51
9:08	9:13	9:21	9:29	9:37	9:50	10:05	10:15	10:25	10:36
9:53	9:58	10:06	10:14	10:22	10:35	10:50	11:00	11:10	11:21
10:33	10:38	10:47	10:56	11:06	11:20	11:36	11:47	11:56	**12:08**
11:18	11:23	11:32	11:41	11:51	**12:05**	**12:21**	**12:32**	**12:41**	**12:53**
12:03	**12:08**	**12:17**	**12:26**	**12:36**	**12:50**	**1:06**	**1:17**	**1:26**	**1:38**
12:48	**12:53**	**1:02**	**1:11**	**1:21**	**1:35**	**1:51**	**2:02**	**2:11**	**2:23**
1:33	**1:38**	**1:47**	**1:56**	**2:06**	**2:20**	**2:36**	**2:47**	**2:56**	**3:08**
2:18	**2:23**	**2:32**	**2:41**	**2:51**	**3:05**	**3:21**	**3:32**	**3:41**	**3:53**
3:03	**3:08**	**3:17**	**3:26**	**3:35**	**3:48**	**4:03**	**4:15**	**4:26**	**4:38**
3:48	**3:53**	**4:02**	**4:11**	**4:20**	**4:33**	**4:48**	**5:00**	**5:11**	**5:23**
4:29	**4:34**	**4:43**	**4:52**	**5:01**	**5:14**	**5:29**	**5:41**	**5:52**	**6:04**
5:33	**5:39**	**5:48**	**5:57**	**6:05**	**6:17**	**6:31**	**6:41**	**6:49**	**7:00**
6:53	**6:59**	**7:08**	**7:17**	**7:25**	**7:37**	**7:51**	**8:01**	**8:09**	**8:20**

Monday-Saturday
SOUTHBOUND To: Costa Mesa

Fullerton Park-and-Ride	Brookhurst & Orangethorpe	Brookhurst & Lincoln	Brookhurst & Katella	Brookhurst & Westminster	Brookhurst & Edinger	Brookhurst & Talbert	Brookhurst & Adams	Placentia & Victoria	Newport & 18th
5:19	5:32	5:40	5:48	6:01	6:09	6:16	6:24	6:32	6:39
6:04	6:17	6:25	6:33	6:46	6:54	7:01	7:09	7:17	7:24
6:49	7:02	7:10	7:18	7:31	7:39	7:46	7:54	8:02	8:09
7:29	7:42	7:50	7:58	8:11	8:19	8:26	8:34	8:42	8:49
8:02	8:15	8:24	8:33	8:51	9:01	9:09	9:17	9:26	9:35
8:42	8:55	9:04	9:13	9:31	9:41	9:49	9:57	10:06	10:15
9:23	9:37	9:46	9:58	10:16	10:28	10:37	10:46	10:55	11:04
10:08	10:22	10:31	10:43	11:01	11:13	11:22	11:31	11:40	11:49
10:52	11:05	11:14	11:25	11:46	11:57	**12:06**	**12:15**	**12:24**	**12:33**
11:37	11:50	11:59	**12:10**	**12:31**	**12:42**	**12:51**	**1:00**	**1:09**	**1:18**
12:22	**12:35**	**12:44**	**12:55**	**1:16**	**1:27**	**1:36**	**1:45**	**1:54**	**2:03**
1:11	**1:23**	**1:32**	**1:43**	**2:01**	**2:12**	**2:21**	**2:30**	**2:38**	**2:48**
1:56	**2:08**	**2:17**	**2:28**	**2:46**	**2:57**	**3:06**	**3:15**	**3:23**	**3:33**
2:38	**2:50**	**2:59**	**3:10**	**3:28**	**3:39**	**3:48**	**3:57**	**4:05**	**4:15**
3:23	**3:35**	**3:44**	**3:55**	**4:13**	**4:24**	**4:33**	**4:42**	**4:50**	**5:00**
4:08	**4:20**	**4:29**	**4:40**	**4:58**	**5:09**	**5:18**	**5:27**	**5:35**	**5:45**
5:13	**5:25**	**5:34**	**5:43**	**5:58**	**6:08**	**6:16**	**6:23**	**6:31**	**6:37**
6:13	**6:25**	**6:34**	**6:43**	**6:58**	**7:08**	**7:16**	**7:23**	**7:31**	**7:37**
7:13	**7:25**	**7:34**	**7:43**	**7:58**	**8:08**	**8:16**	**8:23**	**8:31**	**8:37**

35 Fullerton to Costa Mesa
via Brookhurst St

Sunday & Holiday
NORTHBOUND To: Fullerton

19th & Meyer	Victoria & Placentia	Brookhurst & Adams	Brookhurst & Talbert	Brookhurst & Edinger	Brookhurst & Westminster	Brookhurst & Katella	Brookhurst & Lincoln	Brookhurst & Orangethorpe	Fullerton Park-and-Ride
5:38	5:44	5:50	5:56	6:01	6:09	6:19	6:26	6:33	6:43
6:24	6:30	6:37	6:44	6:51	6:59	7:10	7:18	7:25	7:35
7:07	7:12	7:20	7:29	7:37	7:49	8:03	8:12	8:22	8:33
7:52	7:57	8:05	8:14	8:22	8:34	8:48	8:57	9:07	9:18
8:44	8:49	8:57	9:06	9:14	9:26	9:40	9:49	9:59	10:10
9:36	9:41	9:49	9:58	10:06	10:18	10:32	10:41	10:51	11:02
10:26	10:31	10:39	10:48	10:56	11:08	11:22	11:31	11:41	11:52
11:13	11:18	11:26	11:35	11:44	11:57	**12:12**	**12:23**	**12:33**	**12:45**
12:07	**12:12**	**12:20**	**12:29**	**12:38**	**12:51**	**1:06**	**1:17**	**1:27**	**1:39**
1:01	**1:06**	**1:14**	**1:23**	**1:32**	**1:45**	**2:00**	**2:11**	**2:21**	**2:33**
1:57	**2:02**	**2:10**	**2:19**	**2:28**	**2:41**	**2:56**	**3:07**	**3:17**	**3:29**
2:45	**2:50**	**2:58**	**3:07**	**3:16**	**3:29**	**3:44**	**3:55**	**4:05**	**4:17**
3:39	**3:44**	**3:51**	**4:00**	**4:08**	**4:20**	**4:34**	**4:43**	**4:53**	**5:04**
4:30	**4:35**	**4:42**	**4:51**	**4:59**	**5:11**	**5:25**	**5:34**	**5:44**	**5:55**
5:25	**5:30**	**5:37**	**5:46**	**5:54**	**6:06**	**6:20**	**6:29**	**6:39**	**6:50**
6:15	**6:20**	**6:27**	**6:36**	**6:44**	**6:56**	**7:10**	**7:19**	**7:29**	**7:40**

Sunday & Holiday
SOUTHBOUND To: Costa Mesa

Fullerton Park-and-Ride	Brookhurst & Orangethorpe	Brookhurst & Lincoln	Brookhurst & Katella	Brookhurst & Westminster	Brookhurst & Edinger	Brookhurst & Talbert	Brookhurst & Adams	Placentia & Victoria	Newport & 18th
5:35	5:45	5:52	5:59	6:11	6:19	6:26	6:33	6:41	6:48
6:17	6:29	6:37	6:45	6:57	7:05	7:12	7:19	7:27	7:35
7:07	7:19	7:27	7:35	7:47	7:55	8:02	8:09	8:17	8:25
7:53	8:05	8:14	8:24	8:39	8:49	8:56	9:04	9:12	9:20
8:43	8:55	9:04	9:14	9:29	9:39	9:46	9:54	10:02	10:10
9:28	9:41	9:50	10:01	10:17	10:27	10:34	10:42	10:50	10:59
10:21	10:34	10:43	10:54	11:10	11:20	11:27	11:35	11:43	11:52
11:12	11:25	11:34	11:45	**12:01**	**12:11**	**12:18**	**12:26**	**12:34**	**12:43**
12:03	**12:15**	**12:24**	**12:34**	**12:52**	**1:03**	**1:12**	**1:21**	**1:29**	**1:39**
12:55	**1:07**	**1:16**	**1:26**	**1:44**	**1:55**	**2:04**	**2:13**	**2:21**	**2:31**
1:51	**2:03**	**2:12**	**2:22**	**2:37**	**2:47**	**2:55**	**3:04**	**3:12**	**3:21**
2:43	**2:55**	**3:04**	**3:14**	**3:29**	**3:39**	**3:47**	**3:56**	**4:04**	**4:13**
3:39	**3:51**	**4:00**	**4:10**	**4:25**	**4:35**	**4:43**	**4:52**	**5:00**	**5:09**
4:27	**4:39**	**4:48**	**4:58**	**5:13**	**5:23**	**5:31**	**5:40**	**5:48**	**5:57**
5:15	**5:27**	**5:36**	**5:46**	**6:01**	**6:11**	**6:19**	**6:28**	**6:36**	**6:45**
6:08	**6:19**	**6:26**	**6:34**	**6:47**	**6:56**	**7:02**	**7:08**	**7:16**	**7:23**
7:03	**7:14**	**7:21**	**7:29**	**7:42**	**7:51**	**7:57**	**8:03**	**8:11**	**8:18**

Route 35 Provides Service To / Ruta 35 Proporciona Servicio A

Buena Park
- Buena Park High School

Fullerton
- Fullerton Park-and-Ride

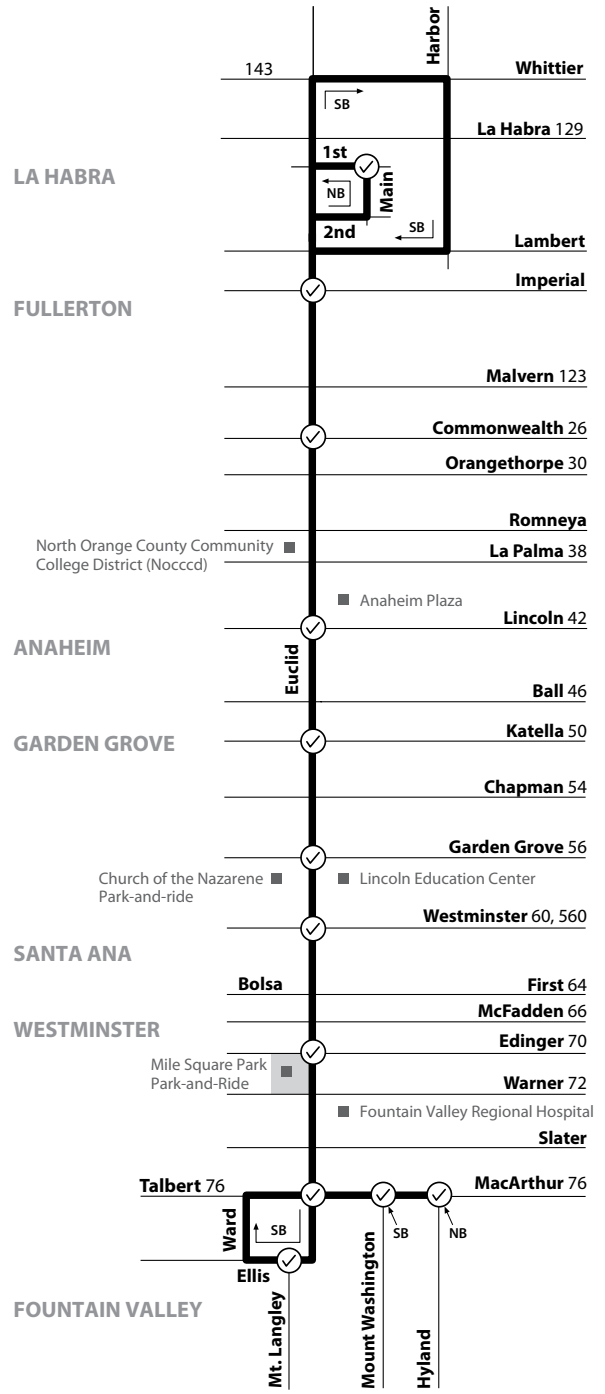
Anaheim
- Brookhurst Junior High School
- Savanna High School
- Magnolia High School

Garden Grove
- Donald S. Jordan Intermediate School
- Garden Grove Promenade
- Korea Town

Westminster
- Warner Middle School
- Sarah McGarvin Intermediate School
- La Quinta High School

Fountain Valley
- Fountain Valley Civic Center
- Mile Square Park and Park-and-Ride
- Fountain Valley High School
- Talbert Medical Center

Costa Mesa
- Triangle Square



LEGEND *LEYENDA*

Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 037/111519

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday-Friday
NORTHBOUND To: La Habra

MacArthur & Hyland	Euclid & Talbert	Euclid & Edinger	Euclid & Westminster	Euclid & Garden Grove	Euclid & Katella	Euclid & Lincoln	Euclid & Commonwealth	Euclid & Imperial (F)	1st & Main
5:18	5:21	5:30	5:37	5:41	5:49	5:56	6:08	6:19	6:23
6:13	6:16	6:25	6:32	6:36	6:44	6:51	7:03	7:14	7:18
6:56	6:59	7:08	7:15	7:19	7:27	7:34	7:46	7:57	8:01
7:13	7:17	7:26	7:35	7:39	7:49	7:58	8:11	8:22	8:27
7:36	7:40	7:49	7:58	8:02	8:12	8:21	8:34	8:45	8:50
8:24	8:28	8:37	8:46	8:50	9:00	9:09	9:22	9:33	9:38
8:59	9:04	9:14	9:23	9:28	9:38	9:48	10:02	10:14	10:19
9:21	9:26	9:36	9:45	9:50	10:00	10:10	10:24	10:36	10:41
9:44	9:49	9:59	10:08	10:13	10:23	10:33	10:47	10:59	11:04
10:07	10:12	10:22	10:31	10:36	10:46	10:56	11:10	11:22	11:27
10:29	10:34	10:44	10:53	10:58	11:08	11:18	11:32	11:44	11:49
11:14	11:19	11:29	11:38	11:43	11:53	**12:03**	**12:17**	**12:29**	**12:34**
11:59	**12:04**	**12:14**	**12:23**	**12:28**	**12:38**	**12:48**	**1:02**	**1:14**	**1:19**
12:47	**12:52**	**1:02**	**1:11**	**1:16**	**1:26**	**1:36**	**1:50**	**2:02**	**2:07**
1:28	**1:33**	**1:43**	**1:54**	**2:00**	**2:11**	**2:19**	**2:31**	**2:46**	**2:51**
2:13	**2:18**	**2:28**	**2:39**	**2:45**	**2:56**	**3:04**	**3:16**	**3:31**	**3:36**
2:55	**3:00**	**3:10**	**3:21**	**3:27**	**3:38**	**3:46**	**3:58**	**4:13**	**4:18**
3:43	**3:47**	**3:55**	**4:03**	**4:08**	**4:18**	**4:28**	**4:41**	**4:52**	**4:56**
4:03	**4:07**	**4:15**	**4:23**	**4:28**	**4:38**	**4:48**	**5:01**	**5:12**	**5:16**
4:23	**4:27**	**4:35**	**4:43**	**4:48**	**4:58**	**5:08**	**5:21**	**5:32**	**5:36**
5:08	**5:12**	**5:20**	**5:28**	**5:33**	**5:43**	**5:53**	**6:06**	**6:17**	**6:21**
5:30	**5:34**	**5:42**	**5:50**	**5:55**	**6:05**	**6:15**	**6:28**	**6:39**	**6:43**
5:53	**5:57**	**6:05**	**6:13**	**6:18**	**6:28**	**6:38**	**6:51**	**7:02**	**7:06**
6:33	**6:37**	**6:45**	**6:53**	**6:58**	**7:08**	**7:18**	**7:31**	**7:42**	**7:46**
7:13	**7:17**	**7:25**	**7:33**	**7:38**	**7:48**	**7:58**	**8:11**	**8:22**	**8:26**

Monday-Friday
SOUTHBOUND To: Fountain Valley

1st & Main	Euclid & Imperial	Euclid & Commonwealth	Euclid & Lincoln	Euclid & Katella	Euclid & Garden Grove	Euclid & Westminster	Euclid & Edinger	Ellis & Mt. Langley	Talbert & Mt Washington
5:53	6:06	6:18	6:29	6:38	6:45	6:50	6:58	7:07	7:10
6:43	6:56	7:08	7:21	7:30	7:38	7:43	7:52	8:03	8:07
7:12	7:25	7:37	7:50	7:59	8:07	8:12	8:21	8:32	8:36
7:42	7:55	8:07	8:20	8:29	8:37	8:42	8:51	9:02	9:06
8:32	8:45	8:57	9:10	9:19	9:27	9:32	9:41	9:52	9:56
9:18	9:33	9:45	9:59	10:09	10:18	10:24	10:33	10:46	10:51
9:42	9:57	10:09	10:23	10:33	10:42	10:48	10:57	11:10	11:15
10:05	10:20	10:32	10:46	10:56	11:05	11:11	11:20	11:33	11:38
10:50	11:05	11:17	11:31	11:41	11:50	11:56	**12:05**	**12:18**	**12:23**
11:35	11:51	**12:02**	**12:16**	**12:26**	**12:35**	**12:43**	**12:52**	**1:04**	**1:09**
11:57	**12:13**	**12:24**	**12:38**	**12:48**	**12:57**	**1:05**	**1:14**	**1:26**	**1:31**
12:19	**12:35**	**12:46**	**1:00**	**1:10**	**1:19**	**1:27**	**1:36**	**1:48**	**1:53**
1:03	**1:19**	**1:30**	**1:44**	**1:54**	**2:03**	**2:11**	**2:20**	**2:32**	**2:37**
1:49	**2:05**	**2:16**	**2:29**	**2:39**	**2:47**	**2:52**	**3:01**	**3:12**	**3:17**
2:11	**2:27**	**2:38**	**2:51**	**3:01**	**3:09**	**3:14**	**3:23**	**3:34**	**3:39**
2:33	**2:49**	**3:00**	**3:13**	**3:23**	**3:31**	**3:36**	**3:45**	**3:56**	**4:01**
2:55	**3:11**	**3:22**	**3:35**	**3:45**	**3:53**	**3:58**	**4:07**	**4:18**	**4:23**
3:18	**3:34**	**3:45**	**3:58**	**4:08**	**4:16**	**4:21**	**4:30**	**4:41**	**4:46**
3:39	**3:55**	**4:06**	**4:19**	**4:29**	**4:37**	**4:42**	**4:51**	**5:02**	**5:07**
4:01	**4:17**	**4:28**	**4:41**	**4:51**	**4:59**	**5:04**	**5:13**	**5:24**	**5:29**
4:23	**4:39**	**4:50**	**5:03**	**5:13**	**5:21**	**5:26**	**5:35**	**5:46**	**5:51**
4:47	**5:01**	**5:12**	**5:26**	**5:36**	**5:44**	**5:48**	**5:56**	**6:05**	**6:09**
5:10	**5:24**	**5:35**	**5:49**	**5:59**	**6:07**	**6:11**	**6:19**	**6:28**	**6:32**
5:33	**5:47**	**5:58**	**6:12**	**6:22**	**6:30**	**6:34**	**6:42**	**6:51**	**6:55**
6:13	**6:27**	**6:38**	**6:52**	**7:02**	**7:10**	**7:14**	**7:22**	**7:31**	**7:35**
6:53	**7:07**	**7:18**	**7:32**	**7:42**	**7:50**	**7:54**	**8:02**	**8:11**	**8:15**
7:33	**7:47**	**7:58**	**8:12**	**8:22**	**8:30**	**8:34**	**8:42**	**8:51**	**8:55**
8:13	**8:27**	**8:38**	**8:52**	**9:02**	**9:10**	**9:14**	**9:22**	**9:31**	**9:35**

F = Times are approximate/*Los horarios son aproximados.*

37 La Habra to Fountain Valley

via Euclid St

Saturday
NORTHBOUND To: La Habra

MacArthur & Hyland	Euclid & Talbert	Euclid & Edinger	Euclid & Westminster	Euclid & Garden Grove	Euclid & Katella	Euclid & Lincoln	Euclid & Commonwealth	Euclid & Imperial **(F)**	1st & Main
5:18	5:21	5:30	5:37	5:41	5:49	5:56	6:08	6:19	6:23
6:13	6:16	6:25	6:32	6:36	6:44	6:51	7:03	7:14	7:18
6:56	6:59	7:08	7:15	7:19	7:27	7:34	7:46	7:57	8:01
7:36	7:40	7:49	7:58	8:02	8:12	8:21	8:34	8:45	8:50
8:24	8:28	8:37	8:46	8:50	9:00	9:09	9:22	9:33	9:38
8:59	9:04	9:14	9:23	9:28	9:38	9:48	10:02	10:14	10:19
9:44	9:49	9:59	10:08	10:13	10:23	10:33	10:47	10:59	11:04
10:29	10:34	10:44	10:53	10:58	11:08	11:18	11:32	11:44	11:49
11:14	11:19	11:29	11:38	11:43	11:53	**12:03**	**12:17**	**12:29**	**12:34**
11:59	**12:04**	**12:14**	**12:23**	**12:28**	**12:38**	**12:48**	**1:02**	**1:14**	**1:19**
12:47	**12:52**	**1:02**	**1:11**	**1:16**	**1:26**	**1:36**	**1:50**	**2:02**	**2:07**
1:28	**1:33**	**1:43**	**1:54**	**2:00**	**2:11**	**2:19**	**2:31**	**2:46**	**2:51**
2:13	**2:18**	**2:28**	**2:39**	**2:45**	**2:56**	**3:04**	**3:16**	**3:31**	**3:36**
2:55	**3:00**	**3:10**	**3:21**	**3:27**	**3:38**	**3:46**	**3:58**	**4:13**	**4:18**
3:43	**3:47**	**3:55**	**4:03**	**4:08**	**4:18**	**4:28**	**4:41**	**4:52**	**4:56**
4:23	**4:27**	**4:35**	**4:43**	**4:48**	**4:58**	**5:08**	**5:21**	**5:32**	**5:36**
5:08	**5:12**	**5:20**	**5:28**	**5:33**	**5:43**	**5:53**	**6:06**	**6:17**	**6:21**
5:53	**5:57**	**6:05**	**6:13**	**6:18**	**6:28**	**6:38**	**6:51**	**7:02**	**7:06**
6:33	**6:37**	**6:45**	**6:53**	**6:58**	**7:08**	**7:18**	**7:31**	**7:42**	**7:46**
7:13	**7:17**	**7:25**	**7:33**	**7:38**	**7:48**	**7:58**	**8:11**	**8:22**	**8:26**

Saturday
SOUTHBOUND To: Fountain Valley

1st & Main	Euclid & Imperial	Euclid & Commonwealth	Euclid & Lincoln	Euclid & Katella	Euclid & Garden Grove	Euclid & Westminster	Euclid & Edinger	Ellis & Mt. Langley	Talbert & Mt Washington
5:53	6:06	6:18	6:29	6:38	6:45	6:50	6:58	7:07	7:10
6:43	6:56	7:08	7:21	7:30	7:38	7:43	7:52	8:03	8:07
7:42	7:55	8:07	8:20	8:29	8:37	8:42	8:51	9:02	9:06
8:32	8:45	8:57	9:10	9:19	9:27	9:32	9:41	9:52	9:56
9:18	9:33	9:45	9:59	10:09	10:18	10:24	10:33	10:46	10:51
10:05	10:20	10:32	10:46	10:56	11:05	11:11	11:20	11:33	11:38
10:50	11:05	11:17	11:31	11:41	11:50	11:56	**12:05**	**12:18**	**12:23**
11:35	11:51	**12:02**	**12:16**	**12:26**	**12:35**	**12:43**	**12:52**	**1:04**	**1:09**
12:19	**12:35**	**12:46**	**1:00**	**1:10**	**1:19**	**1:27**	**1:36**	**1:48**	**1:53**
1:03	**1:19**	**1:30**	**1:44**	**1:54**	**2:03**	**2:11**	**2:20**	**2:32**	**2:37**
1:49	**2:05**	**2:16**	**2:29**	**2:39**	**2:47**	**2:52**	**3:01**	**3:12**	**3:17**
2:33	**2:49**	**3:00**	**3:13**	**3:23**	**3:31**	**3:36**	**3:45**	**3:56**	**4:01**
3:18	**3:34**	**3:45**	**3:58**	**4:08**	**4:16**	**4:21**	**4:30**	**4:41**	**4:46**
4:01	**4:17**	**4:28**	**4:41**	**4:51**	**4:59**	**5:04**	**5:13**	**5:24**	**5:29**
4:47	**5:01**	**5:12**	**5:26**	**5:36**	**5:44**	**5:48**	**5:56**	**6:05**	**6:09**
5:33	**5:47**	**5:58**	**6:12**	**6:22**	**6:30**	**6:34**	**6:42**	**6:51**	**6:55**
6:13	**6:27**	**6:38**	**6:52**	**7:02**	**7:10**	**7:14**	**7:22**	**7:31**	**7:35**
6:53	**7:07**	**7:18**	**7:32**	**7:42**	**7:50**	**7:54**	**8:02**	**8:11**	**8:15**
7:33	**7:47**	**7:58**	**8:12**	**8:22**	**8:30**	**8:34**	**8:42**	**8:51**	**8:55**
8:13	**8:27**	**8:38**	**8:52**	**9:02**	**9:10**	**9:14**	**9:22**	**9:31**	**9:35**

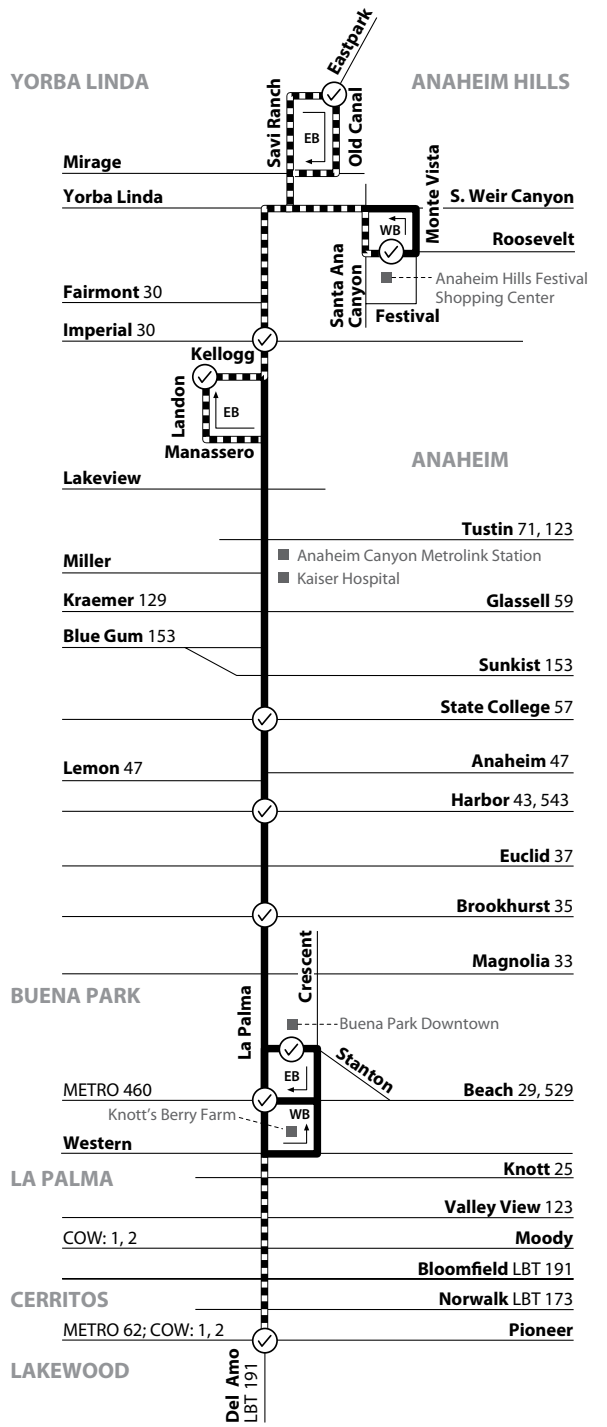
Sunday & Holiday
SOUTHBOUND To: Fountain Valley

1st & Main	Euclid & Imperial	Euclid & Commonwealth	Euclid & Lincoln	Euclid & Katella	Euclid & Garden Grove	Euclid & Westminster	Euclid & Edinger	Ellis & Mt. Langley	Talbert & Mt Washington
6:55	7:07	7:17	7:29	7:38	7:47	7:51	7:59	8:08	8:12
7:45	7:57	8:07	8:19	8:28	8:37	8:41	8:49	8:58	9:02
8:35	8:47	8:57	9:09	9:18	9:27	9:31	9:39	9:48	9:52
9:25	9:37	9:47	9:59	10:08	10:17	10:21	10:29	10:38	10:42
10:13	10:26	10:36	10:49	10:58	11:07	11:13	11:21	11:31	11:36
11:03	11:16	11:26	11:39	11:48	11:57	**12:03**	**12:11**	**12:21**	**12:26**
11:53	**12:06**	**12:16**	**12:29**	**12:38**	**12:47**	**12:53**	**1:01**	**1:11**	**1:16**
12:40	**12:55**	**1:06**	**1:19**	**1:28**	**1:37**	**1:42**	**1:49**	**2:01**	**2:06**
1:30	**1:45**	**1:56**	**2:09**	**2:18**	**2:27**	**2:32**	**2:39**	**2:51**	**2:56**
2:20	**2:35**	**2:46**	**2:59**	**3:08**	**3:17**	**3:22**	**3:29**	**3:41**	**3:46**
3:11	**3:25**	**3:35**	**3:49**	**3:58**	**4:07**	**4:12**	**4:20**	**4:29**	**4:34**
4:01	**4:15**	**4:25**	**4:39**	**4:48**	**4:57**	**5:02**	**5:10**	**5:19**	**5:24**
4:51	**5:05**	**5:15**	**5:29**	**5:38**	**5:47**	**5:52**	**6:00**	**6:09**	**6:14**
5:44	**5:57**	**6:07**	**6:19**	**6:28**	**6:36**	**6:40**	**6:47**	**6:56**	**7:00**
6:34	**6:47**	**6:57**	**7:09**	**7:18**	**7:26**	**7:30**	**7:37**	**7:46**	**7:50**
7:24	**7:37**	**7:47**	**7:59**	**8:08**	**8:16**	**8:20**	**8:27**	**8:36**	**8:40**

Sunday & Holiday
NORTHBOUND To: La Habra

MacArthur & Hyland	Euclid & Talbert	Euclid & Edinger	Euclid & Westminster	Euclid & Garden Grove	Euclid & Katella	Euclid & Lincoln	Euclid & Commonwealth	Euclid & Imperial **(F)**	1st & Main
6:59	7:01	7:10	7:18	7:22	7:30	7:39	7:50	7:59	8:04
7:49	7:51	8:00	8:08	8:12	8:20	8:29	8:40	8:49	8:54
8:39	8:41	8:50	8:58	9:02	9:10	9:19	9:30	9:39	9:44
9:27	9:29	9:37	9:46	9:51	10:00	10:10	10:21	10:30	10:35
10:17	10:19	10:27	10:36	10:41	10:50	11:00	11:11	11:20	11:25
11:07	11:10	11:18	11:27	11:31	11:40	11:50	**12:02**	**12:11**	**12:16**
11:57	**12:00**	**12:08**	**12:17**	**12:21**	**12:30**	**12:40**	**12:52**	**1:01**	**1:06**
12:47	**12:50**	**12:58**	**1:07**	**1:11**	**1:20**	**1:30**	**1:42**	**1:51**	**1:56**
1:37	**1:40**	**1:48**	**1:56**	**2:01**	**2:10**	**2:20**	**2:32**	**2:41**	**2:47**
2:27	**2:30**	**2:38**	**2:46**	**2:51**	**3:00**	**3:10**	**3:22**	**3:31**	**3:37**
3:17	**3:20**	**3:28**	**3:36**	**3:41**	**3:50**	**4:00**	**4:12**	**4:21**	**4:27**
4:07	**4:10**	**4:18**	**4:26**	**4:31**	**4:40**	**4:50**	**5:02**	**5:11**	**5:17**
4:57	**5:00**	**5:08**	**5:16**	**5:21**	**5:30**	**5:40**	**5:52**	**6:01**	**6:07**
5:47	**5:50**	**5:58**	**6:06**	**6:11**	**6:20**	**6:29**	**6:41**	**6:52**	**6:57**
6:37	**6:40**	**6:48**	**6:56**	**7:01**	**7:10**	**7:19**	**7:31**	**7:42**	**7:47**

F = Times are approximate/*Los horarios son aproximados.*



LEGEND / ***LEYENDA***

Route 038/111519

Scheduled Departure | Regular Routing | No Service On Some Weekday Trips

N — MAP NOT TO SCALE

METRO = Los Angeles Metro | COW = Cerritos On Wheels | LBT = Long Beach Transit

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday-Friday
EASTBOUND To: Anaheim Hills /Yorba Linda

Del Amo & Pioneer	La Palma & Beach	La Palma & Brookhurst	La Palma & Harbor	La Palma & State College	La Palma & Imperial	Anaheim Hills Festival
5:14	5:31	5:39	5:48	5:57	6:16	6:26
5:35	5:56	6:04	6:13	6:22	6:41	6:51
6:00	6:21	6:29	6:38	6:47	7:06	7:16
6:25	6:46	6:54	7:03	7:12	7:31	7:41
6:50	7:11	7:19	7:28	7:37	7:56	8:06
7:15	7:36	7:44	7:53	8:02	8:21	8:31
7:37	7:58	8:08	8:18	8:29	8:48	8:58
8:02	8:23	8:33	8:43	8:54	9:13	9:23
8:27	8:48	8:58	9:08	9:19	9:38	9:48
9:17	9:38	9:48	9:58	10:09	10:28	10:39
10:07	10:28	10:38	10:48	10:59	11:18	11:29
10:32	10:53	11:03	11:13	11:24	11:43	11:54
10:55	11:17	11:29	11:38	11:49	**12:08**	**12:19**
11:20	11:42	11:54	**12:03**	**12:14**	**12:33**	**12:44**
11:45	**12:07**	**12:19**	**12:28**	**12:39**	**12:58**	**1:09**
12:10	**12:32**	**12:44**	**12:53**	**1:04**	**1:23**	**1:34**
12:35	**12:57**	**1:09**	**1:18**	**1:29**	**1:48**	**1:59**
1:25	**1:47**	**1:59**	**2:08**	**2:19**	**2:38**	**2:49**
2:16	**2:37**	**2:49**	**2:58**	**3:09**	**3:28**	**3:39**
3:06	**3:27**	**3:39**	**3:48**	**3:59**	**4:18**	**4:29**
3:56	**4:17**	**4:29**	**4:38**	**4:49**	**5:08**	**5:18**
4:21	**4:42**	**4:54**	**5:03**	**5:14**	**5:33**	**5:43**
4:46	**5:07**	**5:19**	**5:28**	**5:39**	**5:58**	**6:08**
5:38	**5:58**	**6:09**	**6:18**	**6:29**	**6:48**	**6:57**
6:28	**6:48**	**6:59**	**7:08**	**7:19**	**7:38**	**7:47**
7:20	**7:40**	**7:50**	**7:58**	**8:06**	**8:23**	**8:32**
8:10	**8:30**	**8:40**	**8:48**	**8:56**	**9:13**	**9:22**

Monday-Friday
WESTBOUND To: Lakewood

Anaheim Hills Festival	La Palma & Imperial	La Palma & State College	La Palma & Harbor	La Palma & Brookhurst	La Palma & Beach	Del Amo & Pioneer
6:00	6:13	6:31	6:40	6:48	6:57	7:11
6:44	6:59	7:20	7:30	7:40	7:51	8:09
7:34	7:49	8:10	8:20	8:30	8:41	8:59
8:24	8:39	9:00	9:10	9:20	9:31	9:49
9:14	9:29	9:50	10:00	10:10	10:21	10:39
10:03	10:18	10:39	10:50	11:01	11:15	11:33
10:51	11:07	11:29	11:40	11:50	**12:02**	**12:20**
11:41	11:57	**12:19**	**12:30**	**12:40**	**12:52**	**1:10**
12:04	**12:21**	**12:44**	**12:55**	**1:05**	**1:17**	**1:35**
12:29	**12:46**	**1:09**	**1:20**	**1:30**	**1:42**	**2:00**
12:54	**1:11**	**1:34**	**1:45**	**1:55**	**2:07**	**2:25**
1:19	**1:36**	**1:59**	**2:10**	**2:20**	**2:32**	**2:50**
1:46	**2:01**	**2:24**	**2:35**	**2:45**	**2:57**	**3:15**
2:11	**2:26**	**2:49**	**3:00**	**3:10**	**3:22**	**3:40**
2:36	**2:51**	**3:14**	**3:25**	**3:35**	**3:47**	**4:05**
3:01	**3:16**	**3:39**	**3:50**	**4:00**	**4:12**	**4:30**
3:26	**3:41**	**4:04**	**4:15**	**4:25**	**4:37**	**4:55**
3:51	**4:06**	**4:29**	**4:40**	**4:50**	**5:02**	**5:20**
4:16	**4:31**	**4:54**	**5:05**	**5:15**	**5:27**	**5:45**
4:46	**5:00**	**5:20**	**5:30**	**5:39**	**5:51**	**6:09**
5:11	**5:25**	**5:45**	**5:55**	**6:04**	**6:16**	**6:34**
5:36	**5:50**	**6:10**	**6:20**	**6:29**	**6:40**	**6:58**
6:28	**6:41**	**7:00**	**7:10**	**7:19**	**7:30**	**7:46**
7:28	**7:41**	**8:00**	**8:10**	**8:19**	**8:30**	**8:46**

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Lakewood to Anaheim Hills

via Del Amo Blvd / La Palma Ave

Saturday
EASTBOUND To: Anaheim Hills /Yorba Linda

Del Amo & Pioneer	La Palma & Beach	La Palma & Brookhurst	La Palma & Harbor	La Palma & State College	La Palma & Imperial	Anaheim Hills Festival
5:14	5:31	5:39	5:48	5:57	6:16	6:26
6:00	6:21	6:29	6:38	6:47	7:06	7:16
6:50	7:11	7:19	7:28	7:37	7:56	8:06
7:37	7:58	8:08	8:18	8:29	8:48	8:58
8:27	8:48	8:58	9:08	9:19	9:38	9:48
9:17	9:38	9:48	9:58	10:09	10:28	10:39
10:07	10:28	10:38	10:48	10:59	11:18	11:29
10:55	11:17	11:29	11:38	11:49	**12:08**	**12:19**
11:45	**12:07**	**12:19**	**12:28**	**12:39**	**12:58**	**1:09**
12:35	**12:57**	**1:09**	**1:18**	**1:29**	**1:48**	**1:59**
1:25	**1:47**	**1:59**	**2:08**	**2:19**	**2:38**	**2:49**
2:16	**2:37**	**2:49**	**2:58**	**3:09**	**3:28**	**3:39**
3:06	**3:27**	**3:39**	**3:48**	**3:59**	**4:18**	**4:29**
3:56	**4:17**	**4:29**	**4:38**	**4:49**	**5:08**	**5:18**
4:46	**5:07**	**5:19**	**5:28**	**5:39**	**5:58**	**6:08**
5:38	**5:58**	**6:09**	**6:18**	**6:29**	**6:48**	**6:57**
6:28	**6:48**	**6:59**	**7:08**	**7:19**	**7:38**	**7:47**
7:20	**7:40**	**7:50**	**7:58**	**8:06**	**8:23**	**8:32**
8:10	**8:30**	**8:40**	**8:48**	**8:56**	**9:13**	**9:22**

Sunday & Holiday
EASTBOUND To: Anaheim Hills /Yorba Linda

Del Amo & Pioneer	La Palma & Beach	La Palma & Brookhurst	La Palma & Harbor	La Palma & State College	La Palma & Imperial	Anaheim Hills Festival
5:15	5:32	5:40	5:49	5:59	6:17	6:27
6:00	6:17	6:25	6:34	6:44	7:02	7:12
6:45	7:02	7:10	7:19	7:29	7:47	7:57
7:30	7:47	7:55	8:04	8:14	8:32	8:42
8:11	8:30	8:39	8:49	8:59	9:17	9:27
8:56	9:15	9:24	9:34	9:44	10:02	10:12
9:40	10:01	10:12	10:21	10:31	10:50	11:01
10:25	10:46	10:57	11:06	11:16	11:35	11:46
11:10	11:31	11:42	11:51	**12:01**	**12:20**	**12:31**
11:55	**12:16**	**12:27**	**12:36**	**12:46**	**1:05**	**1:16**
12:45	**1:06**	**1:17**	**1:26**	**1:36**	**1:55**	**2:06**
1:30	**1:51**	**2:02**	**2:11**	**2:21**	**2:40**	**2:51**
2:15	**2:36**	**2:47**	**2:56**	**3:06**	**3:25**	**3:36**
3:01	**3:21**	**3:32**	**3:41**	**3:51**	**4:09**	**4:20**
3:47	**4:07**	**4:18**	**4:27**	**4:37**	**4:55**	**5:05**
4:33	**4:53**	**5:04**	**5:13**	**5:23**	**5:41**	**5:51**
5:19	**5:39**	**5:50**	**5:59**	**6:09**	**6:27**	**6:37**
6:04	**6:24**	**6:35**	**6:44**	**6:54**	**7:12**	**7:22**
6:49	**7:09**	**7:20**	**7:29**	**7:39**	**7:57**	**8:07**
7:35	**7:51**	**8:01**	**8:09**	**8:17**	**8:33**	**8:44**
8:15	**8:31**	**8:41**	**8:49**	**8:57**	**9:13**	**9:24**

Saturday
WESTBOUND To: Lakewood

Anaheim Hills Festival	La Palma & Imperial	La Palma & State College	La Palma & Harbor	La Palma & Brookhurst	La Palma & Beach	Del Amo & Pioneer
6:00	6:13	6:31	6:40	6:48	6:57	7:11
6:44	6:59	7:20	7:30	7:40	7:51	8:09
7:34	7:49	8:10	8:20	8:30	8:41	8:59
8:24	8:39	9:00	9:10	9:20	9:31	9:49
9:14	9:29	9:50	10:00	10:10	10:21	10:39
10:03	10:18	10:39	10:50	11:01	11:15	11:33
10:51	11:07	11:29	11:40	11:50	**12:02**	**12:20**
11:41	11:57	**12:19**	**12:30**	**12:40**	**12:52**	**1:10**
12:29	**12:46**	**1:09**	**1:20**	**1:30**	**1:42**	**2:00**
1:19	**1:36**	**1:59**	**2:10**	**2:20**	**2:32**	**2:50**
2:11	**2:26**	**2:49**	**3:00**	**3:10**	**3:22**	**3:40**
3:01	**3:16**	**3:39**	**3:50**	**4:00**	**4:12**	**4:30**
3:51	**4:06**	**4:29**	**4:40**	**4:50**	**5:02**	**5:20**
4:46	**5:00**	**5:20**	**5:30**	**5:39**	**5:51**	**6:09**
5:36	**5:50**	**6:10**	**6:20**	**6:29**	**6:40**	**6:58**
6:28	**6:41**	**7:00**	**7:10**	**7:19**	**7:30**	**7:46**
7:28	**7:41**	**8:00**	**8:10**	**8:19**	**8:30**	**8:46**

Sunday & Holiday
WESTBOUND To: Lakewood

Anaheim Hills Festival	La Palma & Imperial	La Palma & State College	La Palma & Harbor	La Palma & Brookhurst	La Palma & Beach	Del Amo & Pioneer
6:00	6:11	6:29	6:37	6:44	6:51	7:05
6:38	6:53	7:13	7:22	7:31	7:39	7:56
7:21	7:37	7:57	8:07	8:16	8:28	8:46
8:06	8:22	8:42	8:52	9:01	9:13	9:31
8:51	9:07	9:27	9:37	9:46	9:58	10:16
9:36	9:52	10:12	10:22	10:31	10:43	11:01
10:21	10:37	10:57	11:07	11:16	11:28	11:46
11:11	11:27	11:47	11:57	**12:06**	**12:18**	**12:36**
11:56	**12:12**	**12:32**	**12:42**	**12:51**	**1:03**	**1:21**
12:40	**12:57**	**1:20**	**1:29**	**1:37**	**1:48**	**2:04**
1:26	**1:43**	**2:06**	**2:15**	**2:23**	**2:34**	**2:50**
2:15	**2:32**	**2:50**	**3:00**	**3:08**	**3:18**	**3:34**
3:00	**3:17**	**3:35**	**3:45**	**3:53**	**4:03**	**4:19**
3:45	**4:02**	**4:20**	**4:30**	**4:38**	**4:48**	**5:04**
4:30	**4:47**	**5:05**	**5:15**	**5:23**	**5:33**	**5:49**
5:15	**5:32**	**5:50**	**6:00**	**6:08**	**6:18**	**6:34**
6:03	**6:17**	**6:35**	**6:45**	**6:53**	**7:03**	**7:19**
6:50	**7:04**	**7:20**	**7:27**	**7:36**	**7:47**	**8:03**
7:32	**7:44**	**8:00**	**8:07**	**8:16**	**8:27**	**8:43**

Seal Beach to Orange
via Seal Beach Blvd / Los Alamitos Blvd / Lincoln Ave

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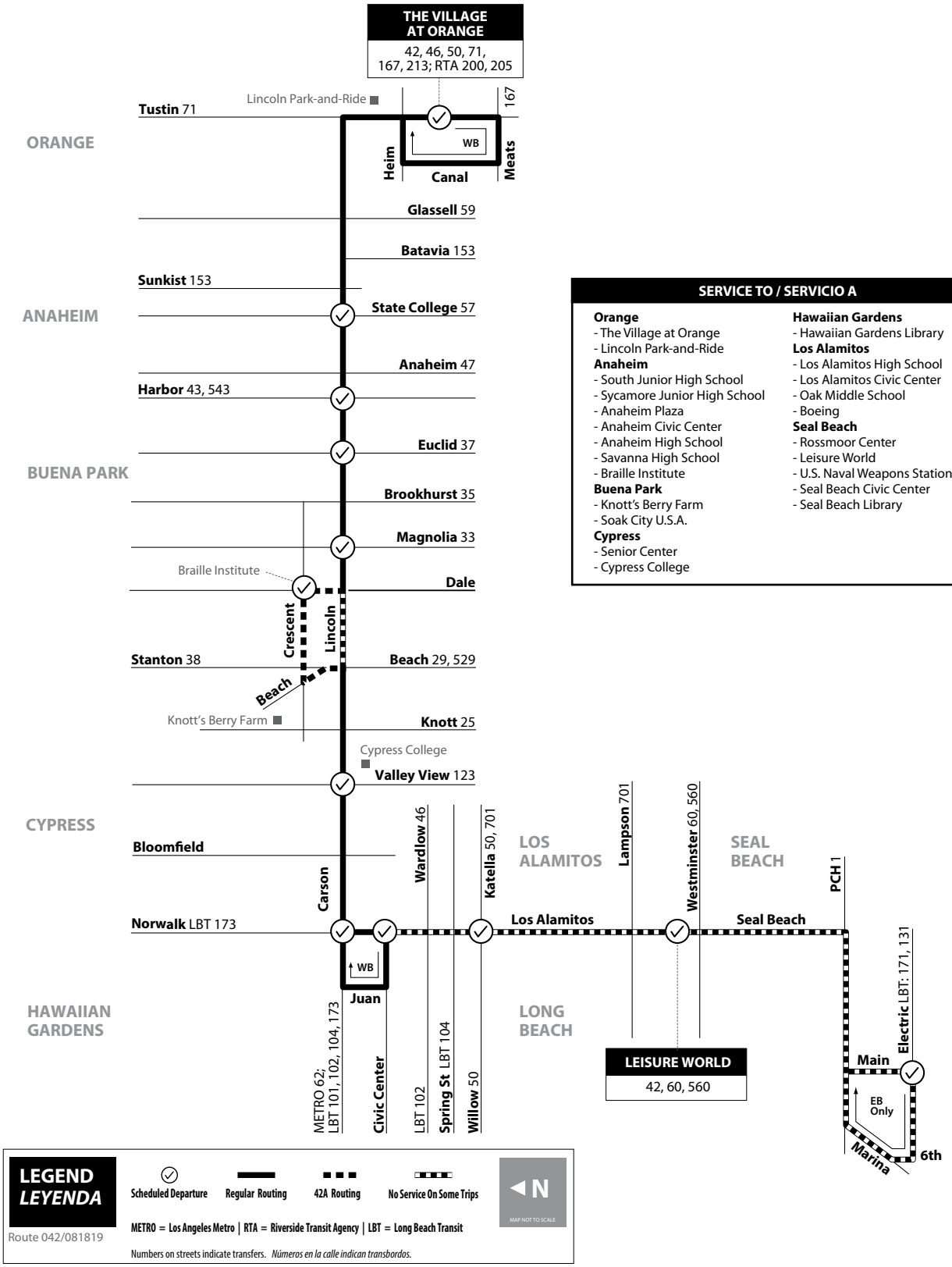

SERVICE TO / SERVICIO A

Orange
- The Village at Orange
- Lincoln Park-and-Ride

Anaheim
- South Junior High School
- Sycamore Junior High School
- Anaheim Plaza
- Anaheim Civic Center
- Anaheim High School
- Savanna High School
- Braille Institute

Buena Park
- Knott's Berry Farm
- Soak City U.S.A.

Cypress
- Senior Center
- Cypress College

Hawaiian Gardens
- Hawaiian Gardens Library

Los Alamitos
- Los Alamitos High School
- Los Alamitos Civic Center
- Oak Middle School
- Boeing

Seal Beach
- Rossmoor Center
- Leisure World
- U.S. Naval Weapons Station
- Seal Beach Civic Center
- Seal Beach Library

LEGEND *LEYENDA*

Scheduled Departure | Regular Routing | 42A Routing | No Service On Some Trips

N — MAP NOT TO SCALE

Route 042/081819

METRO = Los Angeles Metro | RTA = Riverside Transit Agency | LBT = Long Beach Transit

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

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Seal Beach to Orange

via Seal Beach Blvd / Los Alamitos Blvd / Lincoln Ave

Monday-Friday
EASTBOUND To: Orange

Electric & Main	Leisure World	Los Alamitos & Katella	Carson & Norwalk	Lincoln & Valley View	Braille Institute	Lincoln & Magnolia	Lincoln & Euclid	Lincoln & Harbor	Lincoln & State College	Village at Orange Zone 5
			5:45	5:54	·····	6:07	6:15	6:21	6:29	6:46
			5:48	5:55	·····	6:07	6:15	6:20	6:27	6:40
5:59	6:09	6:18	6:25	6:35	·····	6:47	6:55	7:00	7:07	7:20
6:36	6:47	6:56	7:02	7:12	·····	7:26	7:35	7:41	7:50	8:04
7:12	7:23	7:32	7:38	7:48	8:01	8:06	8:15	8:21	8:30	8:44
7:42	7:53	8:02	8:08	8:18	8:31	8:36	8:45	8:51	9:00	9:14
8:05	8:18	8:27	8:35	8:47	9:00	9:05	9:15	9:22	9:32	9:46
			9:10	9:21	·····	9:35	9:45	9:52	10:02	10:16
9:00	9:13	9:22	9:30	9:42	9:55	10:00	10:10	10:17	10:27	10:41
			9:57	10:08	·····	10:25	10:35	10:42	10:52	11:08
9:47	9:59	10:09	10:17	10:29	10:44	10:50	11:00	11:07	11:17	11:33
			10:47	10:58	·····	11:15	11:25	11:32	11:42	11:58
			11:12	11:23	·····	11:40	11:50	11:57	**12:07**	**12:23**
11:01	11:13	11:24	11:31	11:44	11:59	**12:05**	**12:15**	**12:23**	**12:36**	**12:52**
			11:59	**12:12**	·····	**12:30**	**12:40**	**12:48**	**1:01**	**1:17**
11:51	**12:03**	**12:14**	**12:21**	**12:34**	**12:50**	**12:55**	**1:05**	**1:13**	**1:26**	**1:42**
			12:49	**1:02**	·····	**1:20**	**1:30**	**1:38**	**1:51**	**2:07**
12:36	**12:49**	**1:01**	**1:10**	**1:23**	**1:39**	**1:44**	**1:55**	**2:02**	**2:13**	**2:28**
			1:40	**1:53**	·····	**2:09**	**2:20**	**2:27**	**2:38**	**2:53**
1:26	**1:39**	**1:51**	**2:00**	**2:13**	**2:29**	**2:34**	**2:45**	**2:52**	**3:03**	**3:18**
			2:31	**2:43**	·····	**2:59**	**3:10**	**3:17**	**3:28**	**3:43**
2:16	**2:29**	**2:41**	**2:50**	**3:03**	**3:19**	**3:24**	**3:35**	**3:42**	**3:53**	**4:08**
			3:22	**3:34**	·····	**3:50**	**4:00**	**4:06**	**4:16**	**4:32**
3:09	**3:21**	**3:32**	**3:42**	**3:54**	**4:10**	**4:15**	**4:25**	**4:31**	**4:41**	**4:57**
			4:12	**4:24**	·····	**4:40**	**4:50**	**4:56**	**5:06**	**5:22**
3:57	**4:09**	**4:20**	**4:30**	**4:42**	**4:59**	**5:05**	**5:15**	**5:21**	**5:31**	**5:47**
			4:55	**5:07**	**5:24**	**5:30**	**5:40**	**5:46**	**5:56**	**6:12**
4:56	**5:08**	**5:18**	**5:25**	**5:37**	**5:54**	**6:00**	**6:10**	**6:16**	**6:25**	**6:39**
5:35	**5:47**	**5:57**	**6:04**	**6:16**	·····	**6:30**	**6:40**	**6:46**	**6:55**	**7:09**
6:25	**6:37**	**6:47**	**6:54**	**7:06**	·····	**7:20**	**7:30**	**7:36**	**7:45**	**7:59**
7:40	**7:52**	**8:02**	**8:09**	**8:21**	·····	**8:35**	**8:45**	**8:51**	**9:00**	**9:14**

Seal Beach to Orange
via Seal Beach Blvd / Los Alamitos Blvd / Lincoln Ave

42/A

Monday-Friday
WESTBOUND To: Seal Beach

Village at Orange Zone 5	Lincoln & State College	Lincoln & Harbor	Lincoln & Euclid	Lincoln & Magnolia	Braille Institute	Lincoln & Valley View	Carson & Norwalk	Norwalk & Civic Center	Los Alamitos & Katella	Leisure World	Electric & Main
5:36	5:54	6:02	6:08	6:16	·····	6:30	·····	6:40	6:46	6:53	7:03
5:42	5:57	6:03	6:08	6:15	·····	6:26	·····	6:34	6:43	6:50	7:02
6:26	6:44	6:52	6:58	7:06	·····	7:20	·····	7:30	7:36	7:43	7:53
7:11	7:29	7:37	7:43	7:51	7:55	8:10	·····	8:20	8:26	8:33	8:43
7:46	8:05	8:16	8:23	8:32	8:36	8:51	·····	9:02	9:10	9:19	9:31
8:26	8:45	8:56	9:03	9:12	·····	9:27	9:41				
8:54	9:13	9:24	9:31	9:40	9:44	10:01	·····	10:12	10:20	10:29	10:41
9:16	9:35	9:46	9:53	10:02	·····	10:17	10:31				
9:40	10:00	10:10	10:18	10:28	10:32	10:49	·····	11:01	11:08	11:18	11:30
10:05	10:25	10:35	10:43	10:53	·····	11:08	11:22				
10:30	10:50	11:00	11:08	11:18	11:22	11:39	·····	11:51	11:58	**12:08**	**12:20**
10:57	11:17	11:26	11:33	11:42	·····	11:57	**12:11**				
11:22	11:42	11:51	11:58	**12:07**	**12:11**	**12:28**	·····	**12:40**	**12:48**	**12:58**	**1:10**
11:47	**12:07**	**12:16**	**12:23**	**12:32**	·····	**12:47**	**1:01**				
12:12	**12:32**	**12:41**	**12:48**	**12:57**	**1:01**	**1:18**	·····	**1:30**	**1:38**	**1:48**	**2:00**
12:38	**12:58**	**1:07**	**1:13**	**1:22**	·····	**1:37**	**1:54**				
1:03	**1:23**	**1:32**	**1:38**	**1:47**	**1:51**	**2:09**	·····	**2:20**	**2:28**	**2:37**	**2:50**
1:28	**1:48**	**1:57**	**2:03**	**2:12**	·····	**2:27**	**2:44**				
1:53	**2:13**	**2:22**	**2:28**	**2:37**	**2:41**	**2:59**	·····	**3:10**	**3:18**	**3:27**	**3:40**
2:17	**2:37**	**2:46**	**2:53**	**3:02**	·····	**3:16**	**3:31**				
2:42	**3:02**	**3:11**	**3:18**	**3:27**	**3:31**	**3:49**	·····	**4:00**	**4:07**	**4:17**	**4:26**
3:07	**3:27**	**3:36**	**3:43**	**3:52**	·····	**4:06**	**4:21**				
3:32	**3:52**	**4:01**	**4:08**	**4:17**	**4:21**	**4:37**	·····	**4:48**	**4:55**	**5:05**	**5:14**
3:57	**4:18**	**4:27**	**4:33**	**4:41**	·····	**4:54**	**5:08**				
4:22	**4:43**	**4:52**	**4:58**	**5:06**	**5:10**	**5:26**	·····	**5:37**	**5:44**	**5:53**	**6:04**
4:30	**4:53**	**5:03**	**5:10**	**5:20**	·····	**5:35**	**5:48**				
4:47	**5:08**	**5:17**	**5:23**	**5:31**	·····	**5:44**	**5:58**				
5:12	**5:33**	**5:42**	**5:48**	**5:56**	**6:00**	**6:16**	·····	**6:27**	**6:34**	**6:43**	**6:54**
5:37	**5:58**	**6:07**	**6:13**	**6:21**	**6:25**	**6:41**	·····	**6:52**	**6:59**	**7:08**	**7:19**
6:03	**6:24**	**6:32**	**6:38**	**6:47**	·····	**7:00**	·····	**7:09**	**7:15**	**7:22**	**7:32**
7:08	**7:29**	**7:37**	**7:43**	**7:52**	·····	**8:05**	·····	**8:14**	**8:20**	**8:27**	**8:37**
8:13	**8:34**	**8:42**	**8:48**	**8:57**	·····	**9:10**	**9:24**				

42/A

Seal Beach to Orange

via Seal Beach Blvd / Los Alamitos Blvd / Lincoln Ave

Saturday, Sunday & Holiday
EASTBOUND To: Orange

	Electric & Main	Leisure World	Los Alamitos & Katella	Carson & Norwalk	Lincoln & Valley View	Braille Institute	Lincoln & Magnolia	Lincoln & Euclid	Lincoln & Harbor	Lincoln & State College	Village At Orange
				5:48	5:55	·····	6:07	6:15	6:20	6:27	6:40
	5:59	6:09	6:18	6:25	6:35	·····	6:47	6:55	7:00	7:07	7:20
	6:36	6:47	6:56	7:02	7:12	·····	7:26	7:35	7:41	7:50	8:04
A	7:12	7:23	7:32	7:38	7:48	8:01	8:06	8:15	8:21	8:30	8:44
A	7:42	7:53	8:02	8:08	8:18	8:31	8:36	8:45	8:51	9:00	9:14
A	8:05	8:18	8:27	8:35	8:47	9:00	9:05	9:15	9:22	9:32	9:46
				9:10	9:21	·····	9:35	9:45	9:52	10:02	10:16
A	9:00	9:13	9:22	9:30	9:42	9:55	10:00	10:10	10:17	10:27	10:41
				9:57	10:08	·····	10:25	10:35	10:42	10:52	11:08
A	9:47	9:59	10:09	10:17	10:29	10:44	10:50	11:00	11:07	11:17	11:33
				10:47	10:58	·····	11:15	11:25	11:32	11:42	11:58
				11:12	11:23	·····	11:40	11:50	11:57	**12:07**	**12:23**
A	11:01	11:13	11:24	11:31	11:44	11:59	**12:05**	**12:15**	**12:23**	**12:36**	**12:52**
				11:59	**12:12**	·····	**12:30**	**12:40**	**12:48**	**1:01**	**1:17**
A	11:51	**12:03**	**12:14**	**12:21**	**12:34**	**12:50**	**12:55**	**1:05**	**1:13**	**1:26**	**1:42**
				12:49	**1:02**	·····	**1:20**	**1:30**	**1:38**	**1:51**	**2:07**
A	**12:36**	**12:49**	**1:01**	**1:10**	**1:23**	**1:39**	**1:44**	**1:55**	**2:02**	**2:13**	**2:28**
				1:40	**1:53**	·····	**2:09**	**2:20**	**2:27**	**2:38**	**2:53**
A	**1:26**	**1:39**	**1:51**	**2:00**	**2:13**	**2:29**	**2:34**	**2:45**	**2:52**	**3:03**	**3:18**
				2:31	**2:43**	·····	**2:59**	**3:10**	**3:17**	**3:28**	**3:43**
A	**2:16**	**2:29**	**2:41**	**2:50**	**3:03**	**3:19**	**3:24**	**3:35**	**3:42**	**3:53**	**4:08**
				3:22	**3:34**	·····	**3:50**	**4:00**	**4:06**	**4:16**	**4:32**
A	**3:09**	**3:21**	**3:32**	**3:42**	**3:54**	**4:10**	**4:15**	**4:25**	**4:31**	**4:41**	**4:57**
				4:12	**4:24**	·····	**4:40**	**4:50**	**4:56**	**5:06**	**5:22**
A	**3:57**	**4:09**	**4:20**	**4:30**	**4:42**	**4:59**	**5:05**	**5:15**	**5:21**	**5:31**	**5:47**
A				**4:55**	**5:07**	**5:24**	**5:30**	**5:40**	**5:46**	**5:56**	**6:12**
A	**4:56**	**5:08**	**5:18**	**5:25**	**5:37**	**5:54**	**6:00**	**6:10**	**6:16**	**6:25**	**6:39**
	5:35	**5:47**	**5:57**	**6:04**	**6:16**	·····	**6:30**	**6:40**	**6:46**	**6:55**	**7:09**
	6:25	**6:37**	**6:47**	**6:54**	**7:06**	·····	**7:20**	**7:30**	**7:36**	**7:45**	**7:59**
	7:40	**7:52**	**8:02**	**8:09**	**8:21**	·····	**8:35**	**8:45**	**8:51**	**9:00**	**9:14**

A = Operates alternate routing serving the Braille Institute/*Opera la ruta alternativa que atiende al Braille Institute.*

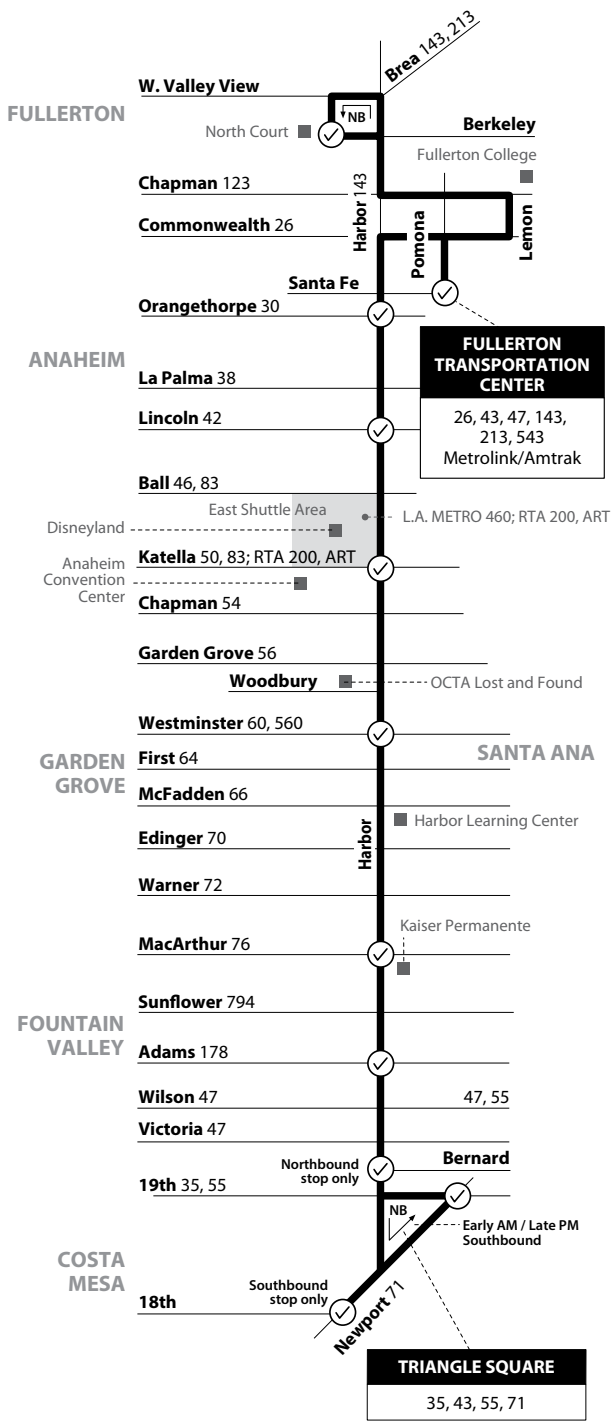
Saturday, Sunday & Holiday
WESTBOUND To: Seal Beach

	Village At Orange	Lincoln & State College	Lincoln & Harbor	Lincoln & Euclid	Lincoln & Magnolia	Braille Institute	Lincoln & Valley View	Carson & Norwalk	Norwalk & Civic Center	Los Alamitos & Katella	Leisure World	Electric & Main
	5:36	5:54	6:02	6:08	6:16	·····	6:30	·····	6:40	6:46	6:53	7:03
	6:26	6:44	6:52	6:58	7:06	·····	7:20	·····	7:30	7:36	7:43	7:53
A	7:11	7:29	7:37	7:43	7:51	7:55	8:10	·····	8:20	8:26	8:33	8:43
A	7:46	8:05	8:16	8:23	8:32	8:36	8:51	·····	9:02	9:10	9:19	9:31
	8:26	8:45	8:56	9:03	9:12	·····	9:27	9:41				
A	8:54	9:13	9:24	9:31	9:40	9:44	10:01	·····	10:12	10:20	10:29	10:41
	9:16	9:35	9:46	9:53	10:02	·····	10:17	10:31				
A	9:40	10:00	10:10	10:18	10:28	10:32	10:49	·····	11:01	11:08	11:18	11:30
	10:05	10:25	10:35	10:43	10:53	·····	11:08	11:22				
A	10:30	10:50	11:00	11:08	11:18	11:22	11:39	·····	11:51	11:58	**12:08**	**12:20**
	10:57	11:17	11:26	11:33	11:42	·····	11:57	**12:11**				
A	11:22	11:42	11:51	11:58	**12:07**	**12:11**	**12:28**	·····	**12:40**	**12:48**	**12:58**	**1:10**
	11:47	**12:07**	**12:16**	**12:23**	**12:32**	·····	**12:47**	**1:01**				
A	**12:12**	**12:32**	**12:41**	**12:48**	**12:57**	**1:01**	**1:18**	·····	**1:30**	**1:38**	**1:48**	**2:00**
	12:38	**12:58**	**1:07**	**1:13**	**1:22**	·····	**1:37**	**1:54**				
A	**1:03**	**1:23**	**1:32**	**1:38**	**1:47**	**1:51**	**2:09**	·····	**2:20**	**2:28**	**2:37**	**2:50**
	1:28	**1:48**	**1:57**	**2:03**	**2:12**	·····	**2:27**	**2:44**				
A	**1:53**	**2:13**	**2:22**	**2:28**	**2:37**	**2:41**	**2:59**	·····	**3:10**	**3:18**	**3:27**	**3:40**
	2:17	**2:37**	**2:46**	**2:53**	**3:02**	·····	**3:16**	**3:31**				
A	**2:42**	**3:02**	**3:11**	**3:18**	**3:27**	**3:31**	**3:49**	·····	**4:00**	**4:07**	**4:17**	**4:26**
	3:07	**3:27**	**3:36**	**3:43**	**3:52**	·····	**4:06**	**4:21**				
A	**3:32**	**3:52**	**4:01**	**4:08**	**4:17**	**4:21**	**4:37**	·····	**4:48**	**4:55**	**5:05**	**5:14**
	3:57	**4:18**	**4:27**	**4:33**	**4:41**	·····	**4:54**	**5:08**				
A	**4:22**	**4:43**	**4:52**	**4:58**	**5:06**	**5:10**	**5:26**	·····	**5:37**	**5:44**	**5:53**	**6:04**
	4:47	**5:08**	**5:17**	**5:23**	**5:31**	·····	**5:44**	**5:58**				
A	**5:12**	**5:33**	**5:42**	**5:48**	**5:56**	**6:00**	**6:16**	·····	**6:27**	**6:34**	**6:43**	**6:54**
A	**5:37**	**5:58**	**6:07**	**6:13**	**6:21**	**6:25**	**6:41**	·····	**6:52**	**6:59**	**7:08**	**7:19**
	6:03	**6:24**	**6:32**	**6:38**	**6:47**	·····	**7:00**	·····	**7:09**	**7:15**	**7:22**	**7:32**
	7:08	**7:29**	**7:37**	**7:43**	**7:52**	·····	**8:05**	·····	**8:14**	**8:20**	**8:27**	**8:37**
	8:13	**8:34**	**8:42**	**8:48**	**8:57**	·····	**9:10**	**9:24**				

A = Operates alternate routing serving the Braille Institute/*Opera la ruta alternativa que atiende al Braille Institute.*

43 Fullerton to Costa Mesa

via Harbor Blvd



LEGEND *LEYENDA*

Scheduled Departure

Regular Routing

METRO = Los Angeles Metro | RTA = Riverside Transit Agency

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

N

MAP NOT TO SCALE

Route 043/111519

Monday-Friday
NORTHBOUND To: Fullerton

19th & Newport	Harbor & Bernard	Harbor & Adams	Harbor & MacArthur	Harbor & Westminster	Harbor & Katella	Harbor & Lincoln	Harbor & Orangethorpe	Fullerton Transportation Center	Berkely & West Valley View
4:30	4:31	4:40	4:45	4:57	5:10	5:18	5:25	5:28	5:35
	4:51	5:00	5:05	5:17	5:30	5:38	5:45	5:48	5:55
	5:11	5:20	5:25	5:37	5:50	5:58	6:05	6:08	6:15
	5:31	5:40	5:45	5:57	6:10	6:18	6:25	6:28	6:35
	5:50	6:00	6:05	6:19	6:35	6:43	6:51	6:55	7:04
	6:10	6:20	6:25	6:39	6:55	7:03	7:11	7:15	7:24
	6:29	6:39	6:44	6:58	7:14	7:22	7:30	7:34	7:43
	6:46	6:56	7:02	7:18	7:35	7:45	7:54	7:58	8:07
	7:12	7:22	7:28	7:44	8:01	8:11	8:20	8:24	8:33
	7:38	7:48	7:54	8:10	8:27	8:37	8:46	8:50	8:59
	8:00	8:12	8:20	8:36	8:57	9:09	9:18	9:22	9:32
	8:26	8:38	8:46	9:02	9:23	9:35	9:44	9:48	9:58
	8:52	9:04	9:12	9:28	9:49	10:01	10:10	10:14	10:24
	9:18	9:30	9:38	9:54	10:15	10:27	10:36	10:40	10:50
	9:44	9:56	10:04	10:20	10:41	10:53	11:02	11:06	11:16
	10:10	10:22	10:30	10:46	11:07	11:19	11:28	11:32	11:42
	10:27	10:41	10:51	11:11	11:33	11:45	11:55	11:59	**12:09**
	10:53	11:07	11:17	11:37	11:59	**12:11**	**12:21**	**12:25**	**12:35**
	11:19	11:33	11:43	**12:03**	**12:25**	**12:37**	**12:47**	**12:51**	**1:01**
	11:45	11:59	**12:09**	**12:29**	**12:51**	**1:03**	**1:13**	**1:17**	**1:27**
	12:11	**12:25**	**12:35**	**12:55**	**1:17**	**1:29**	**1:39**	**1:43**	**1:53**
	12:37	**12:51**	**1:01**	**1:21**	**1:43**	**1:55**	**2:05**	**2:09**	**2:19**
	12:51	**1:05**	**1:15**	**1:35**	**1:57**	**2:09**	**2:19**	**2:23**	**2:33**
	1:06	**1:20**	**1:30**	**1:50**	**2:12**	**2:24**	**2:34**	**2:38**	**2:48**
	1:19	**1:33**	**1:43**	**2:03**	**2:25**	**2:37**	**2:47**	**2:51**	**3:01**
	1:32	**1:46**	**1:56**	**2:16**	**2:38**	**2:50**	**3:00**	**3:04**	**3:14**
	1:58	**2:12**	**2:22**	**2:42**	**3:04**	**3:16**	**3:26**	**3:30**	**3:40**
	2:24	**2:38**	**2:48**	**3:08**	**3:30**	**3:42**	**3:52**	**3:56**	**4:06**
	2:50	**3:04**	**3:14**	**3:34**	**3:56**	**4:08**	**4:18**	**4:22**	**4:32**
	3:03	**3:17**	**3:27**	**3:47**	**4:09**	**4:21**	**4:31**	**4:35**	**4:45**
	3:16	**3:30**	**3:40**	**4:00**	**4:22**	**4:34**	**4:44**	**4:48**	**4:58**
	3:29	**3:43**	**3:53**	**4:13**	**4:35**	**4:47**	**4:57**	**5:01**	**5:11**
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	4:36	**4:49**	**4:58**	**5:16**	**5:37**	**5:49**	**5:59**	**6:03**	**6:13**
	5:02	**5:15**	**5:24**	**5:42**	**6:03**	**6:15**	**6:25**	**6:29**	**6:39**
	5:28	**5:41**	**5:50**	**6:08**	**6:29**	**6:41**	**6:51**	**6:55**	**7:05**
	5:54	**6:07**	**6:16**	**6:34**	**6:55**	**7:07**	**7:17**	**7:21**	**7:31**
	6:20	**6:33**	**6:42**	**7:00**	**7:21**	**7:33**	**7:43**	**7:47**	**7:57**
	6:48	**7:01**	**7:09**	**7:26**	**7:47**	**7:58**	**8:07**	**8:11**	**8:20**
	7:18	**7:31**	**7:39**	**7:56**	**8:17**	**8:28**	**8:37**	**8:41**	**8:50**
	7:48	**8:01**	**8:09**	**8:26**	**8:47**	**8:58**	**9:07**	**9:11**	**9:20**
	8:20	**8:33**	**8:41**	**8:58**	**9:19**	**9:30**	**9:39**	**9:43**	**9:52**
	8:48	**9:01**	**9:09**	**9:26**	**9:47**	**9:58**	**10:07**	**10:11**	**10:20**
	9:18	**9:31**	**9:39**	**9:56**	**10:17**	**10:28**	**10:37**	**10:41**	**10:50**
	9:57	**10:09**	**10:16**	**10:30**	**10:48**	**10:59**	**11:07**	**11:11**	**11:19**
10:26	**10:27**	**10:39**	**10:46**	**11:00**	**11:18**	**11:27**	**11:34**	**11:38**	**11:45**
11:26	**11:27**	**11:39**	**11:46**	12:00	12:18	12:27	12:34	12:38	12:45
12:26	12:27	12:39	12:46	1:00	1:18	1:27	1:34	1:38	1:45

Monday-Friday
SOUTHBOUND To: Costa Mesa

Berkely & West Valley View	Fullerton Transportation Center	Harbor & Orangethorpe	Harbor & Lincoln	Harbor & Katella	Harbor & Westminster	Harbor & MacArthur	Harbor & Adams	Newport & 18th	19th & Newport
3:59	4:05	4:09	4:16	4:25	4:37	4:50	4:56	5:05	
4:09	4:15	4:19	4:26	4:35	4:47	5:00	5:06	5:15	
4:19	4:25	4:29	4:36	4:45	4:57	5:10	5:16	5:25	
4:39	4:45	4:49	4:56	5:05	5:17	5:30	5:36	5:45	
4:49	4:55	4:59	5:06	5:15	5:27	5:40	5:46	5:55	
4:59	5:05	5:09	5:16	5:25	5:37	5:50	5:56	6:05	
5:19	5:25	5:29	5:36	5:45	5:57	6:10	6:16	6:25	
5:29	5:35	5:39	5:46	5:55	6:07	6:20	6:26	6:35	
5:39	5:45	5:49	5:56	6:05	6:17	6:30	6:36	6:45	
5:50	5:56	6:01	6:08	6:20	6:37	6:53	7:01	7:11	
6:00	6:06	6:11	6:18	6:30	6:47	7:03	7:11	7:21	
6:10	6:16	6:21	6:28	6:40	6:57	7:13	7:21	7:31	
6:23	6:29	6:34	6:41	6:53	7:10	7:26	7:34	7:44	
6:36	6:42	6:47	6:54	7:06	7:23	7:39	7:47	7:57	
6:49	6:55	7:00	7:07	7:19	7:36	7:52	8:00	8:10	
7:02	7:08	7:13	7:20	7:32	7:49	8:05	8:13	8:23	
7:28	7:34	7:39	7:46	7:58	8:15	8:31	8:39	8:49	
7:54	8:00	8:05	8:12	8:24	8:41	8:57	9:05	9:15	
8:14	8:20	8:26	8:34	8:48	9:07	9:23	9:32	9:45	
8:38	8:44	8:50	8:58	9:12	9:33	9:51	10:01	10:14	
9:04	9:10	9:16	9:24	9:38	9:59	10:17	10:27	10:40	
9:30	9:36	9:42	9:50	10:04	10:25	10:43	10:53	11:06	
9:56	10:02	10:08	10:16	10:30	10:51	11:09	11:19	11:32	
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10:48	10:54	11:00	11:08	11:22	11:43	**12:01**	**12:11**	12:24	
11:07	11:15	11:22	11:31	11:46	**12:09**	**12:29**	**12:39**	**12:53**	
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11:59	**12:07**	**12:14**	**12:23**	**12:38**	**1:01**	**1:21**	**1:31**	**1:45**	
12:25	**12:33**	**12:40**	**12:49**	**1:04**	**1:27**	**1:47**	**1:57**	**2:11**	
12:38	**12:46**	**12:53**	**1:02**	**1:17**	**1:40**	**2:00**	**2:10**	**2:24**	
12:51	**12:59**	**1:06**	**1:15**	**1:30**	**1:53**	**2:13**	**2:23**	**2:37**	
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1:43	**1:51**	**1:58**	**2:07**	**2:22**	**2:45**	**3:05**	**3:15**	**3:29**	
2:09	**2:17**	**2:24**	**2:33**	**2:48**	**3:11**	**3:31**	**3:41**	**3:55**	
2:35	**2:43**	**2:50**	**2:59**	**3:14**	**3:37**	**3:57**	**4:07**	**4:21**	
3:01	**3:09**	**3:16**	**3:25**	**3:40**	**4:03**	**4:23**	**4:33**	**4:47**	
3:27	**3:35**	**3:42**	**3:51**	**4:06**	**4:29**	**4:49**	**4:59**	**5:13**	
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4:23	**4:31**	**4:38**	**4:47**	**5:01**	**5:21**	**5:38**	**5:46**	**5:58**	
4:49	**4:57**	**5:04**	**5:13**	**5:27**	**5:47**	**6:04**	**6:12**	**6:24**	
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7:01	**7:08**	**7:14**	**7:22**	**7:36**	**7:55**	**8:10**	**8:19**	**8:31**	
7:31	**7:38**	**7:44**	**7:52**	**8:06**	**8:25**	**8:40**	**8:49**	**9:01**	
7:48	**7:55**	**8:01**	**8:09**	**8:23**	**8:40**	**8:54**	**9:02**	**9:13**	
8:03	**8:10**	**8:16**	**8:24**	**8:38**	**8:55**	**9:09**	**9:17**	**9:28**	
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9:03	**9:10**	**9:16**	**9:24**	**9:38**	**9:55**	**10:09**	**10:17**	·····	**10:25**
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12:15	12:21	12:27	12:34	12:47	1:00	1:13	1:21	·····	1:29

Saturday
NORTHBOUND To: Fullerton

19th & Newport	Harbor & Bernard	Harbor & Adams	Harbor & MacArthur	Harbor & Westminster	Harbor & Katella	Harbor & Lincoln	Harbor & Orangethorpe	Fullerton Transportation Center	Berkely & West Valley View
4:30	4:31	4:40	4:45	4:57	5:10	5:18	5:25	5:28	5:35
	4:51	5:00	5:05	5:17	5:30	5:38	5:45	5:48	5:55
	5:11	5:20	5:25	5:37	5:50	5:58	6:05	6:08	6:15
	5:31	5:40	5:45	5:57	6:10	6:18	6:25	6:28	6:35
	5:50	6:00	6:05	6:19	6:35	6:43	6:51	6:55	7:04
	6:10	6:20	6:25	6:39	6:55	7:03	7:11	7:15	7:24
	6:29	6:39	6:44	6:58	7:14	7:22	7:30	7:34	7:43
	6:46	6:56	7:02	7:18	7:35	7:45	7:54	7:58	8:07
	7:12	7:22	7:28	7:44	8:01	8:11	8:20	8:24	8:33
	7:38	7:48	7:54	8:10	8:27	8:37	8:46	8:50	8:59
	8:00	8:12	8:20	8:36	8:57	9:09	9:18	9:22	9:32
	8:26	8:38	8:46	9:02	9:23	9:35	9:44	9:48	9:58
	8:52	9:04	9:12	9:28	9:49	10:01	10:10	10:14	10:24
	9:18	9:30	9:38	9:54	10:15	10:27	10:36	10:40	10:50
	9:44	9:56	10:04	10:20	10:41	10:53	11:02	11:06	11:16
	10:10	10:22	10:30	10:46	11:07	11:19	11:28	11:32	11:42
	10:27	10:41	10:51	11:11	11:33	11:45	11:55	**11:59**	**12:09**
	10:53	11:07	11:17	11:37	11:59	**12:11**	**12:21**	**12:25**	**12:35**
	11:19	11:33	11:43	**12:03**	**12:25**	**12:37**	**12:47**	**12:51**	**1:01**
	11:45	11:59	**12:09**	**12:29**	**12:51**	**1:03**	**1:13**	**1:17**	**1:27**
	12:11	**12:25**	**12:35**	**12:55**	**1:17**	**1:29**	**1:39**	**1:43**	**1:53**
	12:37	**12:51**	**1:01**	**1:21**	**1:43**	**1:55**	**2:05**	**2:09**	**2:19**
	1:06	**1:20**	**1:30**	**1:50**	**2:12**	**2:24**	**2:34**	**2:38**	**2:48**
	1:32	**1:46**	**1:56**	**2:16**	**2:38**	**2:50**	**3:00**	**3:04**	**3:14**
	1:58	**2:12**	**2:22**	**2:42**	**3:04**	**3:16**	**3:26**	**3:30**	**3:40**
	2:24	**2:38**	**2:48**	**3:08**	**3:30**	**3:42**	**3:52**	**3:56**	**4:06**
	2:50	**3:04**	**3:14**	**3:34**	**3:56**	**4:08**	**4:18**	**4:22**	**4:32**
	3:16	**3:30**	**3:40**	**4:00**	**4:22**	**4:34**	**4:44**	**4:48**	**4:58**
	3:42	**3:56**	**4:06**	**4:26**	**4:48**	**5:00**	**5:10**	**5:14**	**5:24**
	4:08	**4:22**	**4:32**	**4:52**	**5:14**	**5:26**	**5:36**	**5:40**	**5:50**
	4:36	**4:49**	**4:58**	**5:16**	**5:37**	**5:49**	**5:59**	**6:03**	**6:13**
	5:02	**5:15**	**5:24**	**5:42**	**6:03**	**6:15**	**6:25**	**6:29**	**6:39**
	5:28	**5:41**	**5:50**	**6:08**	**6:29**	**6:41**	**6:51**	**6:55**	**7:05**
	5:54	**6:07**	**6:16**	**6:34**	**6:55**	**7:07**	**7:17**	**7:21**	**7:31**
	6:20	**6:33**	**6:42**	**7:00**	**7:21**	**7:33**	**7:43**	**7:47**	**7:57**
	6:48	**7:01**	**7:09**	**7:26**	**7:47**	**7:58**	**8:07**	**8:11**	**8:20**
	7:18	**7:31**	**7:39**	**7:56**	**8:17**	**8:28**	**8:37**	**8:41**	**8:50**
	7:48	**8:01**	**8:09**	**8:26**	**8:47**	**8:58**	**9:07**	**9:11**	**9:20**
	8:20	**8:33**	**8:41**	**8:58**	**9:19**	**9:30**	**9:39**	**9:43**	**9:52**
	8:48	**9:01**	**9:09**	**9:26**	**9:47**	**9:58**	**10:07**	**10:11**	**10:20**
	9:18	**9:31**	**9:39**	**9:56**	**10:17**	**10:28**	**10:37**	**10:41**	**10:50**
	9:57	**10:09**	**10:16**	**10:30**	**10:48**	**10:59**	**11:07**	**11:11**	**11:19**
10:26	**10:27**	**10:39**	**10:46**	**11:00**	**11:18**	**11:27**	**11:34**	**11:38**	**11:45**
11:26	**11:27**	**11:39**	**11:46**	12:00	12:18	12:27	12:34	12:38	12:45
12:26	12:27	12:39	12:46	1:00	1:18	1:27	1:34	1:38	1:45

43 Fullerton to Costa Mesa

via Harbor Blvd

Saturday
SOUTHBOUND To: Costa Mesa

Berkely & West Valley View	Fullerton Transportation Center	Harbor & Orangethorpe	Harbor & Lincoln	Harbor & Katella	Harbor & Westminster	Harbor & MacArthur	Harbor & Adams	Newport & 18th	19th & Newport
3:59	4:05	4:09	4:16	4:25	4:37	4:50	4:56	5:05	
4:19	4:25	4:29	4:36	4:45	4:57	5:10	5:16	5:25	
4:39	4:45	4:49	4:56	5:05	5:17	5:30	5:36	5:45	
4:59	5:05	5:09	5:16	5:25	5:37	5:50	5:56	6:05	
5:19	5:25	5:29	5:36	5:45	5:57	6:10	6:16	6:25	
5:39	5:45	5:49	5:56	6:05	6:17	6:30	6:36	6:45	
5:50	5:56	6:01	6:08	6:20	6:37	6:53	7:01	7:11	
6:10	6:16	6:21	6:28	6:40	6:57	7:13	7:21	7:31	
6:36	6:42	6:47	6:54	7:06	7:23	7:39	7:47	7:57	
7:02	7:08	7:13	7:20	7:32	7:49	8:05	8:13	8:23	
7:28	7:34	7:39	7:46	7:58	8:15	8:31	8:39	8:49	
7:54	8:00	8:05	8:12	8:24	8:41	8:57	9:05	9:15	
8:14	8:20	8:26	8:34	8:48	9:07	9:23	9:32	9:45	
8:38	8:44	8:50	8:58	9:12	9:33	9:51	10:01	10:14	
9:04	9:10	9:16	9:24	9:38	9:59	10:17	10:27	10:40	
9:30	9:36	9:42	9:50	10:04	10:25	10:43	10:53	11:06	
9:56	10:02	10:08	10:16	10:30	10:51	11:09	11:19	11:32	
10:22	10:28	10:34	10:42	10:56	11:17	11:35	11:45	11:58	
10:48	10:54	11:00	11:08	11:22	11:43	**12:01**	**12:11**	**12:24**	
11:07	11:15	11:22	11:31	11:46	**12:09**	**12:29**	**12:39**	**12:53**	
11:33	11:41	11:48	11:57	**12:12**	**12:35**	**12:55**	**1:05**	**1:19**	
11:59	**12:07**	**12:14**	**12:23**	**12:38**	**1:01**	**1:21**	**1:31**	**1:45**	
12:25	**12:33**	**12:40**	**12:49**	**1:04**	**1:27**	**1:47**	**1:57**	**2:11**	
12:51	**12:59**	**1:06**	**1:15**	**1:30**	**1:53**	**2:13**	**2:23**	**2:37**	
1:17	**1:25**	**1:32**	**1:41**	**1:56**	**2:19**	**2:39**	**2:49**	**3:03**	
1:43	**1:51**	**1:58**	**2:07**	**2:22**	**2:45**	**3:05**	**3:15**	**3:29**	
2:09	**2:17**	**2:24**	**2:33**	**2:48**	**3:11**	**3:31**	**3:41**	**3:55**	
2:35	**2:43**	**2:50**	**2:59**	**3:14**	**3:37**	**3:57**	**4:07**	**4:21**	
3:01	**3:09**	**3:16**	**3:25**	**3:40**	**4:03**	**4:23**	**4:33**	**4:47**	
3:27	**3:35**	**3:42**	**3:51**	**4:06**	**4:29**	**4:49**	**4:59**	**5:13**	
3:53	**4:01**	**4:08**	**4:17**	**4:32**	**4:55**	**5:15**	**5:25**	**5:39**	
4:23	**4:31**	**4:38**	**4:47**	**5:01**	**5:21**	**5:38**	**5:46**	**5:58**	
4:49	**4:57**	**5:04**	**5:13**	**5:27**	**5:47**	**6:04**	**6:12**	**6:24**	
5:15	**5:23**	**5:30**	**5:39**	**5:53**	**6:13**	**6:30**	**6:38**	**6:50**	
5:45	**5:52**	**5:58**	**6:06**	**6:20**	**6:39**	**6:54**	**7:03**	**7:15**	
6:11	**6:18**	**6:24**	**6:32**	**6:46**	**7:05**	**7:20**	**7:29**	**7:41**	
6:37	**6:44**	**6:50**	**6:58**	**7:12**	**7:31**	**7:46**	**7:55**	**8:07**	
7:01	**7:08**	**7:14**	**7:22**	**7:36**	**7:55**	**8:10**	**8:19**	**8:31**	
7:31	**7:38**	**7:44**	**7:52**	**8:06**	**8:25**	**8:40**	**8:49**	**9:01**	
8:03	**8:10**	**8:16**	**8:24**	**8:38**	**8:55**	**9:09**	**9:17**	**9:28**	
8:33	**8:40**	**8:46**	**8:54**	**9:08**	**9:25**	**9:39**	**9:47**	·····	**9:55**
9:03	**9:10**	**9:16**	**9:24**	**9:38**	**9:55**	**10:09**	**10:17**	·····	**10:25**
9:38	**9:45**	**9:51**	**9:59**	**10:13**	**10:30**	**10:44**	**10:52**	·····	**11:00**
10:08	**10:15**	**10:21**	**10:29**	**10:43**	**11:00**	**11:14**	**11:22**	·····	**11:30**
11:15	**11:21**	**11:27**	**11:34**	**11:47**	12:00	12:13	12:21	·····	12:29
12:15	12:21	12:27	12:34	12:47	1:00	1:13	1:21	·····	1:29

Sunday & Holiday
NORTHBOUND To: Fullerton

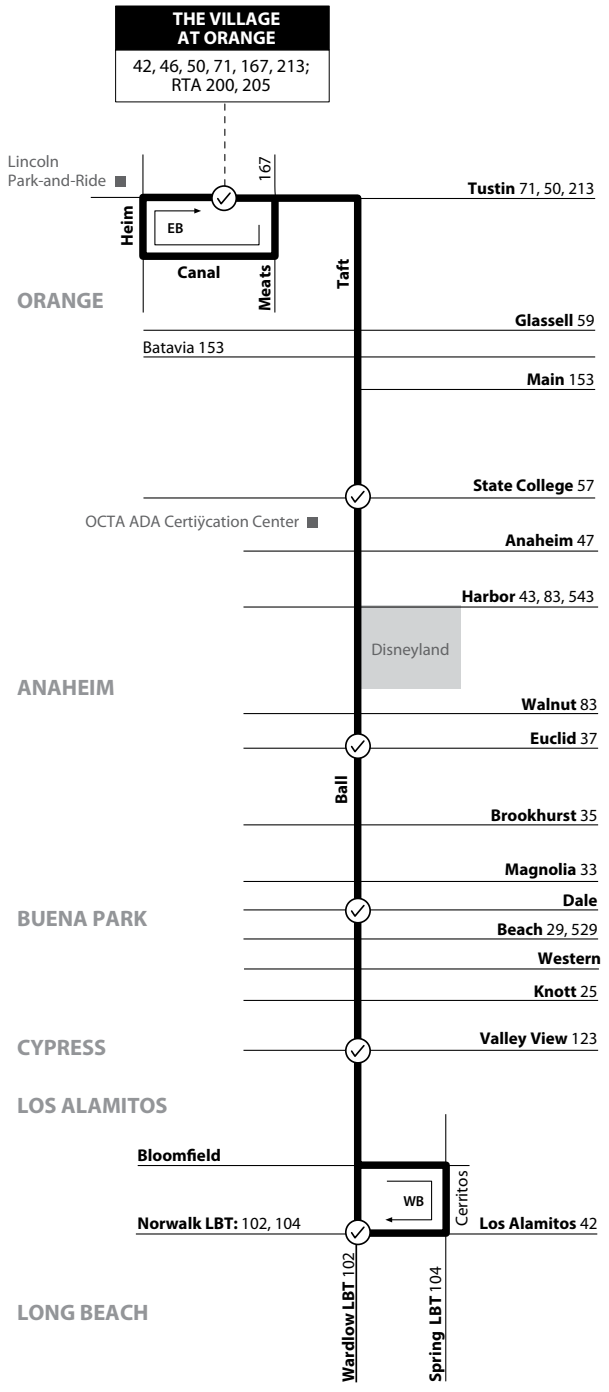
19th & Newport	Harbor & Bernard	Harbor & Adams	Harbor & MacArthur	Harbor & Westminster	Harbor & Katella	Harbor & Lincoln	Harbor & Orangethorpe	Fullerton Transportation Center	Berkely & West Valley View
	4:31	4:38	4:44	4:57	5:11	5:19	5:26	5:29	5:37
	5:00	5:07	5:13	5:26	5:40	5:48	5:55	5:58	6:06
	5:30	5:37	5:43	5:56	6:10	6:18	6:25	6:28	6:36
	6:00	6:07	6:13	6:26	6:40	6:48	6:55	6:58	7:06
	6:27	6:35	6:41	6:54	7:08	7:16	7:23	7:27	7:35
	6:39	6:49	6:56	7:12	7:31	7:42	7:51	7:56	8:04
	7:07	7:17	7:24	7:40	7:59	8:10	8:19	8:24	8:32
	7:33	7:43	7:50	8:06	8:25	8:36	8:45	8:50	8:58
	7:59	8:09	8:16	8:32	8:51	9:02	9:11	9:16	9:24
	8:25	8:35	8:42	8:58	9:17	9:28	9:37	9:42	9:50
	8:51	9:01	9:08	9:24	9:43	9:54	10:03	10:08	10:16
	9:17	9:27	9:34	9:50	10:09	10:20	10:29	10:34	10:42
	9:41	9:51	9:59	10:18	10:38	10:50	11:00	11:05	11:14
	10:07	10:17	10:25	10:44	11:04	11:16	11:26	11:31	11:40
	10:33	10:43	10:51	11:10	11:30	11:42	11:52	11:57	**12:06**
	10:59	11:09	11:17	11:36	11:56	**12:08**	**12:18**	**12:23**	**12:32**
	11:27	11:37	11:45	**12:04**	**12:24**	**12:36**	**12:46**	**12:51**	**1:00**
	11:51	**12:02**	**12:11**	**12:30**	**12:50**	**1:02**	**1:12**	**1:17**	**1:26**
	12:17	**12:28**	**12:37**	**12:56**	**1:16**	**1:28**	**1:38**	**1:43**	**1:52**
	12:43	**12:54**	**1:03**	**1:22**	**1:42**	**1:54**	**2:04**	**2:09**	**2:18**
	1:09	**1:20**	**1:29**	**1:48**	**2:08**	**2:20**	**2:30**	**2:35**	**2:44**
	1:35	**1:46**	**1:55**	**2:14**	**2:34**	**2:46**	**2:56**	**3:01**	**3:10**
	2:01	**2:12**	**2:21**	**2:40**	**3:00**	**3:12**	**3:22**	**3:27**	**3:36**
	2:27	**2:38**	**2:47**	**3:06**	**3:26**	**3:38**	**3:48**	**3:53**	**4:02**
	2:55	**3:05**	**3:13**	**3:32**	**3:53**	**4:05**	**4:14**	**4:18**	**4:27**
	3:21	**3:31**	**3:39**	**3:58**	**4:19**	**4:31**	**4:40**	**4:44**	**4:53**
	3:48	**3:58**	**4:06**	**4:24**	**4:44**	**4:56**	**5:05**	**5:09**	**5:17**
	4:10	**4:20**	**4:28**	**4:46**	**5:06**	**5:18**	**5:27**	**5:31**	**5:39**
	4:36	**4:46**	**4:54**	**5:12**	**5:32**	**5:44**	**5:53**	**5:57**	**6:05**
	5:06	**5:16**	**5:24**	**5:42**	**6:02**	**6:14**	**6:23**	**6:27**	**6:35**
	5:28	**5:38**	**5:46**	**6:04**	**6:24**	**6:36**	**6:45**	**6:49**	**6:57**
	6:03	**6:13**	**6:21**	**6:37**	**6:54**	**7:05**	**7:14**	**7:18**	**7:26**
	6:30	**6:40**	**6:48**	**7:04**	**7:21**	**7:32**	**7:41**	**7:45**	**7:53**
	7:00	**7:10**	**7:18**	**7:34**	**7:51**	**8:02**	**8:11**	**8:15**	**8:23**
	7:31	**7:41**	**7:49**	**8:05**	**8:22**	**8:33**	**8:42**	**8:46**	**8:54**
	8:00	**8:10**	**8:18**	**8:34**	**8:51**	**9:02**	**9:11**	**9:15**	**9:23**
	8:30	**8:40**	**8:48**	**9:04**	**9:21**	**9:32**	**9:41**	**9:45**	**9:53**
	9:00	**9:10**	**9:18**	**9:34**	**9:51**	**10:02**	**10:11**	**10:15**	**10:23**
	9:34	**9:44**	**9:51**	**10:04**	**10:21**	**10:31**	**10:40**	**10:44**	**10:52**
10:29	**10:30**	**10:40**	**10:47**	**11:00**	**11:17**	**11:27**	**11:36**	**11:40**	**11:48**
11:36	**11:37**	**11:45**	**11:50**	12:02	12:14	12:22	12:28	12:32	12:39
12:38	12:39	12:47	12:52	1:04	1:16	1:24	1:30	1:34	1:41

Sunday & Holiday
SOUTHBOUND To: Costa Mesa

Berkely & West Valley View	Fullerton Transportation Center	Harbor & Orangethorpe	Harbor & Lincoln	Harbor & Katella	Harbor & Westminster	Harbor & MacArthur	Harbor & Adams	Newport & 18th	19th & Newport
4:11	4:16	4:20	4:26	4:35	4:49	5:02	5:08	5:17	
4:47	4:52	4:56	5:02	5:11	5:25	5:38	5:44	5:53	
5:11	5:16	5:20	5:26	5:35	5:49	6:02	6:08	6:17	
5:47	5:52	5:56	6:02	6:11	6:25	6:38	6:44	6:53	
6:04	6:09	6:14	6:22	6:34	6:52	7:07	7:14	7:24	
6:37	6:42	6:47	6:55	7:07	7:25	7:40	7:47	7:57	
7:03	7:08	7:13	7:21	7:33	7:51	8:06	8:13	8:23	
7:29	7:34	7:39	7:47	7:59	8:17	8:32	8:39	8:49	
7:45	7:52	7:57	8:05	8:19	8:38	8:55	9:04	9:16	
8:16	8:23	8:28	8:36	8:50	9:09	9:26	9:35	9:47	
8:42	8:49	8:54	9:02	9:16	9:35	9:52	10:01	10:13	
9:08	9:15	9:20	9:28	9:42	10:01	10:18	10:27	10:39	
9:34	9:41	9:46	9:54	10:08	10:27	10:44	10:53	11:05	
10:00	10:07	10:12	10:20	10:34	10:53	11:10	11:19	11:31	
10:26	10:33	10:38	10:46	11:00	11:19	11:36	11:45	11:57	
10:52	10:59	11:04	11:12	11:26	11:45	**12:02**	**12:11**	**12:23**	
11:18	11:25	11:30	11:38	11:52	**12:11**	**12:28**	**12:37**	**12:49**	
11:44	11:51	11:56	**12:04**	**12:18**	**12:37**	**12:54**	**1:03**	**1:15**	
12:09	**12:15**	**12:21**	**12:30**	**12:44**	**1:03**	**1:19**	**1:28**	**1:40**	
12:35	**12:41**	**12:47**	**12:56**	**1:10**	**1:29**	**1:45**	**1:54**	**2:06**	
1:01	**1:07**	**1:13**	**1:22**	**1:36**	**1:55**	**2:11**	**2:20**	**2:32**	
1:27	**1:33**	**1:39**	**1:48**	**2:02**	**2:21**	**2:37**	**2:46**	**2:58**	
1:53	**1:59**	**2:05**	**2:14**	**2:28**	**2:47**	**3:03**	**3:12**	**3:24**	
2:19	**2:25**	**2:31**	**2:40**	**2:54**	**3:13**	**3:29**	**3:38**	**3:50**	
2:45	**2:51**	**2:57**	**3:06**	**3:20**	**3:39**	**3:55**	**4:04**	**4:16**	
3:11	**3:17**	**3:23**	**3:32**	**3:46**	**4:05**	**4:21**	**4:30**	**4:42**	
3:37	**3:43**	**3:49**	**3:58**	**4:12**	**4:31**	**4:47**	**4:56**	**5:08**	
4:03	**4:09**	**4:15**	**4:24**	**4:38**	**4:57**	**5:13**	**5:22**	**5:34**	
4:26	**4:32**	**4:38**	**4:47**	**5:01**	**5:20**	**5:36**	**5:45**	**5:57**	
4:54	**5:00**	**5:06**	**5:15**	**5:29**	**5:48**	**6:04**	**6:13**	**6:25**	
5:21	**5:27**	**5:33**	**5:42**	**5:56**	**6:15**	**6:31**	**6:40**	**6:52**	
5:49	**5:56**	**6:01**	**6:09**	**6:22**	**6:41**	**6:57**	**7:06**	**7:18**	
6:15	**6:22**	**6:27**	**6:35**	**6:48**	**7:07**	**7:23**	**7:32**	**7:44**	
6:45	**6:52**	**6:57**	**7:05**	**7:18**	**7:37**	**7:53**	**8:02**	**8:14**	
7:15	**7:22**	**7:27**	**7:35**	**7:48**	**8:07**	**8:23**	**8:32**	**8:44**	
7:45	**7:52**	**7:57**	**8:05**	**8:18**	**8:37**	**8:53**	**9:02**	**9:14**	
8:12	**8:19**	**8:24**	**8:32**	**8:45**	**9:04**	**9:20**	**9:29**	·····	**9:37**
8:42	**8:49**	**8:54**	**9:02**	**9:15**	**9:34**	**9:50**	**9:59**	·····	**10:07**
9:13	**9:21**	**9:26**	**9:33**	**9:45**	**10:00**	**10:15**	**10:22**	·····	**10:30**
10:09	**10:17**	**10:22**	**10:29**	**10:41**	**10:56**	**11:11**	**11:18**	·····	**11:26**
11:20	**11:25**	**11:29**	**11:34**	**11:45**	12:00	12:13	12:20	·····	12:28
12:20	12:25	12:29	12:34	12:45	1:00	1:13	1:20	·····	1:28

46 Long Beach to Orange

via Ball Rd / Taft Ave



LEGEND / LEYENDA

Scheduled Departure — Regular Routing

LBT = Long Beach Transit | RTA = Riverside Transit Agency

Route 046/111519

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

N — MAP NOT TO SCALE

All Days
EASTBOUND To: Orange

Norwalk & Wardlow	Ball & Valley View	Ball & Dale	Ball & Euclid	Ball & State College	Village At Orange
6:32	6:40	6:49	7:00	7:16	7:33
7:23	7:32	7:42	7:55	8:12	8:30
8:18	8:27	8:37	8:50	9:07	9:25
9:13	9:22	9:32	9:45	10:02	10:20
10:05	10:15	10:26	10:40	10:58	11:19
11:03	11:12	11:22	11:35	11:53	**12:14**
11:58	**12:07**	**12:17**	**12:30**	**12:48**	**1:09**
12:53	**1:02**	**1:12**	**1:25**	**1:43**	**2:04**
1:48	**1:57**	**2:07**	**2:20**	**2:38**	**2:59**
2:42	**2:51**	**3:01**	**3:14**	**3:32**	**3:53**
3:38	**3:47**	**3:57**	**4:10**	**4:28**	**4:49**
4:34	**4:43**	**4:53**	**5:06**	**5:24**	**5:45**
5:28	**5:37**	**5:47**	**6:00**	**6:18**	**6:39**
6:23	**6:33**	**6:43**	**6:55**	**7:12**	**7:31**
7:22	**7:30**	**7:39**	**7:50**	**8:06**	**8:24**
8:17	**8:25**	**8:34**	**8:45**	**9:01**	**9:19**
9:13	**9:21**	**9:30**	**9:40**	**9:55**	**10:11**
10:08	**10:16**	**10:25**	**10:35**	**10:50**	**11:06**

All Days
WESTBOUND To: Long Beach

Village At Orange	Ball & State College	Ball & Euclid	Ball & Dale	Ball & Valley View	Norwalk & Wardlow
7:02	7:16	7:29	7:40	7:50	8:01
7:57	8:11	8:24	8:35	8:45	8:56
8:49	9:04	9:19	9:31	9:42	9:53
9:44	9:59	10:14	10:26	10:37	10:48
10:39	10:54	11:09	11:21	11:32	11:43
11:34	11:49	**12:04**	**12:16**	**12:27**	**12:38**
12:25	**12:42**	**12:59**	**1:11**	**1:21**	**1:32**
1:20	**1:37**	**1:54**	**2:06**	**2:16**	**2:27**
2:16	**2:32**	**2:49**	**3:00**	**3:10**	**3:20**
3:10	**3:27**	**3:44**	**3:56**	**4:06**	**4:17**
4:05	**4:22**	**4:39**	**4:51**	**5:01**	**5:12**
5:01	**5:17**	**5:34**	**5:46**	**5:56**	**6:07**
5:56	**6:12**	**6:29**	**6:41**	**6:51**	**7:02**
6:51	**7:07**	**7:24**	**7:36**	**7:46**	**7:57**
7:51	**8:05**	**8:19**	**8:29**	**8:38**	**8:49**
8:46	**9:00**	**9:14**	**9:24**	**9:33**	**9:44**
9:42	**9:56**	**10:09**	**10:18**	**10:27**	**10:37**

SERVICE TO / SERVICIO A

Orange
- The Village at Orange
- Lincoln Park-and-Ride
- Orange Library

Anaheim
- OCTA ADA Certification Center
- Disneyland
- Ball Junior High School
- Trident Continuation High School
- Loara High School
- Magnolia High School
- Anaheim General Hospital
- Western Medical Center-Anaheim
- Dale Junior High School
- Western High School

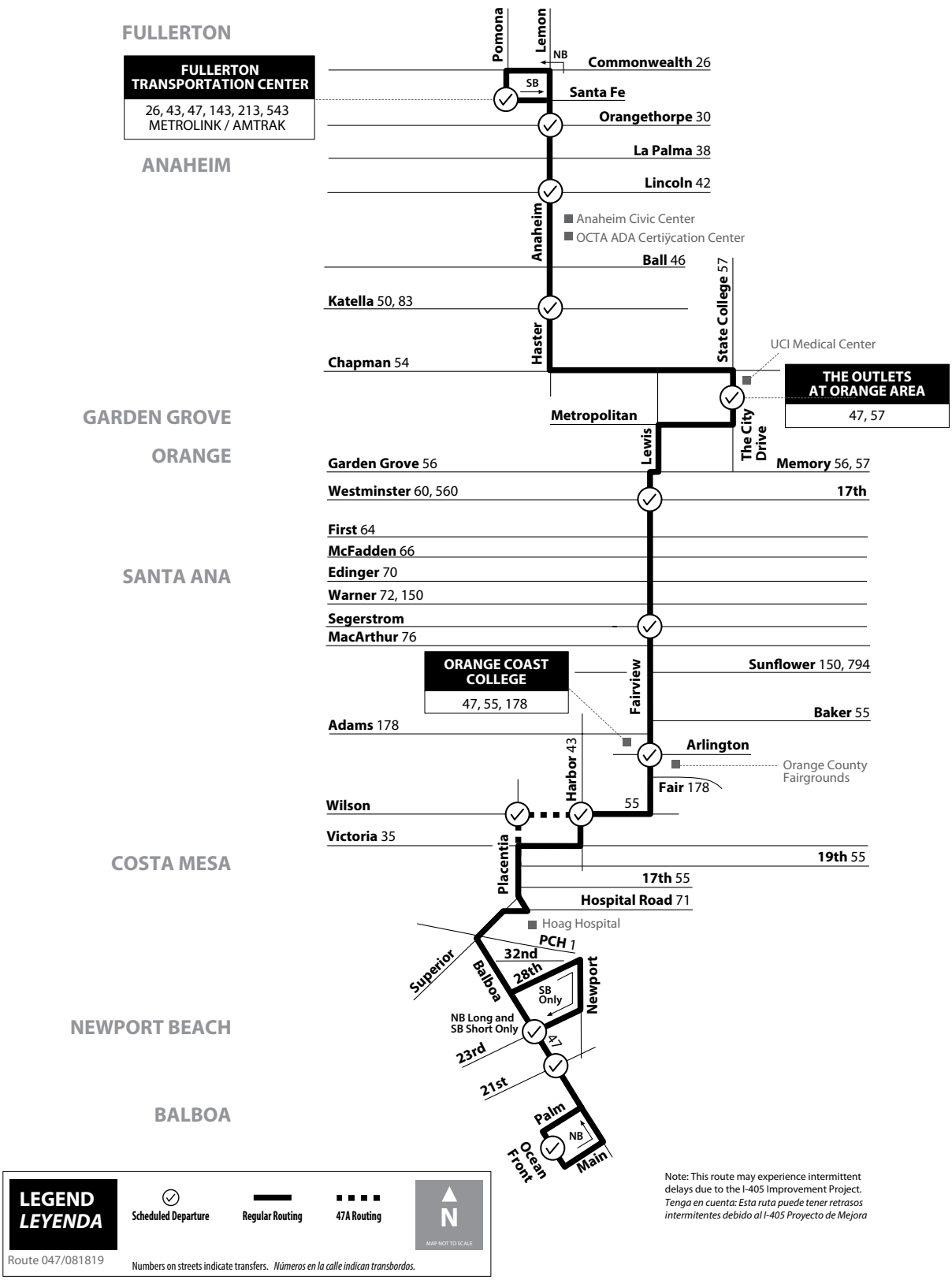
Cypress
- Cypress High School
- Cypress Plaza East
- Oxford Academy
- Lexington Junior High School

Los Alamitos
- Continuation High School
- Los Alamitos High School
- McAuliffe Middle School
- Oak Middle School

Long Beach

Fullerton to Balboa
via Anaheim Blvd / Fairview St

47/A



Note: This route may experience intermittent delays due to the I-405 Improvement Project.
Tenga en cuenta: Esta ruta puede tener retrasos intermitentes debido al I-405 Proyecto de Mejora

47/A

Fullerton to Balboa

via Anaheim Blvd / Fairview St

Monday-Friday
NORTHBOUND To: Fullerton

	Ocean Front & Palm	Balboa & 23rd	Wilson & Placentia	Wilson & Harbor	Fairview & Arlington	Fairview & Segerstrom	Fairview & Westminster	The Outlets At Orange	Anaheim & Katella	Anaheim & Lincoln	Lemon & Orangethorpe	Fullerton Transportation Center
	4:57	5:05	•••••	5:20	5:25	5:33	5:47	5:54	6:04	6:13	6:18	6:22
		5:05	•••••	5:20	5:25	5:33	5:47	5:54	6:04	6:13	6:18	6:22
A		5:50	6:02	6:05	6:10	6:18	6:32	6:39	6:49	6:58	7:03	7:07
	6:10	6:18	•••••	6:33	6:37	6:46	7:01	7:09	7:19	7:30	7:36	7:41
A		6:44	6:57	7:01	7:06	7:16	7:30	7:39	7:49	8:02	8:09	8:14
	7:06	7:15	•••••	7:31	7:36	7:46	8:00	8:09	8:19	8:32	8:39	8:44
A		7:41	7:55	7:59	8:04	8:15	8:30	8:39	8:50	9:02	9:08	9:13
	8:01	8:10	•••••	8:29	8:34	8:45	9:00	9:09	9:20	9:32	9:38	9:43
A		8:29	8:45	8:49	8:56	9:07	9:23	9:32	9:44	9:56	10:03	10:08
		8:50	•••••	9:09	9:16	9:27	9:43	9:52	10:04	10:16	10:23	10:28
	9:01	9:10	•••••	9:29	9:36	9:47	10:03	10:12	10:24	10:36	10:43	10:48
A		9:29	9:45	9:49	9:56	10:07	10:23	10:32	10:44	10:56	11:03	11:08
		9:50	•••••	10:09	10:16	10:27	10:43	10:52	11:04	11:16	11:23	11:28
	9:58	10:07	•••••	10:28	10:35	10:47	11:02	11:12	11:26	11:39	11:46	11:51
A		10:28	10:43	10:48	10:55	11:07	11:22	11:32	11:46	11:59	**12:06**	**12:11**
		10:47	•••••	11:08	11:15	11:27	11:42	11:52	**12:06**	**12:19**	**12:26**	**12:31**
	10:53	11:05	•••••	11:26	11:33	11:45	**12:01**	**12:12**	**12:25**	**12:38**	**12:46**	**12:51**
A		11:25	11:42	11:46	11:53	**12:05**	**12:21**	**12:32**	**12:45**	**12:58**	**1:06**	**1:11**
		11:45	•••••	**12:06**	**12:13**	**12:25**	**12:41**	**12:52**	**1:05**	**1:18**	**1:26**	**1:31**
	11:53	**12:05**	•••••	**12:26**	**12:33**	**12:45**	**1:01**	**1:12**	**1:25**	**1:38**	**1:46**	**1:51**
A		**12:28**	**12:45**	**12:49**	**12:56**	**1:08**	**1:24**	**1:35**	**1:48**	**2:01**	**2:09**	**2:14**
	12:46	**12:58**	•••••	**1:19**	**1:26**	**1:38**	**1:54**	**2:05**	**2:18**	**2:31**	**2:39**	**2:44**
A		**1:28**	**1:45**	**1:49**	**1:56**	**2:08**	**2:24**	**2:35**	**2:48**	**3:01**	**3:09**	**3:14**
		1:43	•••••	**2:04**	**2:11**	**2:23**	**3:09**	**3:20**	**3:33**	**3:46**	**3:54**	**4:01**
	1:46	**1:58**	•••••	**2:19**	**2:26**	**2:38**	**2:54**	**3:05**	**3:18**	**3:31**	**3:39**	**3:44**
		2:15	•••••	**2:34**	**2:41**	**2:53**	**3:39**	**3:50**	**4:03**	**4:16**	**4:24**	**4:31**
A		**2:28**	**2:45**	**2:49**	**2:56**	**3:08**	**3:24**	**3:35**	**3:48**	**4:01**	**4:09**	**4:14**
	2:46	**2:58**	•••••	**3:19**	**3:26**	**3:38**	**3:54**	**4:05**	**4:18**	**4:31**	**4:39**	**4:44**
		3:10	•••••	**3:31**	**3:31**	**3:43**	**4:09**	**4:20**	**4:33**	**4:46**	**4:54**	**4:59**
A		**3:28**	**3:45**	**3:49**	**3:56**	**4:08**	**4:24**	**4:35**	**4:48**	**5:01**	**5:09**	**5:14**
	3:46	**3:58**	•••••	**4:19**	**4:26**	**4:38**	**4:54**	**5:05**	**5:18**	**5:31**	**5:39**	**5:44**
A		**4:24**	**4:39**	**4:44**	**4:51**	**5:02**	**5:19**	**5:30**	**5:41**	**5:54**	**6:02**	**6:06**
	4:36	**4:48**	•••••	**5:09**	**5:16**	**5:27**	**5:44**	**5:55**	**6:06**	**6:19**	**6:27**	**6:31**
A		**5:17**	**5:32**	**5:37**	**5:43**	**5:54**	**6:09**	**6:20**	**6:31**	**6:43**	**6:49**	**6:53**
	5:32	**5:41**	•••••	**6:02**	**6:08**	**6:19**	**6:34**	**6:45**	**6:56**	**7:08**	**7:14**	**7:18**
A		**6:10**	**6:25**	**6:29**	**6:35**	**6:46**	**7:01**	**7:10**	**7:22**	**7:33**	**7:39**	**7:43**
	6:32	**6:40**	•••••	**7:00**	**7:06**	**7:16**	**7:31**	**7:40**	**7:51**	**8:01**	**8:07**	**8:10**
		7:10	•••••	**7:30**	**7:36**	**7:46**	**8:01**	**8:10**	**8:21**	**8:31**	**8:37**	**8:40**
	7:32	**7:40**	•••••	**8:00**	**8:06**	**8:16**	**8:31**	**8:40**	**8:51**	**9:01**	**9:07**	**9:10**
		8:10	•••••	**8:30**	**8:36**	**8:46**	**9:01**	**9:10**	**9:21**	**9:31**	**9:37**	**9:40**
	8:32	**8:40**	•••••	**9:00**	**9:06**	**9:16**	**9:31**	**9:40**	**9:51**	**10:01**	**10:07**	**10:10**
		9:27	•••••	**9:46**	**9:52**	**10:01**	**10:16**	**10:25**	**10:35**	**10:44**	**10:50**	**10:54**

Monday-Friday
SOUTHBOUND To: Balboa

	Fullerton Transportation Center	Lemon & Freedom	Anaheim & Lincoln	Haster & Katella	The Outlets At Orange	Fairview & Westminster	Fairview & Segerstrom	Fairview & Arlington	Harbor & Wilson	Placentia & Wilson	Balboa & 23rd	Balboa & 21st	Ocean Front & Palm
A	4:55	4:57	5:03	5:11	5:18	5:27	5:41	5:49	5:55	5:57	6:13		
A	4:55	4:57	5:03	5:11	5:18	5:27	5:41	5:49	5:55	5:57	6:13		
	5:10	5:12	5:18	5:26	5:33	5:42	5:56	6:04	6:15	•••••	6:28		
A	5:25	5:27	5:33	5:41	5:48	5:57	6:11	6:19	6:25	6:27	•••••	6:43	6:50
	5:40	5:42	5:48	5:56	6:03	6:12	6:26	6:34	6:42	•••••	6:59		
	5:51	5:53	6:01	6:09	6:18	6:28	6:42	6:50	6:57	•••••	7:14		
A	6:18	6:20	6:28	6:36	6:45	6:55	7:09	7:17	7:23	7:25	•••••	7:42	7:49
	6:45	6:47	6:55	7:03	7:12	7:22	7:36	7:44	7:51	•••••	8:08		
A	7:07	7:10	7:18	7:29	7:38	7:49	8:04	8:14	8:21	8:24	•••••	8:40	8:47
	7:30	7:33	7:43	7:54	8:04	8:16	8:31	8:42	8:50	•••••	9:10		
A	7:57	8:00	8:10	8:21	8:31	8:43	8:58	9:09	9:17	9:20	•••••	9:37	9:46
	8:24	8:27	8:37	8:48	8:58	9:10	9:25	9:36	9:44	•••••	10:04		
A	8:53	8:56	9:05	9:16	9:26	9:37	9:52	10:03	10:10	10:13	•••••	10:30	10:39
	9:23	9:26	9:35	9:46	9:56	10:07	10:22	10:33	10:41	•••••	11:01		
A	9:53	9:56	10:05	10:16	10:26	10:37	10:52	11:03	11:10	11:13	•••••	11:30	11:39
	10:22	10:25	10:34	10:46	10:56	11:08	11:22	11:33	11:42	•••••	**12:03**		
	10:42	10:45	10:54	11:06	11:16	11:28	11:42	11:53	**12:02**	•••••	•••••	**12:23**	**12:32**
A	11:02	11:05	11:14	11:26	11:36	11:48	**12:02**	**12:13**	**12:21**	**12:24**	**12:42**		
	11:22	11:25	11:34	11:46	11:56	**12:08**	**12:22**	**12:33**	**12:42**	•••••	**1:03**		
	11:42	11:45	11:54	**12:06**	**12:16**	**12:28**	**12:42**	**12:53**	**1:02**	•••••	•••••	**1:23**	**1:32**
A	**12:02**	**12:05**	**12:14**	**12:26**	**12:36**	**12:48**	**1:02**	**1:13**	**1:21**	**1:24**	**1:42**		
	12:22	**12:26**	**12:35**	**12:46**	**12:56**	**1:08**	**1:22**	**1:33**	**1:40**	•••••	**2:00**		
	12:42	**12:46**	**12:55**	**1:06**	**1:16**	**1:28**	**1:42**	**1:53**	**2:00**	•••••	•••••	**2:20**	**2:29**
A	**1:00**	**1:03**	**1:14**	**1:26**	**1:36**	**1:49**	**2:03**	**2:14**	**2:21**	**2:24**	**2:41**		
	1:20	**1:23**	**1:34**	**1:46**	**1:56**	**2:09**	**2:23**	**2:34**	**2:42**	•••••	**3:03**		
	1:40	**1:43**	**1:54**	**2:06**	**2:16**	**2:29**	**2:43**	**2:54**	**3:02**	•••••	•••••	**3:23**	**3:32**
A	**2:00**	**2:03**	**2:14**	**2:26**	**2:36**	**2:49**	**3:03**	**3:14**	**3:21**	**3:24**	**3:41**		
	2:30	**2:33**	**2:44**	**2:56**	**3:06**	**3:19**	**3:33**	**3:44**	**3:52**	•••••	•••••	**4:13**	**4:22**
	2:45	**2:48**	**2:59**	**3:11**	**3:21**	**3:34**	**3:48**	**3:59**	**4:07**	•••••	**4:29**		
A	**3:00**	**3:03**	**3:14**	**3:26**	**3:36**	**3:49**	**4:03**	**4:14**	**4:21**	**4:24**	**4:41**		
	3:30	**3:33**	**3:44**	**3:56**	**4:06**	**4:19**	**4:33**	**4:44**	**4:52**	•••••	•••••	**5:13**	**5:22**
A	**4:00**	**4:03**	**4:13**	**4:25**	**4:36**	**4:48**	**5:02**	**5:12**	**5:18**	**5:21**	**5:39**		
	4:30	**4:33**	**4:43**	**4:55**	**5:06**	**5:18**	**5:32**	**5:42**	**5:50**	•••••	•••••	**6:10**	**6:19**
A	**5:00**	**5:03**	**5:13**	**5:25**	**5:36**	**5:48**	**6:02**	**6:12**	**6:18**	**6:21**	**6:39**		
	5:30	**5:33**	**5:43**	**5:55**	**6:06**	**6:18**	**6:32**	**6:42**	**6:50**	•••••	•••••	**7:10**	**7:19**
	6:02	**6:05**	**6:14**	**6:25**	**6:36**	**6:47**	**7:01**	**7:11**	**7:18**	•••••	**7:37**		
	6:32	**6:35**	**6:44**	**6:55**	**7:06**	**7:17**	**7:31**	**7:41**	**7:48**	•••••	•••••	**8:07**	**8:16**
	7:02	**7:05**	**7:14**	**7:25**	**7:36**	**7:47**	**8:01**	**8:11**	**8:18**	•••••	**8:37**		
	7:34	**7:36**	**7:45**	**7:56**	**8:06**	**8:17**	**8:29**	**8:37**	**8:45**	•••••	•••••	**9:03**	**9:11**
	8:20	**8:22**	**8:30**	**8:41**	**8:51**	**9:02**	**9:15**	**9:23**	**9:30**	•••••	•••••	**9:46**	**9:54**
	9:00	**9:02**	**9:10**	**9:21**	**9:31**	**9:42**	**9:55**	**10:03**	**10:10**	•••••	**10:26**		

A = Operates routing via Fairview, Wilson, and Placentia/*Opera la ruta por Fairview, Wilson y Placentia.*

Fullerton to Balboa
via Anaheim Blvd / Fairview St

47/A

Saturday, Sunday & Holiday
NORTHBOUND To: Fullerton

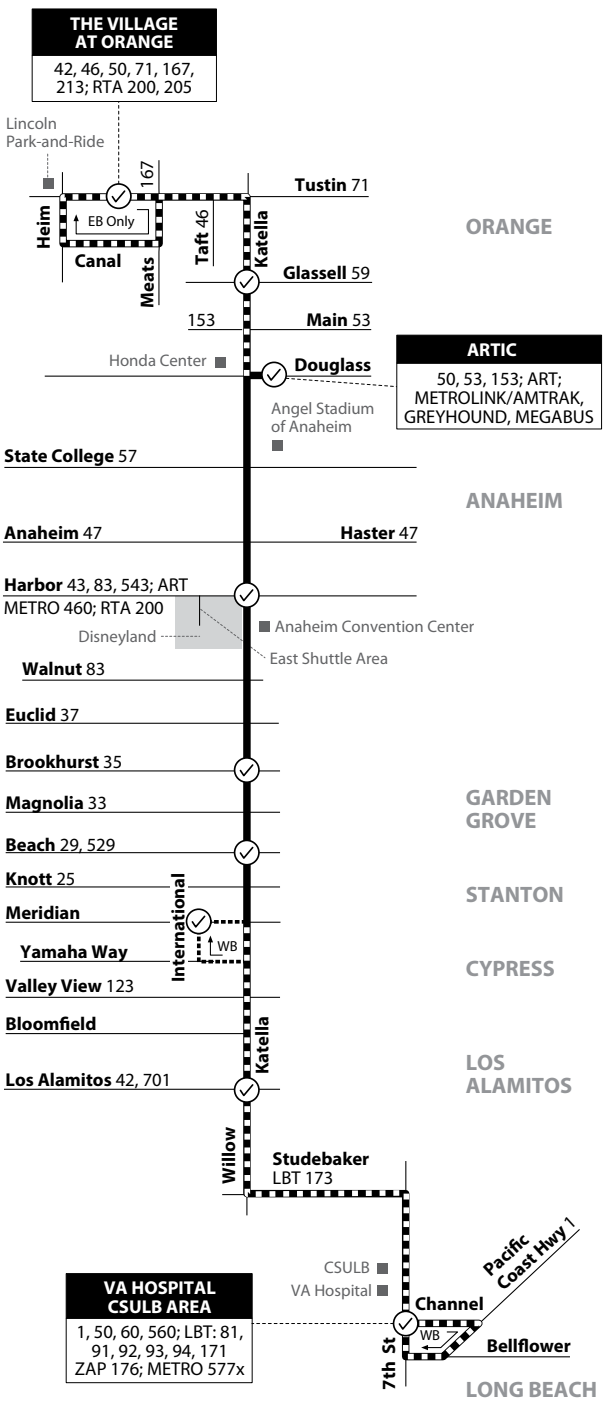
	Ocean Front & Palm	Balboa & 23rd	Wilson & Placentia	Wilson & Harbor	Fairview & Arlington	Fairview & Segerstrom	Fairview & Westminster	The Outlets At Orange	Anaheim & Katella	Anaheim & Lincoln	Lemon & Orangethorpe	Fullerton Transportation Center
	4:57	5:05	•••••	5:20	5:25	5:33	5:47	5:54	6:04	6:13	6:18	6:22
A		5:50	6:02	6:05	6:10	6:18	6:32	6:39	6:49	6:58	7:03	7:07
	6:10	6:18	•••••	6:33	6:37	6:46	7:01	7:09	7:19	7:30	7:36	7:41
A		6:44	6:57	7:01	7:06	7:16	7:30	7:39	7:49	8:02	8:09	8:14
	7:06	7:15	•••••	7:31	7:36	7:46	8:00	8:09	8:19	8:32	8:39	8:44
A		7:41	7:55	7:59	8:04	8:15	8:30	8:39	8:50	9:02	9:08	9:13
	8:01	8:10	•••••	8:29	8:34	8:45	9:00	9:09	9:20	9:32	9:38	9:43
A		8:29	8:45	8:49	8:56	9:07	9:23	9:32	9:44	9:56	10:03	10:08
		8:50	•••••	9:09	9:16	9:27	9:43	9:52	10:04	10:16	10:23	10:28
	9:01	9:10	•••••	9:29	9:36	9:47	10:03	10:12	10:24	10:36	10:43	10:48
A		9:29	9:45	9:49	9:56	10:07	10:23	10:32	10:44	10:56	11:03	11:08
		9:50	•••••	10:09	10:16	10:27	10:43	10:52	11:04	11:16	11:23	11:28
	9:58	10:07	•••••	10:28	10:35	10:47	11:02	11:12	11:26	11:39	11:46	11:51
A		10:28	10:43	10:48	10:55	11:07	11:22	11:32	11:46	11:59	**12:06**	**12:11**
		10:47	•••••	11:08	11:15	11:27	11:42	11:52	**12:06**	**12:19**	**12:26**	**12:31**
	10:53	11:05	•••••	11:26	11:33	11:45	**12:01**	**12:12**	**12:25**	**12:38**	**12:46**	**12:51**
A		11:25	11:42	11:46	11:53	**12:05**	**12:21**	**12:32**	**12:45**	**12:58**	**1:06**	**1:11**
		11:45	•••••	**12:06**	**12:13**	**12:25**	**12:41**	**12:52**	**1:05**	**1:18**	**1:26**	**1:31**
	11:53	**12:05**	•••••	**12:26**	**12:33**	**12:45**	**1:01**	**1:12**	**1:25**	**1:38**	**1:46**	**1:51**
A		**12:28**	**12:45**	**12:49**	**12:56**	**1:08**	**1:24**	**1:35**	**1:48**	**2:01**	**2:09**	**2:14**
	12:46	**12:58**	•••••	**1:19**	**1:26**	**1:38**	**1:54**	**2:05**	**2:18**	**2:31**	**2:39**	**2:44**
A		**1:28**	**1:45**	**1:49**	**1:56**	**2:08**	**2:24**	**2:35**	**2:48**	**3:01**	**3:09**	**3:14**
	1:46	**1:58**	•••••	**2:19**	**2:26**	**2:38**	**2:54**	**3:05**	**3:18**	**3:31**	**3:39**	**3:44**
A		**2:28**	**2:45**	**2:49**	**2:56**	**3:08**	**3:24**	**3:35**	**3:48**	**4:01**	**4:09**	**4:14**
	2:46	**2:58**	•••••	**3:19**	**3:26**	**3:38**	**3:54**	**4:05**	**4:18**	**4:31**	**4:39**	**4:44**
A		**3:28**	**3:45**	**3:49**	**3:56**	**4:08**	**4:24**	**4:35**	**4:48**	**5:01**	**5:09**	**5:14**
	3:46	**3:58**	•••••	**4:19**	**4:26**	**4:38**	**4:54**	**5:05**	**5:18**	**5:31**	**5:39**	**5:44**
A		**4:24**	**4:39**	**4:44**	**4:51**	**5:02**	**5:19**	**5:30**	**5:41**	**5:54**	**6:02**	**6:06**
	4:36	**4:48**	•••••	**5:09**	**5:16**	**5:27**	**5:44**	**5:55**	**6:06**	**6:19**	**6:27**	**6:31**
A		**5:17**	**5:32**	**5:37**	**5:43**	**5:54**	**6:09**	**6:20**	**6:31**	**6:43**	**6:49**	**6:53**
	5:32	**5:41**	•••••	**6:02**	**6:08**	**6:19**	**6:34**	**6:45**	**6:56**	**7:08**	**7:14**	**7:18**
A		**6:10**	**6:25**	**6:29**	**6:35**	**6:46**	**7:01**	**7:10**	**7:22**	**7:33**	**7:39**	**7:43**
	6:32	**6:40**	•••••	**7:00**	**7:06**	**7:16**	**7:31**	**7:40**	**7:51**	**8:01**	**8:07**	**8:10**
		7:10	•••••	**7:30**	**7:36**	**7:46**	**8:01**	**8:10**	**8:21**	**8:31**	**8:37**	**8:40**
	7:32	**7:40**	•••••	**8:00**	**8:06**	**8:16**	**8:31**	**8:40**	**8:51**	**9:01**	**9:07**	**9:10**
		8:10	•••••	**8:30**	**8:36**	**8:46**	**9:01**	**9:10**	**9:21**	**9:31**	**9:37**	**9:40**
	8:32	**8:40**	•••••	**9:00**	**9:06**	**9:16**	**9:31**	**9:40**	**9:51**	**10:01**	**10:07**	**10:10**
		9:27	•••••	**9:46**	**9:52**	**10:01**	**10:16**	**10:25**	**10:35**	**10:44**	**10:50**	**10:54**

Saturday, Sunday & Holiday
SOUTHBOUND To: Balboa

	Fullerton Transportation Center	Lemon & Freedom	Anaheim & Lincoln	Haster & Katella	The Outlets At Orange	Fairview & Westminster	Fairview & Segerstrom	Fairview & Arlington	Harbor & Wilson	Placentia & Wilson	Balboa & 23rd	Balboa & 21st	Ocean Front & Palm
A	4:55	4:57	5:03	5:11	5:18	5:27	5:41	5:49	•••••	5:57	6:13		
A	5:25	5:27	5:33	5:41	5:48	5:57	6:11	6:19	•••••	6:27	•••••	6:43	6:5
	5:51	5:53	6:01	6:09	6:18	6:28	6:42	6:50	6:57	•••••	7:14		
A	6:18	6:20	6:28	6:36	6:45	6:55	7:09	7:17	•••••	7:25	•••••	7:42	7:4
	6:45	6:47	6:55	7:03	7:12	7:22	7:36	7:44	7:51	•••••	8:08		
A	7:07	7:10	7:18	7:29	7:38	7:49	8:04	8:14	•••••	8:24	•••••	8:40	8:4
	7:30	7:33	7:43	7:54	8:04	8:16	8:31	8:42	8:50	•••••	9:10		
A	7:57	8:00	8:10	8:21	8:31	8:43	8:58	9:09	•••••	9:20	•••••	9:37	9:4
	8:24	8:27	8:37	8:48	8:58	9:10	9:25	9:36	9:44	•••••	10:04		
A	8:53	8:56	9:05	9:16	9:26	9:37	9:52	10:03	•••••	10:13	•••••	10:30	10:3
	9:23	9:26	9:35	9:46	9:56	10:07	10:22	10:33	10:41	•••••	11:01		
A	9:53	9:56	10:05	10:16	10:26	10:37	10:52	11:03	•••••	11:13	•••••	11:30	11:3
	10:22	10:25	10:34	10:46	10:56	11:08	11:22	11:33	11:42	•••••	**12:03**		
	10:42	10:45	10:54	11:06	11:16	11:28	11:42	11:53	**12:02**	•••••	•••••	**12:23**	**12:3**
A	11:02	11:05	11:14	11:26	11:36	11:48	**12:02**	**12:13**	•••••	**12:24**	**12:42**		
	11:22	11:25	11:34	11:46	11:56	**12:08**	**12:22**	**12:33**	**12:42**	•••••	**1:03**		
	11:42	11:45	11:54	**12:06**	**12:16**	**12:28**	**12:42**	**12:53**	**1:02**	•••••	•••••	**1:23**	**1:3**
A	**12:02**	**12:05**	**12:14**	**12:26**	**12:36**	**12:48**	**1:02**	**1:13**	•••••	**1:24**	**1:42**		
	12:22	**12:26**	**12:35**	**12:46**	**12:56**	**1:08**	**1:22**	**1:33**	**1:40**	•••••	**2:00**		
	12:42	**12:46**	**12:55**	**1:06**	**1:16**	**1:28**	**1:42**	**1:53**	**2:00**	•••••	•••••	**2:20**	**2:2**
A	**1:00**	**1:03**	**1:14**	**1:26**	**1:36**	**1:49**	**2:03**	**2:14**	•••••	**2:24**	**2:41**		
	1:20	**1:23**	**1:34**	**1:46**	**1:56**	**2:09**	**2:23**	**2:34**	**2:42**	•••••	**3:03**		
	1:40	**1:43**	**1:54**	**2:06**	**2:16**	**2:29**	**2:43**	**2:54**	**3:02**	•••••	•••••	**3:23**	**3:3**
A	**2:00**	**2:03**	**2:14**	**2:26**	**2:36**	**2:49**	**3:03**	**3:14**	•••••	**3:24**	**3:41**		
	2:30	**2:33**	**2:44**	**2:56**	**3:06**	**3:19**	**3:33**	**3:44**	**3:52**	•••••	•••••	**4:13**	**4:2**
A	**3:00**	**3:03**	**3:14**	**3:26**	**3:36**	**3:49**	**4:03**	**4:14**	•••••	**4:24**	**4:41**		
	3:30	**3:33**	**3:44**	**3:56**	**4:06**	**4:19**	**4:33**	**4:44**	**4:52**	•••••	•••••	**5:13**	**5:2**
A	**4:00**	**4:03**	**4:13**	**4:25**	**4:36**	**4:48**	**5:02**	**5:12**	•••••	**5:21**	**5:39**		
	4:30	**4:33**	**4:43**	**4:55**	**5:06**	**5:18**	**5:32**	**5:42**	**5:50**	•••••	•••••	**6:10**	**6:1**
A	**5:00**	**5:03**	**5:13**	**5:25**	**5:36**	**5:48**	**6:02**	**6:12**	•••••	**6:21**	**6:39**		
	5:30	**5:33**	**5:43**	**5:55**	**6:06**	**6:18**	**6:32**	**6:42**	**6:50**	•••••	•••••	**7:10**	**7:1**
	6:02	**6:05**	**6:14**	**6:25**	**6:36**	**6:47**	**7:01**	**7:11**	**7:18**	•••••	**7:37**		
	6:32	**6:35**	**6:44**	**6:55**	**7:06**	**7:17**	**7:31**	**7:41**	**7:48**	•••••	•••••	**8:07**	**8:1**
	7:02	**7:05**	**7:14**	**7:25**	**7:36**	**7:47**	**8:01**	**8:11**	**8:18**	•••••	**8:37**		
	7:34	**7:36**	**7:45**	**7:56**	**8:06**	**8:17**	**8:29**	**8:37**	**8:45**	•••••	•••••	**9:03**	**9:1**
	8:20	**8:22**	**8:30**	**8:41**	**8:51**	**9:02**	**9:15**	**9:23**	**9:30**	•••••	•••••	**9:46**	**9:5**
	9:00	**9:02**	**9:10**	**9:21**	**9:31**	**9:42**	**9:55**	**10:03**	**10:10**	•••••	**10:26**		

A = Operates routing via Fairview, Wilson, and Placentia/*Opera la ruta por Fairview, Wilson y Placentia.*

50 Long Beach to Orange
via Katella Ave



Monday-Friday
EASTBOUND To: Orange

7th & Channel	Katella & Los Alamitos	Katella & Beach	Katella & Brookhurst	Katella & Harbor	Anaheim Regional Transportation Intermodal Center (ARTIC)	Katella & Glassell	Village at Orange Zone 2
4:05	4:15	4:28	4:34	4:44	4:56	5:03	5:14
4:25	4:35	4:48	4:54	5:04	5:16	5:23	5:34
4:45	4:55	5:08	5:14	5:24	5:36	5:43	5:54
5:05	5:15	5:28	5:34	5:44	5:56	6:03	6:14
5:16	5:28	5:43	5:51	6:04	6:16	6:25	6:38
5:36	5:48	6:03	6:11	6:24	6:36	6:45	6:58
5:56	6:08	6:23	6:31	6:44	6:56	7:05	7:18
6:16	6:28	6:43	6:51	7:04	7:16	7:25	7:38
6:36	6:48	7:03	7:11	7:24	7:36	7:45	7:58
6:56	7:08	7:23	7:31	7:44	7:56	8:05	8:18
7:11	7:24	7:40	7:49	8:04	8:18	8:27	8:41
7:31	7:44	8:00	8:09	8:24	8:38	8:47	9:01
7:51	8:04	8:20	8:29	8:44	8:58	9:07	9:21
8:31	8:44	9:00	9:09	9:24	9:38	9:47	10:01
9:11	9:24	9:40	9:49	10:04	10:18	10:27	10:41
9:50	10:03	10:20	10:29	10:44	10:58	11:08	11:25
10:10	10:23	10:40	10:49	11:04	11:18	11:28	11:45
10:30	10:43	11:00	11:09	11:24	11:38	11:48	**12:05**
11:10	11:23	11:40	11:49	**12:04**	**12:18**	**12:28**	**12:45**
11:47	**12:00**	**12:19**	**12:28**	**12:44**	**12:58**	**1:08**	**1:24**
12:27	**12:40**	**12:59**	**1:08**	**1:24**	**1:38**	**1:48**	**2:04**
1:07	**1:20**	**1:39**	**1:48**	**2:04**	**2:18**	**2:28**	**2:44**
1:47	**2:00**	**2:19**	**2:28**	**2:44**	**2:58**	**3:08**	**3:24**
2:07	**2:20**	**2:39**	**2:48**	**3:04**	**3:18**	**3:28**	**3:44**
2:27	**2:40**	**2:59**	**3:08**	**3:24**	**3:38**	**3:48**	**4:04**
2:47	**3:00**	**3:19**	**3:28**	**3:44**	**3:58**	**4:08**	**4:24**
3:07	**3:20**	**3:39**	**3:48**	**4:04**	**4:18**	**4:28**	**4:44**
3:27	**3:40**	**3:59**	**4:08**	**4:24**	**4:38**	**4:48**	**5:04**
3:47	**4:00**	**4:19**	**4:28**	**4:44**	**4:58**	**5:08**	**5:24**
4:11	**4:23**	**4:40**	**4:49**	**5:04**	**5:19**	**5:28**	**5:42**
4:31	**4:43**	**5:00**	**5:09**	**5:24**	**5:39**	**5:48**	**6:02**
4:53	**5:05**	**5:22**	**5:30**	**5:44**	**5:57**	**6:06**	**6:20**
5:13	**5:25**	**5:42**	**5:50**	**6:04**	**6:17**	**6:26**	**6:40**
5:53	**6:05**	**6:22**	**6:30**	**6:44**	**6:57**	**7:06**	**7:20**
6:38	**6:50**	**7:07**	**7:15**	**7:29**	**7:42**	**7:51**	**8:05**
7:26	**7:38**	**7:55**	**8:03**	**8:17**	**8:30**	**8:39**	**8:53**
8:06	**8:18**	**8:32**	**8:38**	**8:50**	**9:03**	**9:10**	**9:22**
8:40	**8:52**	**9:06**	**9:12**	**9:24**	**9:37**	**9:44**	**9:56**
9:42	**9:54**	**10:08**	**10:14**	**10:26**	**10:39**	**10:46**	**10:58**
10:45	**10:55**	**11:08**	**11:14**	**11:24**	**11:36**	**11:43**	**11:54**
11:45	**11:55**	12:08	12:14	12:24	12:36	12:43	12:54
12:45	12:55	1:08	1:14	1:24	1:36	1:43	1:54

Monday-Friday
WESTBOUND To: Long Beach

Village at Orange Zone 2	Katella & Glassell	Anaheim Regional Transportation Intermodal Center (ARTIC)	Katella & Harbor	Katella & Brookhurst	Katella & Beach	Katella & Los Alamitos	7th & Channel
4:45	4:53	5:03	5:13	5:22	5:29	5:43	5:58
5:25	5:33	5:43	5:53	6:02	6:09	6:23	6:38
5:59	6:09	6:20	6:33	6:44	6:52	7:08	7:26
6:39	6:49	7:00	7:13	7:24	7:32	7:48	8:06
7:19	7:29	7:40	7:53	8:04	8:12	8:28	8:46
7:59	8:09	8:20	8:33	8:44	8:52	9:08	9:26
8:37	8:49	9:00	9:13	9:24	9:32	9:50	10:10
9:17	9:29	9:40	9:53	10:04	10:12	10:30	10:50
9:57	10:09	10:20	10:33	10:44	10:52	11:10	11:30
10:37	10:49	11:00	11:13	11:24	11:32	11:50	**12:10**
11:11	11:26	11:39	11:53	**12:05**	**12:14**	**12:32**	**12:52**
11:51	**12:06**	**12:19**	**12:33**	**12:45**	**12:54**	**1:12**	**1:32**
12:11	**12:26**	**12:39**	**12:53**	**1:05**	**1:14**	**1:32**	**1:52**
12:31	**12:46**	**12:59**	**1:13**	**1:25**	**1:34**	**1:52**	**2:12**
12:51	**1:06**	**1:19**	**1:33**	**1:45**	**1:54**	**2:12**	**2:32**
1:14	**1:27**	**1:38**	**1:53**	**2:06**	**2:15**	**2:34**	**2:52**
1:34	**1:47**	**1:58**	**2:13**	**2:26**	**2:35**	**2:54**	**3:12**
1:54	**2:07**	**2:18**	**2:33**	**2:46**	**2:55**	**3:14**	**3:32**
2:14	**2:27**	**2:38**	**2:53**	**3:06**	**3:15**	**3:34**	**3:52**
2:34	**2:47**	**2:58**	**3:13**	**3:26**	**3:35**	**3:54**	**4:12**
2:54	**3:07**	**3:18**	**3:33**	**3:46**	**3:55**	**4:14**	**4:32**
3:14	**3:27**	**3:38**	**3:53**	**4:06**	**4:15**	**4:34**	**4:52**
3:34	**3:47**	**3:58**	**4:13**	**4:26**	**4:35**	**4:54**	**5:12**
3:54	**4:07**	**4:18**	**4:33**	**4:46**	**4:55**	**5:14**	**5:32**
4:14	**4:27**	**4:38**	**4:53**	**5:06**	**5:15**	**5:34**	**5:52**
4:34	**4:47**	**4:58**	**5:13**	**5:26**	**5:35**	**5:54**	**6:12**
4:54	**5:07**	**5:18**	**5:33**	**5:46**	**5:55**	**6:14**	**6:32**
5:14	**5:27**	**5:38**	**5:53**	**6:06**	**6:15**	**6:34**	**6:52**
5:34	**5:47**	**5:58**	**6:13**	**6:26**	**6:35**	**6:54**	**7:12**
5:54	**6:07**	**6:18**	**6:33**	**6:46**	**6:55**	**7:14**	**7:32**
6:35	**6:46**	**6:58**	**7:13**	**7:25**	**7:33**	**7:49**	**8:05**
7:15	**7:26**	**7:38**	**7:53**	**8:05**	**8:13**	**8:29**	**8:45**
7:55	**8:06**	**8:18**	**8:33**	**8:45**	**8:53**	**9:09**	**9:25**
8:35	**8:46**	**8:58**	**9:13**	**9:25**	**9:33**	**9:49**	**10:05**
9:15	**9:26**	**9:38**	**9:53**	**10:05**	**10:13**	**10:29**	**10:45**
10:25	**10:33**	**10:41**	**10:53**	**11:01**	**11:06**	**11:20**	**11:33**
11:25	**11:33**	**11:41**	**11:53**	12:01	12:06	12:20	12:33
12:19	12:27	12:36	12:47	12:56	1:02	1:14	1:27

Saturday, Sunday & Holiday
EASTBOUND To: Orange

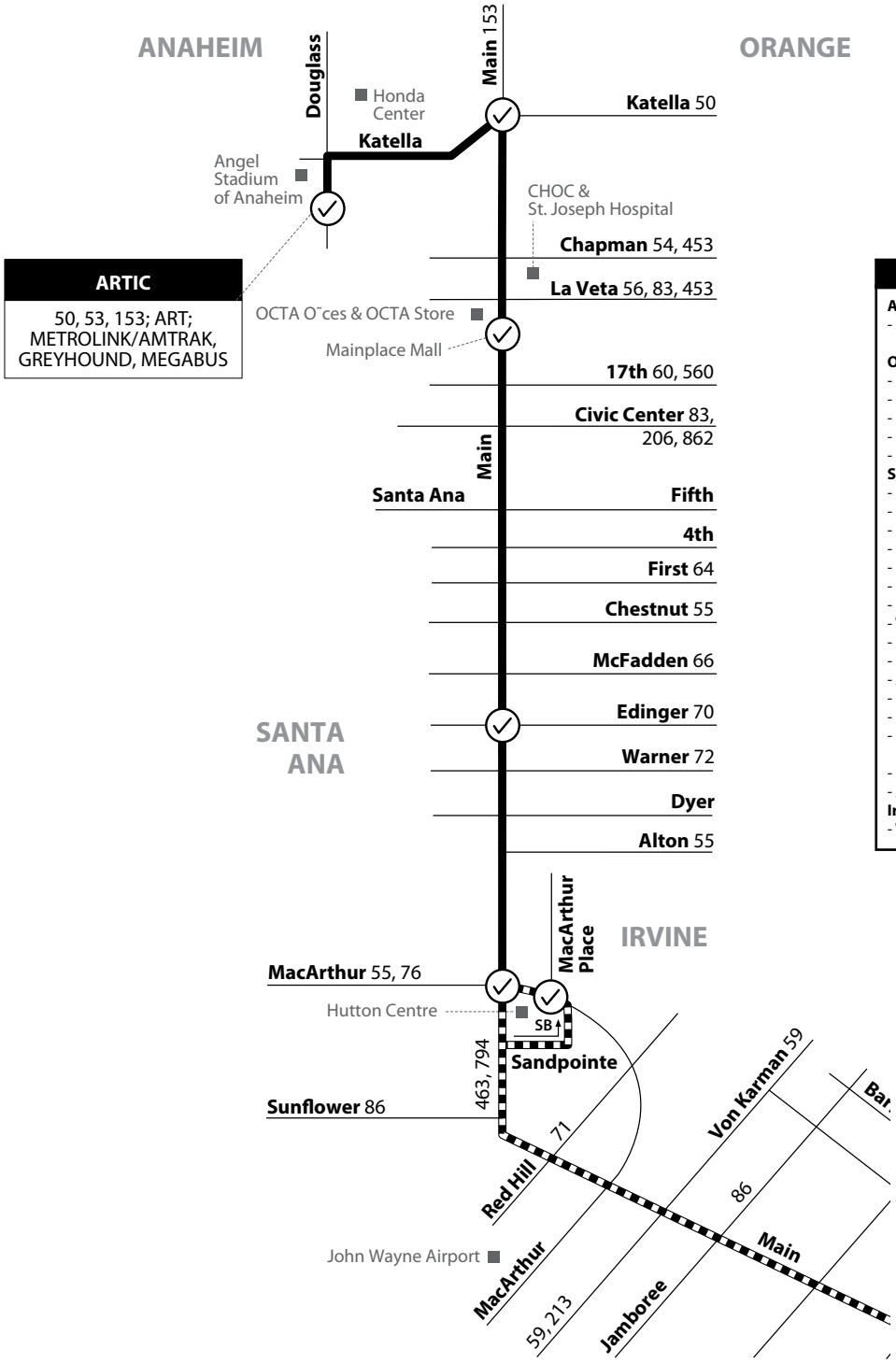
7th & Channel	Katella & Los Alamitos	Katella & Beach	Katella & Brookhurst	Katella & Harbor	Anaheim Regional Transportation Intermodal Center (ARTIC)	Katella & Glassell	Village At Orange
4:05	4:15	4:28	4:34	4:44	4:56	5:03	5:14
4:45	4:55	5:08	5:14	5:24	5:36	5:43	5:54
5:16	5:28	5:43	5:51	6:04	6:16	6:25	6:38
5:56	6:08	6:23	6:31	6:44	6:56	7:05	7:18
6:36	6:48	7:03	7:11	7:24	7:36	7:45	7:58
7:11	7:24	7:40	7:49	8:04	8:18	8:27	8:41
7:51	8:04	8:20	8:29	8:44	8:58	9:07	9:21
8:31	8:44	9:00	9:09	9:24	9:38	9:47	10:01
9:11	9:24	9:40	9:49	10:04	10:18	10:27	10:41
9:50	10:03	10:20	10:29	10:44	10:58	11:08	11:25
10:30	10:43	11:00	11:09	11:24	11:38	11:48	**12:05**
11:10	11:23	11:40	11:49	**12:04**	**12:18**	**12:28**	**12:45**
11:47	**12:00**	**12:19**	**12:28**	**12:44**	**12:58**	**1:08**	**1:24**
12:27	**12:40**	**12:59**	**1:08**	**1:24**	**1:38**	**1:48**	**2:04**
1:07	**1:20**	**1:39**	**1:48**	**2:04**	**2:18**	**2:28**	**2:44**
1:47	**2:00**	**2:19**	**2:28**	**2:44**	**2:58**	**3:08**	**3:24**
2:27	**2:40**	**2:59**	**3:08**	**3:24**	**3:38**	**3:48**	**4:04**
3:07	**3:20**	**3:39**	**3:48**	**4:04**	**4:18**	**4:28**	**4:44**
3:47	**4:00**	**4:19**	**4:28**	**4:44**	**4:58**	**5:08**	**5:24**
4:31	**4:43**	**5:00**	**5:09**	**5:24**	**5:39**	**5:48**	**6:02**
5:13	**5:25**	**5:42**	**5:50**	**6:04**	**6:17**	**6:26**	**6:40**
5:53	**6:05**	**6:22**	**6:30**	**6:44**	**6:57**	**7:06**	**7:20**
6:38	**6:50**	**7:07**	**7:15**	**7:29**	**7:42**	**7:51**	**8:05**
7:26	**7:38**	**7:55**	**8:03**	**8:17**	**8:30**	**8:39**	**8:53**
8:06	**8:18**	**8:32**	**8:38**	**8:50**	**9:03**	**9:10**	**9:22**
8:40	**8:52**	**9:06**	**9:12**	**9:24**	**9:37**	**9:44**	**9:56**
9:42	**9:54**	**10:08**	**10:14**	**10:26**	**10:39**	**10:46**	**10:58**
10:45	**10:55**	**11:08**	**11:14**	**11:24**	**11:36**	**11:43**	**11:54**
11:45	**11:55**	12:08	12:14	12:24	12:36	12:43	12:54
12:45	12:55	1:08	1:14	1:24	1:36	1:43	1:54

Operates Saturday Only.
Unicamente los sabados.

50 Long Beach to Orange
via Katella Ave

Saturday, Sunday & Holiday
WESTBOUND To: Long Beach

Village at Orange Zone 2	Katella & Glassell	Anaheim Regional Transportation Intermodal Center (ARTIC)	Katella & Harbor	Katella & Brookhurst	Katella & Beach	Katella & Los Alamitos	7th & Channel
4:45	4:53	5:03	5:13	5:22	5:29	5:43	5:58
5:25	5:33	5:43	5:53	6:02	6:09	6:23	6:38
5:59	6:09	6:20	6:33	6:44	6:52	7:08	7:26
6:39	6:49	7:00	7:13	7:24	7:32	7:48	8:06
7:19	7:29	7:40	7:53	8:04	8:12	8:28	8:46
7:59	8:09	8:20	8:33	8:44	8:52	9:08	9:26
8:37	8:49	9:00	9:13	9:24	9:32	9:50	10:10
9:17	9:29	9:40	9:53	10:04	10:12	10:30	10:50
9:57	10:09	10:20	10:33	10:44	10:52	11:10	11:30
10:37	10:49	11:00	11:13	11:24	11:32	11:50	**12:10**
11:11	11:26	11:39	11:53	**12:05**	**12:14**	**12:32**	**12:52**
11:51	**12:06**	**12:19**	**12:33**	**12:45**	**12:54**	**1:12**	**1:32**
12:31	**12:46**	**12:59**	**1:13**	**1:25**	**1:34**	**1:52**	**2:12**
1:14	**1:27**	**1:38**	**1:53**	**2:06**	**2:15**	**2:34**	**2:52**
1:54	**2:07**	**2:18**	**2:33**	**2:46**	**2:55**	**3:14**	**3:32**
2:34	**2:47**	**2:58**	**3:13**	**3:26**	**3:35**	**3:54**	**4:12**
3:14	**3:27**	**3:38**	**3:53**	**4:06**	**4:15**	**4:34**	**4:52**
3:54	**4:07**	**4:18**	**4:33**	**4:46**	**4:55**	**5:14**	**5:32**
4:34	**4:47**	**4:58**	**5:13**	**5:26**	**5:35**	**5:54**	**6:12**
5:14	**5:27**	**5:38**	**5:53**	**6:06**	**6:15**	**6:34**	**6:52**
5:54	**6:07**	**6:18**	**6:33**	**6:46**	**6:55**	**7:14**	**7:32**
6:35	**6:46**	**6:58**	**7:13**	**7:25**	**7:33**	**7:49**	**8:05**
7:15	**7:26**	**7:38**	**7:53**	**8:05**	**8:13**	**8:29**	**8:45**
7:55	**8:06**	**8:18**	**8:33**	**8:45**	**8:53**	**9:09**	**9:25**
8:35	**8:46**	**8:58**	**9:13**	**9:25**	**9:33**	**9:49**	**10:05**
9:15	**9:26**	**9:38**	**9:53**	**10:05**	**10:13**	**10:29**	**10:45**
10:25	**10:33**	**10:41**	**10:53**	**11:01**	**11:06**	**11:20**	**11:33**
11:25	**11:33**	**11:41**	**11:53**	12:01	12:06	12:20	12:33
12:19	12:27	12:36	12:47	12:56	1:02	1:14	1:27



ARTIC

50, 53, 153; ART; METROLINK/AMTRAK, GREYHOUND, MEGABUS

SERVICE TO / SERVICIO A

Anaheim
- Anaheim Regional Transportation Intermodal Center (ARTIC)

Orange
- Batavia Industrial Park
- Children's Hospital-CHOC
- St. Joseph Hospital
- OCTA Offices & OCTA Store
- Portola Middle School

Santa Ana
- MainPlace Mall
- Discovery Cube
- Bowers Museum
- St. Joseph Ballet
- Santa Ana Civic Center
- County Courthouse
- Ronald Reagan Federal Courthouse
- Willard Intermediate School
- Orange County High School of the Arts
- Santa Ana High School
- Julia C. Lathrop Intermediate School
- Cesar E. Chavez High School
- Saddleback High School
- Douglas MacArthur Fundamental Intermediate School
- Hutton Centre
- John Wayne Airport

Irvine
- Woodbridge High School

LEGEND / LEYENDA

Scheduled Departure | Regular Route 53 Routing | 53X Weekday Routing and Stops | No Service On Some Trips

N MAP NOT TO SCALE

Route 053/052820

FT = Foothill Transit | ART = Anaheim Resort Transit

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

53 Anaheim to Irvine

via Main St

Monday-Friday

NORTHBOUND To: Anaheim

Yale Loop & Alton	MacArthur Blvd & MacArthur Pl	Main & MacArthur (Santa Ana)	Main & Edinger	Santa Ana Mainplace	Katella & Main	Anaheim Regional Transportation Intermodal Center (ARTIC)
5:20	•••••	5:33	5:42	5:59	6:09	6:14
	5:47	5:48	5:57	6:14	6:24	6:29
	6:02	6:03	6:12	6:29	6:39	6:44
6:05	•••••	6:18	6:27	6:44	6:54	6:59
	6:32	6:33	6:42	6:59	7:09	7:14
	6:45	6:46	6:55	7:12	7:22	7:27
	6:58	6:59	7:08	7:25	7:35	7:40
6:59	•••••	7:12	7:21	7:38	7:48	7:53
	7:24	7:25	7:35	7:55	8:04	8:09
	7:39	7:40	7:50	8:10	8:19	8:24
7:39	•••••	7:54	8:04	8:24	8:33	8:38
	8:08	8:09	8:19	8:39	8:48	8:53
	8:23	8:24	8:34	8:54	9:03	9:08
8:24	•••••	8:39	8:49	9:09	9:18	9:23
	8:53	8:54	9:04	9:24	9:33	9:38
	9:08	9:09	9:19	9:39	9:48	9:53
9:09	•••••	9:24	9:34	9:54	10:03	10:08
	9:36	9:37	9:47	10:09	10:22	10:27
	9:51	9:52	10:02	10:24	10:37	10:42
9:52	•••••	10:07	10:17	10:39	10:52	10:57
	10:22	10:23	10:33	10:55	11:08	11:13
	10:38	10:39	10:49	11:12	11:23	11:28
10:34	•••••	10:54	11:04	11:27	11:38	11:43
	11:08	11:09	11:19	11:42	11:53	11:58
	11:23	11:24	11:34	11:57	**12:08**	**12:13**
11:19	•••••	11:39	11:49	**12:12**	**12:23**	**12:28**
	11:53	11:54	**12:04**	**12:27**	**12:38**	**12:43**
	12:08	**12:09**	**12:19**	**12:42**	**12:53**	**12:58**
12:04	•••••	**12:24**	**12:34**	**12:57**	**1:08**	**1:13**
	12:38	**12:39**	**12:49**	**1:12**	**1:23**	**1:28**
	12:52	**12:53**	**1:03**	**1:26**	**1:37**	**1:42**
12:47	•••••	**1:07**	**1:17**	**1:40**	**1:51**	**1:56**
	1:20	**1:21**	**1:31**	**1:54**	**2:05**	**2:10**
	1:34	**1:35**	**1:45**	**2:08**	**2:19**	**2:24**
1:29	•••••	**1:49**	**1:59**	**2:22**	**2:33**	**2:38**
	2:00	**2:01**	**2:11**	**2:34**	**2:45**	**2:50**
	2:12	**2:13**	**2:23**	**2:46**	**2:57**	**3:02**
	2:25	**2:26**	**2:36**	**2:59**	**3:10**	**3:15**
2:19	•••••	**2:40**	**2:50**	**3:14**	**3:25**	**3:30**
	2:53	**2:54**	**3:04**	**3:28**	**3:39**	**3:44**
	3:07	**3:08**	**3:18**	**3:42**	**3:53**	**3:58**
	3:21	**3:22**	**3:32**	**3:56**	**4:07**	**4:12**
3:14	•••••	**3:35**	**3:45**	**4:09**	**4:20**	**4:25**
	3:47	**3:48**	**3:58**	**4:22**	**4:33**	**4:38**
	4:00	**4:01**	**4:12**	**4:32**	**4:42**	**4:47**
3:53	•••••	**4:14**	**4:25**	**4:45**	**4:55**	**5:00**
	4:28	**4:29**	**4:40**	**5:00**	**5:10**	**5:15**
	4:43	**4:44**	**4:55**	**5:15**	**5:25**	**5:30**
4:31	•••••	**4:52**	**5:03**	**5:23**	**5:33**	**5:38**
4:39	•••••	**5:00**	**5:11**	**5:31**	**5:41**	**5:46**
	5:14	**5:15**	**5:26**	**5:46**	**5:56**	**6:01**
	5:26	**5:27**	**5:38**	**5:58**	**6:08**	**6:13**
	5:38	**5:39**	**5:50**	**6:10**	**6:20**	**6:25**
5:33	•••••	**5:54**	**6:05**	**6:25**	**6:35**	**6:40**
	6:08	**6:09**	**6:20**	**6:40**	**6:50**	**6:55**
	6:23	**6:24**	**6:35**	**6:55**	**7:05**	**7:10**
6:26	•••••	**6:43**	**6:51**	**7:10**	**7:20**	**7:25**
	6:56	**6:57**	**7:05**	**7:24**	**7:34**	**7:39**
	7:11	**7:12**	**7:20**	**7:39**	**7:49**	**7:54**
7:09	•••••	**7:26**	**7:34**	**7:53**	**8:03**	**8:08**
	7:38	**7:39**	**7:47**	**8:06**	**8:16**	**8:21**
	7:51	**7:52**	**8:00**	**8:19**	**8:29**	**8:34**
7:50	•••••	**8:07**	**8:15**	**8:34**	**8:44**	**8:49**
	8:36	**8:37**	**8:45**	**9:04**	**9:14**	**9:19**
8:50	•••••	**9:07**	**9:15**	**9:34**	**9:44**	**9:49**
	9:36	**9:37**	**9:45**	**10:04**	**10:14**	**10:19**
9:50	•••••	**10:07**	**10:15**	**10:34**	**10:44**	**10:49**
	10:36	**10:37**	**10:45**	**11:04**	**11:14**	**11:19**
10:50	•••••	**11:07**	**11:15**	**11:34**	**11:44**	**11:49**
	11:36	**11:37**	**11:45**	12:04	12:14	12:19

Monday-Friday

SOUTHBOUND To: Irvine

Anaheim Regional Transportation Intermodal Center (ARTIC)	Main & Katella	Santa Ana Mainplace	Main & Edinger	Main & MacArthur (Santa Ana)	MacArthur Blvd & MacArthur Pl	Yale Loop & Alton
5:43	5:47	5:56	6:11	6:20	•••••	6:41
6:03	6:07	6:16	6:31	6:40	6:43	
6:18	6:22	6:31	6:46	6:55	6:58	
6:31	6:35	6:44	6:59	7:08	•••••	7:29
6:42	6:46	6:55	7:13	7:23	7:26	
6:56	7:00	7:09	7:27	7:37	7:40	
7:10	7:14	7:23	7:41	7:51	•••••	8:12
7:24	7:28	7:37	7:55	8:05	8:08	
7:39	7:43	7:52	8:10	8:20	8:23	
7:54	7:58	8:07	8:25	8:35	•••••	8:56
8:09	8:13	8:22	8:40	8:50	8:53	
8:24	8:28	8:37	8:55	9:05	9:08	
8:39	8:43	8:52	9:10	9:20	•••••	9:41
8:54	8:58	9:07	9:25	9:35	9:38	
9:09	9:13	9:22	9:40	9:50	9:53	
9:23	9:27	9:36	9:54	10:04	•••••	10:25
9:37	9:41	9:50	10:08	10:18	10:21	
9:52	9:56	10:05	10:23	10:33	10:36	
10:07	10:11	10:20	10:38	10:48	•••••	11:09
10:22	10:26	10:35	10:53	11:03	11:06	
10:37	10:41	10:50	11:08	11:18	11:21	
10:52	10:56	11:05	11:23	11:33	•••••	11:54
11:07	11:11	11:20	11:38	11:48	11:51	
11:22	11:26	11:35	11:53	**12:03**	**12:06**	
11:29	11:33	11:45	**12:06**	**12:17**	•••••	**12:37**
11:40	11:44	11:56	**12:17**	**12:28**	**12:31**	
11:57	**12:01**	**12:13**	**12:34**	**12:45**	**12:48**	
12:11	**12:15**	**12:27**	**12:48**	**12:59**	•••••	**1:19**
12:25	**12:29**	**12:41**	**1:02**	**1:13**	**1:16**	
12:40	**12:44**	**12:56**	**1:17**	**1:28**	**1:31**	
12:55	**12:59**	**1:11**	**1:32**	**1:43**	•••••	**2:03**
1:10	**1:14**	**1:26**	**1:47**	**1:58**	**2:01**	
1:24	**1:28**	**1:40**	**2:01**	**2:12**	**2:15**	
1:38	**1:42**	**1:54**	**2:15**	**2:26**	•••••	**2:46**
1:52	**1:56**	**2:08**	**2:29**	**2:40**	**2:43**	
2:06	**2:10**	**2:22**	**2:43**	**2:54**	**2:57**	
2:20	**2:24**	**2:36**	**2:57**	**3:08**	**3:11**	
2:35	**2:39**	**2:50**	**3:09**	**3:19**	•••••	**3:39**
2:48	**2:52**	**3:03**	**3:22**	**3:32**	**3:36**	
3:01	**3:05**	**3:16**	**3:35**	**3:45**	**3:49**	
3:13	**3:17**	**3:28**	**3:47**	**3:57**	**4:01**	
3:25	**3:29**	**3:40**	**3:59**	**4:09**	•••••	**4:29**
3:40	**3:44**	**3:55**	**4:14**	**4:24**	**4:28**	
3:55	**3:59**	**4:10**	**4:29**	**4:39**	**4:43**	
4:10	**4:14**	**4:25**	**4:44**	**4:54**	•••••	**5:14**
4:24	**4:28**	**4:39**	**4:58**	**5:08**	**5:12**	
4:39	**4:43**	**4:54**	**5:13**	**5:23**	**5:27**	
4:54	**4:58**	**5:09**	**5:29**	**5:39**	•••••	**5:57**
5:09	**5:13**	**5:24**	**5:44**	**5:54**	**5:57**	
5:25	**5:29**	**5:40**	**6:00**	**6:10**	**6:13**	
5:40	**5:44**	**5:55**	**6:15**	**6:25**	•••••	**6:43**
5:56	**6:00**	**6:11**	**6:31**	**6:41**	**6:44**	
6:11	**6:15**	**6:26**	**6:46**	**6:56**	**6:59**	
6:23	**6:27**	**6:38**	**6:58**	**7:08**	**7:11**	
6:37	**6:41**	**6:52**	**7:12**	**7:22**	•••••	**7:40**
6:50	**6:54**	**7:05**	**7:26**	**7:35**	**7:38**	
7:05	**7:09**	**7:20**	**7:41**	**7:50**	**7:53**	
7:20	**7:24**	**7:35**	**7:56**	**8:05**	•••••	**8:24**
7:35	**7:39**	**7:50**	**8:11**	**8:20**	**8:23**	
8:05	**8:09**	**8:20**	**8:41**	**8:50**	**8:53**	
8:40	**8:44**	**8:54**	**9:11**	**9:19**	•••••	**9:38**
9:10	**9:14**	**9:24**	**9:41**	**9:49**	**9:52**	
9:40	**9:44**	**9:54**	**10:11**	**10:19**	•••••	**10:38**
10:10	**10:14**	**10:24**	**10:41**	**10:49**	**10:52**	
10:40	**10:44**	**10:54**	**11:11**	**11:19**	•••••	**11:38**
11:10	**11:14**	**11:24**	**11:41**	**11:49**	**11:52**	

F = Times are approximate/*Los horarios son aproximados.*

Saturday
NORTHBOUND To: Anaheim

West Yale Loop & Alton	MacArthur Blvd & MacArthur Pl	Main & MacArthur (Santa Ana)	Main & Edinger	Santa Ana MainPlace	Katella & Main **(F)**	Anaheim Regional Transportation Intermodal Center (ARTIC)
	5:47	5:48	5:57	6:14	6:24	6:29
	6:02	6:03	6:12	6:29	6:39	6:44
6:05	·····	6:18	6:27	6:44	6:54	6:59
	6:32	6:33	6:42	6:59	7:09	7:14
	6:45	6:46	6:55	7:12	7:22	7:27
	6:58	6:59	7:08	7:25	7:35	7:40
6:59	·····	7:12	7:21	7:38	7:48	7:53
	7:24	7:25	7:35	7:55	8:04	8:09
	7:39	7:40	7:50	8:10	8:19	8:24
7:39	·····	7:54	8:04	8:24	8:33	8:38
	8:08	8:09	8:19	8:39	8:48	8:53
	8:23	8:24	8:34	8:54	9:03	9:08
8:24	·····	8:39	8:49	9:09	9:18	9:23
	8:53	8:54	9:04	9:24	9:33	9:38
	9:08	9:09	9:19	9:39	9:48	9:53
9:09	·····	9:24	9:34	9:54	10:03	10:08
	9:36	9:37	9:47	10:09	10:22	10:27
	9:51	9:52	10:02	10:24	10:37	10:42
9:52	·····	10:07	10:17	10:39	10:52	10:57
	10:22	10:23	10:33	10:55	11:08	11:13
	10:38	10:39	10:49	11:12	11:23	11:28
10:34	·····	10:54	11:04	11:27	11:38	11:43
	11:08	11:09	11:19	11:42	11:53	11:58
	11:23	11:24	11:34	11:57	**12:08**	**12:13**
11:19	·····	11:39	11:49	**12:12**	**12:23**	**12:28**
	11:53	11:54	**12:04**	**12:27**	**12:38**	**12:43**
	12:08	**12:09**	**12:19**	**12:42**	**12:53**	**12:58**
12:04	·····	**12:24**	**12:34**	**12:57**	**1:08**	**1:13**
	12:38	**12:39**	**12:49**	**1:12**	**1:23**	**1:28**
	12:52	**12:53**	**1:03**	**1:26**	**1:37**	**1:42**
12:47	·····	**1:07**	**1:17**	**1:40**	**1:51**	**1:56**
	1:20	**1:21**	**1:31**	**1:54**	**2:05**	**2:10**
	1:34	**1:35**	**1:45**	**2:08**	**2:19**	**2:24**
1:29	·····	**1:49**	**1:59**	**2:22**	**2:33**	**2:38**
	2:00	**2:01**	**2:11**	**2:34**	**2:45**	**2:50**
	2:12	**2:13**	**2:23**	**2:46**	**2:57**	**3:02**
	2:25	**2:26**	**2:36**	**2:59**	**3:10**	**3:15**
2:19	·····	**2:40**	**2:50**	**3:14**	**3:25**	**3:30**
	2:53	**2:54**	**3:04**	**3:28**	**3:39**	**3:44**
	3:07	**3:08**	**3:18**	**3:42**	**3:53**	**3:58**
	3:21	**3:22**	**3:32**	**3:56**	**4:07**	**4:12**
3:14	·····	**3:35**	**3:45**	**4:09**	**4:20**	**4:25**
	3:47	**3:48**	**3:58**	**4:22**	**4:33**	**4:38**
	4:00	**4:01**	**4:12**	**4:32**	**4:42**	**4:47**
3:53	·····	**4:14**	**4:25**	**4:45**	**4:55**	**5:00**
	4:28	**4:29**	**4:40**	**5:00**	**5:10**	**5:15**
	4:43	**4:44**	**4:55**	**5:15**	**5:25**	**5:30**
4:39	·····	**5:00**	**5:11**	**5:31**	**5:41**	**5:46**
	5:14	**5:15**	**5:26**	**5:46**	**5:56**	**6:01**
	5:26	**5:27**	**5:38**	**5:58**	**6:08**	**6:13**
	5:38	**5:39**	**5:50**	**6:10**	**6:20**	**6:25**
5:33	·····	**5:54**	**6:05**	**6:25**	**6:35**	**6:40**
	6:08	**6:09**	**6:20**	**6:40**	**6:50**	**6:55**
	6:23	**6:24**	**6:35**	**6:55**	**7:05**	**7:10**
6:26	·····	**6:43**	**6:51**	**7:10**	**7:20**	**7:25**
	6:56	**6:57**	**7:05**	**7:24**	**7:34**	**7:39**
	7:11	**7:12**	**7:20**	**7:39**	**7:49**	**7:54**
7:09	·····	**7:26**	**7:34**	**7:53**	**8:03**	**8:08**
	7:38	**7:39**	**7:47**	**8:06**	**8:16**	**8:21**
	7:51	**7:52**	**8:00**	**8:19**	**8:29**	**8:34**
7:50	·····	**8:07**	**8:15**	**8:34**	**8:44**	**8:49**
	8:36	**8:37**	**8:45**	**9:04**	**9:14**	**9:19**
8:50	·····	**9:07**	**9:15**	**9:34**	**9:44**	**9:49**
	9:36	**9:37**	**9:45**	**10:04**	**10:14**	**10:19**
9:50	·····	**10:07**	**10:15**	**10:34**	**10:44**	**10:49**
	10:36	**10:37**	**10:45**	**11:04**	**11:14**	**11:19**
10:50	·····	**11:07**	**11:15**	**11:34**	**11:44**	**11:49**
	11:36	**11:37**	**11:45**	12:04	12:14	12:19

Saturday
SOUTHBOUND To: Irvine

Anaheim Regional Intermodal Transportation Center (ARTIC)	Main & Katella	Santa Ana MainPlace	Main & Edinger	Main & MacArthur (Santa Ana) **(F)**	MacArthur Blvd & MacArthur Pl	West Yale Loop & Alton
5:43	5:47	5:56	6:11	6:20	6:23	
6:03	6:07	6:16	6:31	6:40	6:43	
6:18	6:22	6:31	6:46	6:55	6:58	
6:31	6:35	6:44	6:59	7:08	·····	7:29
6:42	6:46	6:55	7:13	7:23	7:26	
6:56	7:00	7:09	7:27	7:37	7:40	
7:10	7:14	7:23	7:41	7:51	·····	8:12
7:24	7:28	7:37	7:55	8:05	8:08	
7:39	7:43	7:52	8:10	8:20	8:23	
7:54	7:58	8:07	8:25	8:35	·····	8:56
8:09	8:13	8:22	8:40	8:50	8:53	
8:24	8:28	8:37	8:55	9:05	9:08	
8:39	8:43	8:52	9:10	9:20	·····	9:41
8:54	8:58	9:07	9:25	9:35	9:38	
9:09	9:13	9:22	9:40	9:50	9:53	
9:23	9:27	9:36	9:54	10:04	·····	10:25
9:37	9:41	9:50	10:08	10:18	10:21	
9:52	9:56	10:05	10:23	10:33	10:36	
10:07	10:11	10:20	10:38	10:48	·····	11:09
10:22	10:26	10:35	10:53	11:03	11:06	
10:37	10:41	10:50	11:08	11:18	11:21	
10:52	10:56	11:05	11:23	11:33	·····	11:54
11:07	11:11	11:20	11:38	11:48	11:51	
11:22	11:26	11:35	11:53	**12:03**	**12:06**	
11:29	11:33	11:45	**12:06**	**12:17**	·····	**12:37**
11:40	11:44	11:56	**12:17**	**12:28**	**12:31**	
11:57	**12:01**	**12:13**	**12:34**	**12:45**	**12:48**	
12:11	**12:15**	**12:27**	**12:48**	**12:59**	·····	**1:19**
12:25	**12:29**	**12:41**	**1:02**	**1:13**	**1:16**	
12:40	**12:44**	**12:56**	**1:17**	**1:28**	**1:31**	
12:55	**12:59**	**1:11**	**1:32**	**1:43**	·····	**2:03**
1:10	**1:14**	**1:26**	**1:47**	**1:58**	**2:01**	
1:24	**1:28**	**1:40**	**2:01**	**2:12**	**2:15**	
1:38	**1:42**	**1:54**	**2:15**	**2:26**	·····	**2:46**
1:52	**1:56**	**2:08**	**2:29**	**2:40**	**2:43**	
2:06	**2:10**	**2:22**	**2:43**	**2:54**	**2:57**	
2:20	**2:24**	**2:36**	**2:57**	**3:08**	**3:11**	
2:35	**2:39**	**2:50**	**3:09**	**3:19**	·····	**3:39**
2:48	**2:52**	**3:03**	**3:22**	**3:32**	**3:36**	
3:01	**3:05**	**3:16**	**3:35**	**3:45**	**3:49**	
3:13	**3:17**	**3:28**	**3:47**	**3:57**	**4:01**	
3:25	**3:29**	**3:40**	**3:59**	**4:09**	·····	**4:29**
3:40	**3:44**	**3:55**	**4:14**	**4:24**	**4:28**	
3:55	**3:59**	**4:10**	**4:29**	**4:39**	**4:43**	
4:10	**4:14**	**4:25**	**4:44**	**4:54**	·····	**5:14**
4:24	**4:28**	**4:39**	**4:58**	**5:08**	**5:12**	
4:39	**4:43**	**4:54**	**5:13**	**5:23**	**5:27**	
4:54	**4:58**	**5:09**	**5:29**	**5:39**	·····	**5:57**
5:09	**5:13**	**5:24**	**5:44**	**5:54**	**5:57**	
5:25	**5:29**	**5:40**	**6:00**	**6:10**	**6:13**	
5:40	**5:44**	**5:55**	**6:15**	**6:25**	·····	**6:43**
5:56	**6:00**	**6:11**	**6:31**	**6:41**	**6:44**	
6:11	**6:15**	**6:26**	**6:46**	**6:56**	**6:59**	
6:23	**6:27**	**6:38**	**6:58**	**7:08**	**7:11**	
6:37	**6:41**	**6:52**	**7:12**	**7:22**	·····	**7:40**
6:50	**6:54**	**7:05**	**7:26**	**7:35**	**7:38**	
7:05	**7:09**	**7:20**	**7:41**	**7:50**	**7:53**	
7:20	**7:24**	**7:35**	**7:56**	**8:05**	·····	**8:24**
7:35	**7:39**	**7:50**	**8:11**	**8:20**	**8:23**	
8:05	**8:09**	**8:20**	**8:41**	**8:50**	**8:53**	
8:40	**8:44**	**8:54**	**9:11**	**9:19**	·····	**9:38**
9:10	**9:14**	**9:24**	**9:41**	**9:49**	**9:52**	
9:40	**9:44**	**9:54**	**10:11**	**10:19**	·····	**10:38**
10:10	**10:14**	**10:24**	**10:41**	**10:49**	**10:52**	
10:40	**10:44**	**10:54**	**11:11**	**11:19**	·····	**11:38**
11:10	**11:14**	**11:24**	**11:41**	**11:49**	**11:52**	

F = Times are approximate/*Los horarios son aproximados.*

53 Anaheim to Irvine

via Main St

Sunday & Holiday
NORTHBOUND To: Anaheim

West Yale Loop & Alton	MacArthur Blvd & MacArthur Pl	Main & MacArthur (Santa Ana)	Main & Edinger	Santa Ana MainPlace	Katella & Main **(F)**	Anaheim Regional Transportation Intermodal Center (ARTIC)
5:37	·····	5:51	5:59	6:11	6:20	6:25
	6:11	6:12	6:20	6:33	6:43	6:48
	6:27	6:28	6:36	6:49	6:59	7:04
6:36	·····	6:51	6:59	7:12	7:22	7:27
	7:10	7:11	7:19	7:32	7:42	7:47
	7:30	7:31	7:39	7:52	8:02	8:07
7:36	·····	7:51	7:59	8:12	8:22	8:27
	8:08	8:09	8:18	8:33	8:42	8:47
	8:30	8:31	8:40	8:55	9:04	9:09
8:33	·····	8:51	9:00	9:15	9:24	9:29
	9:10	9:11	9:20	9:35	9:44	9:49
	9:29	9:30	9:39	9:54	10:03	10:08
9:29	·····	9:47	9:56	10:14	10:24	10:29
	10:04	10:05	10:14	10:32	10:42	10:47
	10:14	10:15	10:24	10:42	10:52	10:57
	10:29	10:30	10:39	10:57	11:07	11:12
10:33	·····	10:51	11:00	11:18	11:28	11:33
	11:06	11:07	11:16	11:34	11:44	11:49
	11:22	11:23	11:32	11:50	**12:00**	**12:05**
	11:35	11:36	11:45	**12:03**	**12:13**	**12:18**
11:33	·····	11:51	**12:00**	**12:18**	**12:28**	**12:33**
	12:05	**12:06**	**12:15**	**12:33**	**12:43**	**12:48**
	12:20	**12:21**	**12:30**	**12:48**	**12:58**	**1:03**
	12:35	**12:36**	**12:45**	**1:03**	**1:13**	**1:18**
12:33	·····	**12:51**	**1:00**	**1:18**	**1:28**	**1:33**
	1:06	**1:07**	**1:16**	**1:34**	**1:44**	**1:49**
	1:21	**1:22**	**1:31**	**1:49**	**1:59**	**2:04**
	1:35	**1:36**	**1:45**	**2:03**	**2:13**	**2:18**
1:33	·····	**1:51**	**2:00**	**2:18**	**2:28**	**2:33**
	2:05	**2:06**	**2:15**	**2:33**	**2:43**	**2:48**
	2:20	**2:21**	**2:30**	**2:48**	**2:58**	**3:03**
	2:31	**2:32**	**2:41**	**2:59**	**3:09**	**3:14**
2:29	·····	**2:47**	**2:56**	**3:14**	**3:24**	**3:29**
	3:02	**3:03**	**3:12**	**3:30**	**3:40**	**3:45**
	3:17	**3:18**	**3:27**	**3:45**	**3:55**	**4:00**
	3:32	**3:33**	**3:42**	**4:00**	**4:10**	**4:15**
3:30	·····	**3:48**	**3:57**	**4:15**	**4:25**	**4:30**
	4:02	**4:03**	**4:12**	**4:30**	**4:40**	**4:45**
	4:17	**4:18**	**4:27**	**4:45**	**4:55**	**5:00**
	4:34	**4:35**	**4:44**	**5:00**	**5:10**	**5:15**
4:33	·····	**4:50**	**4:59**	**5:15**	**5:25**	**5:30**
	5:04	**5:05**	**5:14**	**5:30**	**5:40**	**5:45**
	5:19	**5:20**	**5:29**	**5:45**	**5:55**	**6:00**
	5:34	**5:35**	**5:44**	**6:00**	**6:10**	**6:15**
5:35	·····	**5:53**	**6:01**	**6:15**	**6:25**	**6:30**
	6:06	**6:07**	**6:15**	**6:29**	**6:39**	**6:44**
	6:21	**6:22**	**6:30**	**6:44**	**6:54**	**6:59**
	6:36	**6:37**	**6:45**	**6:59**	**7:09**	**7:14**
6:34	·····	**6:52**	**7:00**	**7:14**	**7:24**	**7:29**
	7:06	**7:07**	**7:15**	**7:29**	**7:39**	**7:44**
	7:21	**7:22**	**7:30**	**7:44**	**7:54**	**7:59**
	7:34	**7:35**	**7:43**	**7:57**	**8:07**	**8:12**
7:34	·····	**7:52**	**8:00**	**8:14**	**8:24**	**8:29**
	8:12	**8:13**	**8:21**	**8:35**	**8:45**	**8:50**
	8:31	**8:32**	**8:40**	**8:52**	**9:01**	**9:06**
8:35	·····	**8:52**	**9:00**	**9:12**	**9:21**	**9:26**
	9:21	**9:22**	**9:30**	**9:42**	**9:51**	**9:56**
9:35	·····	**9:52**	**10:00**	**10:12**	**10:21**	**10:26**
	10:21	**10:22**	**10:30**	**10:42**	**10:51**	**10:56**
	11:21	**11:22**	**11:30**	**11:42**	**11:51**	**11:56**

Sunday & Holiday
SOUTHBOUND To: Irvine

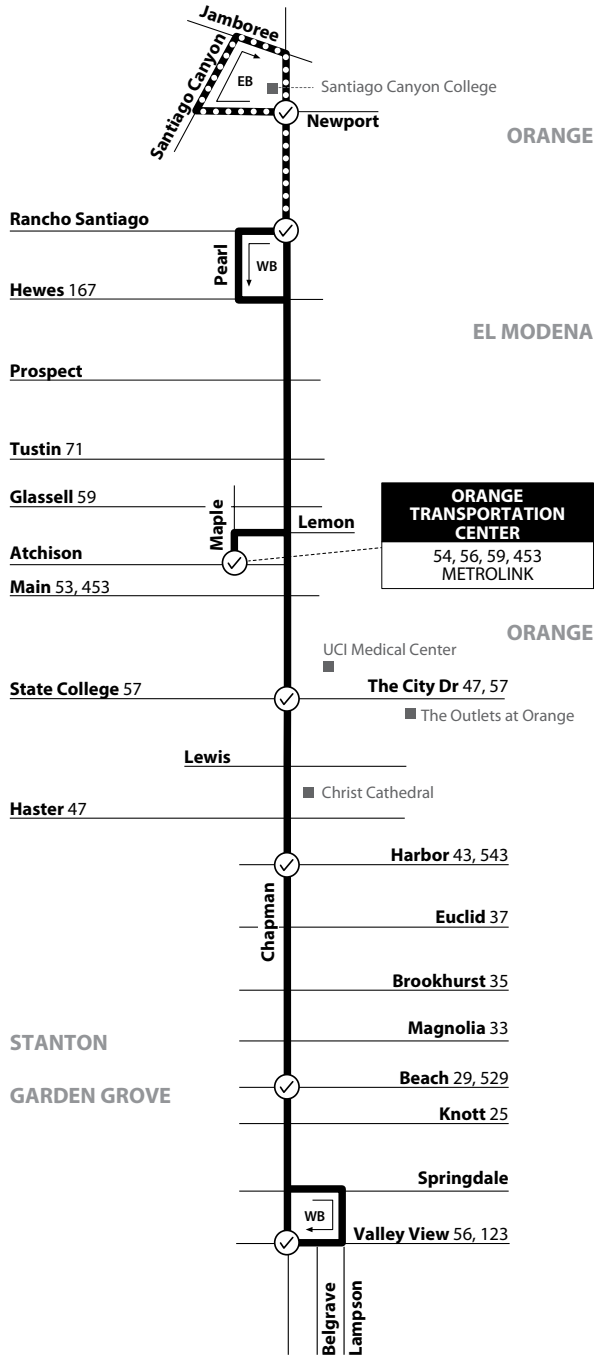
Anaheim Regional Transportation Intermodal Center (ARTIC)	Main & Katella	Santa Ana MainPlace	Main & Edinger	Main & MacArthur (Santa Ana) **(F)**	MacArthur Blvd & MacArthur Pl	West Yale Loop & Alton
5:59	6:03	6:11	6:25	6:32	·····	6:51
6:19	6:23	6:31	6:45	6:52	6:56	
6:39	6:43	6:51	7:05	7:12	7:16	
6:59	7:03	7:11	7:25	7:32	·····	7:51
7:14	7:18	7:26	7:42	7:50	7:54	
7:37	7:41	7:49	8:05	8:13	8:17	
7:57	8:01	8:09	8:25	8:33	·····	8:52
8:17	8:21	8:29	8:45	8:53	8:57	
8:37	8:41	8:49	9:05	9:13	9:17	
8:57	9:01	9:09	9:25	9:33	·····	9:52
9:09	9:13	9:22	9:40	9:50	9:55	
9:33	9:37	9:46	10:04	10:14	10:19	
9:54	9:58	10:07	10:25	10:35	·····	10:55
10:15	10:19	10:27	10:43	10:51	10:56	
10:31	10:35	10:43	10:59	11:07	11:12	
10:42	10:46	10:54	11:10	11:18	11:23	
10:57	11:01	11:09	11:25	11:33	·····	11:52
11:07	11:11	11:20	11:37	11:46	11:51	
11:22	11:26	11:36	11:54	**12:04**	**12:09**	
11:32	11:36	11:46	**12:04**	**12:14**	**12:19**	
11:52	11:56	**12:06**	**12:24**	**12:34**	·····	**12:54**
12:13	**12:17**	**12:26**	**12:42**	**12:51**	**12:56**	
12:28	**12:32**	**12:41**	**12:57**	**1:06**	**1:11**	
12:41	**12:45**	**12:54**	**1:10**	**1:19**	**1:24**	
12:56	**1:00**	**1:09**	**1:25**	**1:34**	·····	**1:54**
1:07	**1:11**	**1:21**	**1:39**	**1:49**	**1:53**	
1:19	**1:23**	**1:33**	**1:51**	**2:01**	**2:05**	
1:35	**1:39**	**1:49**	**2:07**	**2:17**	**2:21**	
1:53	**1:57**	**2:07**	**2:25**	**2:35**	·····	**2:53**
2:06	**2:10**	**2:20**	**2:38**	**2:48**	**2:52**	
2:21	**2:25**	**2:35**	**2:53**	**3:03**	**3:07**	
2:36	**2:40**	**2:50**	**3:08**	**3:18**	**3:22**	
2:53	**2:57**	**3:07**	**3:25**	**3:35**	·····	**3:53**
3:09	**3:13**	**3:22**	**3:39**	**3:48**	**3:52**	
3:24	**3:28**	**3:37**	**3:54**	**4:03**	**4:07**	
3:41	**3:45**	**3:54**	**4:11**	**4:20**	**4:24**	
3:55	**3:59**	**4:08**	**4:25**	**4:34**	·····	**4:52**
4:10	**4:14**	**4:23**	**4:40**	**4:49**	**4:53**	
4:25	**4:29**	**4:38**	**4:55**	**5:04**	**5:08**	
4:40	**4:44**	**4:53**	**5:10**	**5:19**	**5:23**	
4:55	**4:59**	**5:08**	**5:25**	**5:34**	·····	**5:52**
5:10	**5:14**	**5:23**	**5:40**	**5:49**	**5:53**	
5:25	**5:29**	**5:38**	**5:55**	**6:04**	**6:08**	
5:40	**5:44**	**5:53**	**6:10**	**6:19**	**6:23**	
5:55	**5:59**	**6:08**	**6:25**	**6:34**	·····	**6:52**
6:10	**6:14**	**6:23**	**6:40**	**6:49**	**6:53**	
6:25	**6:29**	**6:38**	**6:55**	**7:04**	**7:08**	
6:40	**6:44**	**6:53**	**7:10**	**7:19**	**7:23**	
6:57	**7:01**	**7:10**	**7:27**	**7:36**	·····	**7:54**
7:16	**7:20**	**7:28**	**7:44**	**7:51**	**7:56**	
7:27	**7:31**	**7:39**	**7:55**	**8:02**	**8:07**	
7:42	**7:46**	**7:54**	**8:10**	**8:17**	·····	**8:35**
8:02	**8:06**	**8:14**	**8:30**	**8:37**	**8:42**	
8:22	**8:26**	**8:34**	**8:50**	**8:57**	**9:02**	
8:42	**8:46**	**8:54**	**9:10**	**9:17**	·····	**9:35**
9:20	**9:24**	**9:31**	**9:44**	**9:51**	**9:56**	
9:46	**9:50**	**9:57**	**10:10**	**10:17**	·····	**10:35**
10:16	**10:20**	**10:27**	**10:40**	**10:47**	**10:52**	
11:16	**11:20**	**11:27**	**11:40**	**11:47**	**11:52**	

F = Times are approximate/*Los horarios son aproximados.*

NOTE: This route does not operate east of Rancho Santiago St. on Sundays.
***NOTA:** Esta ruta no opera al este de Rancho Santiago St. los domingos.*

Garden Grove to Orange
via Chapman Ave

54



LEGEND / *LEYENDA*

Scheduled Departure | Regular Routing | Monday-Saturday Only

Route 054/111519

METRO = Los Angeles Metro | RTA = Riverside Transit Agency
LBT = Long Beach Transit | ART = Anaheim Resort Transit

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

N — MAP NOT TO SCALE

Monday-Friday
EASTBOUND To: Orange

Chapman & Valley View	Chapman & Beach	Chapman & Brookhurst	Chapman & Harbor	Chapman & City Drive	Orange Transportation Center	Chapman & Rancho Santiago	Santiago Canyon College
6:15	6:22	6:30	6:39	6:46	6:57	7:13	7:23
6:45	6:52	7:00	7:09	7:16	7:27	7:43	7:53
7:15	7:22	7:30	7:39	7:46	7:57	8:13	8:23
7:45	7:52	8:00	8:09	8:16	8:27	8:43	8:53
8:15	8:22	8:30	8:39	8:46	8:57	9:13	9:23
8:45	8:52	9:00	9:09	9:16	9:27	9:43	9:53
9:14	9:21	9:29	9:39	9:46	9:59	10:16	10:26
9:44	9:51	9:59	10:09	10:16	10:29	10:46	10:56
10:11	10:19	10:27	10:39	10:47	10:59	11:16	11:26
10:41	10:49	10:57	11:09	11:17	11:29	11:46	11:56
11:11	11:19	11:27	11:39	11:47	11:59	**12:16**	**12:26**
11:41	11:49	11:57	**12:09**	**12:17**	**12:29**	**12:46**	**12:56**
12:11	**12:19**	**12:27**	**12:39**	**12:47**	**12:59**	**1:16**	**1:26**
12:40	**12:49**	**12:58**	**1:09**	**1:17**	**1:29**	**1:48**	**1:58**
1:10	**1:19**	**1:28**	**1:39**	**1:47**	**1:59**	**2:18**	**2:28**
1:40	**1:49**	**1:58**	**2:09**	**2:17**	**2:29**	**2:48**	**2:58**
2:10	**2:19**	**2:28**	**2:39**	**2:47**	**2:59**	**3:18**	**3:28**
2:40	**2:49**	**2:58**	**3:09**	**3:17**	**3:29**	**3:48**	**3:58**
			3:25	**3:33**	**3:46**		
3:10	**3:19**	**3:28**	**3:39**	**3:47**	**3:59**	**4:18**	**4:28**
			3:55	**4:03**	**4:16**		
3:40	**3:49**	**3:58**	**4:09**	**4:17**	**4:29**	**4:48**	**4:58**
4:11	**4:20**	**4:28**	**4:39**	**4:47**	**4:57**	**5:14**	**5:24**
			4:44	**4:52**	**5:04**		
4:41	**4:50**	**4:58**	**5:09**	**5:17**	**5:27**	**5:44**	**5:54**
5:12	**5:20**	**5:28**	**5:39**	**5:47**	**5:58**	**6:15**	**6:24**
5:42	**5:50**	**5:58**	**6:09**	**6:17**	**6:28**	**6:45**	**6:54**
6:12	**6:20**	**6:28**	**6:39**	**6:47**	**6:58**	**7:15**	**7:24**
6:45	**6:52**	**6:59**	**7:09**	**7:16**	**7:27**	**7:42**	**7:50**
7:15	**7:22**	**7:29**	**7:39**	**7:46**	**7:57**	**8:12**	**8:20**
7:45	**7:52**	**7:59**	**8:09**	**8:16**	**8:27**	**8:42**	**8:50**
8:15	**8:22**	**8:29**	**8:39**	**8:46**	**8:57**	**9:12**	**9:20**
9:00	**9:07**	**9:14**	**9:24**	**9:31**	**9:42**	**9:57**	**10:05**

SERVICE TO / SERVICIO A

El Modena
Orange
- El Modena High School
- Santiago Canyon College
- Orange Public Library
- Orange Civic Center
- Orange Transportation Center (Metrolink)
- The Plaza
- The Outlets at Orange
- UCI Medical Center
- Lamoreaux Justice Center
- Portola Middle School

Stanton
Garden Grove
- Christ Cathedral
- Garden Grove Resort District
- Izaak Walton Intermediate School
- Dr. Walter C. Ralston Intermediate School
- Alamitos Intermediate School
- Garden Grove Promenade
- Chapman Library
- Garden Grove West Library
- Pacifica High School
- Hilton D. Bell Intermediate School

54 Garden Grove to Orange
via Chapman Ave

NOTE: This route does not operate east of Rancho Santiago St. on Sundays.
NOTA: *Esta ruta no opera al este de Rancho Santiago St. los domingos.*

Monday-Friday
WESTBOUND To: Garden Grove

Santiago Canyon College	Chapman & Rancho Santiago	Orange Transportation Center	Chapman & City Drive	Chapman & Harbor	Chapman & Brookhurst	Chapman & Beach	Chapman & Valley View
6:00	6:05	6:22	6:32	6:38	6:45	6:51	7:00
6:16	6:22	6:40	6:51	6:58	7:08	7:16	7:27
6:46	6:52	7:10	7:21	7:28	7:38	7:46	7:57
7:16	7:22	7:40	7:51	7:58	8:08	8:16	8:27
7:46	7:52	8:10	8:21	8:28	8:38	8:46	8:57
8:16	8:22	8:40	8:51	8:58	9:08	9:16	9:27
8:46	8:52	9:10	9:21	9:28	9:38	9:46	9:57
9:12	9:18	9:38	9:50	9:58	10:08	10:17	10:28
9:42	9:48	10:08	10:20	10:28	10:38	10:47	10:58
10:12	10:18	10:38	10:50	10:58	11:08	11:17	11:28
10:42	10:48	11:08	11:20	11:28	11:38	11:47	11:58
11:12	11:18	11:38	11:50	11:58	**12:08**	**12:17**	**12:28**
11:42	11:48	**12:08**	**12:20**	**12:28**	**12:38**	**12:47**	**12:58**
12:12	**12:18**	**12:38**	**12:50**	**12:58**	**1:08**	**1:17**	**1:28**
12:41	**12:47**	**1:07**	**1:19**	**1:28**	**1:38**	**1:48**	**1:59**
1:11	**1:17**	**1:37**	**1:49**	**1:58**	**2:08**	**2:18**	**2:29**
1:41	**1:47**	**2:07**	**2:19**	**2:28**	**2:38**	**2:48**	**2:59**
2:11	**2:17**	**2:37**	**2:49**	**2:58**	**3:08**	**3:18**	**3:29**
2:41	**2:47**	**3:07**	**3:19**	**3:28**	**3:38**	**3:48**	**3:59**
3:10	**3:17**	**3:36**	**3:49**	**3:58**	**4:09**	**4:18**	**4:28**
3:40	**3:47**	**4:06**	**4:19**	**4:28**	**4:39**	**4:48**	**4:58**
4:10	**4:17**	**4:36**	**4:49**	**4:58**	**5:09**	**5:18**	**5:28**
4:40	**4:47**	**5:06**	**5:19**	**5:28**	**5:39**	**5:48**	**5:58**
5:10	**5:17**	**5:36**	**5:49**	**5:58**	**6:09**	**6:18**	**6:28**
5:45	**5:51**	**6:09**	**6:21**	**6:28**	**6:38**	**6:47**	**6:57**
6:15	**6:21**	**6:39**	**6:51**	**6:58**	**7:08**	**7:17**	**7:27**
6:45	**6:51**	**7:09**	**7:21**	**7:28**	**7:38**	**7:47**	**7:57**
7:15	**7:21**	**7:39**	**7:51**	**7:58**	**8:08**	**8:17**	**8:27**
7:45	**7:51**	**8:09**	**8:21**	**8:28**	**8:38**	**8:47**	**8:57**
8:30	**8:36**	**8:54**	**9:06**	**9:13**	**9:23**	**9:32**	**9:42**

Saturday
EASTBOUND To: Orange

Chapman & Valley View	Chapman & Beach	Chapman & Brookhurst	Chapman & Harbor	Chapman & City Drive	Orange Transportation Center	Chapman & Rancho Santiago	Santiago Canyon College
6:15	6:22	6:30	6:39	6:46	6:57	7:13	7:23
6:45	6:52	7:00	7:09	7:16	7:27	7:43	7:53
7:15	7:22	7:30	7:39	7:46	7:57	8:13	8:23
7:45	7:52	8:00	8:09	8:16	8:27	8:43	8:53
8:15	8:22	8:30	8:39	8:46	8:57	9:13	9:23
8:45	8:52	9:00	9:09	9:16	9:27	9:43	9:53
9:14	9:21	9:29	9:39	9:46	9:59	10:16	10:26
9:44	9:51	9:59	10:09	10:16	10:29	10:46	10:56
10:11	10:19	10:27	10:39	10:47	10:59	11:16	11:26
10:41	10:49	10:57	11:09	11:17	11:29	11:46	11:56
11:11	11:19	11:27	11:39	11:47	11:59	**12:16**	**12:26**
11:41	11:49	11:57	**12:09**	**12:17**	**12:29**	**12:46**	**12:56**
12:11	**12:19**	**12:27**	**12:39**	**12:47**	**12:59**	**1:16**	**1:26**
12:40	**12:49**	**12:58**	**1:09**	**1:17**	**1:29**	**1:48**	**1:58**
1:10	**1:19**	**1:28**	**1:39**	**1:47**	**1:59**	**2:18**	**2:28**
1:40	**1:49**	**1:58**	**2:09**	**2:17**	**2:29**	**2:48**	**2:58**
2:10	**2:19**	**2:28**	**2:39**	**2:47**	**2:59**	**3:18**	**3:28**
2:40	**2:49**	**2:58**	**3:09**	**3:17**	**3:29**	**3:48**	**3:58**
3:10	**3:19**	**3:28**	**3:39**	**3:47**	**3:59**	**4:18**	**4:28**
3:40	**3:49**	**3:58**	**4:09**	**4:17**	**4:29**	**4:48**	**4:58**
4:11	**4:20**	**4:28**	**4:39**	**4:47**	**4:57**	**5:14**	**5:24**
4:41	**4:50**	**4:58**	**5:09**	**5:17**	**5:27**	**5:44**	**5:54**
5:12	**5:20**	**5:28**	**5:39**	**5:47**	**5:58**	**6:15**	**6:24**
5:42	**5:50**	**5:58**	**6:09**	**6:17**	**6:28**	**6:45**	**6:54**
6:12	**6:20**	**6:28**	**6:39**	**6:47**	**6:58**	**7:15**	**7:24**
6:45	**6:52**	**6:59**	**7:09**	**7:16**	**7:27**	**7:42**	**7:50**
7:15	**7:22**	**7:29**	**7:39**	**7:46**	**7:57**	**8:12**	**8:20**
7:45	**7:52**	**7:59**	**8:09**	**8:16**	**8:27**	**8:42**	**8:50**
8:15	**8:22**	**8:29**	**8:39**	**8:46**	**8:57**	**9:12**	**9:20**
9:00	**9:07**	**9:14**	**9:24**	**9:31**	**9:42**	**9:57**	**10:05**

NOTE: This route does not operate east of Rancho Santiago St. on Sundays.
***NOTA:** Esta ruta no opera al este de Rancho Santiago St. los domingos.*

Garden Grove to Orange
via Chapman Ave

54

Saturday
WESTBOUND To: Garden Grove

Santiago Canyon College	Chapman & Rancho Santiago	Orange Transportation Center	Chapman & City Drive	Chapman & Harbor	Chapman & Brookhurst	Chapman & Beach	Chapman & Valley View
6:00	6:05	6:22	6:32	6:38	6:45	6:51	7:00
6:16	6:22	6:40	6:51	6:58	7:08	7:16	7:27
6:46	6:52	7:10	7:21	7:28	7:38	7:46	7:57
7:16	7:22	7:40	7:51	7:58	8:08	8:16	8:27
7:46	7:52	8:10	8:21	8:28	8:38	8:46	8:57
8:16	8:22	8:40	8:51	8:58	9:08	9:16	9:27
8:46	8:52	9:10	9:21	9:28	9:38	9:46	9:57
9:12	9:18	9:38	9:50	9:58	10:08	10:17	10:28
9:42	9:48	10:08	10:20	10:28	10:38	10:47	10:58
10:12	10:18	10:38	10:50	10:58	11:08	11:17	11:28
10:42	10:48	11:08	11:20	11:28	11:38	11:47	11:58
11:12	11:18	11:38	11:50	11:58	**12:08**	**12:17**	**12:28**
11:42	11:48	**12:08**	**12:20**	**12:28**	**12:38**	**12:47**	**12:58**
12:12	**12:18**	**12:38**	**12:50**	**12:58**	**1:08**	**1:17**	**1:28**
12:41	**12:47**	**1:07**	**1:19**	**1:28**	**1:38**	**1:48**	**1:59**
1:11	**1:17**	**1:37**	**1:49**	**1:58**	**2:08**	**2:18**	**2:29**
1:41	**1:47**	**2:07**	**2:19**	**2:28**	**2:38**	**2:48**	**2:59**
2:11	**2:17**	**2:37**	**2:49**	**2:58**	**3:08**	**3:18**	**3:29**
2:41	**2:47**	**3:07**	**3:19**	**3:28**	**3:38**	**3:48**	**3:59**
3:10	**3:17**	**3:36**	**3:49**	**3:58**	**4:09**	**4:18**	**4:28**
3:40	**3:47**	**4:06**	**4:19**	**4:28**	**4:39**	**4:48**	**4:58**
4:10	**4:17**	**4:36**	**4:49**	**4:58**	**5:09**	**5:18**	**5:28**
4:40	**4:47**	**5:06**	**5:19**	**5:28**	**5:39**	**5:48**	**5:58**
5:10	**5:17**	**5:36**	**5:49**	**5:58**	**6:09**	**6:18**	**6:28**
5:45	**5:51**	**6:09**	**6:21**	**6:28**	**6:38**	**6:47**	**6:57**
6:15	**6:21**	**6:39**	**6:51**	**6:58**	**7:08**	**7:17**	**7:27**
6:45	**6:51**	**7:09**	**7:21**	**7:28**	**7:38**	**7:47**	**7:57**
7:15	**7:21**	**7:39**	**7:51**	**7:58**	**8:08**	**8:17**	**8:27**
7:45	**7:51**	**8:09**	**8:21**	**8:28**	**8:38**	**8:47**	**8:57**
8:30	**8:36**	**8:54**	**9:06**	**9:13**	**9:23**	**9:32**	**9:42**

Sunday & Holiday
EASTBOUND To: Orange

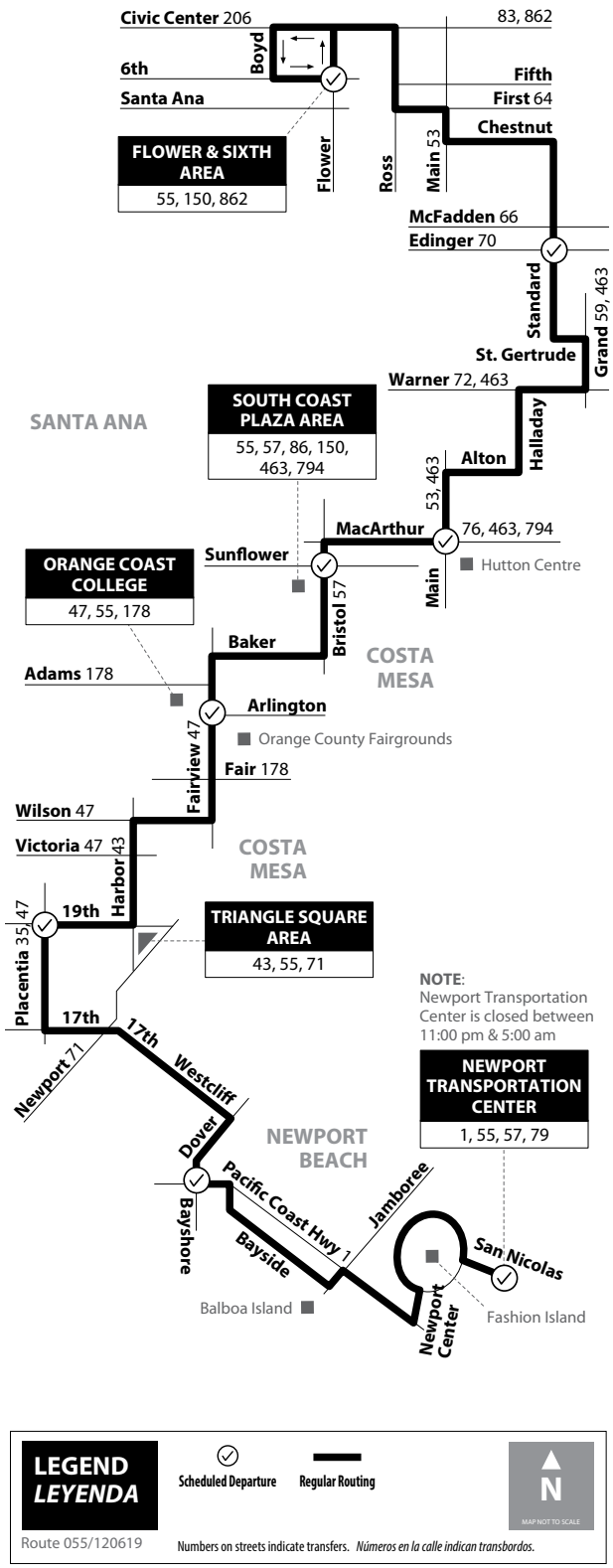
Chapman & alley View	Chapman & Beach	Chapman & Brookhurst	Chapman & Harbor	Chapman & City Drive	Orange Transportation Center	Rancho Santiago & Chapman
6:57	7:04	7:11	7:21	7:28	7:39	7:51
7:28	7:35	7:42	7:52	7:59	8:10	8:22
7:59	8:06	8:13	8:23	8:30	8:41	8:53
8:23	8:32	8:42	8:54	9:02	9:14	9:28
8:54	9:03	9:13	9:25	9:33	9:45	9:59
9:26	9:35	9:45	9:57	10:05	10:17	10:31
9:57	10:06	10:16	10:28	10:36	10:48	11:02
10:30	10:38	10:47	10:59	11:07	11:19	11:33
11:03	11:11	11:20	11:32	11:40	11:52	**12:09**
11:34	11:42	11:51	**12:03**	**12:11**	**12:23**	**12:40**
12:06	**12:14**	**12:23**	**12:35**	**12:43**	**12:55**	**1:12**
12:41	**12:49**	**12:57**	**1:08**	**1:16**	**1:28**	**1:45**
1:10	**1:18**	**1:26**	**1:37**	**1:45**	**1:57**	**2:14**
1:43	**1:51**	**1:59**	**2:10**	**2:18**	**2:30**	**2:47**
2:17	**2:25**	**2:33**	**2:44**	**2:52**	**3:04**	**3:21**
2:49	**2:57**	**3:05**	**3:16**	**3:24**	**3:36**	**3:52**
3:22	**3:30**	**3:38**	**3:48**	**3:56**	**4:07**	**4:23**
3:51	**3:59**	**4:07**	**4:17**	**4:25**	**4:36**	**4:52**
4:24	**4:32**	**4:40**	**4:50**	**4:58**	**5:09**	**5:25**
4:58	**5:06**	**5:14**	**5:24**	**5:32**	**5:43**	**5:59**
5:28	**5:35**	**5:43**	**5:53**	**6:00**	**6:11**	**6:24**
5:59	**6:06**	**6:14**	**6:24**	**6:31**	**6:42**	**6:55**
6:27	**6:34**	**6:42**	**6:52**	**6:59**	**7:10**	**7:23**
6:57	**7:04**	**7:12**	**7:22**	**7:29**	**7:40**	**7:53**
7:31	**7:38**	**7:46**	**7:56**	**8:03**	**8:14**	**8:27**
8:31	**8:38**	**8:46**	**8:56**	**9:03**	**9:14**	**9:27**
9:31	**9:38**	**9:46**	**9:56**	**10:03**	**10:14**	**10:27**

Sunday & Holiday
WESTBOUND To: Garden Grove

Rancho Santiago & Chapman	Orange Transportation Center	Chapman & City Drive	Chapman & Harbor	Chapman & Brookhurst	Chapman & Beach	Chapman & Valley View
6:29	6:45	6:55	7:02	7:10	7:17	7:26
7:06	7:22	7:34	7:42	7:52	8:01	8:11
7:36	7:52	8:04	8:12	8:22	8:31	8:41
8:06	8:22	8:34	8:42	8:52	9:01	9:11
8:37	8:53	9:05	9:13	9:23	9:32	9:42
9:08	9:24	9:36	9:44	9:54	10:03	10:13
9:43	9:59	10:11	10:19	10:29	10:38	10:48
10:14	10:30	10:42	10:50	11:00	11:09	11:19
10:44	11:02	11:14	11:22	11:32	11:41	11:51
11:17	11:35	11:47	11:55	**12:05**	**12:14**	**12:24**
11:48	**12:06**	**12:18**	**12:26**	**12:36**	**12:45**	**12:55**
12:21	**12:39**	**12:51**	**12:59**	**1:09**	**1:18**	**1:28**
12:55	**1:13**	**1:25**	**1:33**	**1:43**	**1:52**	**2:02**
1:28	**1:45**	**1:57**	**2:05**	**2:15**	**2:24**	**2:34**
2:00	**2:17**	**2:29**	**2:37**	**2:47**	**2:57**	**3:07**
2:29	**2:46**	**2:58**	**3:06**	**3:16**	**3:26**	**3:36**
3:02	**3:19**	**3:31**	**3:39**	**3:49**	**3:59**	**4:09**
3:37	**3:53**	**4:05**	**4:13**	**4:23**	**4:32**	**4:42**
4:08	**4:24**	**4:36**	**4:44**	**4:54**	**5:03**	**5:13**
4:39	**4:55**	**5:07**	**5:15**	**5:25**	**5:34**	**5:44**
5:08	**5:23**	**5:35**	**5:43**	**5:52**	**6:01**	**6:10**
5:40	**5:55**	**6:07**	**6:15**	**6:24**	**6:33**	**6:42**
6:14	**6:29**	**6:41**	**6:49**	**6:58**	**7:07**	**7:16**
6:39	**6:54**	**7:06**	**7:14**	**7:23**	**7:32**	**7:41**
7:10	**7:25**	**7:37**	**7:45**	**7:54**	**8:03**	**8:12**
7:38	**7:53**	**8:05**	**8:13**	**8:22**	**8:31**	**8:40**
8:38	**8:53**	**9:05**	**9:13**	**9:22**	**9:31**	**9:40**
9:38	**9:53**	**10:05**	**10:13**	**10:22**	**10:31**	**10:40**

55 Santa Ana to Newport Beach

via Standard Ave / Bristol St / Fairview St / 17th St



Monday-Friday

NORTHBOUND To: Santa Ana

Newport Transportation Center	Dover & Pacific Coast Hwy	Placentia & 19th	Fairview & Arlington	Bristol & Sunflower	Main & MacArthur (Santa Ana)	Standard & Edinger	Flower & 6th
			5:40	5:50	5:55	6:07	6:23
			6:10	6:20	6:25	6:37	6:53
5:56	6:06	6:18	6:36	6:50	6:56	7:09	7:27
6:26	6:36	6:48	7:06	7:20	7:26	7:39	7:57
6:56	7:06	7:18	7:36	7:50	7:56	8:09	8:27
7:26	7:36	7:48	8:06	8:20	8:26	8:39	8:57
7:56	8:06	8:18	8:36	8:50	8:56	9:09	9:27
8:21	8:34	8:47	9:05	9:20	9:28	9:42	10:01
8:51	9:04	9:17	9:35	9:50	9:58	10:12	10:31
9:21	9:34	9:47	10:05	10:20	10:28	10:42	11:01
9:51	10:04	10:17	10:35	10:50	10:58	11:12	11:31
10:21	10:34	10:47	11:05	11:20	11:28	11:42	**12:01**
10:51	11:04	11:17	11:35	11:50	11:58	**12:12**	**12:31**
11:21	11:34	11:47	**12:05**	**12:20**	**12:28**	**12:42**	**1:01**
11:51	**12:04**	**12:17**	**12:35**	**12:50**	**12:58**	**1:12**	**1:31**
12:21	**12:34**	**12:47**	**1:05**	**1:20**	**1:28**	**1:42**	**2:01**
12:51	**1:04**	**1:17**	**1:35**	**1:50**	**1:58**	**2:12**	**2:31**
1:21	**1:34**	**1:47**	**2:05**	**2:20**	**2:28**	**2:42**	**3:01**
1:51	**2:04**	**2:17**	**2:35**	**2:50**	**2:58**	**3:12**	**3:31**
2:21	**2:34**	**2:47**	**3:05**	**3:20**	**3:28**	**3:42**	**4:01**
2:51	**3:04**	**3:17**	**3:35**	**3:50**	**3:58**	**4:12**	**4:31**
3:21	**3:34**	**3:47**	**4:05**	**4:20**	**4:28**	**4:42**	**5:01**
3:51	**4:04**	**4:17**	**4:35**	**4:50**	**4:58**	**5:12**	**5:31**
4:21	**4:34**	**4:47**	**5:05**	**5:20**	**5:28**	**5:42**	**6:01**
4:58	**5:10**	**5:21**	**5:37**	**5:50**	**5:58**	**6:09**	**6:25**
5:28	**5:40**	**5:51**	**6:07**	**6:20**	**6:28**	**6:39**	**6:55**
6:03	**6:15**	**6:26**	**6:42**	**6:55**	**7:03**	**7:14**	**7:30**
6:38	**6:50**	**7:01**	**7:17**	**7:30**	**7:38**	**7:49**	**8:05**
7:13	**7:25**	**7:36**	**7:52**	**8:05**	**8:13**	**8:24**	**8:40**
7:47	**7:59**	**8:10**	**8:24**	**8:35**	**8:42**	**8:54**	**9:10**
8:17	**8:29**	**8:40**	**8:54**	**9:05**	**9:12**	**9:24**	**9:40**
8:47	**8:59**	**9:10**	**9:24**	**9:35**	**9:42**	**9:54**	**10:10**
9:17	**9:29**	**9:40**	**9:54**	**10:05**	**10:12**	**10:24**	**10:40**
9:47	**9:59**	**10:10**	**10:24**	**10:35**	**10:42**	**10:54**	**11:10**

Santa Ana to Newport Beach
via Standard Ave / Bristol St / Fairview St / 17th St

55

Monday-Friday
SOUTHBOUND To: Newport Beach

Flower & 6th	Edinger & Standard	MacArthur & Main, S.A.	Bristol & Sunflower	Fairview & Arlington	Placentia & 19th	Pacific Coast Hwy & Bay Shore	Newport Transportation Center
4:20	4:36	4:48	4:53	5:01	5:13	5:23	5:32
4:49	5:06	5:18	5:23	5:32	5:45	5:56	6:08
5:11	5:28	5:40	5:45	5:54	6:07	6:18	6:30
5:26	5:43	5:55	6:00	6:09	6:22	6:33	6:45
5:56	6:13	6:25	6:30	6:39	6:52	7:03	7:15
6:26	6:43	6:54	7:00	7:10	7:23	7:37	7:52
6:56	7:13	7:24	7:30	7:40	7:53	8:07	8:22
7:25	7:42	7:54	8:00	8:12	8:28	8:41	8:57
7:55	8:12	8:24	8:30	8:42	8:58	9:11	9:27
8:25	8:42	8:54	9:00	9:12	9:28	9:41	9:57
8:55	9:12	9:24	9:30	9:42	9:58	10:11	10:27
9:23	9:41	9:53	10:00	10:16	10:33	10:47	11:03
9:53	10:11	10:23	10:30	10:46	11:03	11:17	11:33
10:23	10:41	10:53	11:00	11:16	11:33	11:47	**12:03**
10:53	11:11	11:23	11:30	11:46	**12:03**	**12:17**	**12:33**
11:23	11:41	11:53	**12:00**	**12:16**	**12:33**	**12:47**	**1:03**
11:53	**12:11**	**12:23**	**12:30**	**12:46**	**1:03**	**1:17**	**1:33**
12:23	**12:41**	**12:53**	**1:00**	**1:16**	**1:33**	**1:47**	**2:03**
12:53	**1:11**	**1:23**	**1:30**	**1:46**	**2:03**	**2:17**	**2:33**
1:23	**1:41**	**1:53**	**2:00**	**2:16**	**2:33**	**2:47**	**3:03**
1:53	**2:11**	**2:23**	**2:30**	**2:46**	**3:03**	**3:17**	**3:33**
2:23	**2:41**	**2:53**	**3:00**	**3:16**	**3:33**	**3:47**	**4:03**
2:53	**3:11**	**3:23**	**3:30**	**3:46**	**4:03**	**4:17**	**4:33**
3:23	**3:41**	**3:53**	**4:00**	**4:16**	**4:33**	**4:47**	**5:03**
3:53	**4:11**	**4:23**	**4:30**	**4:46**	**5:03**	**5:17**	**5:33**
4:23	**4:41**	**4:53**	**5:00**	**5:16**	**5:33**	**5:47**	**6:03**
4:53	**5:11**	**5:23**	**5:30**	**5:46**	**6:03**	**6:17**	**6:33**
5:23	**5:41**	**5:53**	**6:00**	**6:16**	**6:33**	**6:47**	**7:03**
5:53	**6:11**	**6:23**	**6:30**	**6:46**	**7:03**	**7:17**	**7:33**
6:24	**6:41**	**6:53**	**7:00**	**7:13**	**7:28**	**7:40**	**7:55**
6:54	**7:11**	**7:23**	**7:30**	**7:43**	**7:58**	**8:10**	**8:25**
7:24	**7:41**	**7:53**	**8:00**	**8:13**	**8:28**	**8:40**	**8:55**
7:54	**8:11**	**8:23**	**8:30**	**8:43**	**8:58**	**9:10**	**9:25**
8:24	**8:41**	**8:53**	**9:00**	**9:13**	**9:28**	**9:40**	**9:55**
8:56	**9:12**	**9:24**	**9:30**	**9:41**	**9:55**	**10:06**	**10:20**

Saturday
NORTHBOUND To: Santa Ana

Newport Transportation Center	Dover & Pacific Coast Hwy	Placentia & 19th	Fairview & Arlington	Bristol & Sunflower	Main & MacArthur (Santa Ana)	Standard & Edinger	Flower & 6th
			5:40	5:50	5:55	6:07	6:23
			6:10	6:20	6:25	6:37	6:53
5:56	6:06	6:18	6:36	6:50	6:56	7:09	7:27
6:26	6:36	6:48	7:06	7:20	7:26	7:39	7:57
6:56	7:06	7:18	7:36	7:50	7:56	8:09	8:27
7:26	7:36	7:48	8:06	8:20	8:26	8:39	8:57
7:56	8:06	8:18	8:36	8:50	8:56	9:09	9:27
8:21	8:34	8:47	9:05	9:20	9:28	9:42	10:01
8:51	9:04	9:17	9:35	9:50	9:58	10:12	10:31
9:21	9:34	9:47	10:05	10:20	10:28	10:42	11:01
9:51	10:04	10:17	10:35	10:50	10:58	11:12	11:31
10:21	10:34	10:47	11:05	11:20	11:28	11:42	**12:01**
10:51	11:04	11:17	11:35	11:50	11:58	**12:12**	**12:31**
11:21	11:34	11:47	**12:05**	**12:20**	**12:28**	**12:42**	**1:01**
11:51	**12:04**	**12:17**	**12:35**	**12:50**	**12:58**	**1:12**	**1:31**
12:21	**12:34**	**12:47**	**1:05**	**1:20**	**1:28**	**1:42**	**2:01**
12:51	**1:04**	**1:17**	**1:35**	**1:50**	**1:58**	**2:12**	**2:31**
1:21	**1:34**	**1:47**	**2:05**	**2:20**	**2:28**	**2:42**	**3:01**
1:51	**2:04**	**2:17**	**2:35**	**2:50**	**2:58**	**3:12**	**3:31**
2:21	**2:34**	**2:47**	**3:05**	**3:20**	**3:28**	**3:42**	**4:01**
2:51	**3:04**	**3:17**	**3:35**	**3:50**	**3:58**	**4:12**	**4:31**
3:21	**3:34**	**3:47**	**4:05**	**4:20**	**4:28**	**4:42**	**5:01**
3:51	**4:04**	**4:17**	**4:35**	**4:50**	**4:58**	**5:12**	**5:31**
4:21	**4:34**	**4:47**	**5:05**	**5:20**	**5:28**	**5:42**	**6:01**
4:58	**5:10**	**5:21**	**5:37**	**5:50**	**5:58**	**6:09**	**6:25**
5:28	**5:40**	**5:51**	**6:07**	**6:20**	**6:28**	**6:39**	**6:55**
6:03	**6:15**	**6:26**	**6:42**	**6:55**	**7:03**	**7:14**	**7:30**
6:38	**6:50**	**7:01**	**7:17**	**7:30**	**7:38**	**7:49**	**8:05**
7:13	**7:25**	**7:36**	**7:52**	**8:05**	**8:13**	**8:24**	**8:40**
7:47	**7:59**	**8:10**	**8:24**	**8:35**	**8:42**	**8:54**	**9:10**
8:17	**8:29**	**8:40**	**8:54**	**9:05**	**9:12**	**9:24**	**9:40**
8:47	**8:59**	**9:10**	**9:24**	**9:35**	**9:42**	**9:54**	**10:10**
9:17	**9:29**	**9:40**	**9:54**	**10:05**	**10:12**	**10:24**	**10:40**
9:47	**9:59**	**10:10**	**10:24**	**10:35**	**10:42**	**10:54**	**11:10**

55 Santa Ana to Newport Beach

via Standard Ave / Bristol St / Fairview St / 17th St

Saturday
SOUTHBOUND To: Newport Beach

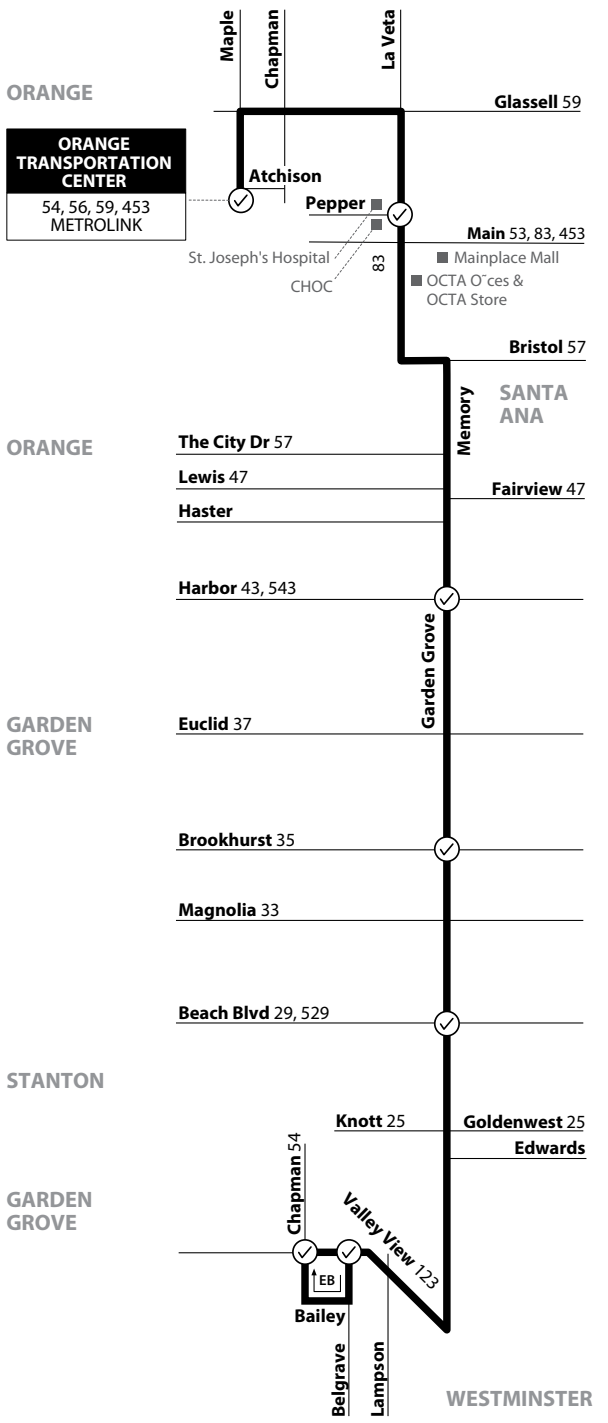
Flower & 6th	Standard & Edinger	MacArthur & Main, S.A.	Bristol & Sunflower	Fairview & Arlington	Placentia & 19th	Pacific Coast Hwy & Bay Shore	Newport Transportation Center
4:56	5:13	5:25	5:30	5:39	5:52	6:03	6:15
5:26	5:43	5:55	6:00	6:09	6:22	6:33	6:45
5:56	6:13	6:25	6:30	6:39	6:52	7:03	7:15
6:26	6:43	6:54	7:00	7:10	7:23	7:37	7:52
6:56	7:13	7:24	7:30	7:40	7:53	8:07	8:22
7:25	7:42	7:54	8:00	8:12	8:28	8:41	8:57
7:55	8:12	8:24	8:30	8:42	8:58	9:11	9:27
8:25	8:42	8:54	9:00	9:12	9:28	9:41	9:57
8:55	9:12	9:24	9:30	9:42	9:58	10:11	10:27
9:23	9:41	9:53	10:00	10:16	10:33	10:47	11:03
9:53	10:11	10:23	10:30	10:46	11:03	11:17	11:33
10:23	10:41	10:53	11:00	11:16	11:33	11:47	**12:03**
10:53	11:11	11:23	11:30	11:46	**12:03**	**12:17**	**12:33**
11:23	11:41	11:53	**12:00**	**12:16**	**12:33**	**12:47**	**1:03**
11:53	**12:11**	**12:23**	**12:30**	**12:46**	**1:03**	**1:17**	**1:33**
12:23	**12:41**	**12:53**	**1:00**	**1:16**	**1:33**	**1:47**	**2:03**
12:53	**1:11**	**1:23**	**1:30**	**1:46**	**2:03**	**2:17**	**2:33**
1:23	**1:41**	**1:53**	**2:00**	**2:16**	**2:33**	**2:47**	**3:03**
1:53	**2:11**	**2:23**	**2:30**	**2:46**	**3:03**	**3:17**	**3:33**
2:23	**2:41**	**2:53**	**3:00**	**3:16**	**3:33**	**3:47**	**4:03**
2:53	**3:11**	**3:23**	**3:30**	**3:46**	**4:03**	**4:17**	**4:33**
3:23	**3:41**	**3:53**	**4:00**	**4:16**	**4:33**	**4:47**	**5:03**
3:53	**4:11**	**4:23**	**4:30**	**4:46**	**5:03**	**5:17**	**5:33**
4:23	**4:41**	**4:53**	**5:00**	**5:16**	**5:33**	**5:47**	**6:03**
4:53	**5:11**	**5:23**	**5:30**	**5:46**	**6:03**	**6:17**	**6:33**
5:23	**5:41**	**5:53**	**6:00**	**6:16**	**6:33**	**6:47**	**7:03**
5:53	**6:11**	**6:23**	**6:30**	**6:46**	**7:03**	**7:17**	**7:33**
6:24	**6:41**	**6:53**	**7:00**	**7:13**	**7:28**	**7:40**	**7:55**
6:54	**7:11**	**7:23**	**7:30**	**7:43**	**7:58**	**8:10**	**8:25**
7:24	**7:41**	**7:53**	**8:00**	**8:13**	**8:28**	**8:40**	**8:55**
7:54	**8:11**	**8:23**	**8:30**	**8:43**	**8:58**	**9:10**	**9:25**
8:24	**8:41**	**8:53**	**9:00**	**9:13**	**9:28**	**9:40**	**9:55**
8:56	**9:12**	**9:24**	**9:30**	**9:41**	**9:55**	**10:06**	**10:20**

Sunday & Holiday
NORTHBOUND To: Santa Ana

Newport Transportation Center	Dover & Pacific Coast Hwy	Placentia & 19th	Fairview & Arlington	Bristol & Sunflower	Main & MacArthur (Santa Ana)	Standard & Edinger	Flower & 6th
6:04	6:13	6:24	6:38	6:50	6:56	7:08	7:25
6:38	6:47	6:58	7:12	7:24	7:30	7:42	7:59
7:12	7:21	7:32	7:46	7:58	8:04	8:16	8:33
7:36	7:49	8:01	8:19	8:34	8:41	8:54	9:14
8:12	8:25	8:37	8:55	9:10	9:17	9:30	9:50
8:42	8:55	9:07	9:25	9:40	9:47	10:00	10:20
9:12	9:25	9:37	9:55	10:10	10:17	10:30	10:50
9:42	9:55	10:07	10:25	10:40	10:47	11:00	11:20
10:12	10:25	10:37	10:55	11:10	11:17	11:30	11:50
10:42	10:55	11:07	11:25	11:40	11:47	**12:00**	**12:20**
11:12	11:25	11:37	11:55	**12:10**	**12:17**	**12:30**	**12:50**
11:42	11:55	**12:07**	**12:25**	**12:40**	**12:47**	**1:00**	**1:20**
12:12	**12:25**	**12:37**	**12:55**	**1:10**	**1:17**	**1:30**	**1:50**
12:42	**12:55**	**1:07**	**1:25**	**1:40**	**1:47**	**2:00**	**2:20**
1:12	**1:25**	**1:37**	**1:55**	**2:10**	**2:17**	**2:30**	**2:50**
1:42	**1:55**	**2:07**	**2:25**	**2:40**	**2:47**	**3:00**	**3:20**
2:12	**2:25**	**2:37**	**2:55**	**3:10**	**3:17**	**3:30**	**3:50**
2:42	**2:55**	**3:07**	**3:25**	**3:40**	**3:47**	**4:00**	**4:20**
3:12	**3:25**	**3:37**	**3:55**	**4:10**	**4:17**	**4:30**	**4:50**
3:42	**3:55**	**4:07**	**4:25**	**4:40**	**4:47**	**5:00**	**5:20**
4:12	**4:25**	**4:37**	**4:55**	**5:10**	**5:17**	**5:30**	**5:50**
4:42	**4:55**	**5:07**	**5:25**	**5:40**	**5:47**	**6:00**	**6:20**
5:12	**5:25**	**5:37**	**5:55**	**6:10**	**6:17**	**6:30**	**6:50**
5:42	**5:55**	**6:07**	**6:25**	**6:40**	**6:47**	**7:00**	**7:20**
6:17	**6:29**	**6:41**	**6:56**	**7:10**	**7:17**	**7:28**	**7:45**
6:47	**6:59**	**7:11**	**7:26**	**7:40**	**7:47**	**7:58**	**8:15**
7:17	**7:29**	**7:41**	**7:56**	**8:10**	**8:17**	**8:28**	**8:45**
7:47	**7:59**	**8:11**	**8:26**	**8:40**	**8:47**	**8:58**	**9:15**
8:27	**8:39**	**8:51**	**9:06**	**9:20**	**9:27**	**9:38**	**9:55**

Sunday & Holiday
SOUTHBOUND To: Newport Beach

Flower & 6th	Standard & Edinger	MacArthur & Main, S.A.	Bristol & Sunflower	Fairview & Arlington	Placentia & 19th	Pacific Coast Highway & Bay Shore	Newport Transportation Center
4:56	5:12	5:24	5:30	5:39	5:51	6:01	6:13
5:32	5:48	5:59	6:05	6:15	6:29	6:39	6:53
6:06	6:23	6:34	6:40	6:50	7:05	7:18	7:33
6:41	6:58	7:09	7:15	7:25	7:40	7:53	8:08
7:11	7:28	7:39	7:45	7:55	8:10	8:23	8:38
7:41	7:58	8:09	8:15	8:25	8:40	8:53	9:08
8:12	8:29	8:40	8:46	8:56	9:11	9:24	9:39
8:43	9:00	9:11	9:17	9:27	9:42	9:55	10:10
9:11	9:28	9:39	9:46	10:01	10:18	10:32	10:47
9:40	9:57	10:08	10:15	10:30	10:47	11:01	11:16
10:10	10:27	10:38	10:45	11:00	11:17	11:31	11:46
10:40	10:57	11:08	11:15	11:30	11:47	**12:01**	**12:16**
11:10	11:27	11:38	11:45	**12:00**	**12:17**	**12:31**	**12:46**
11:40	11:57	**12:08**	**12:15**	**12:30**	**12:47**	**1:01**	**1:16**
12:10	**12:27**	**12:38**	**12:45**	**1:00**	**1:17**	**1:31**	**1:46**
12:40	**12:57**	**1:08**	**1:15**	**1:30**	**1:47**	**2:01**	**2:16**
1:10	**1:27**	**1:38**	**1:45**	**2:00**	**2:17**	**2:31**	**2:46**
1:37	**1:54**	**2:05**	**2:12**	**2:27**	**2:44**	**2:58**	**3:13**
2:10	**2:27**	**2:38**	**2:45**	**3:00**	**3:17**	**3:31**	**3:46**
2:40	**2:57**	**3:08**	**3:15**	**3:30**	**3:47**	**4:01**	**4:16**
3:10	**3:27**	**3:38**	**3:45**	**4:00**	**4:17**	**4:31**	**4:46**
3:40	**3:57**	**4:08**	**4:15**	**4:30**	**4:47**	**5:01**	**5:16**
4:10	**4:27**	**4:38**	**4:45**	**5:00**	**5:17**	**5:31**	**5:46**
4:40	**4:57**	**5:08**	**5:15**	**5:30**	**5:47**	**6:01**	**6:16**
5:10	**5:27**	**5:38**	**5:45**	**6:00**	**6:17**	**6:31**	**6:46**
5:40	**5:57**	**6:08**	**6:15**	**6:30**	**6:47**	**7:01**	**7:16**
6:10	**6:27**	**6:38**	**6:45**	**7:00**	**7:17**	**7:31**	**7:46**
6:41	**6:57**	**7:08**	**7:15**	**7:27**	**7:42**	**7:55**	**8:08**
7:08	**7:24**	**7:35**	**7:42**	**7:54**	**8:09**	**8:22**	**8:35**
7:38	**7:54**	**8:05**	**8:12**	**8:24**	**8:39**	**8:52**	**9:05**
8:08	**8:24**	**8:35**	**8:42**	**8:54**	**9:09**	**9:22**	**9:35**



LEGEND *LEYENDA*

Scheduled Departure — Regular Routing

N — MAP NOT TO SCALE

Route 056/111519

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

All Days
EASTBOUND To: Orange

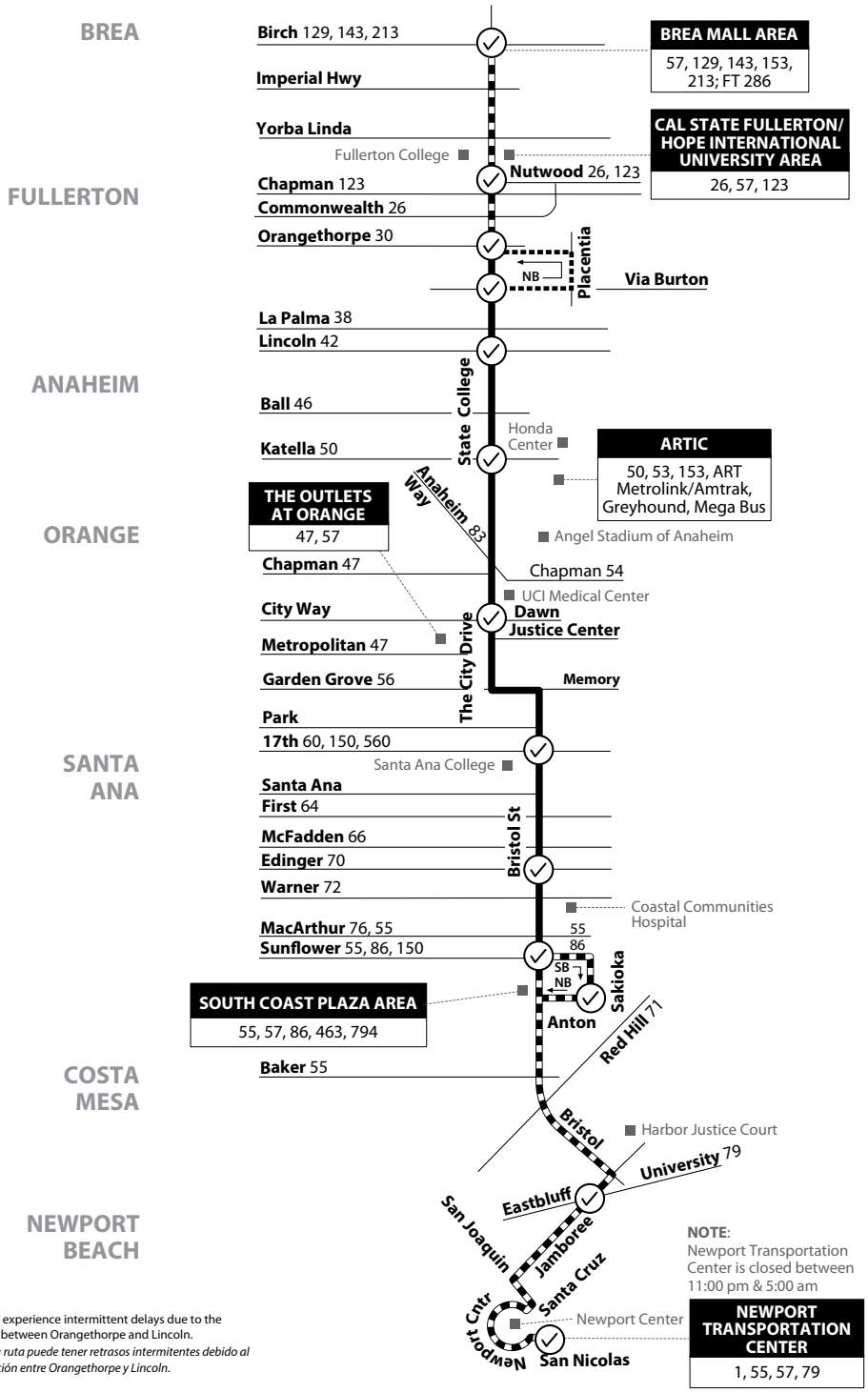
Chapman & Valley View	Belgrave & Valley View	Garden Grove & Beach	Garden Grove & Brookhurst	Garden Grove & Harbor	La Veta & Pepper	Orange Transportation Center
7:03	·····	7:19	7:31	7:40	7:54	8:01
7:48	·····	8:04	8:16	8:25	8:39	8:46
	8:33	8:49	9:01	9:10	9:24	9:31
	9:16	9:33	9:45	9:55	10:10	10:18
	10:01	10:18	10:30	10:40	10:55	11:03
	10:46	11:03	11:15	11:25	11:40	11:48
	11:27	11:46	11:58	**12:10**	**12:26**	**12:35**
	12:12	**12:31**	**12:43**	**12:55**	**1:11**	**1:20**
	12:57	**1:16**	**1:28**	**1:40**	**1:56**	**2:05**
	1:44	**2:02**	**2:13**	**2:25**	**2:39**	**2:48**
	2:29	**2:47**	**2:58**	**3:10**	**3:24**	**3:33**
	3:14	**3:32**	**3:43**	**3:55**	**4:09**	**4:18**
	3:58	**4:18**	**4:29**	**4:40**	**4:52**	**5:02**
	4:43	**5:03**	**5:14**	**5:25**	**5:37**	**5:47**
	5:28	**5:49**	**6:01**	**6:10**	**6:24**	**6:32**
6:18	·····	**6:37**	**6:48**	**6:55**	**7:08**	**7:15**
7:03	·····	**7:22**	**7:33**	**7:40**	**7:53**	**8:00**

All Days
WESTBOUND To: Garden Grove

Orange Transportation Center	La Veta & Pepper	Garden Grove & Harbor	Garden Grove & Brookhurst	Garden Grove & Beach	Belgrave & Valley View	Chapman & Valley View
6:50	6:56	7:09	7:19	7:27	·····	7:38
7:33	7:39	7:54	8:03	8:13	8:26	
8:18	8:24	8:39	8:48	8:58	9:11	
9:03	9:09	9:24	9:33	9:43	9:56	
9:48	9:54	10:09	10:18	10:28	10:41	
10:32	10:40	10:54	11:05	11:16	11:30	
11:17	11:25	11:39	11:50	**12:01**	**12:15**	
12:02	**12:10**	**12:24**	**12:35**	**12:46**	**1:00**	
12:46	**12:54**	**1:09**	**1:19**	**1:30**	**1:43**	
1:31	**1:39**	**1:54**	**2:04**	**2:15**	**2:28**	
2:16	**2:24**	**2:39**	**2:49**	**3:00**	**3:13**	
3:01	**3:09**	**3:24**	**3:34**	**3:45**	**3:56**	
3:48	**3:55**	**4:09**	**4:20**	**4:30**	**4:43**	
4:33	**4:40**	**4:54**	**5:05**	**5:15**	·····	**5:28**
5:18	**5:24**	**5:39**	**5:49**	**6:00**	·····	**6:13**
6:03	**6:09**	**6:24**	**6:34**	**6:45**	·····	**6:58**
6:48	**6:54**	**7:09**	**7:19**	**7:30**	·····	**7:43**
7:33	**7:39**	**7:54**	**8:04**	**8:15**	·····	**8:28**

57 Brea to Newport Beach

via State College Blvd / Bristol St



Note: This route may experience intermittent delays due to the construction project between Orangethorpe and Lincoln.
Tenga en cuenta: Esta ruta puede tener retrasos intermitentes debido al proyecto de construcción entre Orangethorpe y Lincoln.

LEGEND *LEYENDA*

Scheduled Departure | Regular Route 57 Routing | 57X Weekday Routing and Stops | 57X Weekday Southbound Only Stops | 57X Weekday Northbound Only Stops

FT = Foothill Transit | Turn Around For Short Turn Only | No Service On Some Trips

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Route 057/052820

Monday-Saturday
NORTHBOUND To: Brea

Newport Transportation Center	Jamboree University	Anton & Sakioka	Bristol & Sunflower	Bristol & Edinger	Bristol & 17th	The Outlets At Orange	State College & Katella	State College & Lincoln	State College & Orangethorpe	State College & Via Burton	State College & Nutwood	Brea Mall
4:00	4:09	·····	4:20	4:29	4:39	4:46	4:53	5:02	·····	5:07	5:16	5:30
4:22	4:31	·····	4:42	4:51	5:01	5:08	5:15	5:24	·····	5:29	5:38	5:52
4:44	4:53	·····	5:04	5:13	5:23	5:30	5:37	5:46	·····	5:51	6:00	6:14
5:06	5:15	·····	5:26	5:35	5:45	5:52	5:59	6:08	·····	6:13	6:22	6:36
5:28	5:37	·····	5:48	5:57	6:07	6:14	6:21	6:30	·····	6:35	6:44	6:58
5:48	5:57	·····	6:08	6:17	6:27	6:34	6:41	6:50	·····	6:55	7:04	7:18
6:05	6:14	·····	6:26	6:36	6:47	6:54	7:01	7:11	·····	7:17	7:26	7:40
6:25	6:34	·····	6:46	6:56	7:07	7:14	7:21	7:31	·····	7:37	7:46	8:00
6:45	6:54	·····	7:06	7:16	7:27	7:34	7:41	7:51	·····	7:57	8:06	8:20
7:00	7:11	·····	7:23	7:35	7:47	7:54	8:02	8:12	·····	8:18	8:27	8:40
7:20	7:31	·····	7:43	7:55	8:07	8:14	8:22	8:32	·····	8:38	8:47	9:00
7:40	7:51	·····	8:03	8:15	8:27	8:34	8:42	8:52	·····	8:58	9:07	9:20
8:00	8:11	·····	8:23	8:35	8:47	8:54	9:02	9:12	·····	9:18	9:27	9:40
8:20	8:31	·····	8:43	8:55	9:07	9:14	9:22	9:32	·····	9:38	9:47	10:00
		8:56	8:59	9:11	9:23	9:30	9:38	9:48	10:02			
8:48	8:59	·····	9:13	9:26	9:38	9:46	9:54	10:05	·····	10:12	10:22	10:36
		9:26	9:29	9:42	9:54	10:02	10:10	10:21	10:35			
9:20	9:31	·····	9:45	9:58	10:10	10:18	10:26	10:37	·····	10:44	10:54	11:08
		9:58	10:01	10:14	10:26	10:34	10:42	10:53	11:07			
9:52	10:03	·····	10:17	10:30	10:42	10:50	10:58	11:09	·····	11:16	11:26	11:40
		10:30	10:33	10:46	10:58	11:06	11:14	11:25	11:39			
10:24	10:35	·····	10:49	11:02	11:14	11:22	11:30	11:41	·····	11:48	11:58	**12:12**
		11:02	11:05	11:18	11:30	11:38	11:46	11:57	**12:11**			
10:56	11:07	·····	11:21	11:34	11:46	11:54	**12:02**	**12:13**	·····	**12:20**	**12:30**	**12:44**
		11:34	11:37	11:50	**12:02**	**12:10**	**12:18**	**12:29**	**12:43**			
11:28	11:39	·····	11:53	**12:06**	**12:18**	**12:26**	**12:34**	**12:45**	·····	**12:52**	**1:02**	**1:16**
		12:00	**12:04**	**12:20**	**12:34**	**12:42**	**12:50**	**1:02**	**1:16**			
11:54	**12:06**	·····	**12:20**	**12:36**	**12:50**	**12:58**	**1:06**	**1:18**	·····	**1:25**	**1:34**	**1:49**
		12:32	**12:36**	**12:52**	**1:06**	**1:14**	**1:22**	**1:34**	**1:47**			
12:26	**12:38**	·····	**12:52**	**1:08**	**1:22**	**1:30**	**1:38**	**1:50**	·····	**1:57**	**2:06**	**2:21**
		1:04	**1:08**	**1:24**	**1:38**	**1:46**	**1:54**	**2:06**	**2:19**			

Continued on next page.

57 Brea to Newport Beach

via State College Blvd / Bristol St

Monday-Saturday

NORTHBOUND To: Brea *(cont)*

Newport Transportation Center	Jamboree University	Anton & Sakioka	Bristol & Sunflower	Bristol & Edinger	Bristol & 17th	The Outlets At Orange	State College & Katella	State College & Lincoln	State College & Orangethorpe	State College & Via Burton	State College & Nutwood	Brea Mall
12:58	1:10	·····	1:24	1:40	1:54	2:02	2:10	2:22	·····	2:29	2:38	2:53
		1:36	1:40	1:56	2:10	2:18	2:26	2:38	2:51			
1:30	1:42	·····	1:56	2:12	2:26	2:34	2:42	2:54	·····	3:01	3:10	3:25
		2:08	2:12	2:28	2:42	2:50	2:58	3:10	3:23			
2:02	2:14	·····	2:28	2:44	2:58	3:06	3:14	3:26	·····	3:33	3:42	3:57
		2:40	2:44	3:00	3:14	3:22	3:30	3:42	3:55			
2:34	2:46	·····	3:00	3:16	3:30	3:38	3:46	3:58	·····	4:05	4:14	4:29
		3:12	3:16	3:32	3:46	3:54	4:02	4:14	4:27			
3:06	3:18	·····	3:32	3:48	4:02	4:10	4:18	4:30	·····	4:37	4:46	5:01
		3:44	3:48	4:04	4:18	4:26	4:34	4:46	4:59			
3:38	3:50	·····	4:04	4:20	4:34	4:42	4:50	5:02	·····	5:09	5:18	5:33
		4:16	4:20	4:36	4:50	4:58	5:06	5:18	5:31			
4:10	4:22	·····	4:36	4:52	5:06	5:14	5:22	5:34	·····	5:41	5:50	6:05
		4:45	4:49	5:05	5:20	5:30	5:38	5:51	6:03			
4:43	4:55	·····	5:09	5:24	5:38	5:46	5:55	6:04	·····	6:10	6:19	6:34
		5:21	5:25	5:40	5:54	6:02	6:11	6:20	6:32			
5:18	5:29	·····	5:44	5:58	6:10	6:18	6:26	6:35	·····	6:41	6:50	7:03
		5:56	6:00	6:14	6:26	6:34	6:42	6:51	7:03			
5:50	6:01	·····	6:16	6:30	6:42	6:50	6:58	7:07	·····	7:13	7:22	7:35
		6:28	6:32	6:46	6:58	7:06	7:14	7:23	7:35			
6:22	6:33	·····	6:48	7:02	7:14	7:22	7:30	7:39	·····	7:45	7:54	8:07
		7:04	7:08	7:22	7:34	7:42	7:50	7:59	8:11			
7:08	7:19	·····	7:34	7:45	7:55	8:02	8:09	8:18	·····	8:23	8:31	8:44
		7:50	7:54	8:05	8:15	8:22	8:29	8:38	8:50			
7:58	8:09	·····	8:24	8:35	8:45	8:52	8:59	9:08	·····	9:13	9:21	9:34
		8:50	8:54	9:05	9:15	9:22	9:29	9:38	9:50			
8:58	9:09	·····	9:24	9:35	9:45	9:52	9:59	10:08	·····	10:13	10:21	10:34
		9:58	10:02	10:13	10:23	10:30	10:37	10:46	10:58			
10:26	10:36	·····	10:48	10:59	11:09	11:16	11:23	11:31	·····	11:36	11:45	11:59
11:34	11:45	·····	11:56	12:05	12:14	12:22	12:28	12:36	·····	12:40	12:48	1:01
12:35	12:46	·····	12:57	1:06	1:15	1:23	1:29	1:37	·····	1:41	1:49	2:02

Monday-Saturday
SOUTHBOUND To: Newport Beach

Brea Mall	State College & Nutwood	State College & Via Burton	State College & Lincoln	State College & Katella	The Outlets At Orange	Bristol & 17th	Bristol & Edinger	Bristol & Sunflower	Anton & Sakioka	Jamboree & Eastbluff	Newport Transportation Center
3:57	4:06	4:14	4:18	4:26	4:31	4:38	4:48	4:58	·····	5:10	5:21
		4:37	4:40	4:48	4:53	5:00	5:10	5:20	·····	5:32	5:43
4:41	4:50	4:58	5:02	5:10	5:15	5:22	5:32	5:42	·····	5:54	6:05
		5:21	5:24	5:32	5:37	5:44	5:54	6:04	·····	6:16	6:27
5:17	5:28	5:37	5:42	5:51	5:57	6:05	6:17	6:27	·····	6:40	6:52
5:37	5:48	5:57	6:02	6:11	6:17	6:25	6:37	6:47	·····	7:00	7:12
5:57	6:08	6:17	6:22	6:31	6:37	6:45	6:57	7:07	·····	7:20	7:32
6:17	6:28	6:37	6:42	6:51	6:57	7:05	7:17	7:27	·····	7:40	7:52
6:37	6:48	6:57	7:02	7:11	7:17	7:25	7:37	7:47	·····	8:00	8:12
6:57	7:08	7:17	7:22	7:31	7:37	7:45	7:57	8:07	·····	8:20	8:32
7:17	7:28	7:37	7:42	7:51	7:57	8:05	8:17	8:27	·····	8:40	8:52
7:37	7:48	7:57	8:02	8:11	8:17	8:25	8:37	8:47	·····	9:00	9:12
7:57	8:08	8:17	8:22	8:31	8:37	8:45	8:57	9:07	·····	9:20	9:32
		8:39	8:42	8:51	8:57	9:06	9:20	·····	9:35		
8:30	8:41	8:50	8:58	9:07	9:13	9:22	9:36	9:48	·····	10:02	10:14
		9:11	9:14	9:23	9:29	9:38	9:52	·····	10:10		
9:02	9:13	9:22	9:30	9:39	9:45	9:54	10:08	10:20	·····	10:34	10:46
		9:39	9:44	9:54	10:01	10:09	10:24	·····	10:42		
9:32	9:44	9:53	10:00	10:10	10:17	10:25	10:40	10:56	·····	11:11	11:23
		10:11	10:16	10:26	10:33	10:41	10:56	·····	11:14		
10:04	10:16	10:25	10:32	10:42	10:49	10:57	11:12	11:28	·····	11:43	11:55
		10:43	10:48	10:58	11:05	11:13	11:28	·····	11:46		
10:36	10:48	10:57	11:04	11:14	11:21	11:29	11:44	**12:00**	·····	**12:15**	**12:27**
		11:15	11:20	11:30	11:37	11:45	**12:00**	·····	**12:18**		
11:08	11:20	11:29	11:36	11:46	11:53	**12:01**	**12:16**	**12:32**	·····	**12:47**	**12:59**
		11:47	11:52	**12:02**	**12:09**	**12:17**	**12:32**	·····	**12:50**		
11:39	11:52	**12:01**	**12:07**	**12:18**	**12:25**	**12:35**	**12:50**	**1:04**	·····	**1:20**	**1:34**
		12:18	**12:23**	**12:34**	**12:41**	**12:51**	**1:06**	·····	**1:24**		
12:11	**12:24**	**12:33**	**12:39**	**12:50**	**12:57**	**1:07**	**1:22**	**1:36**	·····	**1:52**	**2:06**
		12:50	**12:55**	**1:06**	**1:13**	**1:23**	**1:38**	·····	**1:56**		
12:43	**12:56**	**1:05**	**1:11**	**1:22**	**1:29**	**1:39**	**1:54**	**2:08**	·····	**2:24**	**2:38**
		1:22	**1:27**	**1:38**	**1:45**	**1:55**	**2:10**	·····	**2:28**		
1:15	**1:28**	**1:37**	**1:43**	**1:54**	**2:01**	**2:11**	**2:26**	**2:40**	·····	**2:56**	**3:10**
		1:54	**1:59**	**2:10**	**2:17**	**2:27**	**2:42**	·····	**3:00**		
1:47	**2:00**	**2:09**	**2:15**	**2:26**	**2:33**	**2:43**	**2:58**	**3:12**	·····	**3:28**	**3:42**
		2:26	**2:31**	**2:42**	**2:49**	**2:59**	**3:14**	·····	**3:32**		
2:19	**2:32**	**2:41**	**2:47**	**2:58**	**3:05**	**3:15**	**3:30**	**3:44**	·····	**4:00**	**4:14**
		2:58	**3:03**	**3:14**	**3:21**	**3:31**	**3:46**	·····	**4:04**		
2:51	**3:04**	**3:13**	**3:20**	**3:30**	**3:37**	**3:48**	**4:02**	**4:15**	·····	**4:31**	**4:43**
		3:31	**3:36**	**3:46**	**3:53**	**4:04**	**4:18**	·····	**4:36**		
3:23	**3:36**	**3:45**	**3:52**	**4:02**	**4:09**	**4:20**	**4:34**	**4:47**	·····	**5:03**	**5:15**
		4:03	**4:08**	**4:18**	**4:25**	**4:36**	**4:50**	·····	**5:08**		
3:55	**4:08**	**4:17**	**4:24**	**4:34**	**4:41**	**4:52**	**5:06**	**5:19**	·····	**5:35**	**5:47**
		4:35	**4:40**	**4:50**	**4:57**	**5:08**	**5:22**	·····	**5:40**		
4:27	**4:40**	**4:49**	**4:56**	**5:06**	**5:13**	**5:24**	**5:38**	**5:51**	·····	**6:07**	**6:19**
		5:07	**5:12**	**5:22**	**5:29**	**5:40**	**5:54**	·····	**6:12**		
4:59	**5:12**	**5:21**	**5:28**	**5:38**	**5:45**	**5:56**	**6:10**	**6:23**	·····	**6:39**	**6:51**
		5:39	**5:44**	**5:54**	**6:01**	**6:12**	**6:26**	·····	**6:40**		
5:31	**5:44**	**5:53**	**6:00**	**6:10**	**6:17**	**6:28**	**6:42**	**6:55**	·····	**7:11**	**7:23**
		6:10	**6:15**	**6:26**	**6:33**	**6:43**	**6:59**	·····	**7:13**		
6:02	**6:15**	**6:24**	**6:31**	**6:42**	**6:49**	**6:59**	**7:15**	**7:26**	·····	**7:39**	**7:49**
		6:47	**6:52**	**7:03**	**7:10**	**7:20**	**7:36**	·····	**7:50**		
7:00	**7:11**	**7:19**	**7:26**	**7:34**	**7:40**	**7:48**	**7:58**	**8:06**	·····	**8:17**	**8:27**
		7:51	**7:56**	**8:04**	**8:10**	**8:18**	**8:28**	·····	**8:42**		
8:00	**8:11**	**8:19**	**8:26**	**8:34**	**8:40**	**8:48**	**8:58**	**9:06**	·····	**9:17**	**9:27**
		8:47	**8:52**	**9:00**	**9:06**	**9:14**	**9:24**	·····	**9:38**		
8:46	**8:57**	**9:05**	**9:12**	**9:20**	**9:26**	**9:34**	**9:44**	**9:52**	·····	**10:03**	**10:13**
9:24	**9:35**	**9:43**	**9:50**	**9:58**	**10:04**	**10:12**	**10:22**	**10:30**	·····	**10:41**	**10:51**
9:56	**10:07**	**10:15**	**10:22**	**10:30**	**10:36**	**10:44**	**10:54**	**11:02**	·····	**11:13**	**11:23**
11:10	**11:19**	**11:26**	**11:30**	**11:38**	**11:43**	**11:51**	**11:58**	12:04	·····	12:14	12:22
12:10	12:19	12:26	12:30	12:38	12:43	12:51	12:58	1:04	·····	1:14	1:22

57 Brea to Newport Beach

via State College Blvd / Bristol St

Sunday & Holiday

NORTHBOUND To: Brea

Newport Transportation Center	Jamboree & University	Anton & Sakioka	Bristol & Sunflower	Bristol & Edinger	Bristol & 17th	The Outlets At Orange	State College & Katella	State College & Lincoln	State College & Orangethorpe	State College & Via Burton	State College & Nutwood	Brea Mall
4:00	4:09	·····	4:19	4:28	4:37	4:45	4:50	4:58	·····	5:02	5:10	5:24
		4:42	4:46	4:56	5:06	5:14	5:20	5:29	5:39			
4:59	5:08	·····	5:18	5:28	5:38	5:46	5:52	6:01	·····	6:06	6:14	6:28
		5:46	5:50	6:00	6:10	6:18	6:24	6:33	6:43			
6:01	6:10	·····	6:20	6:30	6:40	6:48	6:54	7:03	·····	7:08	7:16	7:30
6:26	6:35	·····	6:45	6:55	7:05	7:13	7:19	7:28	·····	7:33	7:41	7:55
6:51	7:00	·····	7:10	7:20	7:30	7:38	7:44	7:53	·····	7:58	8:06	8:20
7:16	7:25	·····	7:35	7:45	7:55	8:03	8:09	8:18	·····	8:23	8:31	8:45
7:41	7:50	·····	8:00	8:10	8:20	8:28	8:34	8:43	·····	8:48	8:56	9:10
8:06	8:15	·····	8:25	8:35	8:45	8:53	8:59	9:08	·····	9:13	9:21	9:35
8:24	8:34	·····	8:47	8:58	9:10	9:18	9:24	9:34	·····	9:40	9:48	10:02
8:49	8:59	·····	9:12	9:23	9:35	9:43	9:49	9:59	·····	10:05	10:13	10:27
9:11	9:21	·····	9:34	9:45	9:57	10:05	10:11	10:21	·····	10:27	10:35	10:49
		9:46	9:50	10:01	10:13	10:21	10:27	10:37	10:49			
9:43	9:53	·····	10:06	10:17	10:29	10:37	10:43	10:53	·····	10:59	11:07	11:21
		10:18	10:22	10:33	10:45	10:53	10:59	11:09	11:21			
10:13	10:23	·····	10:35	10:48	11:00	11:09	11:17	11:29	·····	11:36	11:44	**12:00**
		10:47	10:51	11:04	11:16	11:25	11:33	11:45	11:57			
10:45	10:55	·····	11:07	11:20	11:32	11:41	11:49	12:01	·····	**12:08**	**12:16**	**12:32**
		11:19	11:23	11:36	11:48	11:57	**12:05**	**12:17**	**12:29**			
11:17	11:27	·····	11:39	11:52	**12:04**	**12:13**	**12:21**	**12:33**	·····	**12:40**	**12:48**	**1:04**
		11:51	11:55	**12:08**	**12:20**	**12:29**	**12:37**	**12:49**	**1:01**			
11:52	**12:02**	·····	**12:14**	**12:26**	**12:37**	**12:45**	**12:53**	**1:04**	·····	**1:11**	**1:21**	**1:34**
		12:26	**12:30**	**12:42**	**12:53**	**1:01**	**1:09**	**1:20**	**1:32**			
12:24	**12:34**	·····	**12:46**	**12:58**	**1:09**	**1:17**	**1:25**	**1:36**	·····	**1:43**	**1:53**	**2:06**
		12:58	**1:02**	**1:14**	**1:25**	**1:33**	**1:41**	**1:52**	**2:04**			
12:46	**12:58**	·····	**1:13**	**1:27**	**1:40**	**1:49**	**1:56**	**2:07**	·····	**2:13**	**2:22**	**2:36**
		1:25	**1:29**	**1:43**	**1:56**	**2:05**	**2:12**	**2:23**	**2:35**			
1:18	**1:30**	·····	**1:45**	**1:59**	**2:12**	**2:21**	**2:28**	**2:39**	·····	**2:45**	**2:54**	**3:08**

Continued on next page.

Sunday & Holiday
NORTHBOUND To: Brea *(cont)*

Newport Transportation Center	Jamboree & University	Anton & Sakioka	Bristol & Sunflower	Bristol & Edinger	Bristol & 17th	The Outlets At Orange	State College & Katella	State College & Lincoln	State College & Orangethorpe	State College & Via Burton	State College & Nutwood	Brea Mall
		1:57	2:01	2:15	2:28	2:37	2:44	2:55	3:07			
1:50	2:02	·····	2:17	2:31	2:44	2:53	3:00	3:11	·····	3:17	3:26	3:40
		2:29	2:33	2:47	3:00	3:09	3:16	3:27	3:39			
2:22	2:34	·····	2:49	3:03	3:16	3:25	3:32	3:43	·····	3:49	3:58	4:12
		3:01	3:05	3:19	3:32	3:41	3:48	3:59	4:11			
2:54	3:06	·····	3:21	3:35	3:48	3:57	4:04	4:15	·····	4:21	4:30	4:44
		3:33	3:37	3:51	4:04	4:13	4:20	4:31	4:43			
3:26	3:38	·····	3:53	4:07	4:20	4:29	4:36	4:47	·····	4:53	5:02	5:16
		4:05	4:09	4:23	4:36	4:45	4:52	5:03	5:15			
4:01	4:13	·····	4:28	4:42	4:54	5:01	5:08	5:18	·····	5:23	5:31	5:45
		4:40	4:44	4:58	5:10	5:17	5:24	5:34	5:44			
4:33	4:45	·····	5:00	5:14	5:26	5:33	5:40	5:50	·····	5:55	6:03	6:17
		5:12	5:16	5:30	5:42	5:49	5:56	6:06	6:16			
5:05	5:17	·····	5:32	5:46	5:58	6:05	6:12	6:22	·····	6:27	6:35	6:49
		5:49	5:52	6:03	6:13	6:21	6:27	6:36	6:46			
5:42	5:55	·····	6:08	6:19	6:29	6:37	6:43	6:52	·····	6:59	7:07	7:21
		6:21	6:24	6:35	6:45	6:53	6:59	7:08	7:18			
6:14	6:27	·····	6:40	6:51	7:01	7:09	7:15	7:24	·····	7:31	7:39	7:53
		6:53	6:56	7:07	7:17	7:25	7:31	7:40	7:50			
6:45	6:58	·····	7:11	7:22	7:32	7:40	7:46	7:55	·····	8:02	8:10	8:24
7:15	7:28	·····	7:41	7:52	8:02	8:10	8:16	8:25	·····	8:32	8:40	8:54
7:45	7:58	·····	8:11	8:22	8:32	8:40	8:46	8:55	·····	9:02	9:10	9:24
8:15	8:28	·····	8:41	8:52	9:02	9:10	9:16	9:25	·····	9:32	9:40	9:54
8:45	8:58	·····	9:11	9:22	9:32	9:40	9:46	9:55	·····	10:02	10:10	10:24
9:27	9:38	·····	9:49	9:58	10:07	10:15	10:21	10:29	·····	10:33	10:41	10:54
10:01	10:12	·····	10:23	10:32	10:41	10:49	10:55	11:03	·····	11:07	11:15	11:28
10:29	10:40	·····	10:51	11:00	11:08	11:17	11:23	11:31	·····	11:35	11:43	11:56
11:34	11:45	·····	11:56	12:05	12:15	12:22	12:28	12:36	·····	12:40	12:48	1:01
12:35	12:46	·····	12:57	1:06	1:15	1:23	1:29	1:37	·····	1:41	1:49	2:02

57 Brea to Newport Beach

via State College Blvd / Bristol St

Sunday & Holiday

SOUTHBOUND To: Newport Beach

Brea Mall	State College & Nutwood	State College Via Burton	State College & Lincoln	State College & Katella	The Outlets At Orange	Bristol & 17th	Bristol & Edinger	Bristol & Sunflower	Anton & Sakioka	Jamboree & Eastbluff	Newport Transportation Center
3:57	4:06	4:15	4:20	4:29	4:33	4:39	4:48	4:56	·····	5:07	5:18
		4:50	4:53	5:02	5:06	5:12	5:21	5:29	·····	5:40	5:51
5:01	5:11	5:20	5:25	5:33	5:38	5:46	5:57	6:08	·····	6:21	6:34
		5:51	5:57	6:05	6:10	6:18	6:29	6:40	·····	6:53	7:06
6:00	6:10	6:19	6:24	6:32	6:37	6:45	6:56	7:07	·····	7:20	7:33
		6:48	6:54	7:02	7:07	7:15	7:26	7:37	·····	7:50	8:03
7:00	7:10	7:19	7:24	7:32	7:37	7:45	7:56	8:07	·····	8:20	8:33
		7:34	7:40	7:48	7:53	8:01	8:12	8:23	·····	8:36	8:49
7:26	7:38	7:47	7:54	8:03	8:09	8:18	8:31	8:42	·····	8:55	9:07
		8:04	8:10	8:19	8:25	8:34	8:47	8:58	·····	9:11	9:23
7:58	8:10	8:19	8:26	8:35	8:41	8:50	9:03	9:14	·····	9:27	9:39
		8:36	8:42	8:51	8:57	9:06	9:19	·····	9:35		
8:30	8:42	8:51	8:58	9:07	9:13	9:22	9:35	9:46	·····	9:59	10:11
		9:08	9:14	9:23	9:29	9:38	9:51	·····	10:07		
9:02	9:14	9:23	9:30	9:39	9:45	9:54	10:07	10:18	·····	10:31	10:43
		9:40	9:46	9:55	10:01	10:10	10:23	·····	10:39		
9:34	9:46	9:55	10:02	10:11	10:17	10:26	10:39	10:50	·····	11:03	11:15
		10:12	10:18	10:27	10:33	10:42	10:55	·····	11:11		
10:04	10:16	10:25	10:32	10:42	10:49	10:58	11:12	11:24	·····	11:39	11:52
		10:42	10:48	10:58	11:05	11:14	11:28	·····	11:44		
10:36	10:48	10:57	11:04	11:14	11:21	11:30	11:44	11:56	·····	**12:11**	**12:24**
		11:14	11:20	11:30	11:37	11:46	**12:00**	·····	**12:16**		
11:08	11:20	11:29	11:36	11:46	11:53	**12:02**	**12:16**	**12:28**	·····	**12:43**	**12:56**
		11:46	11:52	**12:02**	**12:09**	**12:18**	**12:32**	·····	**12:48**		
11:40	11:52	**12:01**	**12:08**	**12:18**	**12:25**	**12:34**	**12:48**	**1:00**	·····	**1:15**	**1:28**
		12:18	**12:24**	**12:34**	**12:41**	**12:50**	**1:04**	·····	**1:20**		
12:12	**12:24**	**12:33**	**12:40**	**12:50**	**12:57**	**1:06**	**1:20**	**1:32**	·····	**1:47**	**2:00**
		12:50	**12:56**	**1:06**	**1:13**	**1:22**	**1:36**	·····	**1:52**		
12:44	**12:56**	**1:05**	**1:12**	**1:22**	**1:29**	**1:38**	**1:52**	**2:04**	·····	**2:19**	**2:32**
		1:22	**1:28**	**1:38**	**1:45**	**1:54**	**2:08**	·····	**2:24**		
1:15	**1:28**	**1:38**	**1:44**	**1:54**	**2:01**	**2:11**	**2:25**	**2:38**	·····	**2:52**	**3:05**
		1:54	**2:00**	**2:10**	**2:17**	**2:27**	**2:41**	·····	**2:57**		
1:47	**2:00**	**2:10**	**2:16**	**2:26**	**2:33**	**2:43**	**2:57**	**3:10**	·····	**3:24**	**3:37**
		2:26	**2:32**	**2:42**	**2:49**	**2:59**	**3:13**	·····	**3:29**		
2:19	**2:32**	**2:42**	**2:48**	**2:58**	**3:05**	**3:15**	**3:29**	**3:42**	·····	**3:56**	**4:09**
		2:58	**3:04**	**3:14**	**3:21**	**3:31**	**3:45**	·····	**4:01**		
2:51	**3:04**	**3:14**	**3:20**	**3:30**	**3:37**	**3:47**	**4:01**	**4:14**	·····	**4:28**	**4:41**
		3:30	**3:36**	**3:46**	**3:53**	**4:03**	**4:17**	·····	**4:33**		
3:23	**3:36**	**3:46**	**3:52**	**4:02**	**4:09**	**4:19**	**4:33**	**4:46**	·····	**5:00**	**5:13**
		4:02	**4:08**	**4:18**	**4:25**	**4:35**	**4:49**	·····	**5:05**		
3:56	**4:09**	**4:18**	**4:26**	**4:35**	**4:41**	**4:51**	**5:02**	**5:13**	·····	**5:26**	**5:37**
		4:36	**4:42**	**4:51**	**4:57**	**5:07**	**5:18**	·····	**5:34**		
4:28	**4:41**	**4:50**	**4:58**	**5:07**	**5:13**	**5:23**	**5:34**	**5:45**	·····	**5:58**	**6:09**
		5:08	**5:14**	**5:23**	**5:29**	**5:39**	**5:50**	·····	**6:06**		
5:00	**5:13**	**5:22**	**5:30**	**5:39**	**5:45**	**5:55**	**6:06**	**6:17**	·····	**6:30**	**6:41**
		5:40	**5:46**	**5:55**	**6:01**	**6:11**	**6:22**	·····	**6:38**		
5:32	**5:45**	**5:54**	**6:02**	**6:11**	**6:17**	**6:27**	**6:38**	**6:49**	·····	**7:02**	**7:13**
5:47	**6:00**	**6:09**	**6:17**	**6:26**	**6:32**	**6:42**	**6:53**	**7:04**	·····	**7:17**	**7:28**
6:02	**6:15**	**6:24**	**6:32**	**6:41**	**6:47**	**6:57**	**7:08**	**7:19**	·····	**7:32**	**7:43**
6:27	**6:40**	**6:49**	**6:57**	**7:06**	**7:12**	**7:22**	**7:33**	**7:44**	·····	**7:57**	**8:08**
6:58	**7:11**	**7:20**	**7:28**	**7:36**	**7:42**	**7:50**	**8:01**	**8:12**	·····	**8:23**	**8:34**
7:28	**7:41**	**7:50**	**7:58**	**8:06**	**8:12**	**8:20**	**8:31**	**8:42**	·····	**8:53**	**9:04**
8:14	**8:27**	**8:36**	**8:44**	**8:52**	**8:58**	**9:06**	**9:17**	**9:28**	·····	**9:39**	**9:50**
8:54	**9:07**	**9:15**	**9:20**	**9:28**	**9:33**	**9:41**	**9:50**	**9:59**	·····	**10:09**	**10:19**
9:59	**10:12**	**10:20**	**10:25**	**10:33**	**10:38**	**10:45**	**10:55**	**11:04**	·····	**11:14**	**11:24**
11:10	**11:19**	**11:27**	**11:31**	**11:39**	**11:43**	**11:52**	**11:58**	12:05	·····	12:15	12:24
12:15	12:24	12:32	12:36	12:44	12:48	12:57	1:03	1:10	·····	1:20	1:30

Anaheim to Irvine
via Kraemer Blvd / Glassell St / Grand Ave / Von Karman Ave

59

LEGEND *LEYENDA*

Scheduled Departure | Regular Routing | No Service On Some Trips | No Service On Weekends Monday-Friday Only

N

MAP NOT TO SCALE

Route 059/111519

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday-Friday
NORTHBOUND To: Anaheim

Tustin Ranch & Park	Dyer & Pullman	Grand & McFadden	Santa Ana Regional Transportatiobn Intermodal Center (ARTIC)	Grand & 17th	Orange Transportation Center	Glassell & Lincoln	La Palma & Kraemer
4:50	5:00	5:06	5:16	5:20	5:28	5:39	5:43
5:51	6:00	6:12	6:21	6:25	6:34	6:46	6:49
6:47	6:56	7:08	7:17	7:21	7:30	7:42	7:45
7:51	8:00	8:12	8:21	8:25	8:34	8:46	8:49
8:51	9:00	9:11	9:22	9:27	9:38	9:50	9:54
9:49	10:01	10:14	10:25	10:30	10:41	10:53	10:57
10:42	10:54	11:09	11:20	11:27	11:39	11:52	11:56
11:40	11:53	**12:06**	**12:17**	**12:24**	**12:36**	**12:49**	**12:53**
12:31	**12:44**	**12:57**	**1:08**	**1:15**	**1:27**	**1:40**	**1:44**
1:26	**1:39**	**1:52**	**2:03**	**2:10**	**2:22**	**2:35**	**2:39**
2:21	**2:34**	**2:47**	**2:58**	**3:05**	**3:17**	**3:30**	**3:34**
3:16	**3:29**	**3:42**	**3:53**	**4:00**	**4:12**	**4:25**	**4:29**
4:11	**4:24**	**4:37**	**4:48**	**4:55**	**5:07**	**5:20**	**5:24**
5:06	**5:19**	**5:32**	**5:43**	**5:50**	**6:02**	**6:15**	**6:19**
6:01	**6:14**	**6:27**	**6:38**	**6:45**	**6:57**	**7:10**	**7:14**
7:02	**7:12**	**7:22**	**7:31**	**7:36**	**7:46**	**7:57**	**7:59**
7:50	**8:00**	**8:10**	**8:19**	**8:24**	**8:34**	**8:45**	**8:47**
8:25	**8:35**	**8:45**	**8:54**	**8:59**	**9:09**	**9:20**	**9:22**

Monday-Friday
SOUTHBOUND To: Irvine

Kraemer & Coronado	Glassell & Lincoln	Orange Transportation Center	Grand & 17th	Santa Ana Regional Transportatiobn Intermodal Center (ARTIC)	Grand & Mc Fadden	Dyer & Pullman	Tustin Ranch & Park
5:56	6:02	6:14	6:23	6:29	6:39	6:47	6:55
6:56	7:00	7:13	7:23	7:29	7:38	7:51	7:59
7:55	7:59	8:12	8:22	8:28	8:37	8:50	8:58
8:54	8:58	9:11	9:21	9:27	9:36	9:49	9:57
9:53	9:57	10:11	10:23	10:29	10:38	10:50	11:01
10:43	10:47	11:01	11:13	11:19	11:28	11:40	11:51
11:33	11:37	11:51	**12:03**	**12:09**	**12:18**	**12:30**	**12:41**
12:28	**12:32**	**12:46**	**12:58**	**1:04**	**1:13**	**1:25**	**1:36**
1:23	**1:27**	**1:41**	**1:53**	**1:59**	**2:08**	**2:20**	**2:31**
2:18	**2:22**	**2:36**	**2:48**	**2:54**	**3:03**	**3:15**	**3:26**
3:13	**3:17**	**3:31**	**3:43**	**3:49**	**3:58**	**4:10**	**4:21**
4:08	**4:12**	**4:26**	**4:38**	**4:44**	**4:53**	**5:05**	**5:16**
5:03	**5:07**	**5:21**	**5:33**	**5:39**	**5:48**	**6:00**	**6:11**
5:58	**6:02**	**6:16**	**6:28**	**6:34**	**6:43**	**6:55**	**7:06**
6:53	**6:56**	**7:08**	**7:17**	**7:22**	**7:31**	**7:41**	**7:51**
7:48	**7:51**	**8:03**	**8:12**	**8:17**	**8:26**	**8:36**	**8:46**
8:38	**8:41**	**8:53**	**9:02**	**9:07**	**9:16**	**9:26**	**9:36**
9:34	**9:37**	**9:49**	**9:58**	**10:03**	**10:12**	**10:22**	**10:32**

TRANSFER NOTE / *LA TRANSFERENCIA DE LA NOTA*

Passengers transferring between OCTA Routes 59 and 129 should transfer at Kraeme & Coronado. To connect from the 59 northbound to the 129 eastbound passengers need to walk from La Palma & Kraemer to Kraemer & Coronado.

Pasajeros transbordando entre las Rutas 59 y 129 de OCTA deben ir a Kraemer y Coronado. Para conectar del 59 hacia el Norte al 129 hacia el Este, pasajeros deben caminar de La Palma y Kraemer a Kraemer y Coronado.

59 Anaheim to Irvine

via Kraemer Blvd / Glassell St / Grand Ave / Von Karman Ave

Saturday
NORTHBOUND To: Anaheim

Tustin Ranch & Park	Dyer & Pullman	Grand & Mc Fadden	Santa Ana Regional Transportatiobn Intermodal Center (ARTIC)	Grand & 17th	Orange Transportation Center	Glassell & Lincoln	La Palma & Kraemer
5:51	6:00	6:12	6:21	6:25	6:34	6:46	6:49
6:47	6:56	7:08	7:17	7:21	7:30	7:42	7:45
7:51	8:00	8:12	8:21	8:25	8:34	8:46	8:49
8:51	9:00	9:11	9:22	9:27	9:38	9:50	9:54
9:49	10:01	10:14	10:25	10:30	10:41	10:53	10:57
10:42	10:54	11:09	11:20	11:27	11:39	11:52	11:56
11:40	11:53	**12:06**	**12:17**	**12:24**	**12:36**	**12:49**	**12:53**
12:31	**12:44**	**12:57**	**1:08**	**1:15**	**1:27**	**1:40**	**1:44**
1:26	**1:39**	**1:52**	**2:03**	**2:10**	**2:22**	**2:35**	**2:39**
2:21	**2:34**	**2:47**	**2:58**	**3:05**	**3:17**	**3:30**	**3:34**
3:16	**3:29**	**3:42**	**3:53**	**4:00**	**4:12**	**4:25**	**4:29**
4:11	**4:24**	**4:37**	**4:48**	**4:55**	**5:07**	**5:20**	**5:24**
5:06	**5:19**	**5:32**	**5:43**	**5:50**	**6:02**	**6:15**	**6:19**
6:01	**6:14**	**6:27**	**6:38**	**6:45**	**6:57**	**7:10**	**7:14**
7:02	**7:12**	**7:22**	**7:31**	**7:36**	**7:46**	**7:57**	**7:59**
7:50	**8:00**	**8:10**	**8:19**	**8:24**	**8:34**	**8:45**	**8:47**
8:25	**8:35**	**8:45**	**8:54**	**8:59**	**9:09**	**9:20**	**9:22**

Saturday
SOUTHBOUND To: Irvine

Kraemer & Coronado	Glassell & Lincoln	Orange Transportation Center	Grand & 17th	Santa Ana Regional Transportatiobn Intermodal Center (ARTIC)	Grand & Mc Fadden	Dyer & Pullman	Tustin Ranch & Park
6:56	7:00	7:13	7:23	7:29	7:38	7:51	7:59
7:55	7:59	8:12	8:22	8:28	8:37	8:50	8:58
8:54	8:58	9:11	9:21	9:27	9:36	9:49	9:57
9:53	9:57	10:11	10:23	10:29	10:38	10:50	11:01
10:43	10:47	11:01	11:13	11:19	11:28	11:40	11:51
11:33	11:37	11:51	**12:03**	**12:09**	**12:18**	**12:30**	**12:41**
12:28	**12:32**	**12:46**	**12:58**	**1:04**	**1:13**	**1:25**	**1:36**
1:23	**1:27**	**1:41**	**1:53**	**1:59**	**2:08**	**2:20**	**2:31**
2:18	**2:22**	**2:36**	**2:48**	**2:54**	**3:03**	**3:15**	**3:26**
3:13	**3:17**	**3:31**	**3:43**	**3:49**	**3:58**	**4:10**	**4:21**
4:08	**4:12**	**4:26**	**4:38**	**4:44**	**4:53**	**5:05**	**5:16**
5:03	**5:07**	**5:21**	**5:33**	**5:39**	**5:48**	**6:00**	**6:11**
5:58	**6:02**	**6:16**	**6:28**	**6:34**	**6:43**	**6:55**	**7:06**
6:53	**6:56**	**7:08**	**7:17**	**7:22**	**7:31**	**7:41**	**7:51**
7:48	**7:51**	**8:03**	**8:12**	**8:17**	**8:26**	**8:36**	**8:46**
8:38	**8:41**	**8:53**	**9:02**	**9:07**	**9:16**	**9:26**	**9:36**
9:34	**9:37**	**9:49**	**9:58**	**10:03**	**10:12**	**10:22**	**10:32**

Sunday & Holiday
NORTHBOUND To: Anaheim

Tustin Ranch & Park	Dyer & Pullman	Grand & Mc Fadden	Santa Ana Regional Transportatiobn Intermodal Center (ARTIC)	Grand & 17th	Orange Transportation Center	Glassell & Lincoln	La Palma & Kraemer
8:51	9:00	9:11	9:22	9:27	9:38	9:50	9:54
9:49	10:01	10:14	10:25	10:30	10:41	10:53	10:57
10:42	10:54	11:09	11:20	11:27	11:39	11:52	11:56
11:40	11:53	**12:06**	**12:17**	**12:24**	**12:36**	**12:49**	**12:53**
12:31	**12:44**	**12:57**	**1:08**	**1:15**	**1:27**	**1:40**	**1:44**
1:26	**1:39**	**1:52**	**2:03**	**2:10**	**2:22**	**2:35**	**2:39**
2:21	**2:34**	**2:47**	**2:58**	**3:05**	**3:17**	**3:30**	**3:34**
3:16	**3:29**	**3:42**	**3:53**	**4:00**	**4:12**	**4:25**	**4:29**
4:11	**4:24**	**4:37**	**4:48**	**4:55**	**5:07**	**5:20**	**5:24**
5:06	**5:19**	**5:32**	**5:43**	**5:50**	**6:02**	**6:15**	**6:19**
6:01	**6:14**	**6:27**	**6:38**	**6:45**	**6:57**	**7:10**	**7:14**
7:02	**7:12**	**7:22**	**7:31**	**7:36**	**7:46**	**7:57**	**7:59**
7:50	**8:00**	**8:10**	**8:19**	**8:24**	**8:34**	**8:45**	**8:47**

Sunday & Holiday
SOUTHBOUND To: Irvine

Kraemer & Coronado	Glassell & Lincoln	Orange Transportation Center	Grand & 17th	Santa Ana Regional Transportatiobn Intermodal Center (ARTIC)	Grand & Mc Fadden	Dyer & Pullman	Tustin Ranch & Park
8:54	8:58	9:11	9:21	9:27	9:36	9:49	9:57
9:53	9:57	10:11	10:23	10:29	10:38	10:50	11:01
10:43	10:47	11:01	11:13	11:19	11:28	11:40	11:51
11:33	11:37	11:51	**12:03**	**12:09**	**12:18**	**12:30**	**12:41**
12:28	**12:32**	**12:46**	**12:58**	**1:04**	**1:13**	**1:25**	**1:36**
1:23	**1:27**	**1:41**	**1:53**	**1:59**	**2:08**	**2:20**	**2:31**
2:18	**2:22**	**2:36**	**2:48**	**2:54**	**3:03**	**3:15**	**3:26**
3:13	**3:17**	**3:31**	**3:43**	**3:49**	**3:58**	**4:10**	**4:21**
4:08	**4:12**	**4:26**	**4:38**	**4:44**	**4:53**	**5:05**	**5:16**
5:03	**5:07**	**5:21**	**5:33**	**5:39**	**5:48**	**6:00**	**6:11**
5:58	**6:02**	**6:16**	**6:28**	**6:34**	**6:43**	**6:55**	**7:06**
6:53	**6:56**	**7:08**	**7:17**	**7:22**	**7:31**	**7:41**	**7:51**
7:48	**7:51**	**8:03**	**8:12**	**8:17**	**8:26**	**8:36**	**8:46**
8:38	**8:41**	**8:53**	**9:02**	**9:07**	**9:16**	**9:26**	**9:36**
9:34	**9:37**	**9:49**	**9:58**	**10:03**	**10:12**	**10:22**	**10:32**

OCBUS
OCbus.com

System Map

- 1 — Routes offering 15 minutes (or less) Weekday rush hour frequency
- 1 — Local Routes (1-99)
- 100 — Community Routes (100-199)
- 200 — OC Express Routes (200-299) Weekday Rush Hour Only
- 400 — Metrolink Stationlink Routes (400-499) Weekday Rush Hour Only
- 500 — Bravo Limited Stop Service (500-599)
- 700 — Express Service (700-799) Weekday Rush Hour Only
- 800 — City Shuttle
- Rail Stations
- OC Bus Transit Centers

Effective October 11, 2020

OC Flex Zones

Unlimited rides only $5 a day!
Zones serving parts of Huntington Beach/ Westminster and Aliso Viejo/Laguna Niguel/ Mission Viejo.

Learn more on page 158.

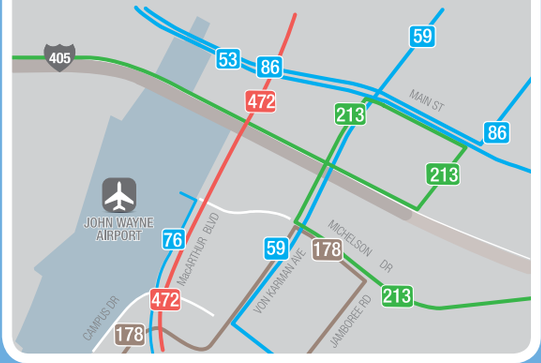
OCFLEX

North
Map not to scale

MILES 1 2

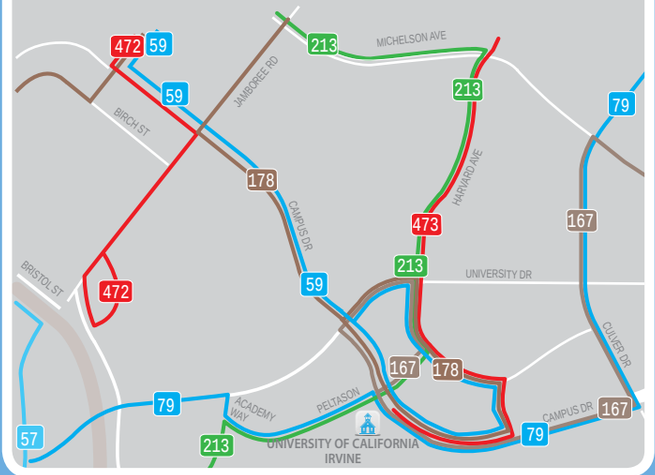
major bus transfer areas (central and south county)

JOHN WAYNE AIRPORT AREA



SOUTH COAST PLAZA AREA

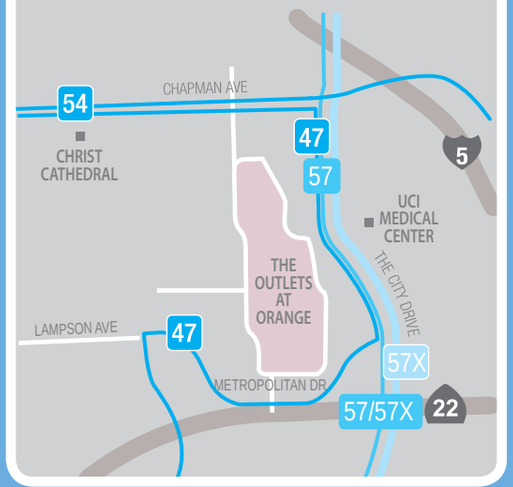
U.C. IRVINE CAMPUS AREA



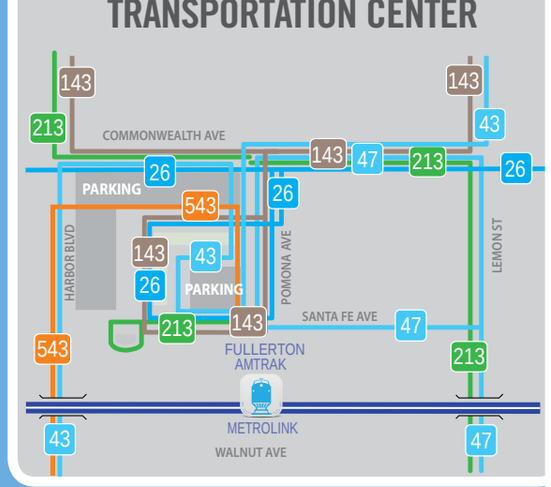
LAGUNA HILLS TRANSPORTATION CENTER

major bus transfer areas (central and north county)

THE OUTLETS AT ORANGE

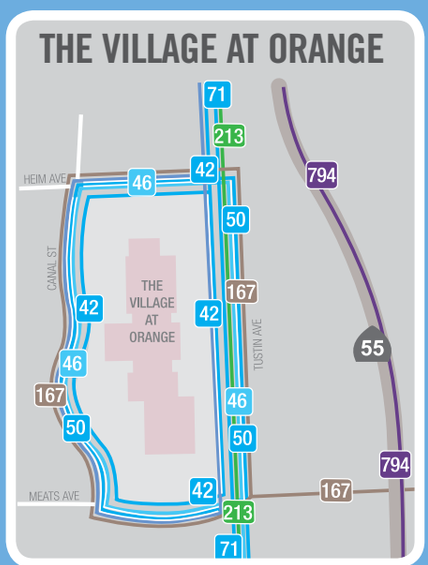


FULLERTON TRANSPORTATION CENTER



SANTA ANA CIVIC CENTER

THE VILLAGE AT ORANGE

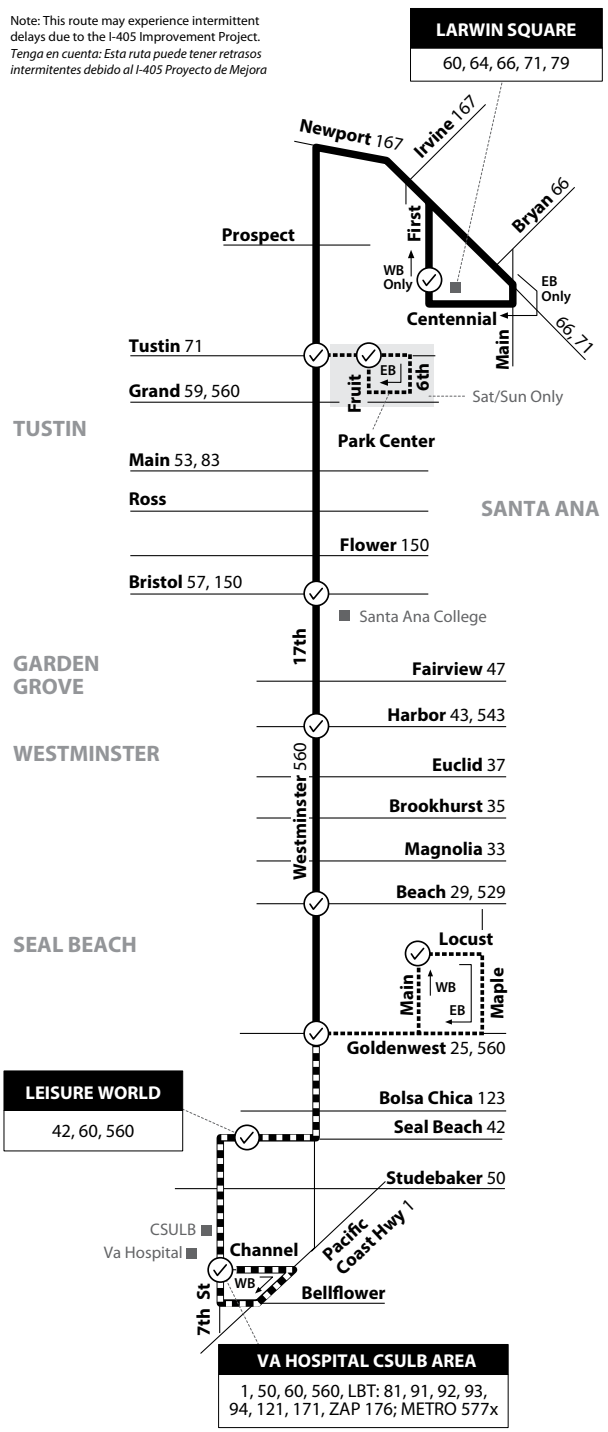


OCBUS
ocbus.com

60 Long Beach to Tustin

via Westminster Ave / 17th

Note: This route may experience intermittent delays due to the I-405 Improvement Project.
Tenga en cuenta: Esta ruta puede tener retrasos intermitentes debido al I-405 Proyecto de Mejora



LEGEND *LEYENDA*

Scheduled Departure | Regular Routing | Short Turn Only | No Service On Some Trips

N — MAP NOT TO SCALE

Route 060/111519

METRO = Los Angeles Metro | LBT = Long Beach Transit

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday-Friday
EASTBOUND To: Tustin

7th & Channel	Leisure World	Main & Locust	Westminster & Golden West	Westminster & Beach	Westminster & Harbor	17th & Bristol	17th & Tustin **(F)**	Fruit & Tustin	Larwin Square
3:55	4:00	·····	4:12	4:15	4:25	4:29	4:38	·····	4:49
4:25	4:30	·····	4:42	4:45	4:55	4:59	5:08	·····	5:19
4:52	4:57	·····	5:08	5:12	5:25	5:32	5:42	·····	5:57
5:22	5:27	·····	5:38	5:42	5:55	6:02	6:12	·····	6:27
5:47	5:52	·····	6:03	6:07	6:20	6:27	6:37	·····	6:52
6:12	6:18	·····	6:30	6:36	6:50	7:02	7:14	·····	7:27
6:27	6:33	·····	6:45	6:51	7:05	7:17	7:29	·····	7:42
6:42	6:48	·····	7:00	7:06	7:20	7:32	7:44	·····	7:57
7:03	7:08	·····	7:23	7:29	7:50	8:02	8:15	·····	8:27
7:23	7:28	·····	7:43	7:49	8:10	8:22	8:35	·····	8:47
7:43	7:48	·····	8:03	8:09	8:30	8:42	8:55	·····	9:07
8:03	8:08	·····	8:23	8:29	8:50	9:02	9:15	·····	9:27
		8:39	8:43	8:49	9:10	9:22	9:35	9:38	
8:43	8:48	·····	9:03	9:09	9:30	9:42	9:55	·····	10:07
		9:19	9:23	9:29	9:50	10:02	10:15	10:18	
9:24	9:30	·····	9:45	9:51	10:11	10:23	10:37	·····	10:56
		9:56	10:00	10:06	10:26	10:38	10:52	10:55	
9:54	10:00	·····	10:15	10:21	10:41	10:53	11:07	·····	11:26
		10:26	10:30	10:36	10:56	11:08	11:22	11:25	
10:24	10:30	·····	10:45	10:51	11:11	11:23	11:37	·····	11:56
		10:56	11:00	11:06	11:26	11:38	11:52	11:55	
10:54	11:00	·····	11:15	11:21	11:41	11:53	**12:07**	·····	**12:26**
		11:26	11:30	11:36	11:56	**12:08**	**12:22**	**12:25**	
11:24	11:30	·····	11:45	11:51	**12:11**	**12:23**	**12:37**	·····	**12:56**
		11:56	**12:00**	**12:06**	**12:26**	**12:38**	**12:52**	**12:55**	
11:54	**12:00**	·····	**12:15**	**12:21**	**12:41**	**12:53**	**1:07**	·····	**1:26**
		12:26	**12:30**	**12:36**	**12:56**	**1:08**	**1:22**	**1:25**	
12:24	**12:30**	·····	**12:45**	**12:51**	**1:11**	**1:23**	**1:37**	·····	**1:56**
		12:56	**1:00**	**1:06**	**1:26**	**1:38**	**1:52**	**1:55**	
12:54	**1:00**	·····	**1:15**	**1:21**	**1:41**	**1:53**	**2:07**	·····	**2:26**
		1:26	**1:30**	**1:36**	**1:56**	**2:08**	**2:22**	**2:25**	
1:24	**1:30**	·····	**1:45**	**1:51**	**2:11**	**2:23**	**2:37**	·····	**2:56**
		1:57	**2:01**	**2:07**	**2:26**	**2:37**	**2:49**	**2:52**	
1:56	**2:02**	·····	**2:16**	**2:22**	**2:41**	**2:52**	**3:04**	·····	**3:22**
		2:27	**2:31**	**2:37**	**2:56**	**3:07**	**3:19**	**3:22**	
2:26	**2:32**	·····	**2:46**	**2:52**	**3:11**	**3:22**	**3:34**	·····	**3:52**
		2:57	**3:01**	**3:07**	**3:26**	**3:37**	**3:49**	**3:52**	
2:56	**3:02**	·····	**3:16**	**3:22**	**3:41**	**3:52**	**4:04**	·····	**4:22**
		3:27	**3:31**	**3:37**	**3:56**	**4:07**	**4:19**	**4:22**	
3:26	**3:32**	·····	**3:46**	**3:52**	**4:11**	**4:22**	**4:34**	·····	**4:52**
		3:57	**4:01**	**4:07**	**4:26**	**4:37**	**4:49**	**4:52**	
3:56	**4:02**	·····	**4:16**	**4:22**	**4:41**	**4:52**	**5:04**	·····	**5:22**
		4:27	**4:31**	**4:37**	**4:56**	**5:07**	**5:19**	**5:22**	
4:26	**4:32**	·····	**4:46**	**4:52**	**5:11**	**5:22**	**5:34**	·····	**5:52**
		4:57	**5:01**	**5:07**	**5:26**	**5:37**	**5:49**	**5:52**	
4:56	**5:02**	·····	**5:16**	**5:22**	**5:41**	**5:52**	**6:04**	·····	**6:22**
		5:31	**5:35**	**5:41**	**6:00**	**6:11**	**6:23**	**6:26**	
5:45	**5:51**	·····	**6:05**	**6:11**	**6:30**	**6:41**	**6:53**	·····	**7:11**
6:15	**6:21**	·····	**6:35**	**6:41**	**7:00**	**7:11**	**7:23**	·····	**7:41**
6:45	**6:51**	·····	**7:05**	**7:11**	**7:30**	**7:41**	**7:53**	·····	**8:11**
7:15	**7:21**	·····	**7:35**	**7:41**	**8:00**	**8:11**	**8:23**	·····	**8:41**
7:45	**7:51**	·····	**8:05**	**8:11**	**8:30**	**8:41**	**8:53**	·····	**9:11**
8:15	**8:21**	·····	**8:35**	**8:41**	**9:00**	**9:11**	**9:23**	·····	**9:41**
8:50	**8:56**	·····	**9:09**	**9:14**	**9:30**	**9:39**	**9:50**	·····	**10:02**
9:20	**9:26**	·····	**9:39**	**9:44**	**10:00**	**10:09**	**10:20**	·····	**10:32**
9:50	**9:56**	·····	**10:09**	**10:14**	**10:30**	**10:39**	**10:50**	·····	**11:02**
10:20	**10:26**	·····	**10:39**	**10:44**	**11:00**	**11:09**	**11:20**	·····	**11:32**
11:27	**11:32**	·····	**11:43**	**11:48**	12:00	12:06	12:18	·····	12:30
12:27	12:32	·····	12:43	12:48	1:00	1:06	1:18	·····	1:30

F = Times are approximate for trips terminating at Fruit & Tustin or Main & Locust.
= *Los horarios son aproximados para los viajes que terminan en Fruit & Tustin o Main & Locust*

Effective October 11, 202

Monday-Friday
WESTBOUND To: Long Beach

Larwin Square	Fruit & Tustin	17th & Tustin	17th & Bristol	Westminster & Harbor	Westminster & Beach	Westminster & Goldenwest (F)	Leisure World	7th & Channel
3:59	•••••	4:08	4:13	4:22	4:33	4:37	4:49	4:58
4:27	•••••	4:35	4:43	4:52	5:04	5:07	5:21	5:30
4:47	•••••	4:55	5:03	5:12	5:24	5:27	5:41	5:50
5:17	•••••	5:25	5:33	5:42	5:54	5:57	6:11	6:20
5:38	•••••	5:49	6:00	6:12	6:30	6:36	6:49	7:02
6:08	•••••	6:19	6:30	6:42	7:00	7:06	7:19	7:32
6:18	•••••	6:29	6:40	6:52	7:10	7:16	7:29	7:42
6:28	•••••	6:39	6:50	7:02	7:20	7:26	7:39	7:52
6:38	•••••	6:49	7:00	7:12	7:30	7:36	7:49	8:02
6:48	•••••	6:59	7:10	7:22	7:40	7:46	7:59	8:12
7:08	•••••	7:19	7:30	7:42	8:00	8:06	8:19	8:32
7:28	•••••	7:39	7:50	8:02	8:20	8:26	8:39	8:52
7:48	•••••	7:59	8:10	8:22	8:40	8:46	8:59	9:12
8:08	•••••	8:19	8:30	8:42	9:00	9:06	9:19	9:32
	8:36	8:39	8:50	9:02	9:20	9:26		
8:48	•••••	8:59	9:10	9:22	9:40	9:46	9:59	10:12
	9:12	9:15	9:29	9:42	10:01	10:07		
9:21	•••••	9:34	9:48	10:01	10:20	10:26	10:40	10:56
	9:46	9:49	10:03	10:16	10:35	10:41		
9:51	•••••	10:04	10:18	10:31	10:50	10:56	11:10	11:26
	10:16	10:19	10:33	10:46	11:05	11:11		
10:21	•••••	10:34	10:48	11:01	11:20	11:26	11:40	11:56
	10:45	10:48	11:02	11:15	11:34	11:40		
10:50	•••••	11:03	11:17	11:30	11:49	11:55	**12:09**	**12:25**
	11:15	11:18	11:32	11:45	**12:04**	**12:10**		
11:20	•••••	11:33	11:47	**12:00**	**12:19**	**12:25**	**12:39**	**12:55**
	11:45	11:48	**12:02**	**12:15**	**12:34**	**12:40**		
11:50	•••••	**12:03**	**12:17**	**12:30**	**12:49**	**12:55**	**1:09**	**1:25**
	12:15	**12:18**	**12:32**	**12:45**	**1:04**	**1:10**		
12:20	•••••	**12:33**	**12:47**	**1:00**	**1:19**	**1:25**	**1:39**	**1:55**
	12:45	**12:48**	**1:02**	**1:15**	**1:34**	**1:40**		
12:50	•••••	**1:03**	**1:17**	**1:30**	**1:49**	**1:55**	**2:09**	**2:25**
	1:15	**1:18**	**1:32**	**1:45**	**2:04**	**2:10**		
1:20	•••••	**1:33**	**1:47**	**2:00**	**2:19**	**2:25**	**2:39**	**2:55**
	1:38	**1:41**	**1:55**	**2:08**	**2:27**	**2:33**		
	1:45	**1:48**	**2:02**	**2:15**	**2:34**	**2:40**		
1:50	•••••	**2:03**	**2:17**	**2:30**	**2:49**	**2:55**	**3:09**	**3:25**
	2:15	**2:18**	**2:32**	**2:45**	**3:04**	**3:09**		
2:20	•••••	**2:33**	**2:47**	**3:00**	**3:19**	**3:25**	**3:39**	**3:55**
	2:45	**2:48**	**3:02**	**3:15**	**3:34**	**3:39**		
2:50	•••••	**3:03**	**3:17**	**3:30**	**3:49**	**3:55**	**4:09**	**4:25**
	3:08	**3:11**	**3:25**	**3:38**	**3:57**	**4:02**		
	3:15	**3:18**	**3:32**	**3:45**	**4:04**	**4:09**		
3:20	•••••	**3:33**	**3:47**	**4:00**	**4:19**	**4:25**	**4:39**	**4:55**
	3:45	**3:48**	**4:02**	**4:15**	**4:34**	**4:39**		
3:50	•••••	**4:03**	**4:17**	**4:30**	**4:49**	**4:55**	**5:09**	**5:25**
	4:08	**4:11**	**4:25**	**4:38**	**4:57**	**5:02**		
	4:15	**4:18**	**4:32**	**4:45**	**5:04**	**5:09**		
4:22	•••••	**4:35**	**4:48**	**5:00**	**5:18**	**5:24**	**5:38**	**5:51**
	4:47	**4:50**	**5:03**	**5:15**	**5:33**	**5:38**		
4:52	•••••	**5:05**	**5:18**	**5:30**	**5:48**	**5:54**	**6:08**	**6:21**
	5:17	**5:20**	**5:33**	**5:45**	**6:03**	**6:08**		
5:22	•••••	**5:35**	**5:48**	**6:00**	**6:18**	**6:24**	**6:38**	**6:51**
5:37	•••••	**5:50**	**6:03**	**6:15**	**6:33**	**6:39**	**6:53**	**7:06**
	6:02	**6:05**	**6:18**	**6:30**	**6:48**	**6:53**		
6:07	•••••	**6:20**	**6:33**	**6:45**	**7:03**	**7:09**	**7:23**	**7:36**
6:22	•••••	**6:35**	**6:48**	**7:00**	**7:18**	**7:24**	**7:38**	**7:51**
6:52	•••••	**7:05**	**7:18**	**7:30**	**7:48**	**7:54**	**8:08**	**8:21**
7:22	•••••	**7:35**	**7:48**	**8:00**	**8:18**	**8:24**	**8:38**	**8:51**
7:52	•••••	**8:05**	**8:18**	**8:30**	**8:48**	**8:54**	**9:08**	**9:21**
8:25	•••••	**8:37**	**8:47**	**9:00**	**9:17**	**9:21**	**9:32**	**9:42**
8:55	•••••	**9:07**	**9:17**	**9:30**	**9:47**	**9:51**	**10:02**	**10:12**
9:28	•••••	**9:37**	**9:47**	**10:00**	**10:15**	**10:19**	**10:31**	**10:41**
9:58	•••••	**10:07**	**10:17**	**10:30**	**10:45**	**10:49**	**11:01**	**11:11**
10:28	•••••	**10:37**	**10:47**	**11:00**	**11:15**	**11:19**	**11:31**	**11:41**
11:27	•••••	**11:36**	**11:46**	**11:59**	12:14	12:18	12:30	12:40
12:35	•••••	12:44	12:50	1:00	1:11	1:14	1:24	1:34

Saturday
EASTBOUND To: Tustin

7th & Channel	Leisure World	Main & Locust	Westminster & Goldenwest	Westminster & Beach	Westminster & Harbor	17th & Bristol	17th & Tustin (F)	Fruit & Tustin	Larwin Square
3:55	4:00	•••••	4:12	4:15	4:25	4:29	4:38	•••••	4:49
4:52	4:57	•••••	5:08	5:12	5:25	5:32	5:42	•••••	5:57
5:22	5:27	•••••	5:38	5:42	5:55	6:02	6:12	•••••	6:27
5:47	5:52	•••••	6:03	6:07	6:20	6:27	6:37	•••••	6:52
6:12	6:18	•••••	6:30	6:36	6:50	7:02	7:14	•••••	7:27
6:42	6:48	•••••	7:00	7:06	7:20	7:32	7:44	•••••	7:57
7:03	7:08	•••••	7:23	7:29	7:50	8:02	8:15	•••••	8:27
7:23	7:28	•••••	7:43	7:49	8:10	8:22	8:35	•••••	8:47
7:43	7:48	•••••	8:03	8:09	8:30	8:42	8:55	•••••	9:07
8:03	8:08	•••••	8:23	8:29	8:50	9:02	9:15	•••••	9:27
		8:39	8:43	8:49	9:10	9:22	9:35	9:38	
8:43	8:48	•••••	9:03	9:09	9:30	9:42	9:55	•••••	10:07
		9:19	9:23	9:29	9:50	10:02	10:15	10:18	
9:24	9:30	•••••	9:45	9:51	10:11	10:23	10:37	•••••	10:56
		9:56	10:00	10:06	10:26	10:38	10:52	10:55	
9:54	10:00	•••••	10:15	10:21	10:41	10:53	11:07	•••••	11:26
		10:26	10:30	10:36	10:56	11:08	11:22	11:25	
10:24	10:30	•••••	10:45	10:51	11:11	11:23	11:37	•••••	11:56
		10:56	11:00	11:06	11:26	11:38	11:52	11:55	
10:54	11:00	•••••	11:15	11:21	11:41	11:53	**12:07**	•••••	**12:26**
		11:26	11:30	11:36	11:56	**12:08**	**12:22**	**12:25**	
11:24	11:30	•••••	11:45	11:51	**12:11**	**12:23**	**12:37**	•••••	**12:56**
		11:56	**12:00**	**12:06**	**12:26**	**12:38**	**12:52**	**12:55**	
11:54	**12:00**	•••••	**12:15**	**12:21**	**12:41**	**12:53**	**1:07**	•••••	**1:26**
		12:26	**12:30**	**12:36**	**12:56**	**1:08**	**1:22**	**1:25**	
12:24	**12:30**	•••••	**12:45**	**12:51**	**1:11**	**1:23**	**1:37**	•••••	**1:56**
		12:56	**1:00**	**1:06**	**1:26**	**1:38**	**1:52**	**1:55**	
12:54	**1:00**	•••••	**1:15**	**1:21**	**1:41**	**1:53**	**2:07**	•••••	**2:26**
		1:26	**1:30**	**1:36**	**1:56**	**2:08**	**2:22**	**2:25**	
1:24	**1:30**	•••••	**1:45**	**1:51**	**2:11**	**2:23**	**2:37**	•••••	**2:56**
		1:57	**2:01**	**2:07**	**2:26**	**2:37**	**2:49**	**2:52**	
1:56	**2:02**	•••••	**2:16**	**2:22**	**2:41**	**2:52**	**3:04**	•••••	**3:22**
		2:27	**2:31**	**2:37**	**2:56**	**3:07**	**3:19**	**3:22**	
2:26	**2:32**	•••••	**2:46**	**2:52**	**3:11**	**3:22**	**3:34**	•••••	**3:52**
		2:57	**3:01**	**3:07**	**3:26**	**3:37**	**3:49**	**3:52**	
2:56	**3:02**	•••••	**3:16**	**3:22**	**3:41**	**3:52**	**4:04**	•••••	**4:22**
		3:27	**3:31**	**3:37**	**3:56**	**4:07**	**4:19**	**4:22**	
3:26	**3:32**	•••••	**3:46**	**3:52**	**4:11**	**4:22**	**4:34**	•••••	**4:52**
		3:57	**4:01**	**4:07**	**4:26**	**4:37**	**4:49**	**4:52**	
3:56	**4:02**	•••••	**4:16**	**4:22**	**4:41**	**4:52**	**5:04**	•••••	**5:22**
		4:27	**4:31**	**4:37**	**4:56**	**5:07**	**5:19**	**5:22**	
4:26	**4:32**	•••••	**4:46**	**4:52**	**5:11**	**5:22**	**5:34**	•••••	**5:52**
		4:57	**5:01**	**5:07**	**5:26**	**5:37**	**5:49**	**5:52**	
4:56	**5:02**	•••••	**5:16**	**5:22**	**5:41**	**5:52**	**6:04**	•••••	**6:22**
		5:31	**5:35**	**5:41**	**6:00**	**6:11**	**6:23**	**6:26**	
5:45	**5:51**	•••••	**6:05**	**6:11**	**6:30**	**6:41**	**6:53**	•••••	**7:11**
6:15	**6:21**	•••••	**6:35**	**6:41**	**7:00**	**7:11**	**7:23**	•••••	**7:41**
6:45	**6:51**	•••••	**7:05**	**7:11**	**7:30**	**7:41**	**7:53**	•••••	**8:11**
7:15	**7:21**	•••••	**7:35**	**7:41**	**8:00**	**8:11**	**8:23**	•••••	**8:41**
7:45	**7:51**	•••••	**8:05**	**8:11**	**8:30**	**8:41**	**8:53**	•••••	**9:11**
8:15	**8:21**	•••••	**8:35**	**8:41**	**9:00**	**9:11**	**9:23**	•••••	**9:41**
8:50	**8:56**	•••••	**9:09**	**9:14**	**9:30**	**9:39**	**9:50**	•••••	**10:02**
9:20	**9:26**	•••••	**9:39**	**9:44**	**10:00**	**10:09**	**10:20**	•••••	**10:32**
9:50	**9:56**	•••••	**10:09**	**10:14**	**10:30**	**10:39**	**10:50**	•••••	**11:02**
10:20	**10:26**	•••••	**10:39**	**10:44**	**11:00**	**11:09**	**11:20**	•••••	**11:32**
11:27	**11:32**	•••••	**11:43**	**11:48**	12:00	12:06	12:18	•••••	12:30
12:27	12:32	•••••	12:43	12:48	1:00	1:06	1:18	•••••	1:30

F = Times are approximate for trips terminating at Fruit & Tustin or Main & Locust.
= *Los horarios son aproximados para los viajes que terminan en Fru & Tustin o Main & Locust*

60 Long Beach to Tustin

via Westminster Ave / 17th

Saturday

WESTBOUND To: Long Beach

Larwin Square	Fruit & Tustin	17th & Tustin	17th & Bristol	Westminster & Harbor	Westminster & Beach	Westminster & Goldenwest (F)	Main & Locust	Leisure World	7th & Channel
3:59	·····	4:08	4:13	4:22	4:33	4:37	·····	4:49	4:58
4:47	·····	4:55	5:03	5:12	5:24	5:27	·····	5:41	5:50
5:17	·····	5:25	5:33	5:42	5:54	5:57	·····	6:11	6:20
5:38	·····	5:49	6:00	6:12	6:30	6:36	·····	6:49	7:02
6:08	·····	6:19	6:30	6:42	7:00	7:06	·····	7:19	7:32
6:28	·····	6:39	6:50	7:02	7:20	7:26	·····	7:39	7:52
6:48	·····	6:59	7:10	7:22	7:40	7:46	·····	7:59	8:12
7:08	·····	7:19	7:30	7:42	8:00	8:06	·····	8:19	8:32
7:28	·····	7:39	7:50	8:02	8:20	8:26	·····	8:39	8:52
7:48	·····	7:59	8:10	8:22	8:40	8:46	·····	8:59	9:12
8:08	·····	8:19	8:30	8:42	9:00	9:06	·····	9:19	9:32
	8:36	8:39	8:50	9:02	9:20	9:26	9:29		
8:48	·····	8:59	9:10	9:22	9:40	9:46	·····	9:59	10:12
	9:12	9:15	9:29	9:42	10:01	10:07	10:10		
9:21	·····	9:34	9:48	10:01	10:20	10:26	·····	10:40	10:56
	9:46	9:49	10:03	10:16	10:35	10:41	10:44		
9:51	·····	10:04	10:18	10:31	10:50	10:56	·····	11:10	11:26
	10:16	10:19	10:33	10:46	11:05	11:11	11:14		
10:21	·····	10:34	10:48	11:01	11:20	11:26	·····	11:40	11:56
	10:45	10:48	11:02	11:15	11:34	11:40	11:43		
10:50	·····	11:03	11:17	11:30	11:49	11:55	·····	**12:09**	**12:25**
	11:15	11:18	11:32	11:45	**12:04**	**12:10**	**12:13**		
11:20	·····	11:33	11:47	**12:00**	**12:19**	**12:25**	·····	**12:39**	**12:55**
	11:45	11:48	**12:02**	**12:15**	**12:34**	**12:40**	**12:43**		
11:50	·····	**12:03**	**12:17**	**12:30**	**12:49**	**12:55**	·····	**1:09**	**1:25**
	12:15	**12:18**	**12:32**	**12:45**	**1:04**	**1:10**	**1:13**		
12:20	·····	**12:33**	**12:47**	**1:00**	**1:19**	**1:25**	·····	**1:39**	**1:55**
	12:45	**12:48**	**1:02**	**1:15**	**1:34**	**1:40**	**1:43**		
12:50	·····	**1:03**	**1:17**	**1:30**	**1:49**	**1:55**	·····	**2:09**	**2:25**
	1:15	**1:18**	**1:32**	**1:45**	**2:04**	**2:10**	**2:13**		
1:20	·····	**1:33**	**1:47**	**2:00**	**2:19**	**2:25**	·····	**2:39**	**2:55**
	1:45	**1:48**	**2:02**	**2:15**	**2:34**	**2:40**	**2:43**		
1:50	·····	**2:03**	**2:17**	**2:30**	**2:49**	**2:55**	·····	**3:09**	**3:25**
	2:15	**2:18**	**2:32**	**2:45**	**3:04**	**3:09**	**3:12**		
2:20	·····	**2:33**	**2:47**	**3:00**	**3:19**	**3:25**	·····	**3:39**	**3:55**
	2:45	**2:48**	**3:02**	**3:15**	**3:34**	**3:39**	**3:42**		
2:50	·····	**3:03**	**3:17**	**3:30**	**3:49**	**3:55**	·····	**4:09**	**4:25**
	3:15	**3:18**	**3:32**	**3:45**	**4:04**	**4:09**	**4:12**		
3:20	·····	**3:33**	**3:47**	**4:00**	**4:19**	**4:25**	·····	**4:39**	**4:55**
	3:45	**3:48**	**4:02**	**4:15**	**4:34**	**4:39**	**4:42**		
3:50	·····	**4:03**	**4:17**	**4:30**	**4:49**	**4:55**	·····	**5:09**	**5:25**
	4:15	**4:18**	**4:32**	**4:45**	**5:04**	**5:09**	**5:12**		
4:22	·····	**4:35**	**4:48**	**5:00**	**5:18**	**5:24**	·····	**5:38**	**5:51**
	4:47	**4:50**	**5:03**	**5:15**	**5:33**	**5:38**	**5:41**		
4:52	·····	**5:05**	**5:18**	**5:30**	**5:48**	**5:54**	·····	**6:08**	**6:21**
	5:17	**5:20**	**5:33**	**5:45**	**6:03**	**6:08**	**6:11**		
5:22	·····	**5:35**	**5:48**	**6:00**	**6:18**	**6:24**	·····	**6:38**	**6:51**
	6:02	**6:05**	**6:18**	**6:30**	**6:48**	**6:53**	**6:56**		
6:22	·····	**6:35**	**6:48**	**7:00**	**7:18**	**7:24**	·····	**7:38**	**7:51**
6:52	·····	**7:05**	**7:18**	**7:30**	**7:48**	**7:54**	·····	**8:08**	**8:21**
7:22	·····	**7:35**	**7:48**	**8:00**	**8:18**	**8:24**	·····	**8:38**	**8:51**
7:52	·····	**8:05**	**8:18**	**8:30**	**8:48**	**8:54**	·····	**9:08**	**9:21**
8:25	·····	**8:37**	**8:47**	**9:00**	**9:17**	**9:21**	·····	**9:32**	**9:42**
8:55	·····	**9:07**	**9:17**	**9:30**	**9:47**	**9:51**	·····	**10:02**	**10:12**
9:28	·····	**9:37**	**9:47**	**10:00**	**10:15**	**10:19**	·····	**10:31**	**10:41**
9:58	·····	**10:07**	**10:17**	**10:30**	**10:45**	**10:49**	·····	**11:01**	**11:11**
10:28	·····	**10:37**	**10:47**	**11:00**	**11:15**	**11:19**	·····	**11:31**	**11:41**
11:27	·····	**11:36**	**11:46**	**11:59**	12:14	12:18	·····	12:30	12:40
12:35	·····	12:44	12:50	1:00	1:11	1:14	·····	1:24	1:34

Sunday & Holiday

EASTBOUND To: Tustin

7th & Channel	Leisure World	Main & Locust	Westminster & Goldenwest	Westminster & Beach	Westminster & Harbor	17th & Bristol	17th & Tustin (F)	Fruit & Tustin	Larwin Square
4:27	4:33	·····	4:45	4:48	4:59	5:05	5:14	·····	5:23
4:57	5:03	·····	5:15	5:18	5:29	5:35	5:44	·····	5:53
5:27	5:33	·····	5:45	5:48	5:59	6:05	6:14	·····	6:23
5:52	5:58	·····	6:11	6:17	6:32	6:40	6:50	·····	7:02
6:22	6:28	·····	6:41	6:47	7:02	7:10	7:20	·····	7:32
6:48	6:54	·····	7:08	7:13	7:32	7:41	7:54	·····	8:09
7:18	7:24	·····	7:38	7:43	8:02	8:11	8:24	·····	8:39
7:48	7:54	·····	8:08	8:13	8:32	8:41	8:54	·····	9:09
8:18	8:24	·····	8:38	8:43	9:02	9:11	9:24	·····	9:39
8:48	8:54	·····	9:08	9:13	9:32	9:41	9:54	·····	10:09
		9:20	9:23	9:28	9:47	9:56	10:09	10:15	
9:18	9:24	·····	9:38	9:43	10:02	10:11	10:24	·····	10:39
		9:50	9:53	9:58	10:17	10:26	10:39	10:45	
9:48	9:54	·····	10:08	10:13	10:32	10:41	10:54	·····	11:09
		10:20	10:23	10:28	10:47	10:56	11:09	11:15	
10:18	10:24	·····	10:38	10:43	11:02	11:11	11:24	·····	11:39
		10:50	10:53	10:58	11:17	11:26	11:39	11:45	
10:48	10:54	·····	11:08	11:13	11:32	11:41	11:54	·····	**12:09**
		11:20	11:23	11:28	11:47	11:56	**12:09**	**12:15**	
11:18	11:24	·····	11:38	11:43	**12:02**	**12:11**	**12:24**	·····	**12:39**
		11:50	11:53	11:58	**12:17**	**12:26**	**12:39**	**12:45**	
11:48	11:54	·····	**12:08**	**12:13**	**12:32**	**12:41**	**12:54**	·····	**1:09**
		12:20	**12:23**	**12:28**	**12:47**	**12:56**	**1:09**	**1:15**	
12:18	**12:24**	·····	**12:38**	**12:43**	**1:02**	**1:11**	**1:24**	·····	**1:39**
		12:50	**12:53**	**12:58**	**1:17**	**1:26**	**1:39**	**1:44**	
12:48	**12:54**	·····	**1:08**	**1:13**	**1:32**	**1:41**	**1:54**	·····	**2:09**
		1:20	**1:23**	**1:28**	**1:47**	**1:56**	**2:09**	**2:14**	
1:16	**1:22**	·····	**1:37**	**1:42**	**2:02**	**2:11**	**2:25**	·····	**2:40**
		1:49	**1:52**	**1:57**	**2:17**	**2:26**	**2:40**	**2:45**	
1:46	**1:52**	·····	**2:07**	**2:12**	**2:32**	**2:41**	**2:55**	·····	**3:10**
		2:19	**2:22**	**2:27**	**2:47**	**2:56**	**3:10**	**3:15**	
2:16	**2:22**	·····	**2:37**	**2:42**	**3:02**	**3:11**	**3:25**	·····	**3:40**
		2:49	**2:52**	**2:57**	**3:17**	**3:26**	**3:40**	**3:45**	
2:46	**2:52**	·····	**3:07**	**3:12**	**3:32**	**3:41**	**3:55**	·····	**4:10**
		3:19	**3:22**	**3:27**	**3:47**	**3:56**	**4:10**	**4:15**	
3:16	**3:22**	·····	**3:37**	**3:42**	**4:02**	**4:11**	**4:25**	·····	**4:40**
		3:49	**3:52**	**3:57**	**4:17**	**4:26**	**4:40**	**4:45**	
3:46	**3:52**	·····	**4:07**	**4:12**	**4:32**	**4:41**	**4:55**	·····	**5:10**
		4:19	**4:22**	**4:27**	**4:47**	**4:56**	**5:10**	**5:15**	
4:16	**4:22**	·····	**4:37**	**4:42**	**5:02**	**5:11**	**5:25**	·····	**5:40**
		4:49	**4:52**	**4:57**	**5:17**	**5:26**	**5:40**	**5:45**	
4:45	**4:52**	·····	**5:07**	**5:12**	**5:31**	**5:38**	**5:51**	·····	**6:05**
		5:19	**5:22**	**5:27**	**5:46**	**5:53**	**6:06**	**6:11**	
5:14	**5:21**	·····	**5:36**	**5:41**	**6:00**	**6:07**	**6:20**	·····	**6:34**
		5:48	**5:51**	**5:56**	**6:15**	**6:22**	**6:35**	**6:40**	
5:46	**5:53**	·····	**6:08**	**6:13**	**6:32**	**6:39**	**6:52**	·····	**7:06**
6:16	**6:23**	·····	**6:38**	**6:43**	**7:02**	**7:09**	**7:22**	·····	**7:36**
6:46	**6:53**	·····	**7:08**	**7:13**	**7:32**	**7:39**	**7:52**	·····	**8:06**
7:26	**7:31**	·····	**7:44**	**7:47**	**8:02**	**8:09**	**8:21**	·····	**8:35**
7:56	**8:01**	·····	**8:14**	**8:17**	**8:32**	**8:39**	**8:51**	·····	**9:05**
8:26	**8:31**	·····	**8:44**	**8:47**	**9:02**	**9:09**	**9:21**	·····	**9:35**
8:56	**9:01**	·····	**9:14**	**9:17**	**9:32**	**9:39**	**9:51**	·····	**10:05**
9:26	**9:31**	·····	**9:44**	**9:47**	**10:02**	**10:09**	**10:21**	·····	**10:35**
9:54	**9:59**	·····	**10:12**	**10:15**	**10:30**	**10:37**	**10:49**	·····	**11:03**
10:30	**10:35**	·····	**10:45**	**10:48**	**11:00**	**11:08**	**11:16**	·····	**11:29**
11:30	**11:35**	·····	**11:45**	**11:48**	12:00	12:08	12:16	·····	12:29
12:30	12:35	·····	12:45	12:48	1:00	1:08	1:16	·····	1:29

F = Times are approximate for trips terminating at Fruit & Tustin or Main & Locust.

= Los horarios son aproximados para los viajes que terminan en Fruit & Tustin o Main & Locust

Sunday & Holiday

WESTBOUND To: Long Beach

Larwin Square	Fruit & Tustin	17th & Tustin	17th & Bristol	Westminster & Harbor	Westminster & Beach	Westminster & Goldenwest (F)	Main & Locust	Leisure World	7th & Channel
4:03	·····	4:12	4:20	4:32	4:46	4:51	·····	5:03	5:12
4:34	·····	4:43	4:51	5:03	5:17	5:22	·····	5:34	5:43
5:04	·····	5:13	5:21	5:33	5:47	5:52	·····	6:04	6:13
5:34	·····	5:43	5:51	6:03	6:17	6:22	·····	6:34	6:43
6:04	·····	6:13	6:21	6:33	6:47	6:52	·····	7:04	7:13
6:34	·····	6:43	6:51	7:03	7:17	7:22	·····	7:34	7:43
6:59	·····	7:08	7:16	7:28	7:42	7:47	·····	7:59	8:08
7:28	·····	7:40	7:51	8:03	8:21	8:26	·····	8:39	8:53
	7:59	8:02	8:13	8:25	8:43	8:48	8:50		
8:05	·····	8:17	8:28	8:40	8:58	9:03	·····	9:16	9:30
	8:29	8:32	8:43	8:55	9:13	9:18	9:20		
8:35	·····	8:47	8:58	9:10	9:28	9:33	·····	9:46	10:00
	8:59	9:02	9:13	9:25	9:43	9:48	9:50		
9:05	·····	9:17	9:28	9:40	9:58	10:03	·····	10:16	10:30
	9:29	9:32	9:43	9:55	10:13	10:18	10:20		
9:35	·····	9:47	9:58	10:10	10:28	10:33	·····	10:46	11:00
	9:59	10:02	10:13	10:25	10:43	10:48	10:50		
10:05	·····	10:17	10:28	10:40	10:58	11:03	·····	11:16	11:30
	10:29	10:32	10:43	10:55	11:13	11:18	11:20		
10:35	·····	10:47	10:58	11:10	11:28	11:33	·····	11:46	**12:00**
	10:59	11:02	11:13	11:25	11:43	11:48	11:50		
11:01	·····	11:14	11:27	11:39	11:57	**12:03**	·····	**12:17**	**12:32**
	11:26	11:29	11:42	11:54	**12:12**	**12:17**	**12:19**		
11:30	·····	11:43	11:56	**12:08**	**12:26**	**12:32**	·····	**12:46**	**1:01**
	11:55	11:58	**12:11**	**12:23**	**12:41**	**12:46**	**12:48**		
12:00	·····	**12:13**	**12:26**	**12:38**	**12:56**	**1:02**	·····	**1:16**	**1:31**
	12:25	**12:28**	**12:41**	**12:53**	**1:11**	**1:16**	**1:18**		
12:30	·····	**12:43**	**12:56**	**1:08**	**1:26**	**1:32**	·····	**1:46**	**2:01**
	12:55	**12:58**	**1:11**	**1:23**	**1:41**	**1:46**	**1:48**		
1:00	·····	**1:13**	**1:26**	**1:38**	**1:56**	**2:02**	·····	**2:16**	**2:31**
	1:25	**1:28**	**1:41**	**1:53**	**2:11**	**2:16**	**2:18**		
1:30	·····	**1:43**	**1:56**	**2:08**	**2:26**	**2:32**	·····	**2:46**	**3:01**
	1:55	**1:58**	**2:11**	**2:23**	**2:41**	**2:46**	**2:48**		
2:00	·····	**2:13**	**2:26**	**2:38**	**2:56**	**3:02**	·····	**3:16**	**3:31**
	2:25	**2:28**	**2:41**	**2:53**	**3:11**	**3:16**	**3:18**		
2:34	·····	**2:46**	**2:58**	**3:09**	**3:27**	**3:32**	·····	**3:45**	**4:01**
	2:58	**3:01**	**3:13**	**3:24**	**3:42**	**3:47**	**3:49**		
3:03	·····	**3:15**	**3:27**	**3:38**	**3:56**	**4:01**	·····	**4:14**	**4:30**
	3:27	**3:30**	**3:42**	**3:53**	**4:11**	**4:16**	**4:18**		
3:32	·····	**3:44**	**3:56**	**4:07**	**4:25**	**4:30**	·····	**4:43**	**4:59**
	3:56	**3:59**	**4:11**	**4:22**	**4:40**	**4:45**	**4:47**		
4:04	·····	**4:16**	**4:28**	**4:39**	**4:57**	**5:02**	·····	**5:15**	**5:31**
	4:28	**4:31**	**4:43**	**4:54**	**5:12**	**5:17**	**5:19**		
4:34	·····	**4:46**	**4:58**	**5:09**	**5:27**	**5:32**	·····	**5:45**	**6:01**
	4:58	**5:01**	**5:13**	**5:24**	**5:42**	**5:47**	**5:49**		
5:04	·····	**5:16**	**5:28**	**5:39**	**5:57**	**6:02**	·····	**6:15**	**6:31**
5:24	·····	**5:36**	**5:48**	**5:59**	**6:17**	**6:22**	·····	**6:35**	**6:51**
5:44	·····	**5:56**	**6:08**	**6:19**	**6:37**	**6:42**	·····	**6:55**	**7:11**
6:15	·····	**6:27**	**6:39**	**6:50**	**7:08**	**7:13**	·····	**7:26**	**7:42**
6:44	·····	**6:56**	**7:08**	**7:19**	**7:37**	**7:42**	·····	**7:55**	**8:11**
7:17	·····	**7:28**	**7:38**	**7:49**	**8:05**	**8:12**	·····	**8:22**	**8:37**
7:47	·····	**7:58**	**8:08**	**8:19**	**8:35**	**8:42**	·····	**8:52**	**9:07**
8:17	·····	**8:28**	**8:38**	**8:49**	**9:05**	**9:12**	·····	**9:22**	**9:37**
8:47	·····	**8:58**	**9:08**	**9:19**	**9:35**	**9:42**	·····	**9:52**	**10:07**
9:17	·····	**9:28**	**9:38**	**9:49**	**10:05**	**10:12**	·····	**10:22**	**10:37**
9:51	·····	**10:02**	**10:09**	**10:19**	**10:35**	**10:40**	·····	**10:53**	**11:05**
10:36	·····	**10:46**	**10:52**	**11:00**	**11:11**	**11:15**	·····	**11:24**	**11:34**
11:36	·····	**11:46**	**11:52**	12:00	12:11	12:15	·····	12:24	12:34
12:36	·····	12:46	12:52	1:00	1:11	1:15	·····	1:24	1:34

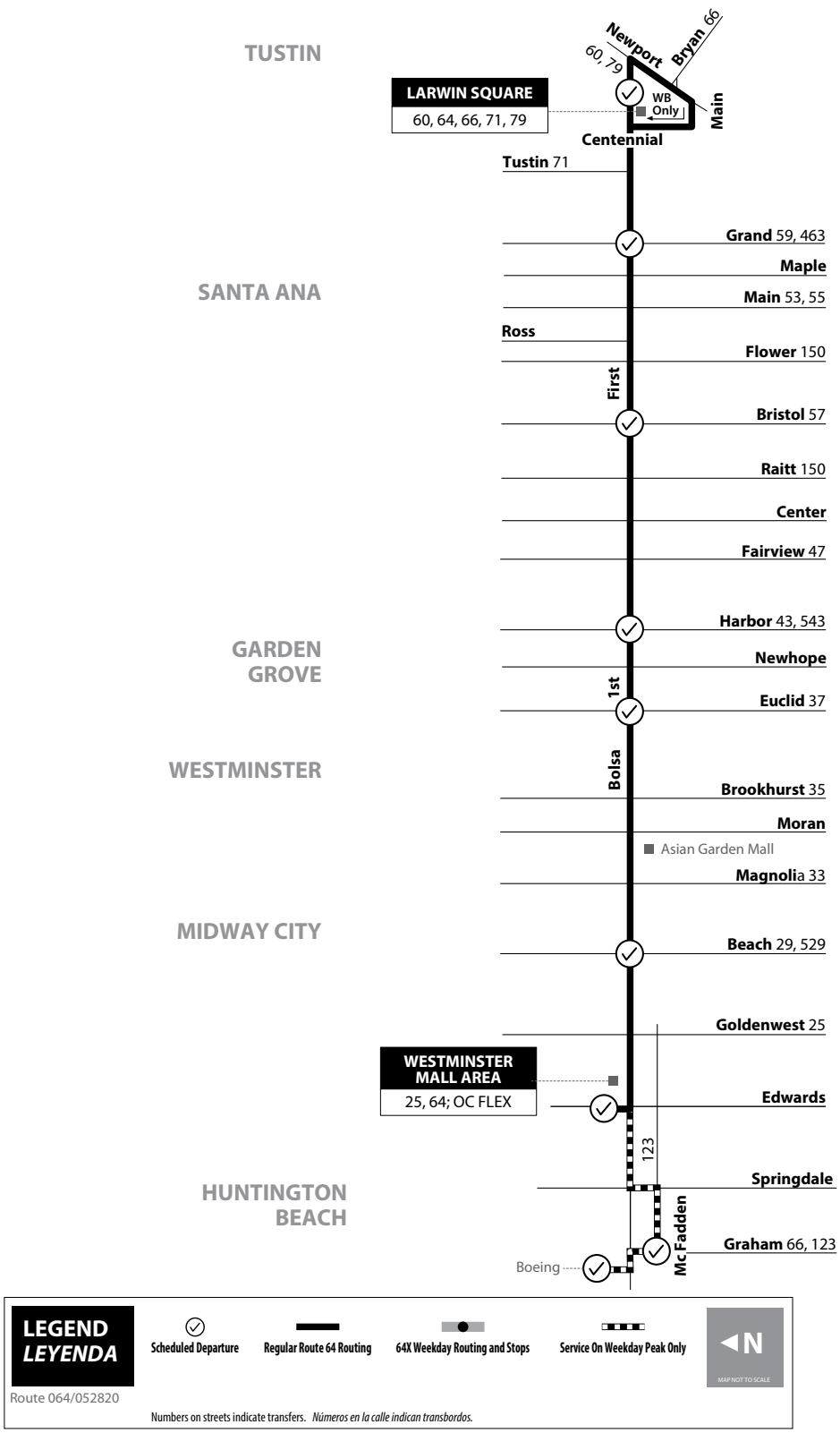
F = Times are approximate for trips terminating at Fruit & Tustin or Main & Locust.

= *Los horarios son aproximados para los viajes que terminan en Fruit & Tustin o Main & Locust*

64

Huntington Beach to Tustin

via Bolsa Ave / 1st St



Monday-Friday
EASTBOUND To: Tustin

Edwards & Bolsa*	Bolsa & Beach	1st & Euclid	1st & Harbor	1st & Bristol	1st & Grand	Larwin Square
5:27	5:33	5:46	5:51	5:58	6:11	6:22
5:49	5:55	6:08	6:13	6:20	6:33	6:44
6:11	6:17	6:30	6:35	6:42	6:56	7:09
6:21	6:28	6:41	6:46	6:56	7:09	7:20
6:33	6:39	6:52	6:57	7:04	7:18	7:31
6:55	7:01	7:14	7:19	7:26	7:40	7:53
7:17	7:23	7:36	7:41	7:48	8:02	8:15
7:28	7:31	7:46	7:52	8:02	8:17	8:26
7:38	7:44	7:57	8:02	8:09	8:23	8:36
7:59	8:05	8:18	8:23	8:30	8:44	8:57
8:20	8:26	8:39	8:44	8:51	9:05	9:18
8:37	8:44	8:59	9:05	9:12	9:27	9:41
8:57	9:04	9:19	9:25	9:32	9:47	10:01
9:06	9:13	9:28	9:34	9:41	9:56	10:10
9:15	9:22	9:37	9:43	9:50	10:05	10:19
9:30	9:37	9:52	9:58	10:05	10:20	10:34
9:45	9:52	10:07	10:13	10:20	10:35	10:49
10:00	10:07	10:22	10:28	10:35	10:50	11:04
10:15	10:22	10:37	10:43	10:50	11:05	11:19
10:28	10:35	10:52	10:58	11:06	11:22	11:36
10:43	10:50	11:07	11:13	11:21	11:37	11:51
10:58	11:05	11:22	11:28	11:36	11:52	**12:06**
11:13	11:20	11:37	11:43	11:51	**12:07**	**12:21**
11:28	11:35	11:52	11:58	**12:06**	**12:22**	**12:36**
11:43	11:50	**12:07**	**12:13**	**12:21**	**12:37**	**12:51**
11:58	**12:05**	**12:22**	**12:28**	**12:36**	**12:52**	**1:06**
12:13	**12:20**	**12:37**	**12:43**	**12:51**	**1:07**	**1:21**
12:28	**12:35**	**12:52**	**12:58**	**1:06**	**1:22**	**1:36**
12:43	**12:50**	**1:07**	**1:13**	**1:21**	**1:37**	**1:51**
12:56	**1:03**	**1:23**	**1:28**	**1:38**	**1:55**	**2:09**
1:13	**1:20**	**1:37**	**1:43**	**1:50**	**2:07**	**2:20**
1:28	**1:35**	**1:52**	**1:58**	**2:05**	**2:22**	**2:35**
1:43	**1:50**	**2:07**	**2:13**	**2:20**	**2:37**	**2:50**
1:58	**2:05**	**2:22**	**2:28**	**2:35**	**2:52**	**3:05**
2:13	**2:20**	**2:37**	**2:43**	**2:50**	**3:07**	**3:20**
2:28	**2:35**	**2:52**	**2:58**	**3:05**	**3:22**	**3:35**
2:36	**2:42**	**3:00**	**3:06**	**3:13**	**3:30**	**3:43**
2:43	**2:50**	**3:07**	**3:13**	**3:20**	**3:37**	**3:50**
2:58	**3:05**	**3:22**	**3:28**	**3:35**	**3:52**	**4:05**
3:14	**3:21**	**3:38**	**3:44**	**3:51**	**4:08**	**4:21**
3:29	**3:36**	**3:53**	**3:59**	**4:06**	**4:23**	**4:36**
3:38	**3:44**	**4:01**	**4:07**	**4:14**	**4:31**	**4:43**
3:46	**3:53**	**4:09**	**4:15**	**4:22**	**4:37**	**4:50**
3:53	**4:00**	**4:16**	**4:22**	**4:29**	**4:44**	**4:57**
4:00	**4:07**	**4:23**	**4:29**	**4:36**	**4:51**	**5:04**
4:13	**4:20**	**4:36**	**4:42**	**4:49**	**5:04**	**5:17**
4:28	**4:35**	**4:51**	**4:57**	**5:04**	**5:19**	**5:32**
4:43	**4:50**	**5:06**	**5:12**	**5:19**	**5:34**	**5:47**
4:59	**5:06**	**5:22**	**5:28**	**5:35**	**5:50**	**6:03**
5:07	**5:14**	**5:30**	**5:36**	**5:43**	**5:58**	**6:11**
5:14	**5:21**	**5:37**	**5:43**	**5:50**	**6:05**	**6:18**
5:29	**5:36**	**5:52**	**5:58**	**6:05**	**6:20**	**6:33**
5:58	**6:05**	**6:21**	**6:27**	**6:34**	**6:49**	**7:02**
6:29	**6:35**	**6:50**	**6:56**	**7:02**	**7:17**	**7:30**
6:59	**7:05**	**7:20**	**7:26**	**7:32**	**7:47**	**8:00**
7:31	**7:37**	**7:52**	**7:58**	**8:04**	**8:19**	**8:32**
8:03	**8:09**	**8:22**	**8:26**	**8:32**	**8:46**	**8:58**
8:33	**8:39**	**8:52**	**8:56**	**9:02**	**9:16**	**9:28**
9:03	**9:09**	**9:22**	**9:26**	**9:32**	**9:46**	**9:58**
10:03	**10:09**	**10:22**	**10:26**	**10:32**	**10:46**	**10:58**

Monday-Friday
WESTBOUND To: Huntington Beach

Larwin Square	1st & Grand	1st & Bristol	1st & Harbor	1st & Euclid	Bolsa & Beach	Edwards & Bolsa*
5:12	5:20	5:30	5:39	5:43	5:55	6:07
5:37	5:45	5:55	6:04	6:08	6:20	6:32
5:59	6:07	6:17	6:26	6:30	6:42	6:54
6:11	6:18	6:28	6:37	6:41	6:53	7:05
6:21	6:29	6:39	6:48	6:52	7:04	7:16
6:33	6:40	6:50	6:59	7:03	7:15	7:27
6:43	6:51	7:01	7:10	7:14	7:26	7:38
6:55	7:02	7:14	7:21	7:25	7:37	7:49
7:05	7:13	7:23	7:32	7:36	7:48	8:00
7:23	7:34	7:45	7:54	7:58	8:10	8:22
7:45	7:56	8:07	8:16	8:20	8:32	8:44
8:07	8:18	8:29	8:38	8:42	8:54	9:06
8:18	8:29	8:40	8:49	8:53	9:05	9:17
8:29	8:40	8:51	9:00	9:04	9:16	9:28
8:46	8:57	9:10	9:20	9:25	9:42	9:55
9:06	9:17	9:30	9:40	9:45	10:02	10:15
9:24	9:35	9:48	9:58	10:03	10:20	10:33
9:39	9:50	10:03	10:13	10:18	10:35	10:48
9:54	10:05	10:18	10:28	10:33	10:50	11:03
10:09	10:20	10:33	10:43	10:48	11:05	11:18
10:24	10:35	10:48	10:58	11:03	11:20	11:33
10:39	10:50	11:03	11:13	11:18	11:35	11:48
10:53	11:04	11:17	11:27	11:32	11:49	**12:02**
11:07	11:18	11:31	11:41	11:46	**12:03**	**12:16**
11:21	11:32	11:45	11:55	**12:00**	**12:17**	**12:30**
11:32	11:45	11:59	**12:09**	**12:14**	**12:32**	**12:46**
11:49	**12:02**	**12:16**	**12:26**	**12:31**	**12:49**	**1:03**
12:04	**12:17**	**12:31**	**12:41**	**12:46**	**1:04**	**1:18**
12:19	**12:32**	**12:46**	**12:56**	**1:01**	**1:19**	**1:33**
12:34	**12:47**	**1:01**	**1:12**	**1:17**	**1:33**	**1:46**
12:50	**1:03**	**1:17**	**1:28**	**1:33**	**1:49**	**2:02**
1:05	**1:18**	**1:32**	**1:43**	**1:48**	**2:04**	**2:17**
1:20	**1:33**	**1:47**	**1:58**	**2:03**	**2:19**	**2:32**
1:35	**1:48**	**2:02**	**2:13**	**2:18**	**2:34**	**2:47**
1:42	**1:56**	**2:11**	**2:21**	**2:26**	**2:42**	**2:54**
1:50	**2:03**	**2:17**	**2:28**	**2:33**	**2:49**	**3:02**
1:57	**2:11**	**2:26**	**2:36**	**2:41**	**2:57**	**3:09**
2:05	**2:18**	**2:32**	**2:43**	**2:48**	**3:04**	**3:17**
2:20	**2:33**	**2:47**	**2:58**	**3:03**	**3:19**	**3:32**
2:35	**2:48**	**3:02**	**3:13**	**3:18**	**3:34**	**3:47**
2:42	**2:55**	**3:11**	**3:21**	**3:25**	**3:41**	**3:54**
2:50	**3:03**	**3:17**	**3:28**	**3:33**	**3:49**	**4:02**
2:57	**3:10**	**3:26**	**3:36**	**3:40**	**3:56**	**4:09**
3:05	**3:18**	**3:32**	**3:43**	**3:48**	**4:04**	**4:17**
3:12	**3:25**	**3:41**	**3:51**	**3:55**	**4:11**	**4:24**
3:20	**3:33**	**3:47**	**3:58**	**4:03**	**4:19**	**4:32**
3:35	**3:48**	**4:02**	**4:13**	**4:18**	**4:34**	**4:47**
3:50	**4:03**	**4:17**	**4:28**	**4:33**	**4:49**	**5:02**
4:05	**4:18**	**4:32**	**4:43**	**4:48**	**5:04**	**5:17**
4:20	**4:33**	**4:47**	**4:58**	**5:03**	**5:19**	**5:32**
4:35	**4:48**	**5:02**	**5:13**	**5:18**	**5:34**	**5:47**
4:50	**5:03**	**5:17**	**5:28**	**5:33**	**5:49**	**6:02**
5:05	**5:18**	**5:32**	**5:43**	**5:48**	**6:04**	**6:17**
5:15	**5:28**	**5:40**	**5:51**	**5:55**	**6:11**	**6:22**
5:26	**5:38**	**5:49**	**5:58**	**6:03**	**6:16**	**6:28**
5:30	**5:42**	**5:54**	**6:03**	**6:08**	**6:21**	**6:34**
5:41	**5:53**	**6:04**	**6:13**	**6:18**	**6:31**	**6:43**
5:57	**6:09**	**6:20**	**6:29**	**6:34**	**6:47**	**6:59**
6:15	**6:27**	**6:38**	**6:47**	**6:52**	**7:05**	**7:17**
6:35	**6:47**	**6:58**	**7:07**	**7:12**	**7:25**	**7:37**
6:55	**7:07**	**7:18**	**7:27**	**7:32**	**7:45**	**7:57**
7:20	**7:32**	**7:43**	**7:52**	**7:57**	**8:10**	**8:22**
7:50	**8:02**	**8:13**	**8:22**	**8:27**	**8:40**	**8:52**
8:20	**8:32**	**8:43**	**8:52**	**8:57**	**9:10**	**9:22**
8:50	**9:02**	**9:14**	**9:22**	**9:26**	**9:37**	**9:49**
9:57	**10:09**	**10:21**	**10:29**	**10:33**	**10:44**	**10:56**

* This stop is 400 ft north of Bolsa on Edwards for both East and West trips.
Esta parada esta a 400 pies al norte de Bolsa en Edwards para los viajes hacia el este y oeste.

64 Huntington Beach to Tustin

via Bolsa Ave / 1st St

Saturday
EASTBOUND To: Tustin

Edwards & Bolsa*	Bolsa & Beach	1st & Euclid	1st & Harbor	1st & Bristol	1st & Grand	Larwin Square
5:27	5:33	5:46	5:51	5:58	6:11	6:22
5:49	5:55	6:08	6:13	6:20	6:33	6:44
6:11	6:17	6:30	6:35	6:42	6:56	7:09
6:33	6:39	6:52	6:57	7:04	7:18	7:31
6:55	7:01	7:14	7:19	7:26	7:40	7:53
7:17	7:23	7:36	7:41	7:48	8:02	8:15
7:38	7:44	7:57	8:02	8:09	8:23	8:36
7:59	8:05	8:18	8:23	8:30	8:44	8:57
8:20	8:26	8:39	8:44	8:51	9:05	9:18
8:37	8:44	8:59	9:05	9:12	9:27	9:41
8:57	9:04	9:19	9:25	9:32	9:47	10:01
9:15	9:22	9:37	9:43	9:50	10:05	10:19
9:30	9:37	9:52	9:58	10:05	10:20	10:34
9:45	9:52	10:07	10:13	10:20	10:35	10:49
10:00	10:07	10:22	10:28	10:35	10:50	11:04
10:15	10:22	10:37	10:43	10:50	11:05	11:19
10:28	10:35	10:52	10:58	11:06	11:22	11:36
10:43	10:50	11:07	11:13	11:21	11:37	11:51
10:58	11:05	11:22	11:28	11:36	11:52	**12:06**
11:13	11:20	11:37	11:43	11:51	**12:07**	**12:21**
11:28	11:35	11:52	11:58	**12:06**	**12:22**	**12:36**
11:43	11:50	**12:07**	**12:13**	**12:21**	**12:37**	**12:51**
11:58	**12:05**	**12:22**	**12:28**	**12:36**	**12:52**	**1:06**
12:13	**12:20**	**12:37**	**12:43**	**12:51**	**1:07**	**1:21**
12:28	**12:35**	**12:52**	**12:58**	**1:06**	**1:22**	**1:36**
12:43	**12:50**	**1:07**	**1:13**	**1:21**	**1:37**	**1:51**
12:56	**1:03**	**1:23**	**1:28**	**1:38**	**1:55**	**2:09**
1:13	**1:20**	**1:37**	**1:43**	**1:50**	**2:07**	**2:20**
1:28	**1:35**	**1:52**	**1:58**	**2:05**	**2:22**	**2:35**
1:43	**1:50**	**2:07**	**2:13**	**2:20**	**2:37**	**2:50**
1:58	**2:05**	**2:22**	**2:28**	**2:35**	**2:52**	**3:05**
2:13	**2:20**	**2:37**	**2:43**	**2:50**	**3:07**	**3:20**
2:28	**2:35**	**2:52**	**2:58**	**3:05**	**3:22**	**3:35**
2:43	**2:50**	**3:07**	**3:13**	**3:20**	**3:37**	**3:50**
2:58	**3:05**	**3:22**	**3:28**	**3:35**	**3:52**	**4:05**
3:14	**3:21**	**3:38**	**3:44**	**3:51**	**4:08**	**4:21**
3:29	**3:36**	**3:53**	**3:59**	**4:06**	**4:23**	**4:36**
3:46	**3:53**	**4:09**	**4:15**	**4:22**	**4:37**	**4:50**
4:00	**4:07**	**4:23**	**4:29**	**4:36**	**4:51**	**5:04**
4:13	**4:20**	**4:36**	**4:42**	**4:49**	**5:04**	**5:17**
4:28	**4:35**	**4:51**	**4:57**	**5:04**	**5:19**	**5:32**
4:43	**4:50**	**5:06**	**5:12**	**5:19**	**5:34**	**5:47**
4:59	**5:06**	**5:22**	**5:28**	**5:35**	**5:50**	**6:03**
5:14	**5:21**	**5:37**	**5:43**	**5:50**	**6:05**	**6:18**
5:29	**5:36**	**5:52**	**5:58**	**6:05**	**6:20**	**6:33**
5:58	**6:05**	**6:21**	**6:27**	**6:34**	**6:49**	**7:02**
6:29	**6:35**	**6:50**	**6:56**	**7:02**	**7:17**	**7:30**
6:59	**7:05**	**7:20**	**7:26**	**7:32**	**7:47**	**8:00**
7:31	**7:37**	**7:52**	**7:58**	**8:04**	**8:19**	**8:32**
8:03	**8:09**	**8:22**	**8:26**	**8:32**	**8:46**	**8:58**
8:33	**8:39**	**8:52**	**8:56**	**9:02**	**9:16**	**9:28**
9:03	**9:09**	**9:22**	**9:26**	**9:32**	**9:46**	**9:58**
10:03	**10:09**	**10:22**	**10:26**	**10:32**	**10:46**	**10:58**

Saturday
WESTBOUND To: Huntington Beach

Larwin Square	1st & Grand	1st & Bristol	1st & Harbor	1st & Euclid	Bolsa & Beach	Edwards & Bolsa*
5:12	5:20	5:30	5:39	5:43	5:55	6:07
5:37	5:45	5:55	6:04	6:08	6:20	6:32
5:59	6:07	6:17	6:26	6:30	6:42	6:54
6:21	6:29	6:39	6:48	6:52	7:04	7:16
6:43	6:51	7:01	7:10	7:14	7:26	7:38
7:05	7:13	7:23	7:32	7:36	7:48	8:00
7:23	7:34	7:45	7:54	7:58	8:10	8:22
7:45	7:56	8:07	8:16	8:20	8:32	8:44
8:07	8:18	8:29	8:38	8:42	8:54	9:06
8:29	8:40	8:51	9:00	9:04	9:16	9:28
8:46	8:57	9:10	9:20	9:25	9:42	9:55
9:06	9:17	9:30	9:40	9:45	10:02	10:15
9:24	9:35	9:48	9:58	10:03	10:20	10:33
9:39	9:50	10:03	10:13	10:18	10:35	10:48
9:54	10:05	10:18	10:28	10:33	10:50	11:03
10:09	10:20	10:33	10:43	10:48	11:05	11:18
10:24	10:35	10:48	10:58	11:03	11:20	11:33
10:39	10:50	11:03	11:13	11:18	11:35	11:48
10:53	11:04	11:17	11:27	11:32	11:49	**12:02**
11:07	11:18	11:31	11:41	11:46	**12:03**	**12:16**
11:21	11:32	11:45	11:55	**12:00**	**12:17**	**12:30**
11:32	11:45	11:59	**12:09**	**12:14**	**12:32**	**12:46**
11:49	**12:02**	**12:16**	**12:26**	**12:31**	**12:49**	**1:03**
12:04	**12:17**	**12:31**	**12:41**	**12:46**	**1:04**	**1:18**
12:19	**12:32**	**12:46**	**12:56**	**1:01**	**1:19**	**1:33**
12:34	**12:47**	**1:01**	**1:12**	**1:17**	**1:33**	**1:46**
12:50	**1:03**	**1:17**	**1:28**	**1:33**	**1:49**	**2:02**
1:05	**1:18**	**1:32**	**1:43**	**1:48**	**2:04**	**2:17**
1:20	**1:33**	**1:47**	**1:58**	**2:03**	**2:19**	**2:32**
1:35	**1:48**	**2:02**	**2:13**	**2:18**	**2:34**	**2:47**
1:50	**2:03**	**2:17**	**2:28**	**2:33**	**2:49**	**3:02**
2:05	**2:18**	**2:32**	**2:43**	**2:48**	**3:04**	**3:17**
2:20	**2:33**	**2:47**	**2:58**	**3:03**	**3:19**	**3:32**
2:35	**2:48**	**3:02**	**3:13**	**3:18**	**3:34**	**3:47**
2:50	**3:03**	**3:17**	**3:28**	**3:33**	**3:49**	**4:02**
3:05	**3:18**	**3:32**	**3:43**	**3:48**	**4:04**	**4:17**
3:20	**3:33**	**3:47**	**3:58**	**4:03**	**4:19**	**4:32**
3:35	**3:48**	**4:02**	**4:13**	**4:18**	**4:34**	**4:47**
3:50	**4:03**	**4:17**	**4:28**	**4:33**	**4:49**	**5:02**
4:05	**4:18**	**4:32**	**4:43**	**4:48**	**5:04**	**5:17**
4:20	**4:33**	**4:47**	**4:58**	**5:03**	**5:19**	**5:32**
4:35	**4:48**	**5:02**	**5:13**	**5:18**	**5:34**	**5:47**
4:50	**5:03**	**5:17**	**5:28**	**5:33**	**5:49**	**6:02**
5:05	**5:18**	**5:32**	**5:43**	**5:48**	**6:04**	**6:17**
5:26	**5:38**	**5:49**	**5:58**	**6:03**	**6:16**	**6:28**
5:41	**5:53**	**6:04**	**6:13**	**6:18**	**6:31**	**6:43**
5:57	**6:09**	**6:20**	**6:29**	**6:34**	**6:47**	**6:59**
6:15	**6:27**	**6:38**	**6:47**	**6:52**	**7:05**	**7:17**
6:35	**6:47**	**6:58**	**7:07**	**7:12**	**7:25**	**7:37**
6:55	**7:07**	**7:18**	**7:27**	**7:32**	**7:45**	**7:57**
7:20	**7:32**	**7:43**	**7:52**	**7:57**	**8:10**	**8:22**
7:50	**8:02**	**8:13**	**8:22**	**8:27**	**8:40**	**8:52**
8:20	**8:32**	**8:43**	**8:52**	**8:57**	**9:10**	**9:22**
8:50	**9:02**	**9:14**	**9:22**	**9:26**	**9:37**	**9:49**
9:57	**10:09**	**10:21**	**10:29**	**10:33**	**10:44**	**10:56**

* This stop is 400 ft north of Bolsa on Edwards for both East and West trips.
Esta parada esta a 400 pies al norte de Bolsa en Edwards para los viajes hacia el este y oeste.

Huntington Beach to Tustin
via Bolsa Ave / 1st St

64

Sunday & Holiday
EASTBOUND To: Tustin

Edwards & Bolsa*	Bolsa & Beach	1st & Euclid	1st & Harbor	1st & Bristol	1st & Grand	Larwin Square
6:11	6:17	6:30	6:35	6:44	6:54	7:01
6:42	6:48	6:59	7:04	7:11	7:20	7:28
7:02	7:08	7:21	7:26	7:35	7:46	7:54
7:24	7:30	7:43	7:48	7:57	8:08	8:16
7:45	7:51	8:05	8:10	8:20	8:31	8:39
8:07	8:13	8:27	8:32	8:42	8:53	9:01
8:28	8:34	8:48	8:53	9:03	9:14	9:22
8:45	8:51	9:05	9:10	9:20	9:31	9:39
9:01	9:07	9:22	9:27	9:37	9:47	9:55
9:16	9:22	9:37	9:42	9:52	10:02	10:10
9:31	9:37	9:52	9:57	10:07	10:17	10:25
9:45	9:51	10:07	10:12	10:22	10:31	10:39
10:00	10:06	10:22	10:27	10:37	10:46	10:54
10:15	10:21	10:37	10:42	10:52	11:01	11:09
10:30	10:36	10:52	10:57	11:07	11:16	11:24
10:45	10:51	11:07	11:12	11:22	11:31	11:39
10:59	11:06	11:22	11:27	11:36	11:46	11:55
11:14	11:21	11:37	11:42	11:51	**12:01**	**12:10**
11:29	11:36	11:52	11:57	**12:06**	**12:16**	**12:25**
11:44	11:51	**12:07**	**12:12**	**12:21**	**12:31**	**12:40**
11:59	**12:06**	**12:22**	**12:27**	**12:37**	**12:47**	**12:55**
12:14	**12:21**	**12:37**	**12:42**	**12:52**	**1:02**	**1:10**
12:29	**12:36**	**12:52**	**12:57**	**1:07**	**1:17**	**1:25**
12:44	**12:51**	**1:07**	**1:12**	**1:22**	**1:32**	**1:40**
12:59	**1:06**	**1:22**	**1:27**	**1:37**	**1:47**	**1:55**
1:14	**1:21**	**1:37**	**1:42**	**1:52**	**2:03**	**2:11**
1:29	**1:36**	**1:52**	**1:57**	**2:07**	**2:18**	**2:26**
1:44	**1:51**	**2:07**	**2:12**	**2:22**	**2:33**	**2:41**
1:59	**2:06**	**2:22**	**2:27**	**2:37**	**2:48**	**2:56**
2:14	**2:21**	**2:37**	**2:42**	**2:52**	**3:03**	**3:11**
2:29	**2:36**	**2:52**	**2:57**	**3:07**	**3:18**	**3:26**
2:44	**2:51**	**3:07**	**3:12**	**3:22**	**3:33**	**3:41**
2:59	**3:06**	**3:22**	**3:27**	**3:37**	**3:48**	**3:56**
3:14	**3:21**	**3:37**	**3:42**	**3:52**	**4:03**	**4:11**
3:29	**3:36**	**3:52**	**3:57**	**4:07**	**4:18**	**4:26**
3:47	**3:54**	**4:08**	**4:12**	**4:21**	**4:32**	**4:41**
4:02	**4:09**	**4:23**	**4:27**	**4:36**	**4:47**	**4:56**
4:17	**4:24**	**4:38**	**4:42**	**4:51**	**5:02**	**5:11**
4:32	**4:39**	**4:53**	**4:57**	**5:06**	**5:17**	**5:26**
4:47	**4:54**	**5:08**	**5:12**	**5:21**	**5:32**	**5:41**
5:03	**5:09**	**5:23**	**5:27**	**5:36**	**5:46**	**5:54**
5:25	**5:31**	**5:45**	**5:49**	**5:58**	**6:08**	**6:16**
5:47	**5:53**	**6:07**	**6:11**	**6:20**	**6:30**	**6:38**
6:09	**6:15**	**6:29**	**6:33**	**6:42**	**6:52**	**7:00**
6:33	**6:39**	**6:52**	**6:56**	**7:05**	**7:16**	**7:24**
7:01	**7:07**	**7:20**	**7:24**	**7:33**	**7:44**	**7:52**
7:32	**7:38**	**7:51**	**7:55**	**8:04**	**8:13**	**8:20**
8:00	**8:06**	**8:19**	**8:23**	**8:32**	**8:41**	**8:48**
8:29	**8:35**	**8:47**	**8:51**	**8:59**	**9:09**	**9:16**
9:29	**9:35**	**9:47**	**9:51**	**9:59**	**10:09**	**10:16**

Sunday & Holiday
WESTBOUND To: Huntington Beach

Larwin Square	1st & Grand	1st & Bristol	1st & Harbor	1st & Euclid	Bolsa & Beach	Edwards & Bolsa*
5:36	5:44	5:53	6:00	6:04	6:14	6:20
6:01	6:09	6:18	6:25	6:29	6:39	6:45
6:24	6:33	6:42	6:50	6:54	7:05	7:11
6:49	6:58	7:07	7:15	7:19	7:30	7:36
7:11	7:20	7:29	7:37	7:41	7:52	7:58
7:28	7:39	7:50	7:59	8:03	8:17	8:24
7:50	8:01	8:12	8:21	8:25	8:39	8:46
8:12	8:23	8:34	8:43	8:47	9:01	9:08
8:32	8:43	8:54	9:03	9:07	9:21	9:28
8:52	9:03	9:14	9:23	9:27	9:41	9:48
9:09	9:20	9:31	9:40	9:44	9:59	10:07
9:25	9:36	9:47	9:56	10:00	10:15	10:23
9:41	9:52	10:03	10:12	10:16	10:31	10:39
9:57	10:08	10:19	10:28	10:32	10:47	10:55
10:12	10:23	10:34	10:43	10:47	11:02	11:10
10:27	10:38	10:49	10:58	11:02	11:17	11:25
10:42	10:53	11:04	11:13	11:17	11:32	11:40
10:57	11:08	11:19	11:28	11:32	11:47	11:55
11:13	11:23	11:34	11:43	11:48	**12:03**	**12:11**
11:28	11:38	11:49	11:58	**12:03**	**12:18**	**12:26**
11:40	11:51	**12:03**	**12:13**	**12:17**	**12:32**	**12:40**
11:55	**12:06**	**12:18**	**12:28**	**12:32**	**12:47**	**12:55**
12:10	**12:21**	**12:33**	**12:43**	**12:47**	**1:02**	**1:10**
12:25	**12:36**	**12:48**	**12:58**	**1:02**	**1:17**	**1:25**
12:40	**12:51**	**1:03**	**1:13**	**1:17**	**1:31**	**1:39**
12:55	**1:06**	**1:18**	**1:28**	**1:32**	**1:46**	**1:54**
1:10	**1:21**	**1:33**	**1:43**	**1:47**	**2:01**	**2:09**
1:25	**1:36**	**1:48**	**1:58**	**2:02**	**2:16**	**2:24**
1:40	**1:51**	**2:03**	**2:13**	**2:17**	**2:31**	**2:39**
1:55	**2:06**	**2:18**	**2:28**	**2:32**	**2:46**	**2:54**
2:10	**2:21**	**2:33**	**2:43**	**2:47**	**3:01**	**3:09**
2:25	**2:36**	**2:48**	**2:58**	**3:02**	**3:16**	**3:24**
2:40	**2:51**	**3:03**	**3:13**	**3:17**	**3:31**	**3:39**
2:55	**3:06**	**3:18**	**3:28**	**3:32**	**3:46**	**3:54**
3:10	**3:21**	**3:33**	**3:43**	**3:47**	**4:01**	**4:09**
3:27	**3:38**	**3:49**	**3:58**	**4:03**	**4:15**	**4:22**
3:42	**3:53**	**4:04**	**4:13**	**4:18**	**4:30**	**4:37**
3:57	**4:08**	**4:19**	**4:28**	**4:33**	**4:45**	**4:52**
4:12	**4:23**	**4:34**	**4:43**	**4:48**	**5:00**	**5:07**
4:27	**4:38**	**4:49**	**4:58**	**5:03**	**5:15**	**5:22**
4:42	**4:53**	**5:04**	**5:13**	**5:18**	**5:30**	**5:37**
4:57	**5:08**	**5:19**	**5:28**	**5:33**	**5:45**	**5:52**
5:12	**5:23**	**5:34**	**5:43**	**5:48**	**6:00**	**6:07**
5:26	**5:38**	**5:48**	**5:58**	**6:03**	**6:16**	**6:23**
5:46	**5:58**	**6:08**	**6:18**	**6:23**	**6:36**	**6:43**
6:07	**6:18**	**6:29**	**6:38**	**6:43**	**6:55**	**7:02**
6:27	**6:38**	**6:49**	**6:58**	**7:03**	**7:15**	**7:22**
6:55	**7:06**	**7:17**	**7:26**	**7:31**	**7:43**	**7:50**
7:24	**7:35**	**7:46**	**7:55**	**8:00**	**8:12**	**8:19**
8:01	**8:11**	**8:21**	**8:30**	**8:34**	**8:44**	**8:51**
8:30	**8:40**	**8:50**	**8:59**	**9:03**	**9:13**	**9:20**
9:00	**9:10**	**9:20**	**9:29**	**9:33**	**9:43**	**9:50**
9:54	**10:04**	**10:13**	**10:20**	**10:24**	**10:34**	**10:40**

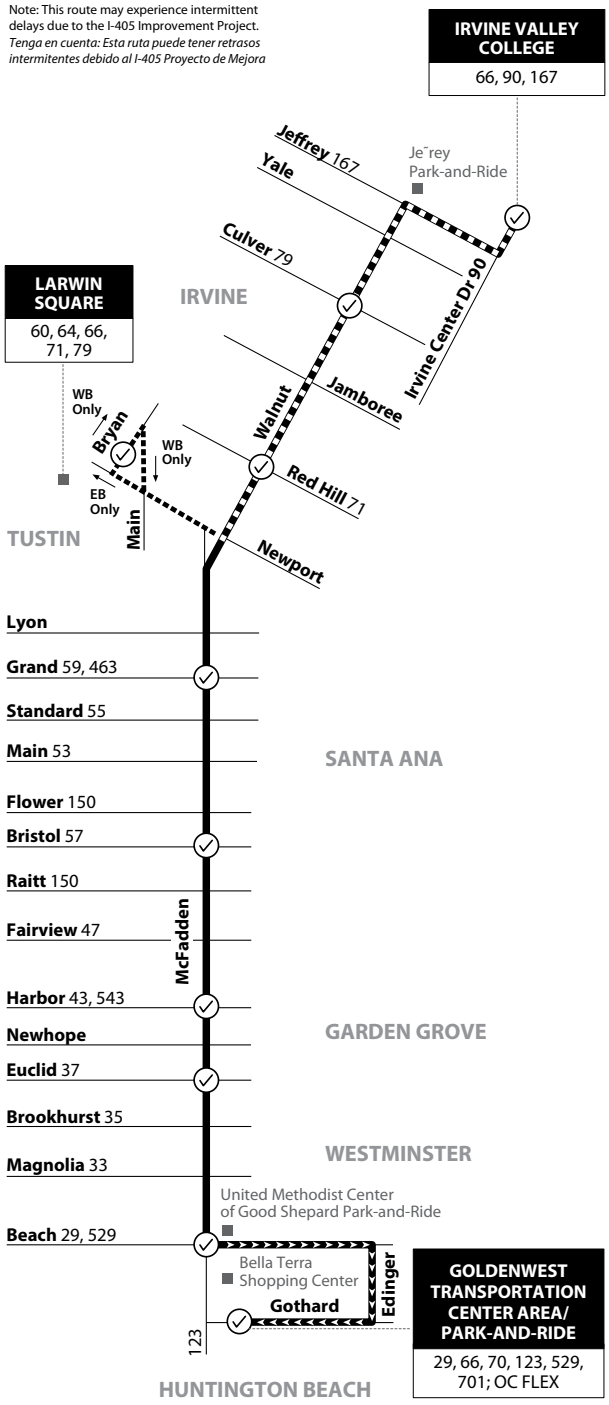
* This stop is 400 ft north of Bolsa on Edwards for both East and West trips.
Esta parada esta a 400 pies al norte de Bolsa en Edwards para los viajes hacia el este y oeste.

66

Huntington Beach to Irvine

via McFadden Ave / Walnut Ave

Note: This route may experience intermittent delays due to the I-405 Improvement Project.
Tenga en cuenta: Esta ruta puede tener retrasos intermitentes debido al I-405 Proyecto de Mejora



LEGEND *LEYENDA*

Route 066/111519

Scheduled Departure | Regular Routing | Short Turn Only | No Service On Some Trips | Long-Term Detour

N — MAP NOT TO SCALE

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday-Friday
EASTBOUND To: Irvine

Goldenwest Transportation Center	McFadden & Beach	McFadden & Euclid	McFadden & Harbor	McFadden & Bristol	McFadden & Grand	Bryan & Newport	Walnut & Redhill	Walnut & Culver	Irvine Valley College
4:27	4:31	4:41	4:48	4:56	5:07	·····	5:16	5:25	5:35
4:45	4:54	5:04	5:11	5:19	5:30	·····	5:39	5:48	5:58
5:12	5:16	5:26	5:33	5:41	5:52	·····	6:01	6:10	6:20
5:30	5:39	5:49	5:56	6:04	6:15	·····	6:24	6:33	6:43
5:59	6:03	6:13	6:20	6:28	6:39	6:52			
6:18	6:27	6:37	6:44	6:52	7:03	7:16			
6:38	6:47	6:57	7:04	7:12	7:23	7:36			
6:53	6:57	7:07	7:14	7:22	7:33	·····	7:42	7:51	8:01
6:58	7:07	7:17	7:24	7:32	7:43	·····	7:52	8:01	8:11
7:16	7:25	7:35	7:42	7:50	8:01	8:14			
7:36	7:45	7:55	8:02	8:10	8:21	8:34			
7:58	8:07	8:17	8:24	8:32	8:43	·····	8:52	9:01	9:11
8:16	8:25	8:35	8:42	8:50	9:01	9:14			
8:36	8:45	8:55	9:01	9:12	9:24	9:37			
8:56	9:05	9:15	9:21	9:32	9:44	·····	9:54	10:03	10:13
9:16	9:25	9:35	9:41	9:52	10:04	10:17			
9:36	9:45	9:55	10:01	10:12	10:24	10:37			
9:56	10:05	10:15	10:21	10:32	10:44	·····	10:54	11:03	11:13
10:16	10:25	10:35	10:41	10:52	11:04	11:17			
10:36	10:45	10:55	11:01	11:12	11:24	11:37			
10:56	11:05	11:15	11:21	11:32	11:44	·····	11:54	**12:03**	**12:13**
11:16	11:25	11:35	11:41	11:52	**12:04**	**12:17**			
11:36	11:45	11:55	**12:01**	**12:12**	**12:24**	**12:37**			
11:56	**12:05**	**12:15**	**12:21**	**12:32**	**12:44**	·····	**12:54**	**1:03**	**1:13**
12:16	**12:25**	**12:35**	**12:41**	**12:52**	**1:04**	**1:17**			
12:36	**12:45**	**12:55**	**1:01**	**1:12**	**1:24**	**1:37**			
12:56	**1:05**	**1:15**	**1:21**	**1:32**	**1:44**	·····	**1:54**	**2:03**	**2:13**
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1:36	**1:45**	**1:55**	**2:01**	**2:12**	**2:24**	**2:37**			
1:51	**1:55**	**2:05**	**2:11**	**2:22**	**2:34**	·····	**2:44**	**2:53**	**3:03**
1:56	**2:05**	**2:15**	**2:21**	**2:32**	**2:44**	·····	**2:54**	**3:03**	**3:13**
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2:31	**2:35**	**2:45**	**2:51**	**3:02**	**3:14**	**3:27**			
2:36	**2:45**	**2:55**	**3:01**	**3:12**	**3:24**	**3:37**			
2:51	**2:55**	**3:05**	**3:11**	**3:22**	**3:34**	·····	**3:44**	**3:53**	**4:03**
2:56	**3:05**	**3:15**	**3:21**	**3:32**	**3:44**	·····	**3:54**	**4:03**	**4:13**
3:11	**3:15**	**3:25**	**3:31**	**3:42**	**3:54**	**4:07**			
3:16	**3:25**	**3:35**	**3:41**	**3:52**	**4:04**	**4:17**			
3:31	**3:35**	**3:45**	**3:51**	**4:02**	**4:14**	**4:27**			
3:36	**3:45**	**3:55**	**4:01**	**4:12**	**4:24**	**4:37**			
3:51	**3:55**	**4:05**	**4:11**	**4:22**	**4:34**	**4:47**			
3:56	**4:05**	**4:15**	**4:21**	**4:32**	**4:44**	·····	**4:54**	**5:03**	**5:13**
4:11	**4:15**	**4:25**	**4:31**	**4:42**	**4:54**	**5:07**			
4:16	**4:25**	**4:35**	**4:41**	**4:52**	**5:04**	**5:17**			
4:36	**4:45**	**4:55**	**5:01**	**5:12**	**5:24**	**5:37**			
4:51	**4:55**	**5:05**	**5:11**	**5:22**	**5:34**	**5:47**			
4:56	**5:05**	**5:15**	**5:21**	**5:32**	**5:44**	·····	**5:54**	**6:03**	**6:13**
5:11	**5:15**	**5:25**	**5:31**	**5:42**	**5:54**	**6:07**			
5:16	**5:25**	**5:35**	**5:41**	**5:52**	**6:04**	**6:17**			
5:36	**5:45**	**5:55**	**6:01**	**6:12**	**6:24**	**6:37**			
5:56	**6:05**	**6:15**	**6:21**	**6:32**	**6:44**	·····	**6:54**	**7:03**	**7:13**
6:33	**6:42**	**6:50**	**6:54**	**7:02**	**7:13**	**7:25**			
7:03	**7:12**	**7:20**	**7:24**	**7:32**	**7:43**	·····	**7:52**	**8:01**	**8:11**
7:33	**7:42**	**7:50**	**7:54**	**8:02**	**8:13**	**8:25**			
8:03	**8:12**	**8:20**	**8:24**	**8:32**	**8:43**	·····	**8:52**	**9:01**	**9:11**
8:43	**8:52**	**9:00**	**9:04**	**9:12**	**9:23**	**9:35**			
9:23	**9:32**	**9:40**	**9:44**	**9:52**	**10:03**	·····	**10:12**	**10:21**	**10:31**

Monday-Friday
WESTBOUND To: Huntington Beach

Irvine Valley College	Walnut & Culver	Walnut & Red Hill	Bryan & Newport	McFadden & Grand	McFadden & Bristol	McFadden & Harbor	McFadden & Euclid	McFadden & Beach	Goldenwest Transportation Center
			5:08	5:21	5:30	5:38	5:42	5:49	5:56
5:08	5:15	5:21	·····	5:31	5:40	5:48	5:52	5:59	6:10
			5:40	5:53	6:02	6:10	6:14	6:21	6:32
			5:59	6:12	6:21	6:29	6:33	6:40	6:47
6:08	6:15	6:21	·····	6:31	6:40	6:48	6:52	6:59	7:10
			6:53	7:06	7:15	7:23	7:27	7:34	7:45
7:02	7:12	7:18	·····	7:29	7:40	7:50	7:55	8:04	8:15
			7:41	7:54	8:05	8:15	8:20	8:29	8:40
7:50	8:00	8:06	·····	8:17	8:28	8:38	8:43	8:52	9:03
			8:24	8:37	8:48	8:58	9:03	9:12	9:23
			8:44	8:57	9:08	9:18	9:23	9:32	9:43
8:50	9:00	9:06	·····	9:17	9:28	9:38	9:43	9:52	10:03
			9:24	9:37	9:48	9:58	10:03	10:12	10:23
			9:44	9:57	10:08	10:18	10:23	10:32	10:43
9:50	10:00	10:06	·····	10:17	10:28	10:38	10:43	10:52	11:03
			10:24	10:37	10:48	10:58	11:03	11:12	11:23
			10:39	10:52	11:06	11:19	11:24	11:33	11:44
10:40	10:52	11:00	·····	11:12	11:26	11:39	11:44	11:53	**12:04**
			11:19	11:32	11:46	11:59	**12:04**	**12:13**	**12:24**
			11:39	11:52	**12:06**	**12:19**	**12:24**	**12:33**	**12:44**
11:40	11:52	**12:00**	·····	**12:12**	**12:26**	**12:39**	**12:44**	**12:53**	**1:04**
			12:19	**12:32**	**12:46**	**12:59**	**1:04**	**1:13**	**1:24**
			12:39	**12:52**	**1:06**	**1:19**	**1:24**	**1:33**	**1:44**
12:40	**12:52**	**1:00**	·····	**1:12**	**1:26**	**1:39**	**1:44**	**1:53**	**2:04**
			1:19	**1:32**	**1:46**	**1:59**	**2:04**	**2:13**	**2:24**
			1:39	**1:52**	**2:06**	**2:19**	**2:24**	**2:33**	**2:44**
1:40	**1:52**	**2:00**	·····	**2:12**	**2:26**	**2:39**	**2:44**	**2:53**	**3:04**
			2:19	**2:32**	**2:46**	**2:59**	**3:04**	**3:13**	**3:24**
			2:31	**2:44**	**2:58**	**3:11**	**3:16**	**3:25**	**3:32**
			2:42	**2:55**	**3:08**	**3:20**	**3:25**	**3:33**	**3:44**
			2:52	**3:05**	**3:18**	**3:30**	**3:35**	**3:43**	**3:50**
2:45	**2:57**	**3:04**	·····	**3:15**	**3:28**	**3:40**	**3:45**	**3:53**	**4:04**
			3:22	**3:35**	**3:48**	**4:00**	**4:05**	**4:13**	**4:24**
			3:42	**3:55**	**4:08**	**4:20**	**4:25**	**4:33**	**4:44**
			3:52	**4:05**	**4:18**	**4:30**	**4:35**	**4:43**	**4:50**
3:45	**3:57**	**4:04**	·····	**4:15**	**4:28**	**4:40**	**4:45**	**4:53**	**5:04**
			4:22	**4:35**	**4:48**	**5:00**	**5:05**	**5:13**	**5:24**
			4:42	**4:55**	**5:08**	**5:20**	**5:25**	**5:33**	**5:44**
			4:52	**5:05**	**5:18**	**5:30**	**5:35**	**5:43**	**5:50**
4:50	**5:00**	**5:07**	·····	**5:17**	**5:28**	**5:39**	**5:44**	**5:52**	**6:03**
			5:22	**5:35**	**5:46**	**5:57**	**6:02**	**6:10**	**6:21**
			5:34	**5:47**	**5:58**	**6:09**	**6:14**	**6:22**	**6:29**
5:30	**5:40**	**5:47**	·····	**5:57**	**6:08**	**6:19**	**6:24**	**6:32**	**6:43**
			6:14	**6:27**	**6:38**	**6:49**	**6:54**	**7:02**	**7:13**
6:30	**6:40**	**6:47**	·····	**6:57**	**7:08**	**7:19**	**7:24**	**7:32**	**7:43**
			7:14	**7:27**	**7:38**	**7:49**	**7:54**	**8:02**	**8:13**
7:30	**7:40**	**7:47**	·····	**7:57**	**8:08**	**8:19**	**8:24**	**8:32**	**8:43**
			8:12	**8:25**	**8:36**	**8:47**	**8:52**	**9:00**	**9:11**
8:36	**8:46**	**8:53**	·····	**9:03**	**9:14**	**9:25**	**9:30**	**9:38**	**9:49**
9:12	**9:22**	**9:29**	·····	**9:39**	**9:50**	**10:01**	**10:06**	**10:14**	**10:25**

Saturday, Sunday & Holiday
EASTBOUND To: Irvine

Goldenwest Transportation Center	Mcfadden & Beach	Mcfadden & Euclid	Mcfadden & Harbor	Mcfadden & Bristol	Mcfadden & Grand	Bryan & Newport	Walnut & Red Hill	Walnut & Culver	Irvine Valley College
4:45	4:54	5:04	5:11	5:19	5:30	·····	5:39	5:48	5:5
5:30	5:39	5:49	5:56	6:04	6:15	·····	6:24	6:33	6:4
6:18	6:27	6:37	6:44	6:52	7:03	7:16			
6:38	6:47	6:57	7:04	7:12	7:23	7:36			
6:58	7:07	7:17	7:24	7:32	7:43	·····	7:52	8:01	8:1
7:16	7:25	7:35	7:42	7:50	8:01	8:14			
7:36	7:45	7:55	8:02	8:10	8:21	8:34			
7:58	8:07	8:17	8:24	8:32	8:43	·····	8:52	9:01	9:1
8:16	8:25	8:35	8:42	8:50	9:01	9:14			
8:36	8:45	8:55	9:01	9:12	9:24	9:37			
8:56	9:05	9:15	9:21	9:32	9:44	·····	9:54	10:03	10:1
9:16	9:25	9:35	9:41	9:52	10:04	10:17			
9:36	9:45	9:55	10:01	10:12	10:24	10:37			
9:56	10:05	10:15	10:21	10:32	10:44	·····	10:54	11:03	11:1
10:16	10:25	10:35	10:41	10:52	11:04	11:17			
10:36	10:45	10:55	11:01	11:12	11:24	11:37			
10:56	11:05	11:15	11:21	11:32	11:44	·····	11:54	**12:03**	**12:1**
11:16	11:25	11:35	11:41	11:52	**12:04**	**12:17**			
11:36	11:45	11:55	**12:01**	**12:12**	**12:24**	**12:37**			
11:56	**12:05**	**12:15**	**12:21**	**12:32**	**12:44**	·····	**12:54**	**1:03**	**1:1**
12:16	**12:25**	**12:35**	**12:41**	**12:52**	**1:04**	**1:17**			
12:36	**12:45**	**12:55**	**1:01**	**1:12**	**1:24**	**1:37**			
12:56	**1:05**	**1:15**	**1:21**	**1:32**	**1:44**	·····	**1:54**	**2:03**	**2:1**
1:16	**1:25**	**1:35**	**1:41**	**1:52**	**2:04**	**2:17**			
1:36	**1:45**	**1:55**	**2:01**	**2:12**	**2:24**	**2:37**			
1:56	**2:05**	**2:15**	**2:21**	**2:32**	**2:44**	·····	**2:54**	**3:03**	**3:1**
2:16	**2:25**	**2:35**	**2:41**	**2:52**	**3:04**	**3:17**			
2:36	**2:45**	**2:55**	**3:01**	**3:12**	**3:24**	**3:37**			
2:56	**3:05**	**3:15**	**3:21**	**3:32**	**3:44**	·····	**3:54**	**4:03**	**4:1**
3:16	**3:25**	**3:35**	**3:41**	**3:52**	**4:04**	**4:17**			
3:36	**3:45**	**3:55**	**4:01**	**4:12**	**4:24**	**4:37**			
3:56	**4:05**	**4:15**	**4:21**	**4:32**	**4:44**	·····	**4:54**	**5:03**	**5:1**
4:16	**4:25**	**4:35**	**4:41**	**4:52**	**5:04**	**5:17**			
4:36	**4:45**	**4:55**	**5:01**	**5:12**	**5:24**	**5:37**			
4:56	**5:05**	**5:15**	**5:21**	**5:32**	**5:44**	·····	**5:54**	**6:03**	**6:1**
5:16	**5:25**	**5:35**	**5:41**	**5:52**	**6:04**	**6:17**			
5:36	**5:45**	**5:55**	**6:01**	**6:12**	**6:24**	**6:37**			
5:56	**6:05**	**6:15**	**6:21**	**6:32**	**6:44**	·····	**6:54**	**7:03**	**7:1**
6:33	**6:42**	**6:50**	**6:54**	**7:02**	**7:13**	**7:25**			
7:03	**7:12**	**7:20**	**7:24**	**7:32**	**7:43**	·····	**7:52**	**8:01**	**8:1**
7:33	**7:42**	**7:50**	**7:54**	**8:02**	**8:13**	**8:25**			
8:03	**8:12**	**8:20**	**8:24**	**8:32**	**8:43**	·····	**8:52**	**9:01**	**9:1**
8:43	**8:52**	**9:00**	**9:04**	**9:12**	**9:23**	**9:35**			
9:23	**9:32**	**9:40**	**9:44**	**9:52**	**10:03**	·····	**10:12**	**10:21**	**10:3**

Saturday, Sunday & Holiday
WESTBOUND To: Huntington Beach

Irvine Valley College	Walnut & Culver	Walnut & Red Hill	Bryan & Newport	Mcfadden & Grand	Mcfadden & Bristol	Mcfadden & Harbor	Mcfadden & Euclid	Mcfadden & Beach	Goldenwest Transportation Center
5:08	5:15	5:21	·····	5:31	5:40	5:48	5:52	5:59	6:10
			5:40	5:53	6:02	6:10	6:14	6:21	6:32
6:08	6:15	6:21	·····	6:31	6:40	6:48	6:52	6:59	7:10
			6:53	7:06	7:15	7:23	7:27	7:34	7:45
7:02	7:12	7:18	·····	7:29	7:40	7:50	7:55	8:04	8:15
			7:41	7:54	8:05	8:15	8:20	8:29	8:40
7:50	8:00	8:06	·····	8:17	8:28	8:38	8:43	8:52	9:03
			8:24	8:37	8:48	8:58	9:03	9:12	9:23
			8:44	8:57	9:08	9:18	9:23	9:32	9:43
8:50	9:00	9:06	·····	9:17	9:28	9:38	9:43	9:52	10:03
			9:24	9:37	9:48	9:58	10:03	10:12	10:23
			9:44	9:57	10:08	10:18	10:23	10:32	10:43
9:50	10:00	10:06	·····	10:17	10:28	10:38	10:43	10:52	11:03
			10:24	10:37	10:48	10:58	11:03	11:12	11:23
			10:39	10:52	11:06	11:19	11:24	11:33	11:44
10:40	10:52	11:00	·····	11:12	11:26	11:39	11:44	11:53	**12:04**
			11:19	11:32	11:46	11:59	**12:04**	**12:13**	**12:24**
			11:39	11:52	**12:06**	**12:19**	**12:24**	**12:33**	**12:44**
11:40	11:52	**12:00**	·····	**12:12**	**12:26**	**12:39**	**12:44**	**12:53**	**1:04**
			12:19	**12:32**	**12:46**	**12:59**	**1:04**	**1:13**	**1:24**
			12:39	**12:52**	**1:06**	**1:19**	**1:24**	**1:33**	**1:44**
12:40	**12:52**	**1:00**	·····	**1:12**	**1:26**	**1:39**	**1:44**	**1:53**	**2:04**
			1:19	**1:32**	**1:46**	**1:59**	**2:04**	**2:13**	**2:24**
			1:39	**1:52**	**2:06**	**2:19**	**2:24**	**2:33**	**2:44**
1:40	**1:52**	**2:00**	·····	**2:12**	**2:26**	**2:39**	**2:44**	**2:53**	**3:04**
			2:19	**2:32**	**2:46**	**2:59**	**3:04**	**3:13**	**3:24**
			2:42	**2:55**	**3:08**	**3:20**	**3:25**	**3:33**	**3:44**
2:45	**2:57**	**3:04**	·····	**3:15**	**3:28**	**3:40**	**3:45**	**3:53**	**4:04**
			3:22	**3:35**	**3:48**	**4:00**	**4:05**	**4:13**	**4:24**
			3:42	**3:55**	**4:08**	**4:20**	**4:25**	**4:33**	**4:44**
3:45	**3:57**	**4:04**	·····	**4:15**	**4:28**	**4:40**	**4:45**	**4:53**	**5:04**
			4:22	**4:35**	**4:48**	**5:00**	**5:05**	**5:13**	**5:24**
			4:42	**4:55**	**5:08**	**5:20**	**5:25**	**5:33**	**5:44**
4:50	**5:00**	**5:07**	·····	**5:17**	**5:28**	**5:39**	**5:44**	**5:52**	**6:03**
			5:22	**5:35**	**5:46**	**5:57**	**6:02**	**6:10**	**6:21**
5:30	**5:40**	**5:47**	·····	**5:57**	**6:08**	**6:19**	**6:24**	**6:32**	**6:43**
			6:14	**6:27**	**6:38**	**6:49**	**6:54**	**7:02**	**7:13**
6:30	**6:40**	**6:47**	·····	**6:57**	**7:08**	**7:19**	**7:24**	**7:32**	**7:43**
			7:14	**7:27**	**7:38**	**7:49**	**7:54**	**8:02**	**8:13**
7:30	**7:40**	**7:47**	·····	**7:57**	**8:08**	**8:19**	**8:24**	**8:32**	**8:43**
			8:12	**8:25**	**8:36**	**8:47**	**8:52**	**9:00**	**9:11**
8:36	**8:46**	**8:53**	·····	**9:03**	**9:14**	**9:25**	**9:30**	**9:38**	**9:49**
9:12	**9:22**	**9:29**	·····	**9:39**	**9:50**	**10:01**	**10:06**	**10:14**	**10:25**

EASY. FAST. SECURE.

Everything you've asked for. And more.

Version 2.0 of the OC Bus Mobile App offers everything you'd want from an upgrade. Here's a peek at our improvements.

- Redesigned interface
- Purchase using Google Pay or Apple Pay
- Easy repeat purchases
- Simplified multi-rider tickets
- Touch ID or Face ID security
- Easy ticket transfer when upgrading phones
- Larger buttons
- New full-screen ticket and larger QR code

Download today and enjoy all the cool new features

Sencilla. Rápida. Segura.

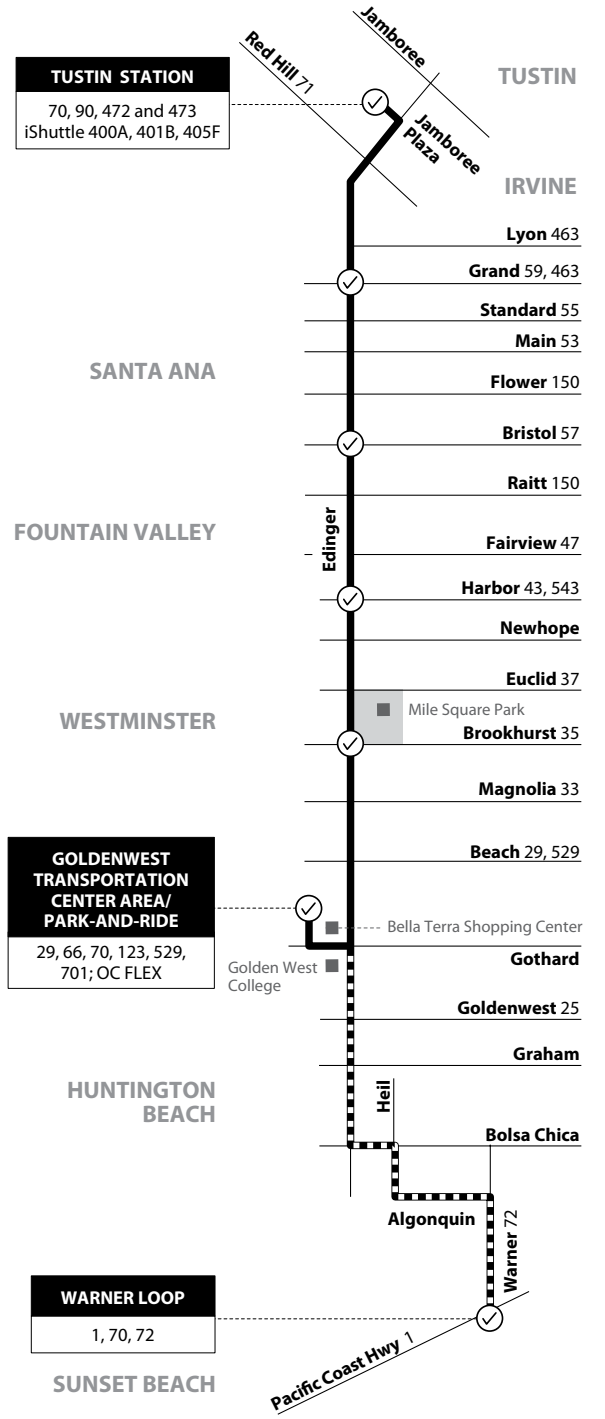
La versión 2.0 de la aplicación OC Bus Mobile ofrece todo lo que se puede desear de una actualización... y mucho más. Aquí tiene un adelanto de algunas de las mejoras.

- Rediseño de la interfaz
- Pago con Google Pay o Apple Pay
- Facilidad de compras repetidas
- Simplificación de los boletos para varios pasajeros
- Seguridad a través de identificación táctil o facial
- Fácil transferencia de boletos si cambia de teléfono
- Botones más prominentes
- Nuevo boleto a pantalla completa y código de barras más grande

Actualice la aplicación el 10 de febrero para disfrutar de todas estas nuevas y fantásticas funciones.

OCBUS

OCbus.com



Monday-Friday
EASTBOUND To: Tustin

Warner & Pacific Coast Hwy	Goldenwest Transportation Center	Edinger & Brookhurst	Edinger & Harbor	Edinger & Bristol	Edinger & Grand	Tustin Metrolink Station
	5:24	5:35	5:41	5:48	5:57	6:07
5:37	5:54	6:05	6:11	6:19	6:27	6:37
5:52	6:09	6:20	6:26	6:34	6:42	6:52
	6:24	6:35	6:41	6:48	6:57	7:07
6:24	6:40	6:51	6:56	7:02	7:11	7:21
6:39	6:55	7:06	7:11	7:17	7:26	7:36
	7:24	7:35	7:41	7:48	7:57	8:07
7:37	7:54	8:05	8:11	8:18	8:27	8:37
	8:24	8:35	8:41	8:48	8:57	9:07
8:34	8:48	9:00	9:07	9:15	9:25	9:35
	9:19	9:33	9:40	9:48	9:58	10:08
9:29	9:49	10:03	10:10	10:18	10:28	10:38
	10:23	10:35	10:41	10:48	10:57	11:06
10:32	10:53	11:05	11:11	11:18	11:27	11:36
	11:20	11:34	11:41	11:49	11:59	**12:09**
11:30	11:50	**12:04**	**12:11**	**12:19**	**12:29**	**12:39**
	12:23	**12:34**	**12:41**	**12:50**	**1:01**	**1:12**
12:31	**12:53**	**1:04**	**1:11**	**1:20**	**1:31**	**1:42**
	1:20	**1:34**	**1:41**	**1:49**	**1:59**	**2:09**
1:33	**1:53**	**2:07**	**2:14**	**2:22**	**2:32**	**2:42**
	2:19	**2:33**	**2:41**	**2:49**	**2:58**	**3:09**
2:30	**2:50**	**3:04**	**3:12**	**3:20**	**3:29**	**3:40**
	3:20	**3:34**	**3:41**	**3:49**	**3:59**	**4:09**
3:30	**3:50**	**4:04**	**4:11**	**4:19**	**4:29**	**4:39**
	4:20	**4:34**	**4:41**	**4:49**	**4:59**	**5:09**
4:34	**4:52**	**5:05**	**5:11**	**5:18**	**5:27**	**5:37**
	5:22	**5:35**	**5:41**	**5:48**	**5:57**	**6:06**
5:34	**5:52**	**6:05**	**6:11**	**6:18**	**6:27**	**6:36**
	6:19	**6:34**	**6:41**	**6:49**	**6:58**	**7:07**
6:28	**6:49**	**7:04**	**7:11**	**7:19**	**7:28**	**7:37**
	7:22	**7:35**	**7:41**	**7:48**	**7:57**	**8:06**
7:34	**7:52**	**8:05**	**8:11**	**8:18**	**8:27**	**8:36**
	8:22	**8:35**	**8:41**	**8:48**	**8:57**	**9:06**
8:34	**8:52**	**9:05**	**9:11**	**9:18**	**9:27**	**9:36**
	9:32	**9:45**	**9:51**	**9:58**	**10:07**	**10:16**

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Sunset Beach to Tustin

via Edinger Ave

Monday-Friday
WESTBOUND To: Sunset Beach

Tustin Metrolink Station	Edinger & Grand	Edinger & Bristol	Edinger & Harbor	Edinger & Brookhurst	Goldenwest Transportation Center	Warner & Pacific Coast Hwy
4:53	5:02	5:11	5:20	5:26	5:37	5:56
5:23	5:32	5:41	5:50	5:56	6:07	
5:53	6:02	6:11	6:20	6:26	6:37	6:56
6:23	6:32	6:41	6:50	6:56	7:07	
6:53	7:02	7:11	7:20	7:26	7:37	7:56
7:23	7:32	7:41	7:50	7:56	8:07	
7:51	8:00	8:10	8:20	8:27	8:39	8:59
8:21	8:30	8:40	8:50	8:57	9:09	
8:51	9:00	9:10	9:20	9:27	9:39	9:59
9:21	9:30	9:40	9:50	9:57	10:09	
9:52	10:01	10:11	10:20	10:27	10:39	10:59
10:22	10:31	10:41	10:50	10:57	11:09	
10:52	11:01	11:11	11:20	11:27	11:39	11:59
11:22	11:31	11:41	11:50	11:57	**12:09**	
11:52	**12:01**	**12:11**	**12:20**	**12:27**	**12:39**	**12:59**
12:22	**12:31**	**12:41**	**12:50**	**12:57**	**1:09**	
12:52	**1:01**	**1:11**	**1:20**	**1:27**	**1:39**	**1:59**
1:23	**1:31**	**1:41**	**1:50**	**1:56**	**2:08**	
1:52	**2:01**	**2:11**	**2:20**	**2:27**	**2:39**	**2:59**
2:23	**2:31**	**2:41**	**2:50**	**2:57**	**3:10**	
2:52	**3:01**	**3:11**	**3:20**	**3:27**	**3:39**	**3:59**
3:22	**3:31**	**3:41**	**3:50**	**3:57**	**4:09**	
3:39	**3:48**	**3:58**	**4:07**	**4:14**	**4:26**	**4:46**
3:56	**4:04**	**4:12**	**4:20**	**4:27**	**4:38**	**4:55**
4:26	**4:34**	**4:42**	**4:50**	**4:57**	**5:08**	
4:41	**4:48**	**4:55**	**5:03**	**5:10**	**5:20**	**5:35**
4:56	**5:04**	**5:12**	**5:20**	**5:27**	**5:38**	**5:55**
5:26	**5:34**	**5:42**	**5:50**	**5:57**	**6:08**	
5:56	**6:04**	**6:12**	**6:20**	**6:27**	**6:38**	**6:55**
6:26	**6:34**	**6:42**	**6:50**	**6:57**	**7:08**	
6:56	**7:04**	**7:12**	**7:20**	**7:27**	**7:38**	**7:55**
7:26	**7:34**	**7:42**	**7:50**	**7:57**	**8:08**	
7:56	**8:04**	**8:12**	**8:20**	**8:27**	**8:38**	**8:55**
8:26	**8:34**	**8:42**	**8:50**	**8:57**	**9:08**	
8:59	**9:06**	**9:13**	**9:20**	**9:27**	**9:36**	**9:53**
9:32	**9:38**	**9:44**	**9:50**	**9:55**	**10:04**	
9:59	**10:06**	**10:13**	**10:20**	**10:27**	**10:36**	**10:53**

Saturday
EASTBOUND To: Tustin

Warner & Pacific Coast Hwy	Goldenwest Transportation Center	Edinger & Brookhurst	Edinger & Harbor	Edinger & Bristol	Edinger & Grand	Tustin Metrolink Station
	5:24	5:35	5:41	5:48	5:57	6:07
5:37	5:54	6:05	6:11	6:19	6:27	6:37
	6:24	6:35	6:41	6:48	6:57	7:07
6:39	6:55	7:06	7:11	7:17	7:26	7:36
	7:24	7:35	7:41	7:48	7:57	8:07
7:37	7:54	8:05	8:11	8:18	8:27	8:37
	8:24	8:35	8:41	8:48	8:57	9:07
8:34	8:48	9:00	9:07	9:15	9:25	9:35
	9:19	9:33	9:40	9:48	9:58	10:08
9:29	9:49	10:03	10:10	10:18	10:28	10:38
	10:23	10:35	10:41	10:48	10:57	11:06
10:32	10:53	11:05	11:11	11:18	11:27	11:36
	11:20	11:34	11:41	11:49	11:59	**12:09**
11:30	11:50	**12:04**	**12:11**	**12:19**	**12:29**	**12:39**
	12:23	**12:34**	**12:41**	**12:50**	**1:01**	**1:12**
12:31	**12:53**	**1:04**	**1:11**	**1:20**	**1:31**	**1:42**
	1:20	**1:34**	**1:41**	**1:49**	**1:59**	**2:09**
1:30	**1:50**	**2:04**	**2:11**	**2:19**	**2:29**	**2:39**
	2:19	**2:33**	**2:41**	**2:49**	**2:58**	**3:09**
2:30	**2:50**	**3:04**	**3:12**	**3:20**	**3:29**	**3:40**
	3:20	**3:34**	**3:41**	**3:49**	**3:59**	**4:09**
3:30	**3:50**	**4:04**	**4:11**	**4:19**	**4:29**	**4:39**
	4:20	**4:34**	**4:41**	**4:49**	**4:59**	**5:09**
4:34	**4:52**	**5:05**	**5:11**	**5:18**	**5:27**	**5:37**
	5:22	**5:35**	**5:41**	**5:48**	**5:57**	**6:06**
5:34	**5:52**	**6:05**	**6:11**	**6:18**	**6:27**	**6:36**
	6:19	**6:34**	**6:41**	**6:49**	**6:58**	**7:07**
6:28	**6:49**	**7:04**	**7:11**	**7:19**	**7:28**	**7:37**
	7:22	**7:35**	**7:41**	**7:48**	**7:57**	**8:06**
7:34	**7:52**	**8:05**	**8:11**	**8:18**	**8:27**	**8:36**
	8:22	**8:35**	**8:41**	**8:48**	**8:57**	**9:06**
8:34	**8:52**	**9:05**	**9:11**	**9:18**	**9:27**	**9:36**
	9:32	**9:45**	**9:51**	**9:58**	**10:07**	**10:16**

Saturday
WESTBOUND To: Sunset Beach

Tustin Metrolink Station	Edinger & Grand	Edinger & Bristol	Edinger & Harbor	Edinger & Brookhurst	Goldenwest Transportation Center	Warner & Pacific Coast Hwy
4:53	5:02	5:11	5:20	5:26	5:37	5:56
5:23	5:32	5:41	5:50	5:56	6:07	
5:53	6:02	6:11	6:20	6:26	6:37	6:56
6:23	6:32	6:41	6:50	6:56	7:07	
6:53	7:02	7:11	7:20	7:26	7:37	7:56
7:23	7:32	7:41	7:50	7:56	8:07	
7:51	8:00	8:10	8:20	8:27	8:39	8:59
8:21	8:30	8:40	8:50	8:57	9:09	
8:51	9:00	9:10	9:20	9:27	9:39	9:59
9:21	9:30	9:40	9:50	9:57	10:09	
9:52	10:01	10:11	10:20	10:27	10:39	10:59
10:22	10:31	10:41	10:50	10:57	11:09	
10:52	11:01	11:11	11:20	11:27	11:39	11:59
11:22	11:31	11:41	11:50	11:57	**12:09**	
11:52	**12:01**	**12:11**	**12:20**	**12:27**	**12:39**	**12:59**
12:22	**12:31**	**12:41**	**12:50**	**12:57**	**1:09**	
12:52	**1:01**	**1:11**	**1:20**	**1:27**	**1:39**	**1:59**
1:23	**1:31**	**1:41**	**1:50**	**1:56**	**2:08**	
1:52	**2:01**	**2:11**	**2:20**	**2:27**	**2:39**	**2:59**
2:23	**2:31**	**2:41**	**2:50**	**2:57**	**3:10**	
2:52	**3:01**	**3:11**	**3:20**	**3:27**	**3:39**	**3:59**
3:22	**3:31**	**3:41**	**3:50**	**3:57**	**4:09**	
3:56	**4:04**	**4:12**	**4:20**	**4:27**	**4:38**	**4:55**
4:26	**4:34**	**4:42**	**4:50**	**4:57**	**5:08**	
4:56	**5:04**	**5:12**	**5:20**	**5:27**	**5:38**	**5:55**
5:26	**5:34**	**5:42**	**5:50**	**5:57**	**6:08**	
5:56	**6:04**	**6:12**	**6:20**	**6:27**	**6:38**	**6:55**
6:26	**6:34**	**6:42**	**6:50**	**6:57**	**7:08**	
6:56	**7:04**	**7:12**	**7:20**	**7:27**	**7:38**	**7:55**
7:26	**7:34**	**7:42**	**7:50**	**7:57**	**8:08**	
7:56	**8:04**	**8:12**	**8:20**	**8:27**	**8:38**	**8:55**
8:26	**8:34**	**8:42**	**8:50**	**8:57**	**9:08**	
8:59	**9:06**	**9:13**	**9:20**	**9:27**	**9:36**	**9:53**
9:32	**9:38**	**9:44**	**9:50**	**9:55**	**10:04**	
9:59	**10:06**	**10:13**	**10:20**	**10:27**	**10:36**	**10:53**

Sunday & Holiday
EASTBOUND To: Tustin

Warner & Pacific Coast Hwy	Goldenwest Transportation Center	Edinger & Brookhurst	Edinger & Harbor	Edinger & Bristol	Edinger & Grand	Tustin Metrolink Station
5:50	6:06	6:14	6:20	6:27	6:37	6:46
6:15	6:31	6:43	6:50	6:58	7:08	7:17
	7:12	7:24	7:31	7:39	7:49	7:58
7:18	7:34	7:46	7:53	8:01	8:11	8:20
	8:04	8:16	8:23	8:31	8:41	8:50
8:18	8:34	8:46	8:53	9:01	9:11	9:20
	9:04	9:16	9:23	9:31	9:41	9:50
9:27	9:45	10:00	10:07	10:15	10:25	10:34
	10:04	10:17	10:24	10:32	10:42	10:50
10:17	10:39	10:52	10:59	11:07	11:17	11:25
	11:04	11:17	11:24	11:32	11:42	11:50
11:17	11:39	11:52	11:59	**12:07**	**12:17**	**12:25**
	12:04	**12:17**	**12:24**	**12:32**	**12:42**	**12:50**
12:20	**12:42**	**12:55**	**1:02**	**1:10**	**1:20**	**1:28**
	1:04	**1:17**	**1:24**	**1:32**	**1:42**	**1:50**
1:21	**1:43**	**1:56**	**2:03**	**2:11**	**2:21**	**2:29**
	2:01	**2:16**	**2:24**	**2:31**	**2:42**	**2:50**
2:20	**2:40**	**2:55**	**3:03**	**3:10**	**3:21**	**3:29**
	3:01	**3:16**	**3:24**	**3:31**	**3:42**	**3:50**
3:20	**3:40**	**3:55**	**4:03**	**4:10**	**4:21**	**4:29**
	4:01	**4:16**	**4:24**	**4:31**	**4:42**	**4:50**
4:21	**4:39**	**4:50**	**4:57**	**5:04**	**5:13**	**5:21**
	5:09	**5:20**	**5:27**	**5:34**	**5:43**	**5:50**
5:21	**5:39**	**5:50**	**5:57**	**6:04**	**6:13**	**6:20**
	6:09	**6:20**	**6:27**	**6:34**	**6:43**	**6:50**
6:21	**6:39**	**6:50**	**6:57**	**7:04**	**7:13**	**7:20**
	7:09	**7:20**	**7:27**	**7:34**	**7:43**	**7:50**
7:29	**7:47**	**7:58**	**8:05**	**8:12**	**8:21**	**8:28**

70

Sunset Beach to Tustin

via Edinger Ave

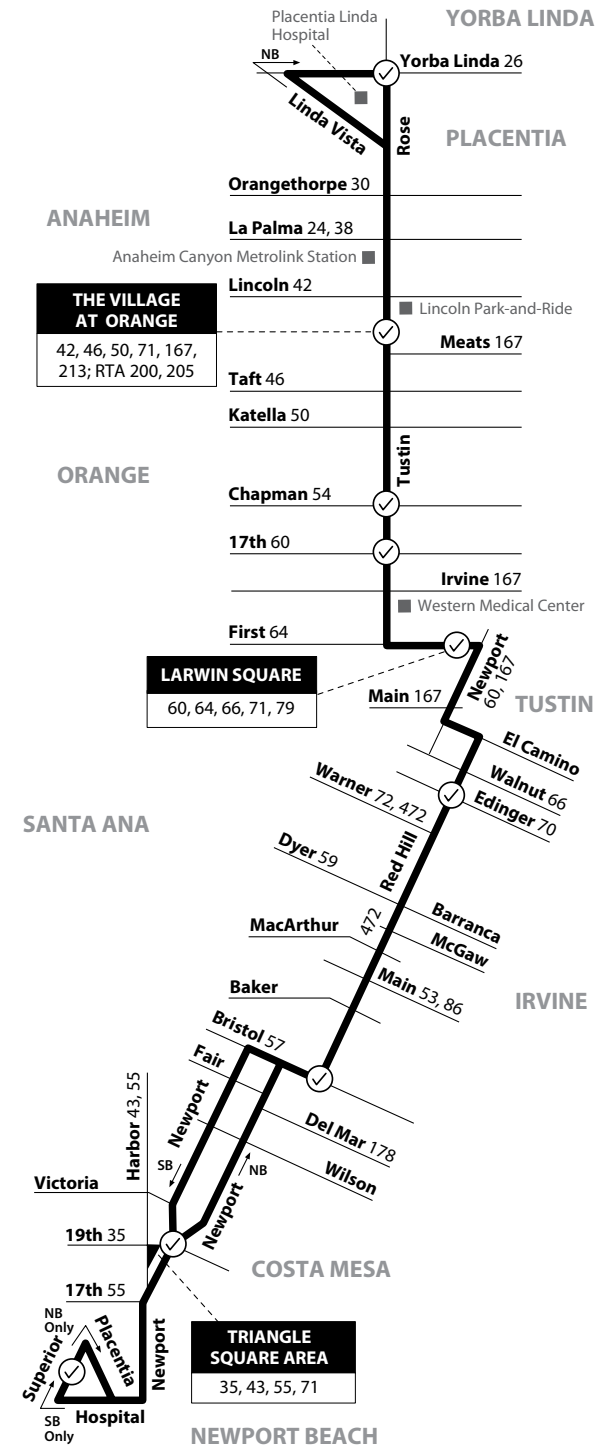
Sunday & Holiday

WESTBOUND To: Sunset Beach

Tustin Metrolink Station	Edinger & Grand	Edinger & Bristol	Edinger & Harbor	Edinger & Brookhurst	Goldenwest Transportation Center	Warner & Pacific Coast Hwy
6:20	6:28	6:36	6:45	6:52	7:03	
7:05	7:13	7:21	7:30	7:37	7:48	8:08
7:35	7:43	7:51	8:00	8:07	8:18	
8:14	8:22	8:30	8:39	8:46	8:57	9:17
8:35	8:43	8:51	9:00	9:07	9:18	
9:05	9:13	9:21	9:30	9:37	9:48	10:08
9:35	9:43	9:51	10:00	10:07	10:18	
10:05	10:13	10:21	10:30	10:37	10:48	11:08
10:44	10:52	11:05	11:14	11:21	11:32	
11:05	11:13	11:21	11:31	11:38	11:49	**12:11**
11:40	11:48	11:56	**12:06**	**12:13**	**12:24**	
12:05	**12:13**	**12:21**	**12:31**	**12:38**	**12:49**	**1:11**
12:40	**12:48**	**12:56**	**1:06**	**1:13**	**1:24**	
1:05	**1:13**	**1:21**	**1:31**	**1:38**	**1:49**	**2:11**
1:43	**1:51**	**1:59**	**2:09**	**2:16**	**2:27**	
2:05	**2:13**	**2:21**	**2:31**	**2:38**	**2:49**	**3:11**
2:44	**2:52**	**3:00**	**3:10**	**3:17**	**3:28**	
3:05	**3:13**	**3:21**	**3:31**	**3:38**	**3:49**	**4:11**
3:44	**3:52**	**4:00**	**4:10**	**4:17**	**4:28**	
4:05	**4:13**	**4:21**	**4:31**	**4:38**	**4:49**	**5:11**
4:44	**4:51**	**5:00**	**5:08**	**5:15**	**5:25**	
5:05	**5:12**	**5:21**	**5:29**	**5:36**	**5:46**	**6:03**
5:35	**5:42**	**5:51**	**5:59**	**6:06**	**6:16**	
6:05	**6:12**	**6:21**	**6:29**	**6:36**	**6:46**	**7:03**
6:35	**6:42**	**6:51**	**6:59**	**7:06**	**7:16**	
7:05	**7:12**	**7:21**	**7:29**	**7:36**	**7:46**	**8:03**
7:35	**7:42**	**7:51**	**7:59**	**8:06**	**8:16**	
8:06	**8:13**	**8:22**	**8:30**	**8:37**	**8:47**	**9:04**
8:43	**8:50**	**8:59**	**9:07**	**9:14**	**9:24**	

Yorba Linda to Newport Beach
via Tustin Ave / Red Hill Ave / Newport Blvd

71



Monday-Saturday
NORTHBOUND To: Yorba Linda

Superior & Placentia	Newport & 19th	Red Hill & Bristol	Red Hill & Edinger	1st & Newport	Tustin & 17th	Tustin & Chapman	Village At Orange	Rose & Yorba Linda
6:00	6:09	6:19	6:32	6:40	6:47	6:56	7:06	7:25
6:40	6:49	7:00	7:14	7:25	7:34	7:43	7:54	8:13
7:25	7:34	7:45	7:59	8:10	8:19	8:28	8:39	8:58
8:09	8:18	8:29	8:43	8:55	9:04	9:13	9:26	9:46
8:54	9:03	9:14	9:28	9:40	9:49	9:58	10:11	10:31
9:39	9:48	9:59	10:13	10:25	10:34	10:43	10:56	11:16
10:24	10:33	10:44	10:58	11:10	11:19	11:28	11:41	**12:01**
11:09	11:18	11:29	11:43	11:55	**12:04**	**12:13**	**12:26**	**12:46**
11:54	**12:03**	**12:14**	**12:28**	**12:40**	**12:49**	**12:58**	**1:11**	**1:31**
12:33	**12:46**	**12:56**	**1:11**	**1:25**	**1:35**	**1:44**	**1:58**	**2:19**
1:18	**1:31**	**1:41**	**1:56**	**2:10**	**2:20**	**2:29**	**2:43**	**3:04**
2:03	**2:16**	**2:26**	**2:41**	**2:55**	**3:05**	**3:14**	**3:28**	**3:49**
2:48	**3:01**	**3:11**	**3:26**	**3:40**	**3:50**	**3:59**	**4:13**	**4:34**
3:33	**3:46**	**3:56**	**4:11**	**4:25**	**4:35**	**4:44**	**4:58**	**5:19**
4:18	**4:31**	**4:41**	**4:56**	**5:10**	**5:20**	**5:29**	**5:43**	**6:04**
5:03	**5:16**	**5:26**	**5:41**	**5:55**	**6:05**	**6:14**	**6:28**	**6:49**
5:48	**6:01**	**6:11**	**6:26**	**6:40**	**6:50**	**6:59**	**7:13**	**7:34**
6:39	**6:48**	**6:58**	**7:13**	**7:25**	**7:35**	**7:44**	**7:55**	**8:16**
7:24	**7:33**	**7:43**	**7:58**	**8:10**	**8:20**	**8:29**	**8:40**	**9:01**
8:09	**8:18**	**8:28**	**8:43**	**8:55**	**9:05**	**9:14**	**9:25**	**9:46**

SERVICE TO / SERVICIO A

Yorba Linda
- Placentia Linda Hospital

Placentia
- Alta Vista Country Club

Anaheim
- Anaheim Canyon Business Center
- Anaheim Canyon (Metrolink Station)

Orange
- Lincoln Park-and-Ride
- The Village at Orange
- Orange High School

Santa Ana
- Regional Center of Orange County
- Nova Academy
- Orange County Global Medical Center

Tustin
- Larwin Square
- Tustin Civic Center
- Columbus Tustin Middle School
- Tustin High School
- A.G. Currie Middle School
- Tustin Legacy

Irvine

Costa Mesa
- Triangle Square
- Pacific College
- Costa Mesa High School
- Orange County Department of Education
- Santa Ana Country Club
- Costa Mesa Civic Center
- Orange County Fairgrounds
- Vanguard University
- College Hospital

Costa Mesa

Newport Beach
- Hoag Hospital

71 Yorba Linda to Newport Beach

via Tustin Ave / Red Hill Ave / Newport Blvd

Monday-Saturday
SOUTHBOUND To: Newport Beach

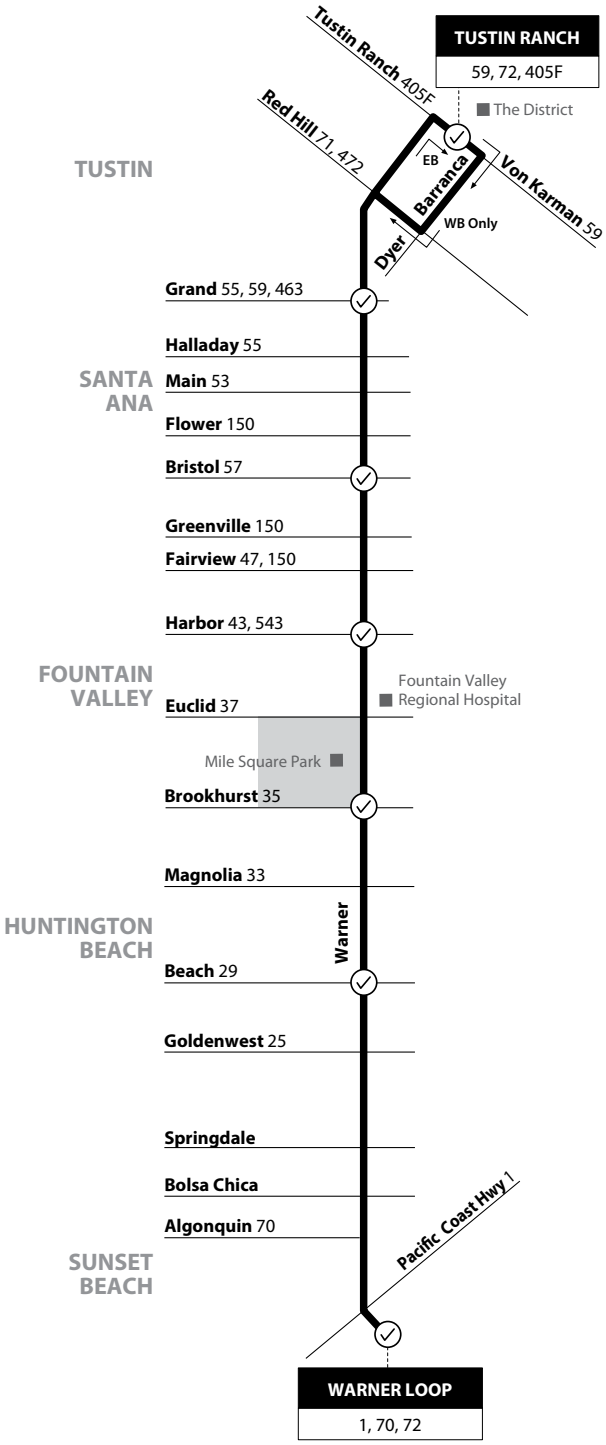
Rose & Yorba Linda	Village At Orange	Tustin & Chapman	Tustin & 17th	Newport & 1st	Red Hill & Edinger	Bristol & Red Hill	Newport & 19th	Superior & Placentia
6:17	6:35	6:46	6:53	7:02	7:12	7:25	7:35	7:43
7:05	7:23	7:34	7:41	7:50	8:00	8:13	8:23	8:31
7:45	8:04	8:17	8:26	8:35	8:45	8:58	9:08	9:17
8:30	8:49	9:02	9:11	9:20	9:30	9:43	9:53	10:02
9:15	9:34	9:47	9:56	10:05	10:15	10:28	10:38	10:47
10:00	10:19	10:32	10:41	10:50	11:00	11:13	11:23	11:32
10:41	11:02	11:17	11:26	11:35	11:48	**12:03**	**12:14**	**12:23**
11:26	11:47	**12:02**	**12:11**	**12:20**	**12:33**	**12:48**	**12:59**	**1:08**
12:11	**12:32**	**12:47**	**12:56**	**1:05**	**1:18**	**1:33**	**1:44**	**1:53**
12:56	**1:17**	**1:32**	**1:41**	**1:50**	**2:03**	**2:18**	**2:29**	**2:38**
1:41	**2:02**	**2:17**	**2:26**	**2:35**	**2:48**	**3:03**	**3:14**	**3:23**
2:26	**2:47**	**3:02**	**3:11**	**3:20**	**3:33**	**3:48**	**3:59**	**4:08**
3:11	**3:32**	**3:47**	**3:56**	**4:05**	**4:18**	**4:33**	**4:44**	**4:53**
4:02	**4:19**	**4:32**	**4:40**	**4:50**	**5:02**	**5:18**	**5:29**	**5:39**
4:47	**5:04**	**5:17**	**5:25**	**5:35**	**5:47**	**6:03**	**6:14**	**6:24**
5:32	**5:49**	**6:02**	**6:10**	**6:20**	**6:32**	**6:48**	**6:59**	**7:09**
6:17	**6:34**	**6:47**	**6:55**	**7:05**	**7:17**	**7:33**	**7:44**	**7:54**
7:04	**7:21**	**7:35**	**7:42**	**7:50**	**8:01**	**8:14**	**8:22**	**8:30**
7:49	**8:06**	**8:20**	**8:27**	**8:35**	**8:46**	**8:59**	**9:07**	**9:15**
8:34	**8:51**	**9:05**	**9:12**	**9:20**	**9:31**	**9:44**	**9:52**	**10:00**

Sunday & Holiday
NORTHBOUND To: Yorba Linda

Superior & Placentia	Newport & 19th	Red Hill & Bristol	Red Hill & Edinger	1st & Newport	Tustin & 17th	Tustin & Chapman	Village At Orange	Rose & Yorba Linda
5:46	5:55	6:05	6:18	6:25	6:33	6:39	6:48	7:03
6:32	6:42	6:52	7:05	7:15	7:24	7:31	7:42	7:59
7:22	7:32	7:42	7:55	8:05	8:14	8:21	8:32	8:49
8:12	8:22	8:32	8:45	8:55	9:04	9:11	9:22	9:39
9:02	9:12	9:22	9:35	9:45	9:54	10:01	10:12	10:29
9:52	10:03	10:14	10:27	10:37	10:46	10:54	11:07	11:25
10:45	10:56	11:07	11:20	11:30	11:39	11:47	**12:00**	**12:18**
11:40	11:51	**12:02**	**12:15**	**12:25**	**12:34**	**12:42**	**12:55**	**1:13**
12:33	**12:44**	**12:55**	**1:09**	**1:20**	**1:29**	**1:36**	**1:49**	**2:08**
1:28	**1:39**	**1:50**	**2:04**	**2:15**	**2:24**	**2:31**	**2:44**	**3:03**
2:23	**2:34**	**2:45**	**2:59**	**3:10**	**3:19**	**3:26**	**3:39**	**3:58**
3:18	**3:29**	**3:40**	**3:54**	**4:05**	**4:14**	**4:21**	**4:34**	**4:53**
4:13	**4:24**	**4:35**	**4:49**	**5:00**	**5:09**	**5:16**	**5:29**	**5:48**
5:08	**5:19**	**5:30**	**5:44**	**5:55**	**6:04**	**6:11**	**6:24**	**6:43**
6:03	**6:14**	**6:25**	**6:39**	**6:50**	**6:59**	**7:06**	**7:19**	**7:38**
6:59	**7:09**	**7:19**	**7:30**	**7:40**	**7:49**	**7:56**	**8:08**	**8:26**

Sunday & Holiday
SOUTHBOUND To: Newport Beach

Rose & Yorba Linda	Village At Orange	Tustin & Chapman	Tustin & 17th	Newport & 1st	Red Hill & Edinger	Bristol & Red Hill	Newport & 19th	Superior & Placentia
6:34	6:50	7:02	7:10	7:17	7:28	7:41	7:51	8:02
7:24	7:40	7:52	8:00	8:07	8:18	8:31	8:41	8:52
8:14	8:30	8:42	8:50	8:57	9:08	9:21	9:31	9:42
9:03	9:19	9:31	9:39	9:47	9:58	10:12	10:22	10:33
9:51	10:08	10:21	10:29	10:37	10:48	11:02	11:12	11:23
10:46	11:03	11:16	11:24	11:32	11:43	11:57	**12:07**	**12:18**
11:41	11:58	**12:11**	**12:19**	**12:27**	**12:38**	**12:52**	**1:02**	**1:13**
12:36	**12:53**	**1:06**	**1:14**	**1:22**	**1:33**	**1:47**	**1:57**	**2:08**
1:31	**1:48**	**2:01**	**2:09**	**2:17**	**2:28**	**2:42**	**2:52**	**3:03**
2:22	**2:39**	**2:54**	**3:02**	**3:12**	**3:23**	**3:37**	**3:49**	**4:00**
3:17	**3:34**	**3:49**	**3:57**	**4:07**	**4:18**	**4:32**	**4:44**	**4:55**
4:08	**4:25**	**4:40**	**4:50**	**5:02**	**5:16**	**5:28**	**5:43**	**5:54**
5:03	**5:20**	**5:35**	**5:45**	**5:57**	**6:11**	**6:23**	**6:38**	**6:49**
5:58	**6:15**	**6:30**	**6:40**	**6:52**	**7:06**	**7:18**	**7:33**	**7:44**
6:53	**7:10**	**7:25**	**7:35**	**7:47**	**8:01**	**8:13**	**8:28**	**8:39**
7:49	**8:06**	**8:19**	**8:28**	**8:37**	**8:49**	**9:03**	**9:13**	**9:24**
8:39	**8:56**	**9:09**	**9:18**	**9:27**	**9:39**	**9:53**	**10:03**	**10:14**



All Days
EASTBOUND To: Tustin

Warner & Pacific Coast Hwy	Warner & Beach	Warner & Brookhurst	Warner & Harbor	Warner & Bristol	Warner & Grand	Tustin Ranch & Legacy
6:55	7:06	7:13	7:19	7:27	7:35	7:41
7:43	7:58	8:07	8:15	8:23	8:30	8:36
8:28	8:43	8:52	9:00	9:08	9:15	9:21
9:13	9:28	9:37	9:45	9:53	10:00	10:06
9:58	10:14	10:23	10:30	10:39	10:46	10:52
10:43	10:59	11:08	11:15	11:24	11:31	11:37
11:26	11:42	11:52	**12:00**	**12:09**	**12:17**	**12:23**
12:11	**12:27**	**12:37**	**12:45**	**12:54**	**1:02**	**1:08**
12:56	**1:12**	**1:22**	**1:30**	**1:39**	**1:47**	**1:53**
1:41	**1:57**	**2:07**	**2:15**	**2:24**	**2:32**	**2:38**
2:26	**2:42**	**2:52**	**3:00**	**3:09**	**3:17**	**3:23**
3:11	**3:27**	**3:37**	**3:45**	**3:54**	**4:02**	**4:08**
3:56	**4:12**	**4:22**	**4:30**	**4:39**	**4:47**	**4:53**
4:41	**4:57**	**5:07**	**5:15**	**5:24**	**5:32**	**5:38**
5:29	**5:44**	**5:53**	**6:00**	**6:07**	**6:14**	**6:20**
6:14	**6:29**	**6:38**	**6:45**	**6:52**	**6:59**	**7:05**
6:59	**7:14**	**7:23**	**7:30**	**7:37**	**7:44**	**7:50**
7:57	**8:11**	**8:19**	**8:25**	**8:31**	**8:37**	**8:42**

Operates Weekday and Saturday.
Opera en la Semana y Sabados.

SERVICE TO / SERVICIO A

Tustin
- The District

Santa Ana
- Saddleback High School
- Adams Park
- Delhi Park
- McFadden Intermediate School

Fountain Valley
- Coastline College
- Fountain Valley Regional Hospital
- Mile Square Park
- Los Amigos High School
- Masuda Middle School

Huntington Beach
- Ocean View High School
- Meadowlark Golf Course
- Spring View Middle School
- Marine View Middle School

Sunset Beach

LEGEND
LEYENDA

Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 072/111519

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

72 Sunset Beach to Tustin
via Warner Ave

All Days
WESTBOUND To: Sunset Beach

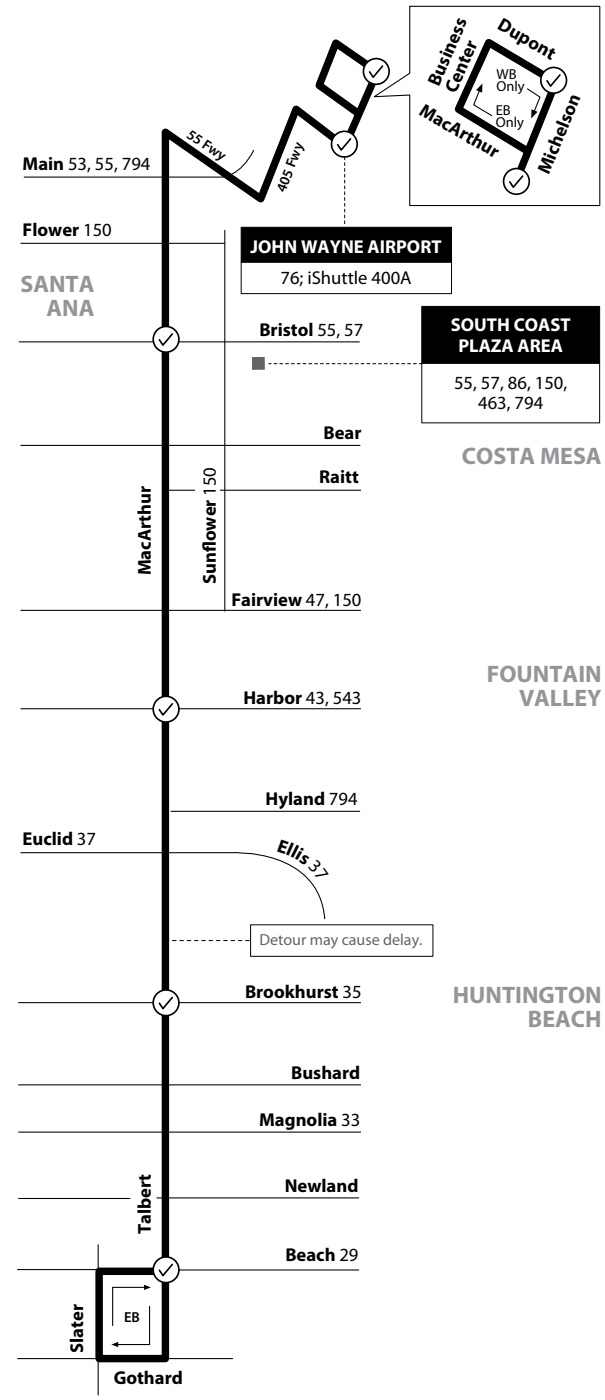
Tustin Ranch & Legacy	Warner & Grand	Warner & Bristol	Warner & Harbor	Warner & Brookhurst	Warner & Beach	Warner & Pacific Coast Hwy
6:49	6:57	7:05	7:12	7:19	7:26	7:41
7:58	8:06	8:14	8:22	8:29	8:37	8:53
8:43	8:51	8:59	9:07	9:14	9:22	9:38
9:28	9:36	9:44	9:52	9:59	10:07	10:23
10:13	10:21	10:29	10:37	10:45	10:54	11:10
10:57	11:05	11:14	11:22	11:30	11:39	11:56
11:42	11:50	11:59	**12:07**	**12:15**	**12:24**	**12:41**
12:27	**12:35**	**12:44**	**12:52**	**1:00**	**1:09**	**1:26**
1:12	**1:20**	**1:29**	**1:37**	**1:45**	**1:54**	**2:11**
1:57	**2:05**	**2:14**	**2:22**	**2:30**	**2:39**	**2:56**
2:43	**2:51**	**2:59**	**3:07**	**3:14**	**3:23**	**3:40**
3:28	**3:36**	**3:44**	**3:52**	**3:59**	**4:08**	**4:25**
4:13	**4:21**	**4:29**	**4:37**	**4:44**	**4:53**	**5:10**
4:58	**5:06**	**5:14**	**5:22**	**5:29**	**5:38**	**5:55**
5:43	**5:51**	**5:59**	**6:07**	**6:14**	**6:23**	**6:40**
6:31	**6:38**	**6:45**	**6:52**	**6:59**	**7:06**	**7:20**
7:16	**7:23**	**7:30**	**7:37**	**7:44**	**7:51**	**8:05**
8:02	**8:09**	**8:16**	**8:23**	**8:30**	**8:37**	**8:51**

Operates Weekday and Saturday.
Opera en la Semana y Sabados.

NOTE: No weekend service.
***NOTA:** No hay servicio los fines de semana.*

Huntington Beach to John Wayne Airport
via Talbert Ave / MacArthur Blvd

76



LEGEND / ***LEYENDA***

Scheduled Departure — Regular Routing

N — MAP NOT TO SCALE

Route 076/122119

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
EASTBOUND To: John Wayne Airport

Talbert & Beach	Talbert & Brookhurst	MacArthur & Hyland	MacArthur & Harbor	MacArthur & Bristol	John Wayne Airport	Dupont & Michelson
5:57	6:11	6:23	6:24	6:31	6:41	6:46
6:53	7:11	7:23	7:24	7:31	7:41	7:46
7:53	8:11	8:23	8:24	8:31	8:41	8:46
8:55	9:11	9:23	9:24	9:31	9:41	9:46
9:55	10:11	10:23	10:24	10:31	10:41	10:46
10:55	11:11	11:23	11:24	11:31	11:41	11:46
11:54	**12:11**	**12:23**	**12:24**	**12:33**	**12:44**	**12:49**
12:54	**1:11**	**1:23**	**1:24**	**1:33**	**1:44**	**1:49**
1:54	**2:11**	**2:23**	**2:24**	**2:33**	**2:44**	**2:49**
2:54	**3:11**	**3:23**	**3:24**	**3:33**	**3:44**	**3:49**
3:59	**4:16**	**4:28**	**4:29**	**4:38**	**4:49**	**4:54**
5:00	**5:16**	**5:28**	**5:29**	**5:38**	**5:48**	**5:52**
6:10	**6:26**	**6:38**	**6:39**	**6:48**	**6:58**	**7:02**

Monday - Friday
WESTBOUND To: Huntington Beach

Dupont & Michelson	John Wayne Airport	MacArthur & Bristol	MacArthur & Harbor	MacArthur & Hyland	Talbert & Brookhurst	Talbert & Beach
6:00	6:04	6:15	6:22	6:23	6:35	6:42
6:54	6:58	7:13	7:22	7:23	7:35	7:44
7:57	8:02	8:14	8:22	8:23	8:35	8:42
8:57	9:02	9:14	9:22	9:23	9:35	9:42
9:57	10:02	10:14	10:22	10:23	10:35	10:42
10:57	11:02	11:14	11:22	11:23	11:35	11:42
11:57	**12:02**	**12:14**	**12:22**	**12:23**	**12:35**	**12:42**
12:55	**1:00**	**1:13**	**1:22**	**1:23**	**1:35**	**1:42**
1:55	**2:00**	**2:13**	**2:22**	**2:23**	**2:35**	**2:42**
2:56	**3:01**	**3:16**	**3:27**	**3:28**	**3:40**	**3:49**
3:56	**4:01**	**4:16**	**4:27**	**4:28**	**4:40**	**4:49**
5:02	**5:07**	**5:26**	**5:37**	**5:38**	**5:50**	**6:01**
6:05	**6:10**	**6:23**	**6:32**	**6:33**	**6:45**	**6:53**

SERVICE TO / SERVICIO A

Irvine
- Irvine Business Complex
- Calvary Chapel High School

Santa Ana
- Hutton Centre
- Calvary Chapel High School
- South Coast Village
- Saddleback High School
- Douglas MacArthur Fundamental Intermediate School
- Segerstrom High School
- John Wayne Airport

Costa Mesa
- South Coast Plaza

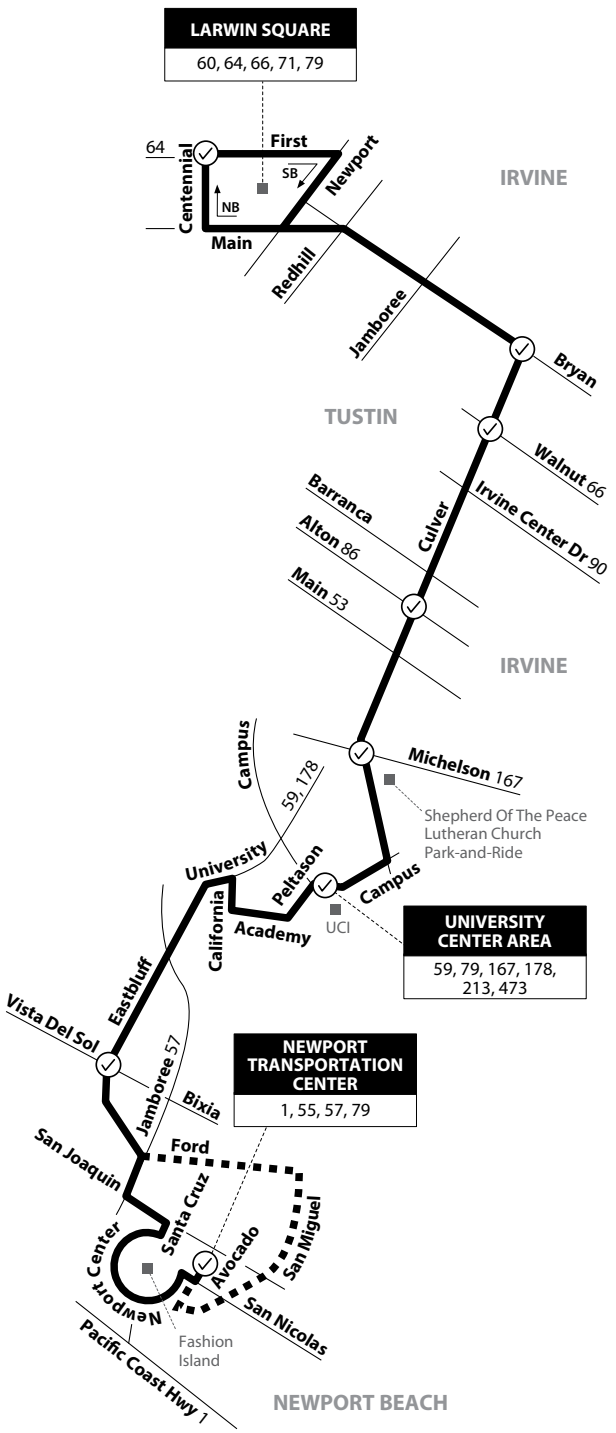
Fountain Valley
- Costco Plaza
- Fountain Valley High School
- Fulton Middle School
- Orange Coast Medical Center
- Orange Coast Memorial Medical Center

Huntington Beach
- Huntington Central Library (EB Only)
- Huntington Sports Complex (EB Only)
- Ocean View High School
- Good Shepard Cemetery

79/A

Tustin to Newport Beach

via Bryan Ave / Culver Dr / University Ave



LEGEND / LEYENDA

Scheduled Departure | Regular Routing | 79A Routing

N

MAP NOT TO SCALE

Route 079/081819

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

All Days

NORTHBOUND To: Tustin

	Newport Transportation Center	Eastbluff & Bixia	University Center	Culver & Michelson	Culver & Alton	Culver & Walnut	Bryan & Culver	Larwin Square
A	6:38	6:55	7:03	7:10	7:14	7:21	7:26	7:41
	7:40	7:50	7:59	8:10	8:16	8:24	8:29	8:44
A	8:35	8:51	8:59	9:10	9:16	9:24	9:29	9:44
	9:35	9:48	9:58	10:10	10:15	10:25	10:30	10:47
A	10:30	10:49	10:58	11:10	11:15	11:25	11:30	11:47
	11:35	11:48	11:58	**12:10**	**12:15**	**12:25**	**12:30**	**12:47**
A	**12:30**	**12:49**	**12:58**	**1:10**	**1:15**	**1:25**	**1:30**	**1:47**
	1:35	**1:48**	**1:58**	**2:10**	**2:15**	**2:25**	**2:30**	**2:47**
A	**2:30**	**2:49**	**2:58**	**3:10**	**3:15**	**3:25**	**3:30**	**3:47**
	3:35	**3:48**	**3:58**	**4:10**	**4:15**	**4:25**	**4:30**	**4:47**
A	**4:30**	**4:49**	**4:58**	**5:10**	**5:15**	**5:25**	**5:30**	**5:47**
	5:35	**5:48**	**5:58**	**6:10**	**6:15**	**6:25**	**6:30**	**6:47**
A	**6:30**	**6:49**	**6:58**	**7:10**	**7:15**	**7:25**	**7:30**	**7:47**
	7:40	**7:53**	**8:01**	**8:10**	**8:15**	**8:23**	**8:28**	**8:43**

SERVICE TO / SERVICIO A

Tustin
- Columbus Tustin Middle School
- Larwin Square
- Tustin Civic Center
- Tustin High School
- Tustin Ranch Golf Course

Irvine
- Arnold O. Beckman High School
- Heritage Plaza
- Irvine High School
- Venado Middle School
- Woodbridge High School
- University High School
- University Center
- UC Irvine
- Shepherd of the Peace
- Katie Wheeler Library
- Northwood Community Park
- Lower Peters Canyon Community Park
- The Crossroads
- Alton Athletic Park
- William R. Mason Regional Park

Newport Beach
- Corona Del Mar High School
- Newport Center/ Fashion Island
- Newport Transportatio Center
- Newport Beach Civic Center and Park
- Bonita Creek Park
- Newport Sport Museum

All Days
SOUTHBOUND To: Newport Beach

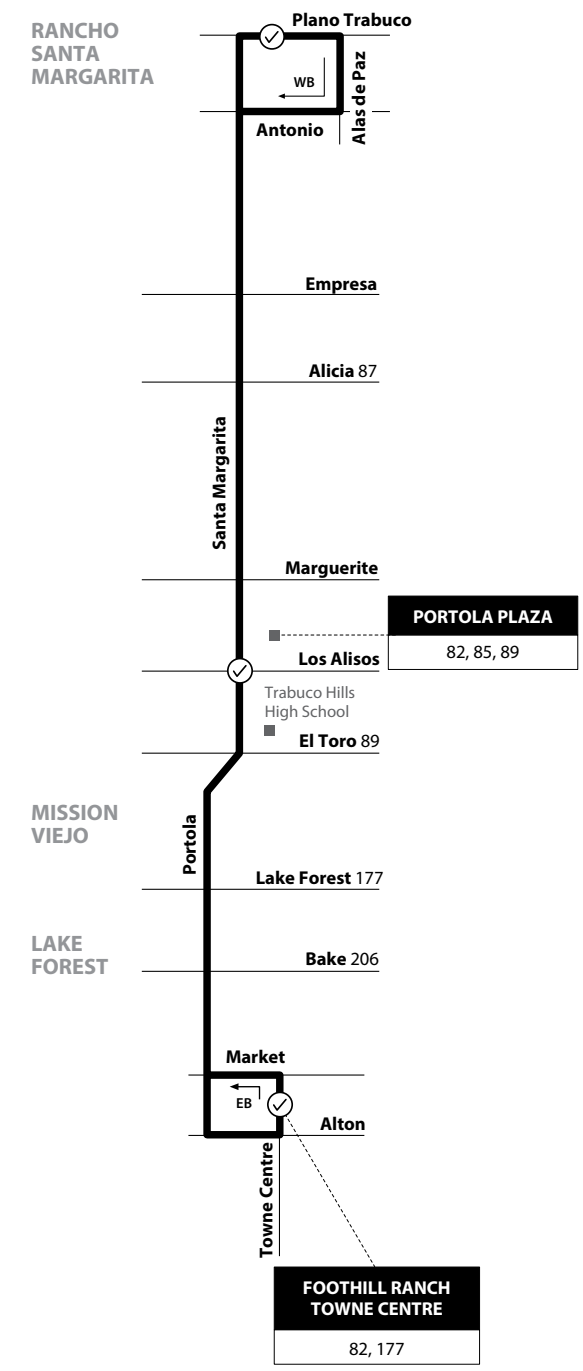
	Larwin Square	Bryan & Culver	Culver & Walnut	Culver & Alton	Culver & Michelson	University Center	Eastbluff & Del Sol	Newport Transportation Center
	6:10	6:27	6:31	6:36	6:40	6:46	6:55	7:03
A	7:09	7:26	7:30	7:35	7:40	7:47	7:55	8:16
	8:03	8:21	8:26	8:35	8:40	8:50	9:00	9:10
A	9:03	9:21	9:26	9:35	9:40	9:50	10:00	10:20
	10:01	10:20	10:25	10:34	10:40	10:50	11:01	11:13
A	11:01	11:20	11:25	11:34	11:40	11:50	**12:01**	**12:20**
	12:01	**12:20**	**12:25**	**12:34**	**12:40**	**12:50**	**1:01**	**1:13**
A	**1:01**	**1:20**	**1:25**	**1:34**	**1:40**	**1:50**	**2:01**	**2:20**
	2:01	**2:20**	**2:25**	**2:34**	**2:40**	**2:50**	**3:01**	**3:13**
A	**3:01**	**3:20**	**3:25**	**3:34**	**3:40**	**3:50**	**4:01**	**4:20**
	4:01	**4:20**	**4:25**	**4:34**	**4:40**	**4:50**	**5:01**	**5:13**
A	**5:02**	**5:20**	**5:25**	**5:34**	**5:40**	**5:48**	**5:58**	**6:18**
	6:02	**6:20**	**6:25**	**6:34**	**6:40**	**6:48**	**6:58**	**7:08**
A	**7:02**	**7:20**	**7:25**	**7:34**	**7:40**	**7:48**	**7:58**	**8:18**
	8:10	**8:27**	**8:31**	**8:37**	**8:40**	**8:47**	**8:56**	**9:06**

82

Foothill Ranch to Rancho Santa Margarita

via Portola Pkwy / Santa Margarita Pkwy

NOTE: No weekend service.
NOTA: *No hay servicio los fines de semana.*



LEGEND *LEYENDA*

Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 082/081819

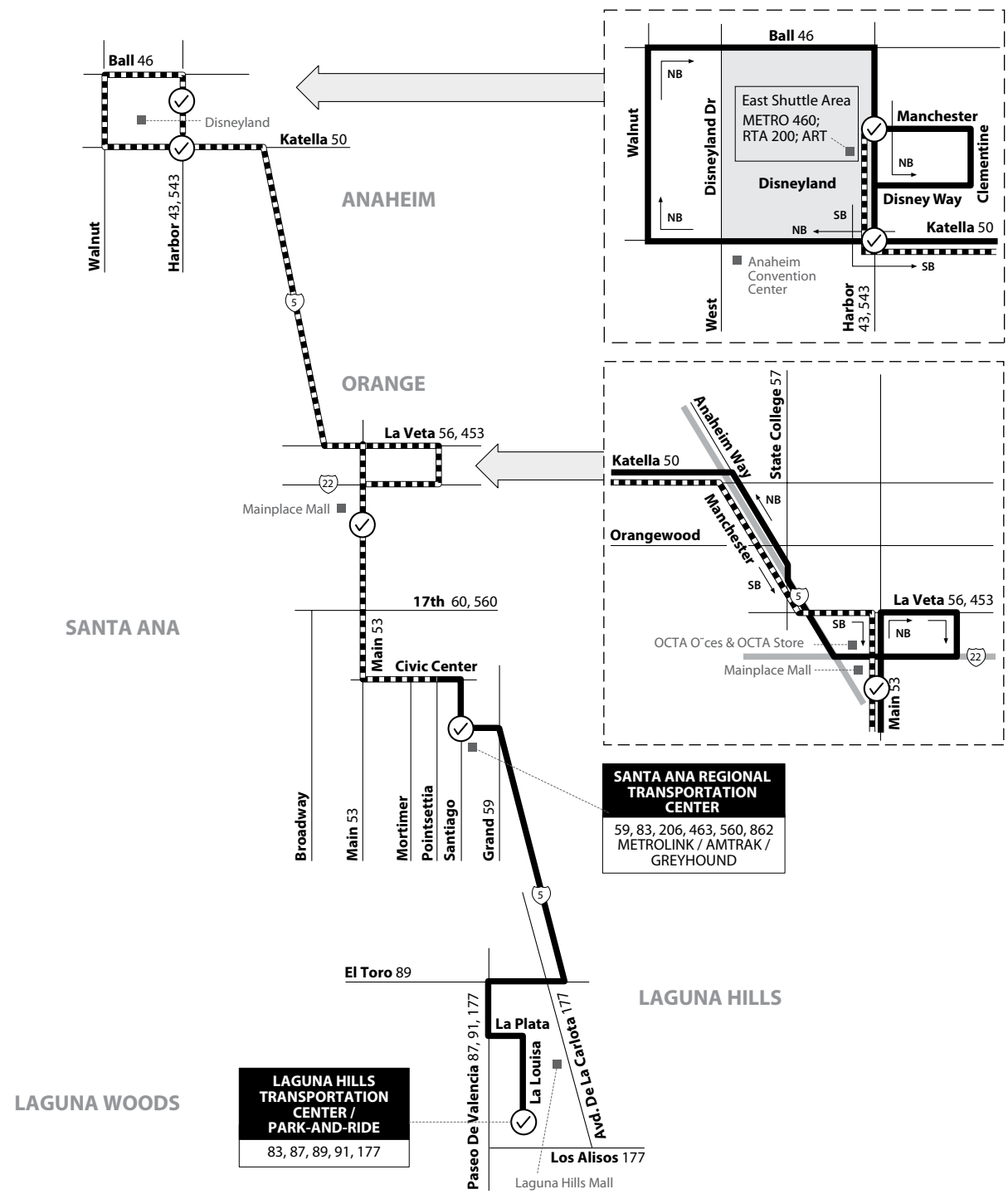
Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
EASTBOUND To: Rancho Santa Margarita

Towne Centre & Alton	Santa Margarita & Los Alisos	Plano Trabuco & Alas De Paz
4:50	4:57	5:08
5:56	6:04	6:18
6:59	7:10	7:28
8:13	8:23	8:38
9:18	9:28	9:43
10:23	10:33	10:48
11:28	11:38	11:53
12:33	**12:43**	**12:58**
1:40	**1:50**	**2:08**
2:49	**2:59**	**3:18**
4:03	**4:15**	**4:33**
5:18	**5:30**	**5:48**
6:31	**6:40**	**6:53**
7:36	**7:45**	**7:58**

Monday - Friday
WESTBOUND To: Foothill Ranch

Plano Trabuco & Alas De Paz	Santa Margarita & Los Alisos	Towne Centre & Alton
5:10	5:22	5:31
6:20	6:35	6:47
7:30	7:46	7:58
8:40	8:54	9:05
9:45	9:59	10:10
10:50	11:04	11:15
11:55	**12:09**	**12:20**
1:00	**1:14**	**1:25**
2:17	**2:31**	**2:42**
3:20	**3:37**	**3:50**
4:35	**4:50**	**5:01**
5:50	**6:05**	**6:16**
7:00	**7:13**	**7:21**



83

Anaheim to Laguna Hills

via 5 Fwy / Main St

Monday-Saturday
NORTHBOUND To: Anaheim

Laguna Hills Transportation Center	Santa Ana & Santiago	Santa Ana Mainplace	Katella & Harbor	Manchester & Harbor
	5:42	5:50	6:04	6:21
6:21	6:42	6:50	7:04	7:21
6:51	7:12	7:21	7:35	7:56
7:21	7:42	7:51	8:05	8:26
7:51	8:12	8:21	8:35	8:56
8:21	8:42	8:51	9:05	9:26
8:51	9:12	9:21	9:35	9:56
9:20	9:42	9:54	10:07	10:27
9:50	10:12	10:24	10:37	10:57
10:20	10:42	10:54	11:07	11:27
10:50	11:12	11:24	11:37	11:57
11:16	11:42	11:54	**12:07**	**12:26**
11:46	**12:12**	**12:24**	**12:37**	**12:56**
12:16	**12:42**	**12:54**	**1:07**	**1:26**
12:46	**1:12**	**1:24**	**1:37**	**1:56**
1:15	**1:42**	**1:54**	**2:08**	**2:30**
1:45	**2:12**	**2:24**	**2:38**	**3:00**
2:15	**2:42**	**2:54**	**3:08**	**3:30**
2:45	**3:12**	**3:24**	**3:38**	**4:00**
3:15	**3:42**	**3:54**	**4:08**	**4:30**
3:45	**4:12**	**4:24**	**4:38**	**5:00**
4:15	**4:42**	**4:54**	**5:08**	**5:30**
4:45	**5:12**	**5:24**	**5:38**	**6:00**
5:16	**5:42**	**5:52**	**6:06**	**6:28**
5:46	**6:12**	**6:22**	**6:36**	**6:58**
6:16	**6:42**	**6:52**	**7:06**	**7:28**
6:46	**7:12**	**7:22**	**7:36**	**7:58**
7:22	**7:43**	**7:52**	**8:06**	**8:27**
7:52	**8:13**	**8:22**	**8:36**	**8:57**
8:22	**8:43**	**8:52**	**9:06**	**9:27**
9:07	**9:28**	**9:37**	**9:51**	**10:12**
9:53	**10:14**	**10:22**	**10:34**	**10:54**
10:53	**11:14**	**11:22**	**11:34**	**11:54**

Monday-Saturday
SOUTHBOUND To: Laguna Hills

Manchester & Harbor	Katella & Harbor	Santa Ana Mainplace	Santa Ana & Santiago	Laguna Hills Transportation Center
			5:40	6:00
			6:10	6:30
			6:40	7:00
6:41	6:48	6:58	7:10	7:31
7:11	7:18	7:28	7:40	8:01
7:41	7:48	7:58	8:10	8:31
8:11	8:18	8:28	8:40	9:01
8:41	8:48	8:58	9:10	9:31
9:11	9:18	9:28	9:40	10:01
9:37	9:44	9:57	10:10	10:31
10:07	10:14	10:27	10:40	11:01
10:37	10:44	10:57	11:10	11:31
11:10	11:17	11:28	11:40	**12:01**
11:40	11:47	11:58	**12:10**	**12:31**
12:10	**12:17**	**12:28**	**12:40**	**1:01**
12:40	**12:47**	**12:58**	**1:10**	**1:31**
1:10	**1:17**	**1:28**	**1:40**	**2:01**
1:40	**1:47**	**1:58**	**2:10**	**2:31**
2:10	**2:17**	**2:28**	**2:40**	**3:01**
2:40	**2:47**	**2:58**	**3:10**	**3:31**
3:10	**3:17**	**3:29**	**3:42**	**4:03**
3:40	**3:47**	**3:59**	**4:12**	**4:33**
4:10	**4:17**	**4:29**	**4:42**	**5:03**
4:40	**4:47**	**4:59**	**5:12**	**5:33**
5:10	**5:17**	**5:29**	**5:42**	**6:03**
5:40	**5:47**	**5:59**	**6:12**	**6:33**
6:10	**6:17**	**6:29**	**6:42**	**7:03**
6:40	**6:47**	**6:59**	**7:12**	**7:33**
7:21	**7:28**	**7:39**	**7:49**	**8:10**
8:06	**8:13**	**8:24**	**8:34**	**8:55**
8:51	**8:58**	**9:09**	**9:19**	**9:40**
9:37	**9:44**	**9:55**	**10:05**	**10:26**
10:22	**10:29**	**10:40**	**10:50**	

Sunday & Holiday
NORTHBOUND To: Anaheim

Laguna Hills Transportation Center	Santa Ana & Santiago **(F)**	Santa Ana Mainplace	Katella & Harbor **(F)**	Manchester & Harbor
	5:33	5:40	5:52	6:08
	7:23	7:31	7:43	8:03
7:31	7:53	8:01	8:13	8:33
8:01	8:23	8:31	8:43	9:03
8:31	8:53	9:01	9:13	9:33
9:00	9:23	9:32	9:46	10:06
9:30	9:53	10:02	10:16	10:36
10:00	10:23	10:32	10:46	11:06
10:30	10:53	11:02	11:16	11:36
11:00	11:23	11:32	11:46	**12:06**
11:30	11:53	**12:02**	**12:16**	**12:36**
12:00	**12:23**	**12:32**	**12:46**	**1:06**
12:30	**12:53**	**1:02**	**1:16**	**1:36**
12:59	**1:23**	**1:31**	**1:43**	**2:04**
1:29	**1:53**	**2:01**	**2:13**	**2:34**
1:59	**2:23**	**2:31**	**2:43**	**3:04**
2:29	**2:53**	**3:01**	**3:13**	**3:34**
2:59	**3:23**	**3:31**	**3:43**	**4:04**
3:29	**3:53**	**4:01**	**4:13**	**4:34**
3:59	**4:23**	**4:31**	**4:43**	**5:04**
4:29	**4:53**	**5:01**	**5:13**	**5:34**
4:59	**5:23**	**5:31**	**5:43**	**6:04**
5:29	**5:53**	**6:01**	**6:13**	**6:34**
5:59	**6:23**	**6:31**	**6:43**	**7:04**
6:41	**7:04**	**7:13**	**7:25**	**7:44**
7:31	**7:54**	**8:03**	**8:15**	**8:34**
8:21	**8:44**	**8:53**	**9:05**	**9:24**
9:11	**9:34**	**9:42**	**9:54**	**10:13**
10:04	**10:27**	**10:35**	**10:47**	**11:06**

F = Times are approximate for trips/*Los horarios son aproximados*

S = Operates Monday, Tuesday, Wednesday, Thursday when OC School of the Arts is in session/*Hay servicio lunes, martes, miércoles, y jueves cuando la escuela OC High School of the Arts está en sesión.*

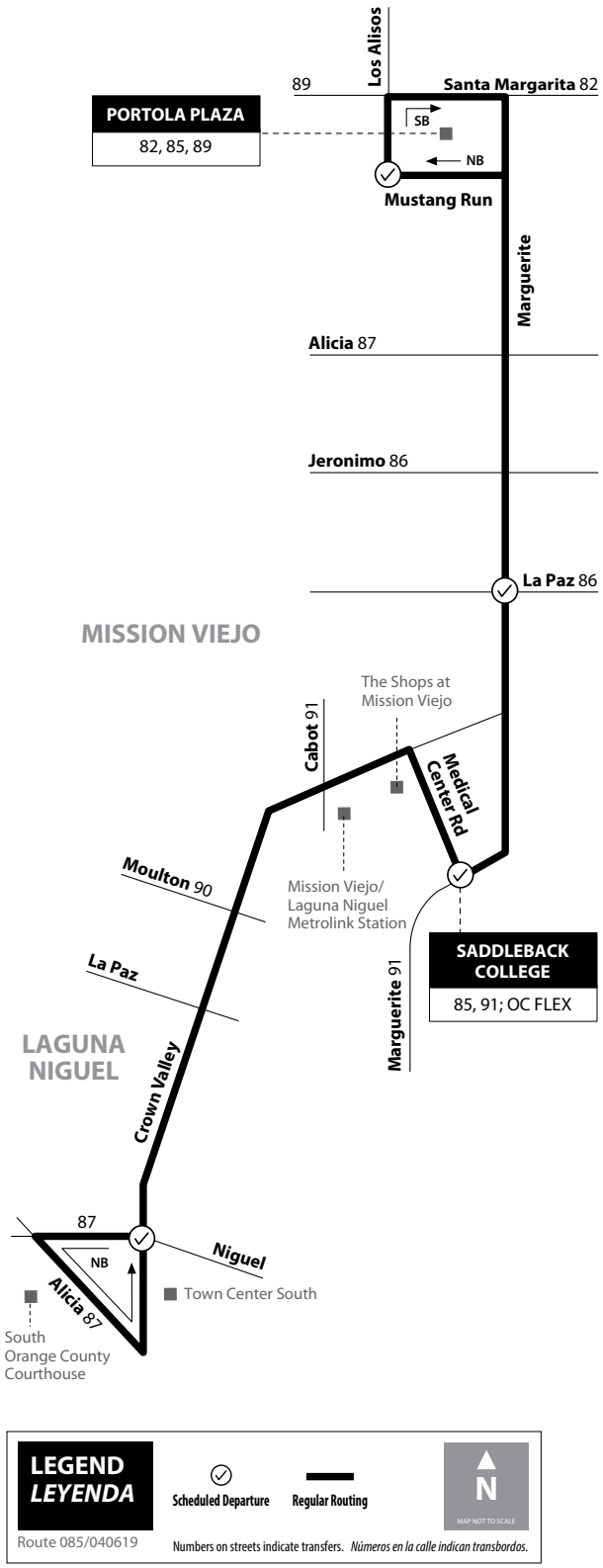
Sunday & Holiday
SOUTHBOUND To: Laguna Hills

Manchester & Harbor	Katella & Harbor	Santa Ana Mainplace	Santa Ana & Santiago	Laguna Hills Transportation Center
6:45	6:51	7:00	7:08	7:29
7:55	8:01	8:10	8:18	8:39
8:25	8:31	8:40	8:48	9:09
8:53	9:00	9:10	9:18	9:40
9:23	9:30	9:40	9:48	10:10
9:53	10:00	10:10	10:18	10:40
10:23	10:30	10:40	10:48	11:10
10:53	11:00	11:10	11:18	11:40
11:23	11:30	11:40	11:48	**12:10**
11:51	11:58	**12:09**	**12:18**	**12:41**
12:21	**12:28**	**12:39**	**12:48**	**1:11**
12:51	**12:58**	**1:09**	**1:18**	**1:41**
1:21	**1:28**	**1:39**	**1:48**	**2:11**
1:51	**1:58**	**2:09**	**2:18**	**2:41**
2:21	**2:28**	**2:39**	**2:48**	**3:11**
2:51	**2:58**	**3:09**	**3:18**	**3:41**
3:21	**3:28**	**3:39**	**3:48**	**4:11**
3:51	**3:58**	**4:09**	**4:18**	**4:41**
4:20	**4:27**	**4:39**	**4:48**	**5:11**
4:50	**4:57**	**5:09**	**5:18**	**5:41**
5:40	**5:47**	**5:59**	**6:08**	**6:31**
6:33	**6:40**	**6:50**	**6:58**	**7:19**
7:25	**7:31**	**7:40**	**7:48**	**8:09**
8:15	**8:21**	**8:30**	**8:38**	**8:59**
9:05	**9:11**	**9:20**	**9:28**	**9:49**
9:57	**10:03**	**10:12**	**10:20**	**10:41**

85 Mission Viejo to Laguna Niguel

via Marguerite Pkwy / Crown Valley Pkwy

NOTE: No weekend service.
NOTA: *No hay servicio los fines de semana.*



Monday - Friday
NORTHBOUND To: Mission Viejo

Niguel & Crown Valley	Saddleback College	Marguerite & La Paz	Los Alisos & Mustang Run
6:29	6:49	7:04	7:17
7:29	7:49	8:04	8:18
8:29	8:51	9:06	9:20
9:29	9:51	10:06	10:20
10:29	10:51	11:06	11:20
11:29	11:50	**12:05**	**12:19**
12:29	**12:50**	**1:05**	**1:18**
1:29	**1:50**	**2:05**	**2:18**
2:29	**2:50**	**3:07**	**3:21**
3:29	**3:50**	**4:07**	**4:21**
4:29	**4:52**	**5:07**	**5:20**
5:29	**5:50**	**6:05**	**6:18**
6:29	**6:50**	**7:05**	**7:18**
7:29	**7:47**	**8:02**	**8:14**
8:29	**8:47**	**8:58**	**9:09**

Monday - Friday
SOUTHBOUND To: Laguna Niguel

Los Alisos & Mustang Run	Marguerite & La Paz	Saddleback College	Niguel & Crown Valley
5:35	5:46	6:01	6:19
6:29	6:42	7:00	7:19
7:29	7:42	8:00	8:19
8:29	8:42	9:00	9:19
9:30	9:43	9:59	10:19
10:30	10:43	10:59	11:19
11:30	11:43	11:59	**12:19**
12:29	**12:42**	**12:57**	**1:19**
1:29	**1:42**	**1:57**	**2:19**
2:29	**2:42**	**2:57**	**3:19**
3:29	**3:42**	**3:57**	**4:19**
4:30	**4:45**	**4:58**	**5:19**
5:30	**5:45**	**5:58**	**6:19**
6:36	**6:48**	**6:59**	**7:19**
7:36	**7:48**	**7:59**	**8:19**
8:38	**8:49**	**8:59**	**9:19**
9:23	**9:34**	**9:44**	**10:04**

NOTE: No weekend service.
***NOTA:** No hay servicio los fines de semana.*

Costa Mesa to Mission Viejo
via Alton Pkwy / Jeronimo Rd

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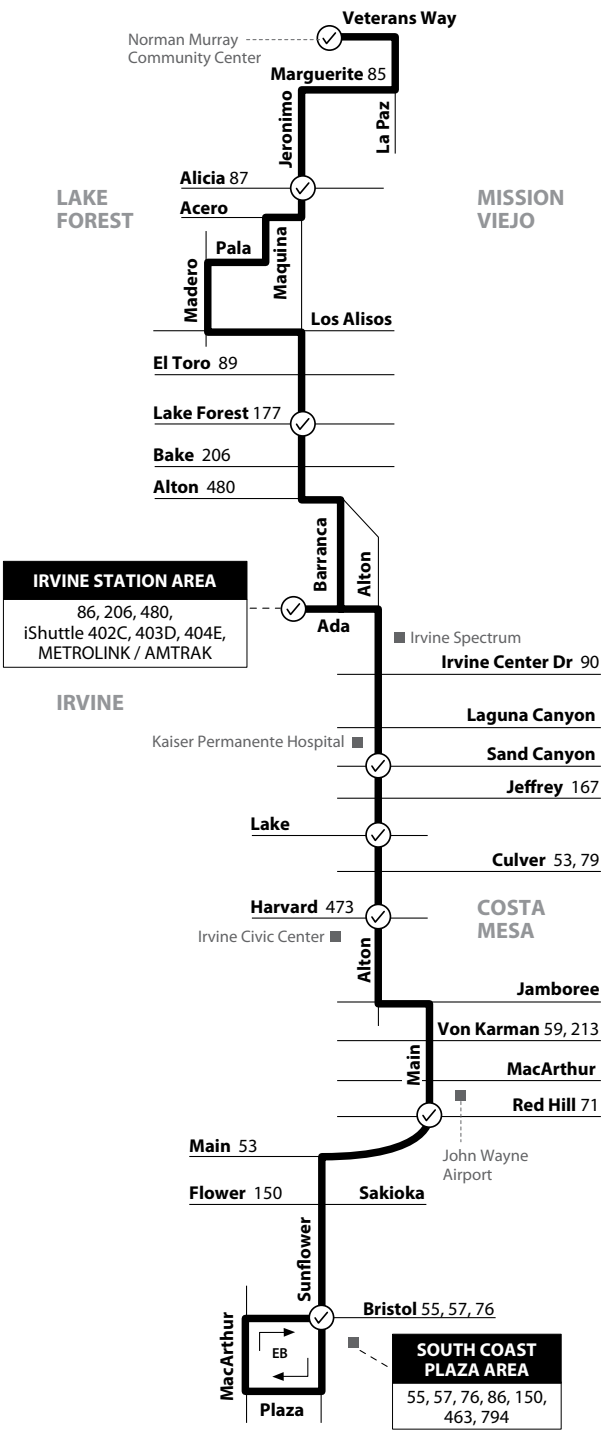

Monday - Friday
EASTBOUND To: Mission Viejo

Sunflower & Bristol	Main & Red Hill	Alton & Harvard	Alton & Lake	Alton & Sand Canyon	Irvine Station	Jeronimo & Lake Forest	Jeronimo & Alicia	Murray ommunity Center
5:42	5:51	6:01	6:07	6:15	6:25	6:36	6:47	6:56
6:35	6:47	7:00	7:06	7:15	7:29	7:40	7:57	8:06
7:35	7:49	8:02	8:09	8:18	8:32	8:43	8:56	9:04
8:37	8:51	9:04	9:11	9:20	9:34	9:44	9:57	10:06
9:47	9:59	10:12	10:19	10:28	10:42	10:52	11:06	11:14
10:47	10:58	11:11	11:17	11:23	11:36	11:46	11:59	**12:09**
11:45	11:56	**12:09**	**12:15**	**12:23**	**12:36**	**12:46**	**12:59**	**1:09**
12:53	**1:05**	**1:18**	**1:24**	**1:34**	**1:47**	**1:56**	**2:12**	**2:22**
1:52	**2:04**	**2:17**	**2:23**	**2:30**	**2:42**	**2:52**	**3:06**	**3:16**
2:51	**3:03**	**3:16**	**3:22**	**3:29**	**3:41**	**3:51**	**4:05**	**4:15**
4:04	**4:16**	**4:28**	**4:35**	**4:45**	**4:58**	**5:09**	**5:22**	**5:32**
5:07	**5:19**	**5:31**	**5:38**	**5:48**	**6:01**	**6:12**	**6:25**	**6:35**
6:11	**6:25**	**6:36**	**6:44**	**6:52**	**7:02**	**7:11**	**7:21**	**7:31**
7:11	**7:25**	**7:36**	**7:44**	**7:52**	**8:02**	**8:11**	**8:21**	**8:31**

Monday - Friday
WESTBOUND To: Costa Mesa

Murray Community Center	Jeronimo & Alicia	Jeronimo & Lake Forest	Irvine Station	Alton & Sand Canyon	Alton & Lake	Alton & Harvard	Main & Red Hill	Sunflower & Bristol
6:11	6:20	6:31	6:40	6:52	6:58	7:04	7:18	7:24
7:06	7:16	7:31	7:40	7:53	8:02	8:08	8:21	8:27
8:16	8:26	8:41	8:50	9:03	9:12	9:18	9:31	9:37
9:18	9:30	9:42	9:50	10:02	10:10	10:17	10:30	10:36
10:16	10:28	10:40	10:48	11:00	11:08	11:15	11:28	11:34
11:25	11:37	11:49	11:57	**12:09**	**12:17**	**12:24**	**12:37**	**12:43**
12:19	**12:31**	**12:45**	**12:53**	**1:07**	**1:14**	**1:21**	**1:34**	**1:41**
1:19	**1:31**	**1:45**	**1:53**	**2:07**	**2:14**	**2:21**	**2:34**	**2:41**
2:32	**2:44**	**2:58**	**3:06**	**3:20**	**3:27**	**3:34**	**3:47**	**3:54**
3:26	**3:38**	**3:52**	**4:01**	**4:16**	**4:28**	**4:35**	**4:49**	**4:57**
4:30	**4:42**	**4:56**	**5:05**	**5:20**	**5:32**	**5:39**	**5:53**	**6:01**
5:43	**5:53**	**6:04**	**6:13**	**6:25**	**6:34**	**6:41**	**6:55**	**7:01**
6:46	**6:57**	**7:06**	**7:13**	**7:25**	**7:33**	**7:40**	**7:51**	**7:57**
7:46	**7:56**	**8:05**	**8:13**	**8:24**	**8:31**	**8:36**	**8:47**	**8:53**

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Rancho Santa Margarita to Laguna Niguel

via Alicia Pkwy

NOTE: No weekend service.
NOTA: *No hay servicio los fines de semana.*

LEGEND *LEYENDA*

Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 087/082718

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
NORTHBOUND To:
Rancho Santa Margarita

Niguel & Crown Valley	Alicia & Mkt Place Dr North	Laguna Hills Transportation Center	Alicia & Jeronimo	Empresa & Aventura
5:56	6:03	6:13	6:27	6:39
6:59	7:07	7:18	7:35	7:49
8:04	8:12	8:23	8:40	8:54
9:08	9:16	9:28	9:44	9:58
10:13	10:21	10:33	10:49	11:03
11:18	11:26	11:38	11:54	**12:08**
12:23	**12:31**	**12:43**	**12:59**	**1:13**
1:28	**1:36**	**1:48**	**2:04**	**2:18**
2:33	**2:41**	**2:53**	**3:11**	**3:26**
3:38	**3:46**	**3:58**	**4:16**	**4:31**
4:43	**4:51**	**5:03**	**5:21**	**5:36**
5:48	**5:56**	**6:08**	**6:26**	**6:41**
6:56	**7:03**	**7:13**	**7:28**	**7:40**

Monday - Friday
SOUTHBOUND To:
Laguna Niguel

Empresa & Aventura	Alicia & Jeronimo	Laguna Hills Transportation Center	Alicia & Mkt Place Dr North	Niguel & Crown Valley
5:54	6:05	6:14	6:26	6:35
6:56	7:10	7:21	7:36	7:48
8:01	8:15	8:26	8:41	8:53
9:06	9:20	9:31	9:46	9:58
10:12	10:25	10:36	10:50	11:02
11:17	11:30	11:41	11:55	**12:07**
12:22	**12:35**	**12:46**	**1:00**	**1:12**
1:27	**1:40**	**1:51**	**2:05**	**2:17**
2:31	**2:45**	**2:57**	**3:13**	**3:26**
3:36	**3:50**	**4:02**	**4:18**	**4:31**
4:41	**4:55**	**5:07**	**5:23**	**5:36**
5:46	**6:00**	**6:12**	**6:28**	**6:41**
6:51	**7:05**	**7:15**	**7:29**	**7:40**

SERVICE TO / SERVICIO A

Rancho Santa Margarita
- Plaza Empresa

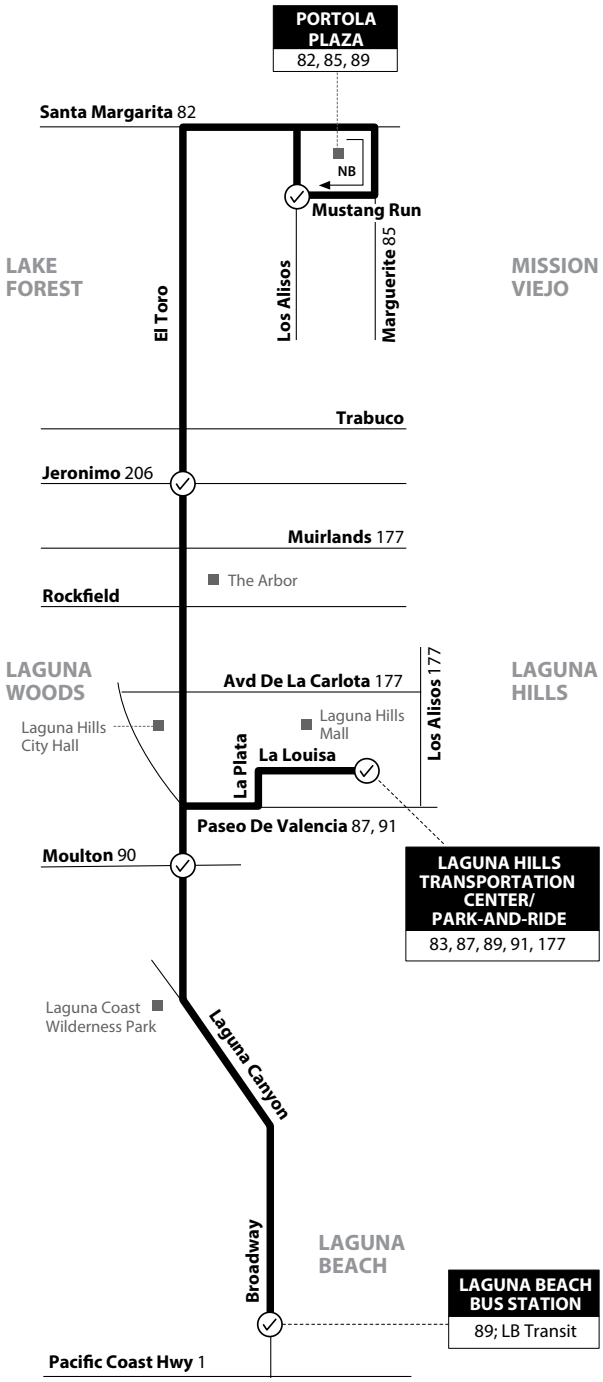
Mission Viejo
- Lake Mission Viejo
- Los Alisos Intermediate School

Laguna Hills
- Laguna Hills Mall
- Laguna Hills Transportation Center
- Laguna Hills High School

Laguna Woods
- Leisure World

Aliso Viejo
- Aliso Viejo Middle School
- Aliso Niguel High School

Laguna Niguel
- Chet Holifield Federal Building
- Market Place at Laguna Niguel
- Town Center South



All Days
NORTHBOUND To: Mission Viejo

Laguna Beach Bus Station	El Toro & Moulton	Laguna Hills Transportation Center	El Toro & Jeronimo	Los Alisos & Mustang Run
6:12	6:27	6:32	6:45	6:56
7:12	7:27	7:32	7:45	7:56
8:13	8:29	8:37	8:52	9:05
9:23	9:39	9:47	10:02	10:15
10:33	10:49	10:57	11:12	11:25
11:40	11:59	**12:07**	**12:26**	**12:39**
12:50	**1:09**	**1:17**	**1:36**	**1:49**
2:00	**2:19**	**2:27**	**2:46**	**2:59**
3:10	**3:29**	**3:37**	**3:56**	**4:09**
4:17	**4:43**	**4:50**	**5:06**	**5:19**
5:30	**5:49**	**5:57**	**6:16**	**6:29**
6:39	**6:55**	**7:02**	**7:13**	**7:28**
7:39	**7:55**	**8:02**	**8:13**	**8:28**
8:39	**8:55**	**9:02**	**9:13**	**9:28**

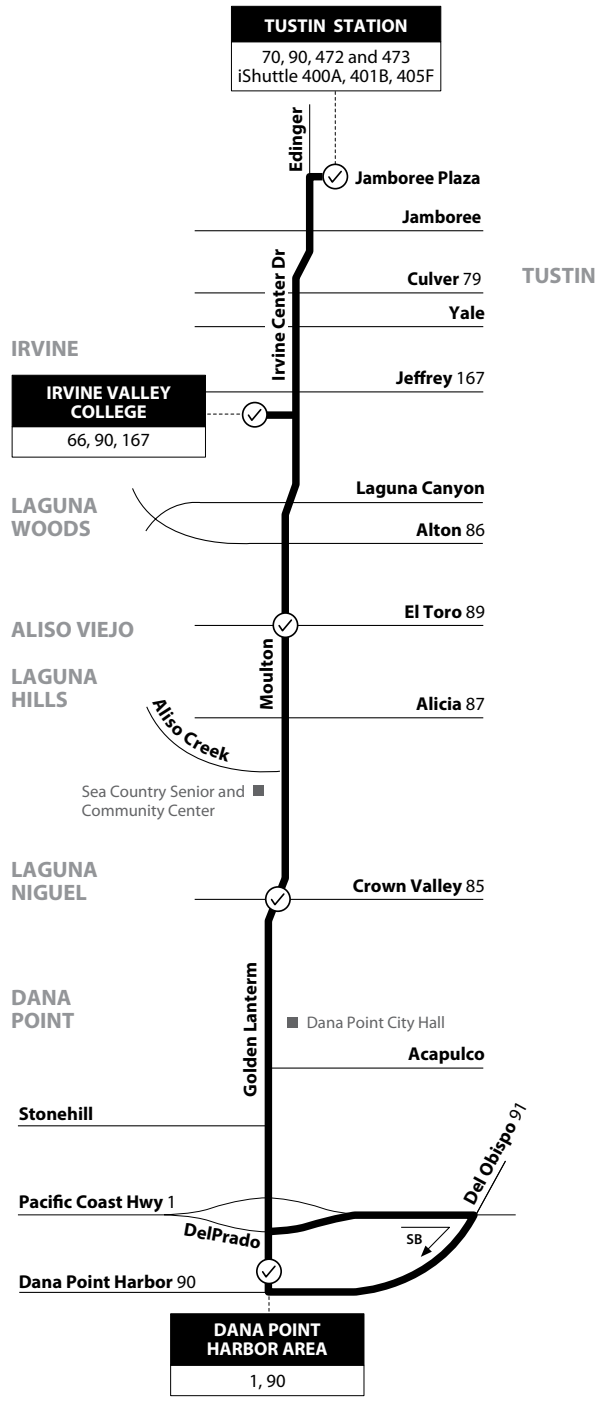
All Days
SOUTHBOUND To: Laguna Beach

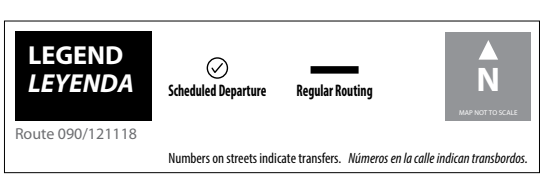
Los Alisos & Mustang Run	El Toro & Jeronimo	Laguna Hills Transportation Center	El Toro & Moulton	Laguna Beach Bus Station
4:57	5:06	5:18	5:26	5:44
6:02	6:11	6:23	6:31	6:49
7:07	7:16	7:28	7:36	7:54
8:08	8:21	8:38	8:49	9:07
9:18	9:31	9:48	9:59	10:17
10:28	10:41	10:58	11:09	11:27
11:39	11:52	**12:08**	**12:19**	**12:36**
12:49	**1:02**	**1:18**	**1:30**	**1:51**
1:59	**2:12**	**2:28**	**2:39**	**2:56**
3:09	**3:22**	**3:38**	**3:49**	**4:06**
4:21	**4:34**	**4:48**	**4:58**	**5:14**
5:31	**5:44**	**5:58**	**6:08**	**6:24**
6:40	**6:51**	**7:03**	**7:12**	**7:28**
7:40	**7:51**	**8:03**	**8:12**	**8:28**

Operates Monday-Saturday Only.
Lunes a sábado solamente.

90 Tustin to Dana Point

via Irvine Center Dr / Moulton Pkwy / Golden Lantern St





Monday-Friday
NORTHBOUND To: Tustin

Golden Lantern & Dana Point Harbor	Moulton & Crown Valley	Moulton & El Toro	Irvine Valley College	Tustin Metrolink Station
5:10	5:28	5:43	6:02	6:14
6:14	6:32	6:48	7:05	7:17
7:34	7:52	8:08	8:25	8:37
8:54	9:12	9:29	9:46	9:57
10:14	10:32	10:49	11:06	11:17
11:34	11:52	**12:09**	**12:26**	**12:37**
12:50	**1:10**	**1:29**	**1:51**	**2:02**
2:10	**2:30**	**2:49**	**3:11**	**3:22**
3:41	**4:01**	**4:20**	**4:42**	**4:53**
5:07	**5:25**	**5:40**	**5:55**	**6:06**
6:27	**6:45**	**7:00**	**7:15**	**7:26**
7:47	**8:05**	**8:20**	**8:35**	**8:46**

Monday-Friday
SOUTHBOUND To: Dana Point

Tustin Metrolink Station	Irvine Valley College	Moulton & El Toro	Moulton & Crown Valley	Golden Lantern & Dana Point Harbor
6:21	6:30	6:48	7:04	7:24
7:31	7:40	7:58	8:14	8:34
8:47	8:59	9:18	9:34	10:00
10:07	10:19	10:38	10:54	11:20
11:27	11:38	11:58	**12:14**	**12:40**
12:47	**12:58**	**1:18**	**1:34**	**2:00**
2:12	**2:26**	**2:47**	**3:05**	**3:30**
3:39	**3:53**	**4:14**	**4:32**	**4:57**
5:03	**5:14**	**5:34**	**5:50**	**6:11**
6:23	**6:34**	**6:54**	**7:10**	**7:31**
7:43	**7:54**	**8:14**	**8:30**	**8:51**
9:09	**9:19**	**9:34**	**9:52**	**10:09**

Saturday
NORTHBOUND To: Tustin

Golden Lantern & Dana Point Harbor	Moulton & Crown Valley	Moulton & El Toro	Irvine Valley College	Tustin Metrolink Station
6:14	6:32	6:48	7:05	7:17
7:34	7:52	8:08	8:25	8:37
8:54	9:12	9:29	9:46	9:57
10:14	10:32	10:49	11:06	11:17
11:34	11:52	**12:09**	**12:26**	**12:37**
12:50	**1:10**	**1:29**	**1:51**	**2:02**
2:10	**2:30**	**2:49**	**3:11**	**3:22**
3:41	**4:01**	**4:20**	**4:42**	**4:53**
5:07	**5:25**	**5:40**	**5:55**	**6:06**
6:27	**6:45**	**7:00**	**7:15**	**7:26**
7:47	**8:05**	**8:20**	**8:35**	**8:46**

Sunday & Holiday
NORTHBOUND To: Tustin

Golden Lantern & Dana Point Harbor	Moulton & Crown Valley	Moulton & El Toro	Irvine Valley College	Tustin Metrolink Station
6:05	6:22	6:40	6:56	7:13
7:25	7:42	8:00	8:16	8:33
8:42	9:00	9:17	9:34	9:52
10:02	10:20	10:37	10:54	11:12
11:22	11:40	11:57	**12:14**	**12:32**
12:45	**1:04**	**1:20**	**1:39**	**1:53**
2:05	**2:24**	**2:40**	**2:59**	**3:13**
3:25	**3:44**	**4:00**	**4:19**	**4:33**
4:44	**5:03**	**5:18**	**5:35**	**5:53**
6:06	**6:25**	**6:40**	**6:57**	**7:15**
7:31	**7:50**	**8:05**	**8:22**	**8:40**

Saturday
SOUTHBOUND To: Dana Point

Tustin Metrolink Station	Irvine Valley College	Moulton & El Toro	Moulton & Crown Valley	Golden Lantern & Dana Point Harbor
6:21	6:30	6:48	7:04	7:24
7:31	7:40	7:58	8:14	8:34
8:47	8:59	9:18	9:34	10:00
10:07	10:19	10:38	10:54	11:20
11:27	11:38	11:58	**12:14**	**12:40**
12:47	**12:58**	**1:18**	**1:34**	**2:00**
2:12	**2:26**	**2:47**	**3:05**	**3:30**
3:39	**3:53**	**4:14**	**4:32**	**4:57**
5:03	**5:14**	**5:34**	**5:50**	**6:11**
6:23	**6:34**	**6:54**	**7:10**	**7:31**
7:43	**7:54**	**8:14**	**8:30**	**8:51**
9:09	**9:19**	**9:34**	**9:52**	**10:09**

Sunday & Holiday
SOUTHBOUND To: Dana Point

Tustin Metrolink Station	Irvine Valley College	Moulton & El Toro	Moulton & Crown Valley	Golden Lantern & Dana Point Harbor
7:26	7:34	7:53	8:09	8:31
8:46	8:54	9:13	9:29	9:51
10:02	10:13	10:33	10:47	11:09
11:22	11:33	11:53	**12:07**	**12:29**
12:42	**12:53**	**1:13**	**1:27**	**1:49**
2:03	**2:15**	**2:33**	**2:49**	**3:11**
3:23	**3:35**	**3:53**	**4:09**	**4:31**
4:43	**4:55**	**5:13**	**5:29**	**5:51**
6:07	**6:16**	**6:33**	**6:49**	**7:08**
7:41	**7:50**	**8:07**	**8:23**	**8:42**

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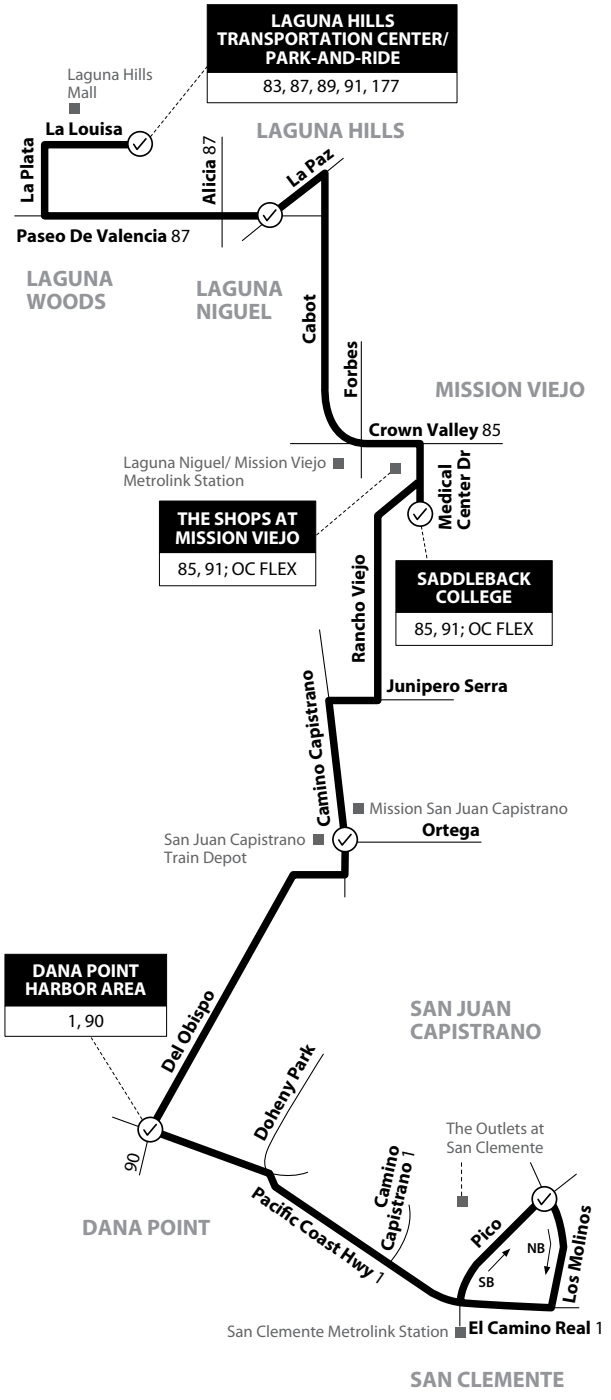
Laguna Hills to San Clemente

via Paseo De Valencia / Camino Capistrano / Del Obispo St



Monday-Saturday

NORTHBOUND To: Laguna Hills

Los Molinos & Pico	Pacific Coast Hwy & Del Obispo	Camino Capistrano & Ortega	Saddleback College	Paseo De Valencia & La Paz	Laguna Hills Transportation Center
6:55	7:07	7:18	7:35	7:51	8:03
7:40	7:52	8:03	8:20	8:36	8:48
8:25	8:37	8:48	9:05	9:21	9:33
8:50	9:03	9:17	9:36	9:52	10:04
9:19	9:32	9:46	10:05	10:21	10:33
9:49	10:02	10:16	10:35	10:51	11:03
10:18	10:31	10:46	11:05	11:21	11:33
10:48	11:01	11:16	11:35	11:51	**12:03**
11:18	11:31	11:46	**12:05**	**12:21**	**12:33**
11:46	**12:00**	**12:16**	**12:35**	**12:52**	**1:04**
12:16	**12:30**	**12:46**	**1:05**	**1:22**	**1:34**
12:46	**1:00**	**1:16**	**1:35**	**1:52**	**2:04**
1:16	**1:30**	**1:46**	**2:05**	**2:22**	**2:34**
1:46	**2:00**	**2:16**	**2:35**	**2:52**	**3:04**
2:16	**2:30**	**2:46**	**3:05**	**3:22**	**3:34**
2:43	**2:59**	**3:16**	**3:35**	**3:53**	**4:05**
3:13	**3:29**	**3:46**	**4:05**	**4:23**	**4:35**
3:47	**4:01**	**4:16**	**4:35**	**4:52**	**5:04**
4:17	**4:31**	**4:46**	**5:05**	**5:22**	**5:34**
4:47	**5:01**	**5:16**	**5:35**	**5:52**	**6:04**
5:17	**5:31**	**5:46**	**6:05**	**6:22**	**6:34**
6:09	**6:21**	**6:35**	**6:53**	**7:09**	**7:21**
6:54	**7:06**	**7:20**	**7:38**	**7:54**	**8:06**

Laguna Hills to San Clemente
via Paseo De Valencia / Camino Capistrano / Del Obispo St

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Monday-Saturday
SOUTHBOUND To: San Clemente

Laguna Hills Transportation Center	La Paz & Paseo De Valencia	Saddleback College	Camino Capistrano & Ortega	Pacific Coast Hwy & Dana Point Harbor	Los Molinos & Pico
6:49	7:00	7:15	7:32	7:44	7:54
7:32	7:45	8:00	8:17	8:29	8:40
8:16	8:29	8:45	9:02	9:15	9:27
8:46	8:59	9:15	9:32	9:45	9:57
9:16	9:29	9:45	10:02	10:15	10:27
9:46	9:59	10:15	10:32	10:45	10:57
10:14	10:27	10:45	11:04	11:20	11:32
10:44	10:57	11:15	11:34	11:50	**12:02**
11:14	11:27	11:45	**12:04**	**12:20**	**12:32**
11:44	11:57	**12:15**	**12:35**	**12:50**	**1:03**
12:14	**12:27**	**12:45**	**1:05**	**1:20**	**1:33**
12:44	**12:57**	**1:15**	**1:35**	**1:50**	**2:03**
1:14	**1:27**	**1:45**	**2:05**	**2:20**	**2:33**
1:44	**1:57**	**2:15**	**2:35**	**2:50**	**3:03**
2:14	**2:27**	**2:45**	**3:05**	**3:20**	**3:33**
2:45	**2:58**	**3:15**	**3:33**	**3:47**	**3:59**
3:15	**3:28**	**3:45**	**4:03**	**4:17**	**4:29**
3:45	**3:58**	**4:15**	**4:33**	**4:47**	**4:59**
4:15	**4:28**	**4:45**	**5:03**	**5:17**	**5:29**
4:45	**4:58**	**5:15**	**5:33**	**5:47**	**5:59**
5:16	**5:29**	**5:45**	**6:02**	**6:15**	**6:26**
6:01	**6:14**	**6:30**	**6:47**	**7:00**	**7:11**
6:46	**6:59**	**7:15**	**7:32**	**7:45**	**7:56**
7:31	**7:44**	**8:00**	**8:17**	**8:30**	**8:41**

Sunday & Holiday
NORTHBOUND To: Laguna Hills

Los Molinos & Pico	Pacific Coast Hwy & Del Obispo	Camino Capistrano & Ortega	Saddleback College	Paseo De Valencia & La Paz	Laguna Hills Transportation Center
6:50	7:01	7:12	7:27	7:42	7:54
7:38	7:49	8:00	8:15	8:30	8:42
8:17	8:28	8:41	9:00	9:15	9:29
9:02	9:13	9:26	9:45	10:00	10:14
9:47	9:58	10:11	10:30	10:45	10:59
10:30	10:44	10:58	11:15	11:31	11:44
11:15	11:29	11:43	**12:00**	**12:16**	**12:29**
12:00	**12:14**	**12:28**	**12:45**	**1:01**	**1:14**
12:45	**12:59**	**1:13**	**1:30**	**1:46**	**1:59**
1:30	**1:44**	**1:58**	**2:15**	**2:31**	**2:44**
2:17	**2:29**	**2:43**	**3:00**	**3:15**	**3:29**
3:02	**3:14**	**3:28**	**3:45**	**4:00**	**4:14**
3:47	**3:59**	**4:13**	**4:30**	**4:45**	**4:59**
4:32	**4:44**	**4:58**	**5:15**	**5:30**	**5:44**
5:17	**5:29**	**5:43**	**6:00**	**6:15**	**6:29**
7:01	**7:13**	**7:27**	**7:44**	**7:59**	**8:13**

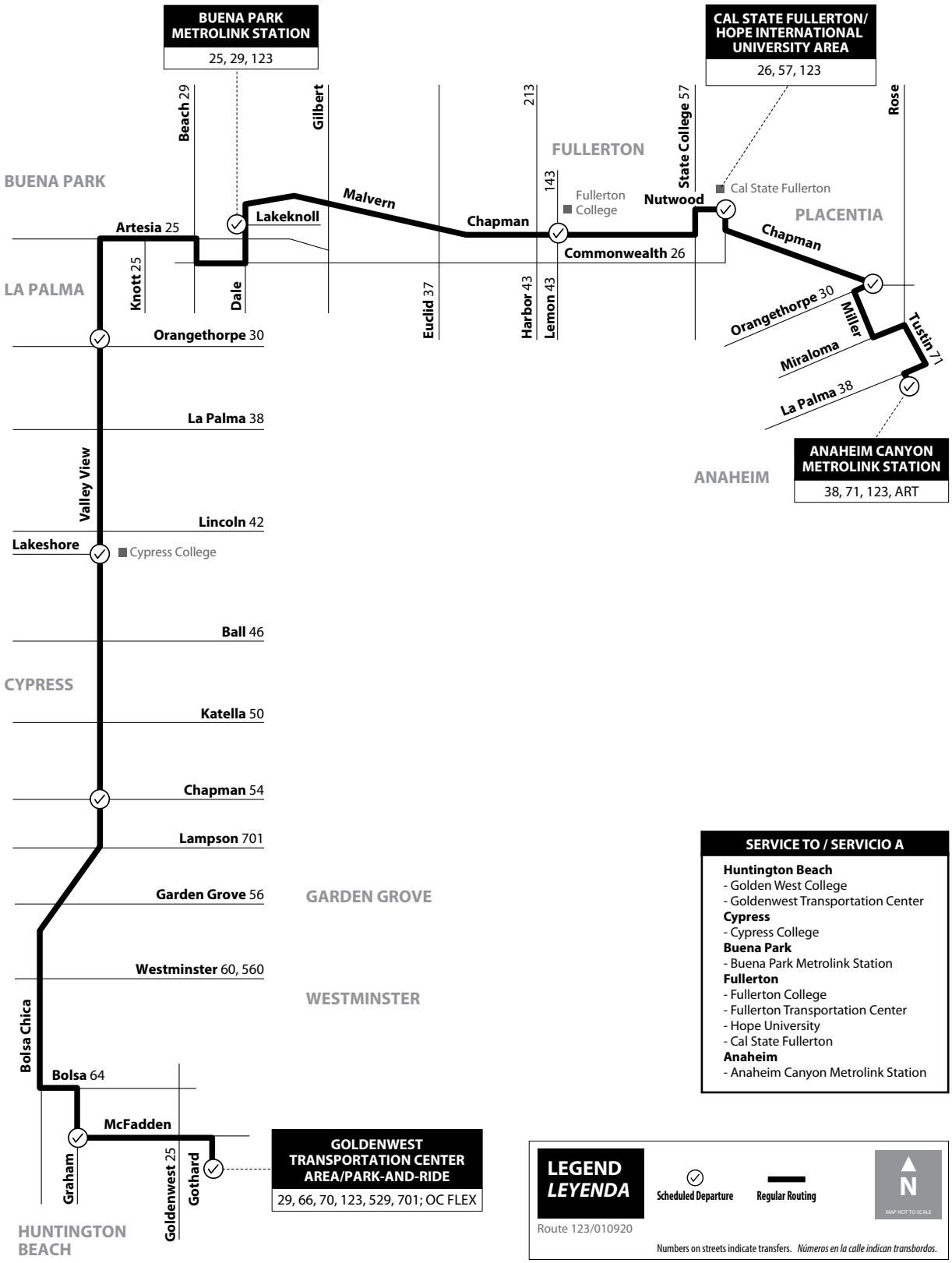
Sunday & Holiday
SOUTHBOUND To: San Clemente

Laguna Hills Transportation Center	La Paz & Paseo De Valencia	Saddleback College	Camino Capistrano & Ortega	Pacific Coast Hwy & Dana Point Harbor	Los Molinos & Pico
6:51	7:02	7:15	7:31	7:42	7:52
7:34	7:45	8:00	8:17	8:29	8:39
8:19	8:30	8:45	9:02	9:14	9:24
9:01	9:13	9:30	9:48	10:01	10:12
9:46	9:58	10:15	10:33	10:46	10:57
10:31	10:43	11:00	11:18	11:31	11:42
11:16	11:28	11:45	**12:03**	**12:16**	**12:27**
12:01	**12:13**	**12:30**	**12:48**	**1:01**	**1:12**
12:46	**12:58**	**1:15**	**1:33**	**1:46**	**1:57**
1:31	**1:43**	**2:00**	**2:18**	**2:31**	**2:42**
2:16	**2:28**	**2:45**	**3:03**	**3:16**	**3:27**
3:01	**3:13**	**3:30**	**3:48**	**4:01**	**4:12**
3:45	**3:59**	**4:15**	**4:34**	**4:48**	**4:59**
4:30	**4:44**	**5:00**	**5:19**	**5:33**	**5:44**
5:15	**5:29**	**5:45**	**6:04**	**6:18**	**6:29**
7:15	**7:29**	**7:45**	**8:04**	**8:18**	**8:29**

123

Anaheim to Huntington Beach

via Malvern Ave / Valley View / Bolsa Chica



SERVICE TO / SERVICIO A

Huntington Beach
- Golden West College
- Goldenwest Transportation Center

Cypress
- Cypress College

Buena Park
- Buena Park Metrolink Station

Fullerton
- Fullerton College
- Fullerton Transportation Center
- Hope University
- Cal State Fullerton

Anaheim
- Anaheim Canyon Metrolink Station

LEGEND *LEYENDA*

Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 123/010920

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
NORTHBOUND: Anaheim

Goldenwest Transportation Center	Graham & McFadden	Valley View & Chapman	Cypress College	Valley View & Orangethorpe	Buena Park Metrolink Station	Chapman & Lemon	Nutwood & Commonwealth	Orangethorpe & Chapman	Anaheim Canyon Metrolink Station
					5:00	5:11	5:18	5:27	5:36
5:34	5:42	5:54	6:00	6:09	6:25	6:39	6:46	6:55	7:03
6:27	6:35	6:49	6:58	7:06	7:25	7:40	7:49	7:59	8:07
7:27	7:35	7:49	7:58	8:06	8:25	8:40	8:49	8:59	9:07
8:27	8:35	8:49	8:58	9:06	9:25	9:40	9:49	9:59	10:07
9:27	9:35	9:49	9:58	10:06	10:25	10:40	10:49	10:59	11:07
10:27	10:35	10:49	10:58	11:06	11:25	11:40	11:49	11:59	**12:07**
11:23	11:32	11:46	11:56	**12:05**	**12:25**	**12:40**	**12:52**	**1:03**	**1:11**
12:23	**12:32**	**12:46**	**12:56**	**1:05**	**1:25**	**1:40**	**1:52**	**2:03**	**2:11**
1:23	**1:32**	**1:46**	**1:56**	**2:05**	**2:25**	**2:40**	**2:52**	**3:03**	**3:11**
2:23	**2:32**	**2:46**	**2:56**	**3:05**	**3:25**	**3:40**	**3:52**	**4:03**	**4:11**
3:21	**3:30**	**3:45**	**3:55**	**4:05**	**4:25**	**4:38**	**4:47**	**4:57**	**5:04**
4:21	**4:30**	**4:45**	**4:55**	**5:05**	**5:25**	**5:38**	**5:47**	**5:57**	**6:04**
5:21	**5:30**	**5:45**	**5:55**	**6:05**	**6:25**	**6:38**	**6:47**	**6:57**	**7:04**
6:27	**6:36**	**6:49**	**6:58**	**7:06**	**7:25**	**7:40**	**7:49**	**7:58**	**8:04**
7:37	**7:44**	**7:55**	**8:03**	**8:09**	**8:25**	**8:38**	**8:46**	**8:55**	**9:01**
8:47	**8:54**	**9:05**	**9:13**	**9:19**	**9:35**	**9:48**	**9:56**	**10:05**	**10:11**

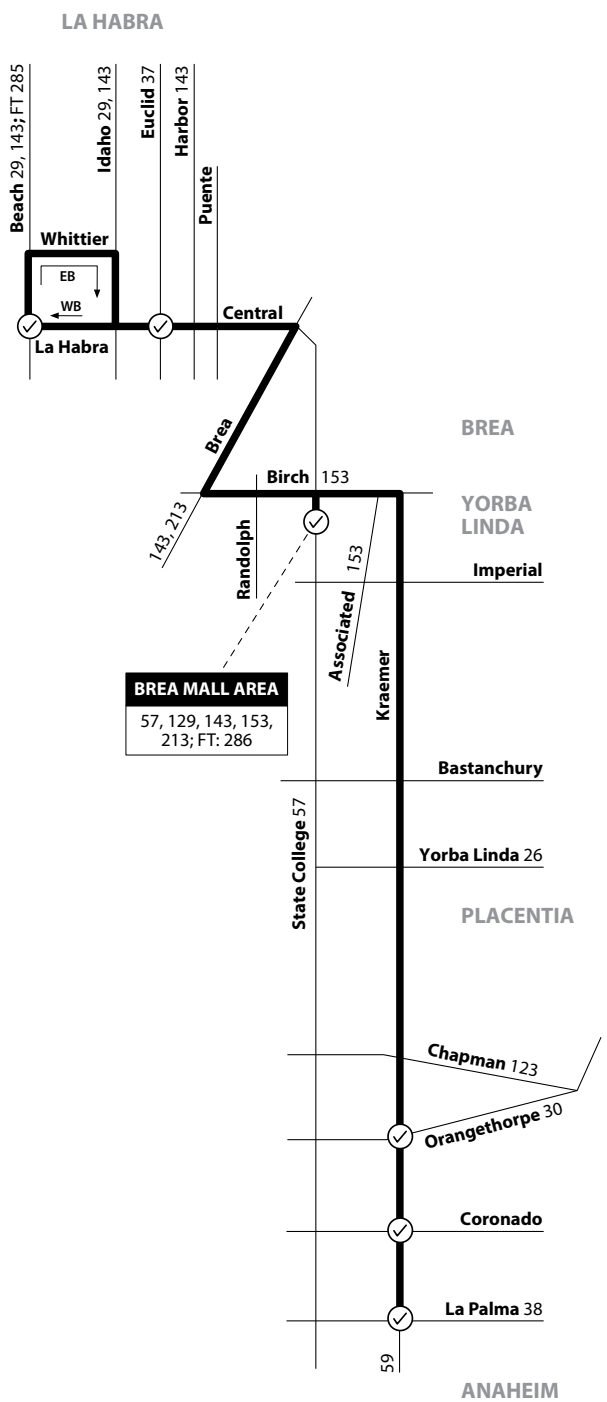
Monday - Friday
SOUTHBOUND: Huntington Beach

Anaheim Canyon Metrolink Station	Chapman & Orangethorpe	Nutwood & Commonwealth	Chapman & Lemon	Buena Park Metrolink Station	Valley View & Orangethorpe	Cypress College	Valley View & Chapman	McFadden & Graham	Goldenwest Transportation Center
				5:05	5:22	5:28	5:36	5:47	5:54
5:44	5:50	5:57	6:02	6:15	6:34	6:43	6:51	7:04	7:10
6:32	6:40	6:54	7:03	7:15	7:34	7:42	7:52	8:05	8:13
7:32	7:40	7:54	8:03	8:15	8:34	8:42	8:52	9:05	9:13
8:30	8:39	8:52	9:01	9:15	9:36	9:45	9:54	10:07	10:14
9:30	9:39	9:52	10:01	10:15	10:36	10:45	10:54	11:07	11:14
10:30	10:39	10:52	11:01	11:15	11:36	11:45	11:54	**12:07**	**12:14**
11:30	11:39	11:52	**12:01**	**12:15**	**12:36**	**12:45**	**12:54**	**1:07**	**1:14**
12:30	**12:39**	**12:52**	**1:01**	**1:15**	**1:36**	**1:45**	**1:54**	**2:07**	**2:14**
1:28	**1:38**	**1:49**	**1:59**	**2:15**	**2:32**	**2:41**	**2:51**	**3:05**	**3:13**
2:28	**2:38**	**2:49**	**2:59**	**3:15**	**3:32**	**3:41**	**3:51**	**4:05**	**4:13**
3:28	**3:38**	**3:49**	**3:59**	**4:15**	**4:32**	**4:41**	**4:51**	**5:05**	**5:13**
4:28	**4:38**	**4:49**	**4:59**	**5:15**	**5:32**	**5:41**	**5:51**	**6:05**	**6:13**
5:25	**5:35**	**5:48**	**5:59**	**6:15**	**6:31**	**6:41**	**6:51**	**7:03**	**7:12**
6:32	**6:41**	**6:51**	**7:00**	**7:15**	**7:33**	**7:40**	**7:48**	**7:59**	**8:06**
7:32	**7:41**	**7:51**	**8:00**	**8:15**	**8:33**	**8:40**	**8:48**	**8:59**	**9:06**
8:40	**8:48**	**8:57**	**9:04**	**9:15**					

129

La Habra to Anaheim

via La Habra Blvd / Brea Blvd / Birch St / Kraemer Blvd



All Days
EASTBOUND To: Anaheim

Beach & La Habra	La Habra & Euclid	Brea Mall	Kraemer & Orangethorpe	La Palma & Kraemer
6:02	6:09	6:25	6:41	6:44
6:54	7:03	7:22	7:40	7:43
7:53	8:02	8:21	8:39	8:42
8:52	9:01	9:20	9:38	9:41
9:38	9:46	10:12	10:28	10:31
10:28	10:38	11:02	11:18	11:21
11:23	11:33	11:57	**12:13**	**12:16**
12:18	**12:28**	**12:52**	**1:08**	**1:11**
1:13	**1:23**	**1:47**	**2:03**	**2:06**
2:09	**2:15**	**2:39**	**2:58**	**3:01**
3:04	**3:10**	**3:34**	**3:53**	**3:56**
3:59	**4:05**	**4:29**	**4:48**	**4:51**
4:54	**5:00**	**5:24**	**5:43**	**5:46**
5:44	**5:50**	**6:14**	**6:33**	**6:36**
6:38	**6:44**	**7:03**	**7:19**	**7:22**
7:33	**7:39**	**7:58**	**8:14**	**8:17**
8:31	**8:37**	**8:56**	**9:12**	**9:15**

All Days
WESTBOUND To: La Habra

Kraemer & Coronado	Kraemer & Orangethorpe	Brea Mall	La Habra & Euclid	Beach & La Habra
7:01	7:04	7:26	7:39	7:43
7:56	7:59	8:17	8:37	8:43
9:01	9:04	9:22	9:42	9:48
10:06	10:09	10:27	10:47	10:53
11:10	11:13	11:31	11:51	11:57
12:10	**12:13**	**12:31**	**12:54**	**1:00**
1:05	**1:08**	**1:26**	**1:49**	**1:55**
2:00	**2:03**	**2:21**	**2:44**	**2:50**
2:54	**2:57**	**3:15**	**3:38**	**3:44**
3:48	**3:52**	**4:10**	**4:34**	**4:40**
4:42	**4:46**	**5:04**	**5:28**	**5:34**
5:36	**5:40**	**5:58**	**6:22**	**6:28**
6:31	**6:35**	**6:53**	**7:17**	**7:23**
7:34	**7:37**	**7:55**	**8:16**	**8:21**
8:11	**8:14**	**8:32**	**8:53**	**8:58**

Operates Monday-Saturday Only.
Lunes a sábado solamente.

TRANSFER NOTE / *LA TRANSFERENCIA DE LA NOTA*

Passengers transferring between OCTA Routes 59 and 129 should transfer at Kraemer & Coronado. To connect from the 59 northbound to the 129 eastbound passengers need to walk from La Palma & Kraemer to Kraemer & Coronado.

Pasajeros transbordando entre las Rutas 59 y 129 de OCTA deben ir a Kraemer y Coronado. Para conectar del 59 hacia el Norte al 129 hacia el Este, pasajeros deben caminar de La Palma y Kraemer a Kraemer y Coronado.

LEGEND / ***LEYENDA***

Scheduled Departure

Regular Routing

N — MAP NOT TO SCALE

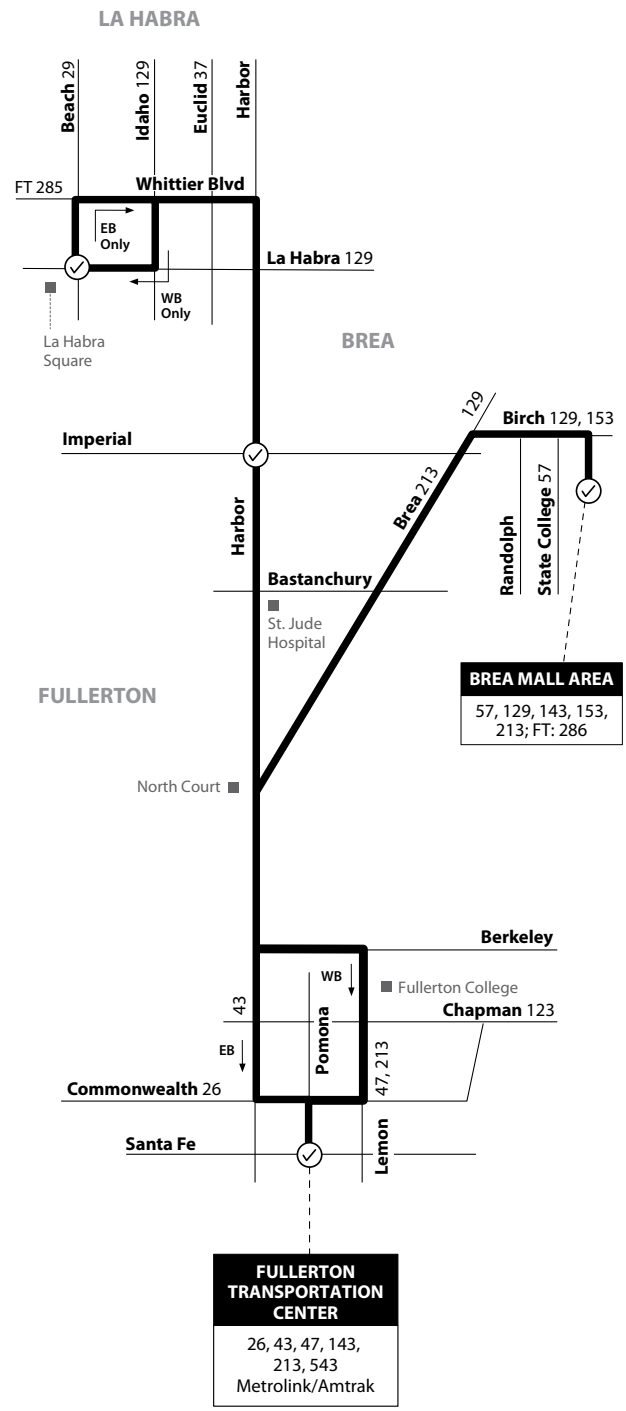
METRO = Los Angeles Metro | NT = Norwalk Transit | FT = Foothill Transit

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Route 129/111519

La Habra to Brea
via Whittier Blvd / Harbor Blvd / Brea Blvd / Birch St

143



LEGEND *LEYENDA*

Route 143/111519

Scheduled Departure

Regular Routing

METRO = Los Angeles Metro | NT = Norwalk Transit | FT = Foothill Transit

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

N

MAP NOT TO SCALE

Monday-Saturday EASTBOUND To: Brea

Beach & La Habra	Harbor & Imperial	Fullerton Transportation Center	Brea Mall Layover Zone
6:14	6:30	6:44	7:08
7:19	7:35	7:49	8:13
8:24	8:40	8:54	9:18
9:29	9:45	9:59	10:23
10:34	10:50	11:04	11:28
11:39	11:55	**12:09**	**12:33**
12:44	**1:00**	**1:14**	**1:38**
1:49	**2:05**	**2:19**	**2:43**
2:54	**3:10**	**3:24**	**3:48**
3:59	**4:15**	**4:29**	**4:53**
5:04	**5:20**	**5:34**	**5:58**
6:09	**6:25**	**6:39**	**7:03**
7:14	**7:29**	**7:42**	**8:05**

Monday-Saturday WESTBOUND To: La Habra

Brea Mall Layover Zone	Fullerton Transportation Center	Harbor & Imperial	Beach & La Habra
6:13	6:36	6:52	7:09
7:23	7:46	8:02	8:19
8:28	8:51	9:07	9:24
9:33	9:56	10:12	10:29
10:38	11:01	11:17	11:34
11:43	**12:06**	**12:22**	**12:39**
12:48	**1:11**	**1:27**	**1:44**
1:53	**2:16**	**2:32**	**2:49**
2:58	**3:21**	**3:37**	**3:54**
4:03	**4:26**	**4:42**	**4:59**
5:08	**5:31**	**5:47**	**6:04**
6:13	**6:36**	**6:52**	**7:09**
7:21	**7:43**	**7:58**	**8:14**
8:26	**8:48**	**9:03**	**9:19**

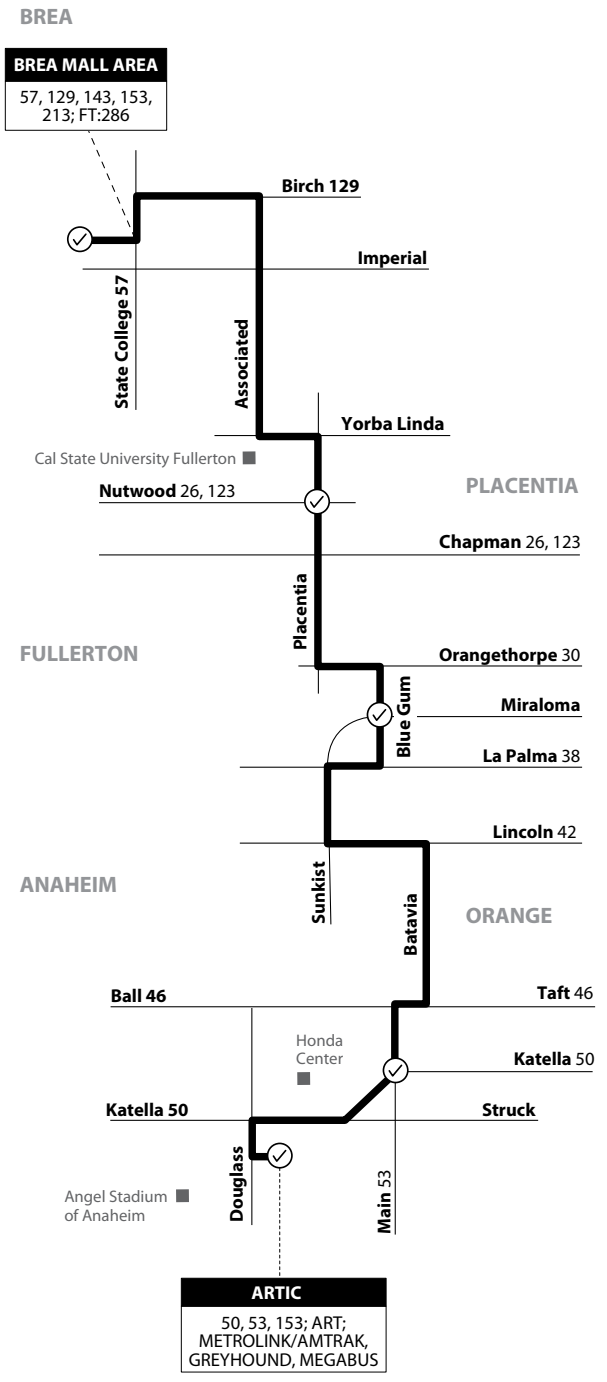
Sunday & Holiday EASTBOUND To: Brea

Beach & La Habra	Harbor & Imperial	Fullerton Transportation Center	Brea Mall Layover Zone
7:19	7:35	7:49	8:13
8:24	8:40	8:54	9:18
9:29	9:45	9:59	10:23
10:34	10:50	11:04	11:28
11:39	11:55	**12:09**	**12:33**
12:44	**1:00**	**1:14**	**1:38**
1:49	**2:05**	**2:19**	**2:43**
2:54	**3:10**	**3:24**	**3:48**
3:59	**4:15**	**4:29**	**4:53**
5:04	**5:20**	**5:34**	**5:58**
6:09	**6:25**	**6:39**	**7:03**

Sunday & Holiday WESTBOUND To: La Habra

Brea Mall Layover Zone	Fullerton Transportation Center	Harbor & Imperial	Beach & La Habra
6:18	6:41	6:57	7:14
7:23	7:46	8:02	8:19
8:28	8:51	9:07	9:24
9:33	9:56	10:12	10:29
10:38	11:01	11:17	11:34
11:43	**12:06**	**12:22**	**12:39**
12:48	**1:11**	**1:27**	**1:44**
1:53	**2:16**	**2:32**	**2:49**
2:58	**3:21**	**3:37**	**3:54**
4:03	**4:26**	**4:42**	**4:59**
5:08	**5:31**	**5:47**	**6:04**
6:13	**6:36**	**6:52**	**7:09**
7:21	**7:43**	**7:58**	**8:14**

153 Brea to Anaheim
via Placentia Ave



All Days
NORTHBOUND To: Brea

Anaheim Regional Transportation Intermodal Center (ARTIC)	Main & Katella	Blue Gum & Miraloma	Placentia & Nutwood	Brea Mall
7:00	7:04	7:18	7:27	7:44
8:00	8:04	8:18	8:27	8:44
9:00	9:04	9:19	9:29	9:50
10:00	10:04	10:19	10:29	10:50
11:00	11:04	11:19	11:29	11:50
12:00	**12:04**	**12:19**	**12:29**	**12:50**
1:00	**1:04**	**1:19**	**1:29**	**1:50**
2:00	**2:04**	**2:19**	**2:29**	**2:50**
3:00	**3:04**	**3:19**	**3:29**	**3:50**
4:00	**4:04**	**4:19**	**4:29**	**4:50**
5:00	**5:04**	**5:19**	**5:29**	**5:50**
6:00	**6:04**	**6:19**	**6:28**	**6:47**
7:00	**7:04**	**7:18**	**7:26**	**7:42**
8:00	**8:04**	**8:18**	**8:26**	**8:42**

All Days
SOUTHBOUND To: Anaheim

Brea Mall	Placentia & Nutwood	Blue Gum & Miraloma	Katella & Main (F)	Anaheim Regional Intermodal Transportation Center (ARTIC)
6:00	6:15	6:23	6:39	6:44
7:00	7:15	7:23	7:39	7:44
8:00	8:15	8:23	8:39	8:44
9:00	9:16	9:25	9:42	9:47
10:00	10:16	10:25	10:42	10:47
11:00	11:16	11:25	11:42	11:47
12:00	**12:16**	**12:25**	**12:42**	**12:47**
1:00	**1:17**	**1:26**	**1:42**	**1:47**
2:00	**2:17**	**2:26**	**2:42**	**2:47**
3:00	**3:17**	**3:26**	**3:42**	**3:47**
4:00	**4:17**	**4:26**	**4:42**	**4:47**
5:00	**5:17**	**5:26**	**5:42**	**5:47**
6:00	**6:17**	**6:25**	**6:40**	**6:45**
7:00	**7:16**	**7:24**	**7:38**	**7:43**

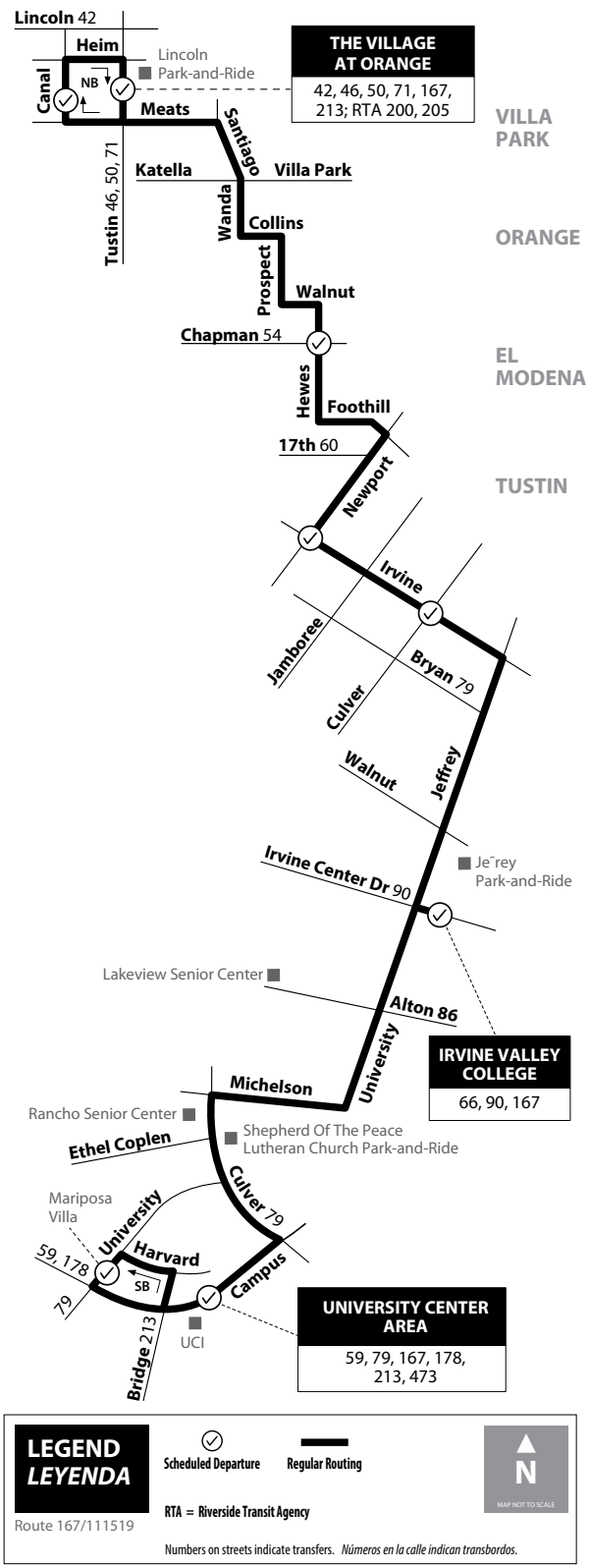
Operates Monday-Saturday Only.
Lunes a sábado solamente.

F = Times are approximate/*Los horas son aproximadas.*

NOTE: No weekend service.
***NOTA:** No hay servicio los fines de semana.*

Orange to Irvine
via Hewes St / Irvine Blvd / Jeffrey Rd

167



Monday - Friday
NORTHBOUND To: Orange

Mariposa Villa	University Center	Irvine Valley College	Irvine & Culver	Newport & Old Irvine	Hewes & Chapman	Canal & Meats
5:17	5:20	5:37	5:50	5:59	6:08	6:28
6:17	6:20	6:37	6:50	6:59	7:08	7:28
7:06	7:11	7:34	7:50	8:00	8:11	8:31
8:06	8:11	8:34	8:50	9:00	9:11	9:31
9:06	9:11	9:34	9:50	10:00	10:11	10:31
10:06	10:11	10:34	10:50	11:00	11:11	11:31
11:06	11:11	11:34	11:50	**12:00**	**12:11**	**12:31**
12:03	**12:08**	**12:32**	**12:50**	**1:02**	**1:13**	**1:35**
1:03	**1:08**	**1:32**	**1:50**	**2:02**	**2:13**	**2:35**
2:03	**2:08**	**2:32**	**2:50**	**3:02**	**3:13**	**3:35**
3:00	**3:05**	**3:31**	**3:50**	**4:04**	**4:16**	**4:37**
4:00	**4:05**	**4:31**	**4:50**	**5:04**	**5:16**	**5:37**
4:56	**5:00**	**5:30**	**5:50**	**6:03**	**6:14**	**6:35**
6:02	**6:06**	**6:33**	**6:50**	**7:01**	**7:11**	**7:28**
7:02	**7:06**	**7:33**	**7:50**	**8:01**	**8:11**	**8:28**

Monday - Friday
SOUTHBOUND To: Irvine

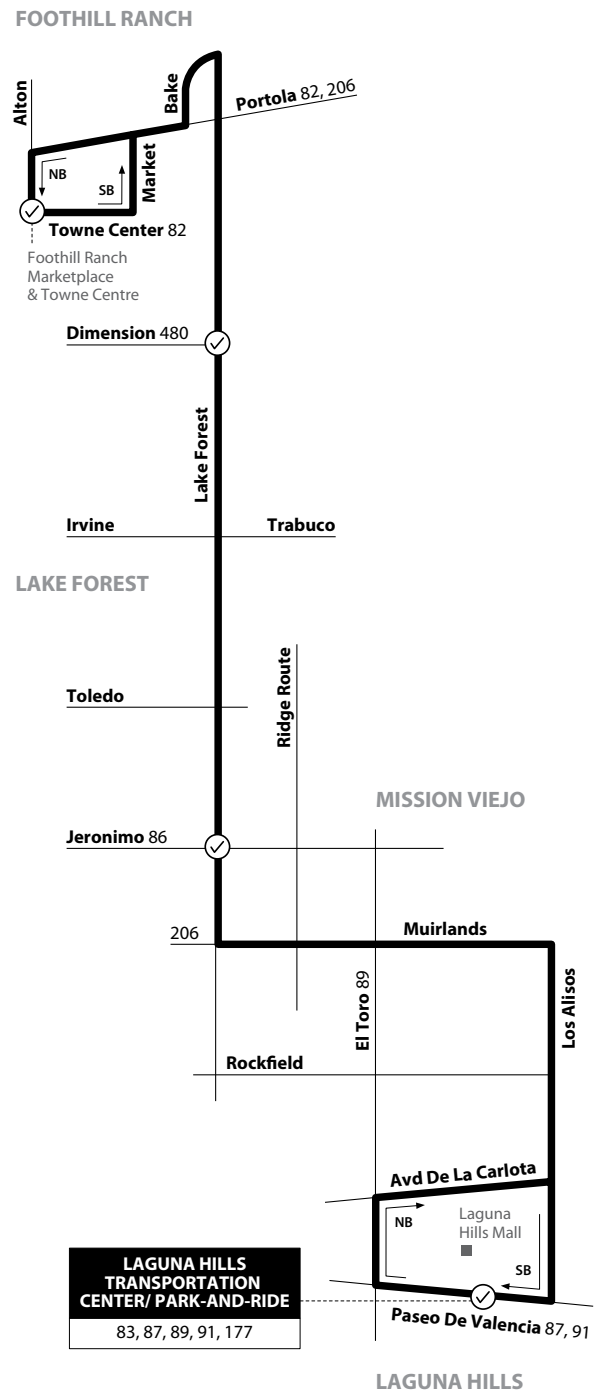
Canal & Meats	Village At Orange	Hewes & Chapman	Irvine & Newport	Irvine & Culver	Irvine Valley College	University Center	Mariposa Villa
6:06	6:10	6:25	6:36	6:45	7:00	7:21	7:26
6:55	6:59	7:17	7:33	7:45	8:05	8:35	8:45
7:54	7:58	8:19	8:32	8:45	9:01	9:24	9:31
9:01	9:05	9:21	9:34	9:45	10:00	10:26	10:32
10:01	10:05	10:21	10:34	10:45	11:00	11:26	11:32
10:59	11:03	11:19	11:33	11:45	**12:02**	**12:32**	**12:37**
12:00	**12:04**	**12:21**	**12:34**	**12:45**	**1:00**	**1:24**	**1:29**
12:55	**12:59**	**1:18**	**1:33**	**1:45**	**2:03**	**2:30**	**2:40**
1:55	**1:59**	**2:18**	**2:33**	**2:45**	**3:03**	**3:30**	**3:40**
2:55	**2:59**	**3:18**	**3:33**	**3:45**	**4:03**	**4:30**	**4:40**
3:55	**4:00**	**4:19**	**4:33**	**4:45**	**5:03**	**5:31**	**5:38**
4:55	**5:00**	**5:19**	**5:33**	**5:45**	**6:03**	**6:31**	**6:38**
5:59	**6:04**	**6:20**	**6:34**	**6:45**	**7:01**	**7:25**	**7:30**
6:59	**7:04**	**7:20**	**7:34**	**7:45**	**8:01**	**8:25**	**8:30**
8:02	**8:07**	**8:21**	**8:35**	**8:45**	**8:59**	**9:20**	**9:25**

177

Foothill Ranch to Laguna Hills

via Lake Forest Dr / Muirlands Blvd / Los Alisos Blvd

NOTE: No service on Sundays.
NOTA: *No hay servicio los domingos.*



LEGEND *LEYENDA*

Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 177/083018

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday NORTHBOUND To: Foothill Ranch

Laguna Hills Transportation Center	Lake Forest & Jeronimo	Lake Forest & Dimension	Towne Centre & Alton
5:44	6:02	6:11	6:23
6:28	6:46	6:55	7:07
7:13	7:31	7:40	7:52
7:59	8:17	8:26	8:38
8:45	9:03	9:11	9:22
9:30	9:48	9:56	10:07
10:15	10:33	10:41	10:52
11:00	11:18	11:26	11:37
11:43	**12:02**	**12:11**	**12:22**
12:28	**12:47**	**12:56**	**1:07**
1:16	**1:33**	**1:41**	**1:51**
1:54	**2:16**	**2:26**	**2:37**
2:41	**3:01**	**3:11**	**3:23**
3:26	**3:46**	**3:56**	**4:08**
4:11	**4:31**	**4:41**	**4:53**
5:00	**5:20**	**5:30**	**5:42**
6:00	**6:20**	**6:30**	**6:42**

Monday - Friday SOUTHBOUND To: Laguna Hills

Towne Centre & Alton	Lake Forest & Dimension	Lake Forest & Jeronimo	Laguna Hills Transportation Center
5:47	5:54	6:01	6:13
6:32	6:39	6:46	6:58
7:09	7:20	7:32	7:49
7:54	8:05	8:17	8:34
8:42	8:51	9:01	9:14
9:27	9:36	9:46	9:59
10:12	10:21	10:31	10:44
10:57	11:06	11:16	11:29
11:42	11:51	**12:01**	**12:14**
12:27	**12:36**	**12:46**	**12:59**
1:11	**1:23**	**1:31**	**1:45**
1:56	**2:08**	**2:16**	**2:30**
2:41	**2:53**	**3:01**	**3:15**
3:26	**3:38**	**3:46**	**4:00**
4:11	**4:23**	**4:31**	**4:45**
4:56	**5:08**	**5:16**	**5:30**
5:47	**5:58**	**6:06**	**6:19**
6:45	**6:56**	**7:04**	**7:17**

Saturday NORTHBOUND To: Foothill Ranch

Laguna Hills Transportation Center	Lake Forest & Jeronimo	Lake Forest & Dimension	Towne Centre & Alton
8:02	8:20	8:27	8:35
9:38	9:56	10:03	10:15
10:58	11:18	11:25	11:35
12:18	**12:38**	**12:45**	**12:55**
1:38	**1:58**	**2:05**	**2:15**
2:58	**3:18**	**3:25**	**3:35**
4:18	**4:38**	**4:45**	**4:55**
5:58	**6:18**	**6:25**	**6:35**

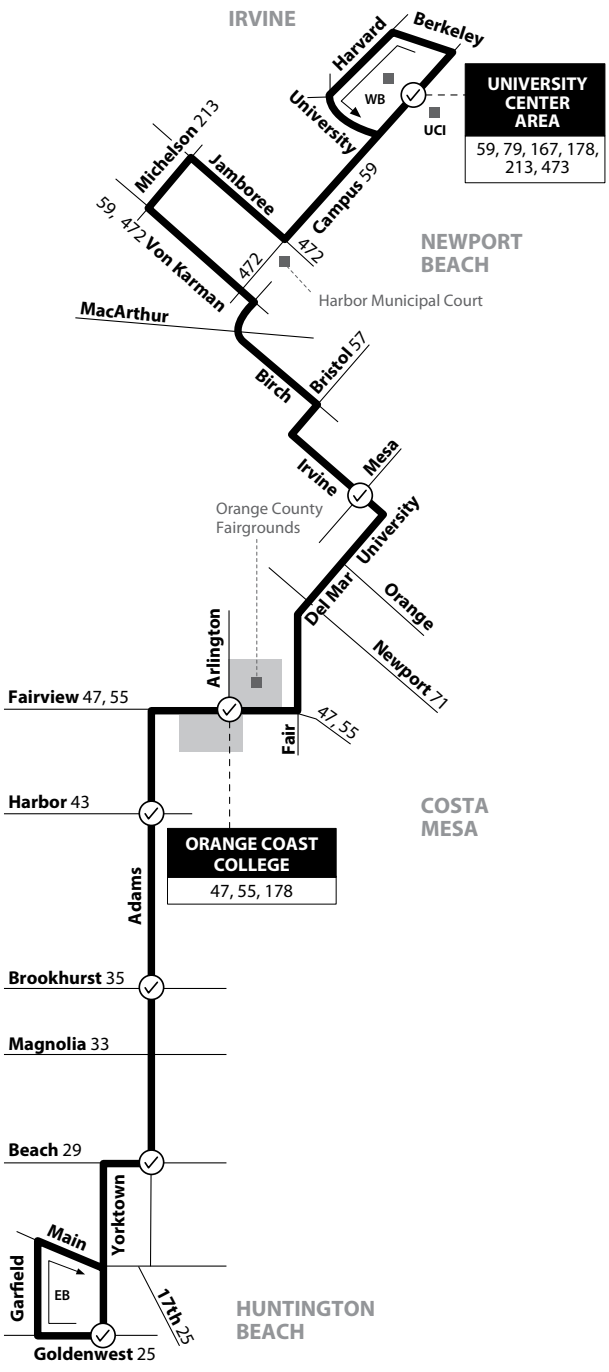
Saturday SOUTHBOUND To: Laguna Hills

Towne Centre & Alton	Lake Forest & Dimension	Lake Forest & Jeronimo	Laguna Hills Transportation Center
7:25	7:34	7:40	7:52
9:05	9:14	9:20	9:32
10:25	10:34	10:40	10:52
11:45	11:54	**12:00**	**12:12**
1:05	**1:15**	**1:22**	**1:35**
2:25	**2:35**	**2:42**	**2:55**
3:45	**3:55**	**4:02**	**4:15**
5:05	**5:15**	**5:22**	**5:35**
6:45	**6:55**	**7:02**	**7:15**

NOTE: No weekend service.
NOTA: *No hay servicio los fines de semana.*

Huntington Beach to Irvine
via Adams Ave / Birch St / Campus Dr

178



LEGEND *LEYENDA*

Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 178/081819

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
EASTBOUND To: Irvine

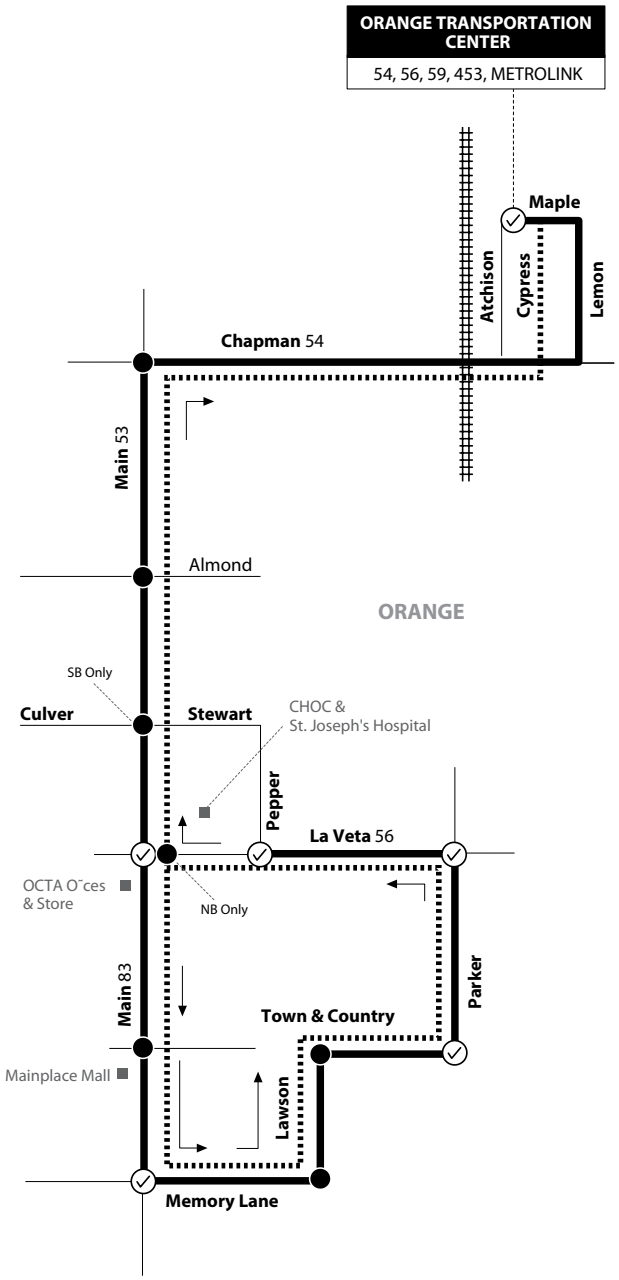
Yorktown & Goldenwest	Adams & Beach	Adams & Brookhurst	Adams & Harbor	Fairview & Arlington	Irvine & Mesa	University Center
5:10	5:22	5:27	5:34	5:38	5:46	6:06
6:15	6:27	6:32	6:39	6:43	6:51	7:11
7:21	7:34	7:41	7:49	7:54	8:03	8:25
8:41	8:54	9:01	9:09	9:14	9:23	9:45
9:51	10:04	10:11	10:19	10:24	10:33	10:55
11:12	11:25	11:32	11:39	11:43	11:51	**12:11**
12:22	**12:35**	**12:42**	**12:49**	**12:53**	**1:01**	**1:21**
1:32	**1:45**	**1:52**	**1:59**	**2:03**	**2:11**	**2:31**
2:42	**2:55**	**3:02**	**3:09**	**3:13**	**3:21**	**3:41**
3:52	**4:05**	**4:12**	**4:19**	**4:23**	**4:31**	**4:51**
5:12	**5:25**	**5:32**	**5:39**	**5:43**	**5:51**	**6:11**
6:24	**6:37**	**6:42**	**6:49**	**6:52**	**7:00**	**7:17**
7:47	**7:59**	**8:03**	**8:09**	**8:12**	**8:19**	**8:34**
9:07	**9:19**	**9:23**	**9:29**	**9:32**	**9:39**	**9:54**

Monday - Friday
WESTBOUND To: Huntington Beach

University Center	Irvine & Mesa	Fairview & Arlington	Adams & Harbor	Adams & Brookhurst	Adams & Beach	Yorktown & Goldenwest
5:07	5:24	5:31	5:35	5:41	5:48	5:53
6:17	6:34	6:41	6:45	6:51	6:58	7:03
7:27	7:52	8:00	8:05	8:12	8:18	8:25
8:37	9:02	9:10	9:15	9:22	9:28	9:35
9:56	10:21	10:30	10:35	10:42	10:50	10:57
11:06	11:31	11:40	11:45	11:52	**12:00**	**12:07**
12:21	**12:46**	**12:55**	**1:00**	**1:07**	**1:15**	**1:22**
1:31	**1:56**	**2:05**	**2:10**	**2:17**	**2:25**	**2:32**
2:41	**3:06**	**3:15**	**3:20**	**3:27**	**3:35**	**3:42**
3:51	**4:23**	**4:32**	**4:38**	**4:47**	**4:55**	**5:03**
5:01	**5:33**	**5:42**	**5:48**	**5:57**	**6:05**	**6:13**
6:22	**6:46**	**6:55**	**7:00**	**7:06**	**7:12**	**7:19**
7:32	**7:56**	**8:05**	**8:10**	**8:16**	**8:22**	**8:29**
8:57	**9:19**	**9:26**	**9:30**	**9:36**	**9:41**	**9:47**

453 Orange Transportation Center to St. Joseph's Hospital

via Chapman Ave / Main St / La Veta Ave



Route 453 is a limited-stop route, making stops only at time check points ✓ and other designated stops ●.

LEGEND / LEYENDA

✓ Scheduled Departure — Southbound Routing ····· Northbound Only

N MAP NOT TO SCALE

Route 453/040619

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
SOUTHBOUND To: St. Joseph's Hospital

Connecting Metrolink Trains	Orange Transportation Center	Orange Transportation Center	Main & La Veta (F)	Memory Lane & Main (F)	Parker & Town & Country (F)	La Veta & Pepper (F)	
ML 601, 803	5:44	5:50	5:58	6:01	6:04	6:07	
ML 603, 805	6:33	6:39	6:47	6:50	6:53	6:56	AM
ML 605, 807	7:07	7:13	7:21	7:24	7:27	7:30	
ML 682, 807	7:14	7:20	7:28	7:31	7:34	7:37	
ML 607, 809	7:53	7:59	8:07	8:10	8:13	8:16	
ML 685, 811	8:30	8:36	8:47	8:50	8:53	8:56	
ML 600, 800	8:45	8:51	9:02	9:05	9:08	9:11	

F = Times are approximate/*Los horarios son aproximados.*

Monday - Friday
NORTHBOUND To: Orange Transportation Center

Main & La Veta	Memory & Main	Parker & Town & Country	La Veta & Pepper	Orange Transportation Center	
3:29	**3:32**	**3:35**	**3:37**	**3:49**	PM
3:56	**3:59**	**4:02**	**4:04**	**4:16**	
4:08	**4:11**	**4:14**	**4:16**	**4:28**	
4:44	**4:47**	**4:50**	**4:52**	**5:04**	
5:06	**5:09**	**5:12**	**5:14**	**5:26**	
5:18	**5:21**	**5:24**	**5:26**	**5:38**	

SERVICE TO / SERVICIO A

Orange
- Portola Middle School
- Orange Transportation Center (Metrolink)
- Children's Hospital (CHOC)
- St. Joseph Hospital
- OCTA Offices & Store

Santa Ana
- MainPlace Mall

NOTE: Limited Stop Service. No service on weekends, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day or New Years Day.Routing and times subject to change.

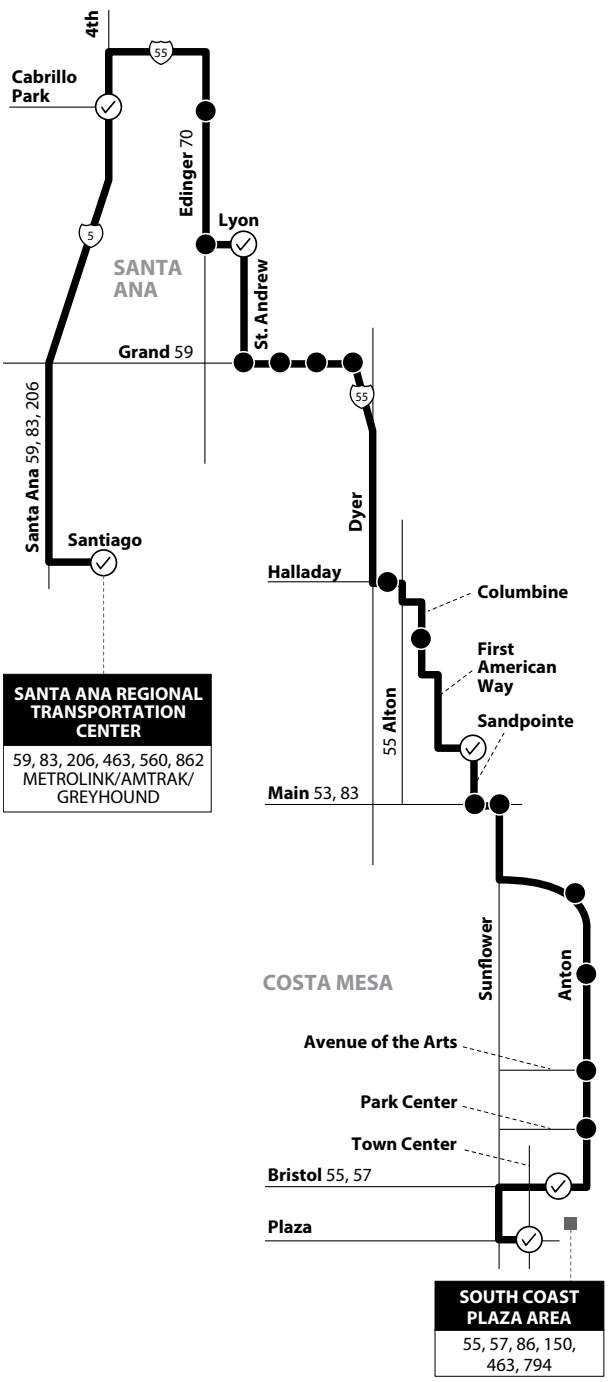
Morning buses will depart the station once the train arrives and all passengers have boarded. This may be up to six minutes earlier than the time shown above. Afternoon buses are scheduled to arrive a few minutes before the departing train. Stationlink passengers must present fare media to the coach operator each time they board the bus.

NOTA: *Servicio de paradas limitadas. No hay servicio los fines de semana, Día de los Caídos, Día de la Independencia, Día del Trabajador, Día de Acción de Gracias, Navidad o Año Nuevo. Rutas y horarios sujetos a cambios.*

Los autobuses de la mañana saldrán de la estación cuando el tren llegue y todos los pasajeros han embarcado. Esto puede ser hasta seis minutos antes que el tiempo mostrado arriba. Por la tarde, los autobuses están programados para llegar unos minutos antes del tren que sale. Los pasajeros de Stationlink deben presentar su medio de tarifa al operador cada vez que suben al autobús.

Santa Ana Regional Transportation Center to Hutton Centre
via Grand Ave

463



Route 463 is a limited-stop route, making stops only at time check points ✓ and other designated stops ●.

LEGEND *LEYENDA*

✓ Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 463/082319

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
SOUTHBOUND To: Hutton Centre

Connecting Metrolink Trains	Santa Ana Regional Transportation Center	4th & Cabrillo (F)	St. Andrew & Lyon (F)	Sandpointe & Hutton Centre (F)	Bristol & Anton	
ML 601, 803	5:53	5:59	6:06	6:18	6:26	AM
ML 603	6:16	6:22	6:29	6:44	6:52	
ML 805	6:38	6:45	6:58	7:12	7:22	
ML 605, 807	7:12	7:19	7:32	7:46	7:56	
ML 682	7:20	7:27	7:40	7:54	8:04	
ML 607, 809	7:58	8:05	8:18	8:32	8:41	
ML 685, 811	8:28	8:35	8:48	9:02	9:11	

F = Times are approximate/*Los horarios son aproximados.*

Monday - Friday
NORTHBOUND To: Santa Ana Regional Transportation Center

South Coast Plaza	Bristol & Town Center	Hutton Centre & Sandpointe	Lyon & Saint andrew	4th & Cabrillo	Santa Ana Regional Transp Center	
2:45	**2:47**	**2:57**	**3:11**	**3:30**	**3:40**	PM
3:08	**3:10**	**3:20**	**3:34**	**3:53**	**4:03**	
3:19	**3:21**	**3:31**	**3:45**	**4:04**	**4:14**	
4:02	**4:04**	**4:14**	**4:28**	**4:47**	**4:57**	
4:19	**4:21**	**4:32**	**4:48**	**5:07**	**5:17**	
4:33	**4:35**	**4:46**	**5:02**	**5:21**	**5:31**	

NOTE: Limited Stop Service. No service on weekends, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day or New Years Day.Routing and times subject to change.

Morning buses will depart the station once the train arrives and all passengers have boarded. This may be up to six minutes earlier than the time shown above. Afternoon buses are scheduled to arrive a few minute before the departing train. Stationlink passengers must present fare media to the coach operator each time they board the bus.

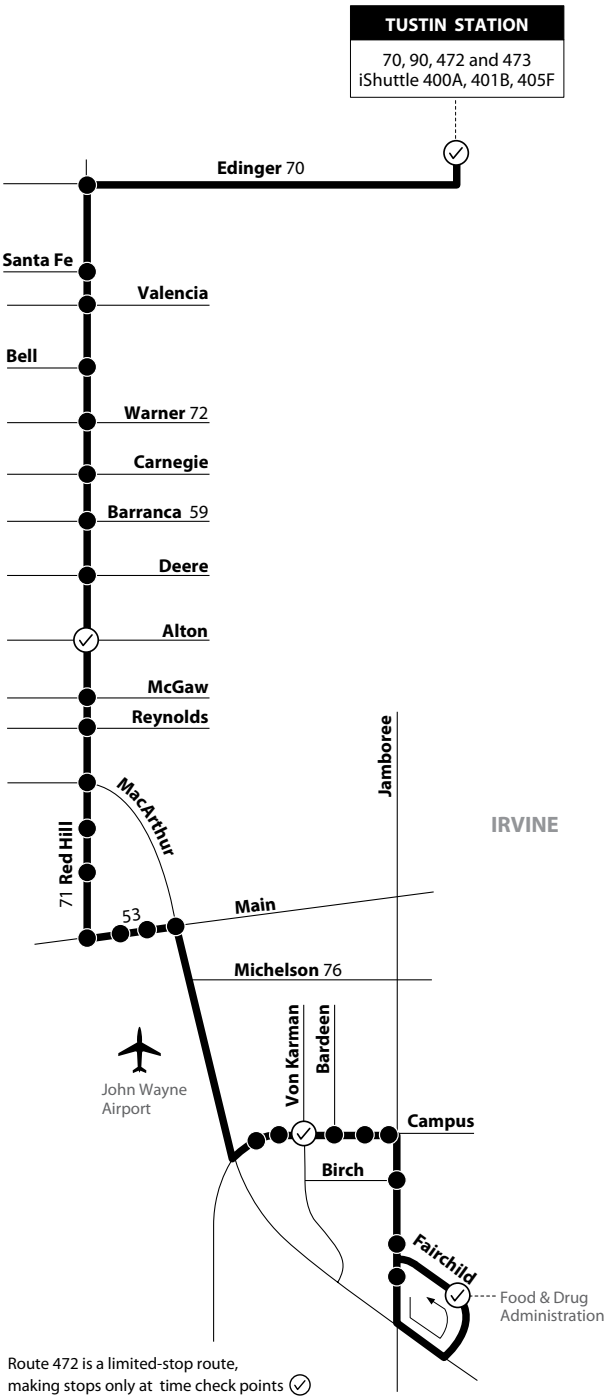
NOTA: *Servicio de paradas limitadas. No hay servicio los fines de semana, Día de los Caídos, Día de la Independencia, Día del Trabajador, Día de Acción de Gracias, Navidad o Año Nuevo. Rutas y horarios sujetos a cambios.*

Los autobuses de la mañana saldrán de la estación cuando el tren llegue y todos los pasajeros han embarcado. Esto puede ser hasta seis minutos antes que el tiempo mostrado arriba. Por la tarde, los autobuses están programados para llegar unos minutos antes del tren que sale. Los pasajeros de Stationlink deben presentar su medio de tarifa al operador cada vez que suben al autobús.

472

Tustin Metrolink Station to Irvine Business Complex

via Edinger Ave / Red Hill Ave / Campus Dr / Jamboree Rd



Route 472 is a limited-stop route, making stops only at time check points ✓ and other designated stops ●.

LEGEND *LEYENDA*

✓ Scheduled Departure

Regular Routing

N MAP NOT TO SCALE

Route 472/081819

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
SOUTHBOUND To: Newport Beach

Connecting Metrolink Trains	Tustin Metrolink Station	Red Hill & Alton (F)	Campus & Von Karman (F)	Food and Drug Adminstration (F)	
ML 603, 803	6:09	6:20	6:32	6:38	AM
ML 605, 805	6:44	6:55	7:07	7:13	
ML 683, 807	7:18	7:30	7:44	7:50	
ML 607, 682, 807	7:28	7:40	7:54	8:00	
ML 685, 811	8:34	8:46	8:59	9:06	

F = Times are approximate/*Los horarios son aproximados.*

Monday - Friday
NORTHBOUND To: Tustin Metrolink Station

Food and Drug Adminstration	Campus & Von Karman	Red Hill & Alton	Tustin Metrolink Station	
3:29	**3:35**	**3:48**	**4:00**	PM
3:39	**3:45**	**3:58**	**4:10**	
4:03	**4:09**	**4:24**	**4:34**	
4:38	**4:45**	**5:00**	**5:11**	
4:48	**4:55**	**5:10**	**5:21**	

SERVICE TO / SERVICIO A

Tustin	Irvine
- A.G. Currie Middle School	- John Wayne Airport
- Tustin Station (Metrolink)	- Food and Drug Administration

NOTE: Limited Stop Service. No service on weekends, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day or New Years Day.Routing and times subject to change.

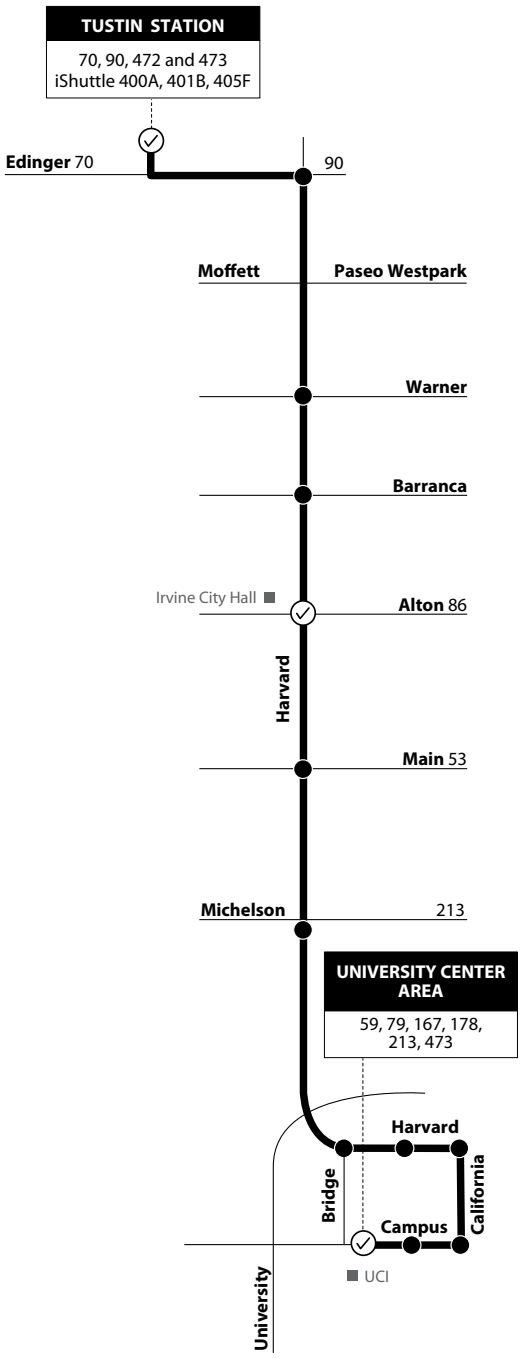
Morning buses will depart the station once the train arrives and all passengers have boarded. This may be up to six minutes earlier than the time shown above. Afternoon buses are scheduled to arrive a few minutes before the departing train. Stationlink passengers must present fare media to the coach operator each time they board the bus.

NOTA: *Servicio de paradas limitadas. No hay servicio los fines de semana, Día de los Caídos, Día de la Independencia, Día del Trabajador, Día de Acción de Gracias, Navidad o Año Nuevo. Rutas y horarios sujetos a cambios.*

Los autobuses de la mañana saldrán de la estación cuando el tren llegue y todos los pasajeros han embarcado. Esto puede ser hasta seis minutos antes que el tiempo mostrado arriba. Por la tarde, los autobuses están programados para llegar unos minutos antes del tren que sale. Los pasajeros de Stationlink deben presentar su medio de tarifa al operador cada vez que suben al autobús.

Tustin Metrolink Station to U.C.I.
via Edinger Ave / Harvard Ave

473



Route 473 is a limited-stop route, making stops only at time check points ✓ and other designated stops ●.

LEGEND *LEYENDA*

✓ Scheduled Departure

— Regular Routing

N MAP NOT TO SCALE

Route 473/081819

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
SOUTHBOUND To: U.C.I.

Connecting Metrolink Trains	Tustin Metrolink Station	Havard & Alton **(F)**	University Center **(F)**	
ML 603, 803	6:09	6:15	6:24	**AM**
ML 605, 805	6:44	6:53	7:04	
ML 683, 807	7:18	7:27	7:38	
ML 607, 682, 807	7:28	7:36	7:49	
ML 607, 809	8:05	8:14	8:24	
ML 685, 811	8:34	8:43	8:53	
ML 687, 811	9:00	9:08	9:21	

F = Times are approximate/*Los horarios son aproximados.*

Monday - Friday
NORTHBOUND To: Tustin Metrolink Station

University Center	Harvard & Alton	Tustin Metrolink Station	
3:07	**3:23**	**3:32**	**PM**
3:36	**3:49**	**4:00**	
4:13	**4:28**	**4:37**	
4:46	**5:02**	**5:11**	
4:56	**5:12**	**5:21**	
6:08	**6:23**	**6:32**	

NOTE: Limited Stop Service. No service on weekends, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day or New Years Day.Routing and times subject to change.

Morning buses will depart the station once the train arrives and all passengers have boarded. This may be up to six minutes earlier than the time shown above. Afternoon buses are scheduled to arrive a few minut before the departing train. Stationlink passengers must present fare media to the coach operator each tin they board the bus.

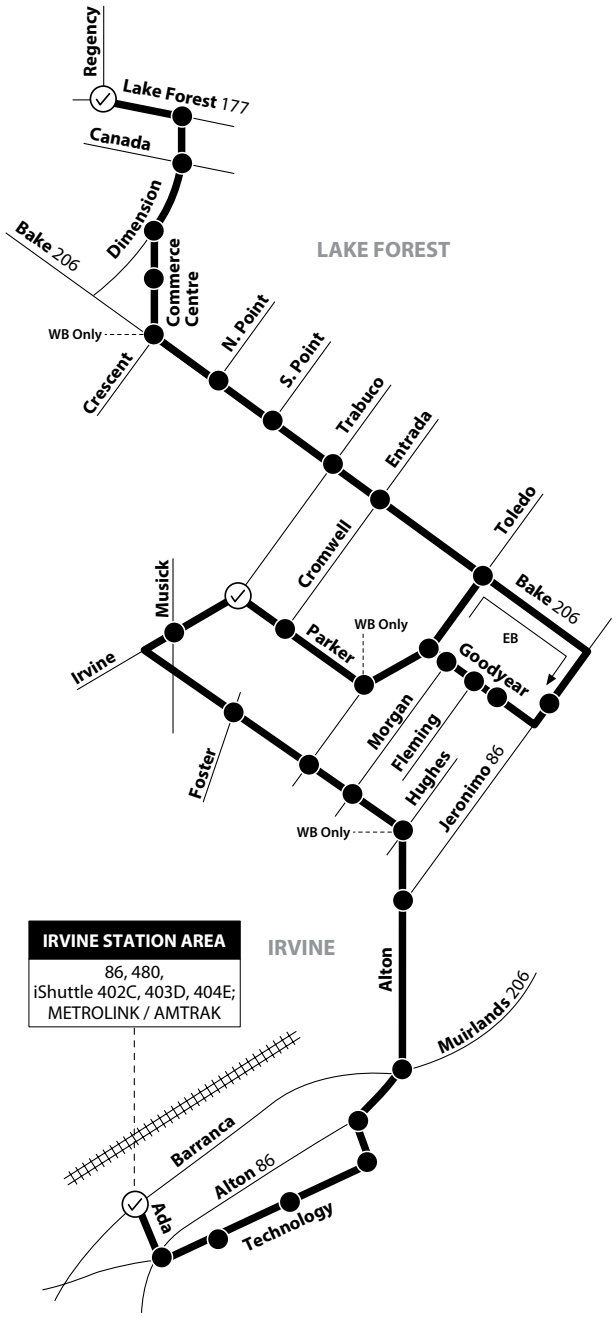
NOTA: *Servicio de paradas limitadas. No hay servicio los fines de semana, Día de los Caídos, Día de la Independencia, Día del Trabajador, Día de Acción de Gracias, Navidad o Año Nuevo. Rutas y horarios sujetos a cambios.*

Los autobuses de la mañana saldrán de la estación cuando el tren llegue y todos los pasajeros han embarcad Esto puede ser hasta seis minutos antes que el tiempo mostrado arriba. Por la tarde, los autobuses están programados para llegar unos minutos antes del tren que sale. Los pasajeros de Stationlink deben presentar medio de tarifa al operador cada vez que suben al autobús.

480

Irvine Metrolink Station to Lake Forest

via Alton Pkwy / Bake Pkwy / Lake Forest Dr



Route 480 is a limited-stop route, making stops only at time check points ✓ and other designated stops ●.

LEGEND *LEYENDA*

✓ Scheduled Departure

Regular Routing

N

MAP NOT TO SCALE

Route 480/081819

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

Monday - Friday
EASTBOUND To: Lake Forest

Connecting Metrolink Trains	Irvine Station	Parker & Irvine (F)	Lake Forest & Regency (F)	
ML 603, 803	6:07	6:21	6:36	**AM**
ML 605	6:29	6:43	6:58	
ML 805	6:55	7:11	7:27	
ML 607, 807	7:26	7:42	7:58	
ML 682	7:35	7:51	8:07	
ML 800, 811	8:42	8:57	9:12	

F = Times are approximate/*Los horarios son aproximados.*

Monday - Friday
WESTBOUND To: Irvine Metrolink Station

Lake Forest & Regency	Irvine & Parker	Irvine Station	
3:25	**3:39**	**3:56**	**PM**
4:11	**4:27**	**4:45**	
4:47	**5:02**	**5:18**	

SERVICE TO / SERVICIO A

Irvine
- Irvine Spectrum
- Irvine Station Area (Metrolink/Amtrak)

Lake Forest
- Commercentre

NOTE: Limited Stop Service. No service on weekends, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day or New Years Day.Routing and times subject to change.

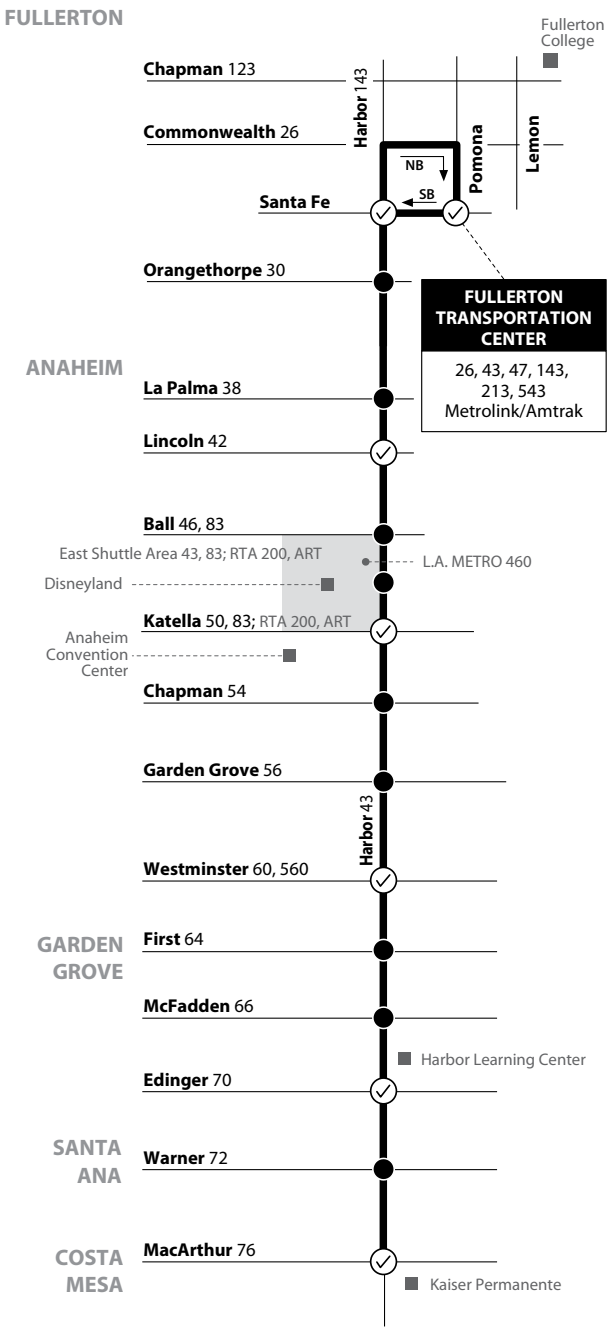
Morning buses will depart the station once the train arrives and all passengers have boarded. This may be up to six minutes earlier than the time shown above. Afternoon buses are scheduled to arrive a few minutes before the departing train. Stationlink passengers must present fare media to the coach operator each time they board the bus.

NOTA: *Servicio de paradas limitadas. No hay servicio los fines de semana, Día de los Caídos, Día de la Independencia, Día del Trabajador, Día de Acción de Gracias, Navidad o Año Nuevo. Rutas y horarios sujetos a cambios.*

Los autobuses de la mañana saldrán de la estación cuando el tren llegue y todos los pasajeros han embarcado. Esto puede ser hasta seis minutos antes que el tiempo mostrado arriba. Por la tarde, los autobuses están programados para llegar unos minutos antes del tren que sale. Los pasajeros de Stationlink deben presentar su medio de tarifa al operador cada vez que suben al autobús.

Fullerton Transportation Center to Santa Ana
via Harbor Blvd

543



Route 543 is a limited-stop route, making stops only at time check points ✓ and other designated stops ●.

LEGEND *LEYENDA*

Route 543/111519

✓ Scheduled Departure

Regular Routing

N MAP NOT TO SCALE

METRO = Los Angeles Metro

Numbers on streets indicate transfers. *Números en la calle indican transbordos.*

All Days
NORTHBOUND To:
Fullerton Transportation Center

Harbor & MacArthur	Harbor & Edinger	Harbor & Westminster	Harbor & Katella	Harbor & Lincoln	Fullerton Transportation Center
6:52	6:56	7:04	7:17	7:27	7:38
7:18	7:22	7:30	7:43	7:53	8:05
7:44	7:48	7:56	8:09	8:19	8:31
8:09	8:14	8:22	8:36	8:46	9:00
8:35	8:40	8:48	9:02	9:12	9:26
9:01	9:06	9:14	9:28	9:38	9:52
9:26	9:31	9:39	9:53	10:03	10:17
9:52	9:57	10:05	10:19	10:29	10:43
10:18	10:23	10:31	10:45	10:55	11:09
10:44	10:49	10:57	11:11	11:21	11:35
11:10	11:15	11:23	11:37	11:47	**12:01**
11:34	11:39	11:48	**12:03**	**12:13**	**12:27**
12:02	**12:07**	**12:16**	**12:31**	**12:41**	**12:55**
12:28	**12:33**	**12:42**	**12:57**	**1:07**	**1:21**
12:54	**12:59**	**1:08**	**1:23**	**1:33**	**1:47**
1:20	**1:25**	**1:34**	**1:49**	**1:59**	**2:13**
1:46	**1:51**	**2:00**	**2:15**	**2:25**	**2:39**
2:12	**2:17**	**2:26**	**2:41**	**2:51**	**3:05**
2:38	**2:43**	**2:52**	**3:07**	**3:17**	**3:31**
3:04	**3:09**	**3:18**	**3:33**	**3:43**	**3:57**
3:30	**3:35**	**3:44**	**3:59**	**4:09**	**4:23**
3:56	**4:01**	**4:10**	**4:25**	**4:35**	**4:49**
4:22	**4:27**	**4:36**	**4:51**	**5:01**	**5:15**
4:48	**4:53**	**5:02**	**5:18**	**5:28**	**5:41**
5:14	**5:19**	**5:28**	**5:44**	**5:54**	**6:07**
5:40	**5:45**	**5:54**	**6:10**	**6:20**	**6:33**
6:06	**6:11**	**6:20**	**6:36**	**6:46**	**6:59**

543

Fullerton Transportation Center to Santa Ana

via Harbor Blvd

All Days
SOUTHBOUND To:
Santa Ana

Fullerton Transportation Center	Harbor & Lincoln	Harbor & Katella	Harbor & Westminster	Harbor & Edinger	MacArthur & Harbor
7:00	7:11	7:25	7:38	7:46	7:51
7:26	7:37	7:51	8:04	8:12	8:17
7:52	8:03	8:17	8:30	8:38	8:43
8:18	8:29	8:43	8:56	9:04	9:09
8:44	8:55	9:09	9:22	9:30	9:35
9:10	9:21	9:35	9:48	9:56	10:01
9:36	9:47	10:01	10:14	10:22	10:27
10:02	10:13	10:27	10:40	10:48	10:53
10:27	10:38	10:52	11:05	11:13	11:18
10:53	11:08	11:19	11:32	11:40	11:45
11:19	11:34	11:45	11:58	**12:06**	**12:11**
11:45	**12:00**	**12:11**	**12:24**	**12:32**	**12:37**
12:11	**12:26**	**12:37**	**12:50**	**12:58**	**1:03**
12:37	**12:52**	**1:03**	**1:16**	**1:24**	**1:29**
1:02	**1:15**	**1:27**	**1:42**	**1:50**	**1:55**
1:28	**1:41**	**1:53**	**2:08**	**2:16**	**2:21**
1:54	**2:07**	**2:19**	**2:34**	**2:42**	**2:47**
2:20	**2:33**	**2:45**	**3:00**	**3:08**	**3:13**
2:46	**2:59**	**3:11**	**3:26**	**3:34**	**3:39**
3:12	**3:24**	**3:38**	**3:52**	**4:00**	**4:05**
3:38	**3:50**	**4:04**	**4:18**	**4:26**	**4:31**
4:04	**4:16**	**4:30**	**4:44**	**4:52**	**4:57**
4:33	**4:44**	**4:57**	**5:10**	**5:18**	**5:24**
4:59	**5:10**	**5:23**	**5:36**	**5:44**	**5:50**
5:25	**5:36**	**5:49**	**6:02**	**6:10**	**6:16**
5:51	**6:02**	**6:15**	**6:28**	**6:36**	**6:42**
6:17	**6:28**	**6:41**	**6:54**	**7:02**	**7:08**

EASY. FAST. SECURE.

Everything you've asked for. And more.

Version 2.0 of the OC Bus Mobile App offers everything you'd want from an upgrade. Here's a peek at our improvements.

- Redesigned interface
- Purchase using Google Pay or Apple Pay
- Easy repeat purchases
- Simplified multi-rider tickets
- Touch ID or Face ID security
- Easy ticket transfer when upgrading phones
- Larger buttons
- New full-screen ticket and larger QR code

Download today and enjoy all the cool new features

Sencilla. Rápida. Segura.

La versión 2.0 de la aplicación OC Bus Mobile ofrece todo lo que se puede desear de una actualización... y mucho más. Aquí tiene un adelanto de algunas de las mejoras.

- Rediseño de la interfaz
- Pago con Google Pay o Apple Pay
- Facilidad de compras repetidas
- Simplificación de los boletos para varios pasajeros
- Seguridad a través de identificación táctil o facial
- Fácil transferencia de boletos si cambia de teléfono
- Botones más prominentes
- Nuevo boleto a pantalla completa y código de barras más grande

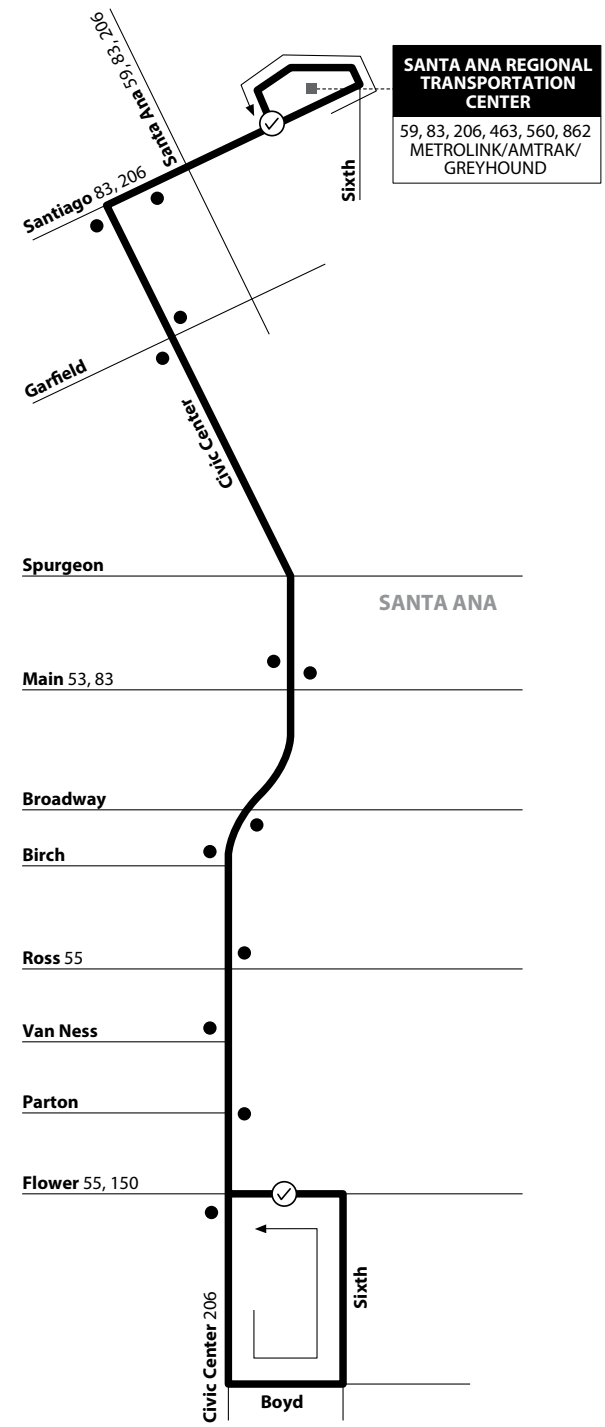
Actualice la aplicación el 10 de febrero para disfrutar de todas estas nuevas y fantásticas funciones.

OCBUS

OCbus.com

Downtown Santa Ana Shuttle
via Civic Center Dr

862



All Days
COUNTER-CLOCKWISE

Santa Ana Regional Transp Center	Flower & 6th	Santa Ana Regional Transp Center
6:00	6:09	6:17
6:20	6:29	6:37
6:45	6:54	7:02
7:05	7:14	7:22
7:25	7:34	7:42
7:50	7:59	8:07
8:10	8:19	8:27
8:30	8:39	8:47
8:50	8:59	9:07
9:20	9:29	9:37
9:40	9:49	9:57
10:00	10:09	10:17
10:20	10:29	10:37
10:40	10:49	10:57
11:00	11:09	11:17
11:30	11:39	11:47
11:50	11:59	**12:07**
12:10	**12:19**	**12:27**
12:30	**12:39**	**12:47**
12:50	**12:59**	**1:07**
1:10	**1:19**	**1:27**
1:40	**1:49**	**1:57**
2:00	**2:09**	**2:17**
2:20	**2:29**	**2:37**
2:40	**2:49**	**2:57**
3:00	**3:09**	**3:17**
3:20	**3:29**	**3:37**
3:50	**3:59**	**4:07**
4:10	**4:19**	**4:27**
4:30	**4:39**	**4:47**
4:50	**4:59**	**5:07**
5:20	**5:29**	**5:37**
5:40	**5:49**	**5:57**
6:00	**6:09**	**6:17**
6:20	**6:29**	**6:37**
6:40	**6:49**	**6:57**
7:00	**7:09**	**7:16**
7:30	**7:39**	**7:46**
7:50	**7:59**	**8:06**
8:10	**8:19**	**8:26**
8:30	**8:39**	**8:46**
8:50	**8:59**	**9:06**
9:10	**9:19**	**9:26**
9:40	**9:49**	**9:56**
10:00	**10:09**	**10:16**
10:20	**10:29**	**10:36**
10:40	**10:49**	**10:56**
11:00	**11:09**	**11:16**
11:30	**11:39**	**11:46**
11:50	**11:59**	12:06

FACILITIES & BOARDING DIAGRAMS

OCTA has several facilities to help ease your commute. Bus Transportation Centers are major transfer hubs that provide restroom facilities and covered shelter while you wait for your bus. Park-and-Ride facilities allow you to drive your car to the nearest transit facility where you can take a bus or train to complete your trip. Metrolink Stations provide rail and bus connections. Stationlink routes provide a link between train stations and major employment/activity centers and are designed to meet selected trains. You can find route maps and timetables inside this Bus Book.

Bus Facilities

Brea Park-and-Ride
937 E. Lambert Road
Brea, CA 92821

Fullerton Park-and-Ride
3000 W. Orangethorpe Avenue
Fullerton, CA 92833
Local Bus: 25, 26, 30, 33, 35, 529
Express Bus: 721
Metro Bus: 460

Fullerton Transportation Center
123 S. Pomona Avenue
Fullerton, CA 92833
Metrolink Service: OC Line, 91 Line
Local Bus: 26, 43, 47, 543
Community Bus: 143
OC Express Bus: 213

Goldenwest Transportation Center
7301 Center Avenue
Huntington Beach, CA 92803
Local Bus: 29, 66, 70, 123, 529
Express Bus: 701
OC Flex

Laguna Beach Transportation Center
375 Broadway Street
Laguna Beach, CA 92651
Local Bus: 89

Laguna Hills Transportation Center
24282 Calle de los Caballeros
Laguna Hills, CA 92653
Local Bus: 83, 87, 89, 91, 177

Newport Transportation Center
1550 Avocado Avenue
Newport Beach, CA 92660
Local Bus: 1, 55, 57, 79

Rail Facilities

Anaheim Regional Transportation Intermodal Center
2626 E. Katella Avenue, Anaheim, CA 92806
Metrolink Service: OC Line
Local Bus: 50, 53, 153

Anaheim Canyon Metrolink Station
1039 N. Pacificenter Drive, Anaheim, CA 92806
Metrolink Service: IEOC Line
Local Bus: 38, 71, 123

Buena Park Metrolink Station
8400 Lakeknoll Drive, Buena Park, CA 90621
Metrolink Service: OC Line, 91 Line
Local Bus: 25, 29, 123

Fullerton Metrolink/Amtrak Station
120 E. Santa Fe Avenue, Fullerton, CA 92832
Metrolink Service: OC Line, 91 Line
Local Bus: 26, 43, 47, 543
Community Bus: 143
OC Express Bus: 213

Irvine Metrolink/Amtrak Station
15215 Barranca Parkway, Irvine, CA 92618
Metrolink Service: OC Line, IEOC Line
Stationlink Bus: 480
Local Bus: 86
OC Express Bus: 206
iShuttle Routes: 402C, 403D & 404E

Laguna Niguel/Mission Viejo Metrolink Station
28200 Forbes Road, Laguna Niguel, CA 92677
Metrolink Service: OC Line, IEOC Line
OC Flex

Orange Metrolink Station
194 N. Atchison Street, Orange, CA 92866
Metrolink Service: OC Line, IEOC Line
Stationlink Bus: 453
Local Bus: 54, 56, 59

San Clemente Metrolink Station
1850 Avenida Estacion, San Clemente, CA 92672
Metrolink Service: OC Line, IEOC Line
Local Bus: 1, 91

San Juan Capistrano Metrolink/Amtrak Station
26701 Verdugo Street, San Juan Capistrano, CA 92675
Metrolink Service: OC Line, IEOC Line
Local Bus: 91

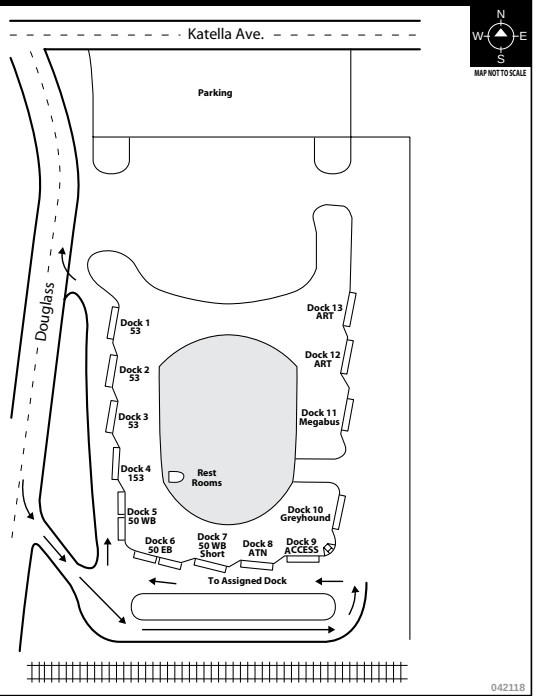
Santa Ana Regional Transportation Center
1000 E. Santa Ana Blvd., Santa Ana, CA 92701
Metrolink Service: OC Line, IEOC Line
Stationlink Bus: 463
Local Bus: 59, 83, 560, 862
OC Express Bus: 206

Tustin Metrolink Station
2975 Edinger Avenue, Tustin, CA 92780
Metrolink Service: OC Line, IEOC Line
Stationlink Bus: 472, 473
Local Bus: 70, 90
iShuttle Routes: 400A, 401B & 405F

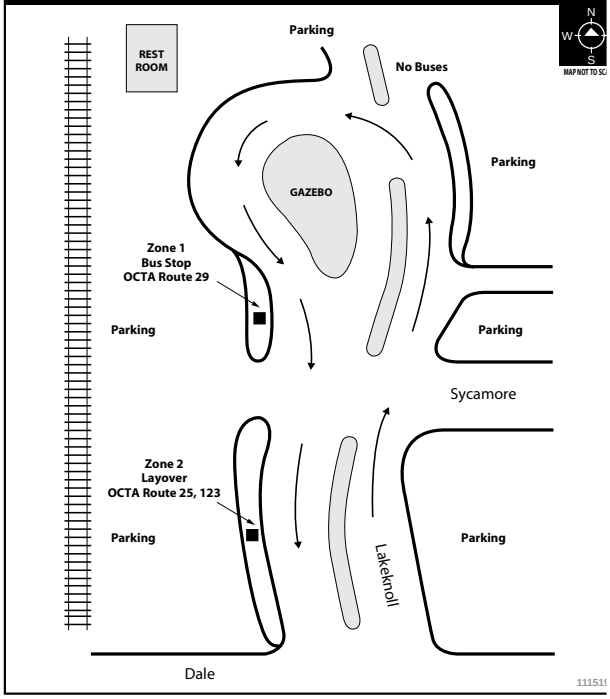
Orange County Metrolink Passengers:
Metrolink trains will operate on a Sunday schedule for the following observed holidays: Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day and New Year's Day. StationLink trips that connect with these trains will not operate on these days.
For more information call (800) 371-LINK or visit **Metrolinktrains.com**.

BOARDING DIAGRAMS

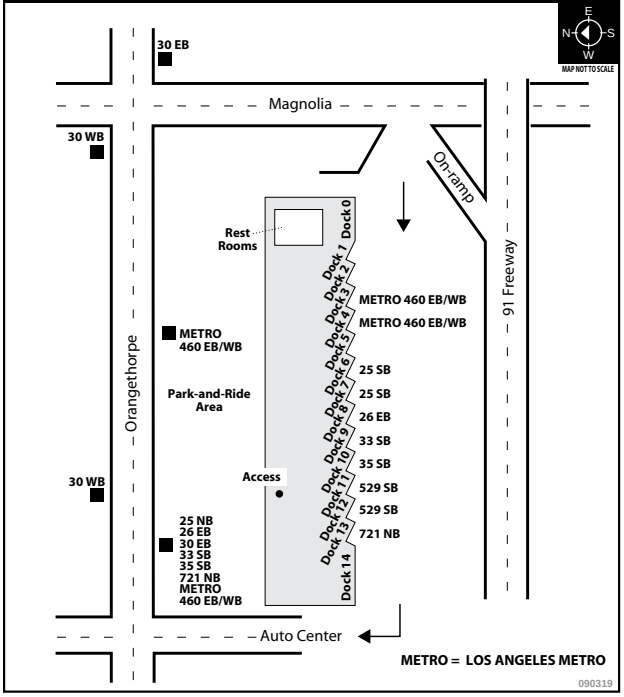
ANAHEIM REGIONAL TRANSPORTATION INTERMODAL CENTER (ARTIC)



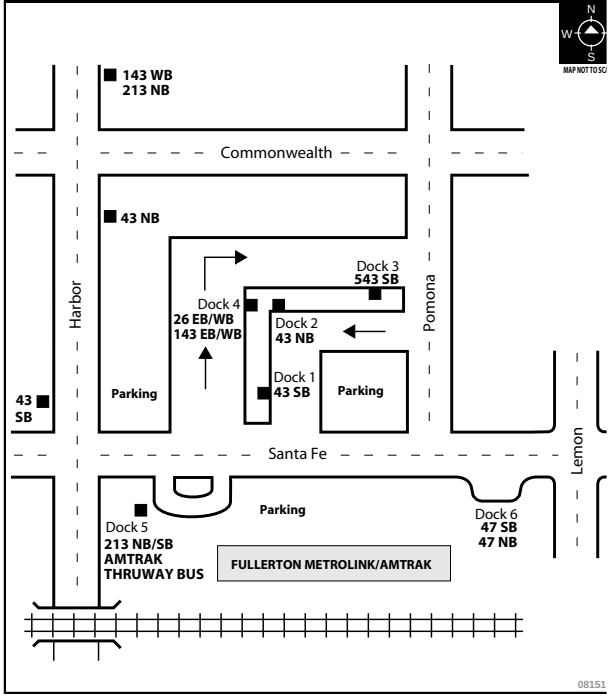
BUENA PARK METROLINK STATION



FULLERTON PARK-and-RIDE

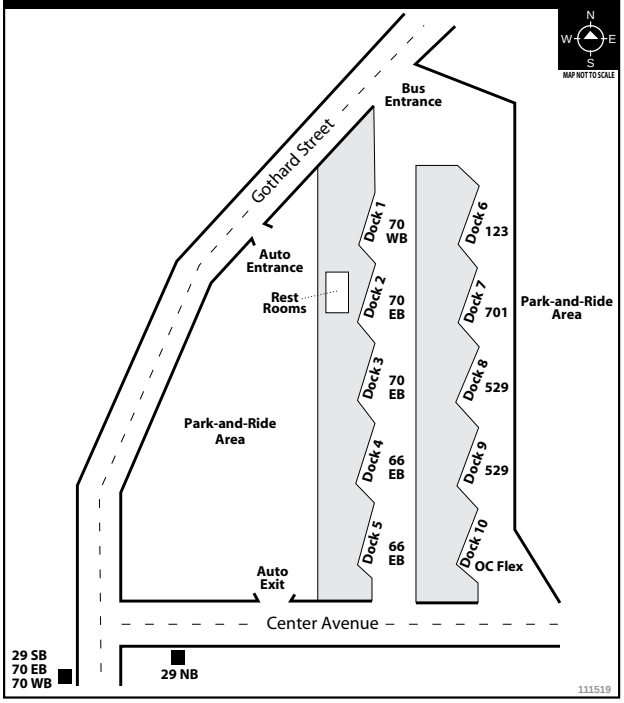


FULLERTON TRANSPORTATION CENTER

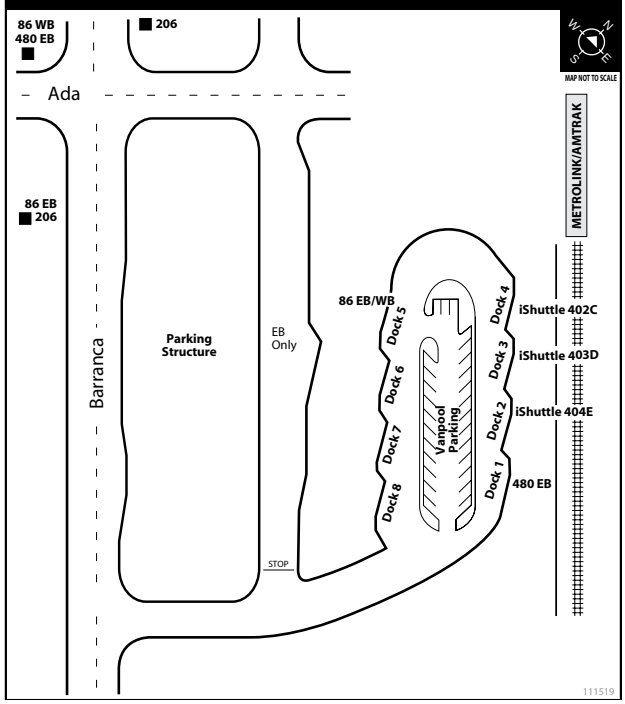


BOARDING DIAGRAMS

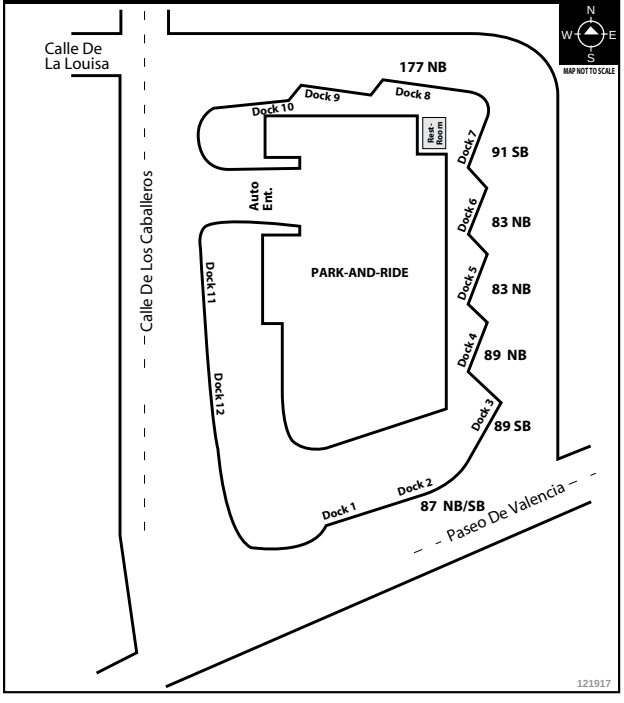
GOLDENWEST TRANSPORTATION CENTER



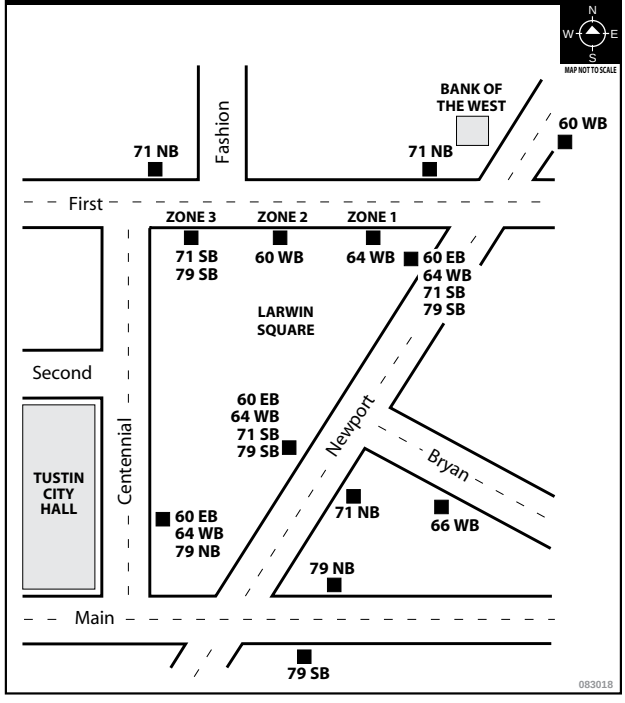
IRVINE STATION
(Corner of Barranca & Ada)



LAGUNA HILLS TRANSPORTATION CENTER

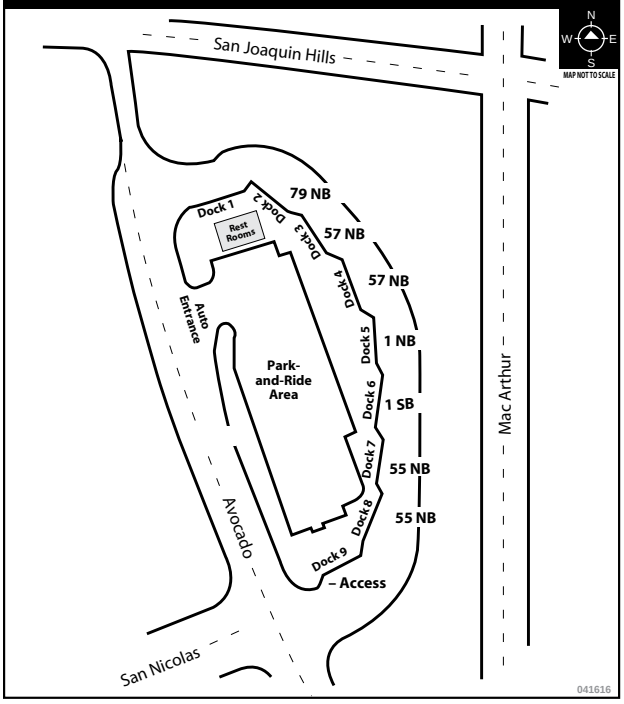


LARWIN SQUARE–TUSTIN

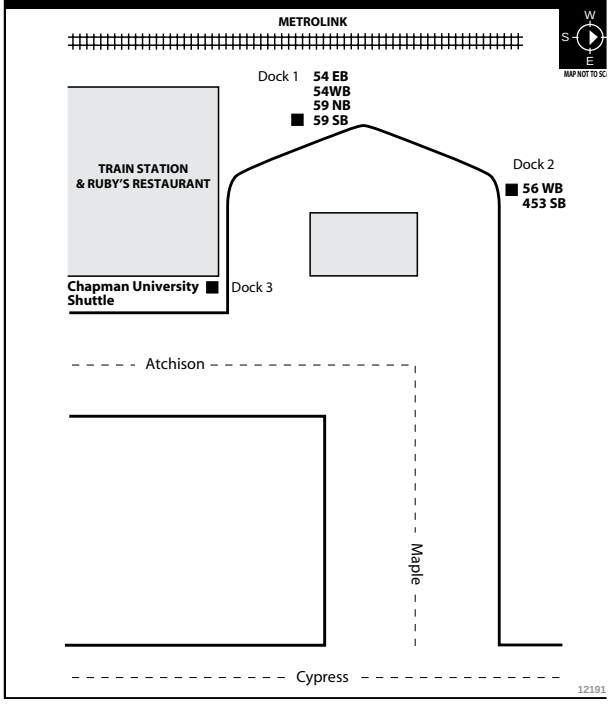


BOARDING DIAGRAMS

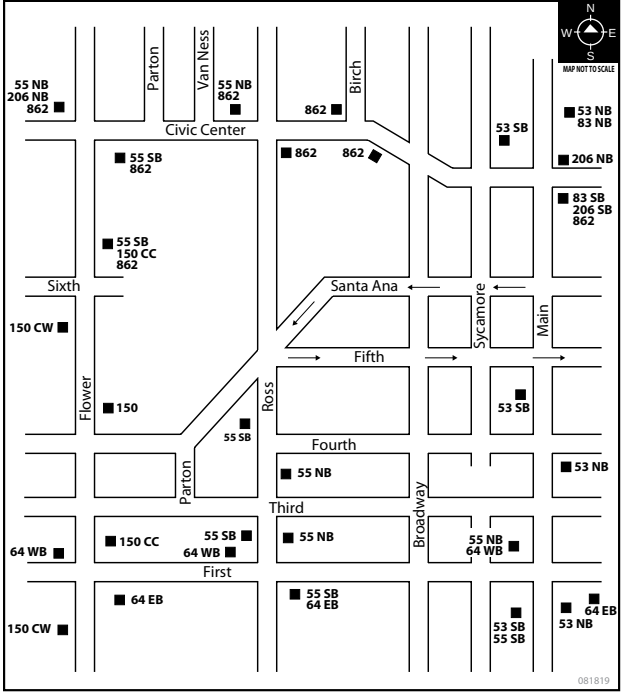
NEWPORT TRANSPORTATION CENTER



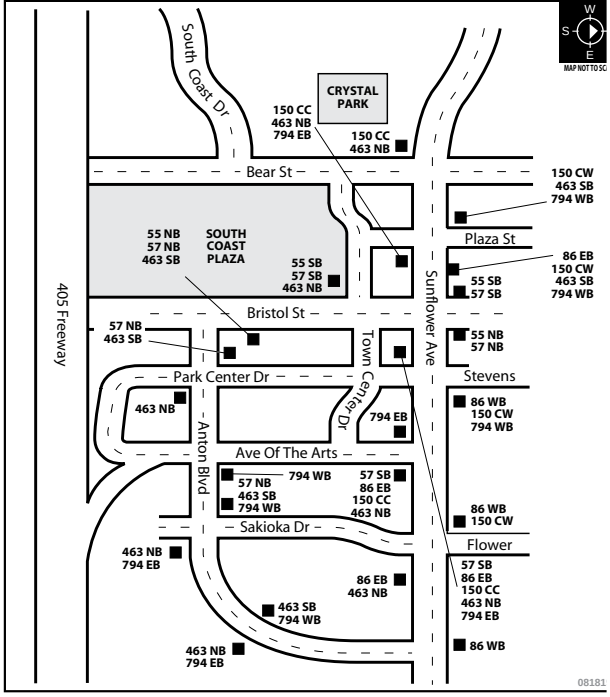
ORANGE TRANSPORTATION CENTER



SANTA ANA (DOWNTOWN AREA)

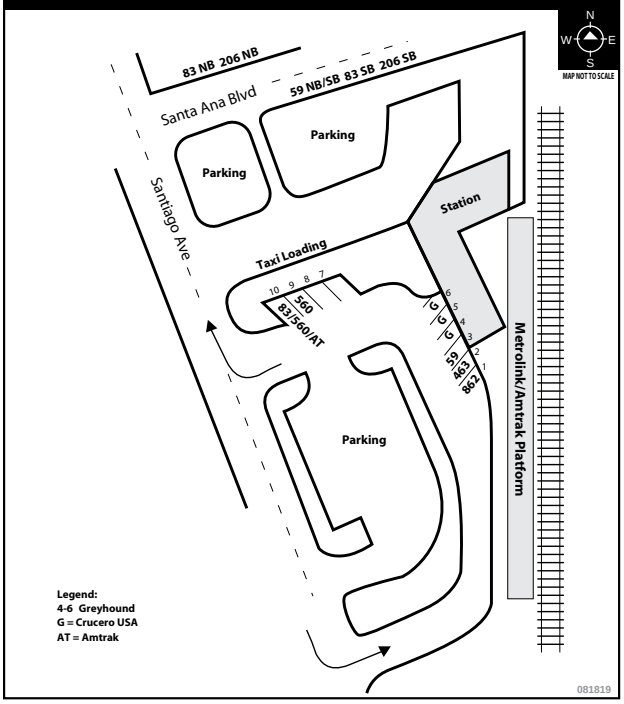


SOUTH COAST PLAZA AREA

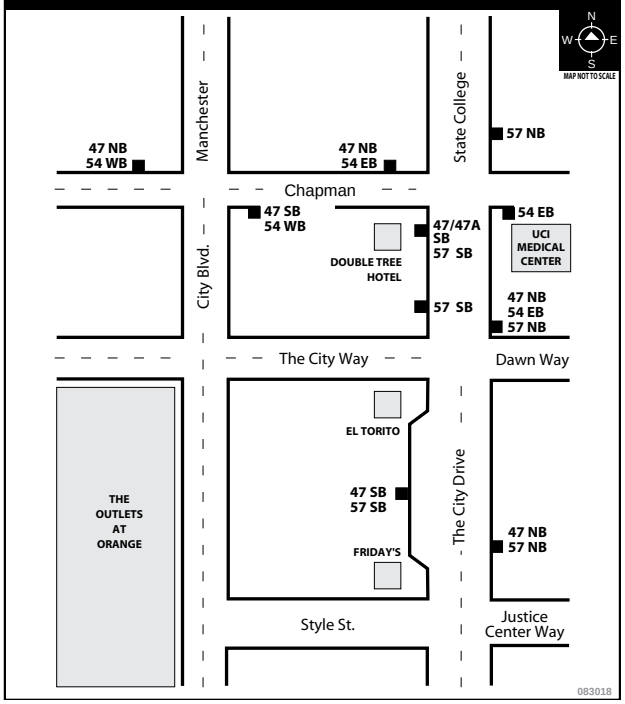


BOARDING DIAGRAMS

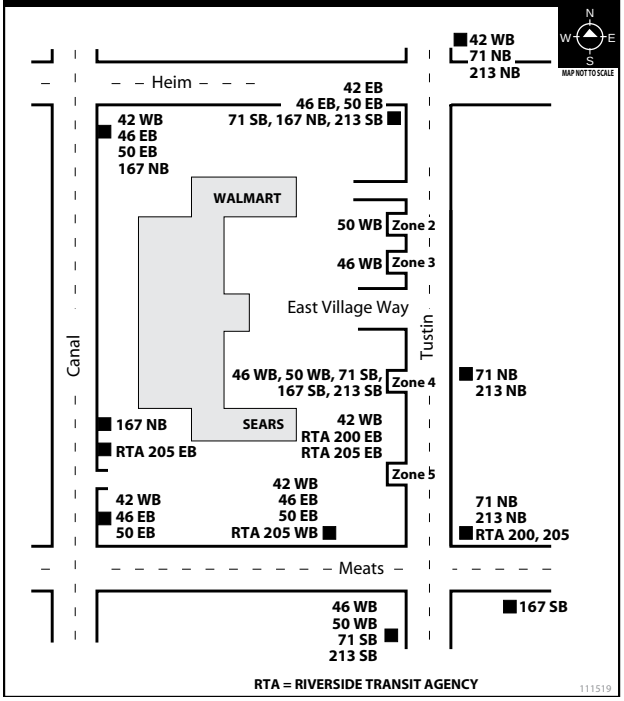
SANTA ANA REGIONAL TRANSPORTATION CENTER



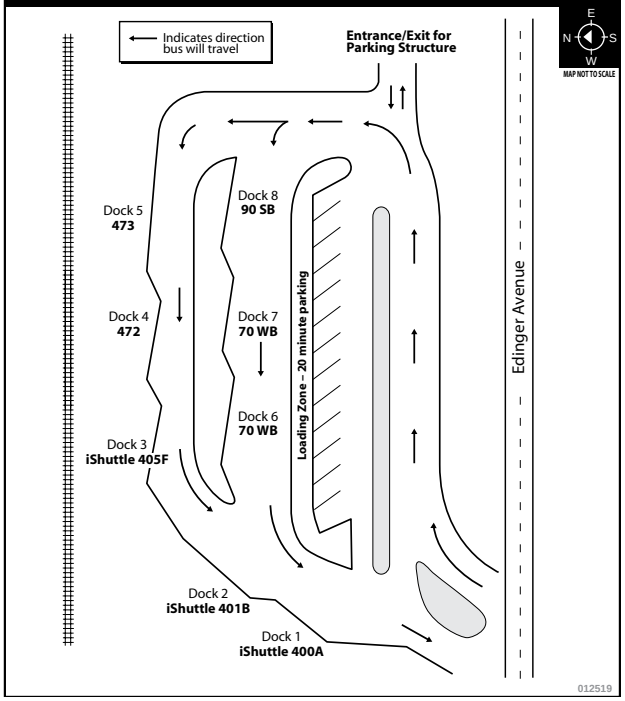
THE OUTLETS AT ORANGE



THE VILLAGE AT ORANGE



TUSTIN METROLINK STATION



OTHER TRANSIT SYSTEMS / OSTROS SISTEMAS DE TRÁNSITC

Amtrak
Serves local, regional and national regions
(800) USA-RAIL (872-7245)
amtrak.com

Anaheim Resort Transit
Serves the Anaheim and Anaheim Resort area
(714) 563-5287
rideart.org

Foothill Transit (FT)
Serves La Habra, Brea, San Gabriel & Pomona Valleys in LA County
(800) 743-3463
foothilltransit.org

LA County Metropolitan Transportation Authority (Metro)
Serves greater Los Angeles County area
(323) GO-METRO
(323) 466-3876
metro.net

Laguna Beach Transit (LB Transit)
Serves Laguna Beach and Dana Point
(949) 497-0746
lagunabeachcity.net

Long Beach Transit (LBT)
Serves Long Beach, Signal Hill, Cerritos and Lakewood
(562) 591-2301
lbtransit.com

Metrolink Commuter Rail
Serves Orange, Los Angeles, Ventura, San Bernardino and Riverside Counties
(800) 371-LINK
(800) 371-5465
metrolinktrains.com

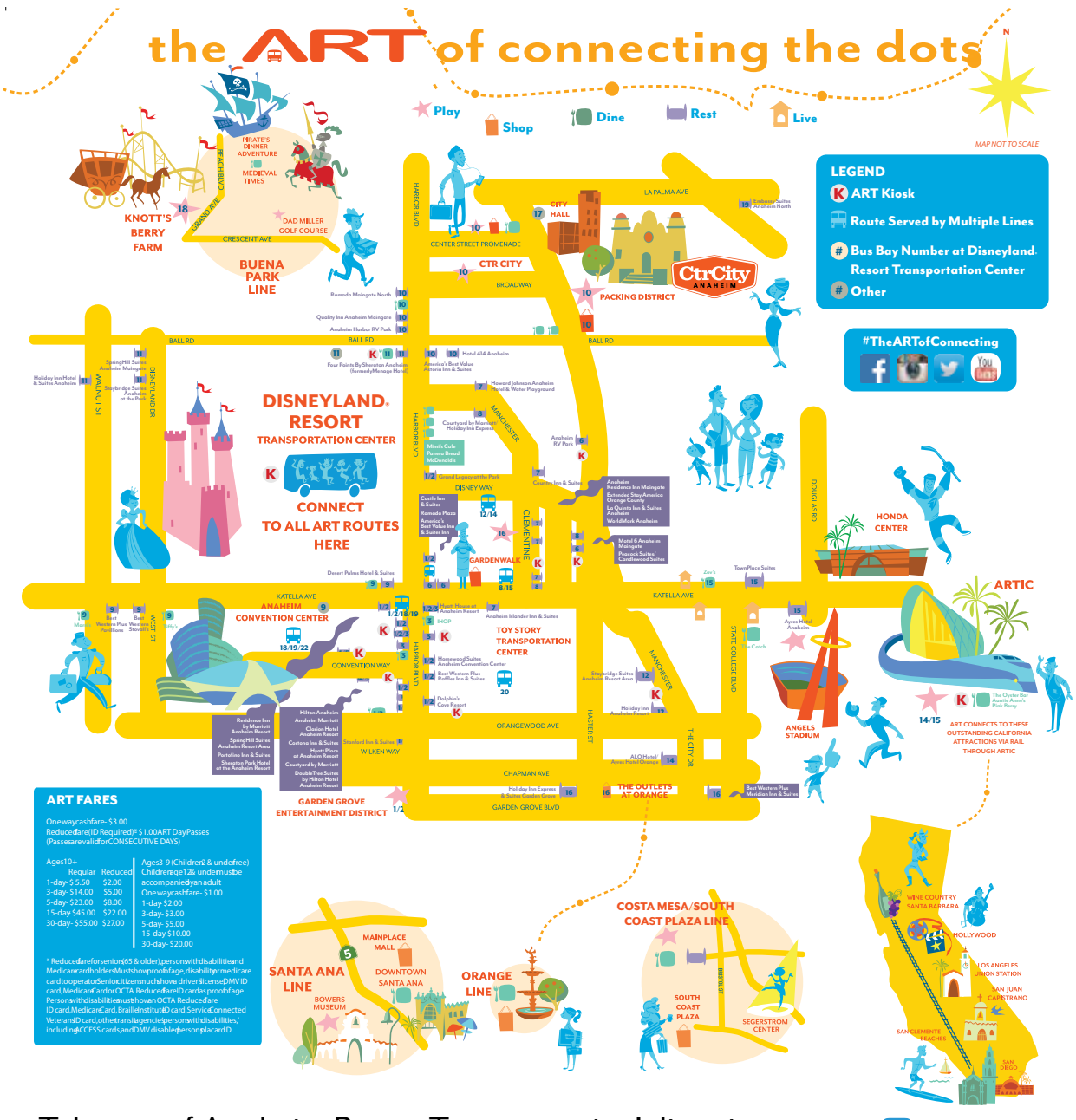
North County Transit District (NCTD)
Serves North San Diego County, connecting with OCTA in San Clemente
(760) 966-6500
gonctd.com

Norwalk Transit (NT)
Serves Norwalk, Cerritos, Bellflower, Santa Fe Springs and Whittier
(562) 929-5550
ci-norwalk.ca.us

Omnitrans (OT)
Serves the San Bernardino Valley
(800) 966-6428
omnitrans.org

Riverside Transit Agency (RTA)
Serves Riverside County and the Village at Orange
(800) 800-7821
riversidetransit.com

ANAHEIM RESORT TRANSPORTATION MAP



Take any of Anaheim Resort Transportation's lines in-and-around the Anaheim Resort® District to reach all your favorite destinations in Anaheim, Costa Mesa, Orange, Santa Ana, Garden Grove, and Buena Park!

www.rideart.org

Routing and times are subject to change. For current schedules and additional information, please visit www.rideart.org

Effective October 11, 202

ANAHEIM RESORT TRANSPORTATION INFO

AREAS OF INTEREST

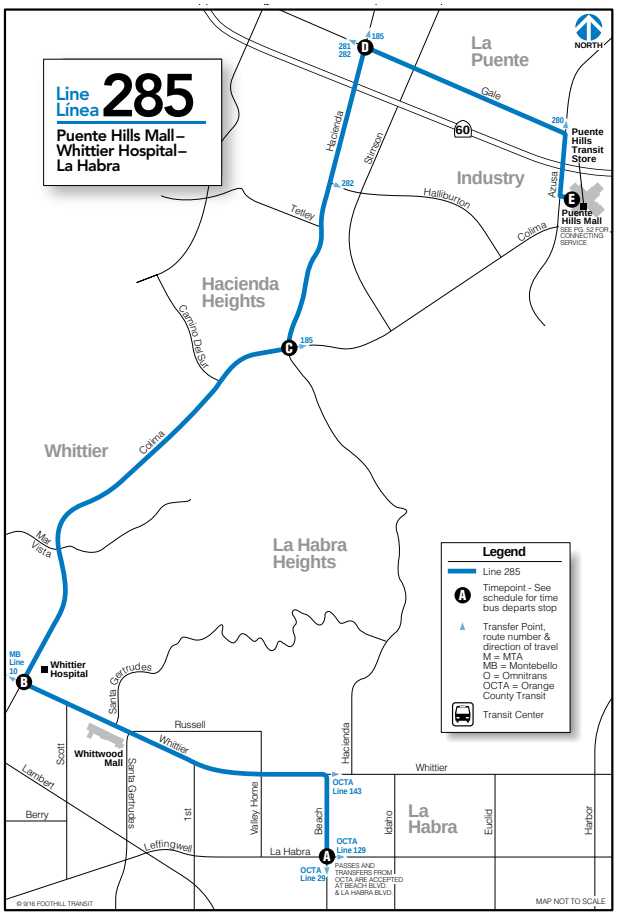
Disneyland® Resort Transportation Center Stop Numbers		TEXT 2 GO CODES
	REST (Anaheim Area Hotels)	
14	ALO Hotel /Ayres Orange	4016
6	America's Best Value Inn & Suites - Convention Center	4013
10	America's Best Value Astoria Inn & Suites - Ball Rd.	4002
10	Anaheim Harbor RV Park	2013
7	Anaheim Islander Inn & Suites	2019
4 5	Anaheim Marriott	2008
7	Anaheim Residence Inn Maingate	2021
6	Anaheim RV Park	2018
15	Ayres Hotel Anaheim	2024
16	Best Western Plus Meridian Inn & Suites	2023
9	Best Western Plus Pavilions	5001
1 2	Best Western Plus Raffles Inn & Suites	3003
9	Best Western Plus Stovall's	5002
6	Candlewood Suites	3013
1 2	Castle Inn & Suites	3009
3	Clarion Hotel	2007
1 2	Cortona Inn & Suites	2002
7	Country Inn & Suites	6024
1 2	Courtyard by Marriott	2002
8	Courtyard by Marriott Theme Park Entrance	5016
9	Desert Palms Hotel & Suites	4001
1 2	Dolphin's Cove Resort	3003
1 2	Double Tree Suites by Hilton Hotel Anaheim Resort	2003
19	Embassy Suites Anaheim North	5019
7	Extended Stay America Orange County	2020
1 2	Grand Legacy At The Park	3012
4 5	Hilton Anaheim	3004
12	Holiday Inn Anaheim Resort	2010
16	Holiday Inn Express & Suites Garden Grove - Anaheim	2025
8	Holiday Inn Express & Suites Anaheim Resort Area	5016
11	Holiday Inn Hotel & Suites Anaheim	3008
1 2	Homewood Suites Anaheim Convention Center	2008
10	Hotel 414 Anaheim	4002
11	Hotel Menage	4005
7	Howard Johnson Anaheim Hotel and Water Playground	3011
1 2 3	Hyatt House at Anaheim Resort - Convention Center	2001
3	Hyatt Place at Anaheim Resort - Convention Center	3004
7	La Quinta Inn & Suites Anaheim	2020
8	Motel 6 Anaheim Maingate	3016
6	Peacock Suites	3013
1 2 3	Portofino Inn & Suites	2001
10	Quality Inn Maingate	2012
10	Ramada Maingate North	2012
6	Ramada Plaza	4014
3	Red Lion Hotel	3005
1 2	Residence Inn by Marriott Anaheim Resort - Convention Center	2001
3	Sheraton Park Hotel at the Anaheim Resort	2006
11	SpringHill Suites Anaheim Maingate	4003
1 2	SpringHill Suites Anaheim Resort Area - Convention Center	2001
1 2	Stanford Inn & Suites	2004
11	Staybridge Suites Anaheim at the Park	4006
12	Staybridge Suites Anaheim - Resort Area	2010
15	TownePlace Suites	4020
8	WorldMark Anaheim	3014
	REST(Costa Mesa Area Hotels)	
19	Avenue of the Arts Costa Mesa, A Tribute Portfolio Hotel	6010
19	Ayres Hotel & Suites Costa Mesa	6006
19	Best Western Plus Newport Mesa Inn	6005
19	BLVD Hotel	6004
19	Costa Mesa Marriott	6009
19	Crowne Plaza	6008
19	Hilton Costa Mesa	6008
19	Holiday Inn Express- Costa Mesa	6003
19	Ramada Inn & Suites - Costa Mesa	6002
19	Residence Inn by Marriott Costa Mesa	6007
19	The Westin South Coast Plaza	6011

	DINE	
11	Tru Grits	4005
10	Anaheim Brewery	3007
8 15	Anaheim Garden Walk- Cheesecake Factory	3015
12	Anaheim Garden Walk- Disney Way	2009
16	Anaheim Garden Walk- Transportation Center	2031
10	Anaheim Packing House	3007
9	Coco's Restaurant	5002
1 2 3	Coffee Bean & Tea Leaf	2001
10	CTR City - Good Food Building	5005
9	Denny's Restaurant - Katella	5001
1 2	Denny's Restaurant - Harbor	3003
All Routes	Downtown Disney District	1
19	Downtown Santa Ana 4th Street Market, Playground, Eat Chow, Native Son Alehouse, Portola Coffee Lab, Yojie Japanese Fondue	2029, 2030
1 2	IHOP	3009
9	Marri's Restaurant	5001
18	Medieval Times Dinner & Tournament	2016
1 2 3	Morton's The Steakhouse	2007
18	Pirates Dinner Adventure	2016
1 2	Roscoe's Chicken & Waffles	3003
1 2	Ruth's Chris Steakhouse	2003
10	Shakey's Pizza	2013
15	Stadium Crossings- Togo's, Fresca's, Panda Express	4017
1 2 3	Starbucks	2001
15	The Catch	4017
1 2	The Fifth	3012
9	Oasis Kitchen and Bar	4001
9	Tiffy's Restaurant	5003
15	Zov's	5018
	PLAY	
8 15	Anaheim Garden Walk- Cheesecake Factory	3015
12	Anaheim Garden Walk- Disney Way	2009
16	Anaheim Garden Walk- Transportation Center	2031
10	Anaheim Packing House	3007
15	Angel Stadium of Anaheim - ARTIC	6000
15	ARTIC (Anaheim Regional Transportation Intermodal Center)	6000
19	Bowers Museum	2028
10	CTR City	5005
18	Dad Miller Golf Course	5013
All Routes	Disneyland® Resort	1
All Routes	Downtown Disney District	1
19	Downtown Santa Ana Yost Theatre, The Frida Cinema, GCS Clothiing	2029, 2030
15	The Grove	4017
15	Honda Center - ARTIC	6000
18	Knott's Berry Farm	2000
10	Muzeo	5005
15	National Grove of Anaheim	2009
20	Toy Story Transportation Center	1100
	SHOP	
8 15	Anaheim Garden Walk- Cheesecake Factory	3015
12	Anaheim Garden Walk- Disney Way	2009
16	Anaheim Garden Walk- Transportation Center	2031
10	Anaheim Packing House	3007
18	Anaheim Plaza	5015
10	CTR City - Good Food Building	5005
1 2 3	CVS pharmacy	2001
19	MainPlace Mall	2026
19	South Coast Plaza	6001
16	The Outlets at Orange	2022
10	Walmart Neighborhood Market	3066
3 7	Walgreens	3005, 2019
	OTHER	
17	Anaheim City Hall	2014, 3010**
9	Anaheim Convention Center ACC North	5004
1 2 3	Anaheim Convention Center - Convention Way	3004
3 4 5	Anaheim Convention Center Grand Plaza	2008
17	Anaheim Police Department	2015, 4010**
17	Canyon Metrolink Station	4012
17	Kaiser Permanente Medical Center	4007, 4011**
17	L3 Interstate Electronics	4009
17	Orange County Social Services	4019, 4018**
17	Styles for Less Corporate Offices	4021, 4022**
11	Team Disney Administration Building	4004
10	US Postal Office	5005
11	US Postal Office	4003

**PM Schedule

Routing and times are subject to change. For current schedules and additional information, please visit www.rideart.org

FOOTHILL TRANSIT BUS 285



NORTHBOUND/EN DIRECCIÓN NORTE

LA HABRA TO INDUSTRY
LA HABRA HACIA INDUSTRY

WEEKDAY / ENTRE SEMANA

Beach Blvd. & La Habra Blvd. (A)	Whittier Blvd. & Colima Rd. (B)	Hacienda Blvd. & Colima Rd. (C)	Gale Ave. & Hacienda Blvd. (D)	Puente Hills Mall (E)
5:35	5:50	5:58	6:04	6:14
6:35	6:50	6:58	7:04	7:14
7:35	7:50	7:58	8:06	8:16
8:35	8:50	9:00	9:12	9:23
9:35	9:50	10:00	10:12	10:23
10:35	10:50	11:00	11:12	11:23
11:35	11:50	**12:00**	**12:12**	**12:23**
12:35	**12:50**	**1:00**	**1:12**	**1:23**
1:35	**1:50**	**2:00**	**2:12**	**2:23**
2:35	**2:50**	**3:00**	**3:12**	**3:23**
3:35	**3:50**	**4:00**	**4:12**	**4:23**
4:35	**4:50**	**5:00**	**5:12**	**5:23**
5:35	**5:50**	**6:00**	**6:12**	**6:23**
6:35	**6:50**	**6:58**	**7:08**	**7:19**
7:35	**7:48**	**7:56**	**8:05**	**8:15**
8:35	**8:48**	**8:56**	**9:05**	**9:15**

WEEKEND/HOLIDAY / FIN DE SEMANA Y DÍA FESTIVO

(A)	(B)	(C)	(D)	(E)
8:13	8:25	8:33	8:41	8:50
9:10	9:24	9:32	9:40	9:49
10:10	10:23	10:31	10:39	10:49
11:10	11:23	11:31	11:39	11:49
12:10	**12:23**	**12:31**	**12:40**	**12:50**
1:10	**1:24**	**1:33**	**1:42**	**1:52**
2:10	**2:24**	**2:33**	**2:41**	**2:51**
3:10	**3:24**	**3:33**	**3:41**	**3:51**
4:10	**4:24**	**4:33**	**4:41**	**4:54**
5:10	**5:24**	**5:32**	**5:40**	**5:50**
6:10	**6:24**	**6:32**	**6:40**	**6:50**
7:10	**7:24**	**7:32**	**7:40**	**7:50**

SOUTHBOUND/EN DIRECCIÓN SUR

INDUSTRY TO LA HABRA
INDUSTRY HACIA LA HABRA

WEEKDAY / ENTRE SEMANA

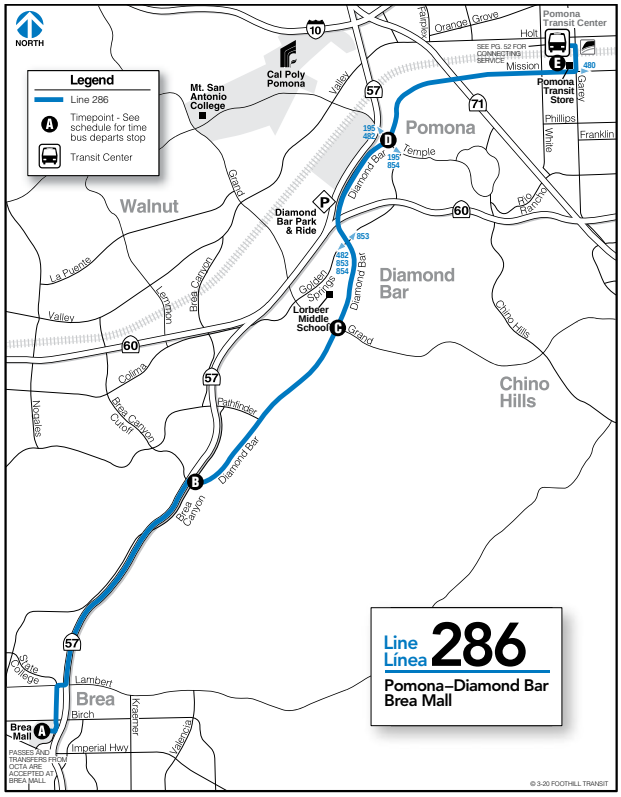
Puente Hills Mall (E)	Gale Ave. & Hacienda Blvd. (D)	Hacienda Blvd. & Colima Rd. (C)	Whittier Blvd. & Colima Rd. (B)	Beach Blvd. & La Habra Blvd. (A)
5:35	5:44	5:52	6:00	6:12
6:35	6:44	6:52	7:00	7:12
7:35	7:45	7:54	8:02	8:14
8:35	8:45	8:57	9:08	9:20
9:35	9:47	9:59	10:10	10:22
10:35	10:47	10:59	11:10	11:22
11:35	11:47	11:59	**12:10**	**12:23**
12:35	**12:47**	**12:59**	**1:10**	**1:23**
1:35	**1:47**	**1:59**	**2:10**	**2:23**
2:35	**2:47**	**2:59**	**3:10**	**3:23**
3:35	**3:47**	**3:59**	**4:10**	**4:23**
4:35	**4:47**	**4:59**	**5:10**	**5:23**
5:35	**5:47**	**5:59**	**6:10**	**6:23**
6:35	**6:46**	**6:56**	**7:06**	**7:18**
7:35	**7:45**	**7:53**	**8:01**	**8:11**
8:35	**8:45**	**8:53**	**9:01**	**9:11**

WEEKEND/HOLIDAY / FIN DE SEMANA Y DÍA FESTIVO

(A)	(B)	(C)	(D)	(E)
7:16	7:26	7:34	7:41	7:52
8:16	8:26	8:34	8:43	8:54
9:18	9:29	9:37	9:46	9:57
10:18	10:29	10:37	10:46	10:57
11:18	11:29	11:37	11:46	11:57
12:18	**12:29**	**12:37**	**12:46**	**12:57**
1:18	**1:29**	**1:37**	**1:46**	**1:57**
2:18	**2:29**	**2:37**	**2:46**	**2:57**
3:18	**3:29**	**3:37**	**3:46**	**3:57**
4:18	**4:30**	**4:38**	**4:46**	**4:57**
5:18	**5:29**	**5:37**	**5:45**	**5:56**
6:18	**6:29**	**6:37**	**6:45**	**6:57**
7:18	**7:29**	**7:37**	**7:45**	**7:57**
8:18	**8:28**	**8:36**	**8:44**	**8:56**

Routing and times are subject to change. For current schedules and additional information, please visit www.foothilltransit.org

FOOTHILL TRANSIT BUS 286



NORTHBOUND/EN DIRECCIÓN NORTE

BREA TO POMONA
BREA HACIA POMONA

WEEKDAY / ENTRE SEMANA

Brea Mall Transit Center (A)	Diamond Bar Blvd. & Brea Canyon Rd. (B)	Diamond Bar Blvd. & Grand Ave. (C)	Diamond Bar Blvd. & Temple Ave. (D)	Pomona Transit Center (E)
6:05	6:20	6:30	6:40	6:52
7:05	7:20	7:30	7:40	7:52
8:05	8:20	8:30	8:40	8:52
9:05	9:20	9:30	9:40	9:52
10:05	10:20	10:30	10:40	10:52
11:05	11:20	11:30	11:40	11:52
12:05	**12:20**	**12:30**	**12:40**	**12:52**
1:05	**1:20**	**1:30**	**1:40**	**1:52**
2:05	**2:20**	**2:30**	**2:40**	**2:52**
3:05	**3:23**	**3:33**	**3:43**	**3:55**
4:05	**4:23**	**4:33**	**4:43**	**4:55**
5:05	**5:23**	**5:33**	**5:43**	**5:55**
6:05	**6:23**	**6:33**	**6:43**	**6:55**
7:05	**7:20**	**7:30**	**7:40**	**7:52**
8:05	**8:20**	**8:30**	**8:40**	**8:52**
9:05	**9:20**	**9:30**	**9:40**	**9:52**
10:05	**10:20**	**10:30**	**10:40**	**10:52**

WEEKEND/HOLIDAY / FIN DE SEMANA Y DÍA FESTIVO

(A)	(B)	(C)	(D)	(E)
7:35	7:48	7:56	8:01	8:09	8:21
8:35	8:48	8:56	9:01	9:09	9:21
9:35	9:48	9:56	10:01	10:09	10:21
10:35	10:48	10:56	11:01	11:09	11:21
11:35	11:48	11:56	**12:01**	**12:09**	**12:23**
12:35	**12:48**	**12:56**	**1:01**	**1:09**	**1:23**
1:35	**1:48**	**1:56**	**2:01**	**2:09**	**2:23**
2:35	**2:48**	**2:56**	**3:01**	**3:09**	**3:23**
3:35	**3:48**	**3:56**	**4:01**	**4:09**	**4:23**
4:35	**4:48**	**4:56**	**5:01**	**5:09**	**5:23**
5:35	**5:48**	**5:56**	**6:01**	**6:09**	**6:21**
6:35	**6:48**	**6:56**	**7:01**	**7:09**	**7:21**
7:35	**7:48**	**7:56**	**8:01**	**8:09**	**8:21**

SOUTHBOUND/EN DIRECCIÓN SUR

POMONA TO BREA
POMONA HACIA BREA

WEEKDAY / ENTRE SEMANA

Pomona Transit Center (E)	Diamond Bar Blvd. & Temple Ave. (D)	Diamond Bar Blvd. & Grand Ave. (C)	Diamond Bar Blvd. & Brea Canyon Rd. (B)	Brea Mall Transit Center (A)
6:00	6:15	6:28	6:37	6:52
7:00	7:20	7:33	7:42	7:57
8:00	8:20	8:33	8:42	8:57
9:00	9:15	9:25	9:34	9:48
10:00	10:15	10:25	10:34	10:48
11:00	11:18	11:28	11:37	11:51
12:00	**12:18**	**12:28**	**12:37**	**12:51**
1:00	**1:20**	**1:30**	**1:39**	**1:53**
2:00	**2:20**	**2:30**	**2:40**	**2:54**
3:00	**3:20**	**3:30**	**3:40**	**3:54**
4:00	**4:18**	**4:28**	**4:38**	**4:52**
5:00	**5:18**	**5:28**	**5:38**	**5:52**
6:00	**6:15**	**6:25**	**6:34**	**6:48**
7:00	**7:15**	**7:25**	**7:34**	**7:48**
8:00	**8:15**	**8:25**	**8:34**	**8:48**
9:00	**9:15**	**9:25**	**9:34**	**9:48**
10:00	**10:15**	**10:25**	**10:34**	**10:48**

WEEKEND/HOLIDAY / FIN DE SEMANA Y DÍA FESTIVO

(E)	(D)	(C)	(B)	(A)
7:30	7:45	7:52	7:57	8:07	8:15
8:30	8:45	8:52	8:57	9:07	9:15
9:30	9:46	9:53	9:58	10:08	10:16
10:30	10:46	10:53	10:58	11:08	11:16
11:30	11:46	11:53	11:58	**12:08**	**12:18**
12:30	**12:47**	**12:54**	**12:59**	**1:09**	**1:19**
1:30	**1:47**	**1:54**	**1:59**	**2:09**	**2:19**
2:30	**2:47**	**2:54**	**2:59**	**3:09**	**3:19**
3:30	**3:45**	**3:52**	**3:57**	**4:07**	**4:17**
4:30	**4:45**	**4:51**	**4:56**	**5:06**	**5:15**
5:30	**5:45**	**5:51**	**5:56**	**6:06**	**6:15**
6:30	**6:45**	**6:51**	**6:56**	**7:06**	**7:15**
7:30	**7:42**	**7:48**	**7:53**	**8:03**	**8:12**

Routing and times are subject to change. For current schedules and additional information, please visit www.foothilltransit.org

LAGUNA BEACH TRANSIT MAP

Routing and times are subject to change.
For current schedules and additional information, please visit www.lagunabeachcity.net/government/departments/publicworks/schedules/bus.htm

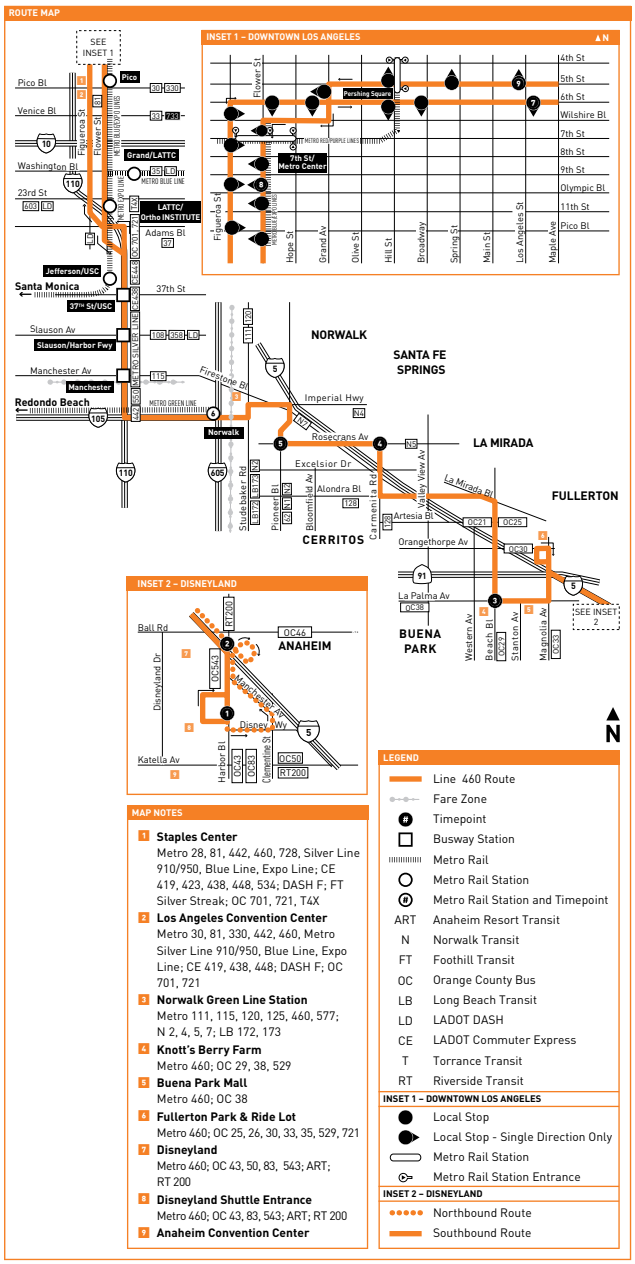
METRO BUS 460

Los Angeles County Metropolitan Transportation Authority's (Metro) Bus Routes and Schedules Serving Orange County

Following are the Metro bus routes and schedules serving Orange County. All schedules were accurate at time of printing. For more information please contact Metro directly at www.metro.net or call 323-GO-METRO (466-3876).

Rutas y Horarios de la Autoridad de Transporte del Condado Metropolitano de Los Angeles (Metro) Que Dan Servicio al Condado de Orange

A continuación se detallan los horarios y de las rutas de la Metro que dan servicio al Condado de Orange. Todos los horarios eran exactos en la hora de la impresión. Para mas información, favor de comunicarse con la Metro directamente por el internet en www.metro.net o llame al 323-GO-METRO (466-3876).



Routing and times are subject to change. For current schedules and additional information, please visit www.metro.net

METRO BUS 460

Monday through Friday — 460

Northbound - Westbound *Al Norte – Al Oeste* (Approximate Times / *Tiempos Aproximados*)

ANAHEIM		BUENA PARK	NORWALK			LOS ANGELES
1	2	3	4	5	6	7
Disneyland	Manchester & Harbor	Knott's Berry Farm	Rosecrans & Carmenita	Pioneer & Rosecrans	Norwalk Green Line Station	6th & Los Angeles
4:00A	4:04A	4:22A	4:43A	4:51A	5:05A	5:39A
—	—	—	5:08	5:16	5:31	6:06
4:38	4:42	5:00	5:24	5:32	5:48	6:26
—	—	—	5:40	5:48	6:04	6:47
5:07	5:12	5:30	5:55	6:03	6:20	7:05
—	—	—	6:10	6:19	6:36	7:25
5:39	5:44	6:03	6:30	6:40	6:58	7:51
6:01	6:06	6:25	6:53	7:03	7:21	8:16
6:23	6:28	6:48	7:16	7:27	7:45	8:39
6:45	6:51	7:11	7:40	7:51	8:09	9:00
7:08	7:14	7:35	8:04	8:15	8:33	9:22
7:33	7:39	8:00	8:29	8:40	8:57	9:42
7:57	8:03	8:25	8:53	9:04	9:21	10:05
8:23	8:29	8:51	9:18	9:29	9:46	10:29
8:48	8:54	9:16	9:43	9:54	10:11	10:52
9:13	9:19	9:41	10:08	10:19	10:36	11:16
9:38	9:44	10:06	10:33	10:44	11:01	11:41
10:07	10:13	10:35	11:02	11:13	11:30	12:10P
10:36	10:42	11:04	11:31	11:42	11:59	12:39
11:04	11:10	11:32	11:59	12:11P	12:28P	1:08
11:33	11:39	12:01P	12:29P	12:40	12:57	1:37
12:02P	12:08P	12:30	12:58	1:09	1:26	2:06
12:31	12:37	12:59	1:27	1:38	1:55	2:36
12:57	1:03	1:26	1:55	2:06	2:24	3:05
1:24	1:30	1:54	2:24	2:35	2:53	3:34
1:50	1:56	2:20	2:51	3:02	3:20	4:03
2:10	2:16	2:41	3:14	3:26	3:45	4:30
2:33	2:39	3:05	3:38	3:51	4:10	4:55
2:54	3:00	3:26	4:00	4:13	4:32	5:17
3:14	3:20	3:46	4:20	4:33	4:53	5:38
3:33	3:39	4:05	4:40	4:53	5:13	5:58
3:53	3:59	4:25	5:00	5:13	5:33	6:17
4:14	4:20	4:46	5:21	5:34	5:53	6:37
4:39	4:45	5:11	5:45	5:57	6:14	6:56
5:02	5:08	5:34	6:08	6:19	6:36	7:16
5:27	5:33	5:59	6:32	6:42	6:59	7:38
5:56	6:02	6:28	6:58	7:07	7:23	8:01
6:23	6:29	6:54	7:22	7:31	7:47	8:24
6:50	6:56	7:20	7:47	7:56	8:11	8:48
7:19	7:25	7:47	8:12	8:21	8:36	9:13
7:49	7:55	8:16	8:41	8:49	9:03	9:40
8:23	8:29	8:49	9:12	9:20	9:33	10:10
8:56	9:02	9:22	9:44	9:52	10:05	10:42
9:29	9:34	9:54	10:16	10:24	10:37	11:14
10:03	10:08	10:27	10:49	10:57	11:10	11:46
10:39	10:44	11:03	11:25	11:33	11:46	12:20A
11:19	11:24	11:43	12:05A	12:13A	12:26A	1:00
12:15A	12:19A	12:37A	12:58	1:06	1:19	1:53

Monday through Friday — 460

Southbound - Eastbound *Al Sur – Al Este* (Approximate Times / *Tiempos Aproximados*)

LOS ANGELES		NORWALK			BUENA PARK	ANAHEIM
9	8	6	5	4	3	1
5th & Los Angeles	Flower & Olympic	Norwalk Green Line Station	Rosecrans & Pioneer	Rosecrans & Carmenita	Knott's Berry Farm	Disneyland
4:00A	4:08A	4:36A	4:47A	4:54A	5:16A	5:36A
4:28	4:36	5:05	5:16	5:23	5:46	6:08
4:52	5:01	5:34	5:46	5:54	6:20	6:44
5:18	5:27	6:00	6:14	6:22	6:51	7:17
5:37	5:46	6:19	6:33	6:43	7:13	7:40
5:54	6:04	6:38	6:52	7:02	7:33	8:00
6:13	6:23	6:57	7:12	7:23	7:55	8:21
6:31	6:41	7:15	7:30	7:42	8:14	8:39
6:49	6:59	7:33	7:49	8:01	8:33	8:58
7:07	7:18	7:52	8:08	8:19	8:51	9:15
7:26	7:38	8:12	8:28	8:38	9:09	9:33
7:46	7:58	8:32	8:48	8:58	9:27	9:51
8:11	8:25	8:59	9:15	9:24	9:53	10:17
8:39	8:53	9:27	9:43	9:52	10:21	10:45
9:07	9:21	9:55	10:11	10:20	10:49	11:13
9:34	9:48	10:22	10:38	10:47	11:16	11:40
10:01	10:15	10:49	11:05	11:14	11:43	12:07P
10:26	10:40	11:14	11:30	11:39	12:08P	12:32
10:51	11:05	11:39	11:55	12:04P	12:33	12:57
11:14	11:28	12:02P	12:18P	12:28	12:57	1:21
11:34	11:48	12:22	12:38	12:48	1:17	1:41
11:54	12:08P	12:42	12:58	1:08	1:37	2:02
12:14P	12:28	1:02	1:19	1:29	1:58	2:23
12:34	12:48	1:22	1:39	1:49	2:18	2:43
12:53	1:07	1:42	1:59	2:10	2:39	3:04
1:13	1:27	2:02	2:20	2:31	3:01	3:26
1:32	1:46	2:22	2:41	2:52	3:24	3:49
1:56	2:10	2:48	3:07	3:19	3:51	4:16
2:21	2:35	3:14	3:34	3:46	4:18	4:44
2:45	2:59	3:40	4:00	4:12	4:44	5:11
3:11	3:25	4:06	4:26	4:38	5:09	5:36
3:34	3:48	4:32	4:52	5:04	5:35	6:02
3:56	4:11	4:57	5:17	5:29	6:00	6:27
4:17	4:33	5:22	5:42	5:54	6:24	6:50
4:40	4:58	5:47	6:07	6:18	6:47	7:12
5:04	5:24	6:12	6:31	6:41	7:08	7:33
5:29	5:49	6:37	6:55	7:05	7:30	7:54
5:58	6:18	7:02	7:19	7:28	7:53	8:17
6:30	6:47	7:27	7:43	7:52	8:17	8:41
7:13	7:27	8:02	8:17	8:26	8:51	9:13
7:55	8:08	8:42	8:55	9:03	9:26	9:47
8:43	8:55	9:25	9:37	9:44	10:06	10:27
9:29	9:39	10:08	10:19	10:26	10:47	11:08
10:24	10:34	11:03	11:14	11:21	11:42	12:03A

Routing and times are subject to change. For current schedules and additional information, please visit www.metro.net

METRO BUS 460

Saturday

Effective Jun 23 2019

460

Northbound - Westbound *Al Norte – Al Oeste* (Approximate Times / *Tiempos Aproximados*)

ANAHEIM		BUENA PARK	NORWALK			LOS ANGELES
1	2	3	4	5	6	7
Disneyland	Manchester & Harbor	Knott's Berry Farm	Rosecrans & Carmenita	Pioneer & Rosecrans	Norwalk Green Line Station	6th & Los Angeles
5:00A	5:06A	5:24A	5:47A	5:55A	6:09A	6:43A
5:45	5:51	6:10	6:33	6:42	6:57	7:31
6:25	6:31	6:50	7:14	7:23	7:38	8:14
6:56	7:03	7:23	7:47	7:56	8:12	8:49
7:27	7:34	7:54	8:18	8:28	8:45	9:22
7:58	8:05	8:25	8:49	8:59	9:16	9:54
8:28	8:35	8:55	9:20	9:30	9:47	10:25
8:57	9:04	9:24	9:50	10:01	10:18	10:56
9:23	9:30	9:53	10:20	10:31	10:48	11:27
9:50	9:57	10:20	10:47	10:58	11:16	11:55
10:16	10:23	10:46	11:14	11:25	11:43	12:22P
10:40	10:47	11:11	11:39	11:50	12:08P	12:48
11:05	11:12	11:36	12:04P	12:15P	12:33	1:13
11:29	11:36	11:59	12:29	12:40	12:58	1:38
11:53	11:59	12:25P	12:54	1:05	1:23	2:03
12:18P	12:25P	12:50	1:19	1:30	1:48	2:28
12:44	12:51	1:16	1:45	1:55	2:13	2:53
1:11	1:18	1:43	2:12	2:22	2:40	3:21
1:39	1:46	2:11	2:40	2:50	3:08	3:49
2:07	2:14	2:39	3:08	3:18	3:36	4:16
2:35	2:42	3:07	3:36	3:46	4:04	4:44
3:04	3:11	3:36	4:05	4:15	4:33	5:12
3:33	3:40	4:05	4:34	4:44	5:02	5:41
4:02	4:09	4:34	5:03	5:13	5:31	6:10
4:31	4:38	5:03	5:32	5:41	5:59	6:38
4:58	5:05	5:30	5:58	6:07	6:24	7:02
5:23	5:30	5:55	6:23	6:32	6:49	7:27
5:50	5:57	6:22	6:50	6:59	7:14	7:51
6:15	6:22	6:47	7:15	7:24	7:39	8:15
6:43	6:50	7:14	7:40	7:49	8:04	8:41
7:13	7:19	7:42	8:07	8:16	8:30	9:06
7:45	7:51	8:14	8:38	8:46	9:00	9:37
8:20	8:26	8:47	9:10	9:18	9:31	10:07
8:53	8:59	9:19	9:42	9:50	10:03	10:40
9:26	9:31	9:51	10:14	10:22	10:35	11:12
10:03	10:08	10:27	10:49	10:57	11:10	11:46
10:39	10:44	11:03	11:25	11:33	11:46	12:20A
11:19	11:24	11:43	12:05A	12:13A	12:26A	1:00
12:15A	12:19A	12:37A	12:58	1:06	1:19	1:53

Saturday

460

Southbound - Eastbound *Al Sur – Al Este* (Approximate Times / *Tiempos Aproximados*)

LOS ANGELES		NORWALK			BUENA PARK	ANAHEIM
9	8	6	5	4	3	1
5th & Los Angeles	Flower & Olympic	Norwalk Green Line Station	Rosecrans & Pioneer	Rosecrans & Carmenita	Knott's Berry Farm	Disneyland
4:30A	4:38A	5:07A	5:18A	5:25A	5:48A	6:09A
4:58	5:06	5:37	5:48	5:55	6:18	6:39
5:28	5:36	6:07	6:18	6:25	6:48	7:10
5:55	6:04	6:35	6:46	6:53	7:17	7:40
6:20	6:29	7:01	7:14	7:22	7:47	8:10
6:42	6:52	7:26	7:39	7:47	8:12	8:35
7:06	7:16	7:50	8:03	8:12	8:38	9:01
7:30	7:40	8:14	8:28	8:37	9:03	9:26
7:54	8:04	8:38	8:52	9:01	9:29	9:53
8:18	8:29	9:03	9:18	9:27	9:55	10:19
8:43	8:54	9:28	9:43	9:52	10:20	10:45
9:07	9:19	9:53	10:08	10:17	10:45	11:10
9:32	9:44	10:18	10:33	10:42	11:10	11:36
9:57	10:09	10:43	10:58	11:07	11:35	12:01P
10:22	10:34	11:08	11:24	11:33	12:01P	12:27
10:47	10:59	11:33	11:49	11:58	12:28	12:54
11:10	11:23	11:58	12:14P	12:23P	12:53	1:19
11:33	11:47	12:23P	12:39	12:48	1:18	1:44
11:58	12:12P	12:48	1:04	1:13	1:43	2:09
12:23P	12:37	1:13	1:29	1:38	2:07	2:33
12:47	1:02	1:38	1:54	2:03	2:31	2:57
1:12	1:27	2:03	2:19	2:27	2:55	3:22
1:35	1:50	2:28	2:44	2:52	3:20	3:47
2:00	2:15	2:54	3:10	3:18	3:46	4:13
2:26	2:41	3:20	3:36	3:44	4:12	4:39
2:51	3:06	3:46	4:02	4:10	4:38	5:04
3:17	3:31	4:12	4:28	4:36	5:04	5:30
3:44	3:58	4:39	4:55	5:03	5:31	5:57
4:11	4:25	5:06	5:22	5:30	5:57	6:23
4:38	4:52	5:33	5:49	5:57	6:23	6:48
5:08	5:22	6:01	6:16	6:24	6:50	7:15
5:37	5:51	6:29	6:44	6:52	7:18	7:42
6:08	6:21	6:58	7:13	7:21	7:46	8:10
6:39	6:52	7:27	7:41	7:49	8:14	8:38
7:18	7:30	8:03	8:17	8:24	8:47	9:09
8:00	8:11	8:43	8:56	9:03	9:26	9:47
8:42	8:53	9:23	9:35	9:42	10:05	10:26
9:29	9:39	10:08	10:19	10:26	10:47	11:08
10:24	10:34	11:03	11:14	11:21	11:42	12:03A

Routing and times are subject to change. For current schedules and additional information, please visit www.metro.net

METRO BUS 460

Sunday and Holiday

Effective Jun 23 2019

460

Northbound - Westbound *Al Norte – Al Oeste* (Approximate Times / *Tiempos Aproximados*)

ANAHEIM		BUENA PARK	NORWALK			LOS ANGELES
1	2	3	4	5	6	7
Disneyland B	Manchester & Harbor	Knott's Berry Farm	Rosecrans & Carmenita	Pioneer & Rosecrans	Norwalk Green Line Station	6th & Los Angeles
5:00A	5:05A	5:23A	5:45A	5:54A	6:08A	6:42A
5:45	5:50	6:08	6:30	6:39	6:54	7:28
6:25	6:30	6:48	7:10	7:19	7:34	8:09
6:57	7:03	7:22	7:44	7:53	8:08	8:43
7:30	7:36	7:55	8:17	8:26	8:42	9:17
8:01	8:07	8:26	8:48	8:57	9:13	9:48
8:30	8:36	8:55	9:18	9:28	9:44	10:19
9:00	9:06	9:26	9:50	10:00	10:16	10:52
9:30	9:37	9:58	10:22	10:32	10:48	11:24
10:00	10:07	10:28	10:54	11:04	11:20	11:56
10:32	10:39	11:00	11:26	11:36	11:52	12:28P
11:03	11:10	11:31	11:57	12:07P	12:24P	1:01
11:34	11:41	12:02P	12:29P	12:39	12:56	1:33
12:04P	12:11P	12:34	1:01	1:11	1:28	2:06
12:35	12:42	1:05	1:32	1:42	1:59	2:38
1:06	1:13	1:36	2:03	2:13	2:30	3:09
1:37	1:44	2:07	2:34	2:44	3:01	3:39
2:08	2:15	2:38	3:05	3:15	3:32	4:10
2:39	2:46	3:09	3:36	3:46	4:03	4:41
3:10	3:17	3:41	4:09	4:18	4:35	5:13
3:41	3:48	4:13	4:41	4:50	5:07	5:45
4:14	4:21	4:45	5:13	5:22	5:39	6:17
4:47	4:54	5:18	5:45	5:54	6:11	6:48
5:20	5:27	5:51	6:18	6:26	6:43	7:20
5:56	6:03	6:26	6:52	7:00	7:15	7:52
6:28	6:35	6:58	7:24	7:32	7:47	8:24
7:03	7:09	7:31	7:56	8:04	8:19	8:55
7:35	7:41	8:03	8:28	8:36	8:51	9:28
8:13	8:19	8:40	9:05	9:13	9:26	10:02
8:52	8:58	9:18	9:41	9:49	10:02	10:38
9:26	9:31	9:51	10:14	10:22	10:35	11:11
10:03	10:08	10:27	10:49	10:57	11:10	11:45
10:39	10:44	11:03	11:25	11:33	11:46	12:20A
11:19	11:24	11:43	12:05A	12:13A	12:26A	1:00
12:15A	12:19A	12:37A	12:58	1:06	1:19	1:53

Sunday and Holiday

460

Southbound - Eastbound *Al Sur – Al Este* (Approximate Times / *Tiempos Aproximados*)

LOS ANGELES		NORWALK			BUENA PARK	ANAHEIM
9	8	6	5	4	3	1
5th & Los Angeles	Flower & Olympic	Norwalk Green Line Station	Rosecrans & Pioneer	Rosecrans & Carmenita	Knott's Berry Farm	Disneyland
4:30A	4:38A	5:07A	5:18A	5:26A	5:47A	6:08A
5:20	5:28	5:57	6:09	6:17	6:39	7:01
5:54	6:03	6:32	6:44	6:52	7:14	7:36
6:21	6:31	7:02	7:14	7:22	7:44	8:07
6:51	7:01	7:32	7:45	7:53	8:16	8:40
7:20	7:30	8:02	8:15	8:23	8:47	9:11
7:49	8:00	8:32	8:45	8:54	9:19	9:44
8:16	8:29	9:02	9:16	9:25	9:50	10:15
8:46	8:59	9:32	9:46	9:55	10:20	10:45
9:16	9:29	10:02	10:16	10:25	10:52	11:17
9:46	9:59	10:32	10:47	10:56	11:23	11:49
10:14	10:27	11:02	11:17	11:26	11:53	12:19P
10:43	10:57	11:32	11:48	11:57	12:24P	12:50
11:13	11:27	12:02P	12:18P	12:27P	12:54	1:20
11:41	11:56	12:31	12:47	12:56	1:23	1:49
12:10P	12:25P	1:00	1:16	1:25	1:52	2:18
12:38	12:53	1:28	1:44	1:53	2:20	2:46
1:06	1:21	1:56	2:12	2:21	2:48	3:15
1:35	1:50	2:24	2:40	2:49	3:16	3:43
2:03	2:18	2:52	3:08	3:17	3:44	4:11
2:31	2:46	3:20	3:36	3:45	4:13	4:40
3:01	3:16	3:50	4:06	4:15	4:43	5:10
3:31	3:46	4:20	4:36	4:45	5:13	5:40
4:03	4:16	4:50	5:06	5:15	5:43	6:10
4:34	4:47	5:21	5:37	5:46	6:12	6:38
5:05	5:18	5:52	6:08	6:17	6:42	7:08
5:36	5:49	6:23	6:37	6:46	7:10	7:36
6:09	6:21	6:54	7:08	7:17	7:41	8:05
6:42	6:54	7:27	7:41	7:50	8:14	8:37
7:20	7:31	8:03	8:17	8:26	8:49	9:10
8:00	8:10	8:42	8:55	9:03	9:26	9:47
8:42	8:52	9:22	9:34	9:41	10:04	10:25
9:29	9:39	10:08	10:19	10:26	10:47	11:08
10:24	10:34	11:03	11:14	11:21	11:42	12:03A

Routing and times are subject to change. For current schedules and additional information, please visit www.metro.net

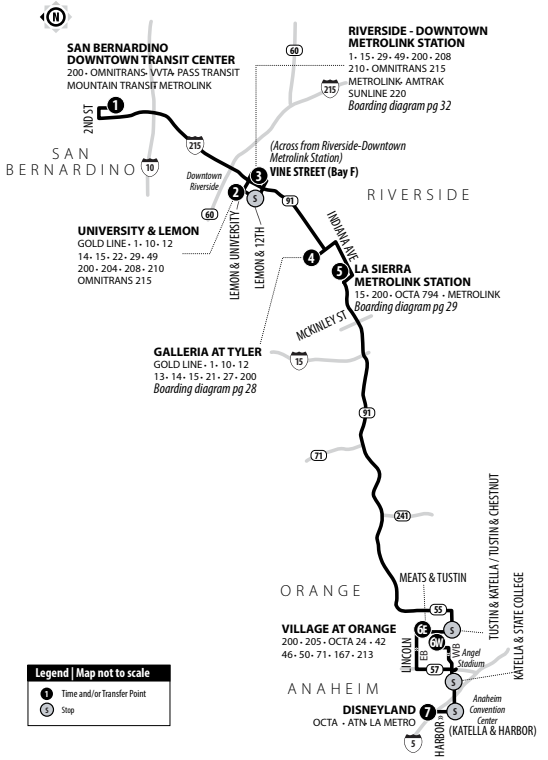
RTA ROUTE 200

200 SAN BERNARDINO - RIVERSIDE - ANAHEIM

Information Center
(951) 565-5002
RiversideTransit.com
RTABus.com

Routing and timetables subject to change.
Rutas y horarios son sujetos a cambios.

Sunday service on: Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day and New Year's Day. On these holidays, the Route 200 bus will not enter the San Bernardino Downtown Transit Center and instead will stop just outside the center on W. Rialto Ave.



200 Weekdays | Westbound to Anaheim

A.M. times are in PLAIN, **P.M. times are in BOLD** | Times are approximate.

San Bernardino Downtown Transit Center	Lemon & University (Downtown Riverside)	Riverside-Downtown Metrolink Station (Vine St Bay F)	Galleria at Tyler	La Sierra Metrolink Station	Meats & Tustin	Disneyland
1	2	3	4	5	6W	7
3:32	3:53	3:56	4:13	4:21	4:57	5:15
4:35	4:56	4:59	5:17	5:25	6:08	6:29
5:11	5:34	5:37	5:55	6:03	6:51	7:33
6:35	7:00	7:03	7:21	7:29	8:14	8:38
7:35	8:00	8:03	8:21	8:29	9:06	9:30
8:15	8:39	8:43	9:03	9:11	9:48	10:12
9:25	9:49	9:53	10:13	10:21	10:58	11:22
10:21	10:45	10:50	11:12	11:20	11:58	12:22
11:23	11:47	11:52	12:14	12:23	1:01	1:25
12:11	12:35	12:40	1:02	1:11	1:49	2:13
1:06	1:30	1:35	1:57	2:06	2:44	3:08
2:16	2:40	2:45	3:07	3:16	3:54	4:18
3:21	3:46	3:49	4:10	4:19	4:57	5:23
4:28	4:53	4:56	5:17	5:26	6:02	6:26
5:28	5:54	5:57	6:18	6:26	7:00	7:24
6:35	6:58	7:01	7:18	7:26	8:00	8:22
7:42	8:04	8:07	8:24	8:32	9:06	9:28

200 Weekdays | Eastbound to San Bernardino

A.M. times are in PLAIN, **P.M. times are in BOLD** | Times are approximate.

Disneyland	Village at Orange	La Sierra Metrolink Station	Galleria at Tyler	Lemon & University (Downtown Riverside)	Riverside-Downtown Metrolink Station (Vine St Bay F)	San Bernardino Downtown Transit Center
7	6E	5	4	2	3	1
5:56	6:16	6:49	6:54	7:17	7:21	7:39
7:05	7:33	8:10	8:18	8:41	8:45	9:05
8:10	8:38	9:12	9:20	9:40	9:43	10:01
9:14	9:40	10:14	10:22	10:42	10:45	11:03
10:06	10:32	11:06	11:14	11:34	11:38	11:56
10:48	11:16	11:55	12:04	12:27	12:31	12:51
12:03	12:31	1:10	1:19	1:42	1:46	2:06
1:03	1:31	2:10	2:19	2:42	2:46	3:06
2:02	2:30	3:13	3:22	3:47	3:51	4:13
2:50	3:22	4:12	4:21	4:46	4:50	5:13
3:45	4:17	5:14	5:23	5:48	5:52	6:15
4:20	4:55	5:55	6:04	6:26	6:30	6:50
5:06	5:41	6:34	6:42	7:03	7:07	7:27
6:06	6:37	7:26	7:34	7:53	7:57	8:15
7:14	7:42	8:21	8:29	8:48	8:52	9:10
8:12	8:37	9:12	9:19	9:38	9:41	9:59
9:05	9:30	10:04	10:11	10:28	10:31	10:49
10:15	10:39	11:12	11:18	11:34	11:37	11:55

200 Weekends | Westbound to Anaheim

A.M. times are in PLAIN, **P.M. times are in BOLD** | Times are approximate.

San Bernardino Downtown Transit Center	Lemon & University (Downtown Riverside)	Riverside-Downtown Metrolink Station (Vine St Bay F)	Galleria at Tyler	La Sierra Metrolink Station	Meats & Tustin	Disneyland
1	2	3	4	5	6W	7
6:00	6:22	6:25	6:45	6:53	7:25	7:47
7:36	7:58	8:01	8:21	8:29	9:04	9:26
9:11	9:33	9:36	9:56	10:04	10:39	11:01
10:40	11:02	11:06	11:26	11:34	12:12	12:36
12:20	12:42	12:46	1:06	1:14	1:52	2:16
2:15	2:37	2:41	3:01	3:09	3:47	4:11
3:30	3:52	3:55	4:15	4:23	4:59	5:23
5:30	5:52	5:55	6:15	6:23	6:57	7:21
7:30	7:52	7:55	8:13	8:21	8:53	9:15

200 Weekends | Eastbound to San Bernardino

A.M. times are in PLAIN, **P.M. times are in BOLD** | Times are approximate.

Disneyland	Village at Orange	La Sierra Metrolink Station	Galleria at Tyler	Lemon & University (Downtown Riverside)	Riverside-Downtown Metrolink Station (Vine St Bay F)	San Bernardino Downtown Transit Center
7	6E	5	4	2	3	1
8:28	8:56	9:32	9:39	9:59	10:02	10:20
10:07	10:35	11:11	11:19	11:39	11:42	12:00
11:42	12:10	12:46	12:55	1:15	1:18	1:36
1:12	1:40	2:18	2:27	2:47	2:50	3:08
2:53	3:21	3:59	4:08	4:28	4:31	4:49
4:48	5:16	5:54	6:02	6:22	6:25	6:43
6:04	6:29	7:07	7:15	7:35	7:38	7:56
8:15	8:40	9:14	9:21	9:41	9:44	10:02
10:15	10:40	11:13	11:19	11:35	11:38	11:56

Routing and times are subject to change. For current schedules and additional information, please visit www.riversidetransit.com

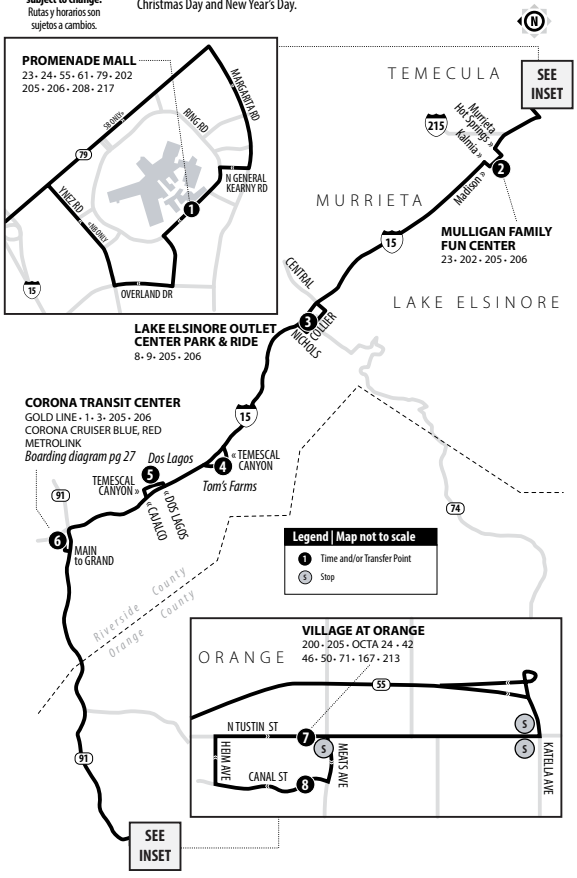
RTA ROUTE 205 & 206

205 | 206 TEMECULA - MURRIETA - LAKE ELSINORE - CORONA TRANSIT CENTER - ORANGE

Information Center
(951) 565-5002
RiversideTransit.com
RTABus.com

Routing and timetables subject to change.
Rutas y horarios son sujetos a cambios.

No service on weekends or: Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day and New Year's Day.



205 | 206 Weekdays | Northbound to Corona Transit Center and Village at Orange

A.M. times are in PLAIN, **P.M. times are in BOLD** | Times are approximate

	Promenade Mall	Mulligans Murrieta	Lake Elsinore Outlet Center Park-And-Ride	Tom's Farm	Dos Lagos	Corona Transit Center	Canal & Meats
	1	2	3	4	5	6	8
205	3:56	4:07	4:27	4:38	—	5:00	5:45
206	4:17	4:27	4:45	5:00	—	5:20	—
206	4:36	4:47	5:07	5:23	—	5:45	—
205	—	—	5:35	5:47	6:00	6:23	7:18
206	5:09	5:20	5:40	—	—	6:15	—
205	—	—	6:10	6:23	6:38	7:04	7:59
206	5:48	6:00	6:20	—	—	7:02	—
206	6:13	6:25	6:48	7:01	7:13	7:39	—
	The 6:48 a.m. trip will stop at Lake Elsinore Center at 6:47 a.m. for passenger connections from Route 8 Loops.						
206	8:00	8:15	8:40	8:54	9:03	9:23	—
206	8:55	9:10	9:35	9:49	9:58	10:18	—
206	11:15	11:30	11:55	12:09	12:18	12:38	—
206	1:35	1:50	2:15	2:29	2:38	2:58	—
205	—	—	—	—	—	3:10	3:48
205	—	—	—	—	—	4:27	5:05
206	3:17	3:32	3:57	4:11	4:20	4:40	—
206	4:41	4:56	5:21	5:35	5:44	6:04	—
205	—	—	—	—	—	6:14	6:49
206	6:30	6:45	7:07	7:20	7:28	7:46	—

205 | 206 Weekdays | Southbound to Temecula

A.M. times are in PLAIN, **P.M. times are in BOLD** | Times are approximate

	Canal & Meats	Village at Orange	Corona Transit Center	Dos Lagos	Tom's Farm	Lake Elsinore Outlet Center Park-And-Ride	Mulligans Murrieta	Promenade Mall
	8	7	6	5	4	3	2	1
206	—	—	6:25	6:38	6:48	7:05	7:23	7:45
	The 6:25 a.m. trip will wait for the 6:10 a.m. westbound train, but no later than 6:25 a.m. before departing the Metrolink Station.							
205	5:55	5:59	6:34	—	—	—	—	—
206	—	—	7:12	7:25	7:35	7:50	8:05	8:18
	The 7:12 a.m. trip will wait for the 6:50 a.m. eastbound and 6:50 a.m. westbound trains, but no later than 7:20 a.m. before departing the Metrolink Station.							
205	7:30	7:34	8:11	—	—	—	—	—
205	8:15	8:19	8:56	—	—	—	—	—
206	—	—	9:35	9:48	9:58	10:13	10:28	10:41
	The 9:35 a.m. trip will wait for the 9:14 a.m. eastbound train, but no later than 9:45 a.m. before departing the station.							
206	—	—	10:40	10:53	11:03	11:18	11:33	11:46
	The 10:40 a.m. trip will wait for the 10:09 a.m. eastbound and 10:36 a.m. west bound trains, but no later than 10:50 a.m. before departing the station.							-
206	—	—	1:50	2:03	2:13	2:28	2:43	2:56
	The 1:50 p.m. trip will wait for the 1:40 p.m. eastbound train, but no later than 2:00 p.m. before departing the station.							
206	—	—	3:25	3:38	3:48	4:03	4:18	4:31
	The 3:25 p.m. trip will wait for the 3:21 p.m. westbound train, but no later than 3:35 p.m. before departing the station.							
206	—	—	4:31	—	5:03	5:18	5:38	5:55
	The 4:31 p.m. trip will wait for the 4:27 p.m. train, but no later than 4:41 p.m. before departing the Metrolink Station.							
205	4:00	4:04	5:08	5:33	5:43	5:58	—	—
	The 5:08 p.m. trip will wait for the 4:41 p.m. and 4:58 p.m. trains, but no later than 5:15 p.m. before departing the Metrolink Station.							
206	—	—	5:09	—	—	5:51	6:11	6:26
	The 5:09 p.m. trip will wait for the 4:41 p.m. and 4:58 p.m. trains, but no later than 5:15 p.m. before departing the Metrolink Station.							
206	—	—	5:30	—	6:02	6:17	6:37	6:52
	The 5:30 p.m. trip will wait for the 5:25 p.m. train, but no later than 5:40 p.m. before departing the Metrolink Station.							
206	—	—	5:50	—	6:22	6:37	6:57	7:12
	The 5:50 p.m. trip will wait for the 5:45 p.m. train, but no later than 6:05 p.m. before departing the Metrolink Station.							
205	5:17	5:21	6:25	6:50	7:00	7:15	7:30	7:48
	The 6:25 p.m. trip will wait for the 6:05 p.m. and 6:17 p.m. trains, but no later than 6:35 p.m. before departing the Metrolink Station.							
206	—	—	6:40	—	7:05	7:20	7:40	7:55
	The 6:40 p.m. trip will wait for the 6:35 p.m. train, but no later than 6:50 p.m. before departing the Metrolink Station.							
205	6:59	7:03	8:01	—	8:19	8:34	8:49	9:05
	The 8:01 p.m. trip will hold for the 7:36 p.m. and 7:55 p.m. trains to arrive. If your train is delayed, please call RTA Customer Information Center at 951-565-5002 to ensure the bus waits.							

ORANGE COUNTY LINE • AMTRAK SERVICE

AMTRAK TRAINS FOR MONTHLY PASS HOLDERS ONLY

Oceanside to L.A.

DAILY

Amtrak Train No.	A561	A1761	A763	A565	A1565	A767	A1767	A569	A1569	A573	A1573	A777	A579	A583	A785	A591	A1591	A593	A595
Oceanside	4:53	5:37	6:57	7:55	7:43	9:23	9:06	10:40	10:40	12:16	11:51	1:00	2:36	3:48	4:53	6:34	6:27	7:40	9:53
San Clemente Pier	|	|	|	|	|	|	|	|	|	|	|	|	|	4:10	5:19	|	|	|	|
San Clemente	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
San Juan Capistrano	5:25	6:09	7:30	8:30	8:18	10:01	9:42	11:17	11:21	12:53	12:22	1:33	3:08	4:25	5:34	7:13	7:07	8:15	10:26
Laguna Niguel/Mission Viejo	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Irvine	5:41	6:25	7:48	8:46	8:34	10:16	9:57	11:31	11:35	1:07	12:36	1:48	3:23	4:42	5:49	7:28	7:22	8:30	10:41
Tustin	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Santa Ana	5:52	6:36	7:59	8:58	8:46	10:27	10:08	11:42	11:46	1:18	12:47	1:59	3:34	4:55	6:00	7:39	7:33	8:42	10:52
Orange	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Anaheim	6:02	6:48	8:08	9:07	8:55	10:36	10:17	11:51	11:55	1:28	12:57	2:08	3:43	5:05	6:10	7:48	7:42	8:52	11:01
Fullerton	6:11	7:00	8:16	9:15	9:03	10:45	10:26	11:59	12:03	1:38	1:07	2:16	3:52	5:17	6:20	7:57	7:51	9:01	11:10
Buena Park	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|
Norwalk/Santa Fe Springs	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|
Commerce	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
L.A. Union Station	7:03	7:30	8:51	9:56	9:44	11:25	11:06	12:34	12:38	2:15	1:46	2:51	4:36	5:54	6:57	8:34	8:28	9:39	11:50
	M-F	Sa-Su		M-F	Sa-Su	M-F	Sa-Su	M-F	Sa-Su	M-F	Sa-Su					M-F	Sa-Su		

Blackout dates may apply; schedules are subject to change. For details please visit: metrolinktrains.com/rail2rail.

L.A. to Oceanside

DAILY

Amtrak Train No.	A562	A564	A1564	A566	A1566	A768	A572	A1572	A774	A578	A580	A782	A584	A1584	A590	A1590	A792	A796
L.A. Union Station	6:05	7:02	6:52	8:33	8:19	9:55	10:54	11:20	12:33	1:15	2:58	4:08	5:15	5:15	7:21	6:46	8:15	10:22
Commerce	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|
Norwalk/Santa Fe Springs	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|	|
Buena Park	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Fullerton	6:36	7:33	7:23	9:04	8:50	10:26	11:25	11:51	1:04	1:47	3:29	4:39	5:47	5:47	7:52	7:17	8:46	10:53
Anaheim	6:45	7:41	7:31	9:12	8:58	10:34	11:33	11:59	1:12	1:56	3:37	4:47	5:56	5:56	8:00	7:26	8:54	11:01
Orange	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Santa Ana	6:55	7:49	7:40	9:21	9:07	10:43	11:42	12:08	1:21	2:05	3:46	4:56	6:05	6:05	8:09	7:34	9:02	11:10
Tustin	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Irvine	7:08	8:02	7:53	9:32	9:18	10:54	11:55	12:21	1:34	2:18	3:59	5:09	6:18	6:18	8:22	7:46	9:15	11:21
Laguna Niguel/Mission Viejo	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
San Juan Capistrano	7:23	8:22	8:09	9:46	9:31	11:09	12:15	12:41	1:49	2:32	4:14	5:24	6:32	6:32	8:38	8:00	9:30	11:36
San Clemente	|	|	|	↓	↓	↓	|	|	|	|	|	|	|	|	|	|	|	|	|
San Clemente Pier	↓	↓	↓	10:04	9:48	11:22	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
Oceanside	8:02	8:55	8:42	10:28	10:19	11:47	12:52	1:15	2:24	3:09	4:52	6:01	7:06	7:06	9:11	8:45	10:05	12:10
		M-F	Sa-Su	M-F	Sa-Su		M-F	Sa-Su					M-F	Sa-Su	M-F	Sa-Su		

Blackout dates may apply; schedules are subject to change. For details please visit: metrolinktrains.com/rail2rail.

ORANGE COUNTY LINE • AMTRAK SERVICE

AMTRAK TRAINS FOR MONTHLY PASS HOLDERS ONLY

M-F Train operates on Mondays to Fridays only
Sa-Su Train operates on Saturdays and Sundays only

NOTES

↓ Train does not stop at this station

↓ Express Train

D Stops to discharge only

➢ Transfer Trains

• Train may leave up to five minutes ahead of schedule

★ Metrolink/Amtrak Shared Station

A Amtrak train. Only Metrolink monthly pass holders may travel on Amtrak at no additional cost as part of the Rail® program. Please visit metrolinktrains.com for conditions of use.

FRI Train operates on Fridays only

Amtrak bus

MA These Amtrak trains are available to passengers with any type of valid Metrolink ticket, and cannot accomodate bicycles

AM times **PM** times

Boarding information is available at each station

Routing and times are subject to change. For current schedules and additional information, please visit www.amtrak.com

METROLINK SCHEDULES

ORANGE COUNTY LINE — Oceanside to L.A.

MONDAY THROUGH FRIDAY

Metrolink Train No.	681	601	603	605	683	607	685	800	687	633	641	609	689	643	645
Oceanside		4:35	5:16	5:42		6:34		7:39			**2:59**	**3:26**			
San Clemente Pier		↓	↓	↓		↓		↓			↓	↓			
San Clemente		4:58	5:38	6:04		6:56		8:02			**3:21**	**3:48**			
San Juan Capistrano		5:07	5:47	6:13		7:05		8:11			**3:31**	**3:57**			
Laguna Niguel/Mission Viejo	4:05	5:14	5:53	6:19		7:11	8:03	8:17 ➤	8:43	9:28	**3:39**	**4:07**		**5:50**	**9:25**
Irvine	4:15	5:24	6:03	6:29	7:10	7:22	8:13	8:27	8:54	9:38	**3:50**	**4:19**	**5:17**	**6:00**	**9:35**
Tustin	4:21	5:30	6:09	6:36	7:16	7:28	8:19	8:33	9:00	9:45	**3:57**	**4:26**	**5:23**	**6:07**	**9:42**
Santa Ana	4:27	5:36	6:16	6:43	7:22	7:34	8:25	8:39	9:06	9:52	**4:04**	**4:33**	**5:29**	**6:14**	**9:49**
Orange	4:32	5:44	6:21	6:49	7:27	7:39	8:30	8:44	9:11	9:57	**4:09**	**4:38**	**5:34**	**6:19**	**9:55**
Anaheim	4:36	5:49	6:26	6:55	7:32	7:44	8:35		9:16	10:02	**4:14**	**4:44**	**5:39**	**6:24**	**10:00**
Fullerton	4:43	5:56	6:35	7:02	7:41	7:51	8:42		9:25	10:10	**4:24**	**4:51**	**5:46**	**6:32**	**10:10**
Buena Park	4:49	6:02	6:41	7:08	7:47	7:57	8:48		9:30	10:16		**4:57**	**5:52**	**6:38**	
Norwalk/Santa Fe Springs	4:57	6:10	6:49	7:16	7:55	8:05	8:56		9:37	10:24		**5:05**	**6:00**	**6:46**	
Commerce	↓	↓	7:00	7:26	↓	8:19	9:08		↓	↓		↓	↓	↓	
L.A. Union Station	5:25	6:37	7:20	7:45	8:19	8:40	9:26		10:04	10:49		**5:31**	**6:27**	**7:11**	

Check 91/PV Line and Inland Empire-Orange County Line schedules for additional trains along this corridor.

NOTES: See page 3

MONDAY THROUGH FRIDAY

Metrolink Train No.	682	600	632	684	602	686	640	604	688	606	608	642	644
L.A. Union Station	6:26	7:58	**1:30**	**2:11**	**3:19**	**3:47**		**4:30**	**4:50**	**5:40**	**6:40**	**7:41**	
Commerce	↓	↓	↓	↓	**3:33**	**4:01**		**4:44**	↓	**5:54**	↓	↓	
Norwalk/Santa Fe Springs	6:48	8:20	**1:53**	**2:33**	**3:43**	**4:12**		**4:55**	**5:12**	**6:04**	**7:03**	**8:05**	
Buena Park	6:55	8:27	**2:01**	**2:40**	**3:50**	**4:19**		**5:03**	**5:19**	**6:11**	**7:10**	**8:13**	
Fullerton	7:02	8:33	**2:08**	**2:46**	**3:56**	**4:25**	**4:50**	**5:10**	**5:25**	**6:17**	**7:16**	**8:19**	**10:30**
Anaheim	7:09	8:40	**2:18**	**2:54**	**4:03**	**4:33**	**4:57**	**5:17**	**5:33**	**6:25**	**7:23**	**8:29**	**10:37**
Orange	7:14	8:45	**2:23**	**2:59**	**4:08**	**4:38**	**5:02**	**5:22**	**5:39**	**6:31**	**7:28**	**8:34**	**10:42**
Santa Ana	7:20	8:50	**2:28**	**3:05**	**4:13**	**4:43**	**5:07**	**5:27**	**5:45**	**6:36**	**7:33**	**8:40**	**10:48**
Tustin	7:26	8:56	**2:35**	**3:12**	**4:19**	**4:49**	**5:13**	**5:33**	**5:52**	**6:42**	**7:39**	**8:46**	**10:54**
Irvine	7:35	9:04	**2:43**	**3:21**	**4:27**	**5:02**	**5:21**	**5:41**	**6:01**	**6:50**	**7:47**	**8:55**	**11:03**
Laguna Niguel/Mission Viejo	7:50	9:14	**2:55**	**3:36**	**4:40**		**5:35**	**5:51**	**6:15**	**7:00**	**7:58**	**9:06**	**11:14**
San Juan Capistrano		9:20			**4:46**			**5:57**		**7:06**	**8:04**		**11:19**
San Clemente		9:30			**4:59**			**6:06**		**7:16**	**8:17**		**11:29**
San Clemente Pier		↓			↓			↓		↓	↓		↓
Oceanside		10:01			**5:28**			**6:37**		**7:48**	**8:46**		**11:55**

Train 644 may be held in Anaheim for special events. Please visit metrolinktrains.com for details.

Check 91/PV Line and Inland Empire-Orange County Line schedules for additional trains along this corridor.

ORANGE COUNTY LINE — L.A. to Oceanside / Oceanside to L.A.

SATURDAY AND SUNDAY

Metrolink Train No.	660	662	664	666
L.A. Union Station	8:40	10:50	**2:00**	**4:40**
Commerce	↓	↓	↓	↓
Norwalk/Santa Fe Springs	9:02	11:12	**2:22**	**5:02**
Buena Park	9:09	11:19	**2:29**	**5:09**
Fullerton	9:15	11:25	**2:35**	**5:15**
Anaheim	9:22	11:32	**2:42**	**5:22**
Orange	9:27	11:37	**2:47**	**5:27**
Santa Ana	9:32	11:42	**2:52**	**5:32**
Tustin	9:38	11:48	**2:58**	**5:38**
Irvine	9:46	11:56	**3:06**	**5:46**
Laguna Niguel/Mission Viejo	9:56	**12:06**	**3:16**	**5:56**
San Juan Capistrano	10:01	**12:13**	**3:21**	**6:01**
San Clemente	10:12	**12:25**	**3:34**	**6:15**
San Clemente Pier	10:15	**12:28**	**3:36**	**6:18**
Oceanside	10:52	**1:00**	**4:15**	**6:55**

Check 91/PV Line and Inland Empire-Orange County Line schedules for additional trains along this corridor.

SATURDAY AND SUNDAY

Metrolink Train No.	661	663	665	667
Oceanside	8:15	11:24	**1:24**	**5:36**
San Clemente Pier	8:35	11:48	**1:43**	**5:55**
San Clemente	8:38	11:50	**1:46**	**5:58**
San Juan Capistrano	8:50	**12:00**	**2:00**	**6:11**
Laguna Niguel/Mission Viejo	8:58	**12:08**	**2:07**	**6:19**
Irvine	9:08	**12:19**	**2:17**	**6:29**
Tustin	9:14	**12:25**	**2:23**	**6:35**
Santa Ana	9:20	**12:31**	**2:29**	**6:41**
Orange	9:25	**12:36**	**2:34**	**6:46**
Anaheim	9:30	**12:41**	**2:39**	**6:51**
Fullerton	9:37	**12:48**	**2:46**	**6:58**
Buena Park	9:43	**12:54**	**2:52**	**7:04**
Norwalk/Santa Fe Springs	9:51	**1:02**	**3:00**	**7:12**
Commerce	↓	↓	↓	↓
L.A. Union Station	10:30	**1:37**	**3:39**	**7:56**

Check 91/PV Line and Inland Empire-Orange County Line schedules for additional trains along this corridor.

NOTES

↓ Train does not stop at this station

★ Metrolink/Amtrak Shared Station

AM times **PM** times

➤ Transfer Trains

• Train may leave up to five minutes ahead of schedule

Boarding information is available at each station

METROLINK SCHEDULES

INLAND EMPIRE - ORANGE COUNTY LINE

Oceanside to San Bernardino

MONDAY THROUGH FRIDAY

Metrolink Train No.	803	805	807	809	811	813	815	817
San Bernardino - Downtown	4:31	5:18	5:54				**12:19**	
San Bernardino Depot*	4:36	5:23	5:59				**12:24**	
Riverside - Downtown	4:53	5:40	6:16	6:59	7:28	10:18	**12:40**	**3:01**
Riverside - La Sierra	5:06	5:50	6:27	7:10	7:40	10:29	**12:52**	**3:14**
Corona - North Main	5:13	5:58	6:34	7:17	7:47	10:36	**12:59**	**3:21**
Corona - West	5:18	6:04	6:39	7:22	7:52	10:41	**1:04**	**3:26**
Anaheim Canyon	5:36	6:25	6:59	7:42	8:12	11:02	**1:25**	**3:45**
Orange	5:44	6:33	7:07	7:53	8:22	11:09	**1:34**	**3:54**
Santa Ana	5:53	6:38	7:12	7:58	8:28	11:14	**1:40**	**4:00**
Tustin	5:59	6:44	7:18	8:05	8:34	11:21	**1:46**	**4:07**
Irvine	6:07	6:55	7:26	8:13	8:42	11:30	**1:54**	**4:15**
Laguna Niguel/Mission Viejo	6:18		7:42	8:28	8:53	11:42	**2:04**	**4:26**
San Juan Capistrano	6:26						**2:09**	
San Clemente	6:36						**2:18**	
San Clemente Pier	↓						↓	
Oceanside	7:03						**2:53**	

* Formerly San Bernardino Station

MONDAY THROUGH FRIDAY

Metrolink Train No.	800	802	804	806	808	810	812	814
Oceanside	7:39						**4:25**	
San Clemente Pier	↓						↓	
San Clemente	8:02						**4:46**	
San Juan Capistrano	8:11						**4:57**	
Laguna Niguel/Mission Viejo	8:17	9:13	**12:40**	**3:27**	**3:56**	**4:45**	**5:18**	**6:35**
Irvine	8:27	9:23	**12:50**	**3:37**	**4:06**	**4:55**	**5:28**	**6:45**
Tustin	8:33	9:29	**12:57**	**3:44**	**4:12**	**5:01**	**5:34**	**6:51**
Santa Ana	8:39	9:35	**1:03**	**3:50**	**4:19**	**5:07**	**5:41**	**6:57**
Orange	8:44	9:40	**1:08**	**3:57**	**4:24**	**5:12**	**5:46**	**7:02**
Anaheim Canyon	8:51	9:46	**1:14**	**4:03**	**4:31**	**5:19**	**5:53**	**7:09**
Corona - West	9:09	10:04	**1:34**	**4:22**	**4:52**	**5:38**	**6:11**	**7:30**
Corona - North Main	9:14	10:09	**1:40**	**4:27**	**4:58**	**5:45**	**6:17**	**7:36**
Riverside - La Sierra	9:21	10:17	**1:48**	**4:35**	**5:06**	**5:54**	**6:25**	**7:44**
Riverside - Downtown	9:44	10:29	**2:10**	**4:57**	**5:17**	**6:06**	**6:37**	**8:05**
San Bernardino Depot*		10:47			**5:32**	**6:21**	**6:54**	
San Bernardino - Downtown		11:01			**5:44**	**6:33**	**7:08**	

Check 91/PV Line and Orange County Line schedules for additional trains along this corridor.

INLAND EMPIRE - ORANGE COUNTY LINE

Oceanside to San Bernardino

SATURDAY AND SUNDAY

Metrolink Train No.	857	859
San Bernardino - Downtown	7:00	8:55
San Bernardino Depot*	7:05	9:00
Riverside - Downtown	7:24	9:19
Riverside - La Sierra	7:36	9:32
Corona - North Main	7:44	9:39
Corona - West	7:49	9:44
Anaheim Canyon	8:11	10:07
Orange	8:22	10:17
Santa Ana	8:27	10:23
Tustin	8:34	10:30
Irvine	8:42	10:39
Laguna Niguel/Mission Viejo	8:57	10:52
San Juan Capistrano	9:03	11:00
San Clemente	9:13	11:10
San Clemente Pier	9:16	11:13
Oceanside	9:55	11:50

* Formerly San Bernardino Station

Check 91/PV Line and Orange County Line schedules for additional trains along this corridor.

SATURDAY AND SUNDAY

Metrolink Train No.	858	860
Oceanside	**2:51**	**4:28**
San Clemente Pier	**3:11**	**4:47**
San Clemente	**3:14**	**4:50**
San Juan Capistrano	**3:29**	**5:00**
Laguna Niguel/Mission Viejo	**3:37**	**5:08**
Irvine	**3:48**	**5:18**
Tustin	**3:55**	**5:24**
Santa Ana	**4:01**	**5:30**
Orange	**4:07**	**5:35**
Anaheim Canyon	**4:16**	**5:42**
Corona - West	**4:36**	**6:02**
Corona - North Main	**4:43**	**6:08**
Riverside - La Sierra	**4:52**	**6:17**
Riverside - Downtown	**5:00**	**6:26**
San Bernardino Depot*	**5:18**	**6:44**
San Bernardino - Downtown	**5:34**	**7:11**

* Formerly San Bernardino Station

Check 91/PV Line and Orange County Line schedules for additional trains along this corridor.

NOTES

↓ Train does not stop at this station

➤ Transfer Trains

★ Metrolink/Amtrak Shared Station

• Train may leave up to five minutes ahead of schedule

AM times **PM** times

Boarding information is available at each station

Routing and times are subject to change. For current schedules and additional information, please visit www.octa.net/metrolink or www.metrolinktrains.com

METROLINK SCHEDULES

91/PERRIS VALLEY LINE

Perris to L.A.

MONDAY THROUGH FRIDAY

Metrolink Train No.	701	703	705	707	711
Perris - South	4:30	5:10	5:48	6:30	
Perris - Downtown	4:34	5:14	5:52	6:34	
Moreno Valley/March Field	4:44	5:24	6:02	6:44	
Riverside - Hunter Park/UCR	5:02	5:42	6:20	7:02	
Riverside - Downtown	5:14	5:54	6:32	7:14	**6:07**
Riverside - La Sierra	5:24	6:02	6:42	7:24	**6:17**
Corona - North Main	5:32	6:10	6:50	7:32	**6:25**
Corona - West	5:38	6:16	6:56	7:38	**6:31**
Fullerton	6:05	6:43	7:21	8:03	**6:58**
Buena Park	6:11	6:50	7:29	8:10	**7:04**
Norwalk/Santa Fe Springs	6:19	6:58	7:36	8:18	**7:10**
L.A. Union Station	6:45	7:25	8:10	8:45	**7:37**

L.A. to Perris

MONDAY THROUGH FRIDAY

Metrolink Train No.	700	704	706	708	710	712
L.A. Union Station	5:45	**3:35**	**4:20**	**5:00**	**5:30**	**6:50**
Norwalk/Santa Fe Springs	6:06	**3:56**	**4:41**	**5:21**	**5:51**	**7:11**
Buena Park	6:12	**4:03**	**4:47**	**5:27**	**5:57**	**7:17**
Fullerton	6:19	**4:09**	**4:54**	**5:34**	**6:04**	**7:24**
Corona - West	6:43	**4:35**	**5:18**	**5:58**	**6:28**	**7:48**
Corona - North Main	6:50	**4:41**	**5:25**	**6:05**	**6:35**	**7:55**
Riverside - La Sierra	6:59	**4:50**	**5:34**	**6:14**	**6:44**	**8:04**
Riverside - Downtown	7:15	**5:03**	**5:48**	**6:28**	**6:58**	**8:25**
Riverside - Hunter Park/UCR		**5:15**	**5:57**	**6:37**	**7:07**	
Moreno Valley/March Field		**5:28**	**6:10**	**6:50**	**7:20**	
Perris - Downtown		**5:39**	**6:21**	**7:01**	**7:31**	
Perris - South		**5:58**	**6:40**	**7:15**	**7:50**	

Check Orange County Line and Inland Empire-Orange County Line schedules for additional trains along this corridor.
Check Riverside Line schedule for additional trains between L.A. Union Station and Riverside - Downtown.

SATURDAY AND SUNDAY

Metrolink Train No.	751	753
Perris - South	7:07	8:17
Perris - Downtown	7:11	8:21
Moreno Valley/March Field	7:24	8:34
Riverside - Hunter Park/UCR	7:41	8:51
Riverside - Downtown	7:50	9:00
Riverside - La Sierra	8:00	9:10
Corona - North Main	8:08	9:18
Corona - West	8:14	9:24
Fullerton	8:39	9:49
Buena Park	8:46	9:56
Norwalk/Santa Fe Springs	8:54	10:04
L.A. Union Station	9:30	10:40

SATURDAY AND SUNDAY

Metrolink Train No.	752	754
L.A. Union Station	**3:15**	**7:12**
Norwalk/Santa Fe Springs	**3:36**	**7:33**
Buena Park	**3:42**	**7:39**
Fullerton	**3:49**	**7:46**
Corona - West	**4:13**	**8:10**
Corona - North Main	**4:20**	**8:17**
Riverside - La Sierra	**4:29**	**8:26**
Riverside - Downtown	**4:42**	**8:39**
Riverside - Hunter Park/UCR	**4:59**	**8:57**
Moreno Valley/March Field	**5:16**	**9:14**
Perris - Downtown	**5:29**	**9:27**
Perris - South	**5:35**	**9:33**

NOTES

↓ Train does not stop at this station

➢ Transfer Trains

★ Metrolink/Amtrak Shared Station

• Train may leave up to five minutes ahead of schedule

AM times **PM** times

Boarding information is available at each station

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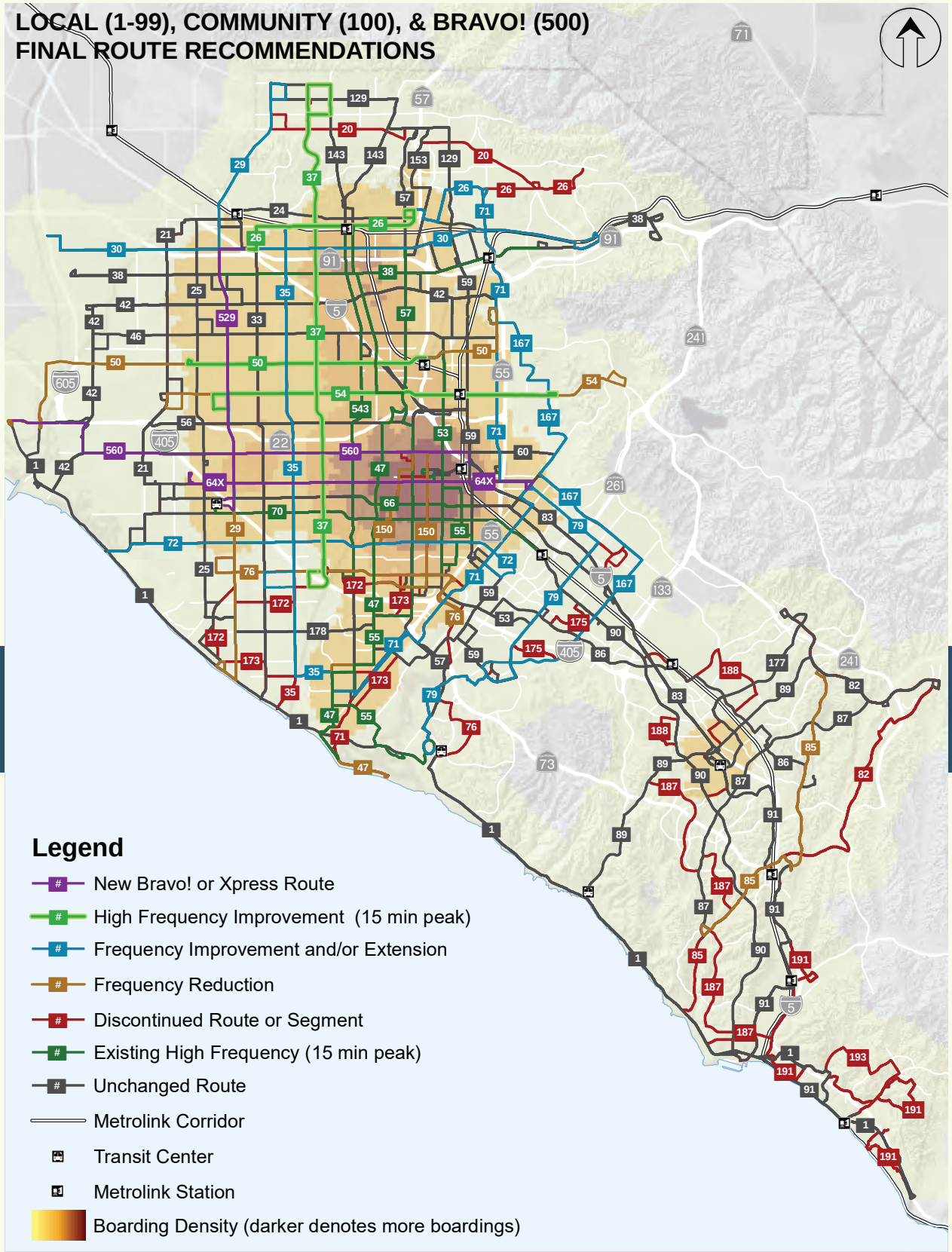
ID	Comment	Response
Submitted by	**City of Costa Mesa**	Submittal 0001527 **Related Documents** Link
0001527.01	Dear Connect SoCal Team:The City of Costa Mesa appreciates the time and effort undertaken by the Southern California Association of Governments (SCAG) staff in its efforts to develop a RTP/SCS of our large and diverse metropolitan planning area. The City of Costa Mesa remains committed to doing its fair share in addressing regional issues and appreciate the comment and review period provided by SCAG for the Connect SoCal Plan and its associated PEIR.	Thank you for your comments on the Draft Connect SoCal and associated PEIR. Comment noted. For responses related to the Connect SoCal Program Environmental Impact Report (PEIR), please refer to Chapter 9.0, Responses to Comments, of the Final Connect SoCal PEIR.
0001527.02	The City would like to express its support of recommendations and comments submitted by the Orange County Council of Governments, Orange County Transportation Authority, and Center for Demographic Research. We strongly recommend that all comments and concerns from these bodies be implemented into the Connect SoCal Plan and the associated PEIR.	Comment noted. For responses related to the Draft Connect SoCal Program Environmental Impact Report (PEIR), please refer to Chapter 9.0, Responses to Comments, and Chapter 10, Corrections and Additions, of the Final Connect SoCal PEIR.
Submitted by	**City of Huntington Beach**	Submittal 0001393 **Related Documents** Link
0001393.01	Thank you for the opportunity to submit comments on the Draft Connect SoCal plan and Program EIR. The City of Huntington Beach appreciates SCAG's public outreach efforts for this process and offers the following comments and concerns for your consideration.	Thank you for your comments on the Draft Connect SoCal and associated PEIR.
0001393.02	High Quality Transit Areas (HQTA). HQTAs are defined as "corridors that have at least a fifteen minute headway (time in between the next scheduled service) during peak hours bus service." According to RTP/SCS maps, all of Beach Boulevard within the City of Huntington Beach is defined as a HQTA. However, based on the October 13, 2019 Orange County Transportation Authority (OCTA) Bus Schedule 1, there are no bus stops on Beach Boulevard within the City of Huntington Beach with headway times of 15 minutes or less. Route 29 services Beach Boulevard from the City of La Habra to PCH in Huntington Beach. The shortest headway time during peak hours for bus service is on the Route 29 stop at PCH/1 51 Street (not a stop on Beach Boulevard) traveling southbound with an average headway time of 18.23 minutes during the PM peak hours. Most stops have an average peak hour headway time of approximately 19-25 minutes. Some stops, such as the Beach Boulevard/Talbert Avenue stop, have peak hour headway times of 40-49 minutes. One stop (Beach Boulevard/Atlanta Avenue) did not list any stop times as part of any route for this stop. It must also be noted that OCTA eliminated Route 211 in October 2019, which serviced Huntington Beach to Irvine (a major Orange County job center) due to low ridership.Further, OCTA's 2018 Long Range Transportation Plan (LRTP)2 includes Figure 4.1 - Local, Community, and Bravo! Final Route Recommendations. This figure recommends that Route 29 receive a reduction in frequency of service. This will add further delay to the 19-25 minute average peak hour headway service times on Beach Boulevard.	SCAG worked closely with the Orange County Transportation Authority (OCTA) to identify the high quality transit corridors (HQTCs) in Orange County which form the basis for high quality transit areas (HQTAs). SCAG and OCTA together identified the Beach Blvd corridor, including the entire alignment within the City of Huntington Beach, as both an existing and future HQTC. See Figure 4.10 in OCTA's 2018 Long Range Transportation Plan.The nature of bus services is that routes and service frequency can change periodically, thus a County Transportation Commission's (CTC) estimate of future transit service frequency is the best estimate available at a given point in time. For the 6th cycle of RHNA, SCAG is assigning a portion of housing unit need on the basis of 2045 HQTAs. These HQTAs will be consistent with those developed for Connect SoCal. CTCs including OCTA have provided SCAG with the most likely future service scenario in order to assist with our long-range planning efforts.

FIGURE 4.1


LOCAL (1-99), COMMUNITY (100), & BRAVO! (500)
FINAL ROUTE RECOMMENDATIONS
Legend
New Bravo! or Xpress Route
High Frequency Improvement (15 min peak)
Frequency Improvement and/or Extension
Frequency Reduction
Discontinued Route or Segment
Existing High Frequency (15 min peak)
Unchanged Route
Metrolink Corridor
Transit Center
Metrolink Station
Boarding Density (darker denotes more boardings)

OCTA

June 11, 2020

To: Transit Committee

From: Darrell E. Johnson, Chief Executive Officer

Subject: Bus Operations Performance Measurements Report for the Third Quarter of Fiscal Year 2019-20

Overview

The Orange County Transportation Authority operates fixed-route bus and demand-response paratransit service throughout Orange County and into neighboring counties. The established measures of performance for these services assess the safety, courtesy, reliability, and overall quality of these services. This report summarizes the year-to-date performance of these services through the third quarter of fiscal year 2019-20.

Recommendation

Receive and file as an information item.

Background

The Orange County Transportation Authority (OCTA) operates a countywide network of 60 routes, including local, community, rail connector, and express bus routes serving over 5,000 bus stops. Fixed-route bus (OC Bus) service operates in a 798 square-mile area, serving more than three million residents in 34 cities and unincorporated areas, with connections to transit services in Orange, Los Angeles, and Riverside counties. OCTA provides these services through both directly-operated (DOFR) and contracted fixed-route service (CFR). OCTA also provides OC ACCESS, a federally-mandated paratransit service, which is a shared-ride program available for people unable to use the OC Bus service because of functional limitations. Performance measures for both, OC Bus and OC ACCESS services are summarized and reported quarterly (Attachment A).

Discussion

This report provides an update on the performance of the OC Bus and OC ACCESS services by presenting the current trends and comparisons with OCTA-established performance standards for transit system safety, courtesy, and reliability. OCTA counts preventable vehicle accidents to evaluate system safety, customer complaints to assess courtesy, and uses both on-time performance and miles between road calls (MBRC) to measure service reliability. This report includes year-to-date performance through the third quarter, including the months of January, February, and March of fiscal year (FY) 2019-20.

It is important to note that OCTA implemented a reduced service schedule for OC Bus on March 23, 2020 in response to the novel coronavirus (COVID-19) pandemic. The impact that COVID-19 has had on both OC Bus and OC ACCESS has been significant, but because the impacts did not begin to manifest themselves until mid-March, the impact on the performance metrics for the entire three-month period is not significant. Impacts as a result of COVID-19 will be much more evident and discussed in the performance measures report for the following quarter.

- Safety – DOFR OC Bus and OC ACCESS services both remain below the accident frequency standard as the number of preventable accidents recorded for each mode exceeded one preventable accident per 100,000 service miles for the year-to-date numbers. OCTA Operations staff have continued to focus on and stress the importance of safety, conduct safety-related campaigns, and promote the safe driving award program. Improvements were realized between January and March, moving the trend line towards meeting the standard. Improvements were realized between January and March, moving the trend line towards meeting the standard. Improvements were realized between January and March, moving the trend line towards meeting the standard. For OC ACCESS service, fixed object and curb strikes continued to pull overall performance below standard. However, the contractor did take steps to address performance in this area with the Regional Director of Safety for Southern onsite during February 2020. OCTA Operations staff will continue to focus on and stress the importance of safety, conduct safety-related campaigns, and promote the safe driving award program. CFR OC Bus service continued to improve compared to the previous quarter, resulting in year-to-date performance that exceeds the standard.

- Customer Service – Customer service is measured by evaluating the number of valid customer complaints received compared to boardings. During the first quarter, all modes of service performed above the respective standards.

- Reliability – On-time performance (OTP) for OC Bus and OC ACCESS remain below target but showed improvement between January and March. The improvement in fixed-route OTP is likely a result of the OTP for March. In March, OTP for fixed-route services was 87.4 percent, an increase of 6.6 percent. OTP for OC ACCESS improved slightly by 0.2 percent.

  The MBRC for all modes of service exceeded the standard through the reporting period. OCTA staff will continue to monitor performance in this area and work with the contractor to sustain or improve overall performance.

The report also includes:

- An assessment of the efficiency of OCTA transit operations based on industry standards for ridership, productivity, farebox recovery, and cost per revenue vehicle hour;
- A review of contractor performance for CFR and OC ACCESS services;
- A route-level performance evaluation that includes subsidy per boarding, revenue per boarding, and resource allocation (buses); and
- A status report on the service adjustments and strategies implemented under the OC Bus 360° Program, including OC Flex and the College Pass Program.

Summary

Through the third quarter of FY 2019-20, the performance of OC Bus service and OC ACCESS exceeded the performance in the areas of courtesy and reliability (MBRC). While the safety and reliability standards continue to improve, year-to-date performance has not met the standard; staff will continue to focus efforts in both safety and reliability. The performance of OC ACCESS exceeded the standard for courtesy but fell below the performance standard for safety and reliability. OCTA staff continue to focus on continuous quality improvement in safety and reliability as detailed in the report. In addition to tracking the established key performance indicators, staff will continue to manage the service contracts pursuant to contract requirements and work to identify other strategies to improve overall system performance.

Attachment

A. Bus Operations Performance Measurements Report, Third Quarter, Fiscal Year 2019-20

Prepared by:

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Manager, Scheduling and Bus Operations Support
(714) 560-5710

Approved by:

Beth McCormick
General Manager, Operations
(714) 560-5964

Jennifer L. Bergener
Chief Operating Officer, Operations/
Deputy Chief Executive Officer
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ATTACHMENT A

Bus Operations Performance Measurements Report

OCTA

Third Quarter

Fiscal Year 2019-20

About This Report

The Orange County Transportation Authority (OCTA) operates a countywide network of 61 routes including local, community, rail connector, and express bus routes serving over 5,000 bus stops known as OC Bus. OCTA also operates paratransit service (OC ACCESS), a shared-ride program available for people unable to use the standard OC Bus service because of functional limitations. OC Bus service is provided through both direct operations by OCTA referred to as directly operated fixed-route (DOFR) and contracted operations referred to as contracted fixed-route (CFR). The OC ACCESS service is a contract-operated demand-response service required by the Americans with Disabilities Act that is complementary to the fixed-route service and predominately accounts for the overall paratransit services operated by OCTA. These services make up the bus transit system and are evaluated by the performance measurements summarized in this report.

This report tracks bus system safety, as measured by vehicle accidents; courtesy, as measured by customer complaints; and reliability, as measured by on-time performance (OTP) and miles between road calls (MBRC). Along with these metrics, industry-standard measurements are tracked to assess OCTA bus operations; these measurements include ridership, productivity, farebox recovery ratio (FRR), and cost per revenue vehicle hour (RVH). Graphs accompany the details of each indicator showing the standards or goals and the values for the current reporting period. The following sections provide performance information for OC Bus service, DOFR and CFR, and OC ACCESS service.

It is important to note that OCTA implemented a reduced service schedule for OC Bus on March 23, 2020 in response to the novel coronavirus (COVID-19) pandemic. The impact that the COVID-19 pandemic has had on both OC Bus and OC ACCESS has been significant, but because the impacts did not begin to manifest themselves until mid-March, the impact on the performance metrics for the entire three-month period, is not significant. Impacts as a result of the COVID-19 pandemic will be much more evident and discussed in the performance measures report for the following quarter.

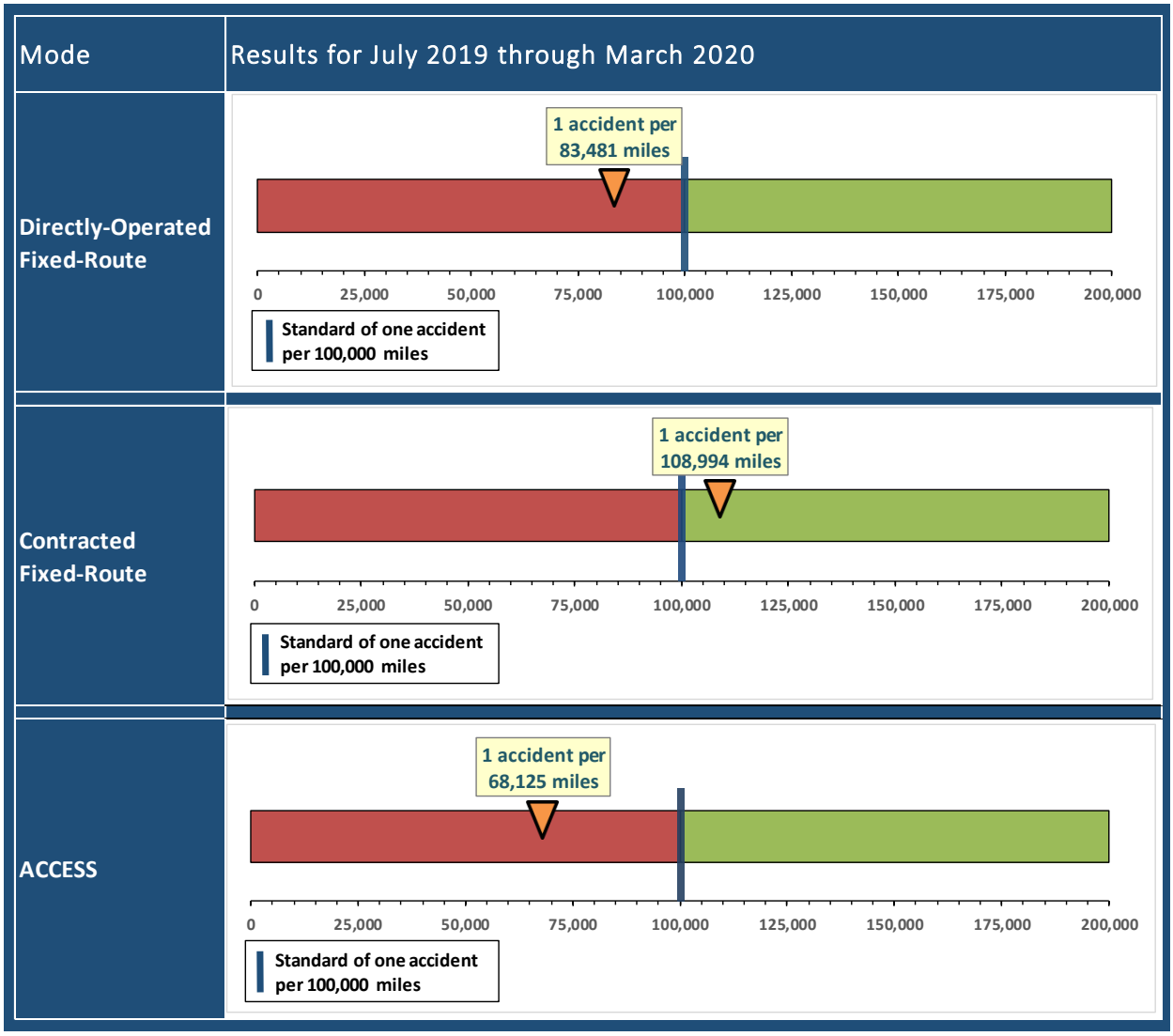
FY2019-20 Q3 SUMMARY

- **Safety**:
  - DOFR - ▼
  - CFR - ▲
  - OC ACCESS - ▼
- **Courtesy**:
  - DOFR - ▲
  - CFR - ▲
  - OC ACCESS - ▲
- **On-Time Performance**:
  - DOFR - ▼
  - CFR - ▼
  - OC ACCESS - ▼
- **Miles Between Road Calls**:
  - DOFR - ▲
  - CFR - ▲
  - OC ACCESS - ▲

Safety: Preventable Vehicle Accidents

OCTA is committed to the safe delivery of the OC Bus service. The safety standard for DOFR, CFR, and OC ACCESS services is no more than one vehicle accident per 100,000 miles. Preventable vehicle accidents are defined as incidents when physical contact occurs between vehicles used for public transit and other vehicles, objects, or pedestrians, and where a coach operator failed to do everything reasonable to prevent the accident.

Through the third quarter of fiscal year (FY) 2019-20, all modes of service, except CFR, performed below the safety standard, operating less than 100,000 miles between preventable accidents.

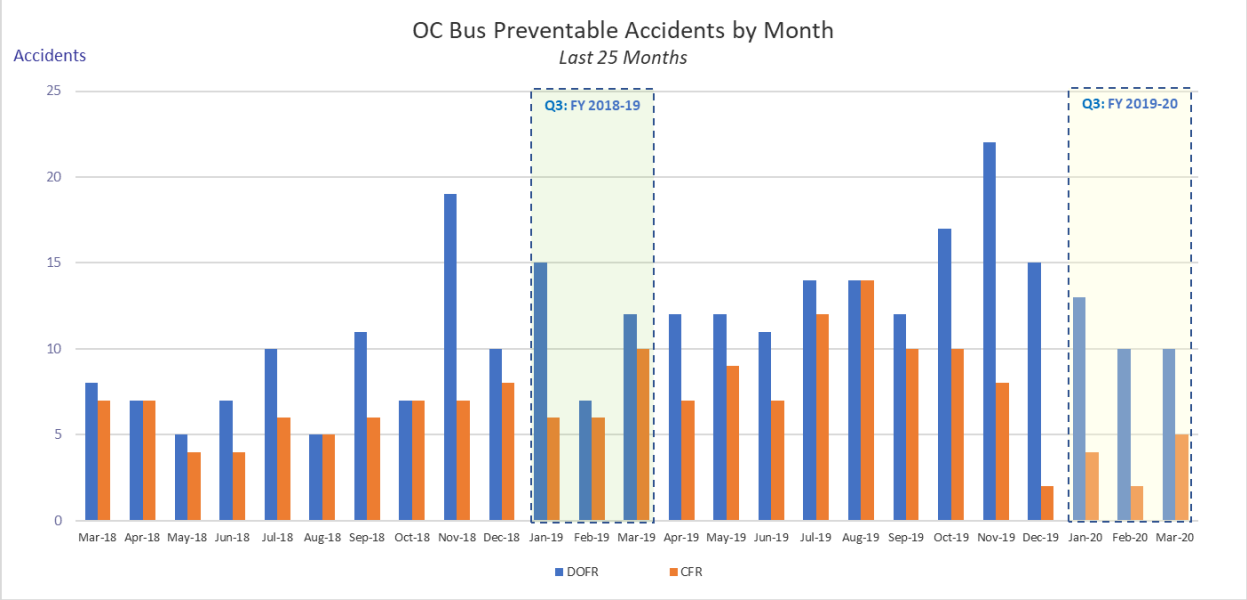


DOFR OC Bus and OC ACCESS services both remain below the accident frequency standard as the number of preventable accidents recorded for each mode exceeded one preventable accident per 100,000 service miles for the year-to-date numbers. Improvements were realized between January and March. During this time, there was a 39 percent decrease in the number of preventable accidents compared to last quarter resulting in an accident rate of less than one accident per 100,000 miles. To sustain this trend,

OCTA Operations staff will continue to focus on and stress the importance of safety, conduct safety-related campaigns, and promote the safe driving award program.

CFR OC Bus service performance also continued to improve during the third quarter, exceeding the standard. Between the months of January and March, the number of preventable accidents reported by the contractor decreased by 45 percent. Monthly comprehensive safety campaigns continue that focus on different topics using a variety of communication methods including posters, safety messages, hands-on training, and discussions at monthly safety meetings by the CFR management.

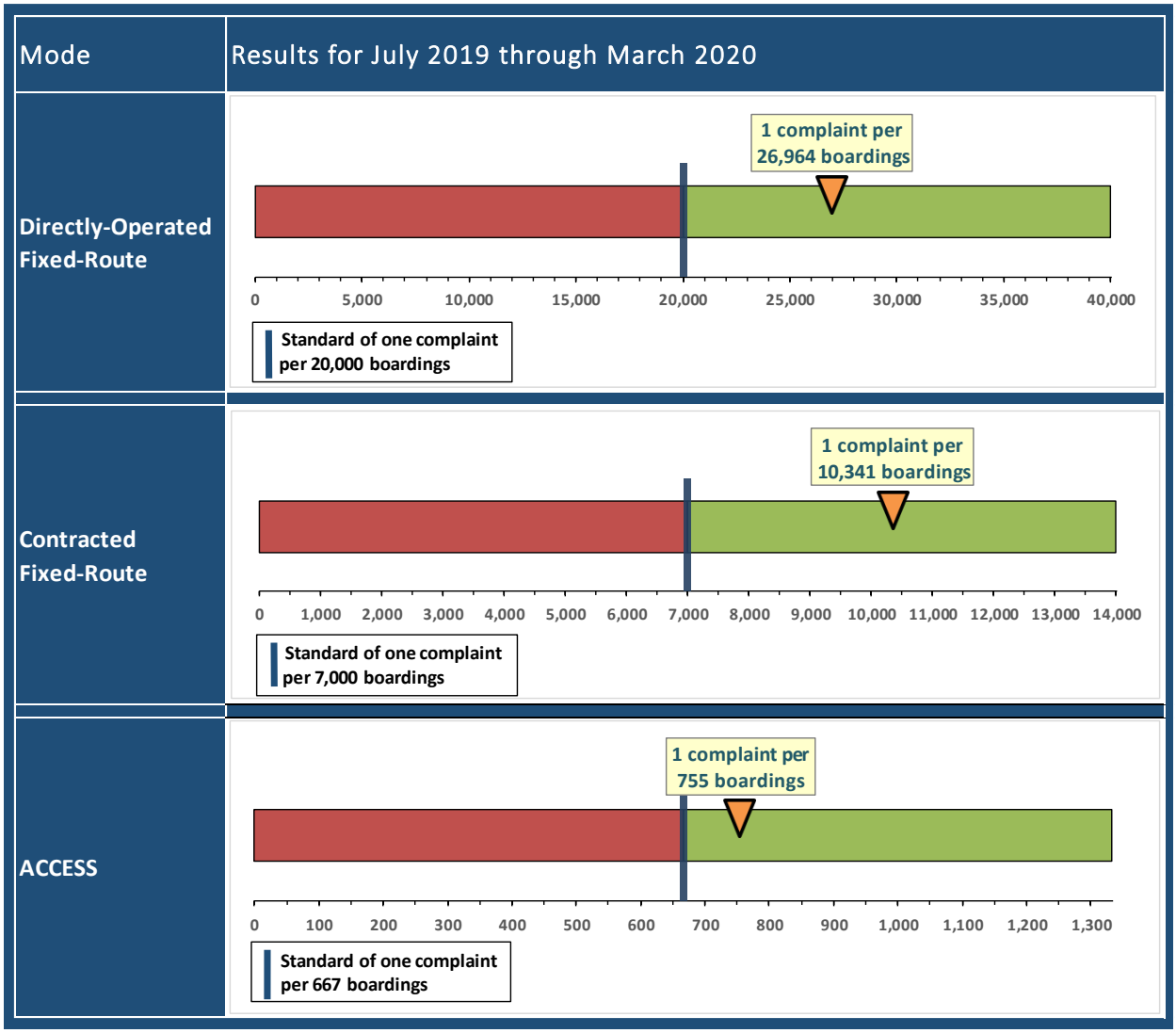
For OC ACCESS, though there was a decrease in the number of preventable accidents compared to the second quarter, fixed object and curb strikes continue to drive overall performance below standard. However, the contractor did take steps to address the increase which included having the Regional Director of Safety for Southern California onsite during February 2020 to review the safety program and to ensure that the safety initiatives were being implemented properly. The efforts taken by the contractor resulted in a significant decrease in preventable accidents for February (eight) and March (five) from after a subpar performance in January (20). The following chart shows the trend of preventable accidents for fixed-route service over the last two years.



Courtesy: Customer Complaints

OCTA strives to achieve a high level of customer satisfaction in the delivery of OC Bus services. The performance standard for customer satisfaction is courtesy as measured by the number of valid complaints received. Customer complaints are the count of incidents when a rider reports dissatisfaction with the service. The standard adopted by OCTA for DOFR OC Bus is no more than one customer complaint per 20,000 boardings; the standard for CFR OC Bus service is no more than one complaint per 7,000 boardings; and the contractual standard for OC ACCESS is no more than one complaint per 667 boardings.

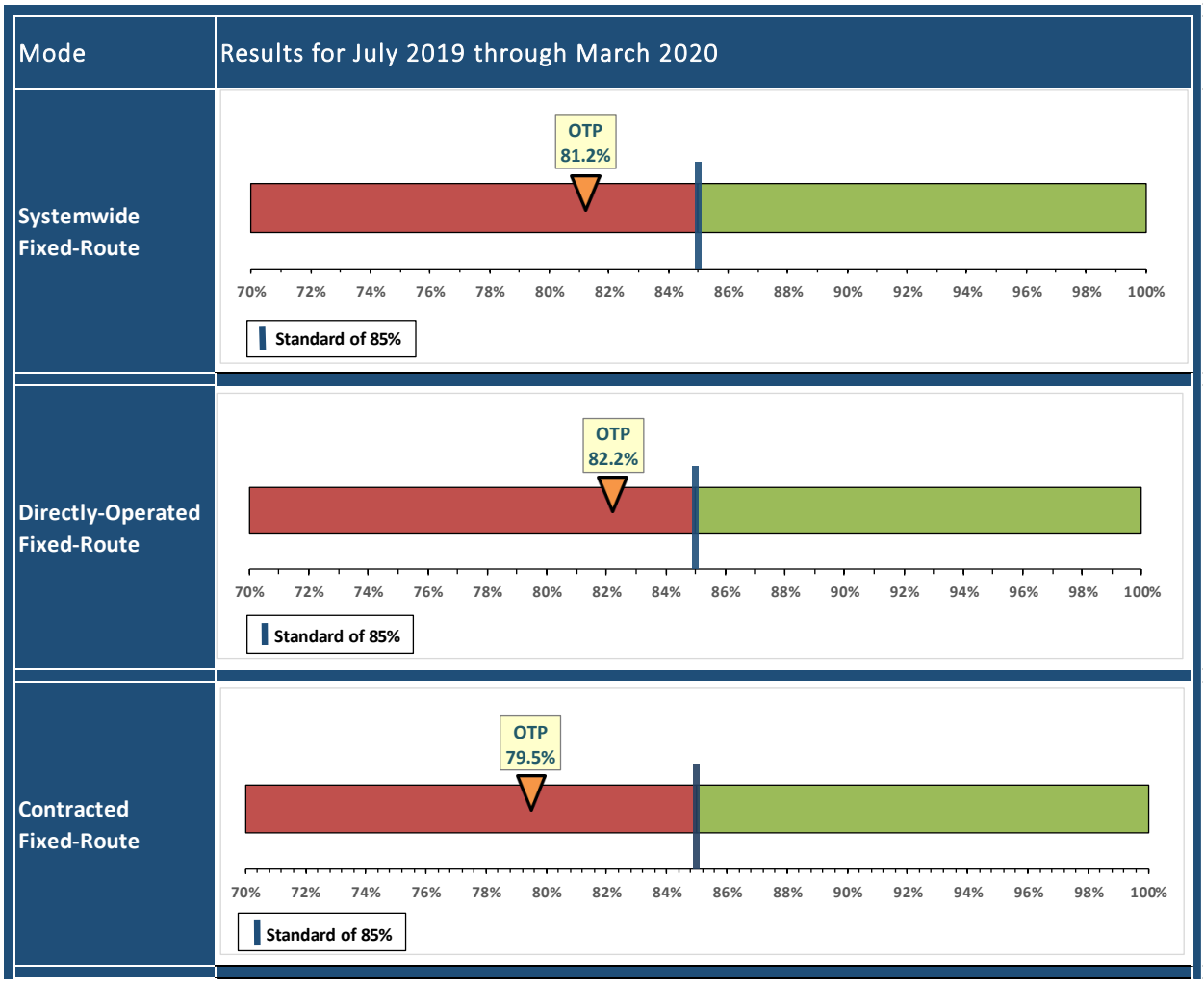
Through the third quarter of FY 2019-20, all modes of service continue to perform well, exceeding the courtesy standard with less than one valid complaint per 20,000, 7,000, and 667 boardings, respectively.



Reliability: On-Time Performance

Reliability is vital to a successful transportation network. Reliability for OCTA is measured in part by OTP. OTP is a measure of performance which evaluates the schedule adherence of a bus operating in revenue service according to a published schedule. Schedule adherence is tracked by monitoring the departure of vehicles from time points, which are designated locations on a route used to control vehicle spacing as shown in the published schedule. For OC Bus service, a trip is considered on-time if it departs the time point no more than five minutes late. OCTA's fixed-route system standard for OTP is 85 percent. For OC ACCESS service, OTP is a measure of performance evaluating a revenue vehicle's adherence to a scheduled pick-up time for transportation on a demand response trip. A trip is considered on-time if the vehicle arrives within a 30-minute window. The OC ACCESS OTP standard is 94 percent.

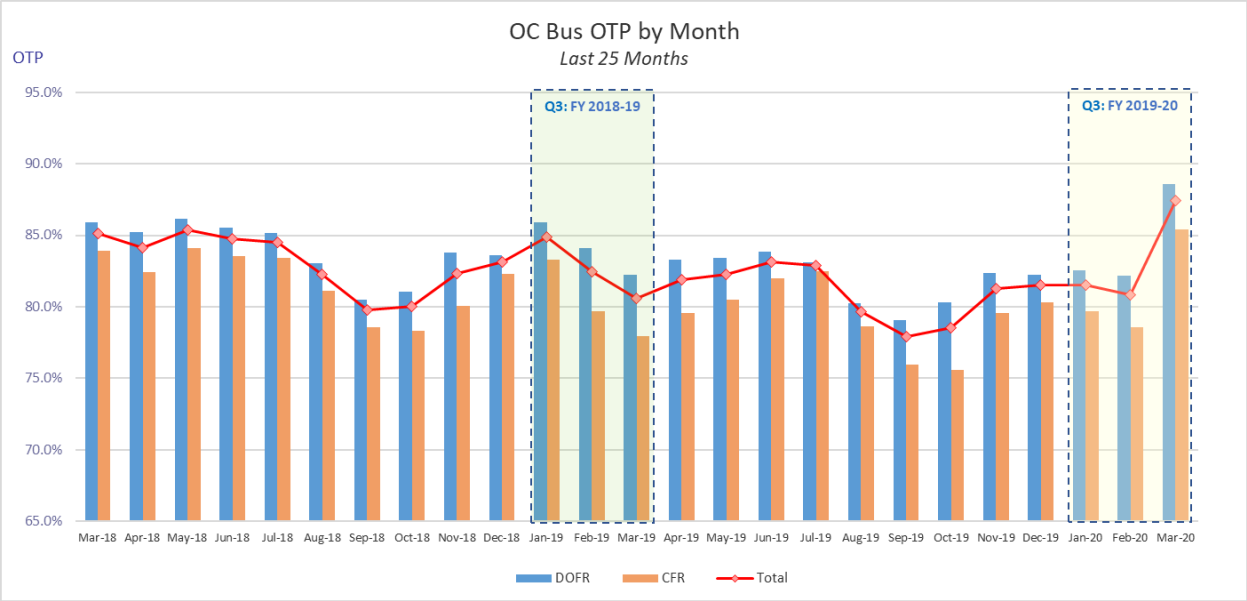
On-time performance (OTP) for OC Bus and OC ACCESS remain below target but showed improvement between January and March with OTP rates of 81.2 percent and 92.4 percent, respectively.



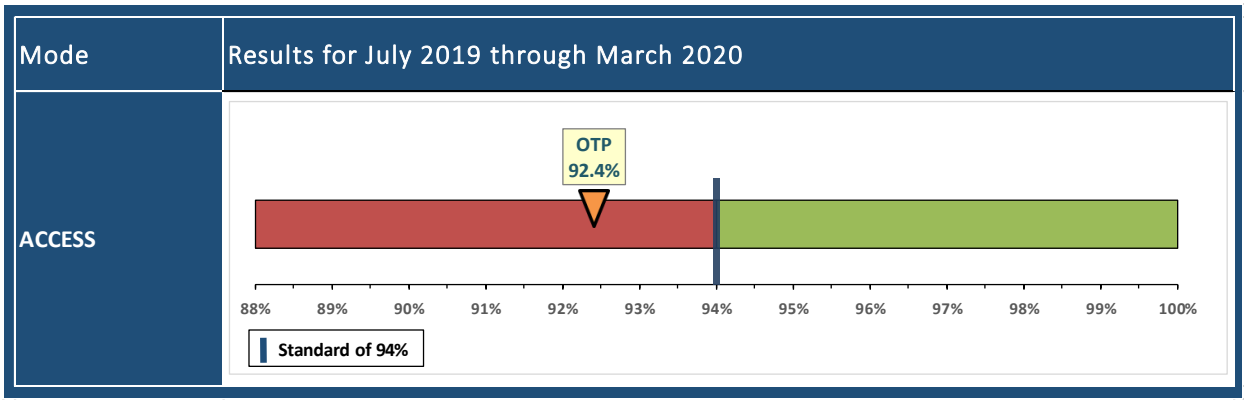
OTP for the DOFR OC Bus service through the third quarter was at 82.2 percent, a 1.0 percent increase from last quarter but 1.0 percent lower than the same time last year. The OTP for the CFR OC Bus service through

the third quarter showed improvement, reaching 79.5 percent, a 0.7 percent increase from last quarter and 1.1 percent lower than the same time last year.

The improvement in OTP is likely a result of the OTP for March. In March, OTP for fixed-route services was 87.4 percent, an increase of 6.6 percent. For the first time in over two years, OTP for both directly operated fixed-route (DOFR) and contract fixed-route (CFR) services exceeded the performance standard of 85 percent in a month, at 88.6 percent and 85.4 percent, respectively. The OTP for March is largely attributed to changes in travel patterns due to the state and national orders associated with the COVID-19 pandemic. This led to reduced traffic on the roads, reduced ridership, and shorter dwell times at bus stops. The following chart shows the OTP trend for fixed-route service over the last two years.



OCTA Operations staff will continue to monitor the dynamic traffic conditions as travel restrictions are lifted to ensure the current overall OTP is maintained and monitor the need for bus running time adjustments needed to reflect traffic associated with on-going construction projects. The contractor management team will continue to focus on coach operator behavior, performing route level checks and coaching and counseling as appropriate.



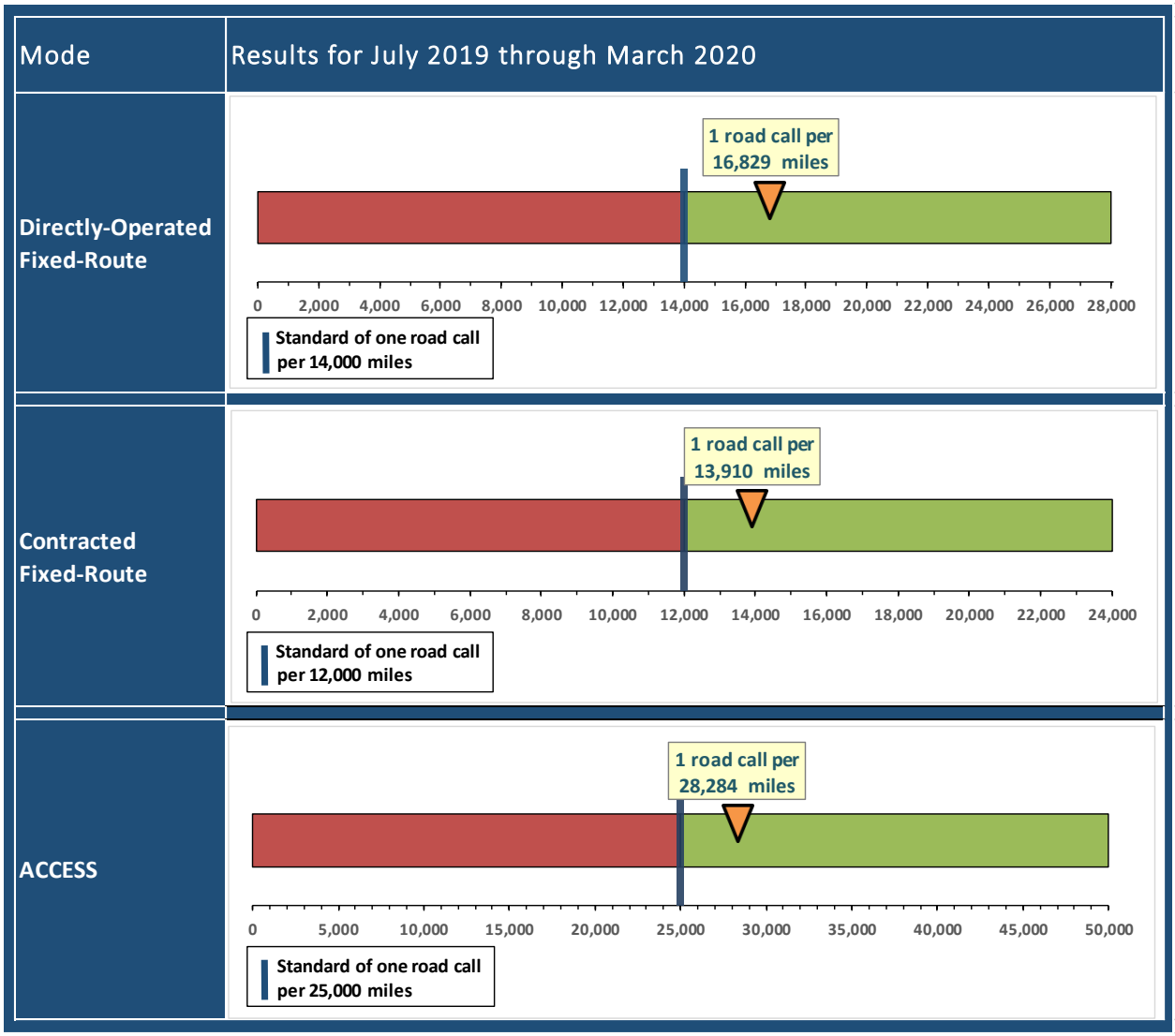
OTP for OC ACCESS service (Primary Service and Supplemental Taxi) for the third quarter was 92.4 percent, 1.6 percent below the standard, 0.2 percent higher than last quarter, and 0.7 percent lower than the 93.1 percent reported during the same period last year.

The contractor continued their work, making modifications to subscription trip routing/scheduling for individuals traveling to adult day programs. These changes were implemented in early-March 2020 but did not have the level of impact that was expected as a result of the COVID-19 pandemic.

OCTA staff will be working closely with the contractor to ensure plans are in place to meet performance standards during and after stay-at-home orders are lifted.

Reliability: Miles Between Road Calls

MBRC is a vehicle reliability performance indicator that measures the average distance in miles that a transit vehicle travels before failure of a vital component forces removal of the vehicle from service. OCTA has adopted standards for the MBRC for DOFR, CFR, and OC ACCESS services. These standards vary to align with the specific type of service being provided and account for the variability inherent to each of these services including the vehicles assigned. The specific standards as adopted by OCTA are 14,000 MBRC for DOFR OC Bus service; 12,000 MBRC for CFR OC Bus service; and 25,000 MBRC for OC ACCESS.



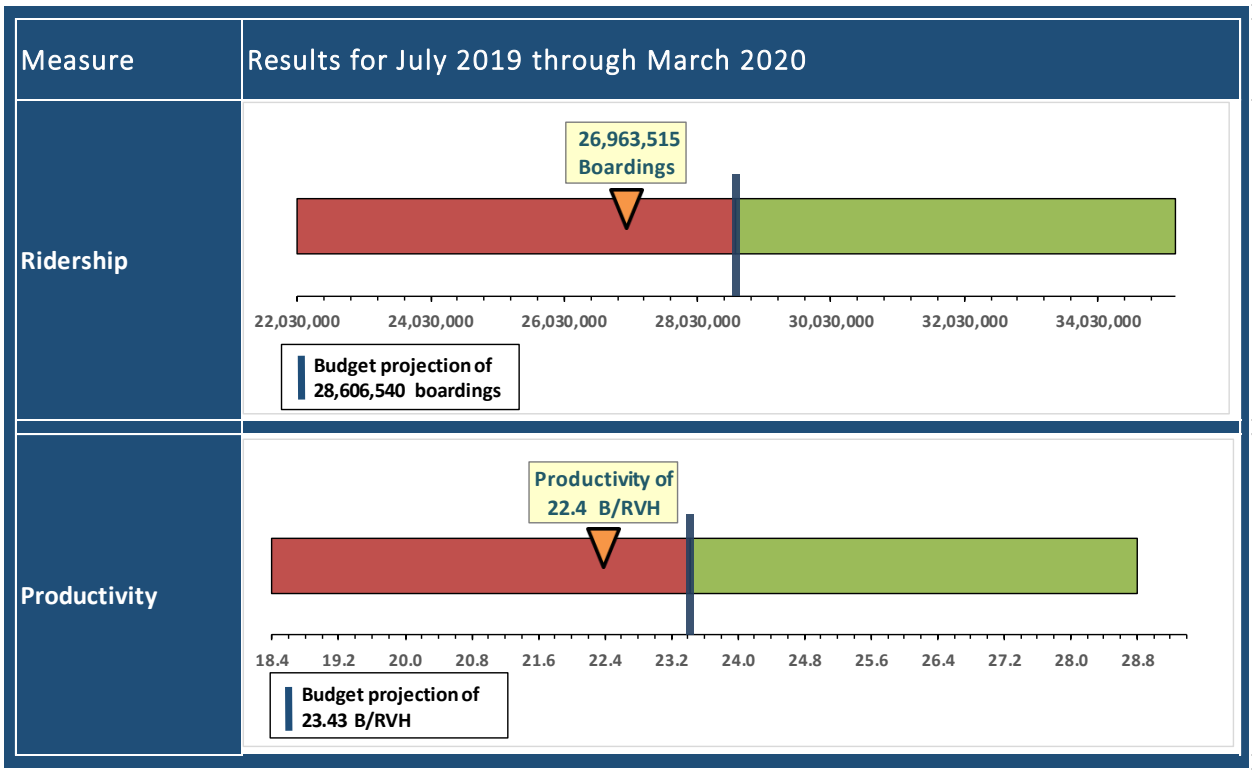
Through the third quarter of FY 2019-20, OC Bus services performed above standard across all modes.

OCTA staff will continue to monitor performance in this area and work with the contractor to sustain or improve overall performance.

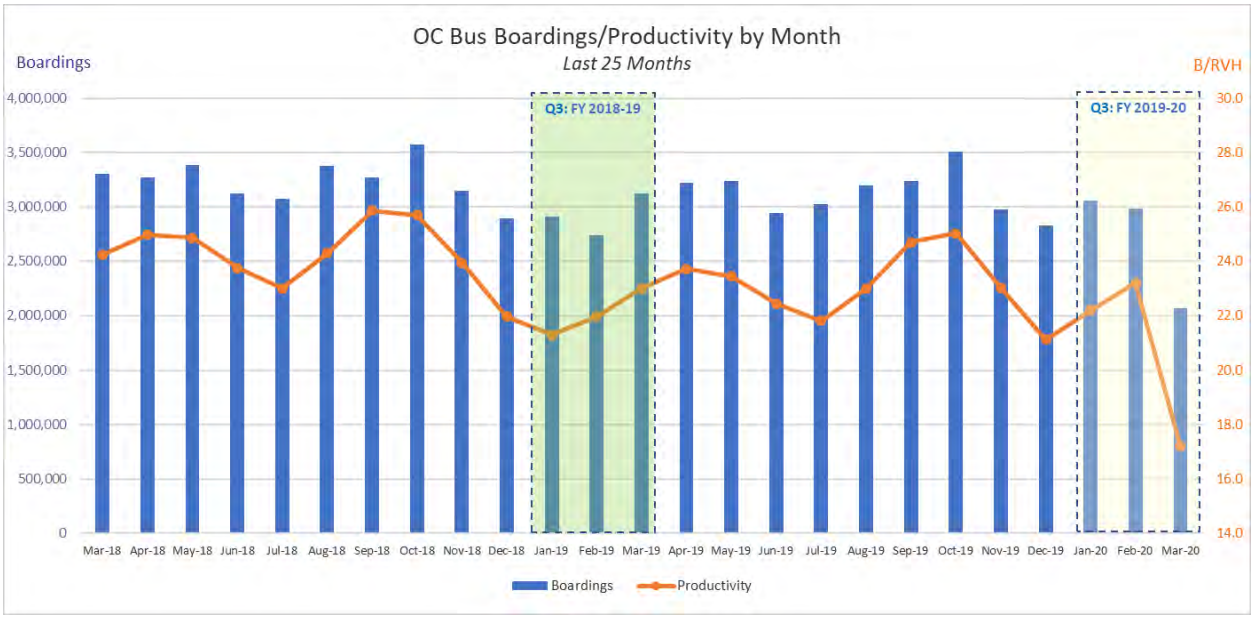
Ridership and Productivity – OC Bus

Ridership (or boardings) is the number of rides taken by passengers using public transit and is influenced by the level of service provided, weather, economy, and seasonal variations in demand. Productivity is an industry measure that counts the average number of boardings for each RVH that is operated. RVH is any 60-minute increment of time that a vehicle is available for passengers within the scheduled hours of service, excluding deadhead (a non-revenue movement of a transit vehicle to position it for service). Boardings per RVH (B/RVH) is calculated by taking the boardings and dividing it by the number of RVH operated.

Through the third quarter of FY 2019-20, both ridership and productivity for OC Bus service were significantly lower than budgeted projections, down by 5.7 percent and 4.5 percent, respectively.



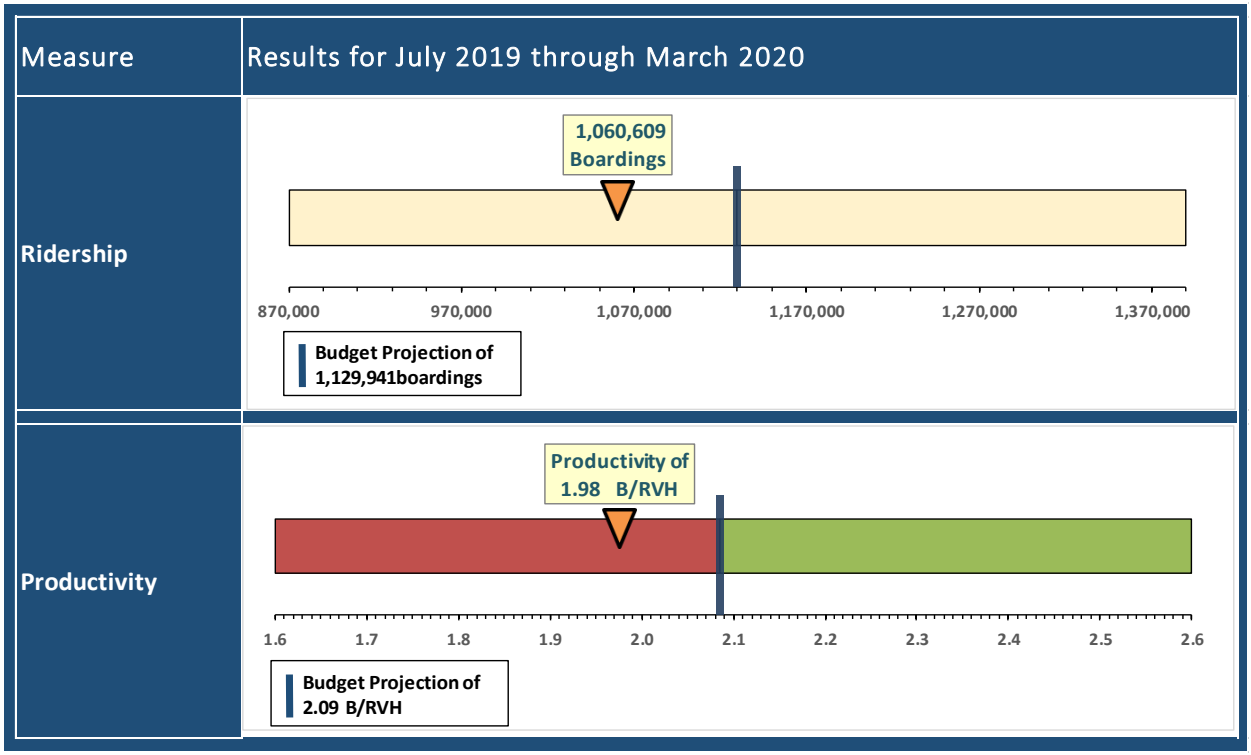
The ridership and productivity for the third quarter, as shown on the following chart, reveals a trend severely impacted by the COVID-19 pandemic that resulted in significant changes to travel patterns. The national and state level orders related to the pandemic caused a substantial drop in ridership and productivity. Average weekday ridership at the close of the month was less than 35,000, roughly 30 percent of the average weekday ridership before the "Safe at Home" orders went into effect. Ridership and productivity levels are expected to remain well below pre-COVID-19 pandemic levels until well after the travel restrictions are lifted.



Ridership and Productivity – OC ACCESS

(Primary Service Provider and Supplemental Taxi)

Through the third quarter of FY 2019-20, the ridership and productivity for OC ACCESS are trending below budgeted projections by 6.1 percent and 5.3 percent, respectively. As with the fixed-route service, ridership and productivity for OC ACCESS was impacted by the initial stages of the COVID-19 pandemic. With recommendations in place that persons 65 years or older or having underlying health issues stay home, many individuals who typically use OC ACCESS service made fewer trips, causing a drop in average daily ridership of 90 percent. Additionally, productivity has been impacted by the requirement for social distancing on OC ACCESS vehicles, as shared rides have been limited.



Contractor Performance: Fixed-Route

Per Agreement No. C-4-1737 between OCTA and First Transit, Inc. (First Transit), additional measures are tracked to ensure the CFR OC Bus service meets specified standards for safety, customer service, and reliability. When the contractor's monthly performance exceeds the standard as set forth in the agreement, financial incentives are paid to the contractor; conversely, when the monthly performance of the contractor is below the standard as set forth in the agreement, penalties are assessed and are paid to OCTA by the contractor.

Through the third quarter of FY 2019-20, the overall performance of the contracted OC Bus service as determined by the performance categories outlined in the contract was below standard for missed trips and on-time performance.

Table 1 provides the penalties and incentives assessed to the contractor by quarter for FY 2019-20. The incentives paid in the third quarter relate to courtesy and accident frequency, which totaled $25,200. This brings the year-to-date total up to $52,100. The total penalties assessed to the contractor during the quarter total $157,207 resulting in a year-to-date total of $565,989. Despite improvements compared to the previous quarter, missed trips, unreported accidents and vehicle damage were the primary categories where penalties were assessed.

Table 1:	Performance Categories	FY20 Q1	FY20 Q2	FY20 Q3	FY20 Q4	FYTD 19
Penalties	On-Time Performance	$ (6,000)	$ (12,000)	$ (7,000)	$ -	$ (25,000)
	Valid Complaints: Per 7,000 boardings	$ -	$ -	$ -	$ -	$ -
	Unreported Accident	$ (85,000)	$ (20,000)	$ (30,000)	$ -	$ (135,000)
	Accident Frequency Ratio	$ (20,000)	$ -	$ -	$ -	$ (20,000)
	Key Positions	$ -	$ -	$ -	$ -	$ -
	CHP Terminal Inspections	$ -	$ -	$ -	$ -	$ -
	Reports	$ -	$ -	$ -	$ -	$ -
	Preventive Maintenance	$ -	$ (382)	$ (1,207)	$ -	$ (1,589)
	Road Calls	$ (1,400)	$ -	$ -	$ -	$ (1,400)
	Vehicle Damage: Per vehicle per day	$ -	$ -	$ (63,000)	$ -	$ (63,000)
	Missed Trips	$ (166,000)	$ (98,000)	$ (56,000)	$ -	$ (320,000)
	Total	**$ (278,400)**	**$ (130,382)**	**$ (157,207)**	**$ -**	**$ (565,989)**
Incentives	On-Time Performance	$ -	$ -	$ -	$ -	$ -
	Valid Complaints: Per 7,000 boardings	$ 14,500	$ 7,400	$ 15,200	$ -	$ 37,100
	Accident Frequency Ratio	$ -	$ 5,000	$ 10,000	$ -	$ 15,000
	Total	**$ 14,500**	**$ 12,400**	**$ 25,200**	**$ -**	**$ 52,100**
Prior Periods Adjustment	AFR	$ -	$ (5,000)	$ -	$ -	$ (5,000)
	Key Position	$ -	$ -	$ -	$ -	$ -
	Total	**$ -**	**$ (5,000)**	**$ -**	**$ -**	**$ (5,000)**
All	**Total**	**$ (263,900)**	**$ (122,982)**	**$ (132,007)**	**$ -**	**$ (518,889)**

Contractor Performance: OC ACCESS

(Primary Service Provider and Supplemental Taxi)

Per Agreement No. C-2-1865 between OCTA and MV Transportation, Inc., additional measures are tracked to ensure OC ACCESS meets the standards for safety, customer service, and reliability. When the contractor's monthly performance exceeds the standard as set forth in the agreement, financial incentives are paid to the contractor; conversely, when the monthly performance of the contractor is below the standard as set forth in the agreement, penalties are assessed and must be paid to OCTA by the contractor.

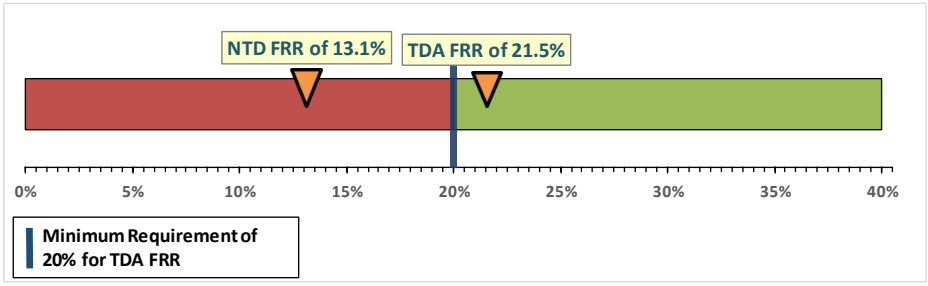
As presented in this report, the overall performance of the contractor providing OC ACCESS service through the third quarter of FY 2019-20 is above standard with respect to courtesy, while below standard for safety and on-time performance. Table 2 below lists, by quarter, the penalties and incentives assessed to the OC ACCESS contractor as established in the agreement. Through the third quarter, there were no incentives awarded to the contractor, but $90,000 in penalties were assessed. This brings the gross year-to-date total for penalties to $272,007. Penalties assessed to the contractor were related to performance for passenger productivity, OTP, excessively late trips, missed trips, and an unreported accident.

Table 2:	Performance Categories	FY20 Q1	FY20 Q2	FY20 Q3	FY20 Q4	FYTD 20
Penalties	Passenger Productivity	$ (10,000)	$ (20,000)	$ (30,000)	$ -	$ (60,000)
	On-Time Performance	$ (15,000)	$ (30,000)	$ (10,000)	$ -	$ (55,000)
	Customer Comments	$ (2,800)	$ (3,000)	$ -	$ -	$ (5,800)
	Call Center Hold Times	$ (5,000)	$ -	$ -	$ -	$ (5,000)
	Excessively Late Trips	$ (20,000)	$ (30,000)	$ (30,000)	$ -	$ (80,000)
	Missed Trips	$ (5,000)	$ (30,000)	$ (15,000)	$ -	$ (50,000)
	Unreported Accident	$ (5,000)	$ (5,000)	$ (5,000)	$ -	$ (15,000)
	Preventive Maintenance	$ -	$ -	$ -	$ -	$ -
	Road calls	$ (700)	$ -	$ -	$ -	$ (700)
	Reports	$ -	$ -	$ -	$ -	$ -
	Key Positions	$ -	$ -	$ -	$ -	$ -
	CHP Terminal Inspections	$ -	$ -	$ -	$ -	$ -
	Vehicle Damage	$ -	$ -	$ -	$ -	$ -
	Fare Variance	$ -	$ (507)	$ -	$ -	$ (507)
	Total	**$ (63,500)**	**$ (118,507)**	**$ (90,000)**	**$ -**	**$ (272,007)**
Incentives	Passenger Productivity	$ -	$ -	$ -	$ -	$ -
	On-Time Performance	$ -	$ -	$ -	$ -	$ -
	Excessively Late Trips	$ -	$ -	$ -	$ -	$ -
	Missed Trips	$ -	$ -	$ -	$ -	$ -
	Total	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
Prior Periods Adjustment	Customer Comments	$ -	$ -	$ -	$ -	$ -
	Unreported Accident	$ 10,000	$ -	$ -	$ -	
	Total	**$ 10,000**	**$ -**	**$ -**	**$ -**	**$ 10,000**
All	**Total**	**$ (53,500)**	**$ (118,507)**	**$ (90,000)**	**$ -**	**$ (262,007)**

Farebox Recovery Ratio

Farebox Recovery Ratio (FRR) is a measure of the proportion of operating costs recovered by passenger fares, calculated by dividing the farebox revenue by total operating expenses. A minimum FRR of 20 percent for all service is required by the Transportation Development Act in order for transit agencies to receive the state sales tax available for public transit purposes. In an effort to normalize seasonal fluctuations, data shown below reflects actuals over the last 12 months from April 2019 through March 2020.

FRR, based on the National Transit Database definition in which only passenger fares are included under revenue, did not meet the 20 percent goal. However, as a result of the passage of Senate Bill No. 508 (SB 508), OCTA was able to adjust the FRR to include local funds. SB 508 states, *"If fare revenues are insufficient to meet the applicable ratio of fare revenues to operating cost required by this article, an operator may satisfy that requirement by supplementing its fare revenues with local funds. As used in this section, "local funds" are any non-federal or non-state grant funds or other revenue generated by, earned by, or distributed to an operator."* After incorporating property tax revenue, advertising revenue, and Measure M fare stabilization, the adjusted FRR was 21.5 percent, a decrease of 0.8 percent from the previous quarter and a 3.9 percent drop from the same quarter last year.

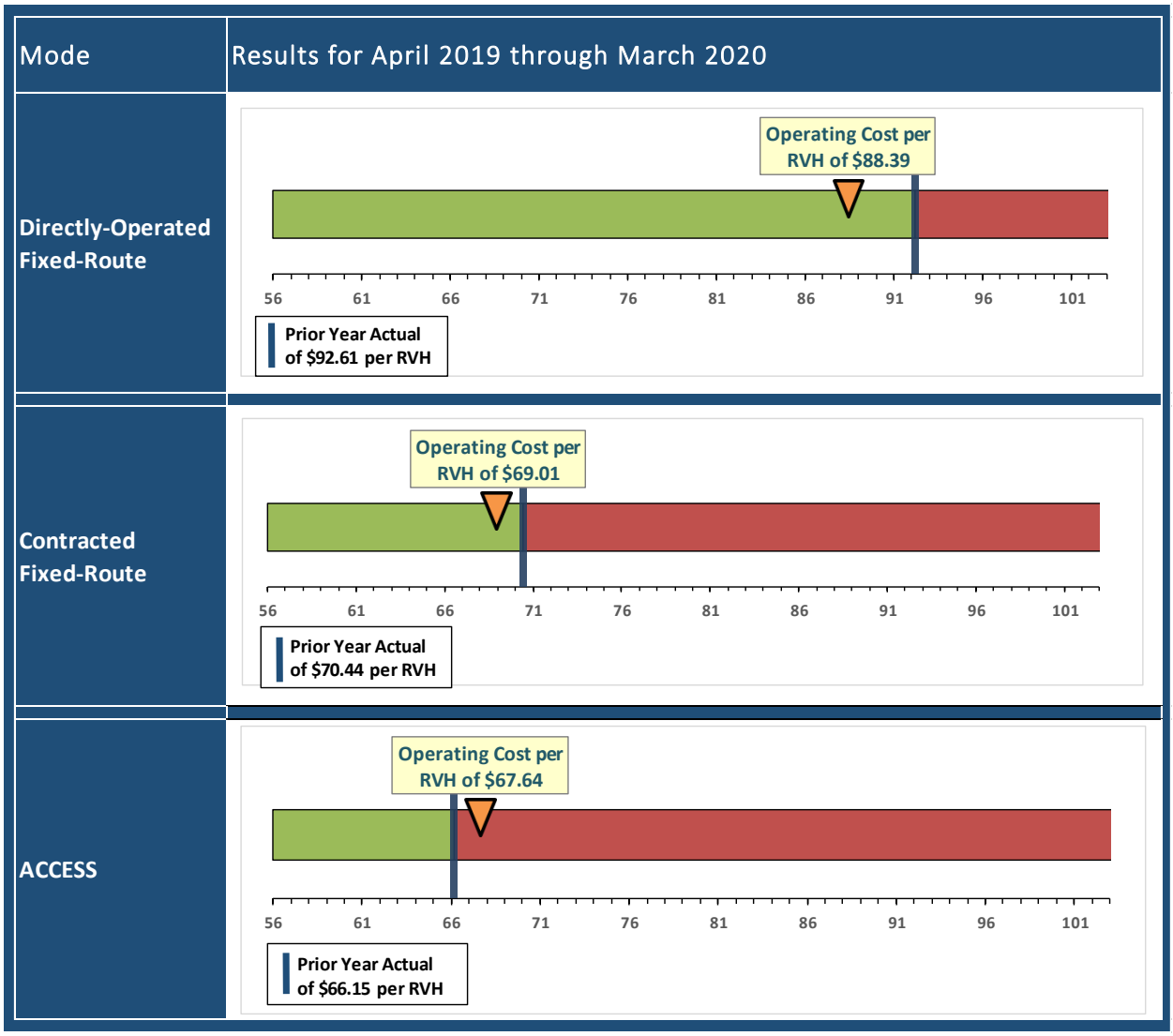
Mode	Results for April 2019 through March 2020
Systemwide	

Note:
- *National Transit Database (NTD) FRR consists of only passenger fares*
- *Transportation Development Act (TDA) FRR includes passenger fares, property tax revenue, advertising revenue and Measure M fare stabilization*

Operating Cost per Revenue Vehicle Hour

Cost per RVH is one of the industry standards used to measure the cost efficiency of transit service. It is derived by dividing operating expenses by RVH. In order to provide a more comparable illustration, all metrics below are calculated based on direct operating cost, which excludes capital, general administrative, and other overhead costs.

Similar to the FRR, the statistics below depict actuals over the last 12 months. All modes operated at a lower cost per RVH than the same 12-month period of the prior year except for OC ACCESS due to the Alternative Fuel Tax Credit for fixed-route services from the period of January 2018 through December 2019 being received in March 2020. The difference in cost per RVH from the prior FY was a 4.1 percent decrease in DOFR, 4.4 percent decrease in CFR, and 2.2 percent increase in OC ACCESS.



Performance Evaluation by Route

Continuing efforts are underway to better understand, evaluate, and improve route performance. Performance evaluation is important because it provides:

- A better understanding of where resources are being applied;
- A measure of how well services are being delivered;
- A measure of how well these services are used; and
- An objective basis for decisions regarding future service changes and service deployment.

The tables on the following pages summarize route-level performance through the third quarter. The first three tables present the route-level performance sorted by routes with the highest net subsidy per boarding to routes with a lower net subsidy per boarding, and the remaining three tables present the same information sorted by routes that have the highest boardings to routes with a lower level of boardings.

A route guide listing all of the routes and their points of origins and destinations is provided after the route-level performance tables. Route types are grouped by route numbers as follows:

- **Routes 1 to 99 -** Local routes include two sub-categories:
  - ***Major*:** These routes operate as frequent as every 15 minutes during peak times. Major routes operate seven days a week throughout the day. Together, the Major routes form a grid on arterial streets throughout the highest transit propensity portions of the OC Bus service area, primarily in northern parts of the county.
  - ***Local:*** These routes operate on arterials within the grid created by the Major routes, but at lower frequencies. Local routes also operate in parts of Orange County with lower transit demand. Most Local routes operate seven days per week, however some operate on weekdays only.
- **Routes 100 to 199**: Community routes to connect pockets of transit demand with major destinations and offer local circulation. Routes tend to be less direct than Local routes, serving neighborhoods and destinations off the arterial grid. Approximately half of Community routes operate seven days per week.
- **Routes 200 to 299**: Intra-county express routes operate on weekdays only at peak times and connect riders over long distances to destinations within Orange County, using freeways to access destinations.
- **Routes 400 to 499**: Stationlink routes are rail feeder services designed to connect Metrolink stations to nearby employment destinations. These routes have relatively short alignments, with schedules tied to Metrolink arrivals and departures. They operate during weekday peak hours only, in the peak direction, from the station to destinations in the morning and the reverse in the evening.
- **Routes 500 to 599**: Bravo! routes are limited-stop services operated with branded vehicles.
- **Routes 600 to 699***: Seasonal or Temporary routes (these are not included on the following charts)* such as the OC Fair Express.
- **Routes 700 to 799**: Inter-county express routes that operate on weekdays only at peak times and connects riders over long distances to destinations outside of Orange County, often using freeways to access destinations.

OCTA Operating Statistics By Route for Local and Community Services (Sorted by Subsidy per Boarding)

Fiscal Year 2019-20 Through Q3

Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	Bus Count		
														40 FT	32 FT	60 FT
862	C	5.3%	$ 17.08	$ 10.72	$ 5.43	$ 0.93	$ 0.90	38,709	$ 135.08	$ 76.79	$ 17.57	7.93	4,883	2	-	-
123	N	8.7%	13.83	5.88	3.98	3.97	0.94	18,076	83.55	44.53	6.46	7.73	2,337	4	-	-
085	S	8.0%	12.70	7.08	4.91	0.71	1.05	50,810	108.91	71.33	8.79	8.36	6,079	2	-	-
001	S	7.1%	12.01	6.91	4.64	0.46	0.88	385,710	145.17	88.99	9.02	11.68	33,018	10	-	-
529	C	7.3%	11.66	6.53	4.39	0.74	0.87	243,859	150.37	90.84	13.14	12.76	19,110	10	-	-
153	N	7.8%	11.62	6.66	4.51	0.45	0.95	80,280	108.01	71.40	9.00	8.91	9,011	2	-	-
087	S	8.5%	10.98	6.07	4.21	0.70	0.95	51,196	110.33	71.92	7.37	9.82	5,215	2	-	-
076	C	8.4%	10.82	6.12	4.11	0.59	0.94	60,494	134.91	81.36	11.60	12.08	5,008	2	-	-
178	C	8.8%	10.70	6.03	4.09	0.58	0.97	62,064	107.35	70.91	8.64	9.68	6,413	2	-	-
177	S	11.2%	9.41	5.10	3.45	0.86	1.08	62,375	109.23	71.30	8.53	11.34	5,500	3	-	-
083	C	10.2%	8.52	4.86	3.27	0.39	0.92	414,666	146.60	89.80	7.76	16.20	25,603	9	-	-
086	C	11.1%	8.27	4.57	3.17	0.53	0.97	101,451	107.24	71.11	8.29	12.32	8,234	3	-	-
091	S	12.8%	8.07	4.46	3.10	0.51	1.11	280,858	110.26	72.09	7.72	12.72	22,087	8	-	-
167	C	12.0%	7.69	4.21	2.86	0.62	0.97	144,808	109.76	71.16	8.83	13.66	10,601	5	-	-
090	S	13.6%	7.46	4.03	2.80	0.63	1.07	229,348	112.27	72.34	7.51	14.21	16,139	8	-	-
129	N	12.6%	7.36	4.15	2.82	0.39	1.00	139,376	108.97	71.61	9.53	13.67	10,198	3	-	-
143	N	11.5%	7.32	4.12	2.80	0.40	0.90	135,843	107.28	69.72	9.63	13.72	9,903	3	-	-
079	C	13.2%	6.73	3.77	2.62	0.34	0.97	317,759	108.40	71.20	9.58	14.74	21,558	6	-	-
056	N	12.2%	6.58	3.76	2.52	0.30	0.87	296,926	138.28	83.10	13.03	19.35	15,346	5	-	-
560	C	12.7%	6.54	3.65	2.45	0.44	0.89	533,808	145.26	87.81	12.69	20.79	25,681	13	-	-
150	C	15.3%	6.22	3.37	2.29	0.56	1.02	126,948	112.65	71.32	11.17	16.86	7,528	4	-	-
059	C	14.0%	6.15	3.45	2.39	0.31	0.95	404,540	110.42	71.63	10.02	16.25	24,900	7	-	-
089	S	15.2%	6.03	3.35	2.32	0.36	1.02	245,835	108.07	71.05	8.67	16.15	15,219	5	-	-
082	S	17.0%	6.00	3.18	2.20	0.62	1.11	57,638	119.82	72.71	8.33	18.47	3,120	2	-	-
026	N	13.8%	5.95	3.31	2.30	0.34	0.90	320,070	108.89	71.17	10.82	16.75	19,109	6	-	-
025	N	14.2%	5.89	3.36	2.33	0.20	0.94	266,672	108.83	71.47	9.11	16.43	16,229	3	-	-
055	C	15.4%	5.88	3.37	2.26	0.25	1.02	921,140	139.73	84.20	12.56	21.00	43,866	13	-	-
050	N	13.0%	5.83	3.33	2.23	0.27	0.83	904,877	139.89	84.40	12.38	21.88	41,353	5	-	6
071	N	14.8%	5.76	3.22	2.23	0.31	0.95	517,972	109.77	71.57	8.82	17.17	30,175	9	-	-
037	N	14.3%	5.75	3.23	2.17	0.35	0.90	777,464	146.01	88.16	11.77	23.19	33,519	15	-	-
072	C	14.5%	5.72	3.28	2.20	0.24	0.93	364,373	136.35	82.36	11.03	21.25	17,149	4	1	-
054	N	14.5%	5.70	3.21	2.16	0.33	0.91	869,506	140.52	84.77	12.56	22.39	38,833	16	-	-
029	N	15.1%	5.34	3.06	2.06	0.22	0.91	1,243,921	141.93	85.74	11.99	23.55	52,831	5	-	7
543	N	16.2%	4.92	2.78	1.86	0.28	0.90	641,470	142.29	85.89	12.95	25.70	24,961	10	-	-
035	N	15.9%	4.81	2.65	1.84	0.32	0.85	569,160	110.70	71.54	9.68	20.76	27,411	10	-	-
033	N	15.5%	4.80	2.64	1.83	0.33	0.82	269,878	107.99	71.36	8.72	20.43	13,208	5	-	-
070	C	17.3%	4.77	2.66	1.84	0.27	0.94	652,545	111.93	71.95	9.56	20.56	31,732	10	-	-
047	C	17.9%	4.76	2.71	1.82	0.23	0.99	1,489,528	140.73	84.90	12.63	25.49	58,435	19	-	-
030	N	15.9%	4.69	2.62	1.82	0.25	0.84	494,816	107.70	71.41	8.33	20.39	24,271	7	-	-
057	C	17.3%	4.69	2.66	1.78	0.25	0.93	1,410,344	157.85	95.48	14.80	29.38	48,009	4	-	11
046	N	18.3%	4.42	2.42	1.68	0.32	0.91	452,008	108.83	71.53	9.47	21.73	20,797	8	-	-
038	N	17.6%	4.35	2.37	1.64	0.34	0.86	732,153	110.37	71.57	9.21	22.65	32,318	14	-	-
060	C	17.8%	4.21	2.42	1.63	0.16	0.87	1,360,015	141.12	85.19	12.32	28.65	47,464	12	-	-
053	C	18.6%	4.16	2.38	1.60	0.18	0.91	973,836	144.76	86.98	15.65	29.65	32,844	10	-	-
053X	C	19.9%	3.90	2.22	1.49	0.19	0.92	483,523	128.29	77.10	12.39	27.69	17,463	5	-	-
043	N	20.4%	3.79	2.19	1.47	0.13	0.94	1,515,585	138.07	82.94	13.75	29.96	50,581	11	-	-
057X	C	22.0%	3.62	2.00	1.35	0.27	0.94	775,154	128.58	77.41	11.80	29.98	25,858	3	-	6
042	N	19.5%	3.57	1.98	1.38	0.21	0.81	1,098,476	109.80	71.50	9.85	26.31	41,750	13	-	-
066	C	22.8%	3.39	1.94	1.30	0.15	0.96	1,467,798	137.37	82.55	13.89	32.68	44,908	12	-	-
064	C	22.2%	3.21	1.82	1.22	0.17	0.87	1,083,794	143.03	85.97	14.58	36.60	29,611	10	-	-
064X	C	23.8%	2.95	1.67	1.12	0.16	0.87	435,532	128.35	77.19	12.24	35.14	12,395	4	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.
(2) Bus count for routes 53X, 57X and 64X are estimated based on total route 53, 57 and 64 equipment requirements.
(3) C under Zone is Central County, N is North County and S is South County.

OCTA Operating Statistics By Route for Express Service (Sorted by Subsidy per Boarding)

Fiscal Year 2019-20 Through Q3

														Bus Count		
Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	40 FT	32 FT	60 FT
213	N	2.3%	$ 51.96	$ 25.02	$ 15.28	$ 11.66	$ 0.96	7,691	$ 156.25	$ 96.51	$ 7.80	3.79	2,031	5	-	-
721	N	4.6%	44.17	24.97	15.67	3.53	1.97	15,223	225.20	140.41	8.71	5.29	2,880	3	-	-
701	C	9.7%	27.22	14.93	9.38	2.91	2.62	18,464	259.39	161.29	10.84	9.63	1,917	3	-	-
206	C	6.1%	24.53	10.21	6.24	8.08	1.07	8,872	153.54	92.71	7.81	8.77	1,012	4	-	-
794	C	20.4%	23.40	13.50	8.25	1.65	5.57	21,681	195.62	131.78	7.34	7.16	3,027	2	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.
(2) C under Zone is Central County, N is North County and S is South County.

OCTA Operating Statistics By Route for Stationlink Service (Sorted by Subsidy per Boarding)

Fiscal Year 2019-20 Through Q3

															Bus Count		
Route	Zone	Submode	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	40 FT	32 FT	60 FT
463	C	RCL	3.5%	$ 28.66	$ 14.57	$ 9.82	$ 4.27	$ 0.89	12,592	$ 143.03	$ 85.43	$ 13.33	5.66	2,226	3	-	-
480	C	RCL	8.2%	13.60	6.22	4.20	3.18	0.93	16,918	142.46	85.50	12.77	12.55	1,348	3	-	-
472	C	RCL	9.4%	11.56	5.29	3.56	2.71	0.92	19,879	135.42	84.72	11.84	13.86	1,434	3	-	-
453	N	RCL	7.7%	10.40	5.20	3.51	1.69	0.73	21,205	141.03	84.99	24.07	14.94	1,419	2	-	-
473	C	RCL	14.7%	7.29	3.34	2.25	1.70	0.96	31,577	150.69	85.47	13.13	22.97	1,374	3	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.
(2) C under Zone is Central County, N is North County and S is South County.

OCTA Operating Statistics By Route for Local and Community Services (Sorted by Boardings)

Fiscal Year 2019-20 Through Q3

Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	Bus Count 40 FT	Bus Count 32 FT	Bus Count 60 FT
043	N	20.4%	$ 3.79	$ 2.19	$ 1.47	$ 0.13	$ 0.94	1,515,585	$ 138.07	$ 82.94	$ 13.75	29.96	50,581	11	-	-
047	C	17.9%	4.76	2.71	1.82	0.23	0.99	1,489,528	140.73	84.90	12.63	25.49	58,435	19	-	-
066	C	22.8%	3.39	1.94	1.30	0.15	0.96	1,467,798	137.37	82.55	13.89	32.68	44,908	12	-	-
057	C	17.3%	4.69	2.66	1.78	0.25	0.93	1,410,344	157.85	95.48	14.80	29.38	48,009	4	-	11
060	C	17.8%	4.21	2.42	1.63	0.16	0.87	1,360,015	141.12	85.19	12.32	28.65	47,464	12	-	-
029	N	15.1%	5.34	3.06	2.06	0.22	0.91	1,243,921	141.93	85.74	11.99	23.55	52,831	5	-	7
042	N	19.5%	3.57	1.98	1.38	0.21	0.81	1,098,476	109.80	71.50	9.85	26.31	41,750	13	-	-
064	C	22.2%	3.21	1.82	1.22	0.17	0.87	1,083,794	143.03	85.97	14.58	36.60	29,611	10	-	-
053	C	18.6%	4.16	2.38	1.60	0.18	0.91	973,836	144.76	86.98	15.65	29.65	32,844	10	-	-
055	C	15.4%	5.88	3.37	2.26	0.25	1.02	921,140	139.73	84.20	12.56	21.00	43,866	13	-	-
050	N	13.0%	5.83	3.33	2.23	0.27	0.83	904,877	139.89	84.40	12.38	21.88	41,353	5	-	6
054	N	14.5%	5.70	3.21	2.16	0.33	0.91	869,506	140.52	84.77	12.56	22.39	38,833	16	-	-
037	N	14.3%	5.75	3.23	2.17	0.35	0.90	777,464	146.01	88.16	11.77	23.19	33,519	15	-	-
057X	C	22.0%	3.62	2.00	1.35	0.27	0.94	775,154	128.58	77.41	11.80	29.98	25,858	3	-	6
038	N	17.6%	4.35	2.37	1.64	0.34	0.86	732,153	110.37	71.57	9.21	22.65	32,318	14	-	-
070	C	17.3%	4.77	2.66	1.84	0.27	0.94	652,545	111.93	71.95	9.56	20.56	31,732	10	-	-
543	N	16.2%	4.92	2.78	1.86	0.28	0.90	641,470	142.29	85.89	12.95	25.70	24,961	10	-	-
035	N	15.9%	4.81	2.65	1.84	0.32	0.85	569,160	110.70	71.54	9.68	20.76	27,411	10	-	-
560	C	12.7%	6.54	3.65	2.45	0.44	0.89	533,808	145.26	87.81	12.69	20.79	25,681	13	-	-
071	N	14.8%	5.76	3.22	2.23	0.31	0.95	517,972	109.77	71.57	8.82	17.17	30,175	9	-	-
030	N	15.9%	4.69	2.62	1.82	0.25	0.84	494,816	107.70	71.41	8.33	20.39	24,271	7	-	-
053X	C	19.9%	3.90	2.22	1.49	0.19	0.92	483,523	128.29	77.10	12.39	27.69	17,463	5	-	-
046	N	18.3%	4.42	2.42	1.68	0.32	0.91	452,008	108.83	71.53	9.47	21.73	20,797	8	-	-
064X	C	23.8%	2.95	1.67	1.12	0.16	0.87	435,532	128.35	77.19	12.24	35.14	12,395	4	-	-
083	C	10.2%	8.52	4.86	3.27	0.39	0.92	414,666	146.60	89.80	7.76	16.20	25,603	9	-	-
059	C	14.0%	6.15	3.45	2.39	0.31	0.95	404,540	110.42	71.63	10.02	16.25	24,900	7	-	-
001	S	7.1%	12.01	6.91	4.64	0.46	0.88	385,710	145.17	88.99	9.02	11.68	33,018	10	-	-
072	C	14.5%	5.72	3.28	2.20	0.24	0.93	364,373	136.35	82.36	11.03	21.25	17,149	4	1	-
026	N	13.8%	5.95	3.31	2.30	0.34	0.90	320,070	108.89	71.17	10.82	16.75	19,109	6	-	-
079	C	13.2%	6.73	3.77	2.62	0.34	0.97	317,759	108.40	71.20	9.58	14.74	21,558	6	-	-
056	N	12.2%	6.58	3.76	2.52	0.30	0.87	296,926	138.28	83.10	13.03	19.35	15,346	5	-	-
091	S	12.8%	8.07	4.46	3.10	0.51	1.11	280,858	110.26	72.09	7.72	12.72	22,087	8	-	-
033	N	15.5%	4.80	2.64	1.83	0.33	0.82	269,878	107.99	71.36	8.72	20.43	13,208	5	-	-
025	N	14.2%	5.89	3.36	2.33	0.20	0.94	266,672	108.83	71.47	9.11	16.43	16,229	3	-	-
089	S	15.2%	6.03	3.35	2.32	0.36	1.02	245,835	108.07	71.05	8.67	16.15	15,219	5	-	-
529	C	7.3%	11.66	6.53	4.39	0.74	0.87	243,859	150.37	90.84	13.14	12.76	19,110	10	-	-
090	S	13.6%	7.46	4.03	2.80	0.63	1.07	229,348	112.27	72.34	7.51	14.21	16,139	8	-	-
167	C	12.0%	7.69	4.21	2.86	0.62	0.97	144,808	109.76	71.16	8.83	13.66	10,601	5	-	-
129	N	12.6%	7.36	4.15	2.82	0.39	1.00	139,376	108.97	71.61	9.53	13.67	10,198	3	-	-
143	N	11.5%	7.32	4.12	2.80	0.40	0.90	135,843	107.28	69.72	9.63	13.72	9,903	3	-	-
150	C	15.3%	6.22	3.37	2.29	0.56	1.02	126,948	112.65	71.32	11.17	16.86	7,528	4	-	-
086	C	11.1%	8.27	4.57	3.17	0.53	0.97	101,451	107.24	71.11	8.29	12.32	8,234	3	-	-
153	N	7.8%	11.62	6.66	4.51	0.45	0.95	80,280	108.01	71.40	9.00	8.91	9,011	2	-	-
177	S	11.2%	9.41	5.10	3.45	0.86	1.08	62,375	109.23	71.30	8.53	11.34	5,500	3	-	-
178	C	8.8%	10.70	6.03	4.09	0.58	0.97	62,064	107.35	70.91	8.64	9.68	6,413	2	-	-
076	C	8.4%	10.82	6.12	4.11	0.59	0.94	60,494	134.91	81.36	11.60	12.08	5,008	2	-	-
082	S	17.0%	6.00	3.18	2.20	0.62	1.11	57,638	119.82	72.71	8.33	18.47	3,120	2	-	-
087	S	8.5%	10.98	6.07	4.21	0.70	0.95	51,196	110.33	71.92	7.37	9.82	5,215	2	-	-
085	S	8.0%	12.70	7.08	4.91	0.71	1.05	50,810	108.91	71.33	8.79	8.36	6,079	2	-	-
862	C	5.3%	17.08	10.72	5.43	0.93	0.90	38,709	135.08	76.79	17.57	7.93	4,883	2	-	-
123	N	8.7%	13.83	5.88	3.98	3.97	0.94	18,076	83.55	44.53	6.46	7.73	2,337	4	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.
(2) Bus count for routes 53X, 57X and 64X are estimated based on total route 53, 57 and 64 equipment requirements.
(3) C under Zone is Central County, N is North County and S is South County.

OCTA Operating Statistics By Route for Express Service (Sorted by Boardings)

Fiscal Year 2019-20 Through Q3

Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	Bus Count 40 FT	Bus Count 32 FT	Bus Count 60 FT
794	C	20.4%	$ 23.40	$ 13.50	$ 8.25	$ 1.65	$ 5.57	21,681	$ 195.62	$ 131.78	$ 7.34	7.16	3,027	2	-	-
701	C	9.7%	27.22	14.93	9.38	2.91	2.62	18,464	259.39	161.29	10.84	9.63	1,917	3	-	-
721	N	4.6%	44.17	24.97	15.67	3.53	1.97	15,223	225.20	140.41	8.71	5.29	2,880	3	-	-
206	C	6.1%	24.53	10.21	6.24	8.08	1.07	8,872	153.54	92.71	7.81	8.77	1,012	4	-	-
213	N	2.3%	51.96	25.02	15.28	11.66	0.96	7,691	156.25	96.51	7.80	3.79	2,031	5	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.
(2) C under Zone is Central County, N is North County and S is South County.

OCTA Operating Statistics By Route for Stationlink Service (Sorted by Boardings)

Fiscal Year 2019-20 Through Q3

Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	Bus Count 40 FT	Bus Count 32 FT	Bus Count 60 FT
473	C	14.7%	$ 7.29	$ 3.34	$ 2.25	$ 1.70	$ 0.96	31,577	$ 150.69	$ 85.47	$ 13.13	22.97	1,374	3	-	-
453	N	7.7%	10.40	5.20	3.51	1.69	0.73	21,205	141.03	84.99	24.07	14.94	1,419	2	-	-
472	C	9.4%	11.56	5.29	3.56	2.71	0.92	19,879	135.42	84.72	11.84	13.86	1,434	3	-	-
480	C	8.2%	13.60	6.22	4.20	3.18	0.93	16,918	142.46	85.50	12.77	12.55	1,348	3	-	-
463	C	3.5%	28.66	14.57	9.82	4.27	0.89	12,592	143.03	85.43	13.33	5.66	2,226	3	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.
(2) C under Zone is Central County, N is North County and S is South County.

Route Reference Table

Route	Route	Route Description	Main Street	Route Category
1	1	Long Beach - San Clemente	via Pacific Coast Hwy	LOCAL
25	25	Fullerton - Huntington Beach	via Knott Ave/ Goldenwest St	LOCAL
26	26	Fullerton - Placentia	via Commonwealth Ave/ Yorba Linda Blvd	LOCAL
29	29	La Habra - Huntington Beach	via Beach Blvd	LOCAL
30	30	Cerritos - Anaheim	via Orangethorpe Ave	LOCAL
33	33	Fullerton - Huntington Beach	via Magnolia St	LOCAL
35	35	Fullerton - Costa Mesa	via Brookhurst St	LOCAL
37	37	La Habra - Fountain Valley	via Euclid St	LOCAL
38	38	Lakewood - Anaheim Hills	via Del Amo Blvd/ La Palma Ave	LOCAL
42	42	Seal Beach - Orange	via Seal Beach Blvd/ Los Alamitos Blvd/ Lincoln Ave	LOCAL
43	43	Fullerton - Costa Mesa	via Harbor Blvd	LOCAL
46	46	Long Beach - Orange	via Ball Road/ Taft Ave	LOCAL
47	47	Fullerton - Balboa	via Anaheim Blvd/ Fairview St	LOCAL
50	50	Long Beach - Orange	via Katella Ave	LOCAL
53	53/53X	Anaheim - Irvine	via Main St	LOCAL
54	54	Garden Grove - Orange	via Chapman Ave	LOCAL
55	55	Santa Ana - Newport Beach	via Standard Ave/ Bristol St/ Fairview St/ 17th St	LOCAL
56	56	Garden Grove - Orange	via Garden Grove Blvd	LOCAL
57	57/57X	Brea - Newport Beach	via State College Blvd/ Bristol St	LOCAL
59	59	Anaheim - Irvine	via Kraemer Blvd/ Glassell St/ Grand Ave/ Von Karman Ave	LOCAL
60	60	Long Beach - Tustin	via Westminster Ave/ 17th St	LOCAL
64	64/64X	Huntington Beach - Tustin	via Bolsa Ave/ 1st St	LOCAL
66	66	Huntington Beach - Irvine	via McFadden Ave/ Walnut Ave	LOCAL
70	70	Sunset Beach - Tustin	via Edinger Ave	LOCAL
71	71	Yorba Linda - Newport Beach	via Tustin Ave/ Red Hill Ave/ Newport Blvd	LOCAL
72	72	Sunset Beach - Tustin	via Warner Ave	LOCAL
76	76	Huntington Beach - John Wayne Airport	via Talbert Ave/ MacArthur Blvd	LOCAL
79	79	Tustin - Newport Beach	via Bryan Ave/ Culver Dr/ University Ave	LOCAL
82	82	Foothill Ranch - Rancho Santa Margarita	via Portola Pkwy/ Santa Margarita Pkwy	LOCAL
83	83	Anaheim - Laguna Hills	via 5 Fwy/ Main St	LOCAL
85	85	Mission Viejo - Laguna Niguel	via Marguerite Pkwy/ Crown Valley Pkwy	LOCAL
86	86	Costa Mesa - Mission Viejo	via Alton Pkwy/ Jeronimo Rd	LOCAL
87	87	Rancho Santa Margarita - Laguna Niguel	via Alicia Pkwy	LOCAL
89	89	Mission Viejo - Laguna Beach	via El Toro Rd/ Laguna Canyon Rd	LOCAL
90	90	Tustin - Dana Point	via Irvine Center Dr/ Moulton Pkwy/ Golden Lantern St	LOCAL
91	91	Laguna Hills - San Clemente	via Paseo de Valencia/ Camino Capistrano/ Del Obispo St	LOCAL
123	123	Anaheim - Huntington Beach	via Malvern Ave/ Valley View / Bolsa Chica	COMMUNITY
129	129	La Habra - Anaheim	via La Habra Blvd/ Brea Blvd/ Birch St/ Kraemer Blvd	COMMUNITY
143	143	La Habra - Brea	via Whittier Blvd/ Harbor Blvd/ Brea Blvd/ Birch St	COMMUNITY
150	150	Santa Ana - Costa Mesa	via Fairview St/ Flower St	COMMUNITY
153	153	Brea - Anaheim	via Placentia Ave	COMMUNITY
167	167	Orange - Irvine	via Irvine Ave/ Hewes St/ Jeffrey Rd	COMMUNITY
177	177	Foothill Ranch - Laguna Hills	via Lake Forest Dr/ Muirlands Blvd/ Los Alisos Blvd	COMMUNITY
178	178	Huntington Beach - Irvine	via Adams Ave/ Birch St/ Campus Dr	COMMUNITY
862	862	Downtown Santa Ana Shuttle	via Civic Center Dr	COMMUNITY
206	206	Santa Ana - Lake Forest Express	via 5 Fwy	EXPRESS BUS
213	213	Brea - Irvine Express	via 55 Fwy	EXPRESS BUS
453	453	Orange Transportation Center - St. Joseph's Hospital	via Chapman Ave/ Main St/ La Veta Ave	STATIONLINK
463	463	Santa Ana Regional transportation Center - Hutton Centre	via Grand Ave	STATIONLINK
472	472	Tustin Metrolink Station - Irvine Business Complex	via Edinger Ave/ Red Hill Ave/ Campus Dr/ Jamboree Rd	STATIONLINK
473	473	Tustin Metrolink Station - U.C.I.	via Edinger Ave/ Harvard Ave	STATIONLINK
480	480	Irvine Metrolink Station - Lake Forest	via Alton Pkwy/ Bake Pkwy/ Lake Forest Dr	STATIONLINK
529	529	Fullerton - Huntington Beach	via Beach Blvd	BRAVO
543	543	Fullerton Transportation Center - Santa Ana	via Harbor Blvd	BRAVO
560	560	Santa Ana - Long Beach	via 17th St/ Wesminster Blvd	BRAVO
701	701	Huntington Beach - Los Angeles Express	via 405 Fwy/ 605 Fwy/ 105 Fwy/ 110 Fwy	EXPRESS BUS
721	721	Fullerton - Los Angeles Express	via 110 Fwy/ 91 Fwy	EXPRESS BUS
794	794	Riverside / Corona - South Coast Metro Express	via 91 Fwy/ 55 Fwy	EXPRESS BUS

OC Bus 360° Plan: Performance to Date

To address declining bus ridership, the OCTA Board of Directors (Board) endorsed a comprehensive action plan known as OC Bus 360° plan in 2015. This effort included a comprehensive review of current and former rider perceptions, a peer review panel that reviewed OCTA's performance and plans, new branding and marketing tactics tied to rider needs, upgraded bus routes and services to better match demand and capacity, technology solutions to improve passenger experience, and pricing, as well as other revenue changes to stimulate ridership and provide new funding.

Extensive work was invested by OCTA divisions to implement the OC Bus 360˚ plan. These efforts included:

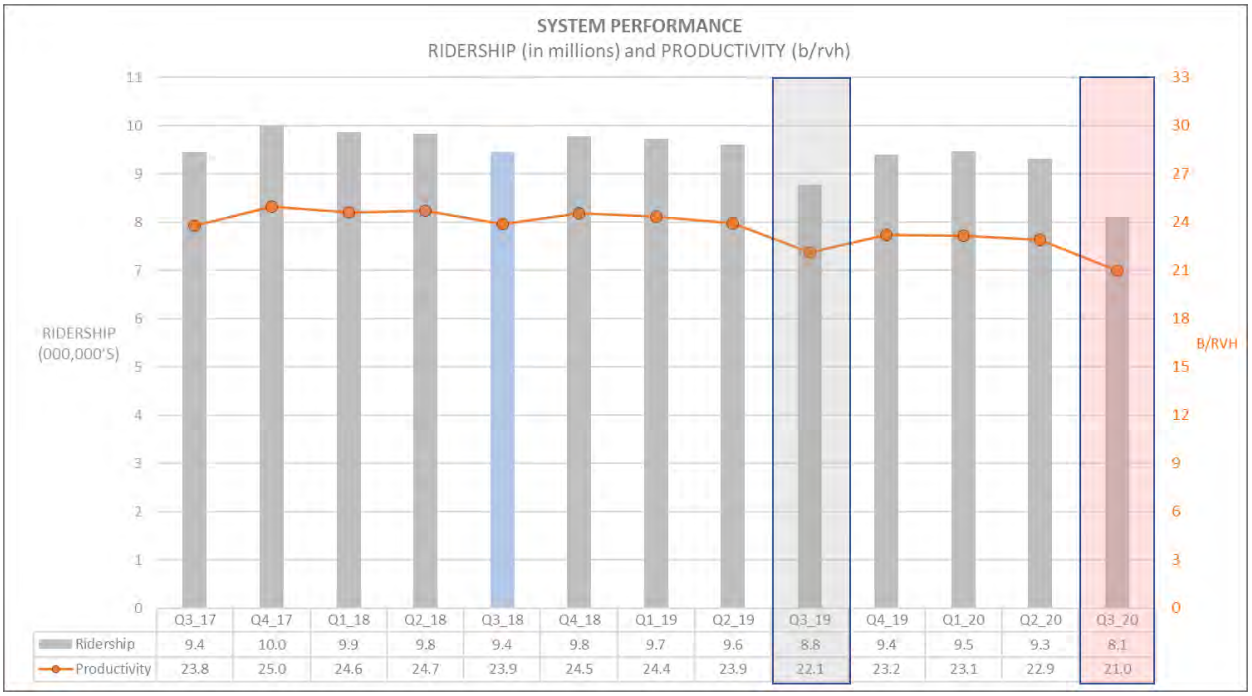
- Implementation of new and faster bus routes;
- Redeployment of services in June 2016, October 2016, October 2017, and February 2018, to improve efficiencies and build ridership;
- Competitively awarded grants to local agencies through Project V for transit services tailored to community needs;
- Implementation of a promotional fare and college pass program;
- Rollout of new technologies, such as mobile ticketing, real-time bus arrival information, a microtransit service; and
- Extensive marketing, public outreach, and promotional campaigns.

Impact of the Service Changes

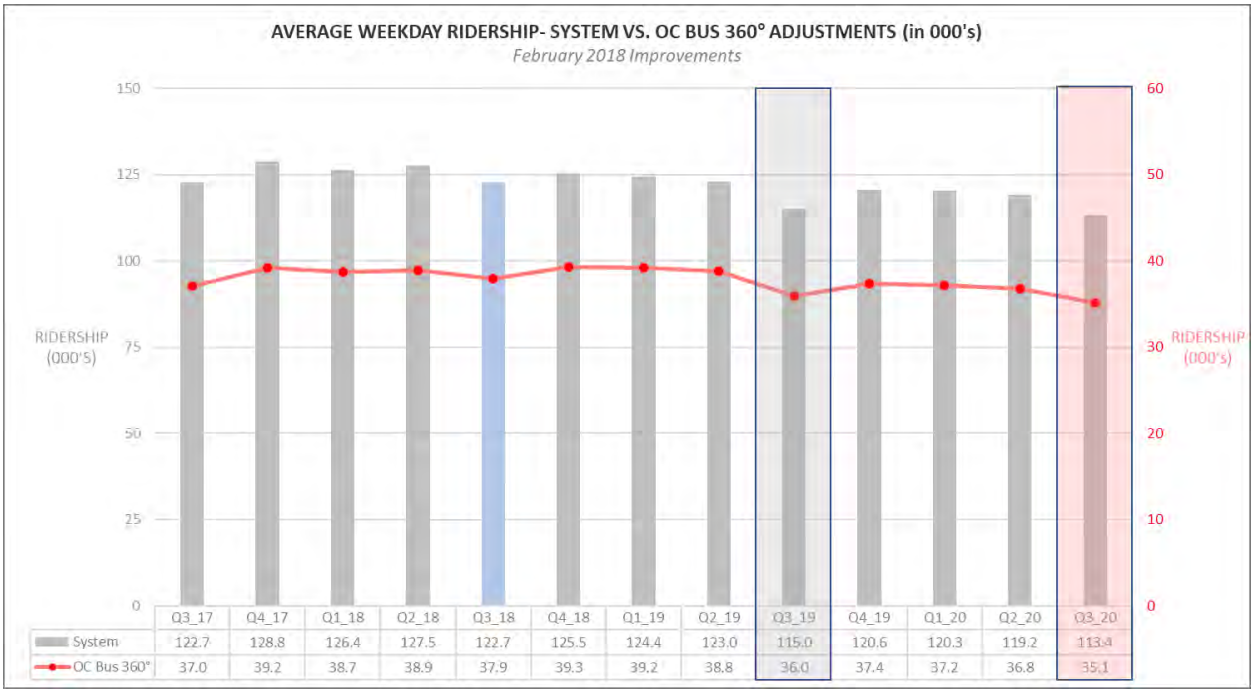
Of the series of approved bus service changes under the OC Bus 360° plan, the changes implemented in October 2016 and February 2018 were the most significant and are tracked for overall OC Bus 360° plan impact. Provided below is a series of charts that show overall system performance over the last 13 quarters and the impact of the route adjustments implemented to date under the plan. In this review, performance is measured by change in average weekday boardings for routes that were improved and average B/RVH for routes that were reduced. This analysis is necessary and ongoing to gauge the effectiveness of the recommended changes and the overall OC Bus 360° plan. The trend of overall system ridership and productivity is provided on the following chart. Though the trend was favorable through January and February, the impact of the COVID-19 pandemic had a substantial impact on ridership and productivity.

Through the third quarter of FY 2019-20:

- Ridership was 13.0 percent lower than the previous quarter, and 7.6 percent lower than the same quarter last year.
- Productivity through the third quarter fell by 8.3 percent from last quarter and dropped by 4.5 percent from the same quarter last year.

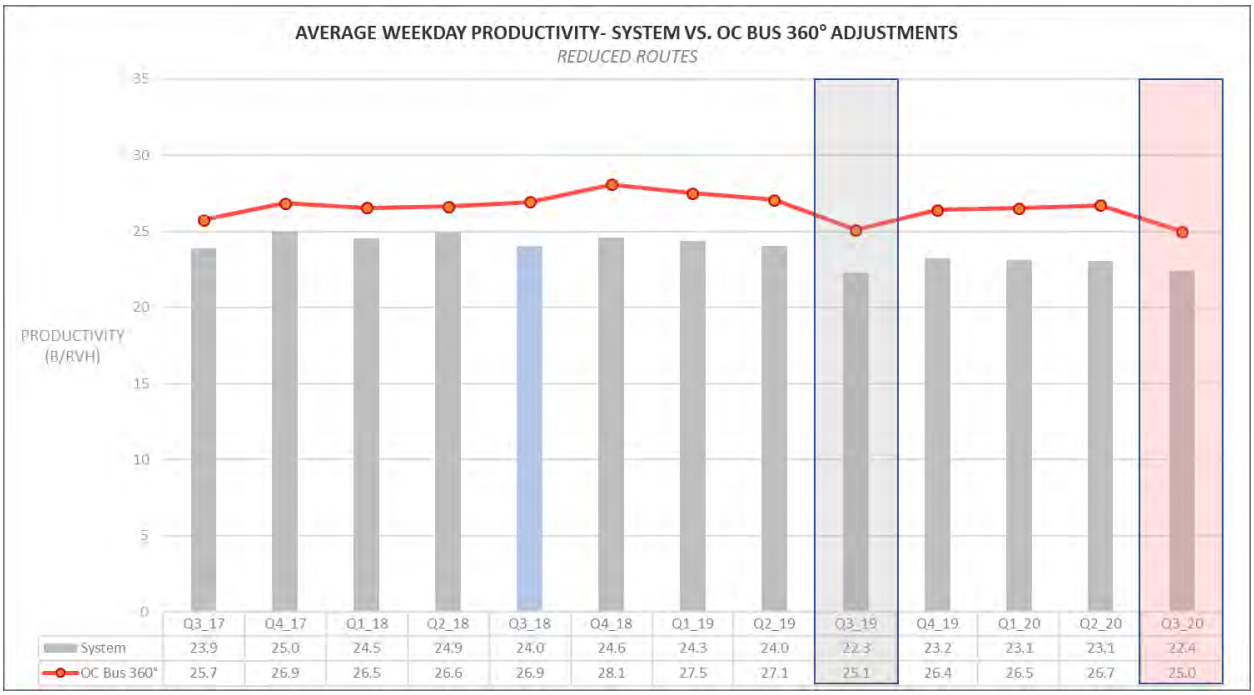


The impacts of the adjustments implemented under the OC Bus 360° plan are consistent with the systemwide trend, including the decrease with respect to the COVID-19 pandemic. The following chart compares the system trend against the group of routes improved under the OC Bus 360° plan. The average weekday ridership systemwide and for the improved routes dropped by 4.8 percent and 4.5 percent compared to last quarter and dropped by 1.4 percent and 2.4 percent respectively compared to the same quarter last year.



Improved system and route productivity are the goals for services that are *reduced* or *eliminate* under the OC Bus 360° plan – making low performing routes more productive.

The following chart compares the system productivity trend against the productivity of the group of routes that were reduced/eliminated, most recently, in February 2018.



During the third quarter of FY 2019-20, productivity systemwide and for the collective reductions decreased by 2.7 percent and 6.5 percent, respectively compared to last quarter. Compared to the same quarter last year, systemwide productivity was up by 0.6 percent and the collective reductions were down by 0.5 percent. Overall, the productivity for the routes reduced under OC Bus 360° remain above the system average by 11.3 percent.

Other OC Bus 360° Initiatives

OC Flex Pilot Program

OC Flex service launched in October 2018 in two zones under a one-year pilot program. The OCTA Board approved five primary goals and performance metrics to evaluate the pilot program. Upon approval of the pilot program, the Board directed staff to provide updates on the performance metrics as part of quarterly Bus Operations Performance Measurements Report.

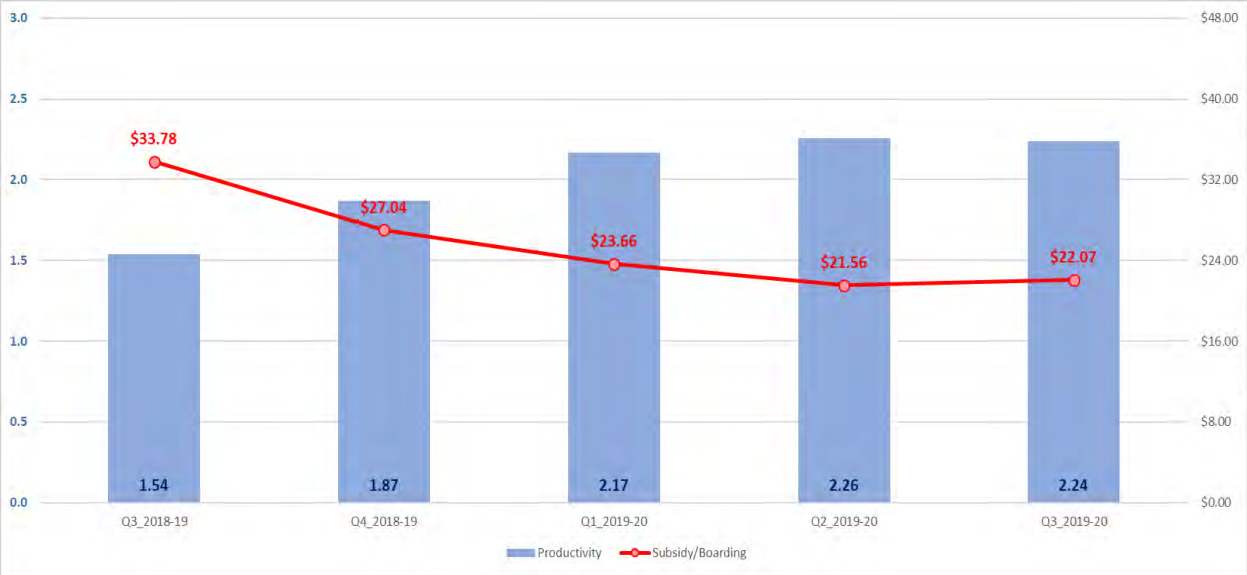
For the third quarter of FY 2019-20, ridership experienced a decrease due to the impacts associated with the COVID-19 pandemic in mid-March. The two performance metrics related to shared trips and connected trips continue to exceed the respective targets. The measures related to productivity and subsidy per boarding continue to trend in the right direction, though they remain below target. The performance improvement expected from the adjustments implemented in February 2020 did not occur due to the reduced travel demand associated with the "Safer at Home" orders passed down

nationally and statewide. Additionally, service in the Blue zone was suspended on March 23, 2020 due to extremely low demand. Staff is now considering options for the near and long-term options for the OC Flex service post-COVID-19 pandemic.

OC Flex Ridership – Through Q3-FY2019-20

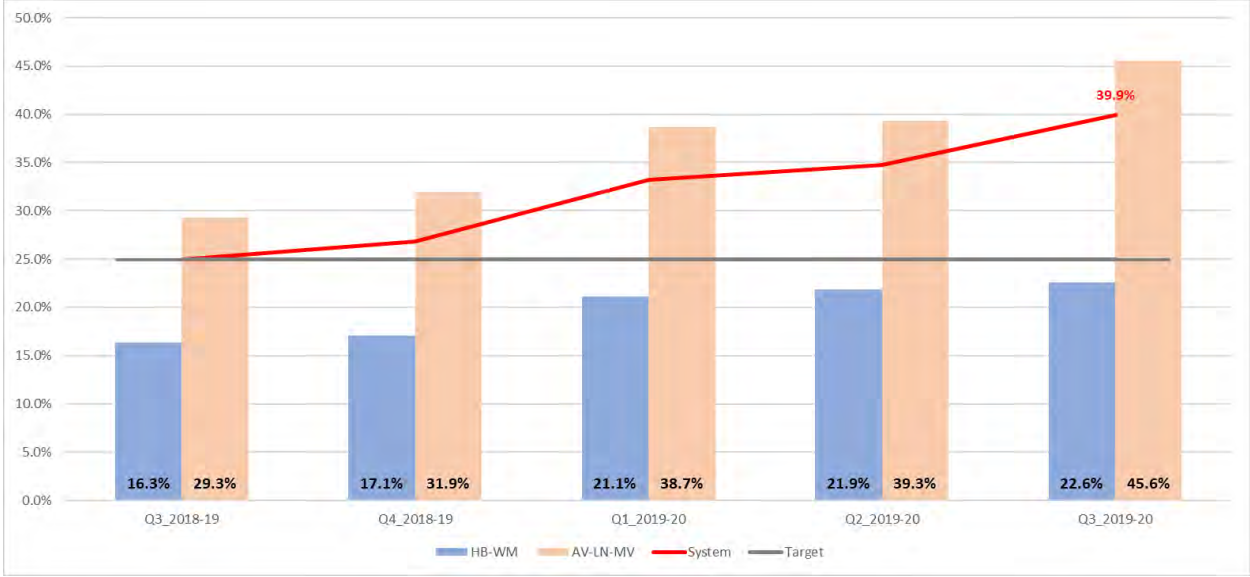
OC Flex Productivity (B/RVH) and Direct Subsidy per Boarding – Through Q3-FY2019-20

Targets: Productivity – 6 b/rvh; Direct Subsidy per Boarding - $9 per Boarding



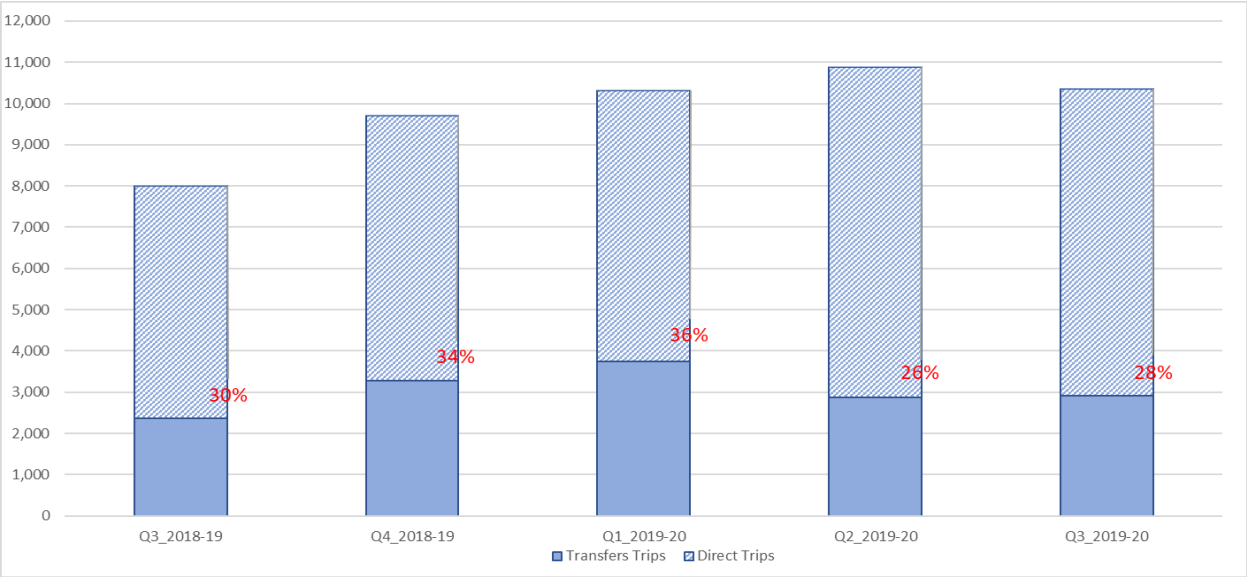
OC Flex Shared Trips – Through Q3-FY2019-20

Target: 25% of Booked Trips Sharing a Vehicle



OC Flex Connecting Trips (Transfers) – Through Q3-FY2019-20

Target: 25% of Trips Transfer to OC Bus or Metrolink Service



College Pass Program

The College Pass Program started in August 2017 with students from Santa Ana College and continuing education students from Santa Ana College and Santiago Canyon College. In August 2018, the program expanded to include all students from Santiago Canyon College. In Fall 2019, both Golden West and Fullerton colleges joined the College Pass Program.

Driven by significant ridership decreases in March 2020 due to the COVID-19 pandemic, the third quarter of FY 2019-20 saw an overall 22.9 percent decrease in ridership compared to the same period the prior year in continuing colleges. In the month of March alone, continuing colleges saw decreases of between 44 to 64 percent of ridership from the prior year. Fullerton and Golden West colleges, which joined the College Pass Program this year, saw ridership in March 2020 decrease from the prior month by 42 and 66 percent respectively.

Despite the impact of the third quarter, since starting on August 26, 2019 to the end of the March 2020 reporting period, Fullerton College reported 161,895 boardings and Golden West College reported 97,012 boardings.

The College Pass continued to attract new student riders at Golden West and Fullerton colleges, with the cumulative total of unique student riders to date continuing to increase. The number of unique student riders at Fullerton College increased by 125 percent (from 1,192 in August 2019 to 2,682 by the end of March 2020) and number of unique student riders at Golden West College increasing by 220 percent (from 422 in August 2019 to 1,352 by the end of March 2020).

As of March 31, 2020, less than three years since starting in August 2017, the overall College Pass Program has reported 3.22 million boardings with 18,958 unique students among participating colleges.

The college pass program has been very successful and popular among students and colleges. Even with the possibility of remote instruction in the Fall 2020 term, additional colleges request to join the program. OCTA continues to work with other interested colleges to expand the College Pass program with college-provided funding or student fees and available Low Carbon Transit Operations Program and Mobile Source Air Pollution Reduction grant funds.

Falling Transit Ridership:

California and Southern California

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UCLA ITS INSTITUTE OF TRANSPORTATION STUDIES

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SCAG INNOVATION

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DISCLAIMER

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EXECUTIVE SUMMARY

In the last ten years transit use in Southern California has fallen significantly. This report investigates that falling transit use. We define Southern California as the six counties that participate in the Southern California Association of Governments (SCAG) – Los Angeles, Orange, Riverside, San Bernardino, Ventura and Imperial. We examine patterns of transit service and patronage over time and across the region, and consider an array of explanations for falling transit use: declining transit service levels, eroding transit service quality, rising fares, falling fuel prices, the growth of Lyft and Uber, the migration of frequent transit users to outlying neighborhoods with less transit service, and rising vehicle ownership. While all of these factors probably play some role, we conclude that the most significant factor is increased motor vehicle access, particularly among low-income households that have traditionally supplied the region with its most frequent and reliable transit users.

Transit service and use trends in Southern California

Long associated with the automobile, in the last 25 years Southern California has invested heavily in public transportation. Since 1990, the SCAG region has added over 100 miles of light and heavy rail in Los Angeles County, and over 530 miles of commuter rail region-wide. These investments, however, have not been matched by increases in transit ridership. Transit ridership in the SCAG region reached its postwar peak in 1985. Through the 1990s and 2000s ridership rose and fell modestly, but never again reached its 1985 level. Figure ES-1 shows that per capita trips have been mostly declining in the SCAG region since 2007, and have fallen consistently since 2013.

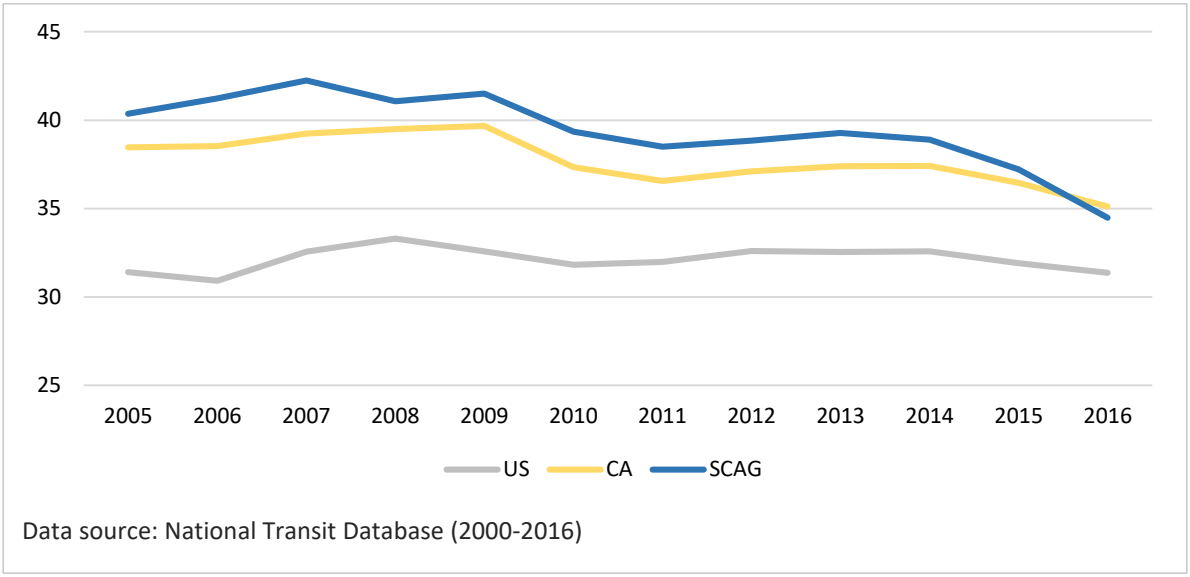


Figure ES 1. Transit trips per capita. *Relatively flat nationally, but down in California since 2009.*

This decline spans modes; it is not simply a case of bus ridership falling while rail ridership increases. Rail ridership, on net, is also down. Further, these aggregate numbers mask large asymmetries in transit service and use. Transit use in particular is heavily concentrated among a relatively small segment of the population, in a small number of the region's neighborhoods, and on a small share of the region's transit systems. As a result of these asymmetries, even small changes in these households, neighborhoods, or transit systems can have an outsized effect on regional transit use.

A few people make most of the trips

The average resident of the SCAG-region made about 35 transit trips in 2016, but the median resident made none. Only a minority of the population rides transit very frequently or even occasionally. About two percent of the population rides transit very frequently (averaging 45 trips/month), another 20 percent of the population rides transit occasionally (averaging 12 trips/month), and more than three-quarters of SCAG-region residents ride transit very little or not at all (averaging less than 1 trip/month). Heavy transit use, moreover, is concentrated among the low-income population, and especially low-income foreign born residents.

A few neighborhoods generate most of the trips

Ten percent of all of the people who commuted to and from work on transit in 2015 lived in 1.4 percent of the region's census tracts, which covered just 0.2 percent of the region's land area; the average number of transit commuters in these few tracts was almost 12 times the regional average. Fully 60 percent of the region's transit commuters lived in 21 percent of the region's census tracts, which occupied 0.9 percent of the region's land area. Overall, the most urban and transit-friendly neighborhoods in the SCAG region comprise less than one percent of the region's land area. These neighborhoods hold about 17 percent the

region's population, but 45 percent of its transit commuters. So while the region's transit systems are increasingly diverse and far reaching, transit riders remain highly concentrated.

A few operators carry most of the passengers

The SCAG region has over 100 transit operators, but just a few them carry the vast majority of riders. Figure ES-2 shows that nine percent of the region's operators are responsible for 60 percent of the region's transit service and carry about 80 percent of all transit riders.

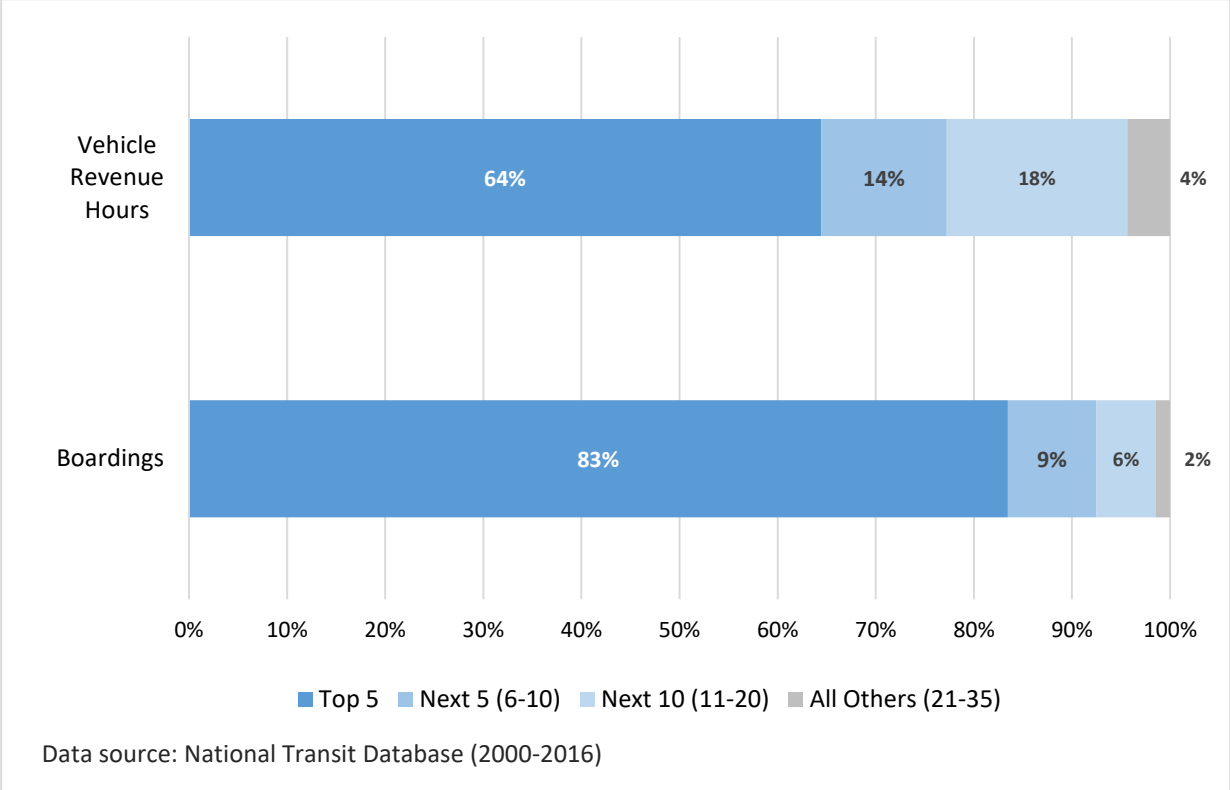


Figure ES 2. Key metrics by operating grouping. *14% of operators carry 83% of the trips.*

Because service and riders are concentrated on the largest systems, ridership losses are concentrated on these systems as well. Four SCAG-region operators—LA Metro, Orange County Transportation Authority (OCTA), Los Angeles Department of Transportation (LADOT), and the Santa Monica Big Blue Bus—accounted for 88 percent of the state's ridership losses between 2010 and 2016. LA Metro by itself accounted for a remarkable 72 percent of the state's losses. Because LA Metro's losses are themselves highly concentrated, a dozen *routes* in LA County account for 38 percent of all the lost ridership in California. In fact, half of California's total lost ridership is accounted for by 17 LA Metro routes (14 bus and 3 rail lines) and one OCTA route.

Possible causes of eroding transit use

Why is transit use falling? We consider a number of potential explanations, and review our findings below.

Changes in transit service and fares have mostly followed and not led falling ridership

Transit use can fall if transit becomes harder to use: if service declines, or fares rise. It does not appear, however, that these factors played a large role in the SCAG region's falling ridership. While transit fare increases are never popular, they are occasionally necessary to keep pace with rising costs. Figure ES-3 shows the inflation-adjusted trends in average fare paid per mile of transit travel between 2002 and 2016 in the U.S., California, and the SCAG region. Fares in Southern California are lower than those in the rest of the state and the country and have been remarkably flat over time.

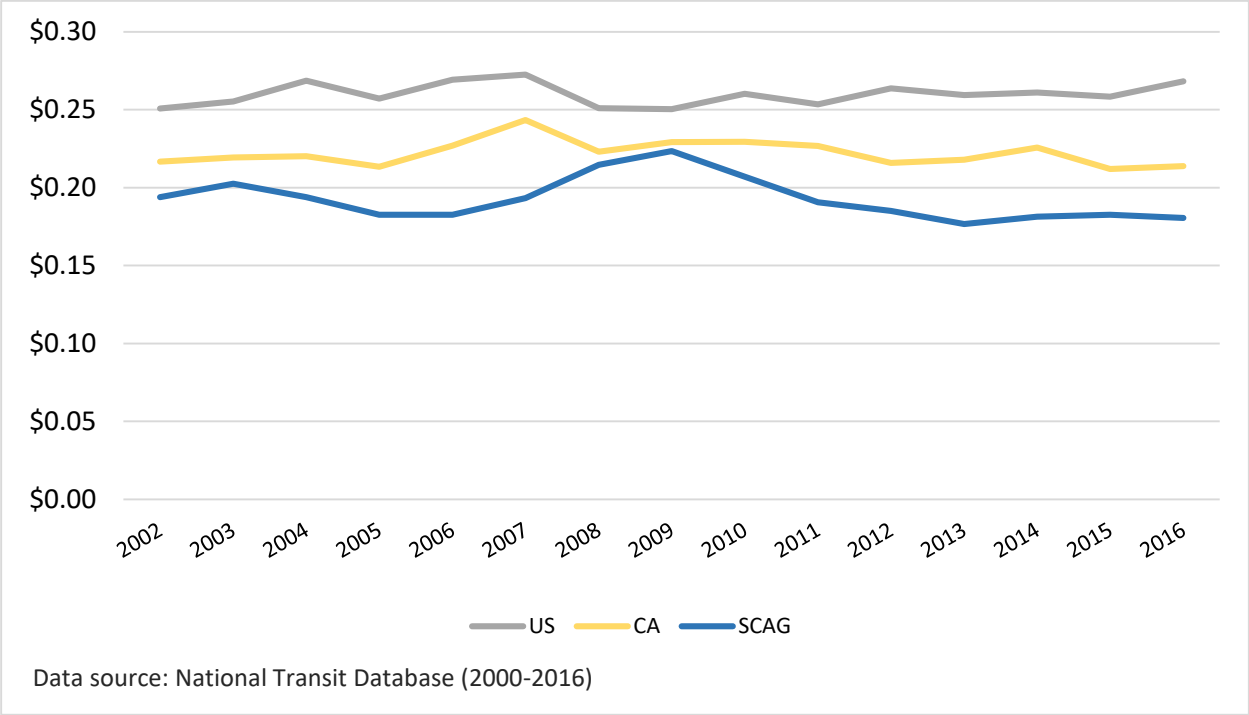


Figure ES 3. Average fare per passenger mile traveled in 2015 dollars. *Average fare per PMT remained fairly consistent and even declined a little since 2009.*

These regional averages can mask significant variation among transit operators. In particular, inflation-adjusted fares per boarding for both OCTA and the Big Blue Bus increased by about 50 percent between 2002 and 2016 — to nearly $1.25 and $0.75 per boarding respectively. So while fares have probably not caused significant ridership declines across the region, they may have played a role at operators like OCTA and Big Blue.

Transit service in the SCAG region, moreover, mostly rose while ridership was falling, and ridership fell even on routes that maintained excellent on-time records. These circumstances suggest that service quantity and reliability were not large factors in falling transit use. There is some evidence, admittedly limited, that riders felt unsafe on transit vehicles in recent years, which may have contributed to the ridership decline.

Fuel prices have likely played a contributing, but not leading role

Fuel prices have been volatile since 1998, but have fallen substantially since peaking in 2012. Figure ES-4 compares trends in fuel prices and transit use in the Los Angeles metropolitan area. While there is a generally positive relationship (as fuel prices rise so too does ridership), it is a relatively weak one – fuel prices rise and fall much more dramatically than transit patronage. The timing of transit's decline, moreover, is not conducive to a fuel price explanation. Per capita transit use in Southern California has been mostly falling since 2007, and it fell between 2009 and 2011 when fuel prices were rising sharply.

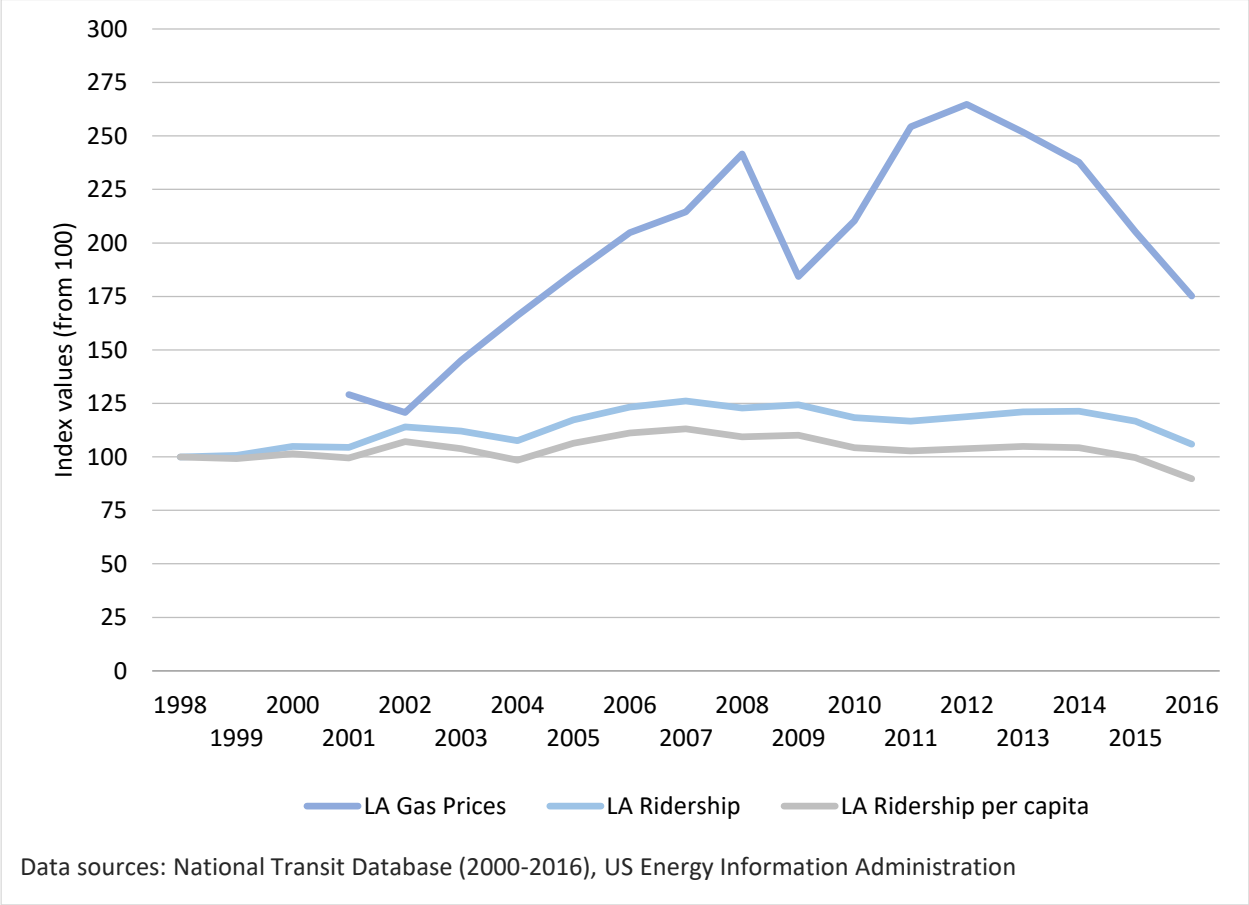


Figure ES 4. Transit ridership and gas prices in Los Angeles Metropolitan Area.

The Transportation Network Companies do not appear to have cannibalized transit

We have very little data that lets us directly measure the effect of transportation network companies (TNCs, like Lyft and Uber) on transit use. What evidence we do have suggests that most TNC trips are probably not replacing large numbers of transit trips. The typical TNC user does not resemble the typical transit rider, the typical TNC trip does not occur when and where most transit trips occur, and most TNC users report no change in their travel by other modes. However, if the pool of TNC users continues to expand, the effect of TNCs on transit use — both positive and negative — may expand as well.

Evidence about neighborhood change and migration of lower-income people is mixed, but suggestive

Transit is heavily-supplied in a small proportion of places, and heavily used by a small proportion of people. If the neighborhoods where transit quality is high change, and become less likely to hold the small group of people who use transit regularly, then transit use could fall. We find some evidence consistent with the idea that neighborhood change has been associated with less transit use. Areas that were heavily populated with transit commuters in the year 2000 became, in the next 15 years, slightly less poor, and significantly less foreign born. Perhaps most important, the share of households without vehicles in these neighborhoods fell notably. All these factors align with a narrative where a transit-using populace is replaced by people who are more likely to drive. We emphasize, however, that this relationship is not one we can measure with precision, and it would be premature to declare neighborhood change a large culprit in falling transit ridership.

Private vehicle access increased substantially from 2000 forward

A defining attribute of regular transit riders is their relative lack of private vehicle access. But between 2000 and 2015, households in the SCAG region, and especially lower-income households, dramatically increased their levels of vehicle ownership. Census data show that from 1990 to 2000 the region added 1.8 million people but only 456,000 household vehicles (or 0.25 vehicles per new resident). From 2000 to 2015, the SCAG region added 2.3 million people and 2.1 million household vehicles (or 0.95 vehicles per new resident).

The growth in vehicle access has been especially dramatic among subsets of the population that are among the heaviest users of transit. Between 2000 and 2015, the share of households in the region with no vehicles fell by 30 percent, and the share of households with fewer vehicles than adults fell 14 percent. Among foreign-born residents, zero-vehicle households were down 42 percent, and those with fewer vehicles than adults were down 22 percent. Finally, among foreign-born households from Mexico, the share of households without vehicles declined an astonishing 66 percent, while households with more adults than vehicles dropped 27 percent. Living in a household without a vehicle is perhaps the strongest single predictor of transit use; the decline of these households has powerful implications for transit in Southern California.

Vehicle ownership is not, of course, the only determinant of regional transit ridership—income, race, age, and nativity, to name a few, also matter. But vehicle access may well be the largest factor. We demonstrate the strong association between vehicle access and transit ridership by building a series of statistical models of transit ridership. The models cover the SCAG region, all of California, Los Angeles

County, and the SCAG region outside of LA County. Each model compares two predicted outcomes: the change in transit use we would expect to see based on due to changes in socioeconomic attributes *other than* vehicle ownership, and the change we would expect to see if we account, in addition, for changes in vehicle access. In short, we compare a scenario where incomes, nativity, racial composition, and various other attributes change the way they did from 2000-2015, but where vehicle access is unchanged, to a scenario where vehicle access changes as well.

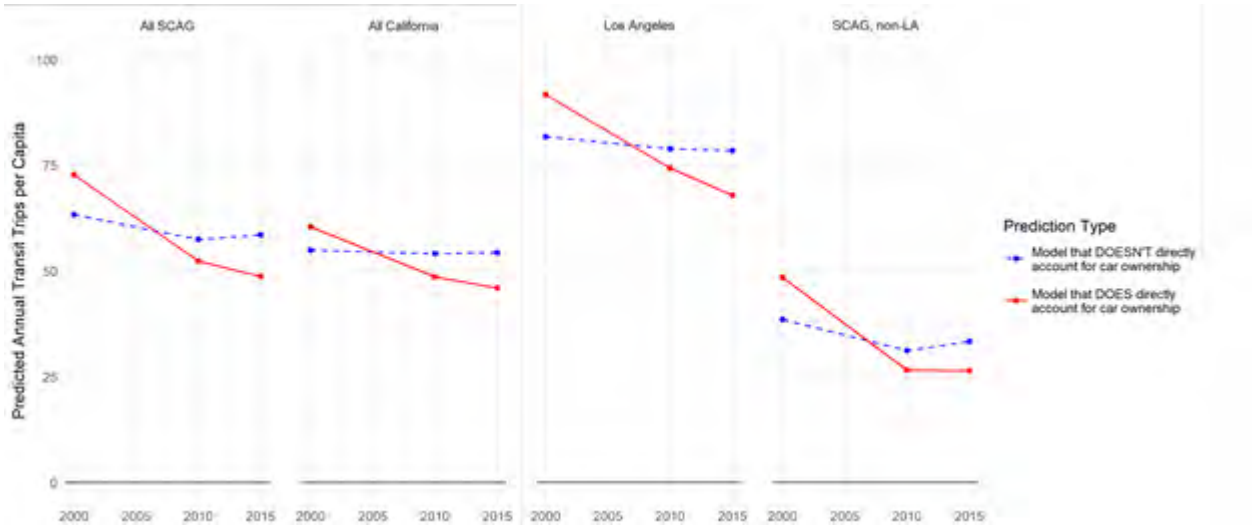


Figure ES 5. Transit use changes based on area.

Figure ES-5 shows the results of these models. The dotted blue line in each case is an estimate of transit ridership trends between 2000 and 2015 based on changes in the region's income, nativity, and so on, but assuming no change in vehicle ownership. The solid red lines represent these same models, but with the region's observed changes in vehicle access included. In all cases the blue line predicts transit use starting at a lower point and declining only modestly, while the red line shows transit use starting at a higher point and falling sharply, more in line with what we are actually observing. The models reinforce the idea that vehicle access is the decisive factor in transit use: income, age, and many other factors matter, but they matter largely because they predict the ability to access and use motor vehicles. In Southern California since 2000, that ability has increased, and transit use has fallen.

Conclusion

Public transportation is unlikely to fare well when Southern California is flooded with additional vehicles, especially when those vehicles are owned disproportionately by transit's traditional riders. Much of the region's built environment is designed to accommodate the presence of private vehicles and to punish their absence. Extensive street and freeway networks link free parking spaces at the origin and destination of most trips. Driving is relatively easy, while moving around by means other than driving is not. These circumstances give people strong economic and social incentives to acquire cars, and — once they have cars — to drive more and ride transit less.

The advantages of automobile access, which are particularly large for low-income people with limited mobility, suggest that transit agencies should not respond to falling ridership by trying to win back former riders who now travel by auto. A better approach may be to convince the vast majority of people who rarely or never use transit to begin riding occasionally instead of driving. This task is unquestionably more difficult than serving frequent-riding transit dependents, and it would likely require weakening or removing some of the state's and region's entrenched subsidies for motor vehicle use. But the opportunity is substantial. The SCAG region, between 2012 and 2016, lost 72 million transit rides annually. That number seems daunting, but the region has a population of 18.8 million, and about 77 percent of those people (roughly 14.5 million), ride transit rarely or never. If one out of every four of those people replaced a single driving trip with a transit trip once every two weeks, annual ridership would grow by 96 million — more than compensating for the losses of recent years. The future of public transit in the SCAG region, then, will be shaped less by the mobility needs of people who do not own vehicles, and more by policy decisions that encourage vehicle-owning households to drive less and use transit more.

FALLING TRANSIT RIDERSHIP: CALIFORNIA AND SOUTHERN CALIFORNIA

In the last 15 years Americans have supported public transportation more and demanded it less. California, the nation's most populous state, is in many ways emblematic of this pattern. Motivated by concerns about congestion and climate change, California's state and local governments have invested heavily in transit, often with the explicit approval of voters. This investment is particularly evident in Southern California. Since 1990, the six-county Southern California Association of Governments (SCAG) region has added over 100 miles of light and heavy rail in Los Angeles County, and over 530 miles of commuter rail region-wide. In November 2016, voters in LA County approved a $120 billion sales tax measure for transportation, with a plurality of the funding dedicated to expanding and improving transit (Measure M: Metro's Plan to Transform Transportation in LA 2016). This measure marked the third such countywide tax increase since 1990, and the fourth one overall. Other SCAG counties have also routinely passed sales tax measures for transportation and transit improvements.

Over the same period, however, California's transit use (depending on how one measures it) has varied from modest increases to relative stagnancy to—in more recent years—steep decline. Southern California is again illustrative. Despite its heavy investments in transit, in absolute terms the region's transit ridership reached its postwar peak in 1985. Through the 1990s and mid-2000s ridership rose and fell modestly, never reaching 1985 levels, and in 2012 it began declining. In per capita terms, ridership has fallen more steadily since the 1980s. Ridership per capita was flat in the early 2000s, but started trending down again in 2007. In California overall, per capita ridership was flat until 2009, when it began a decline from which it has not recovered (The National Transit Database (NTD), 2015).

Why is transit ridership falling? The question is not merely academic. The combination of rising supply and falling demand has profound fiscal implications for transit operators, since it substantially increases the public cost of moving each passenger. Increased transit supply has meant increased public investment, particularly in new rail services. Measured as a ten-year rolling average of capital and operating costs, transit investment in both the US and California rose almost 50 percent between 2000 and 2015. These rising expenditures, when combined with falling patronage, yield falling productivity. Between 2005 and 2016, transit productivity —measured as passenger boardings per vehicle revenue hour (VRH) —has fallen 5 percent in California and 14 percent in the SCAG region. Falling productivity is not sustainable; it usually ends with more subsidies or less service.

Beyond fiscal concerns, falling ridership calls into question a number of California's ambitious environmental goals. California's aggressive agenda for combatting climate change is predicated in part on many people using transit more and driving less. The carbon reduction targets set out in Senate Bill 375, California's landmark climate reduction bill of 2008, involve large mode shifts to transit and away from driving, while the California Department of Transportation's current Strategic Management Plan includes an explicit goal of doubling the state's transit mode share by 2020 (California Department of Transportation, 2015). But transit ridership, despite heavy transit investment, is trending very much in the opposite direction.

This report assesses California's, and particularly Southern California's, recent ridership downturn. We emphasize Southern California because — as we will show — California's falling ridership is in many ways Southern California's falling ridership. Had transit use not fallen in the SCAG region through 2016, it would not have fallen statewide.

Our study considers the years from 2000 to 2015 or 2016 (depending on data availability). While widespread concern about falling transit use did not begin until ridership began falling absolutely in 2012, we focus on the per capita decline that began about five years before that. The falling absolute ridership of the last few years is important, and we do pay outsized attention to it. But we view it as a particularly acute manifestation of the longer-run per capita decline, not as a phenomenon in itself. Absolute declines in ridership are at once more noticeable and less important than per capita declines. Ridership numbers that are not adjusted for population lack context, and focusing only on absolute ridership declines can for that reason yield incomplete or misleading results.

For example, since 2012 gas prices have fallen sharply, transportation network companies (TNCs) like Lyft and Uber have expanded dramatically, undocumented immigrants have been granted drivers' licenses, and the economy has rebounded from the Great Recession. All these factors may have depressed transit use, but all of them also occurred well *after* per capita transit ridership began to decline. Thus none of them, individually or in combination, can fully explain Southern California's, or California's, transit patronage losses.

Our analysis faces data limitations common to examinations of transit. Aggregate data on transit use are widely available through the National Transit Database (NTD), but users of NTD data can never be entirely sure of the data's accuracy.[1] NTD records are compiled from the reports of individual transit operators to the federal government, and for a variety of reasons — from failure to report to mistakes in reporting to errors in correcting those mistakes— NTD data do not always match up with operator data. We have checked some of the NTD data used in this report against operator data and been satisfied that they reasonably conform, but checking all the data would be impossible. We emphasize that this problem is almost universal in transit studies: all data are imperfect, but the NTD is the nation's standard source for transit data.

A second issue is that while data on transit use are easy to find, data on transit *users* are not. Public transportation is used by a small and hard-to-track subset of the population, making riders (and especially former riders) hard to study. The U.S. Census, in its annual American Community Survey (ACS), provides detailed economic and demographic information about transit commuters, but commutes are a minority of transit trips, and commuters (as we will show) are a minority of transit riders. More detailed data on transit users can be found in the California Household Travel Survey (CHTS) which provides an in-depth look at travel of all types by Californians, and complements those travel data with extensive person-level

[1] Transit operators who receive funding from the Federal Transit Administration's Urbanized Area Formula Program, or its Rural Formula program, must submit data to the NTD on the financial and operating conditions of their systems, as well as the conditions of their assets and rolling stock. Just over 660 operators receive such funding and report to the NTD. See https://www.transit.dot.gov/ntd

socioeconomic information. But the CHTS is a one-year snapshot, only available for 2012. As a result, we have a data mismatch: excellent data for a single year, but a research question – why is transit ridership declining? – that demands data on changes over time.

A last data obstacle is that the determinants of transit use are varied, ranging from gas prices to auto ownership to the quality of transit service, and no single data set contains all of them. Some factors thought to influence transit use, like the availability of free parking, are not systematically tracked at all.

To work around these limitations, we draw on an array of spatial, person-level, and administrative data. At different points we use the U.S. Census summary files, the Integrated Public Use Microdata (IPUMS) of the Census,[2] state and national travel diary data, gas price and economic data from the Energy Information Agency and the Bureau of Labor Statistics, and data and rider surveys conducted by some of Southern California's larger transit operators. One operator—the Los Angeles County Metropolitan Transportation Authority (Metro, or LA Metro)—by itself accounts for most of the region's transit use and has ample public data available. As a result, at different points in the report when data for the entire region is lacking, we draw on data specific to LA Metro.

Largely because of these data constraints, the case we build is circumstantial; we offer no definitive proof of cause-and-effect. But the evidence is nevertheless compelling. The primary factor we identify is automobile ownership. In the last 15 years, household vehicle access in the SCAG region has grown dramatically. Vehicle ownership has grown particularly sharply among subgroups most likely to use transit, such as the low-income and the foreign born from Latin America. The steep rise in vehicle access among these groups that occurred as transit ridership began to fall is not direct proof, but it is a smoldering if not a smoking gun. Public transportation is unlikely to fare well when Southern California is flooded with additional vehicles. Much of the region's built environment is designed to accommodate the presence of private vehicles and to punish their absence. Extensive street and freeway networks link free parking spaces at the origin and destination of most trips. These circumstances give people strong incentives to acquire cars, and — once they have cars — to drive more and ride transit less.

The surge in vehicle ownership does not explain all of the transit decline. And it may well have been reinforced by falling gas prices and the rise of TNCs— though again we note that increasing vehicle ownership and declining transit use began before TNCs existed and when gas prices were still high. But increased vehicle ownership by itself probably explains much of Southern California's lost transit ridership.

Our findings accord with previous research about transit patronage. Giuliano (2005) has shown that compared to Americans at large, the poor use transit more but like it less. The typical low-income rider wants to graduate to automobiles, while the typical driver might view transit positively but have little interest in using it (Manville & Cummins, 2015). These facts, coupled with the falling ridership of recent years, raise questions about transit's future.

Transit ridership is not, by itself, a legitimate goal of public policy. Transit use is instead a means to achieve other public ends. Traditionally, transit's goals have been twofold: Providing mobility to disadvantaged people who lack it, and mitigating the social and environmental costs of private automobiles by providing alternatives to them. The first goal has long accounted for more of transit's ridership, while the second

[2] The IPUMS data are from Ruggles et al (2017).

has accounted for more of its rhetoric. Throughout the United States, and particularly in Southern California, public transportation advocates have emphasized transit's potential to manage traffic and reduce pollution. In practice, however, transit has functioned overwhelmingly as a social service for low-income people with little private mobility (Taylor & Morris, 2015).

Because transit has primarily carried low-income people, rising vehicle ownership among those people suggests a future where public transportation's core ridership could dramatically shrink. While this outcome poses a grave problem for transit operators, it is not obvious that transit operators should try to win these low-income riders back, at least not to the very high levels at which they rode transit previously. With very few exceptions, acquiring an automobile in Southern California makes life easier along multiple dimensions, dramatically increasing access to jobs, educational institutions and other opportunities (Kawabata & Shen, 2006). As a result, pulling low-income former riders out of their cars and back onto trains and buses could make transit agencies healthier but the region poorer. If transit agencies want to protect their fiscal health while also increasing social welfare, they may need to convince the vast majority of people who never use transit to begin riding occasionally instead of driving. This task is unquestionably more difficult than serving a large pool of people who have few alternatives to transit. Convincing some drivers to start using transit would likely require weakening or removing some of the state's and region's entrenched subsidies for motor vehicle use. But transit is unlikely to grow substantially, to accomplish its environmental goals, if driving remains artificially inexpensive.

THE SPATIAL AND DEMOGRAPHIC DISTRIBUTION OF AMERICAN PUBLIC TRANSPORTATION

Public transportation use in the United States is distributed unevenly across people and places. Transit accounts for about two percent of all passenger miles travelled (PMT), and about two percent of personal trips overall (NHTS 2009). These small overall numbers, however, conceal transit's outsized importance to some people in some places. The average U.S. resident made about 32 transit trips in 2016 (Neff & Dickens, 2017; U.S. Census Bureau, 2016), but the modal resident made zero trips, and a small number of people rely on transit extensively. Chu (2012) shows that 20 percent of Americans live in neighborhoods without transit, while 60 percent live in neighborhoods with transit but have not used it in the previous month. Another 11 percent uses transit less than ten times per month, while eight percent take ten or more trips monthly.

The small share of people who use transit frequently is concentrated in a handful of metropolitan areas. In 2016, 65 percent of all transit boardings occurred on the nation's ten largest transit operators; the 15 systems in the New York region by themselves account for over 40 percent of the country's transit trips (FTA, 2016). Even within these transit-heavy areas, however, most people do not use transit regularly, because most transit use occurs in the central cities, and specifically among lower-income and foreign-

born people in these cities. And even within these subgroups, whose members are *more likely* to ride transit, *most* people do not use transit.

Why is transit use so rare? In the broadest terms, travelers will choose to ride transit when they believe transit has the lowest relative costs – in money, time, or risk and uncertainty – of the various transportation modes available to them. These factors help explain why so much transit use occurs in New York City. New Yorkers ride transit as much as they do not only because transit service is frequent and extensive, but also because riding a subway across Manhattan is often cheaper, faster and more reliable than driving. Manhattan's streets are clogged with unpredictable congestion and parking is scarce and expensive.[3] In most other places, driving is a faster door-to-door option, and one that people also believe is safer (Yoh, Iseki, Smart, & Taylor, 2011). Driving in these places is also more reliable: when congestion is low and transit service is sparse, riding transit might involve more time waiting at stops and transferring between vehicles, which make trips seem unpredictable, complicated and burdensome (Iseki & Taylor, 2009). For this reason, outside New York and a handful of other urban places, most transit users are people who for various reasons do not have the option of travelling by car.

The fact that so few people use transit regularly is important but often overlooked, especially in discussions about why ridership might fall. Per capita transit use can fall when current riders ride less, when the number of people who never ride grows, or both. Strictly speaking, there is no difference between these root causes. A person who rides and stops is a lost transit rider, but so is a person who moves to a transit service area and never rides. The decision to stop and the failure to start both reduce per capita transit use.

In practice, however, concerns about falling per capita ridership are rarely concerns about new residents who never start riding, and are instead concerns about current riders who leave. This dynamic is understandable, as riders who leave are easier to notice. But it is important to remember that transit riders leave transit regularly, even when ridership is stable or growing. If riders who leave are replaced by others, their departure from transit is less noticeable, and ridership might remain unchanged. For that matter, ridership can remain unchanged even when riders leave and are *not* replaced by other people. If an existing rider stops taking her daily trip and drives instead, but another frequent rider adds a daily trip, the number of riders falls but per capita ridership does not. Conversely, if two riders who take three trips a day each start taking two, the number of riders won't change but ridership will. Riders are not equivalent to ridership; stable ridership can conceal large churn among riders, and vice-versa.

The Spatial Concentration of Transit in California and Southern California

As it is in the nation at large, public transit use in California is unevenly distributed: a small share of people and places account for a large share of overall rides. Northern Californians use transit more intensively than Southern Californians, largely as a result of high ridership in San Francisco and its surrounding areas, but most of California's transit use occurs in Southern California, where a majority of the state's

[3] Manhattan also has relatively few highway lane-miles, which contributes to its surface-street congestion.

population lives (Figure 1). Transit accounts for 6 percent of all trips in the Bay Area, as opposed to 5 percent in the SCAG region, but the SCAG region – because it is so large – accounts for 52 percent of California's transit trips, while the Bay Area accounts for 28 percent. Southern California thus exerts a large influence on California's overall transit use.

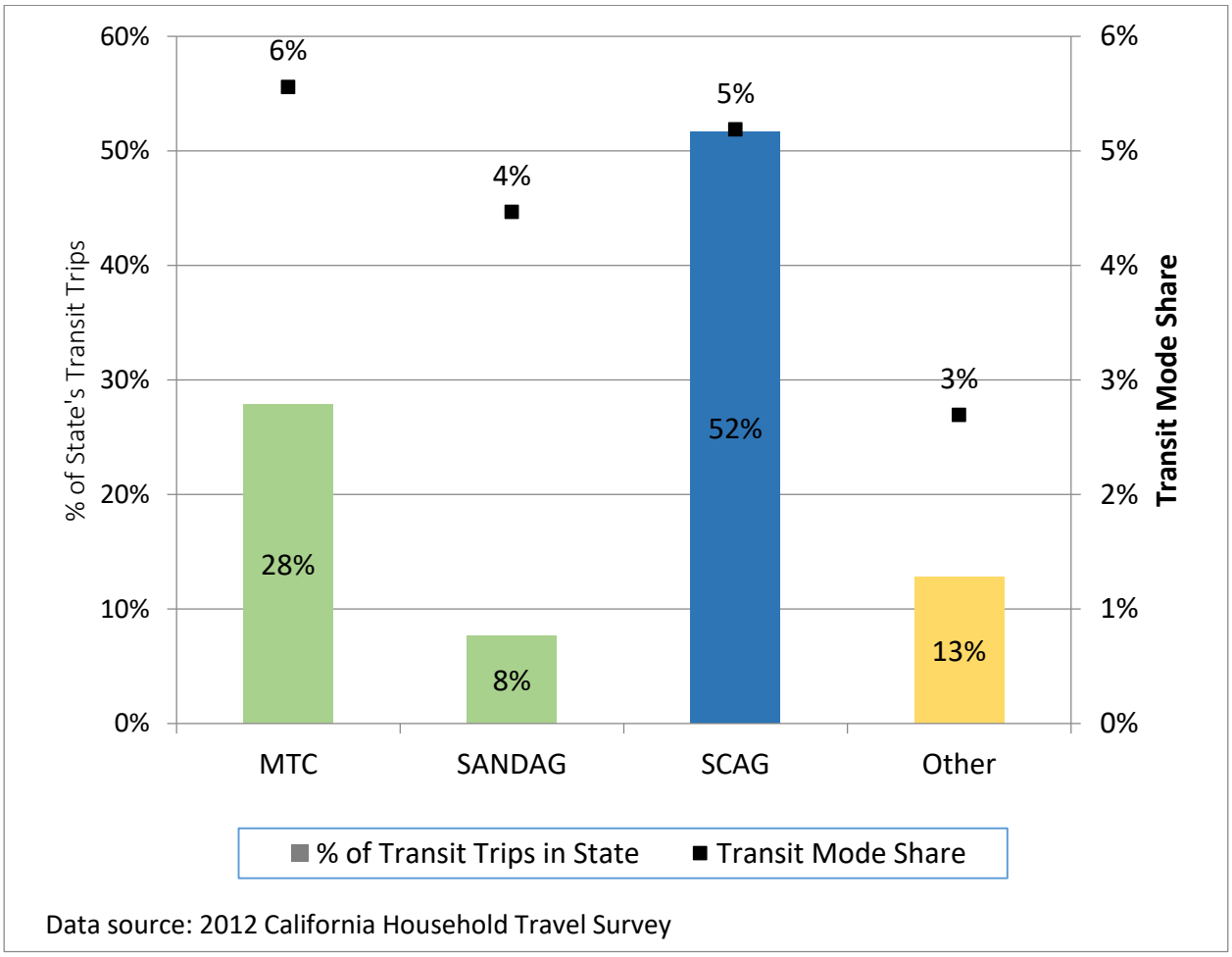


Figure 1. Transit mode share and distribution of transit trips by California region.

Figures 2 and 3 show the trend in transit boardings nationwide, in California, and the SCAG region between 2000 and 2016, first in absolute and then in relative terms. Absolute ridership was largely flat over this time in all three geographies. In relative terms ridership grew steadily between 2004 and 2007 (SCAG region), 2008 (the U.S.), and 2009 (California). This period of growth was followed by patronage losses from the start of the Great Recession through 2011, particularly in California. The recession's end brought a gradual transit patronage recovery, followed by steep declines from 2014 onward.

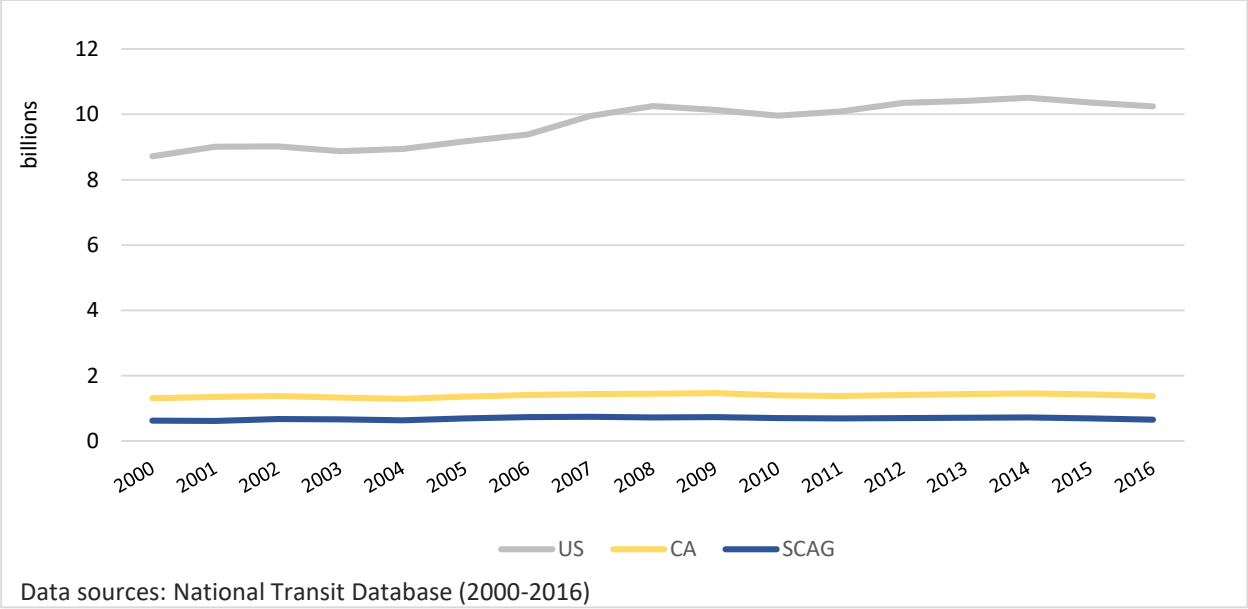


Figure 2. Boardings *(unlinked passenger trips). Growing nationwide, but relatively flat in California and SCAG.*

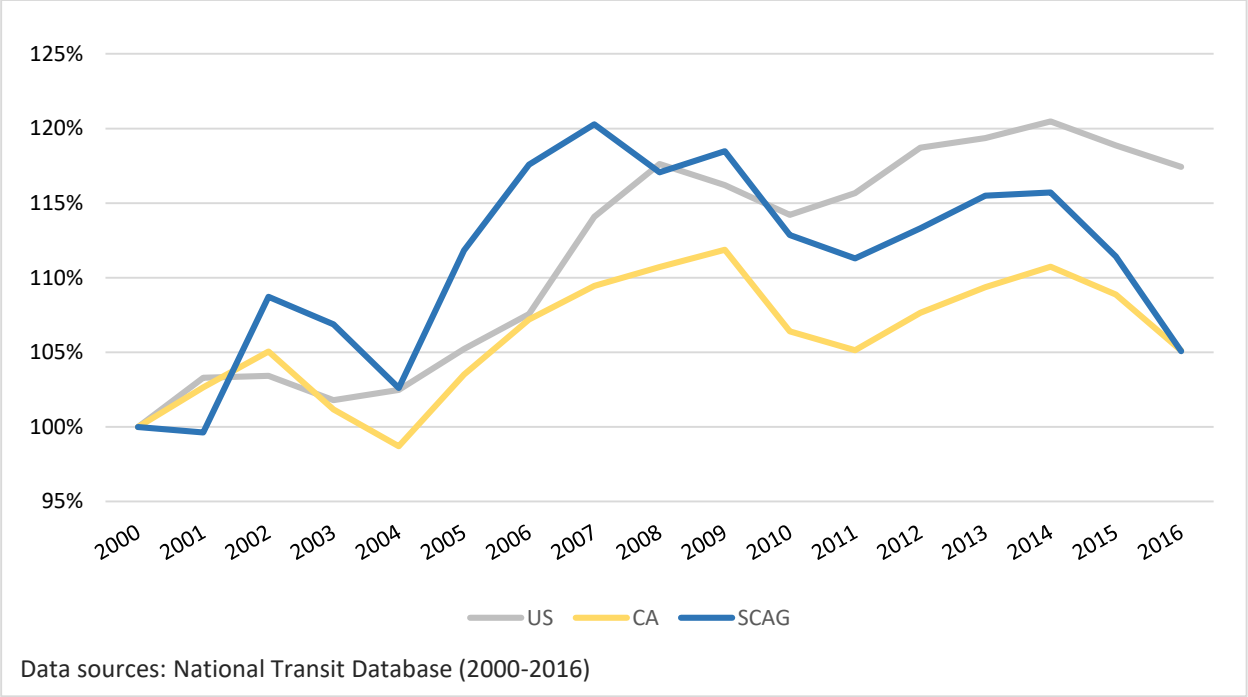


Figure 3. Indexed boardings. *Growing nationwide, but California and SCAG face steeper declines, returning to 2000 levels.*

Figure 4 expresses these ridership trends in per capita terms. Between 2005 and 2016, per capita ridership peaked in California in 2009, in the nation in 2008, and in the SCAG region in 2007. Since 2007, per capita transit use in the SCAG region has been mostly falling—before the recession, the rise of Lyft and Uber, or the post-2012 drop in fuel prices.

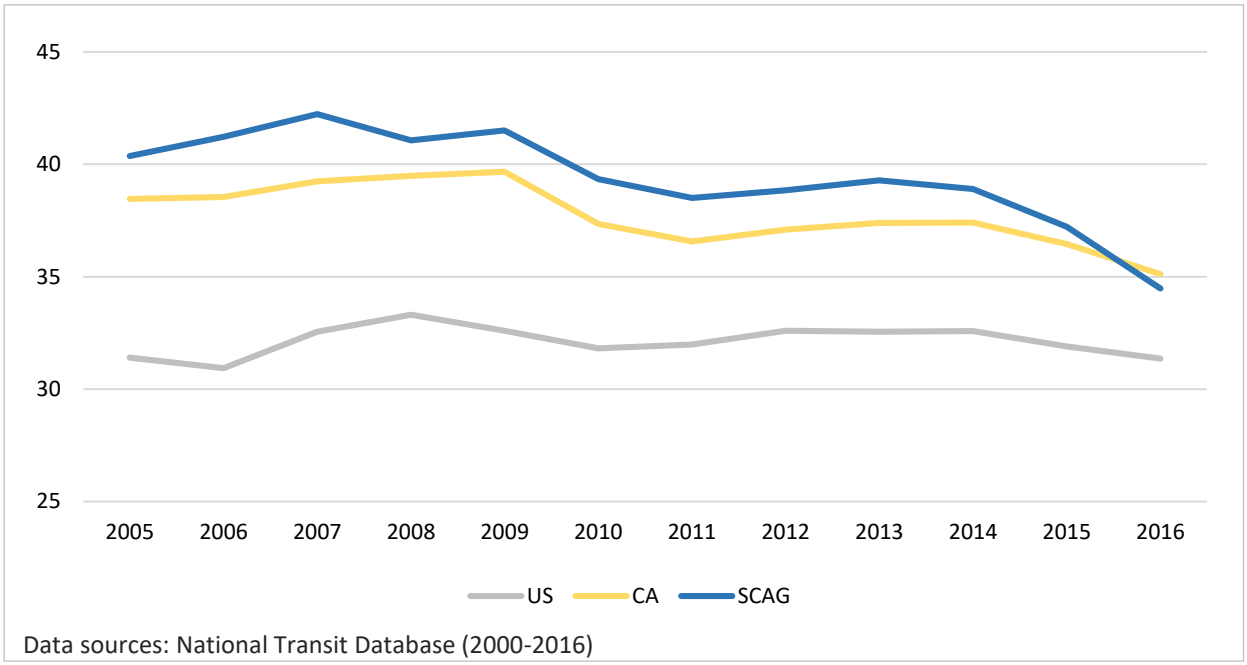


Figure 4. Transit trips per capita. *Relatively flat nationally, but down in California since 2009.*

Because the SCAG region accounts for so much of California's ridership, and because in recent years its decline has been so steep, losses in the SCAG region from 2012 to 2016 actually account for all of California's ridership losses during that time. Figure 5 shows changes in transit ridership across California from 2012 to 2016. During this time annual transit boardings statewide fell by 62.2 million. The SCAG region, however, lost *72 million* annual rides, or 120 percent of the state's total losses. Ridership outside the SCAG region actually rose 20 percent, largely as a result of gains made by transit systems in San Francisco. The Bay Area Rapid Transit District (BART) alone accounted for 28.4 percent of the state's increased transit ridership (although by 2017 ridership on BART, and in California outside the SCAG region, had also started to fall).

Figure 5. CA net change in ridership (2012-2016). *Losses in CA are driven by losses from the largest operators in the SCAG region, while Bay Area region saw growth in ridership.*

Within the SCAG region, transit trips (and lost trips) are similarly geographically concentrated. We can illustrate this concentration in a number of ways. For example, the CHTS shows that in 2012 82 percent of the transit trips in the SCAG region were in Los Angeles County. Another 8 percent were in Orange County, and the remaining ten percent were spread over the other four counties.

A second way to measure concentration, which allows us to examine smaller levels of geography, is to use census data and map the location of the region's transit commuters. While commuters are not the majority of transit riders, they do tend to use transit frequently and intensively, and we have high-quality data about their residential locations. Those locations are intensely concentrated. In 2000, 2010, and 2015, 60 percent of the SCAG region's transit commuters lived in 20 percent of its census tracts, which represented (depending on the year) one to three percent of the region's land area. In all three years, ten percent of the region's transit commuters lived in one percent of the region's census tracts, which accounted for two-tenths of one percent (0.2%) of the region's land area.[4] (Note that even in these tracts, *most* workers do not commute via transit – 7 out of 10 use some other means.) Unsurprisingly, these tracts are overwhelmingly located in LA County, followed by Orange County.

A third way to illustrate the concentration of transit use is to examine transit trips by operator. Figure 6 shows that the ten largest transit agencies in the SCAG region account for 60 percent of all transit service

[4] Calculated from summary file data of the Decennial Census 2000, and the 2010 and 2015 ACS.

(measured in vehicle-revenue hours), and 80 percent of all transit trips. The smallest 60 transit operators, by contrast, account for just over 6 percent of service and just over two percent of trips.

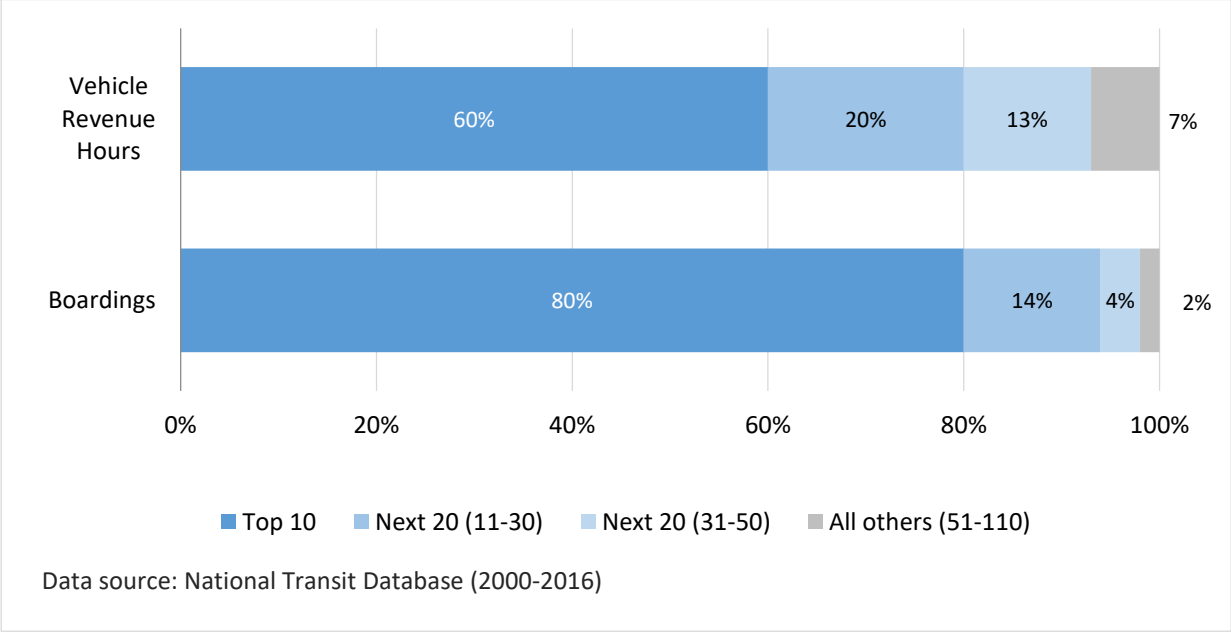


Figure 6. Key metrics by operator grouping. *9% of operators carry 80% of the trips*

Digging still deeper, the distribution of service and trips within these large operators is also highly skewed. LA Metro accounts for most of the SCAG region's trips, and LA Metro's ridership is itself highly concentrated. The agency has over 100 transit routes, but in both 2012 and 2016 over half of its total rides took place on 20 of those routes.[5] Metro's busiest routes are also, unsurprisingly, where the agency has suffered the largest ridership declines. A dozen Metro lines accounted for 53 percent of all the agency's lost rides between 2012 and 2016.

Putting all this information together, we see that declining transit patronage through 2016 in California is essentially declining patronage in Southern California, and that Southern California's ridership declines are themselves remarkably concentrated. As a result, the state's lost ridership can be traced to a small number of Southern California transit operators. Four SCAG operators (LA Metro, the Orange County Transportation Authority (OCTA), the Los Angeles Department of Transportation (LA DOT), and the Santa Monica Big Blue Bus) accounted for 88 percent of the state's ridership losses, and LA Metro by itself accounted for a remarkable 72 percent of the state's losses. Because LA Metro's losses are themselves highly concentrated, a dozen *routes* from LA Metro account for 38 percent of all the lost ridership in California. Half of California's total lost ridership is accounted for by 17 LA Metro routes (14 bus and 3 rail lines) and one OCTA route.

[5] Calculated from Metro ridership-by-line data, 2012 and 2016.

If we examine these routes more closely (Figures 7 and 8), we see that they include both bus and rail. Transit agencies nationwide – LA Metro included – have made substantial investments in rail service, but the bus remains the workhorse of public transit in the US, the SCAG region and LA County. Bus trips are 78 percent of all transit trips in California and 86 percent of transit trips in the SCAG region.[6] Given that buses carry the most passengers, it is not surprising that they have also seen the largest ridership declines, accounting for 84 percent of the lost rides between 2012 and 2016. While some bus routes gained ridership, the bus routes that lost riders lost more than the growing routes gained. The five bus lines with the largest declines were urban routes that travel in and out of downtown LA, while the five lines that gained the most ridership ran more outlying and circumferential routes.

Two Metro rail lines, meanwhile – the Gold and Expo – opened extensions after 2012, and partly as a result their ridership grew. But Metro's remaining rail lines, most of which also travel into downtown LA, saw steep ridership losses that exceeded the Gold and Expo Line's gains. The SCAG transit decline thus spans modes; it is not a simple story of buses falling behind while rail surges. Instead major routes that run into the heart of the city – the sort of routes where transit is traditionally strongest – are losing riders precipitously.

[6] Calculated from the 2012 California Household Travel Survey.

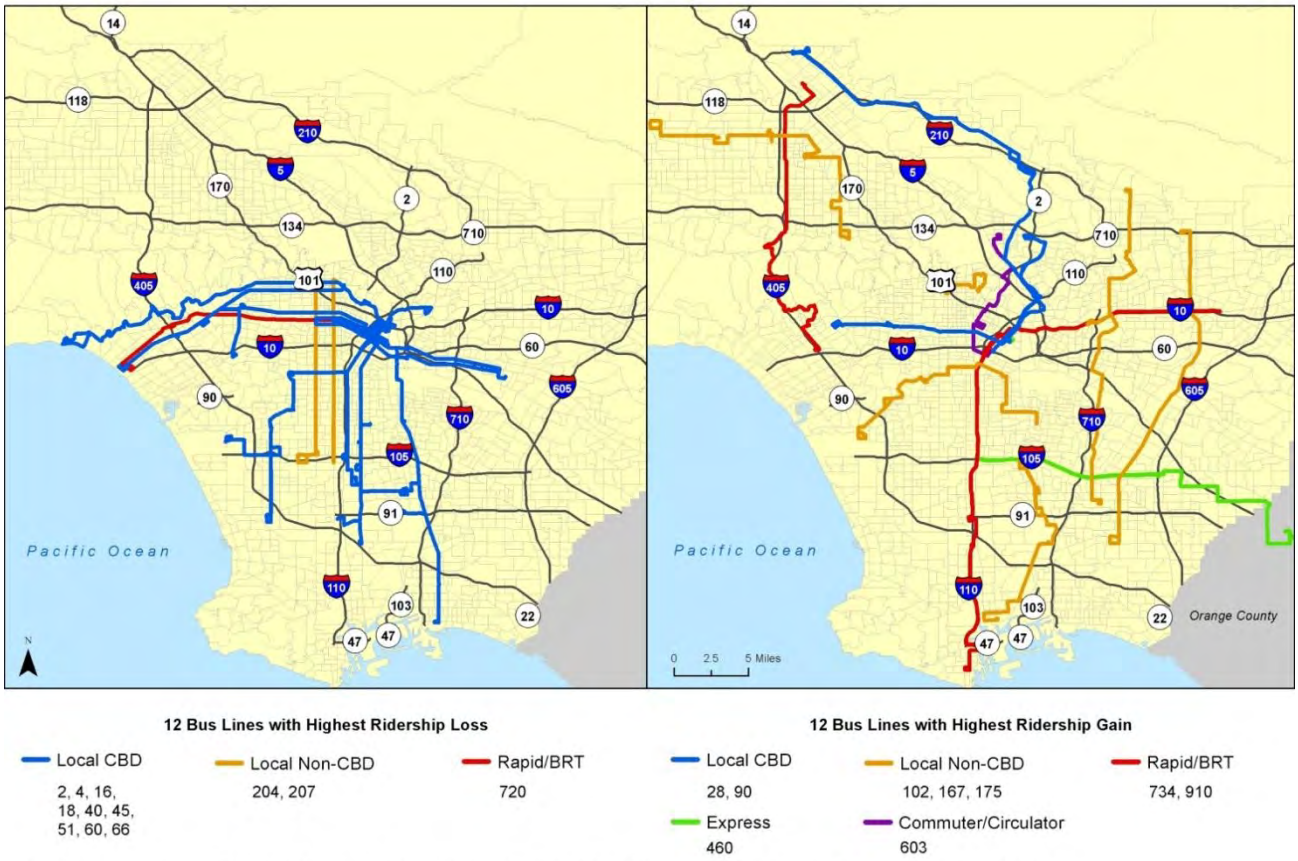


Figure 7. LA MTA: Bus lines with the most ridership change (2012-2016).

Figure 8. LA MTA: Net change in Ridership (2013-2016) by mode. *Buses made up 84% of loss and rail made up 12%.*

The Demographic Concentration of Transit Use in Southern California

Transit use in the SCAG region is concentrated among a small group of people as well as a small number of places. People ride transit for different reasons, but a common thread running through regular transit users is lack of access to a private vehicle. This trait is not universal; many commuter rail passengers, for example, could make their trips by car and choose not to, but commuter rail is a small portion of overall transit ridership. In general, transit ridership is powerfully associated with lack of vehicle access (Taylor & Fink, 2013). Note again, however, that this relationship is not symmetrical. While most regular transit users lack vehicle access, most people without vehicle access do not regularly use transit, in part because transit is unavailable in many places.

Lack of vehicle access might arise for economic reasons, for medical reasons, or out of personal preference or habit (Brown, 2017). The relationship between vehicle access and transit use could also run two ways. People might ride transit because they do not have a car (either they cannot afford a car or cannot use

one for medical or legal reasons) or they may not have access to a car *because* they ride transit (they live and work near high-quality transit and so need not spend money on vehicles).[7]

Non-economic reasons for lacking a vehicle include disabilities or medical conditions that prevent driving, and legal sanctions that forbid it (e.g. losing a license as a result of traffic infractions, or being in the country illegally). In Southern California, perhaps the largest non-economic source of low vehicle access is immigration. Even controlling for income, immigrants are less likely than the native born to have vehicles, and more likely to use public transportation. Why this is so remains something of a puzzle. Scholars have proposed various explanations, including immigrants' tendency to live in dense areas; their tendency to live in close-knit communities that allow for more communal resources, including sharing of cars; a habit of not driving carried over from the native country; and – if the immigrant is undocumented – legal barriers to owning and operating automobiles (Blumenberg & Smart, 2014; Chatman & Klein, 2009, 2013; Liu & Painter, 2012). The evidence suggests, however, that driving less and riding transit more is not universal among the foreign born – immigrants from some countries, particularly Mexico and many countries in Central America, are less likely than others to drive and more likely to ride (Chatman, Klein, & DiPetrillo, 2010). There is also substantial evidence that over time immigrants assimilate and begin to travel more like the native born, with more driving and less transit use (Blumenberg & Evans, 2010). Thus transit ridership cannot be sustained by immigration alone; it requires a steady stream of new immigrants from particular countries, who will arrive with a transit habit and replace those earlier arrivals who assimilate driving.

Economic reasons for lacking vehicle access can include both low incomes and the high cost of driving. In some parts of California, such as northeastern San Francisco, a combination of heavy congestion, high tolls, and scarce and expensive parking make the price of owning and operating a vehicle high, and encourage even affluent people to ride transit (notably, the same density that makes the city congested can makes transit service more effective by putting large numbers of trip origins and destinations within steps of transit stops). Yet there are few places in Southern California where driving is challenging in this way. Congestion is severe, but parking is abundant and often inexpensive if not free, and low-to-moderate densities make transit less able to effectively link many places. As a result, income becomes the principal determining factor in vehicle access, and thus of transit use.

Figure 9 uses CHTS data to illustrate the disproportionate propensity to use transit among the low-income, the foreign-born, and households with limited vehicle access. The figure's dashed vertical line represents the overall average of daily unlinked transit trips in the SCAG region, and the circle associated with each subgroup indicates its relative size in the overall population. The figure shows, in short, that transit use is more common among smaller segments of the population. African Americans and Hispanics ride transit about three times as much as Whites and Asians. Immigrants who have been in the country less than ten years ride substantially more than both the native-born and longtime immigrants who have been in the country longer. Households earning under $25,000 per year ride more than twice as much as households earning $25,000 to $50,000, and these households in turn ride twice as much as households earning over $50,000 annually. By far the largest differences, however, are those that represent vehicle availability. Households without vehicles take almost five times as many transit trips as households with one vehicle,

[7] These reasons might interact. People who cannot afford vehicles might choose to live near transit because of their lack of vehicle access (Glaeser, Kahn, & Rappaport, 2008).

and households with one vehicle take twice as many trips as households with two. If we measure vehicles per adult, households with one vehicle for every two adults take twice as many trips as households with one vehicle per adult. Finally, people without driver's licenses take many more transit trips than licensed residents.

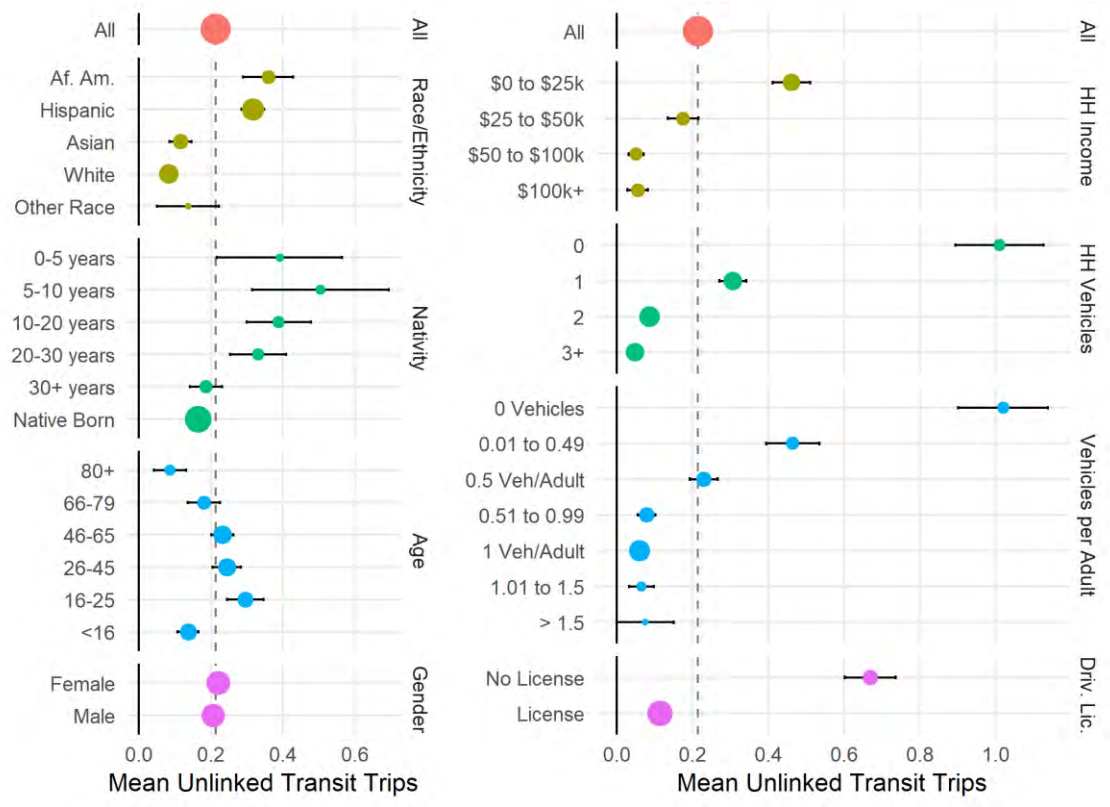


Figure 9. Mean transit trips by socio-economic characteristics and automobile access (CHTS).

The drawback of the CHTS, as we have mentioned before, is that it provides only one year of data. Table 1 uses LA Metro's annual rider surveys to show that the prevalence of people with low incomes and limited vehicle access on transit extends across years. We examine the 2005 survey (the earliest available) and then annual surveys from 2010 to 2016. Across both bus and rail riders, at least 69 percent of transit users (and often closer to 80%) report not having a vehicle available to make their trip. These proportions are higher for bus riders than rail riders, but even among rail riders between 58 and 65 percent (depending on the year) report not having a vehicle. The share of riders reporting not having a vehicle, furthermore, has grown over time.

In addition to limited vehicle access, Metro riders generally have low incomes and are strongly dependent on transit. Close to half of all surveyed LA Metro riders in each year have household incomes under $15,000. The median household income of riders hovers near $16,000, and the average income barely exceeds $25,000 in most years. In most years a strong majority of riders are habitual (riding over 4 days a

week) and a majority are longtime users (riding over 5 years). The riders are also overwhelmingly nonwhite.

All these characteristics make Metro riders – who are, again, most of SCAG's transit users – strikingly different from the population at large. The CHTS shows that in 2012, 73 percent of LA County residents took transit only occasionally or never, and the 2016 Census ACS shows that LA County residents are 26 percent non-Hispanic white, and that county median household income is $62,000. Only 5 percent of the county's households earn less than $15,000 per year. Thus SCAG's largest transit operator has for over a decade been dominated by low-income, nonwhite people with little vehicle access, people who live and move very differently from the typical Southern Californian.

	2005	2010	2012	2013	2014	2015
Share No Vehicle Available (%)	69	75	81	79	69	78
Bus Only	73	76	82	80	70	82
Rail Only	50	64	63	63	58	65
Share Earning Under $15k/Year			51	45	47	47
Median Household Income ($)			14,706	16,316	15,910	15,918
Mean Household Income ($)			26,025	25,540	23,223	25,747
Share White		8	9	10	9	9
Share Riding 5+ Days/Week		56	67	67	67	68
Share Riding 5+ Years		49	53	52	59	57

Source: Metro Rider Surveys. Not all questions asked every year. Dollars are nominal. "No vehicle" indicates that respondents lack access to a vehicle for the current trip.

Table 1. Characteristics of LA Metro riders, 2005-2015.

The importance of vehicle access is reinforced by evidence from other transit operators. A small operator in the SCAG region, the Montebello Bus Lines, surveyed residents (not just riders) in 2016. Most respondents did not ride transit, and 55 percent of non-riders said they would only ride if they lost access to their car. Most people who did ride did not have access to a vehicle (Diversified Transportation Solutions 2015). In 2016, the OCTA also surveyed Orange County residents about their travel behavior. The results were similar. Only three percent of people who always had vehicle access listed transit as their primary travel mode, compared to 33 percent of people who never had a vehicle (True North Research 2015).[8]

The OCTA survey also stands out for usefully disaggregating "lack of vehicle access," and demonstrating that vehicle access is not the same as vehicle ownership. Over 70 percent of OCTA transit users had a car in their household, but the car was not available to them. In most instances it was being used by someone else, but 19 percent of current riders were unable to drive, and another eight percent reported having a vehicle that was not working (True North Research 2015). People in households with vehicles can still lack

[8] Note that 2/3 of people without vehicle access still did not use transit regularly.

vehicle access. If a household has more adults than vehicles, and if most adults move around on most days, then someone is without a car, and the odds of using public transportation rise.

We emphasize again, however, that most people simply do not use public transportation very often. The four panels of Figure 10 use 2012 CHTS data to divide the California, Southern California, and LA County populations into three groups: *Transit Commuters* (respondents who use transit for the journey to work); *Transit Non-Commuters* (respondents who used transit in the week prior to the survey but do not use transit for the journey to work); and *Infrequent Transit Users* (respondents who do not use transit for the journey to work and did not use it in the previous week).

In general, and unsurprisingly, transit use is more intensive in the SCAG region than in California, and more intensive in LA County than in the SCAG region. Beyond this difference, the patterns relating to these three types of users are generally consistent across the three geographies. *Transit Commuters*, who garner perhaps the most attention from public officials and transit planners, ride most frequently (44 to 49 trips per month), but are a very small share (2% to 3%) of the population; as a result, they account for just 25 percent to 30 percent of all transit trips taken, despite their frequent use. *Transit Non-Commuters* ride transit less frequently (11 to 16 trips per month) than *Transit Commuters,* but account for a much larger share (20% to 23%) of the population, and as a result they actually account for over half (54% to 57%) of all transit trips. Finally, *Infrequent Transit Users* ride little or not at all, averaging only 0.9 to 1.5 trips per month across the three geographies. This group, however, comprises about three-quarters (73% to 78%) of the population, and because of this large base, *Infrequent Transit Users* account for better than one in seven (16% to 18%) of all transit trips.

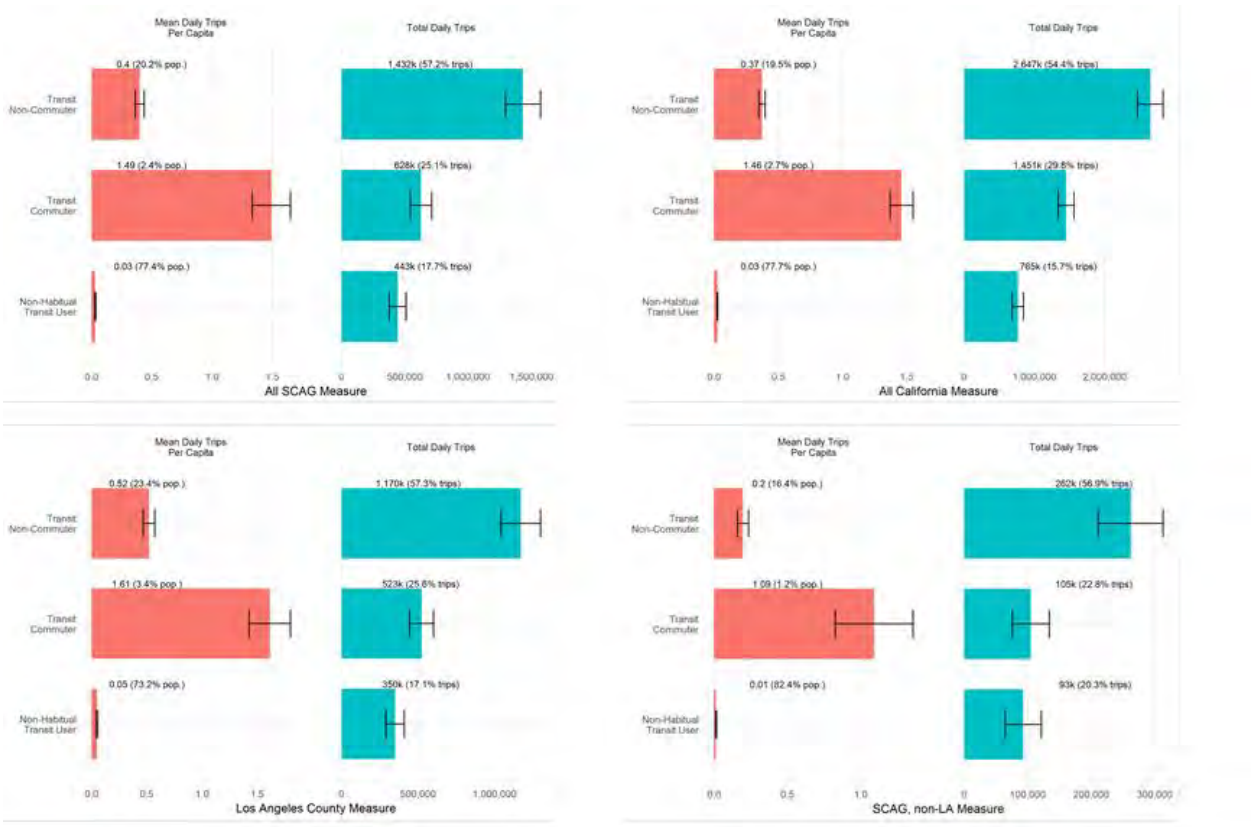


Figure 10. Mean and total daily trips by transit user group for the SCAG region, California, Los Angeles County, and non-Los Angeles SCAG region.

This snapshot of transit users is a picture of asymmetry, and this asymmetry suggests how transit ridership can fall dramatically and seemingly suddenly. The people who ride transit regularly are a narrow segment of the population. They come disproportionately from households with two or more adults per available vehicle, and especially from households with no vehicles. They have lower incomes, on average, and are more likely immigrants, young adults, and African-American or Latino. Many of them do *not* ride transit to or from work; transit commuters are just three percent of the population, and 13 percent of regular transit riders. The transit industry is thus heavily-dependent on a small subset of people, and very sensitive to even small changes in how those people choose to move around.

EXAMINING SOUTHERN CALIFORNIA'S DECLINE IN TRANSIT USE

Transit ridership can fall for multiple reasons. For convenience we divide these reasons into two categories: factors that transit operators (funding permitting) can control, and factors they cannot. We take these up in turn.

Factors Within Transit Operators' Control

The Quantity and Quality of Transit Service

People will ride transit less if service is slow, infrequent, or unreliable, and/or if rides are difficult or dangerous to take. As the quantity or quality of service falls, ridership should fall as well.

The Quantity of Transit Service

Some observers contend that recent drops in transit ridership can be tied directly to declining service quantity. For example, Hertz (2015) ties falling transit ridership to cuts in bus service, and articles in both the Wall Street Journal (Harrison, 2017) and New York Times(Rosenthal, Fitzsimmons, & LaForgia, 2017) make similar arguments. Freemark (2017) argues that LA's declining bus ridership is a function of Metro's falling service levels, and observes that average bus speeds fell 13 percent between 2005 and 2013.

Service levels certainly have a strong influence on ridership, even controlling for reverse causality – the fact that places with more riders often add more service (Alam, Nixon, & Zhang, 2015; Taylor, Miller, Iseki, & Fink, 2009). But service levels can be measured in many ways; two of the most common metrics are vehicle revenue miles (VRMs) and vehicle revenue hours (VRHs). VRM measures the distance transit vehicles cover while in service, while VRH measures the amount of time vehicles are in service. Both Hertz (2015) and Harrison (2017), in relating falling ridership to service declines, measure service using VRM. VRM alone, however, can be a problematic measure of transit service. In practical terms, VRM differentiates faster, longer-distance commuter services from lower speed local service. VRH, in contrast, measures the supply of different kinds of services (local bus service, bus rapid transit, rail transit, express bus, commuter rail, etc.) more similarly. VRH differentiates less among modes and service area types because the time between stops often varies far less than the distance travelled between them. A dozen stops spaced far apart in uncongested outlying suburbs can take a similar amount of time to serve as a dozen closely-spaced stops in a congested urban environment. The miles covered on the two routes will vary greatly, but the time required to serve them may not.

As a result, falling VRM *can* indicate service cuts, but can also reflect transit vehicles operating in higher levels of congestion, or agencies increasing local service rather than express service, or agencies redirecting service from outlying areas to central areas.

For example, if a transit agency shifts service from outlying suburban routes that travel longer distances at higher speeds to shorter, slower urban routes, VRM would almost certainly fall, as would average speed. But VRH may not change. Vehicles moved to dense areas typically cover less ground, but also move more slowly, stop more frequently, and dwell longer at each stop to allow more people to board and alight. In this case a "cut" in VRM would not necessarily be associated with a cut in VRH, and could actually deliver more service to more people.

In short, falling VRM is hard to interpret without also examining VRH. If VRM and VRH fall at roughly the same rate, then service is likely falling absolutely. But VRM falling substantially more than VRH suggests a change in service deployment or operating conditions (such as worsening congestion), rather than a service cut.

With this as background, we can consider the SCAG region's recent trends in VRM and VRH; we will show that rates of change in VRM and VRH have generally not been in concert. Figure 11 shows the relative trends in total VRM for the US, California, the SCAG region, and the SCAG region excluding LA Metro or OCTA between 2000 and 2016.

While VRM has increased across all four geographies, it has grown faster in the SCAG region than the U.S. or California as a whole, and faster still among SCAG's smaller transit operators – suggesting a relative shift in service delivery from LA Metro and OCTA to the smaller operators.

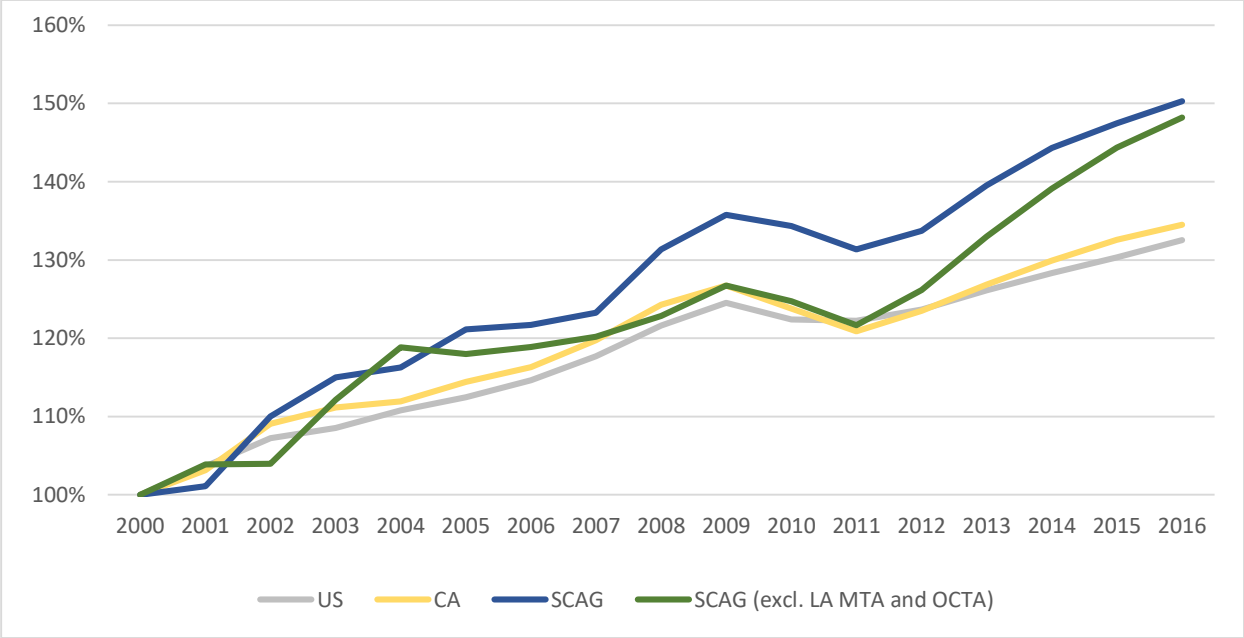


Figure 11. Indexed vehicle revenue miles. *Growth in service in the SCAG region outpaces national and state trends; within the SCAG region, all other operators have collectively added service at a faster rate than LA MTA or OCTA.*

This pattern is confirmed if we examine absolute VRM trends in the SCAG region separately for LA Metro, OCTA, and the remaining SCAG operators (Figure 12). Overall transit VRM has been growing for all three groups, but growing faster at the smaller operators.

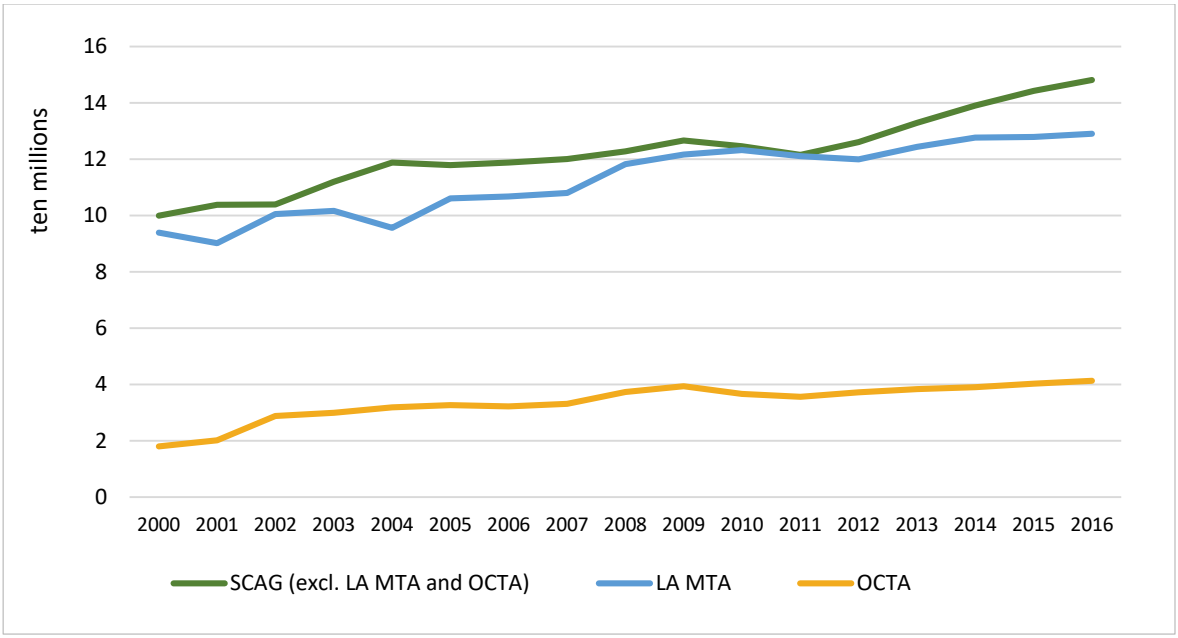


Figure 12. Vehicle revenue miles. *Service levels for LA MTA matches aggregate service provision for all other operators in the region (minus OCTA). Service is growing faster in the SCAG area excluding LA MTA and OCTA than at LA MTA or OCTA.*

While VRM rose in the aggregate from 2000 and 2016, it has not been climbing for all modes. Figure 13 shows the roller coaster that has been the VRM trend for local bus service over this period: Significant growth between 2000 and 2005, little change between 2005 and 2009, a steep drop between 2009 and 2013, and slow growth from 2014 to 2016. Rail service, in contrast, has been steadily rising, especially light rail (Figure 14).

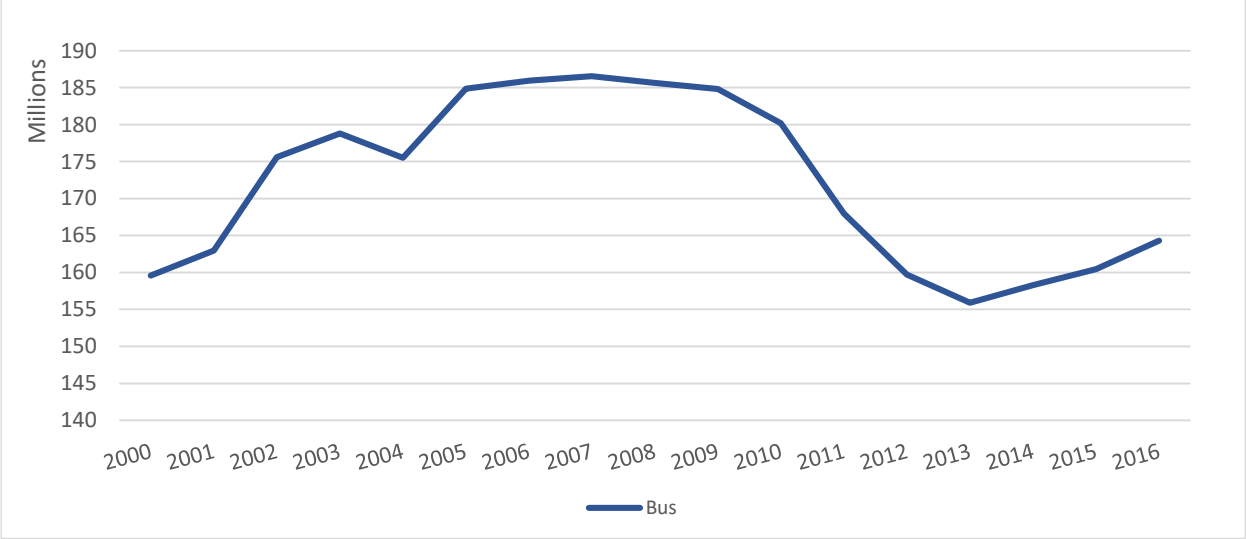


Figure 13. SCAG region: VRM for bus. *Service in miles traveled dropped by 15% between 2007 and 2013. Service has increased since. Hours of service has also declined, but not as rapidly as miles of service, indicating that service is cut on suburban bus lines.*

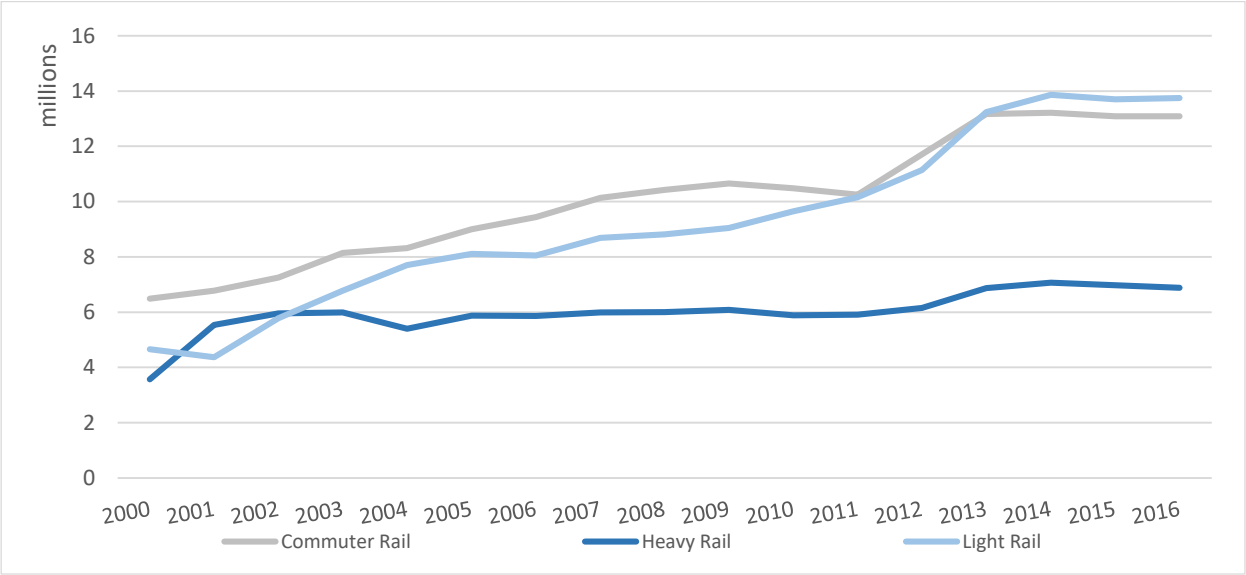


Figure 14. SCAG region: VRM for rail. *Substantial service increases for all commuter and light rail since 2000.*

If we examine service hours (VRH), we see similar aggregate trends. VRH rose from 2000 to 2009 in the US, California, and the SCAG region, fell from 2009 to 2011 during the Great Recession, and then climbed again across all three geographies through 2016 (Figure 15).

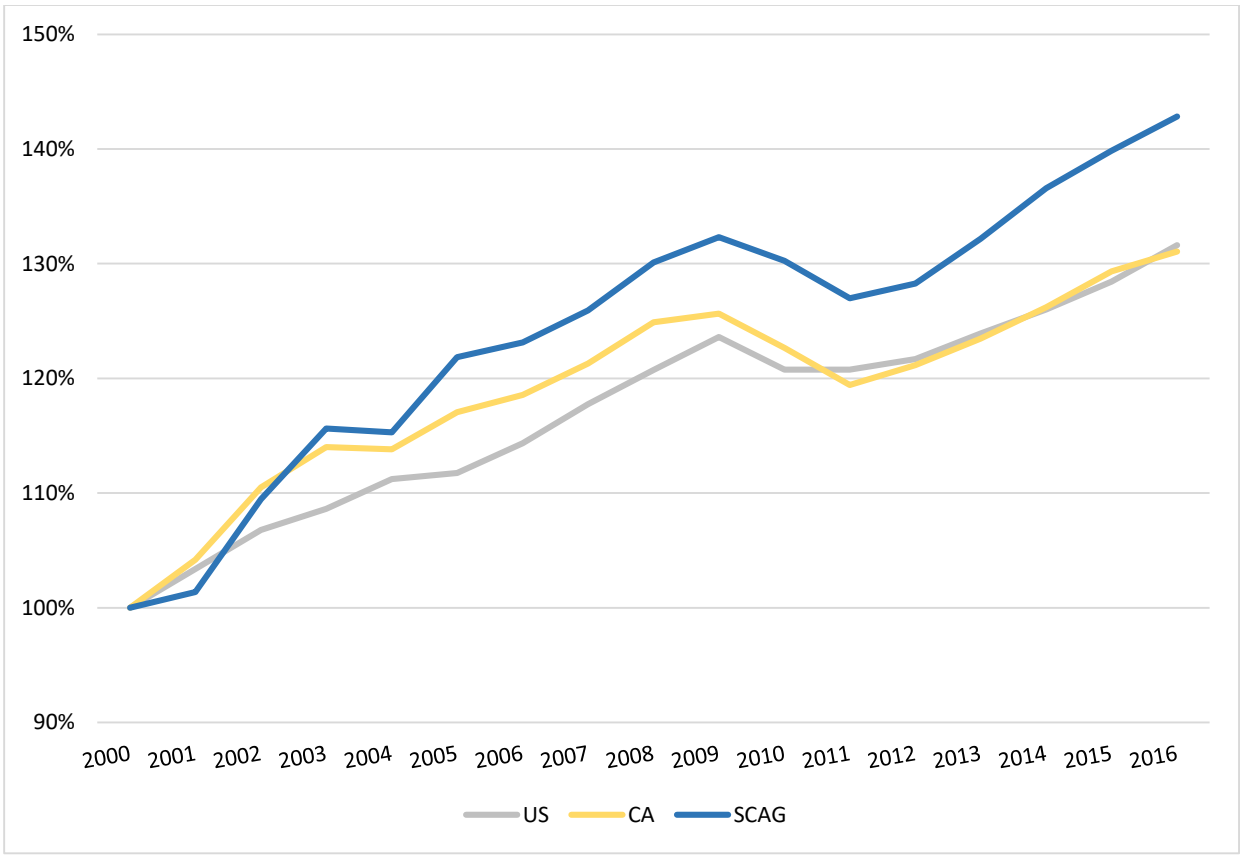


Figure 15. Indexed vehicle revenue hours. *Growth in service in the SCAG region outpaces national and state trends.*

Figure 16 shows the percent change in vehicle revenue hours over two time periods – 2005 to 2016 and 2010 to 2016 – across three geographies (US, California, SCAG region) and across four types of SCAG-region transit operators (Largest, Large, Medium, and Small). The figure shows that VRH increased during both time periods across all three geographies and all four operator types. It also shows, however, that VRH grew least among the largest operators that have lost the most riders, while it increased much more among the smaller operators.

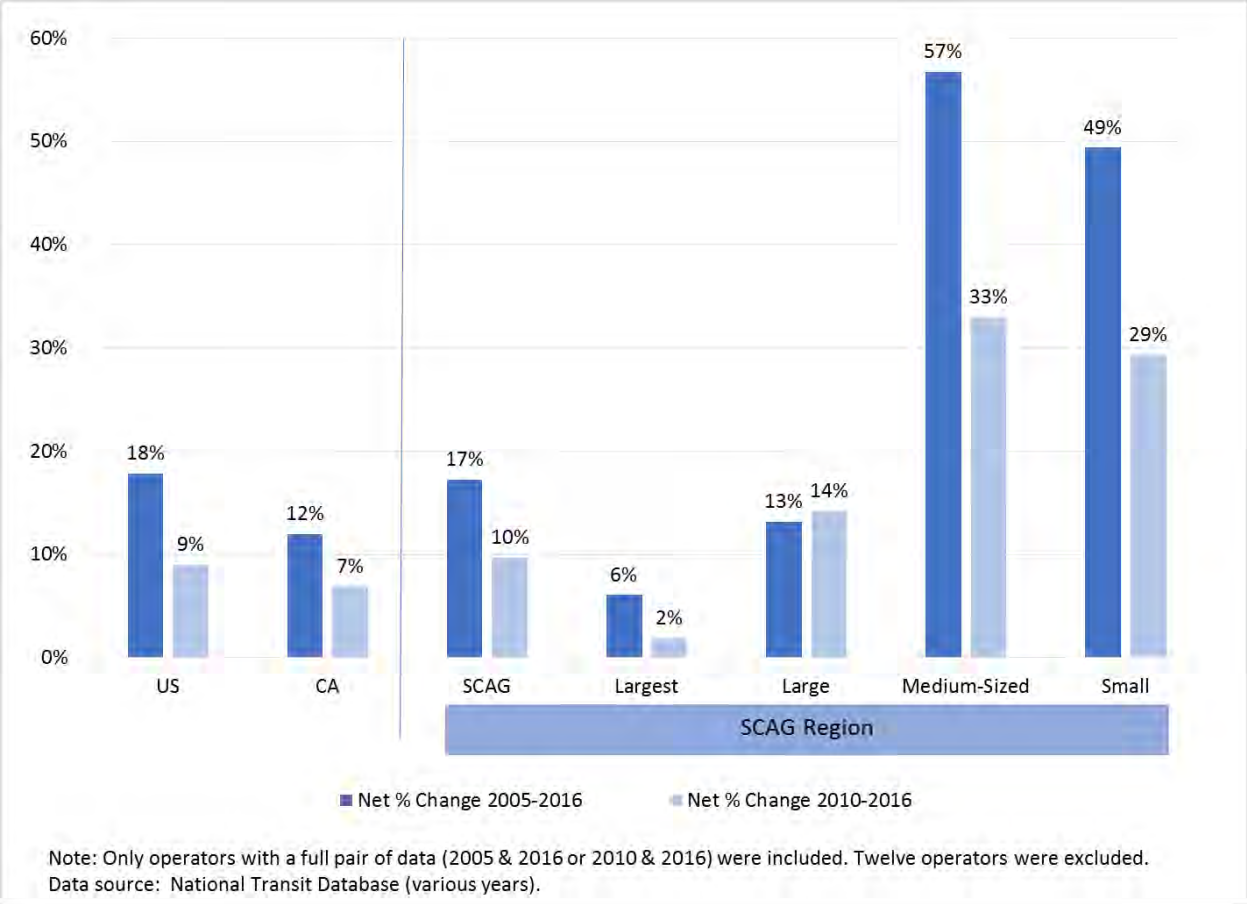
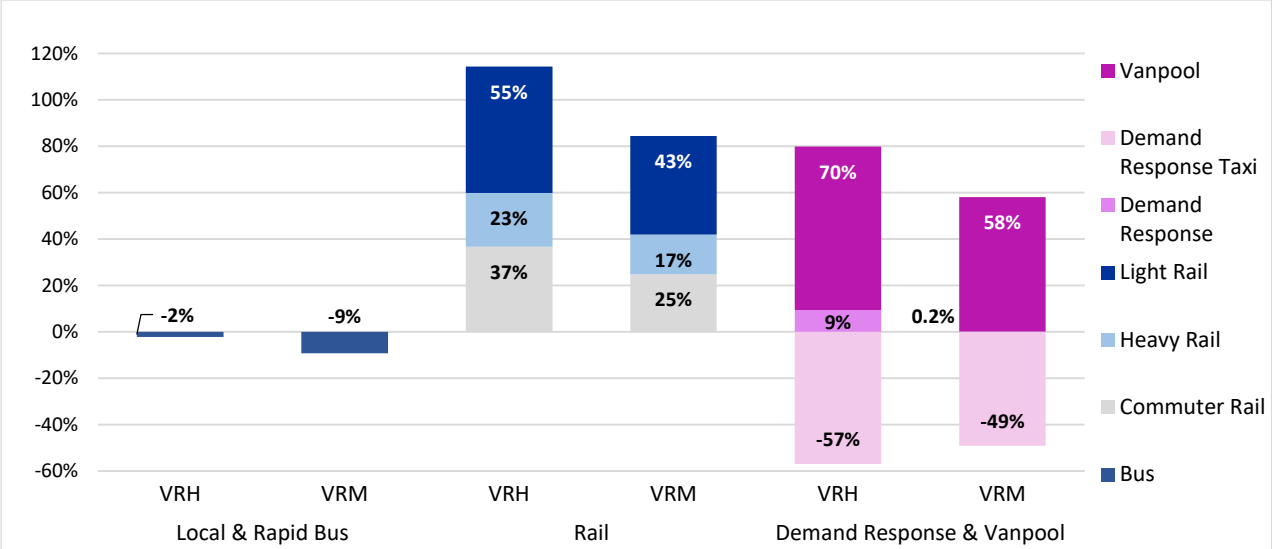


Figure 16. Changes in indexed vehicle revenue hours by region and SCAG transit operator size: 2005-2016 & 2010-2016. *Service growth among the largest SCAG operators was lower than national, state, or regional averages, and much small than smaller SCAG-region operators.*

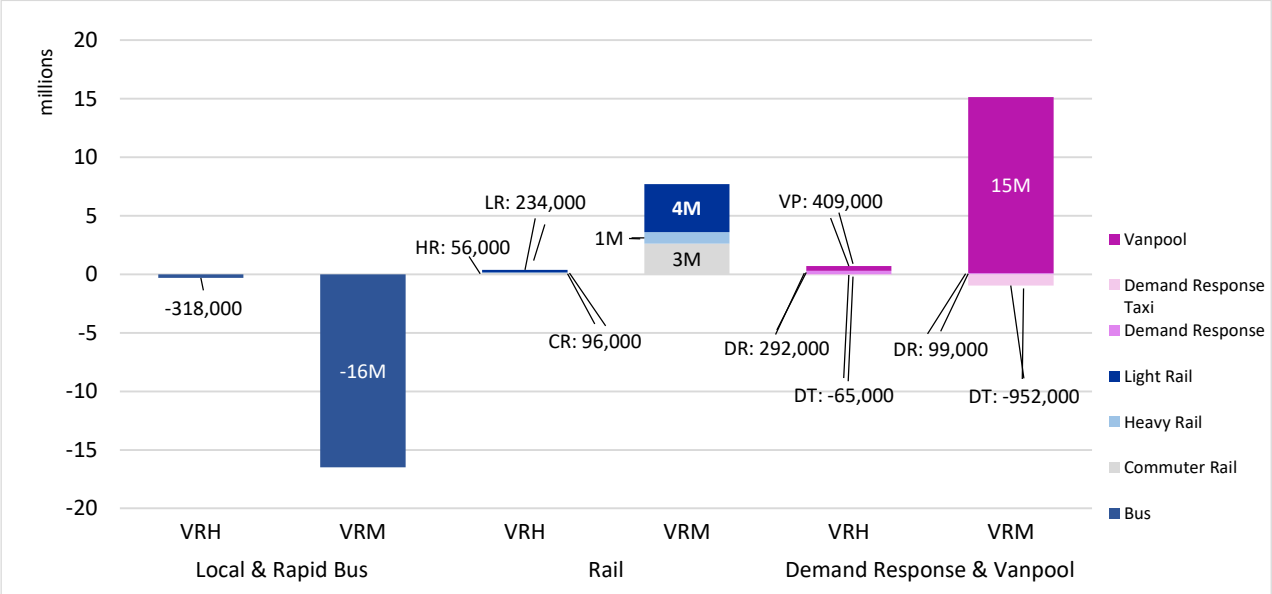
Finally, Figures 17 and 18 show the absolute and relative changes in VRM and VRH by mode between 2010 and 2016.[9] The figures show substantial overall shifts in service among modes, with local bus, rapid bus and demand response taxi service declining, while rail, commuter bus, and vanpool service increased. In absolute terms, local and rapid bus service declined most, while commuter bus and vanpool grew most; in relative terms, rail transit grew most while demand response fell most.

[9] Note that because Figure 17 shows absolute changes in both VRM and VRH on the same Y-axis, the VRM changes appear to be substantially larger than the proportional differences shown in Figure 16. These apparently large differences are mostly an artifact of transit service moving anywhere from about 6 (for the slowest urban bus service) to 40 (for the fastest commuter rail service) miles per hour, on average. This means that, for example, a one million VRH increase might be expected to have a corresponding 10 million or more VRM increase.



Note: For each operator-mode observation, only operators with a full pair of data (2010 & 2016) were included. Excluded observations span 19 operators.
Data source: National Transit Database (2010-2016).

Figure 17. Percent change in service (hours and miles) by mode: SCAG region 2010-2016. *Rail and vanpool have largest % gains, and service is added in the urban core, rather than to outlying areas. Bus service hours were slightly reduced, and came from outlying areas.*



Note: For each operator-mode observation, only operators with a full pair of data (2010 & 2016) were included. Excluded observations span 19 operators. Data source: National Transit Database (2010-2016).

Figure 18. Change in service (hours and miles) by mode: SCAG region 2010-2016. *A 9% reduction in bus service miles is equivalent to 16.5 million bus service miles cut. Vanpool had the most service miles added, reflecting the longer commutes that vanpool serves.*

Overall, these shifts in service provision reflect both the choices and mandates of public policy. For better than three decades Southern California, and Los Angeles County in particular, has chosen to invest heavily in new rail services. As these new services have come on line, they account for a growing share of the region's transit service. Second, federal civil rights legislation, in the form of the Americans with Disabilities Act, has mandated the delivery of both accessible and demand-response transportation services to a growing and aging population. In combination, these choices and mandates have shifted transit service away from buses and toward rail and van services.[10]

What do these changes in transit service supply mean for transit patronage? First, Figure 19 shows the trends per capita VRH and per capita transit boardings over the past quarter century in the SCAG region. Transit service supply has been mostly climbing in the SCAG region for better than a quarter century, while transit use has never reached the 1991 levels. Given this, there is no *prima facie* case that faltering transit service supply is driving down patronage.

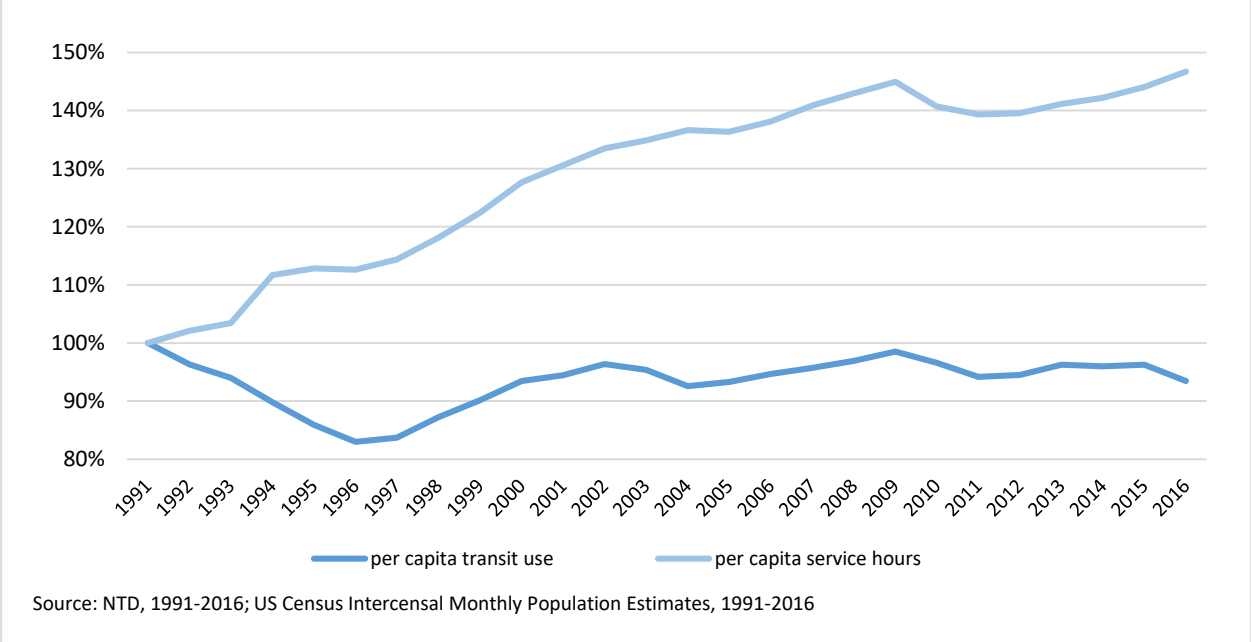


Figure 19. Transit trips and transit supply (1991-2016). *Per capita transit supply has increased 34% since 1991, while per capita transit use has not changed much.*

[10] Though not directly relevant to our question, these shifts have significant budgetary implications beyond just the deployment of various services (Taylor, Garrett, & Iseki, 2000). Local bus and bus rapid transit services (with the exception of those operating in exclusive rights-of-way) tend to be the cheapest to deliver and require the smallest per passenger subsidies. By contrast, the annualized capital plus operating expenses of rail transit tend to be substantially greater per passenger, while the per passenger subsidies for ADA demand response services tend to be the highest of all.

As a final way to examine the relationship between service levels and ridership, we examine the shifts between modes that occurred within the region's largest transit operator, LA Metro. Doing so allows us to address the possibility that aggregate increases in services are masking drops in those types of services— such as buses— that most transit riders rely on. The figures below show the indexed trends in boardings, service (VRH), and productivity (boardings/VRH) for LA Metro bus (Figure 20) and rail (Figure 21) service from 2000 to 2016, and demand response service (Figure 22) since 2008. For local bus and BRT service, transit service supply has tended to follow, rather than lead, changes in ridership — at least through 2014. Beginning in 2014, bus service rose slightly while boardings plunged. Rail service, not surprisingly, has increased more than 150 percent since 2000, and ridership has increased as well, though more slowly. Both service and patronage have tailed off since 2014, but largely in concert— there is no obvious sign of one leading the other. Finally, demand response and van service supply has grown steadily since 2008; boardings increased steadily, albeit more slowly than service, through 2015. Over the past year, service continued to gradually climb, while patronage began to fall.

Collectively, these data offer little evidence that service cuts are driving away customers. Instead service expansion has been accompanied by less ridership, with the main result being lost productivity, particularly for rapidly expanding rail and van services. Rail and van productivity (measured as boardings per VRH) has eroded steadily since 2009, while the service effectiveness of local bus and BRT service began dropping later (and more precipitously) in 2014. Falling service does not seem to be the culprit for falling ridership; falling ridership, in concert with expanding service, is the culprit for falling productivity.

Figure 20. LA MTA: Indexed bus and BRT boardings, service, and productivity. *Declining ridership since 2007, with services' slow growth in the post-recession period leading to declining productivity.*

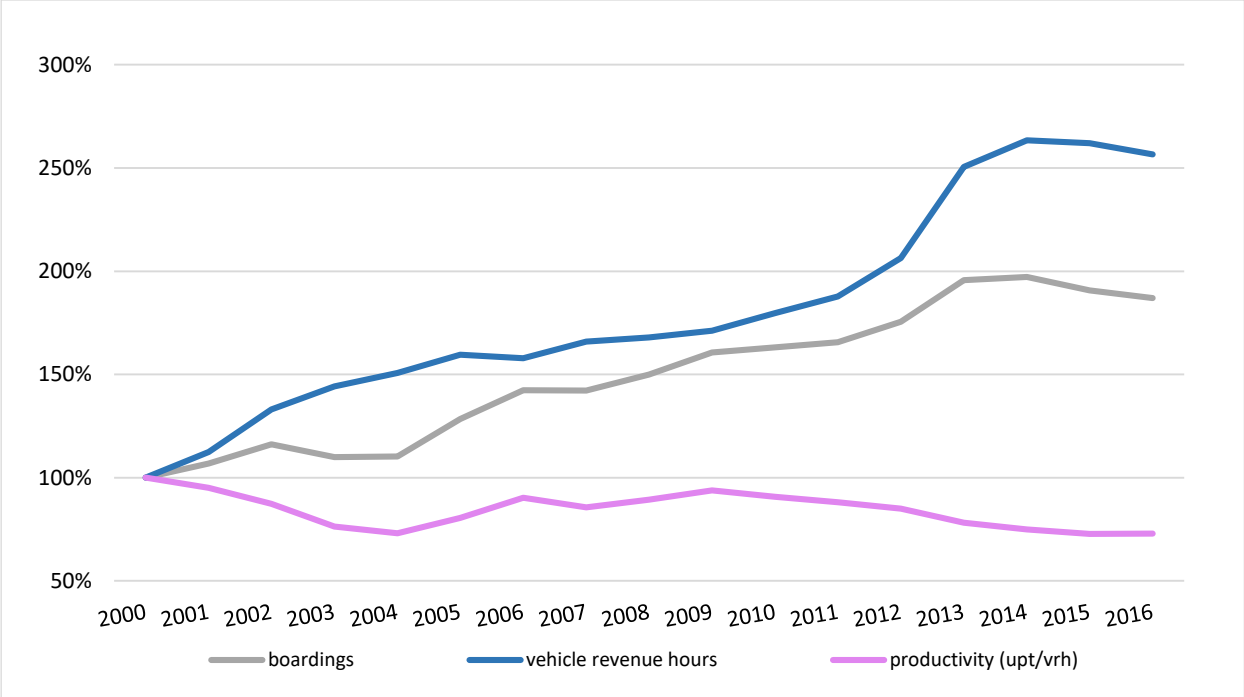


Figure 21. LA MTA: Indexed rail boardings, service, and productivity. *Light rail service doubles with the opening of the Expo Line. Boardings do increase, but slower than the amount of service added.*

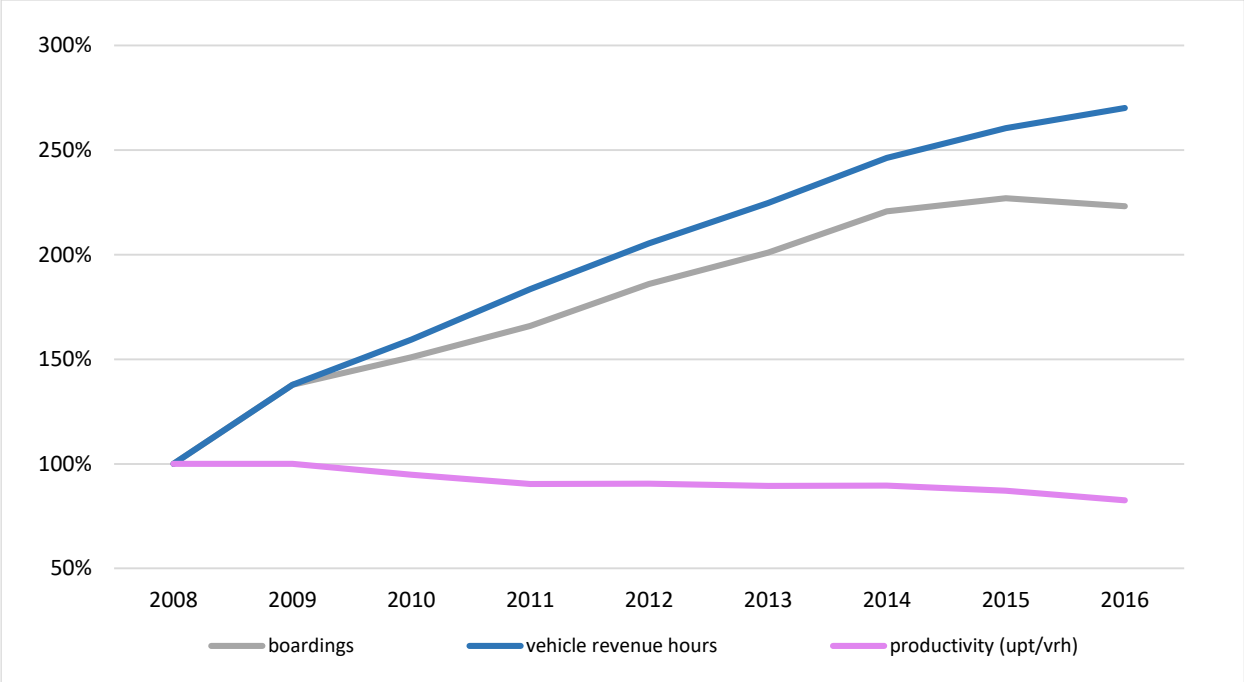


Figure 22. LA MTA: Indexed demand response boardings, service, productivity.
Ridership more than doubled, while service increased by 2.8x.

The Quality of Transit Service

Even if transit quantity does not change, transit quality might. Transit quality has no specific definition, but we can divide it into speed, reliability, and experience. Speed measures how quickly transit vehicles move throughout the region. Reliability is a measure of on-time performance: Do vehicles arrive and depart when they are supposed to? Experience is a measure of how safe or comfortable people feeling during their transit journey, including the time they spend waiting for and transferring among their buses and trains.

Local bus and BRT service in the SCAG region has been slowing down over time. This slowdown is likely a result of many factors, including worsening congestion, shifts from faster suburban to slower urban service, shorter stop spacing, and longer stop "dwell" times to load and unload passengers. Whatever the underlying causes, region-wide bus vehicle speeds declined five percent between 2000 and 2010, and another eight percent between 2010 and 2016, for a total drop in speed of nearly 13 percent over 16 years. By comparison, rail transit speeds were down only two percent between 2000 and 2016.

Falling speeds slow travel times, and if operators do not counteract falling speed by adding more vehicles, then headways (the time between vehicle arrivals at a stop) will rise. Rising headways make transit less attractive by increasing average wait times at stops and lengthening the times of transfers among vehicles. Research has shown that transit passengers find waiting for busses and trains to be especially burdensome, so increased headways can undermine the quality of transit service even if the quantity (in terms of vehicle revenue hours of service) stays unchanged (Iseki & Taylor, 2009).

The SCAG region has 41 transit agencies that operate fixed-route general public service, and on-time performance naturally varies across them.[11] Measuring reliability for all or even most of these operators is therefore beyond the scope of this report. We can, however, examine reliability for LA Metro, which again accounts for the lion's share of the SCAG region's transit trips and lost trips.

Historically, Metro has been unreliable relative to other large transit agencies. A 2008 study by the agency showed that compared to 9 peer operators, Metro had both a lower on-time target and a lower on-time percentage (a vehicle is considered "on-time" if it is less than 5 minutes late). Metro aimed to have 70 percent of its vehicles arrive on time, and attained a rate of 63 percent. In comparison, New York attempted an 83 percent on-time rate and attained an 82 percent rate (Flowers & Snoble, 2008). Metro's reliability problems occur almost entirely on buses, which can easily become trapped in congestion (and which, of course, can also exacerbate congestion).

In the intervening years, however, Metro's on-time performance appears to have improved substantially. An analysis of Metro data by local reporters (Mendelson, 2015) suggests that from 2010 to 2015 Metro rail maintained a 99 percent on-time rate (with subways being late 1 stop out of 200, and light rail 1 stop out of 50), while the buses improved their on-time rate to 81 percent. We say "appears" because this discussion comes with an important caveat: Reliability is a function of the conditions in which buses and trains operate, the efficacy of the bus and train operations, and the schedule that sets the performance expectations. Controlling for conditions or operations, schedules that assume few traffic disruptions and little layover or recovery times can be difficult to meet, while those that assume slower speeds and provide generous layover and recovery times at the ends of routes are easier to meet.

As a result, transit operators can improve measured reliability in two ways. The first involves steps like better field supervision, quicker boarding and alighting procedures that reduce dwell times, and giving buses their own lanes in chronically congested districts. All these steps can change operations, and lower the variability of travel times. But the second way to improve reliability is to change the schedule, by factoring in more slack. Doing so is not necessarily disingenuous, and may simply reflect the challenges of operating in heavy congestion. Adding slack to schedules can allow vehicles to maintain performance even in the face of disruptions (severe congestion, crashes, crowds of people boarding or alighting at particular stops, and so on). The downside to this approach, however, is that too much slack in the schedule might increase reliability on paper but manifest as poorer-quality service in the eyes of riders. As slack increases average vehicle speeds fall, headways rise, and so do timepoint holds (instances where vehicles wait at stops so as not to run ahead of schedule). A service that is on-time because its schedule makes it less frequent is not a high-quality service.

We could not, with the data and time available to us, determine if Metro's schedule adherence improved because its buses met the existing schedule more often, or because schedules themselves were changed. If bus performance improved on the street as opposed to on paper, then we would have little reason to think service reliability was a large factor in falling ridership – bus ridership would have fallen even as schedule adherence increased. But we cannot say for certain that this occurred. We do know, however,

[11] With another 69 systems operating demand-response and other types of transit services, for a total of 110 regional transit service providers.

that rail ridership fell even as rail maintained a near-perfect on-time record. So we have some reason to think that service reliability did not play a large role in the ridership downturn.

We should also note that the advent of mobile apps that track transit vehicles in real time may have diminished the problems caused by unreliable buses. Unreliability is a larger problem when it strands people at stops with little idea of when a vehicle will arrive. To the extent people can follow vehicles in real time and adjust their departures to minimize waiting, some of the worst aspects of irregular transit vehicle arrivals can be mitigated (Yoh et al., 2011). LA Metro has next bus and next train information at its rail stations and BRT stops, and real time information about local and express buses is available on multiple smartphone applications. Metro's 2016 rider survey shows that 51 percent of bus riders have a smartphone, and that 66 percent of these riders use the phone "very often" or "occasionally" to get information about Metro rides.

A transit vehicle that arrives on time can still have poor service quality, if the experience of using the vehicle – which includes walking to the stop, waiting at the stop, and riding – is unpleasant. Specifically, if people using transit feel unsafe or uncomfortable, ridership could fall (Delbosc & Currie, 2012; Iseki & Taylor, 2009). Safety perceptions are often gendered (Loukaitou-Sideris, 2015), and a slight majority of transit users in the SCAG region are women. Note that perceptions of safety are different from, and probably more important than, safety itself. Many behaviors that are not crimes, and that do not directly threaten other people, may nevertheless disturb people nearby, and can discourage them from using transit (Ellickson, 1996; Fink, 2012).

There is some reason to think that transit vehicles, stations, and stops in the SCAG region – and particularly along LA Metro routes – came to feel less safe to riders in recent years. In 2016, LA Metro surveyed former riders, and 28 percent said that the primary reason they stopped riding transit was that they felt either unsafe or uncomfortable. Unfortunately, this survey is not conclusive. Former transit riders are a hard group to reach, and there are responses in the survey that suggest that the overall sample may not have been representative. As a result, we cannot be certain that safety actually loomed so large for former riders. At the same time, even if the survey inflated safety concerns by a factor of two, a nontrivial share of former riders (14 percent) report leaving transit because they felt unsafe. And considerable anecdotal evidence suggests that in recent years transit users started to feel less safe — such reports prompted Metro to completely revamp its security procedures in 2017.

What might explain riders' perceptions that transit is less safe? Possibly some riders have *always* felt unsafe, and what changed was not conditions on transit but the option to leave (if people got access to vehicles or TNCs, for example). We do not discount this possibility, but will take it up later in this report. If we assume that perceptions of safety really did decline in recent years, one potential (and admittedly speculative) reason involves LA County's dramatic increase in homelessness after 2010. Table 2 shows changes in the LA County homeless population from 2005 to 2017, based on homeless counts done by the Los Angeles County Housing Services Administration. Homeless counts, and especially counts of the unsheltered homeless, are for obvious reasons prone to error. Nevertheless, the table suggests that homelessness, while not as severe today as it was in 2005, has in recent years both risen sharply and changed in composition. The unsheltered chronic homeless (people who are not just homeless but also have some sort of disabling condition) became a larger proportion of the homeless overall.

Year	All Homeless		Share	Chronic Homeless		Share
	Total	Unsheltered	Unsheltered	Total	Unsheltered	Unsheltered
2005	65,287	53,429	81.8%			
2007	59,956	39,168	74.0%			
2009	38,602	21,073	54.6%			
2011	39,153	20,157	52.4%			
2013	39,463	25,136	63.7%	7,475	6,652	89.0%
2015	44,359	31,025	69.9%	13,356	nd	nd
2016	46,874	34,701	74.0%	14,644	13,746	93.9%
2017	57,794	42,828	74.1%	17,531	13,321	93.1%
Pct Change, 2005-2017	-13.0%	-24.8%	-10.4%			
Pct Change, 2009-2017	33.2%	50.8%	26.3%			
Pct Change, 2013-2017	46.5%	70.4%	16.3%	57.4%	59.2%	4.4%

Source: Los Angeles Homeless Counts, Los Angeles Almanac
https://www.lahsa.org/homeless-count/reports
http://www.laalmanac.com/social/so14.php

Table 2. Changes in LA County homeless population, 2005-2017.

Homelessness— the simple condition of people being without housing— often arises from high housing prices that push some people out of the housing market (O'Flaherty, 1998). Chronic homelessness, however, which tends to be much more visible (in part because the chronic homeless are less likely to be sheltered) often has different underlying causes related to addiction or mental illness. In conversations with transit operators during the writing of this report, some mentioned the impact of California's prison realignment program, which led to many inmates being released from prisons and jails. The state's carceral institutions have traditionally held many mentally ill persons, and discharging them without any corresponding increase in other social services may have increased the number of people with addictions and disabilities living on the streets. No government entity tracks prison realignment's impact on homelessness, but some advocates estimate that up to 20 percent of the state prisoners discharged, and up to 10 percent of county jail inmates, have now become homeless(Holland, 2015). There is also small body of evidence, some academic and some journalistic, suggesting that the unsheltered homeless gather disproportionately around transit facilities. Transit vehicles can provide shelter and protection, while transit stops can provide a roof or even just a bench (Emmons, 2013; National Academies of Sciences, Engineering, and Medicine, Transportation Research Board, Transit Cooperative Research Program, & Boyle, 2016; Trevor, n.d.; Voorhees Center for Neighborhood and Community Improvement, 2016). To the extent some of these people use transit stops and transit vehicles as ad hoc shelters, and to the extent their presence or behavior disturbs others, realignment may have played a role in making transit seem less safe, and reducing ridership. We emphasize again that this line of thinking is quite speculative and warrants further research.

Transit Fares

Potential transit riders weigh the quality of a ride against its price. Like most goods, transit, even at constant quality, will become less attractive if its price rises, and more attractive if the price falls. The postwar high-water mark for transit in Los Angeles County occurred during a three-year program that cut bus fares in half from 1982 to 1985. When this program ended and bus fares returned to their previous levels, transit ridership fell substantially (Southern California Rapid Transit District, 1986).

The inverse relationship between fares and use, however, is complicated by two factors. First, the people who use transit the most – lower-income people with limited or no vehicle access – are generally more price sensitive in that they have less income, but *less* price sensitive in that they have few viable alternatives to transit. As a result, many transit riders are less sensitive to fare increases than one might expect given their incomes. Second, although every transit operator has a posted one-way fare, relatively few riders actually pay that rate, because agencies offer a variety of discounts and bulk payment mechanisms, including daily, weekly or monthly passes, youth and elderly discount passes, and so on that offer substantial discounts to particular classes of riders, including those who ride frequently (Yoh, Taylor, & Gahbauer, 2016). Heavy users who buy monthly passes will typically pay a per-ride rate much lower than the advertised fare. LA Metro's 2016 rider survey showed nearly half (49%) used a daily, weekly, or monthly pass, while about 25 percent paid a discounted fare.

Further complicating this issue is that transit fares can be calculated on a per-trip or per-mile basis. Arguably the most intuitive way to think about fare increases is per-trip: How much does a person pay to get aboard a vehicle? But once a passenger is on board, what follows might be a local bus trip of two blocks or a light rail trip of 22 miles. With the exception of commuter rail and some express bus routes, transit fares generally do not change with distance travelled. If the average fare to board a vehicle rises less quickly than the average distance of a trip, the per-mile fare could fall more than the per-trip fare rises, and transit may in a real sense become less expensive. For our purposes, the fare per trip is probably more relevant, as it is likely more salient to potential riders, but it remains worthwhile to consider both.

This wide array of payment methods and rates, and ways of considering these rates, makes calculating the actual fare paid by different classes of users beyond the scope of this report. We can, however, easily determine the average fare paid per boarding for a given system and the SCAG region, by simply dividing total fare revenues collected by either total boardings or passenger miles. While these metrics will fail to capture some of the nuances of fare payment among different types of users (they cannot completely control, for instance, the bulk discounts for heavy users of different lines) they are a measure of the fare payments actually made by people when they ride.

Figure 23 below displays the average inflation-adjusted fare paid per boarding across all transit systems in the US, California, and the SCAG region between 2002 and 2015. The figure shows, first, that the average transit fare paid is lower in the SCAG region than for California as a whole, which in turn is lower than the average transit fare paid nationwide. Second, the figure shows that the average inflation-adjusted fare paid per boarding in California began creeping up in 2012, and to a lesser extent in the US since 2013 and the SCAG region since 2015. Overall, however, the average inflation-adjusted fare per boarding in the SCAG region has been remarkably flat since 2002.

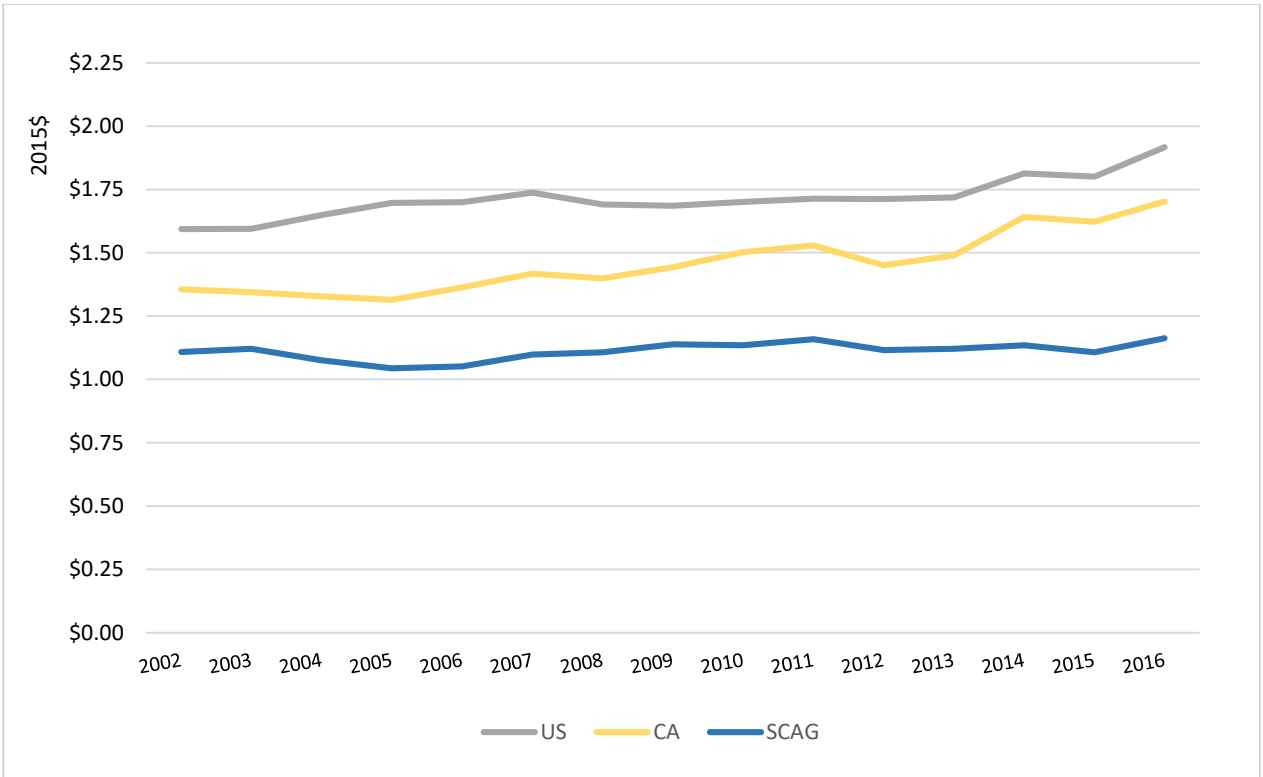


Figure 23. Average fare per boarding in 2015 dollars. *Average fare per boarding has stayed relatively constant in the SCAG region.*

National, state, and regional averages, of course, can mask considerable variation in fares paid across transit systems, services, and riders. Figure 24 shows the same inflation-adjusted trend in fares paid per boarding since 2002 for each of the six largest transit operators in the SCAG region. Focusing on these larger operators tells a different story. With the exception of Long Beach Transit, inflation-adjusted fare payments have been increasing over time on these operators. In particular, inflation-adjusted fares per boarding at both OCTA and the Big Blue Bus increased by about 50 percent between 2002 and 2016 — to nearly $1.25 and $0.75 per boarding respectively. Foothill transit had (in 2016) the highest average fares paid (at $1.25 per boarding), followed in order by OCTA, LA MTA, the Big Blue Bus and Long Beach Transit, while LA DOT had the lowest average fare paid (at just over $0.50 per boarding).

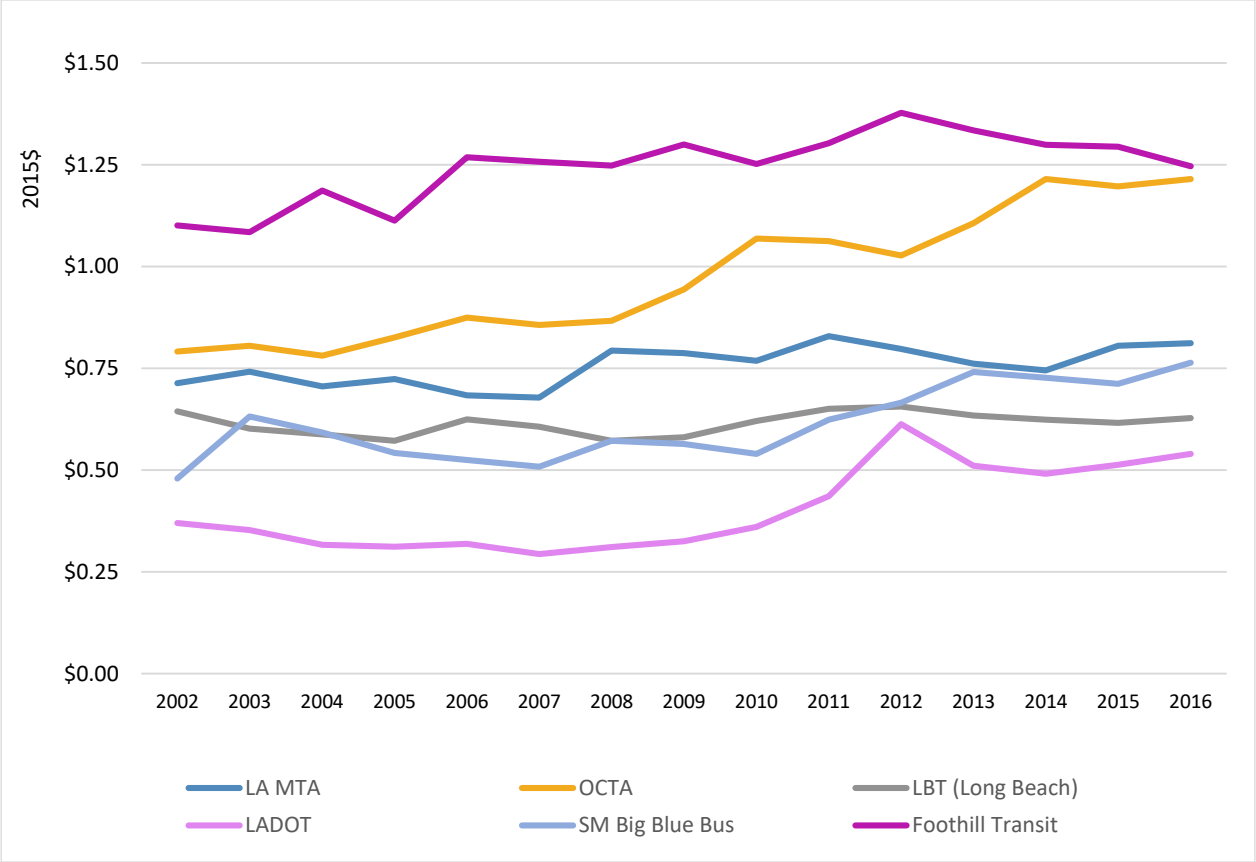


Figure 24. SCAG: Average fare per boarding for largest operators in 2015 dollars.
Inflation-adjusted average fares per boarding have increased the most rapidly for OCTA and LADOT.

Figure 25 shows the 14-year trend in real average fare paid per mile for the nation, California, and the SCAG region. Here we see that average fares paid per mile have remained largely unchanged in the U.S. and California, and in the SCAG region they have actually fallen. Despite being lower than average per mile fares in the state and nation, average per mile fares in the SCAG region have declined about 20 percent since 2009.

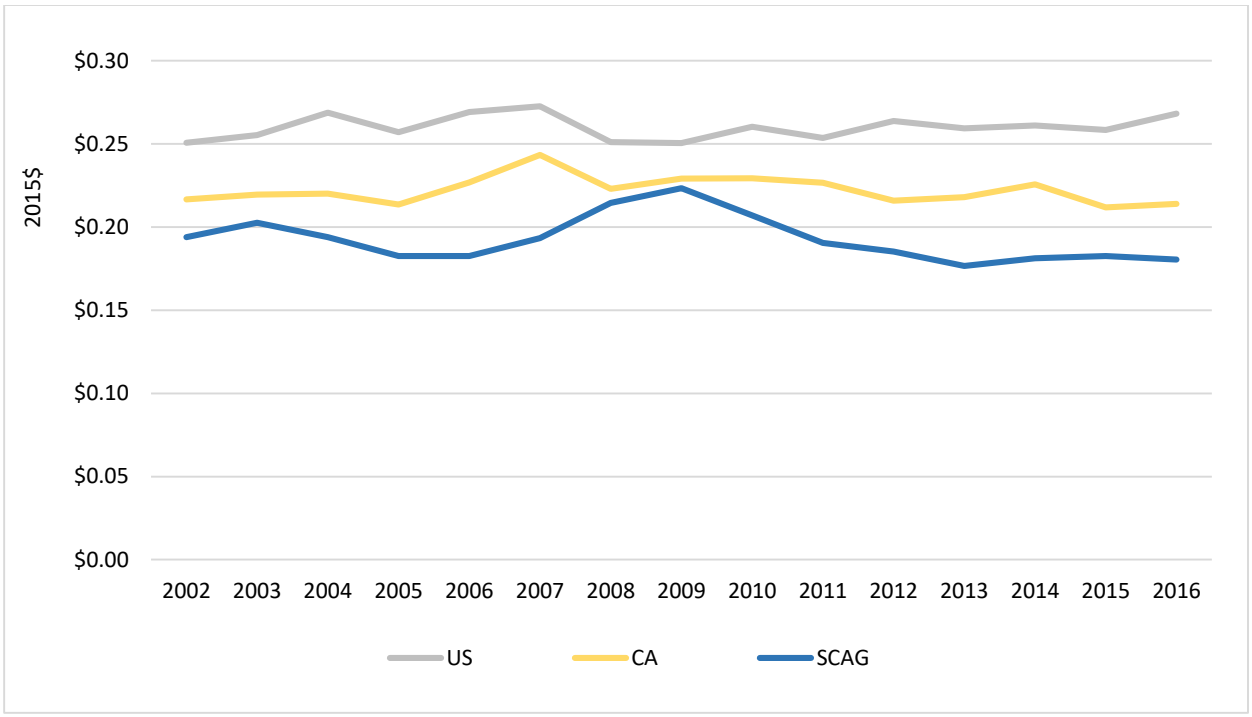


Figure 25. Average fare per passenger mile traveled in 2015 dollars. *Average fare per PMT remained fairly constant, and even declined a little since 2009.*

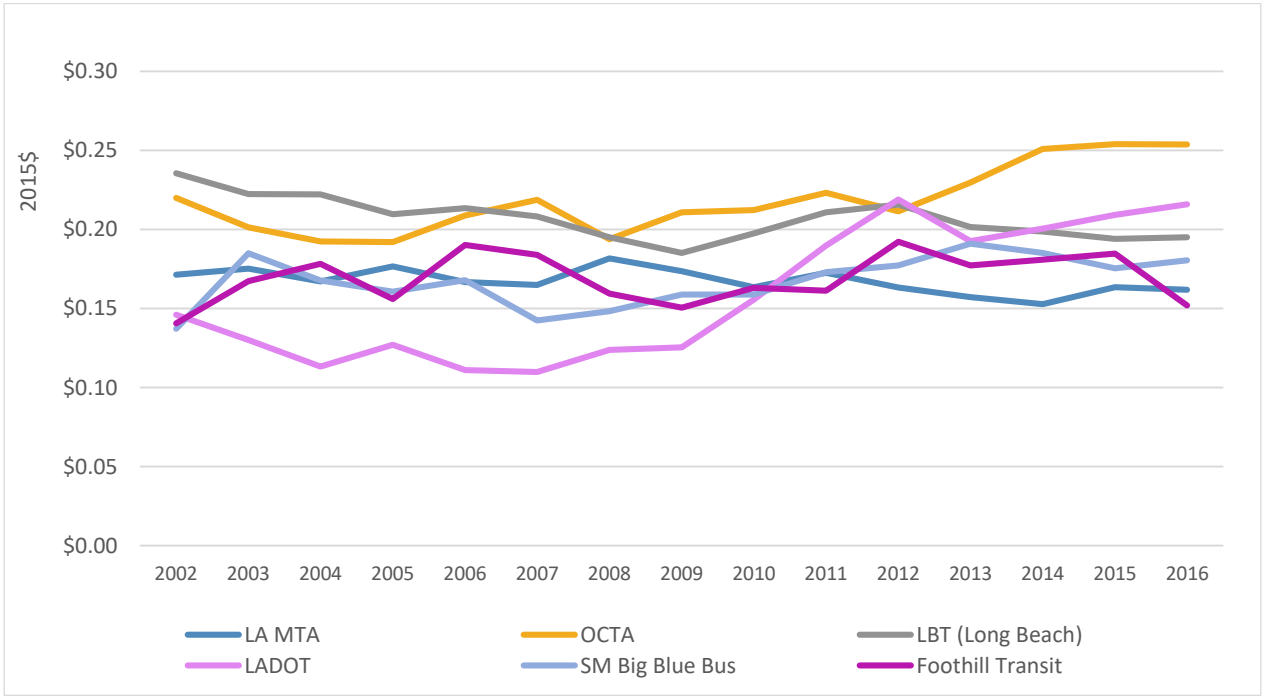


Figure 26. SCAG: Average fare per PMT for largest operators in 2015 dollars. *Average fare per PMT increased the most rapidly (about $0.07 per mile) for LADOT and slightly for OCTA ($0.04 per mile).*

If we zoom in on the six largest transit operators in the SCAG region, we see that inflation-adjusted fares per mile rose notably at two systems — LA DOT (+$0.07/mile) and OCTA (+$0.04/mile). On the Big Blue Bus and Foothill Transit per mile fares rose modestly, and at Long Beach Transit and LA Metro they fell (despite Metro's 2014 fare increase).

The most notable attribute of the figures above is the steep increase in fares for OCTA. OCTA's fares have risen over 50 percent since 2002, and OCTA is also the transit operator that has suffered the sharpest decline in ridership (about 35% since 2007). The transit industry's rule of thumb (sometimes called the Simpson-Curtin rule) suggests that a 10 percent increase in fares will be associated with about a 3 percent reduction in ridership. By this heuristic, OCTA's fare increases should have resulted in a 17 percent ridership decline.

To help isolate the association between fare increases and transit use, we estimated a multivariate regression statistical model using data for each transit operator in the SCAG region for each year between 2002 and 2016. Full details of this model are in the Appendix, but we used fixed effects to control for the panel nature of the data, and controlled for the level of service each operator provided, the average time between each bus or train arrival, and the density, size and population of the service area.

We find, after controlling for these factors, that higher fares are indeed associated with lower ridership, but by less than industry rules of thumb might suggest. Across the SCAG region over this time period, a 10 percent fare increase was associated with a roughly 1.6 percent decrease in ridership. This relationship is relatively "inelastic" (i.e. it suggests people are not very sensitive to prices) though it falls within the range of findings from other studies of how fare increases influence ridership (Cervero, 1990; Linsalata & Pham, 1991). Based on these results, we would expect OCTA patronage to have fallen about 8 percent since 2002, as a result of its fare increases.

It seems plausible, in light of these data, to suggest that fare increases played some role in OCTA's lost transit trips. But OCTA's losses, as large as they are, account for a small fraction of the SCAG region's total losses. The bulk of those losses were from LA Metro, and it is harder to suggest that fare increases played a big role in Metro's ridership decline.

Factors Outside Transit Operators' Control

Fuel Prices

Fuel prices are a large and highly salient operating cost of driving. As fuel prices rise people drive less, and as they fall people drive more. In general, a ten percent increase in the price of gasoline is associated with a long-run (5 year) one to three percent reduction in vehicle travel (Goodwin, Dargay, & Hanly, 2004). Driving more, however, is not the same as using transit less, since (again) the typical driver almost never uses transit. People who drive less when gas prices are high often walk, carpool, stay home, or drive to nearer destinations (e.g. a restaurant that is 2 miles away instead of 10). Similarly, for many regular transit riders changes in the price of gasoline are immaterial, because many transit users do not have access to private vehicles. As a result of these factors, much of the adjustment to fluctuating fuel gas prices that occurs in the U.S. has no bearing on transit use, and the relationship between fuel prices and transit ridership tends to be weaker than the relationship between fuel prices and driving.

"Weaker," however, is not "nonexistent," and in both Southern California and nationwide, fuel prices rose and fell sharply from the late 1990s through 2015. Prices increased at a record pace from 1998 to 2008, declined, and then rose sharply again until 2013, after which they plunged (Figure 27). Transit ridership also fell steeply from 2013 to 2016. It is reasonable to think that falling gas prices could contribute to falling transit ridership. A steep drop in gas prices could have lured some of the minority of transit riders who do have vehicles away from transit use. Even among riders without vehicles available, falling fuel prices could have an indirect impact. When fuel is cheap rides in cars become more available: Friends or family members who become more likely to drive, and people who might otherwise have used transit might start carpooling for some trips.

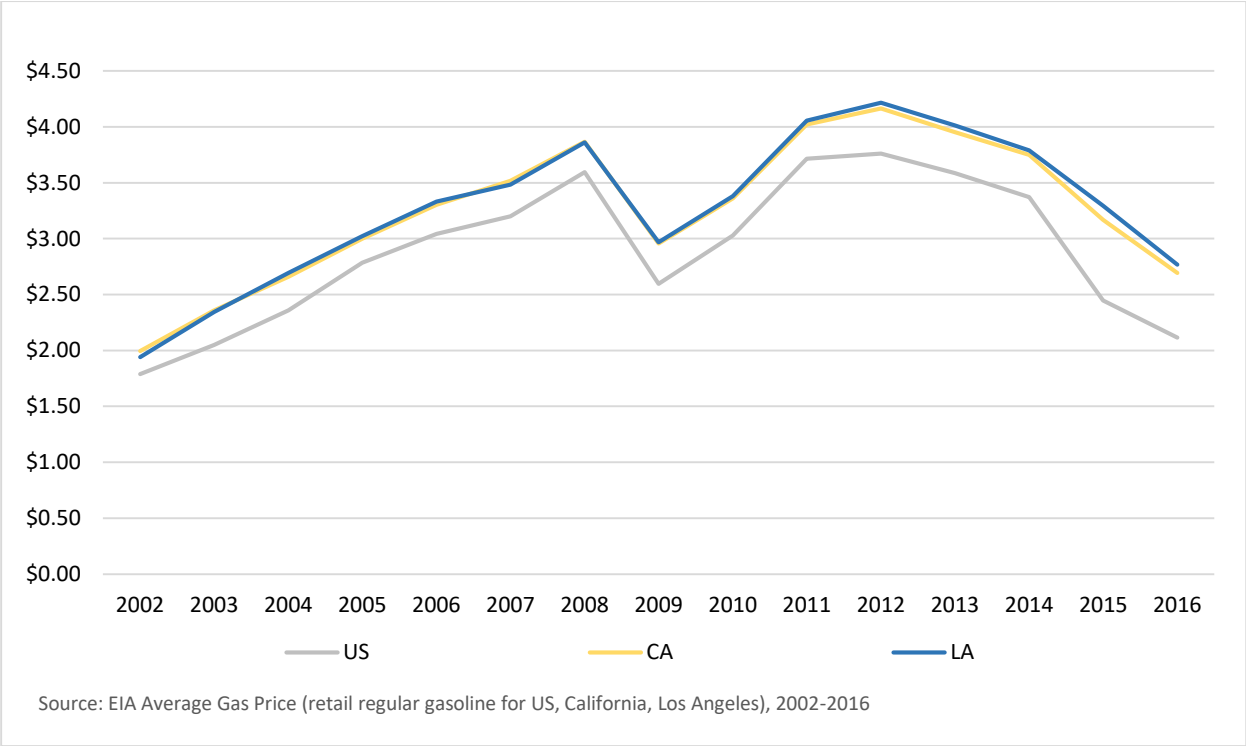
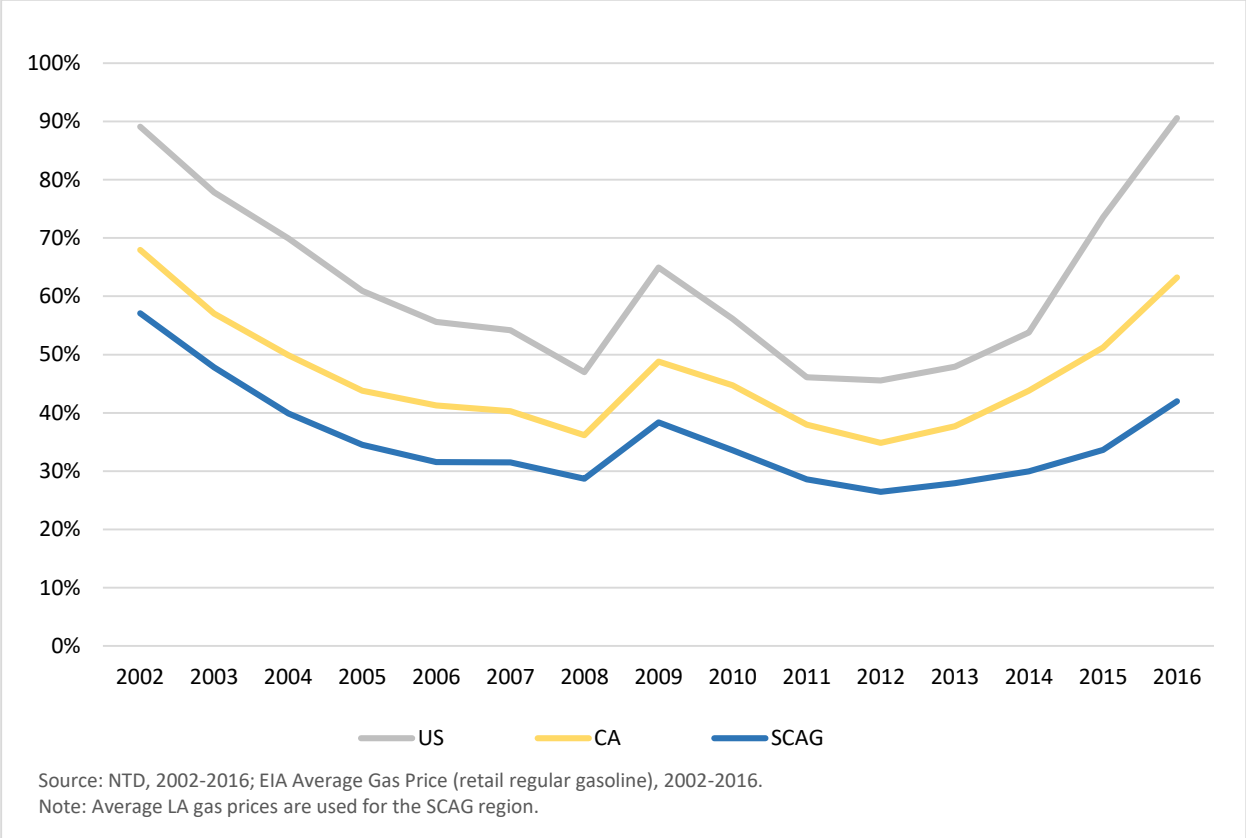


Figure 27. Average gas per gallon in 2015 dollars.

As to how much a steep drop in fuel prices might undermine transit use: the research literature reports a fairly wide array of elasticities (estimates of transit's sensitivity to gas price changes). These range from relatively large effects for commuter rail (0.37, when gasoline costs more than $3 per gallon) (Nowak & Savage, 2013) to much lower average estimates for bus ridership that range from -0.05 to 0.22 (Blanchard, 2009; Iseki & Ali, 2014; Mattson, 2008). Blanchard (2009) used gas price changes in LA County to estimate a bus ridership elasticity of 0.092, a subway elasticity of 0.011, a commuter rail elasticity of 0.126, and light rail elasticity of 0.071. Lane (2010), also studying LA, found similar results. All these estimates suggest that a 10 percent change in fuel prices is associated with about a half-percent change in transit use in the near term, and a 1 to 1.8 percent change in the longer-term. Gas prices fell 30 percent from 2012 to 2016,

which would imply a 3 percent reduction in bus ridership, and larger losses in rail and commuter rail, all else equal.

One way to consider this relationship of fuels prices to fares is to compare the ratio of average fare paid per boarding with the average price of gasoline in the SCAG region over this period (Figure 28). As with fares generally, we see that this fares-to-gas ratio is lower in the SCAG region than in California as a whole, and lower in California than the nation as a whole. Further, while the price of a transit trip relative to a gallon of gas has been climbing across all three geographies since about 2012, the ratio in the SCAG region today remains substantially lower than it was in 2002.



Source: NTD, 2002-2016; EIA Average Gas Price (retail regular gasoline), 2002-2016.
Note: Average LA gas prices are used for the SCAG region.

Figure 28. Average fare as a percent of region's average gas per gallon. *Average fare is consistently less than the cost of a gallon of gas, even as gas prices have been falling since 2014.*

Figure 29 plots the trend in gas prices against the trend in absolute and per capita transit ridership in the SCAG region (we use the Los Angeles Metropolitan Statistical Area average gas prices). The graph suggests a real but fairly modest relationship: Transit use does rise and fall with fuel prices, with a small lag. The response does not appear to be large, however, especially for ridership per capita. But with only one data point per year, we can only say so much about the role of gasoline prices. It would be surprising if falling gas prices did not contribute to the decline in transit ridership, but it is difficult to quantify their precise role. Overall, we consider falling fuel prices to be a real but probably minor driver in falling transit use.

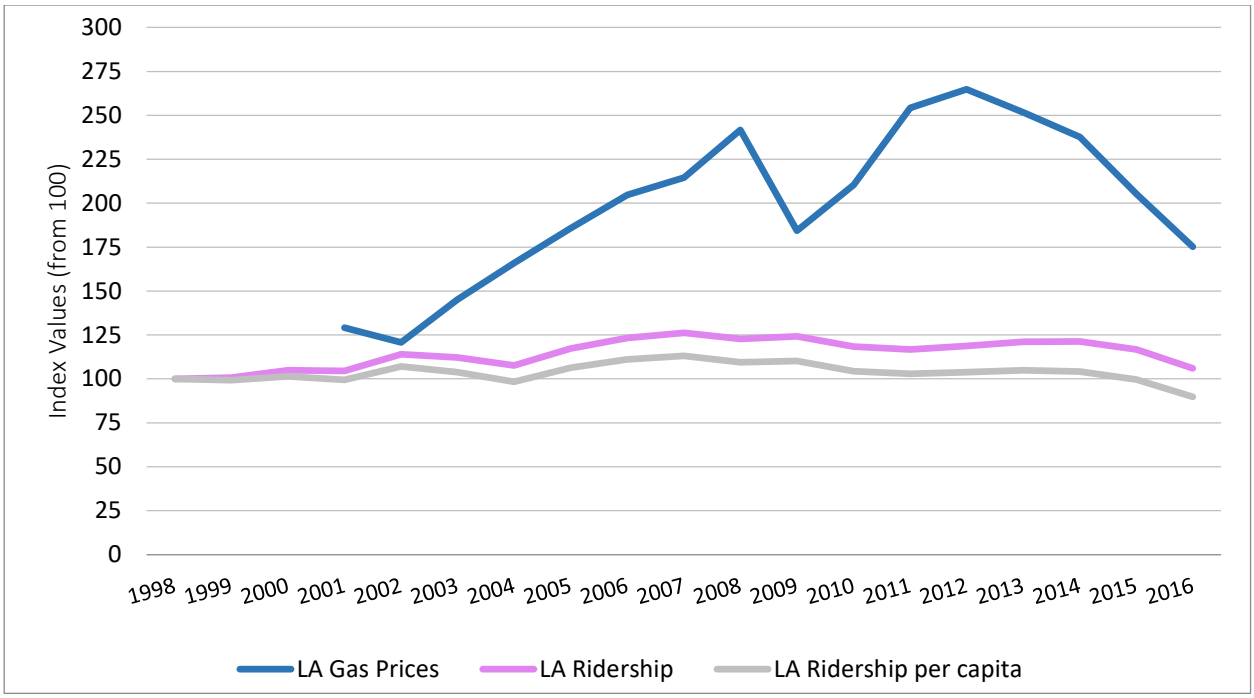


Figure 29. Transit ridership and gas prices in Los Angeles.

The Transportation Network Companies

The large absolute decline in transit ridership coincided not just with falling gas prices but also with the rise of Transportation Network Companies (TNC) like Lyft and Uber. TNCs are a plausible culprit in transit's decline. TNCs can offer the convenience of automobile travel to people who do not own automobiles, and could therefore become viable substitutes for public transportation. Any explanation for falling transit use that hinges on TNCs, however, faces a timing problem: TNCs began operating in Southern California in 2009, and did not begin serving people in large numbers until 2012. Per capita transit ridership began falling in 2007. So while the TNCs may affect transit use, they cannot by themselves explain transit's recent patronage decline.

Moreover, TNCs' influence on mode choice is theoretically ambiguous. On the one hand, TNCs let people purchase vehicle trips *a la carte*. If those trips are inexpensive, then TNCs can be a faster, more direct, less-crowded, and more comfortable substitute for transit. While some TNC trips are substantially more expensive than transit fares, the TNC shared ride services, like Lyft Line and Uber Pool, have sometimes seen fares fall low enough to be competitive with one-way transit fares. Given the speed and convenience these services offer, they could draw some riders away from transit, provided those riders have smartphones and credit cards.

On the other hand, TNCs could also *increase* transit use. TNCs could help solve first-mile/last mile problems, and get people to transit stops that are beyond walking distance. TNCs could also provide transit riders a form of insurance – if some people don't take transit because they worry an emergency might arise where they need a car (for instance, getting a sick child home from school) the option of calling

a TNC during one of those emergencies can lower the perceived risk of taking public transportation, and make it more attractive.

Finally, since most people in most regions do not use transit or even consider doing so, the average TNC trip may have little impact on transit ridership. If the typical Uber passenger has never used a bus and never considered doing so, Uber's growth cannot be blamed for transit's decline.

Because TNCs provide almost no operating data to the public, we do not have sufficient evidence to adjudicate between these scenarios. We do not know even basic information — such as the total number of TNC trips in the SCAG region year over year, or the general areas where those trips originate — that could cast light on the relationship between TNCs and public transportation (Transportation Research Board, & National Academies of Sciences, Engineering, and Medicine, 2016).[12]

What little evidence we do have suggests that most TNC trips do not replace transit trips. Surveys done by independent researchers and organizations suggest that the typical TNC user does not resemble the typical transit rider (TNC users are disproportionately college-educated and affluent), and that the most common times and places for TNC rides are Friday and Saturday nights in popular commercial districts, and trips to airports (Clewlow & Mishra, 2017; Feigon & Murphy, 2016; Rayle, Dai, Chan, Cervero, & Shaheen, 2016). Large surveys by Clewlow and Mishra (2017) and APTA (Murphy 2016) suggest that most TNC trips occur between 10 p.m. and 4 a.m., when transit runs infrequently and carries few riders. Clewlow and Mishra (2017) find that the majority of TNC users report no change in their use of other modes. All this evidence suggests little impact on transit.

The caveat attached to these findings, however, is that the subgroups most likely to take transit – low-income racial and ethnic minorities – are also difficult to survey. Even very large, well-funded surveys often struggle to get adequate coverage of poorer households. As such, we cannot rule out the possibility that actual TNC use in some poorer neighborhoods is higher than the current data suggest.

Moreover, as the pool of TNC users continues to expand, the TNCs' effect on transit use – both positive and negative – may well increase. These amplified effects will be still more likely if TNC prices fall, and TNC use grows disproportionately in dense, high transit ridership areas populated by residents with relatively low levels of household motor vehicle access. For this reason, the relationship between TNCs and transit should be monitored, and there may well be a public interest in letting transit agencies see at least basic data about the location and volume of TNC trips. But relatively little evidence suggests that TNCs are a big player in the current transit decline. The timing, again, does not match up well.

Neighborhood Change and Migration

Transit is heavily-supplied in a small proportion of places, and heavily used by a small proportion of people. This situation creates a potential matching problem. If the small group of people who use transit a lot becomes less likely to live in the small number of places that offers a lot of service, transit use could

[12] TNCs are required under California law to report a host of data on rides given, disability access, and drivers to the California Public Utilities Commission. Unlike transit data in the NTD, however, these TNC data are not public. The CPUC cannot easily turn those data over to the public or public agencies. Such conditions are common throughout the United States. For more - http://www.cpuc.ca.gov/General.aspx?id=3989

fall. Such a mismatch could occur for a number of reasons. The highest-profile explanation is gentrification-driven displacement. If gentrification pushes transit-riding lower-income households away from transit-rich neighborhoods, and replaces them with higher-income residents, transit use may fall. The new higher-income residents may use transit more than they did previously, but less than the lower-income residents they replace (Dominie, 2012).[13]

Gentrification and displacement, however, account for only a small portion of moves by poor and immigrant households. Most moves by such households are by choice, or for reasons unrelated to in-migration by the affluent—for example, a low-income resident might lose a job and be forced to move (either to find new work, or to find a place with lower rent), even if neighborhood rents are not rising (Freeman 2005; Freeman and Braconi 2004; Newman and Wyly 2006; Vigdor 2002). The relevant fact is that in recent years many poor households, when they move for whatever reason, relocate to the suburbs. As poor households suburbanize, they move farther from transit on average (Farrell, 2016; Kneebone, 2014; Kneebone & Garr, 2010; Singer, 2011; Zimmerman, Restrepo, Kates, & Joseph, 2015). Upon arriving in the suburbs, low-income people may well use transit more than other suburbanites, but less than they had used it when they lived in central-city neighborhoods. If they are not replaced in central-city neighborhoods by other people who ride at high rates, then as a result of their migration overall transit use could fall.

Ideally we could examine the extent to which migration influences transit use by following low-income households and their travel behavior over time and across neighborhoods. Unfortunately, the data that would allow us do this do not exist. What we can do instead is use census-tract level data to examine changes in the spatial location of transit commuters and in the characteristics of residents living in high-transit commuting neighborhoods. We approach this task in two ways: identifying tracts with transit-friendly built environments and seeing how they change over time, and identifying tracts with high levels of transit commuting, and examining change within those places over time. These approaches have limits, as we will explain, but in combination they show a decline in the number of transit commuters in many high-transit use neighborhoods in 2010 and 2015, a decline in transit mode share in these neighborhoods (particularly from 2000 to 2010), and a shift in the characteristics of neighborhood residents in ways that help to explain declining transit use.

We have two methods available to identify areas that are highly conducive to transit use. These are areas that, regardless of who lives in them, are transit-friendly, either because of their levels of transit service or attributes of their built environment. Our first measure of transit-conduciveness is SCAG's High Quality Transit Area designation. SCAG defines a High Quality Transit Area as an area within one-half mile of a fixed guideway transit stop or a bus transit corridor where buses arrive at a frequency of every 15 minutes or less during peak commuting hours. SCAG last identified existing High Quality Transit Areas using data for 2012. These High Quality Transit Areas are located in 762 census tracts—about 45 percent of the region's total Census tracts.

Our second measure of transit-conduciveness comes from a typology of neighborhoods developed at the UCLA Institute of Transportation Studies for the US Federal Highway Administration (Voulgaris, Taylor, Blumenberg, Brown, & Ralph, 2016), using data from 2010-2013 (Ramsey & Bell, 2014; Voulgaris et al.,

[13] This outcome could well result in lower transit ridership but also lower VMT and GHG, because the higher income in-migrants are more likely to replace driving with their transit trips (see Chapple et al. 2016, Chapter 4).

2016). This typology characterizes neighborhoods based on their built environment and transportation system characteristics (e.g. density, land use mix, age of housing stock, resident turnover, street network characteristics, and transit supply), but not on the characteristics of the people living in these neighborhoods. In this way the typology can capture how transit-friendly a neighborhood's built environment is. We focus in particular on one neighborhood type called "Old Urban," which indicates very-high density neighborhoods with high-levels of transit supply. Old Urban neighborhoods are much less common than SCAG High Quality Transit Areas—in 2010 there were 719 Old Urban neighborhoods in the region.

For our purposes, the limitations of both the SCAG designation and the Old Urban designation are that the data used to construct them are from 2010 or after. As a result, we can track changes in these neighborhoods from 2010-2015, but we do not have a good measure of tract-level transit supply or transit-conduciveness from 2000 to 2010, the time period when transit use in the SCAG region began to fall.

To examine changes from 2000 forward, we examine the clustering of transit commuters. This method is imperfect, since as we have shown commuters are a minority of transit users, but we assume for this exercise that as regular transit users, commuters tend to cluster in areas conducive to transit use. This assumption is contestable, but we have no other Census tract-level data on transit use that stretches back to 2000. We identify high-transit commuter neighborhoods with data on transit commuters by Census tract from the 2000 Decennial Census, and the 2010 and 2015 ACS.[14] For each year, we rank order tracts by the number of transit commuters in them. As we discussed earlier, transit commuters are highly concentrated in a very small fraction of the SCAG region's land area; eighty percent of transit commuters live on less than five percent of the land area and in less than 40 percent of census tracts. This distribution changed very little from 2000 to 2015.

We examine changes over time using the rank-ordered transit commuting data from the 2000 Census. We identified the census tracts that most intensively host transit commuters; these tracts, which are 1.43 percent of all census tracts in the region and 0.02 percent of the region's land area, hold ten percent of the region's transit commuters. We call these "10% Tracts." The mean number of transit commuters in these tracts is almost 12 times the regional average. For comparison, we also extracted data on the tracts where the top 60 percent of transit commuters live; these neighborhoods comprise 20.6 percent of all census tracts and 0.86 percent of the land area. We call these "60% Tracts." The mean number of transit commuters in these neighborhoods is 4.5 times the regional average. The number of ten percent tracts is extremely small: in 2000, just 48. The number of tracts that hold 60 percent of the commuters, in contrast, is 743—roughly the same number as are in the Old Urban designation.

The tracts in the 10% and 60% designations in 2000 strongly overlap with the SCAG High Quality Transit Area and Old Urban designations. If we take the 10% Tracts in 2000 and follow them forward, we see that about 85 percent are Old Urban tracts, and all of them are SCAG High Quality Transit tracts. Similarly, of the tracts in the 60% designation in 2000, in 2010 55 percent of them are Old Urban, and 85 percent are

[14] Because we are using tract-level data, the ACS data are from the 5-year samples. The 2010 data are from the 2006-2010 ACS, and the 2015 data are from the 2011-2015 ACS.

High Quality Transit. As such, following the trajectory of the 10% and especially the 60% Tracts may be a rough-but-reasonable proxy for following the trajectory of transit-rich areas.

As a first step, we follow three of these four tract designations – 60% Tracts, Old Urban, and High Quality Transit – over time, to the extent we can. For the latter two designations, this means only tracking changes from 2000 to 2015. We follow the year 2000 60% Tracts from 2000 to 2010, and then to 2015. (We use the 60% Tracts, rather than the 10% Tracts, because their numbers are more comparable to the Old Urban tracts).

Figure 30 summarizes the results. Essentially, the 60% Tracts saw substantial changes between 2000 and 2010, and these changes are consistent with the idea that the people most likely to use transit migrated away from transit-rich areas. From 2000 to 2010, the poverty rate in these tracts fell by four percentage points, the share foreign born fell from 48 percentto 45 percent, and the share of households without vehicles fell from 23 percent to 17 percent. From 2010 to 2015, in contrast, relatively little changed, and that same pattern holds if we examine Old Urban tracts and SCAG High Quality Transit Areas. Across all three neighborhood typologies, poverty rose slightly, the share of foreign born fell slightly, and – perhaps most important, given the importance of vehicle access to transit use – the share of households without vehicles stayed at the point it had fallen to. (The same general pattern holds for the 10% Tracts, although to conserve space these are not shown in the figure).

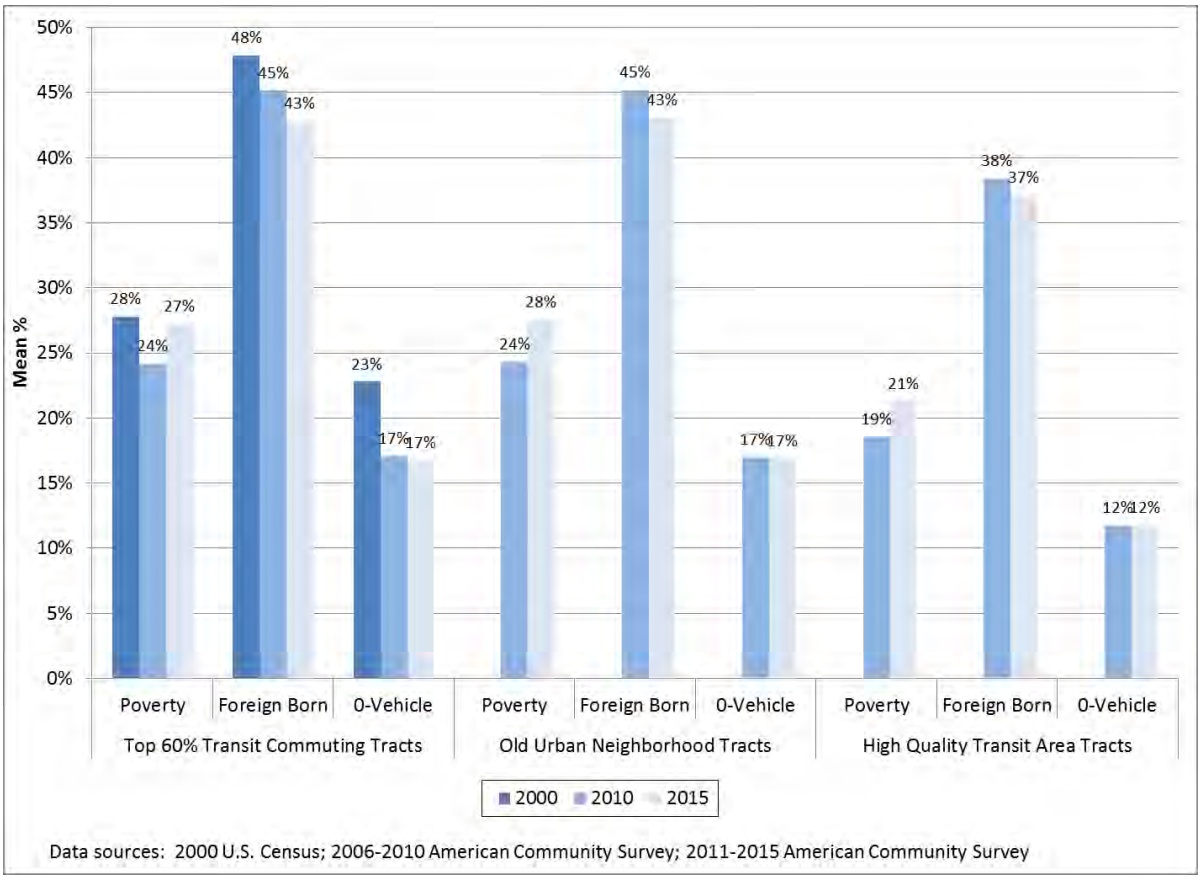


Figure 30. Characteristics of high-transit areas, 2000, 2010, and 2015 (2000 Census tracts over time)

Some additional data also suggest neighborhoods changing in ways not conducive to transit use. Figure 31, for example, shows that in both the 10% and 60% Tracts the transit commute mode share fell between 2000 and 2015 (with most of the decline occurring between 2000 and 2010.) Although not shown graphically, Census data also indicate that in these tracts, both the number of workers and overall earnings for workers rose, but earnings did *not* rise for those commuters using transit to get to work.

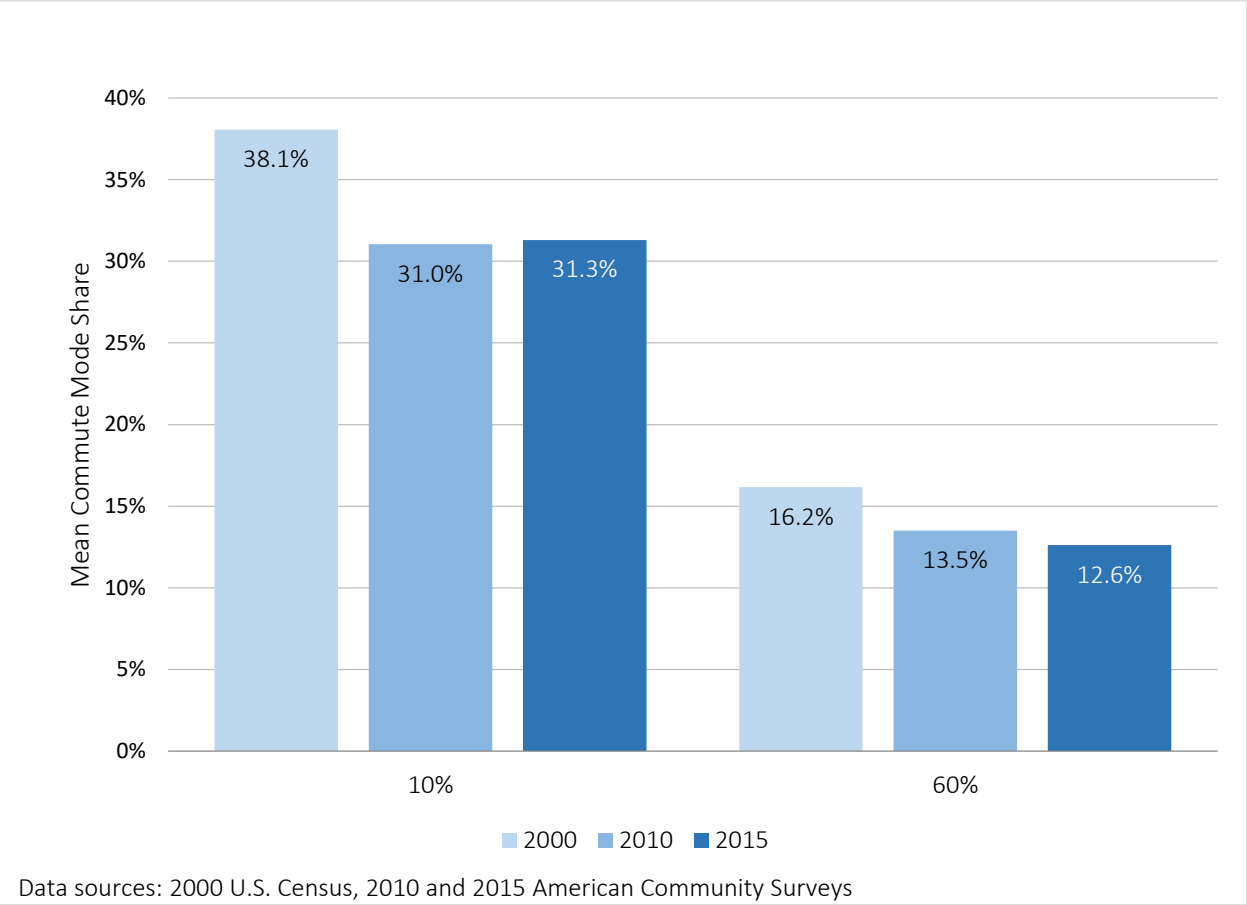


Figure 31. Mean transit commute mode share in high-transit neighborhoods, SCAG Region by year.

In summary, then, we observe changes in census tracts that in the year 2000 were most heavily-populated by transit commuters. These tracts, in turn, overlap substantially with tracts that we know in 2010 were rich in transit supply and/or had transit-friendly built environments, letting us infer (albeit with some uncertainty) that these neighborhoods were transit-rich in 2000 as well. Particularly between 2000 and 2010, in these neighborhoods we see falling transit commuting, falling population, a falling share of immigrants, falling poverty, more vehicle ownership, and higher earnings for workers overall but not those workers who commute via transit. All of this evidence is consonant with these neighborhoods becoming

more affluent, with that affluence being associated with less transit use, and with people left out of that affluence remaining on transit.

We emphasize that this story is far from conclusive. For the reasons we discussed above, the relationship between neighborhood change and transit use is very hard to measure. The data we have are consistent with neighborhood changes in the most transit-friendly SCAG-region neighborhoods contributing to falling transit use, but they are not conclusive. This is an area that warrants substantial further research.

Rising Vehicle Ownership

The defining attribute of regular transit riders is often a lack of vehicle access. Between 2000 and 2015, vehicle access in the SCAG region became much more common. Households in the SCAG region, and especially lower-income households, dramatically increased their levels of vehicle ownership. Census summary file data show that from 2000 to 2015, the SCAG region added 2.3 million people and 2.1 million household vehicles (or 0.95 vehicles per new resident). To put that growth in perspective, from 1990 to 2000 the region added 1.8 million people but only 456,000 household vehicles (0.25 vehicles per new resident). The growth of household vehicles in the last 15 years has been astonishing.

There are strong reasons to believe that this surge in vehicle ownership is largely responsible for the decline in transit use. A back of the envelope calculation can illustrate the magnitude of the problem this vehicle surge could pose for transit operators. Data from the US Consumer Expenditure Survey show that from 2000 to 2015, the average expenditure per household vehicle in LA County was about $3,729.[15] Since SCAG residents added 2.1 million vehicles in this time, a midrange estimate of private expenditures on household vehicle growth is $7.8 billion. Over the same period of time, LA Metro and Metrolink combined to spend about $6.4 billion opening new rail service, and about $7.4 billion on combined rail and Bus Rapid Transit service. Thus even a conservative estimate of private investment in vehicle growth shows it easily outpacing public investment in fixed-route, dedicated right-of-way transit— the type of transit that is supposed to be most competitive with driving. This level of increased vehicle ownership is in many ways incommensurate with robust transit use.

To be sure, much of this vehicle growth would not influence transit use. Because most SCAG residents had never used transit, increased vehicle ownership in most SCAG households would not contribute to transit's decline. The 2000s were when the Millennials, a demographically large cohort, reached ages when many would buy automobiles. Millennial car-buying could help explain the bulge in vehicle acquisition, but unless those Millennials would otherwise be on transit these additional vehicles would not necessarily explain falling transit use.

[15] The Consumer Expenditure Survey tracks the average net outlay per vehicle purchased. Data are not available for the other SCAG counties, but the average net outlays are probably similar across Southern California. Moreover, the $3,729 figure is the average of each annual average. Since more vehicles were purchased in the early to mid-2000s, and at higher prices, this figure likely underestimates the true average. See https://www.bls.gov/cex/csxmsa.htm

Some additional evidence, however, suggests that vehicle ownership did play a role in reducing ridership. When the OCTA surveyed its former riders in 2015, for example, 70 percent reported leaving transit because they had acquired a car (True North Research 2015).

Moreover, we have reason to think that the increase in vehicle ownership occurred disproportionately among populations that are more likely to take transit. Census data show that vehicle access increased most among lower-income households (we return to this point below, in Figure 40). Vehicle access also rose disproportionately among the foreign born. Table 4 shows changes in both zero-vehicle households and those with a vehicle "deficit" (that is, fewer vehicles than adults). Across the entire SCAG region, the share of households without vehicles fell 30 percent between 2000 and 2015, while the share of households with a vehicle deficit fell 14 percent. Among foreign-born households, these percent declines were larger — 42 percent and 22 percent — and among the foreign born from Mexico they were larger still. Among the foreign born from Mexico, the share of households without vehicles fell by two-thirds between 2000 and 2015, and the share with a vehicle deficit fell 28 percent. Thus car ownership rose across-the-board, but rose fastest among subgroups with a high propensity to ride transit. And these changes largely occurred between 2000 and 2010, which aligns with the timing of the transit downturn that began in 2007.

	All SCAG Share Households With:		Foreign Born Share Households With:		Mexican Foreign Born Share Households With:	
	No Vehicles	Vehicle Deficit	No Vehicles	Vehicle Deficit	No Vehicles	Vehicle Deficit
2000	10.2	30.1	14.1	47.1	15.7	57.2
2010	7.7	26.1	9.4	38.9	7.0	46.0
2015	7.1	25.9	8.2	36.6	5.4	41.6
Pct Change	-0.30	-0.14	-0.42	-0.22	-0.66	-0.27

Table 4. Vehicle ownership trends, SCAG region (US Census, Census IPUMs).

To refine our understanding of the association between vehicle ownership and transit use, we estimated a multivariate regression model. As a result of the data constraints we discussed earlier, this process involved two steps. Recall that our fundamental data obstacle was a mismatch between the availability of detailed, person-level information about travel behavior and our need to answer a question about changes over time. The CHTS provides detailed travel behavior, as well as demographic and socioeconomic data, but only for the year 2012. The Census provides detailed annual data, but for almost every category *except* travel behavior and transit use.

We resolve this problem by first using the CHTS to build a model that predicts total unlinked trips as a function of different demographic, socioeconomic, and neighborhood attributes. Importantly, all of these attributes – such as sex, nativity, income, vehicle ownership, and so on – are also tracked in 2000, 2010 and 2015 Census IPUMS microdata. This symmetry allows us to take the parameters of the CHTS model and apply them to time-series data from the Census. We use the CHTS, in short, to estimate the relationship between transit use and different social and economic characteristics, and then use the

Census to track how those characteristics have changed. Once we have measured that change in the Census, we can use the CHTS results to estimate how transit use would have changed as a result.

A core assumption of this approach is that the relationships between transit use and the socioeconomic and demographic attributes, which we can only measure in 2012, are relatively constant across time. We assume that changes in transit use from 2000 to 2015 are driven primarily by changes in the composition of the population, and not by changes in the propensity to use transit by people in different population groups. Our approach is more valid, for example, if transit use changes because there are more or fewer people in poverty, or with vehicles, and not because poor people or people with vehicles become more or less likely to use transit. The latter scenario is possible, but we cannot measure it.

We constructed models for California, the SCAG region, Los Angeles, and the SCAG region outside of Los Angeles. Figure 38 shows results from the first stage of our analysis: the major predictors of transit trips in in the SCAG region. Unsurprisingly, transit trips are highly associated with automobile ownership and access, even accounting for other potential determinants of transit use. Beyond automobile access, transit use is associated with lack of a driver's license, being nonwhite, and being foreign-born — especially being foreign-born and a new arrival.[16]

[16] While we experimented with different functional forms for the regression, we settled on a zero-inflated negative binomial regression. A negative binomial regression is a standard tool for analyzing overdispersed count data, and the zero-inflation corrects for bias that might otherwise be introduced when the value of the dependent variable is frequently zero, as it is with personal transit trips.

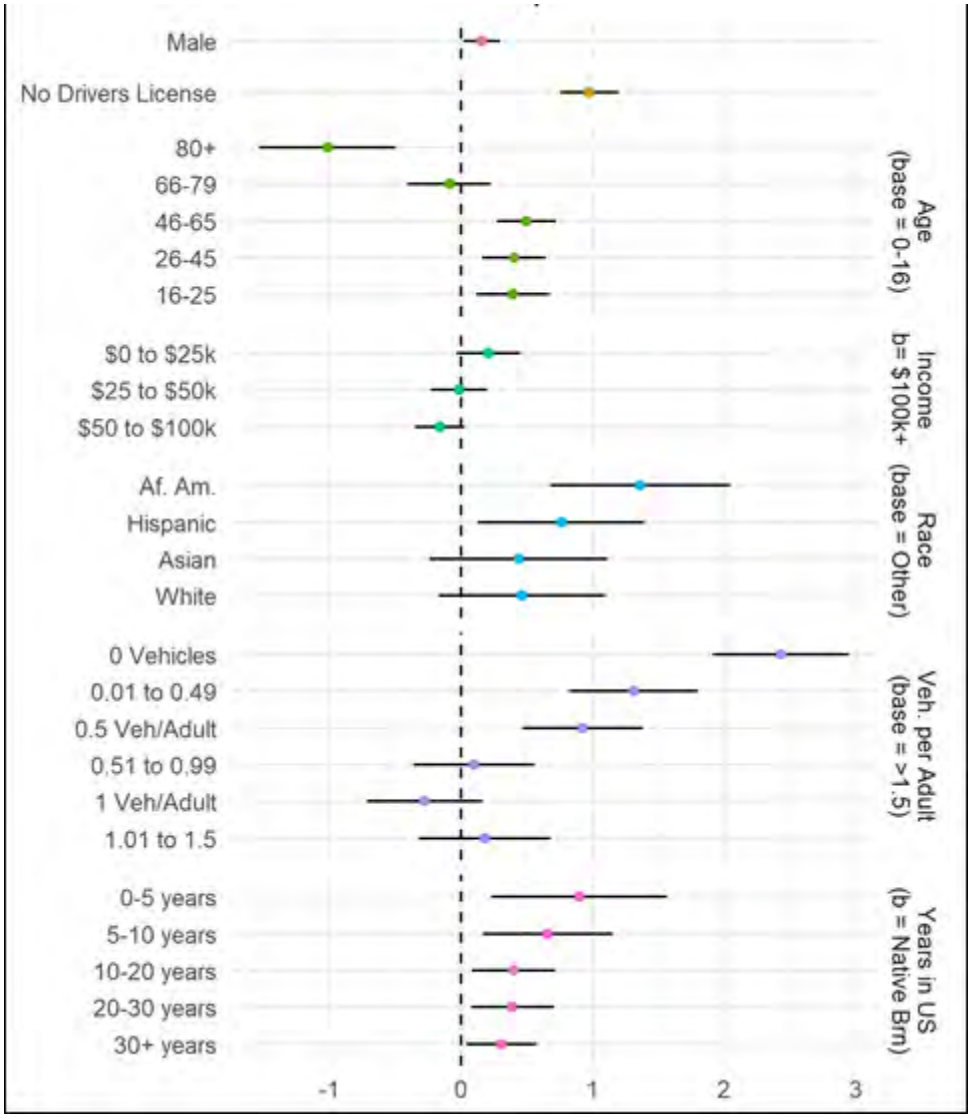


Figure 32. All SCAG unlinked trip predictors (CHTS).

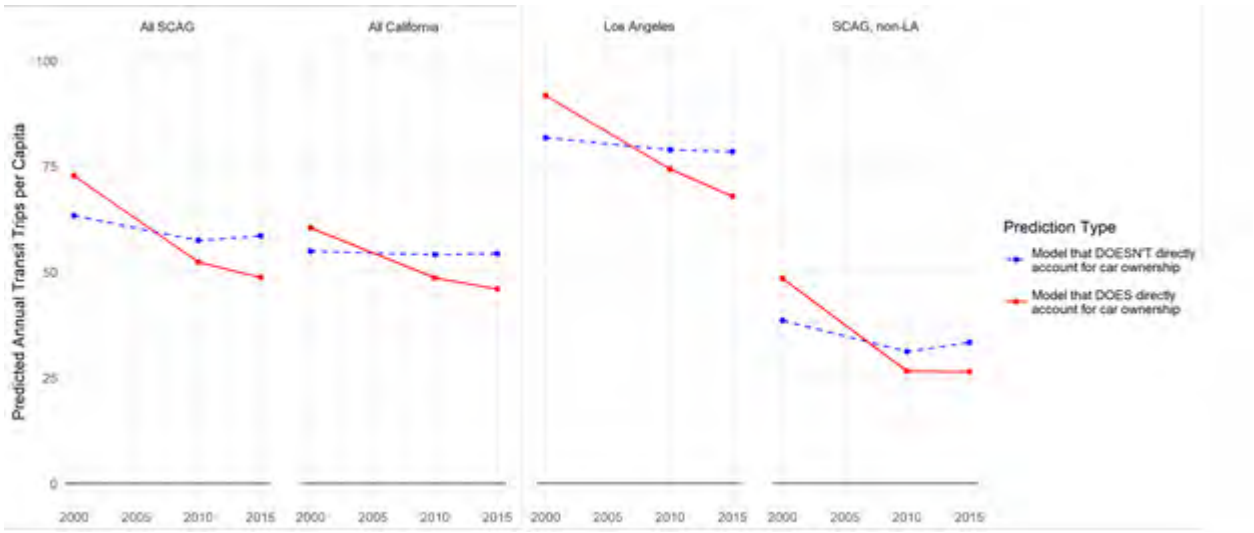


Figure 33. Relationship between increased vehicle ownership and falling transit trips (CHTS and US Census Bureau).

When we apply these parameters to Census IPUMS data from 2000, 2010 and 2015,[17] we see a powerful association between rising household vehicle access and falling transit trips. Figure 39 illustrates this relationship by graphing the results of two models. The first model, represented by the dashed line, predicts the change in county transit trips based on changes in all factors *except* vehicle access. In the SCAG region, the line has a mild negative slope from 2000 to 2010 and then a small positive slope from 2010 to 2015, suggesting that changes in these demographic, economic, and geographic factors would be associated with a small decline in transit use since 2000, albeit with a modest uptick between 2010 and 2015. The graphs for Los Angeles County and the SCAG region outside LA County suggest that this predicted modest uptick (which did not actually occur) would have taken place in SCAG's outlying counties. In Los Angeles County, transit trips were predicted to keep declining through 2015.

The second model, represented by the solid line, is identical to the first model but includes changes in automobile access. The difference in results is dramatic. This line starts at a higher point and falls sharply to a lower point, both of which suggest the important role automobile access has in influencing transit use. An absence of automobiles is associated with much more use, and the acquisition of automobiles is associated with much less. The line also suggests that many socioeconomic attributes play an essentially the intermediary role in mode choice. Income, nativity, age, location within the region, and many other factors can influence transit use, but they do so primarily by predicting people's access to private cars.

[17] A natural concern is that the CHTS might measure nativity, income, etc. differently than the Census. We validated our approach by first using the Census independent variables to replicate the CHTS estimates, suggesting this is not a problem.

Income alone, for example, does not take people off buses. Income helps people buy automobiles, and it is auto access that fuels an exodus from transit.[18]

Why did vehicle ownership rise so much? We cannot answer this question definitively, but as we discussed earlier in this report, vehicle ownership has both economic and non-economic determinants. The non-economic determinants include the growth or decline of immigrant groups who are less likely to acquire vehicles, and changes in licensure laws or other laws that surround owning and operating vehicles. The economic reasons can themselves be divided into two categories: changes in personal spending power, and changes in the price of vehicles themselves.

Since the foreign-born, and particularly the recently-arrived foreign-born, are less likely than the native-born to own vehicles, one possibility is that number or composition of immigrants changed. In absolute terms, the foreign-born population in the SCAG region grew between 2000 and 2015. However, it did not grow as fast as the overall population, so the region's share of foreign-born fell, albeit modestly (from 31% to just over 30%). This proportional decline occurred entirely within LA County, which has the most transit service. Every other SCAG county saw its share of foreign-born rise.

	Imperial	Los Angeles	Orange	Riverside	San Bernardino	Ventura	All SCAG
2000	32.2%	36.2%	29.9%	19.0%	18.6%	20.7%	31.0%
2010	31.9%	35.6%	30.5%	22.4%	21.6%	22.9%	31.0%
2015	32.6%	34.7%	30.5%	22.0%	21.3%	22.8%	30.4%
% Change	1.2%	-4.3%	2.0%	13.7%	12.6%	9.2%	-2.0%

Table 5. Share foreign born residents, Southern California counties (2000-2015). US Census.

The *composition* of immigrants, however, changed more dramatically. Table 6 shows that between 2000 and 2015 (and especially between 2000 and 2010), the share of the foreign-born from Asia rose 23 percent, while the share from Central America fell ten percent, and the share from Mexico fell over 13 percent. In 2000, 48 percent of SCAG immigrants were from Mexico, while by 2015 only 41 percent were. Because existing evidence suggests that immigrants from Mexico and Central America are less likely to have automobiles and drive than immigrants from other origin countries, this shift could contribute to rising auto use, especially among the foreign born (US Census ACS 2015).

[18] We should note that these models are *not* predictive models – their purpose is not to yield output that precisely matches the observed transit ridership in the SCAG region (and in fact our predictions do not match observed ridership). We do not build a predictive model for two reasons. First, we are not using the correct data to do so. Regional ridership counts come from annual reporting to the NTD. Because we need person-level data that includes socioeconomic attributes, we are using one-day travel diary data from the 2012 CHTS, and then matching that to person-level data from three Census years. Second and more important, the goal of the regressions is to test a particular hypothesis – that vehicle access is the decisive factor in transit use – not to predict transit ridership. Our output thus yields an estimate of the relative magnitude of the importance of auto access, *not* a precise measure of how many trips each additional increment of auto access actually cost the SCAG region.

	2000	2010	2015	Change
Asia	28.7%	33.9%	35.3%	23.0%
Americas	63.7%	59.1%	57.7%	-9.4%
Latin America	62.4%	58.0%	56.5%	-9.5%
Central America	58.8%	54.5%	53.0%	-9.9%
Mexico	47.7%	42.4%	41.3%	-13.4%
South America	2.6%	2.7%	2.7%	3.8%

Source: US Census Summary File Data. US Census Bureau classifies Mexico as part of Central America. Data on Caribbean Americas omitted.

Table 6. Composition of SCAG immigrants (2010-2015).

Moreover, among both the foreign-born overall and the foreign-born from Mexico, in data from the US Census IPUMs we see both an assimilation effect and a cohort effect reinforcing the trend toward more vehicles. More recent waves of immigrants are more likely to have vehicles shortly after arrival, and those who do not are faster to acquire them as time goes on.

In the year 2000, for example, 31 percent of the foreign-born households in the SCAG region that had emigrated from Mexico between 1990 and 1999 had no household vehicle, and 74 percent had a vehicle deficit. By 2010, just 9.3 percent of this same cohort of immigrant households had no vehicle, and only 51 percent had a vehicle deficit. By 2015, these figures were 7 percent and 41 percent. This is the assimilation effect; as time passes, immigrants begin to behave more like the native -born.

The cohort effect, however, is more notable. The more recent waves of immigrants to Southern California are more likely to own vehicles shortly after arrival, and as such they have not fully replenish the stock of zero-vehicle households that shrank as existing immigrants assimilated toward cars. In 2010, only 17 percent of the Mexican immigrant households in the SCAG region that had arrived in the US between 2000 and 2009 had no vehicles, compared to 31 percent for those that arrived between 1990 and 1999 in the year 2000. Similarly, only 62 percent of these 2000-2010 arrivals had a vehicle deficit in 2010; in 2000, 74 percent of Mexican immigrants who had arrived since 1990 had a vehicle deficit. By 2015 the share of zero-vehicle households in thepost-2000 cohort was down to 10 percent, and the share with vehicle deficits down to 49 percent. And by in 2015, only 11 percent of Mexican immigrant households that had arrived in 2010 or after did not have a vehicle. A similar pattern holds for the foreign-born overall. More recent waves of immigrants acquired more vehicles more quickly, meaning that as previous waves of immigrants acquired cars, the ranks of the carless were shrinking rather than being replenished.

In sum, immigrants overall are now a slightly smaller share of the population, but also more likely to own vehicles, and to own them earlier after arrival. Mexican immigrants, who are a mainstay of transit ridership in Southern California, remain more likely than the foreign-born overall to live in households without vehicles, but since 2000 they have both added household vehicles and become a smaller share of total immigrants.

It is not clear *why* the foreign-born began adding more cars. In 2015, California began issuing driver's licenses to undocumented immigrants. While licensure may have increased vehicle ownership, for a variety of reasons we do not think it played a large role. First, a license makes a vehicle more useful, but not more affordable; if the barrier to acquiring a vehicle is price, a license does little to overcome that. One might argue in response that legality and not price was the actual barrier, but existing evidence suggests this is simply not the case: many undocumented immigrants, even without licenses, were already driving (Lovejoy & Handy, 2008). Indeed, the prevalence of undocumented driving was the primary motivation for the law that authorized licensure. The decision to issue licenses was justified primarily on safety, not mobility, grounds – there were concerns, for example, that unlicensed undocumented drivers would flee the scene of accidents. It is possible that undocumented immigrants drove *less* – and took transit more – before being licensed, and that licensing did help depress transit use. Even this scenario, however, has its limits. A law that took effect in 2015 cannot explain a per capita ridership decline that began in 2007 or an explosion in vehicle ownership that began in the early 2000s.

Ruling out legal changes brings us to possible economic factors for increased vehicle ownership: Perhaps immigrants (and others) began acquiring more cars because they had more money. A small but persuasive literature on personal consumption shows that poorer people tend to convert even small increases in income into vehicle purchases – a testament to how valuable vehicle access can be (Aaronson, Agarwal, & French, 2012; Adams, Einav, & Levin, 2009; Leininger, Levy, & Schanzenbach, 2010; Parker, Souleles, Johnson, & McClelland, 2013; Souleles, 1999).

The 2000-2015 period was volatile economically, as the economy grew steadily before cratering during the Great Recession. During most of this time, furthermore, median wages and incomes were stagnant. Median household income in LA County, for example, was about $59,000 in both 2000 and 2015, and was slightly lower during the recession in 2010. The Census suggests that newer waves of immigrants are if anything slightly poorer than the cohorts that came before them: In 2000 average incomes of immigrants that had arrived since 1990 was slightly higher than the average income of immigrants in 2010 who had arrived after 2000. Finally, we can see in Figure 40 that vehicle growth occurred across all income groups, for both the foreign-born and the native-born. In 2000 just under 40 percent of households earning less than $25,000 per year had a vehicle-deficit, as did 60 percent of immigrant households in the same income bracket. In 2015 less than 30 percent of native-born households in the same income bracket had a vehicle-deficit, as did just over 50 percent of immigrant households. The pattern holds for households earning $25,000 to $50,000, and for more affluent households.

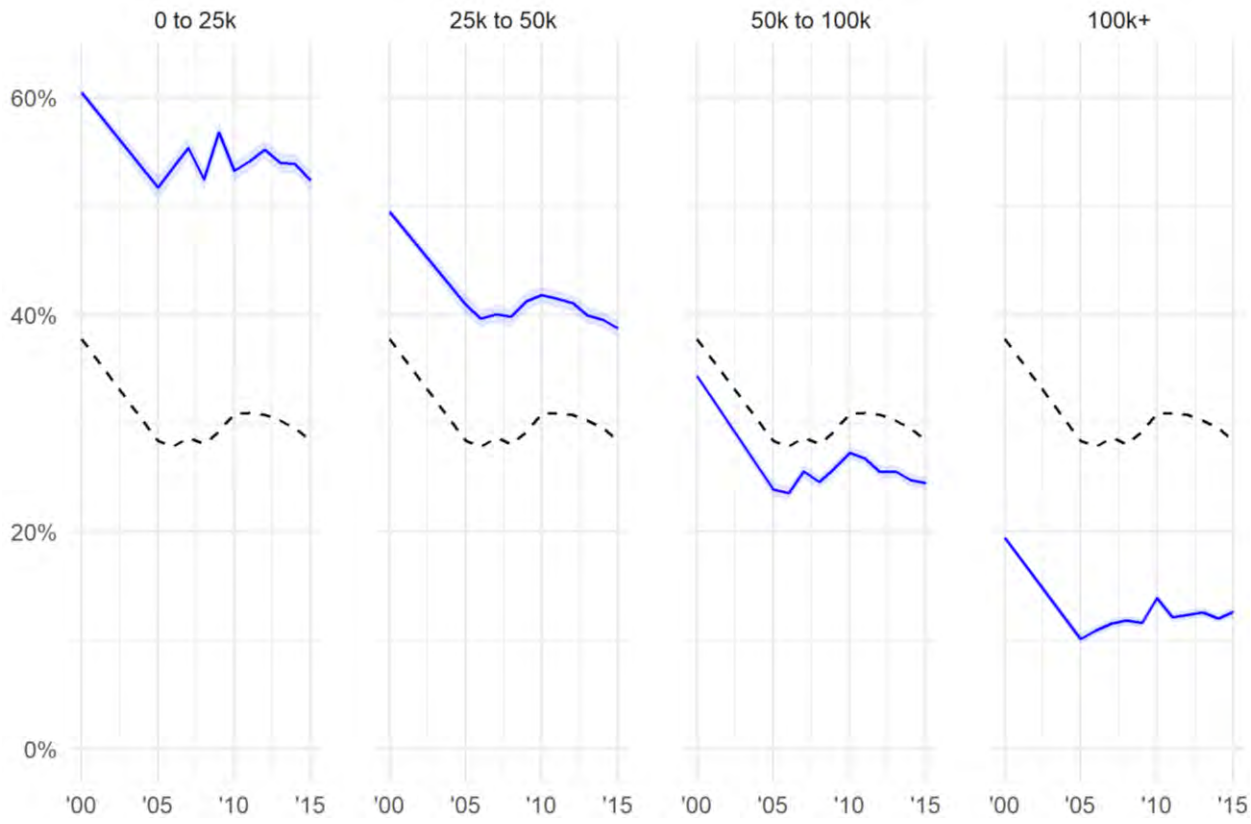


Figure 34. Share of households with vehicle deficits, by income and nativity, 2000-2015, US Census (solid line = foreign born, dashed line = native born).

It is therefore not obvious that rising incomes played a large role in rising vehicle ownership. Certainly the macro-economy played some role in changing levels of transit use. Transit use contracted during the Great Recession: A robust economy puts more people to work, which increases both commuting and discretionary travel. A faltering economy does the reverse. But these same economic trends do not appear to explain why people acquired so many more vehicles than they had in previous periods.

Even at constant incomes, households can acquire more vehicles if the effective price of those vehicles falls. The effective price reflects not the sticker price, but the actual outlay required of a consumer to drive the vehicle home. A large part of this outlay is often a down payment, meaning that vehicles can become more affordable not just if their price declines, but also if financing that price becomes easier.

Some evidence does suggest that vehicle finance became easier during this time. Although lost somewhat in the shadow of easy home-lending credit, automobile credit also surged in the run-up to the Great Recession. And unlike home lending, which tightened considerably after the crash, automobile lending has remained relatively loose. Consumers with good credit scores (typically above 700) can find auto loans with low- and sometimes even zero-interest rates. Since the recession, the share of SCAG-region residents with credit scores below 660 (considered subprime) has fallen (Figure 41), suggesting that consumers have gotten better access over time to low-interest loans (Federal Reserve Bank of New York and Equifax, various). Subprime auto loans also remain prevalent, allowing consumers with poor credit histories or low

incomes to finance vehicle purchases. U.S. auto loan originations among subprime consumers increased 140 percent from 2010 to 2015 (New York Fed Consumer Credit Panel / Equifax). We do not have local-level data on vehicle debt, but inflation-adjusted per capita vehicle debt in California rose 91 percent between 2000 and 2015 (Federal Reserve Bank of New York).[19]

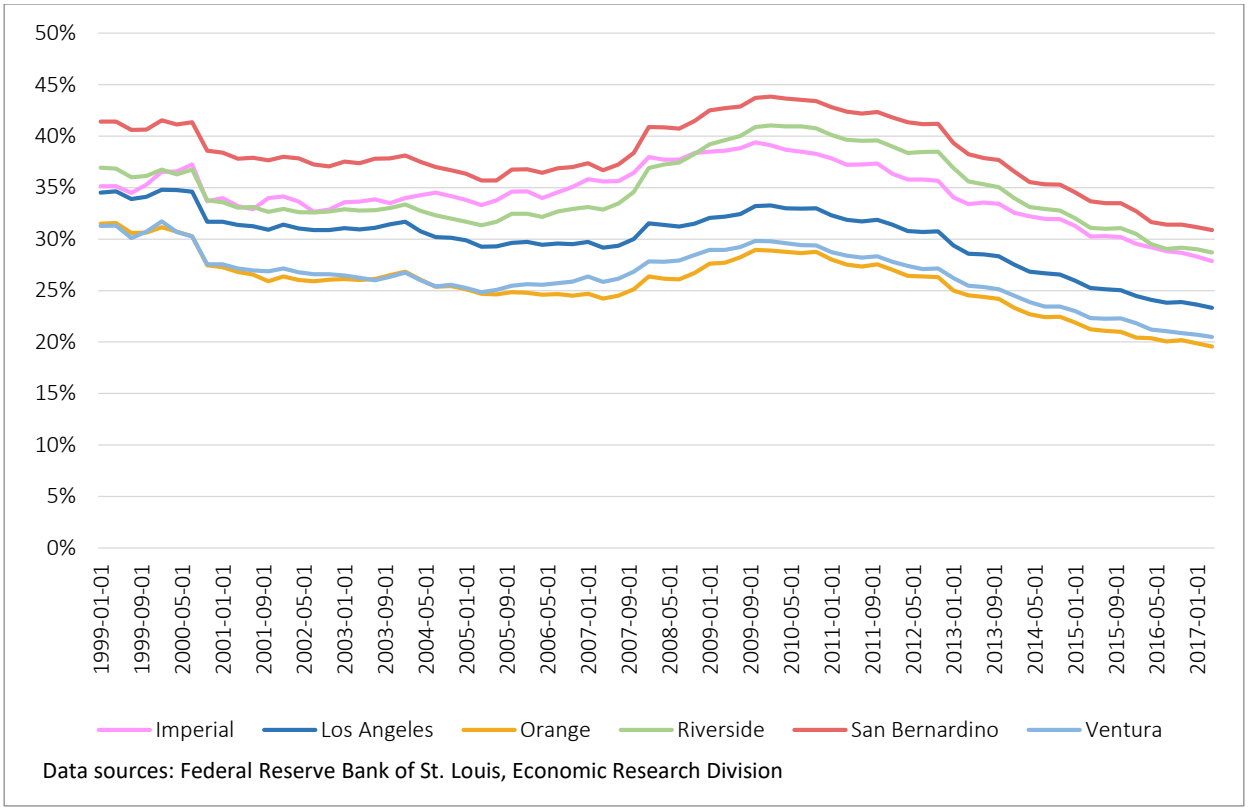


Figure 35. Percent of sample with credit scores below 660, by county in SCAG region.

CONCLUSION

Per capita transit ridership, long sluggish in Southern California, began to fall in 2007. In 2012 that per capita decline accelerated, and manifested as a more noticeable and more alarming absolute decline. The precise reasons for this decline are almost certainly manifold, and hard to disentangle. Gas prices fell sharply after rising steeply. The explosive growth of Uber and Lyft provided new mobility options to some people who had been mobility-constrained. In Orange County, fares rose substantially. On LA Metro, by at least some accounts, feelings of danger increased. Some of the people most likely to use transit moved to areas where transit was less prevalent. Especially in recent years, all these factors most likely contributed to transit's downturn.

[19] Data come from the New York Federal Reserve Bank's Consumer Credit Panel.

But in weighing the evidence, the overwhelming factor appears to be a dramatic increase in the stock of private automobiles. Between 2000 and 2015 Southern Californians acquired vehicles at nearly four times the rate they had between 1990 and 2000. This growth of the private vehicle stock lines up—in timing, in magnitude, and in theory—with the region's falling transit use. Vehicle access grew across all income levels and groups, but disproportionately among those groups, like the low-income and foreign-born, who are most likely to ride transit. Transit ridership in the SCAG region has long depended on a sizable minority of people who did not, largely for economic reasons, have access to cars. After 2000, many of these people acquired cars, and it should not surprise us that they started riding transit less.

To be sure, the case we build in reaching this conclusion is circumstantial. For reasons we have already enumerated, the data available to examine transit riders are scarce and fragmented, which leaves alternative explanations possible if not plausible. Certainly future research should emphasize more data collection. Given the data available today, however, in our judgement rising vehicle ownership is the best explanation for falling transit ridership.

If this explanation is sound, it poses a daunting problem for transit operators. When lower-income people graduate from transit to driving, transit agencies bear a cost, but the other side of that cost is a large benefit for both the people who start driving *and* for society overall. In the aggregate, Southern Californians drive too much, once the various costs of pollution, congestion and crashes are accounted for. But some Southern Californians – the poorest of them – drive *too little*, and both their lives and the region as a whole would be improved if they drove a bit more. The low-income person who acquires a vehicle often makes fewer trips than an affluent person (driving is expensive) and the trips they make are often essential, and have social benefits that exceed their social costs. A car trip by a low-income household is more likely than one by an affluent household to involve finding and keeping work, getting to school, or accessing better health and daycare options. These trips might modestly increase congestion and pollution, but they have large paybacks in employment, earnings, and overall well-being that exceed those costs. Affluent households, in contrast, make many more trips, and more trips whose social value is lower (they might increase congestion and pollution not just by driving to work, but also by driving to lunch, or to visit friends).

Given the powerful difference a car can make in the lives of low-income people, efforts by transit agencies to recapture low-income riders can have a perverse impact: they would target some of the highest-value vehicle trips in the region. Ideally, of course, transit agencies would pull people away from lower-value vehicle trips. It makes little sense to deprive a low-income person of their trip to work at a location poorly served by transit, when affluent people routinely drive for errands and visits that they could easily complete by foot or transit. A quick trip to a store a half mile away (or a trip to a store a mile away when a comparable store is a quarter mile away) is more likely to have social costs that exceed its benefits. And these trips are abundant.

Given this situation, and given the ambitious greenhouse gas reduction goals that California has assigned to transit, planners and operators may need to expand transit's target market. Transit should by no means abdicate its social service mission, but as we stated in the introduction, per capita transit use falls when current riders stop riding, and when new residents don't start. Transit today relies on a high rate of use by a narrow base of people. But if that narrow base of people is acquiring vehicles, transit's healthy future lies in reversing those circumstances, and striving for at least a low rate of use by a broad base of people. The SCAG region lost 72 million transit rides annually from 2012 to 2016. This number seems daunting,

but the region has 18.8 million people. According to the CHTS, about 77 percent of those people (roughly 14.5 million), ride transit rarely or never. Herein lies vast untapped potential. If one out of every four of those people replaced a single driving trip with a transit trip once every two weeks, annual ridership would grow by 96 million—more than compensating for the losses of recent years.

The obstacle to this outcome, however, is large and beyond the direct control of transit operators: driving is too cheap. The large subsidies given to transit in recent years pale next to the longstanding subsidies for automobiles that are hidden in unpriced road use, unpriced or underpriced street parking, high minimum parking requirements, and taxpayer- and developer-financed road-widenings. If public policy does not adequately confront underpriced driving, then transit ridership will likely continue to falter, and transit will not meet its ambitious environmental goals.

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Appendix A

Fare regression output.

Descriptive Data (data are in panel form; observations are agency-years). Route coverage = route miles/service area. Headways = route miles/ (revenue miles/service miles). The service area is in square miles. Service area and service population are the difference between UZA average level of service and service area/ service population.

Absolute Levels

	mean	sd	n
unlinked passenger trips	15,213,380	130,300,000	9,030
vehicle revenue hours	395,268	1,659,684	9,037
headway	33.07	51.01	6,954
route coverage	3.18	6.32	6,922
service area	713.2	8,963.3	9,793
service population	718,549	1,729,745	9,794
fare (2015$)	$1.71	$2.52	8,647

Change from Prior Year

	mean	sd	n
change in unlinked passenger trips	170,442	6,338,137	8,037
change in vehicle revenue hours	5,015	87,867	8,047
change in headway	0.02	18.81	6,277
change in route coverage	-0.07	5.45	6,255
change in service area	0.0	0.4	8,852
change in service population	0	0	8,853
change in fare (2015$)	$0.01	$0.64	7,702

Regression Output:
The regressions are linear and all variables are naturally log-transformed.
Models were run with the dependent variables being levels and changes.
Model 4 is the model discussed in the text.

* change from the prior year is calculated using absolute levels

y=passenger trips	(1)	(2)	(3)	(4)
VARIABLES	OLS	OLS	OLS	FE
vehicle revenue hours	1.264***	1.312***	1.289***	0.754***
	(0.00974)	(0.00950)	(0.00947)	(0.0108)
headway	-0.155***	-0.193***	-0.209***	-0.0152*
	(0.0128)	(0.0129)	(0.0116)	(0.00833)
route coverage	0.0416***	0.0635***	0.0824***	0.0164***
	(0.00809)	(0.00815)	(0.00697)	(0.00555)
service area (miles^2)	-0.126***	0.00594		
	(0.0129)	(0.0104)		
service pop	0.214***		0.139***	0.0380***
	(0.0128)		(0.0102)	(0.00679)
fare (2015$)	-0.0270**	-0.0105	-0.0249**	-0.162***
	(0.0106)	(0.0108)	(0.0107)	(0.00677)
Constant	0.0223	-0.434***	-0.134	5.708***
	(0.0918)	(0.0895)	(0.0910)	(0.123)
Observations	6,767	6,767	6,767	6,767
R-squared	0.868	0.862	0.866	0.498
Number of agencies				620

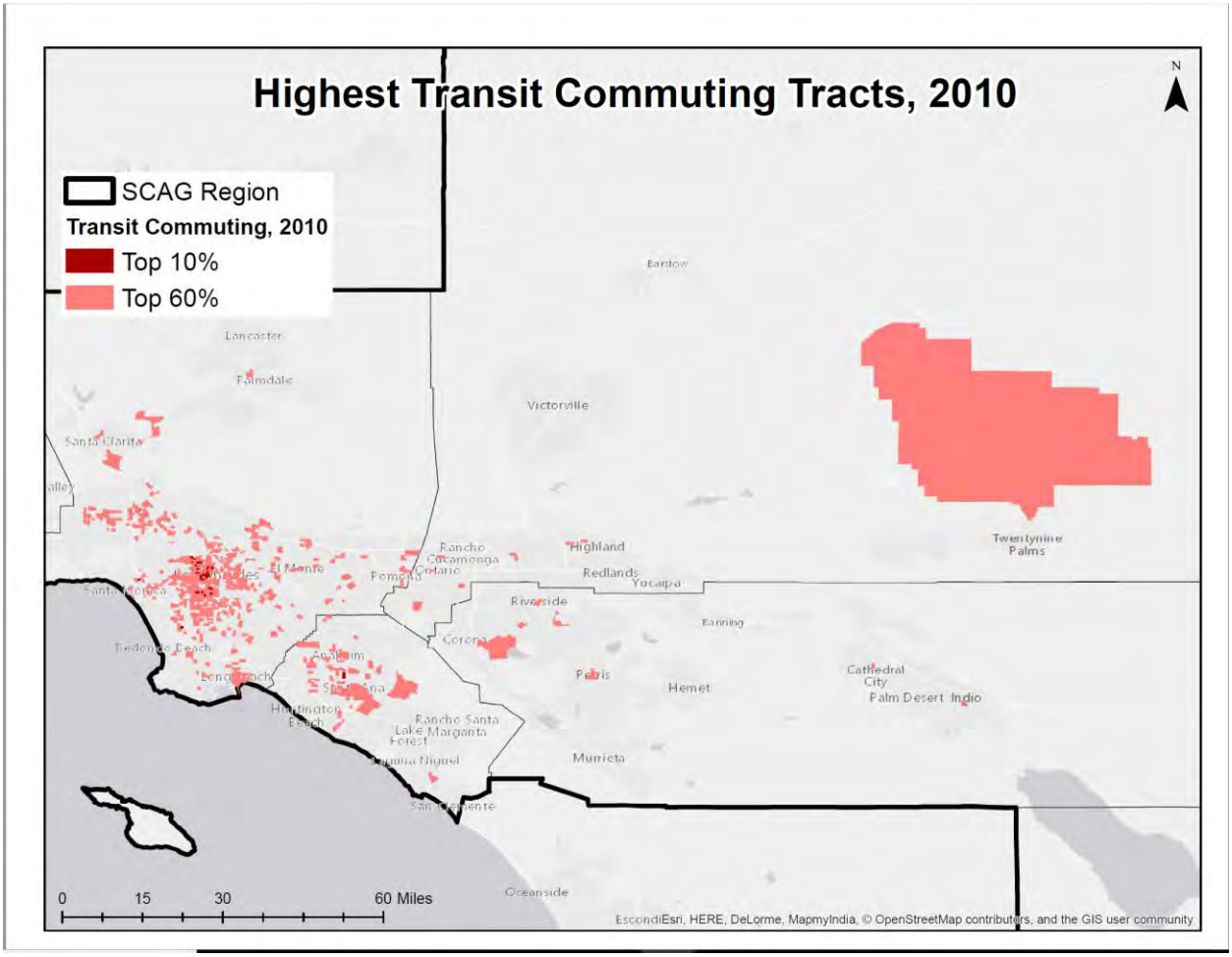
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

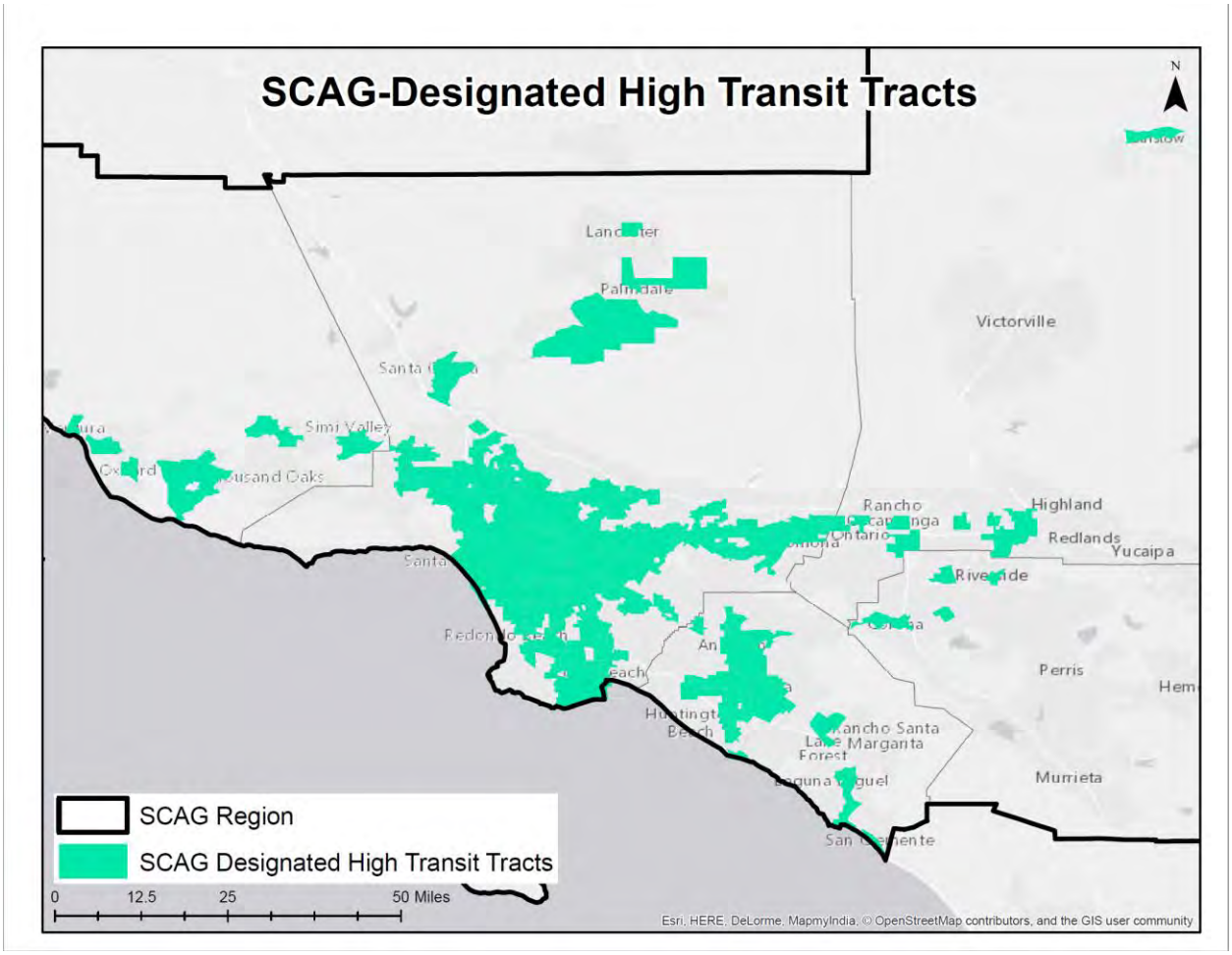
y=change in passenger trips	(1)	(2)	(3)	(4)
VARIABLES	OLS	OLS	OLS	FE
change in VRH	32.08***	32.08***	32.08***	27.19***
	(1.096)	(1.096)	(1.096)	(1.147)
change in headway	-12,979**	-12,973**	-13,133**	-9,162
	(5,995)	(5,994)	(5,981)	(6,095)
change in route coverage	28,528	28,498	29,237	18,718
	(20,642)	(20,637)	(20,554)	(21,703)
change in service area (miles^2)	-98,385	-95,007		
	(263,173)	(259,378)		
change in service pop	19,953		3,401	
	(262,368)		(258,587)	
change in fares (2015$)	-287,046*	-286,709*	-287,167*	-301,584*
	(172,940)	(172,869)	(172,928)	(178,218)
Constant	31,160	31,496	31,138	59,982
	(86,058)	(85,937)	(86,052)	(84,787)
Observations	6,102	6,102	6,102	6,102
R-squared	0.124	0.124	0.124	0.094
Number of agencies				602

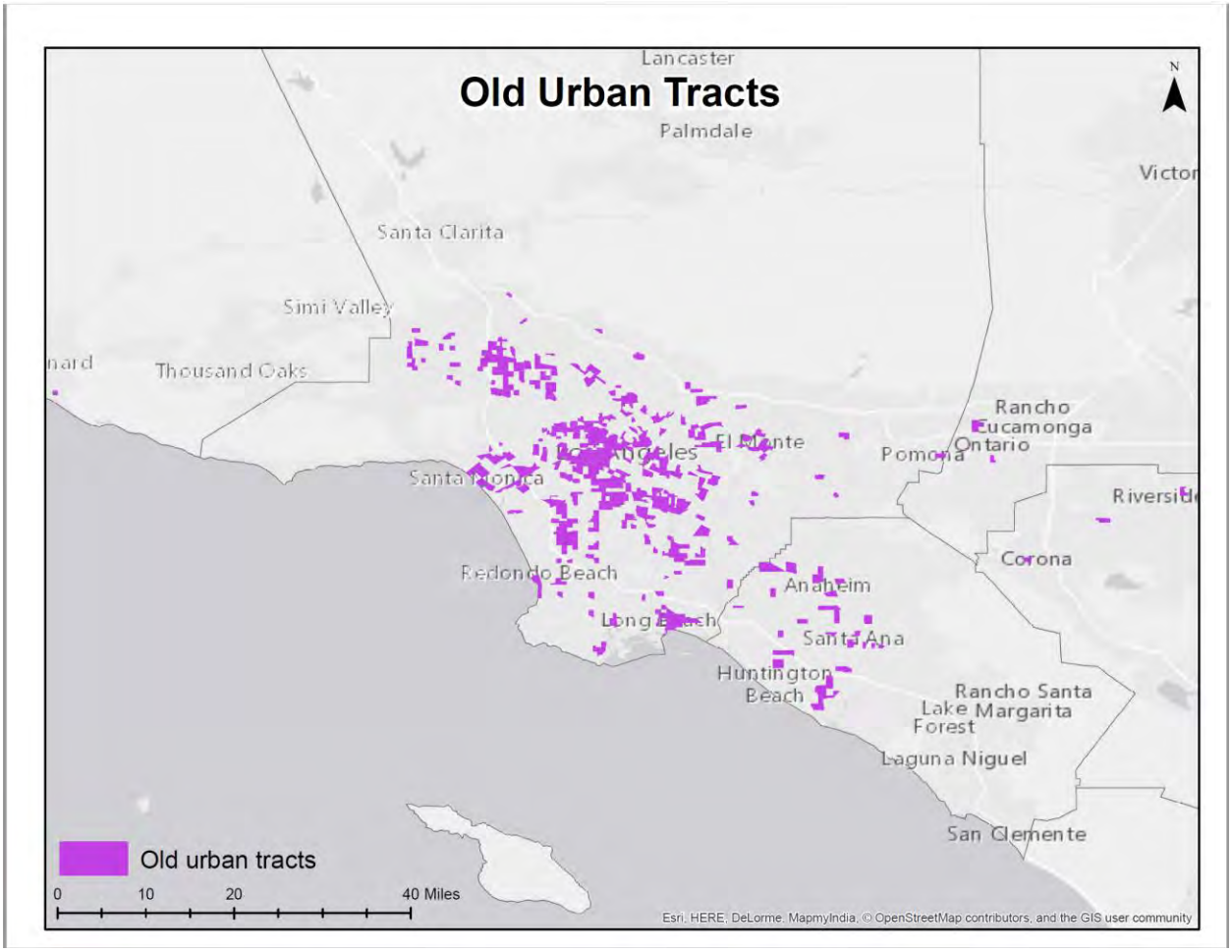
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix B

Neighborhood change attributes and locations.





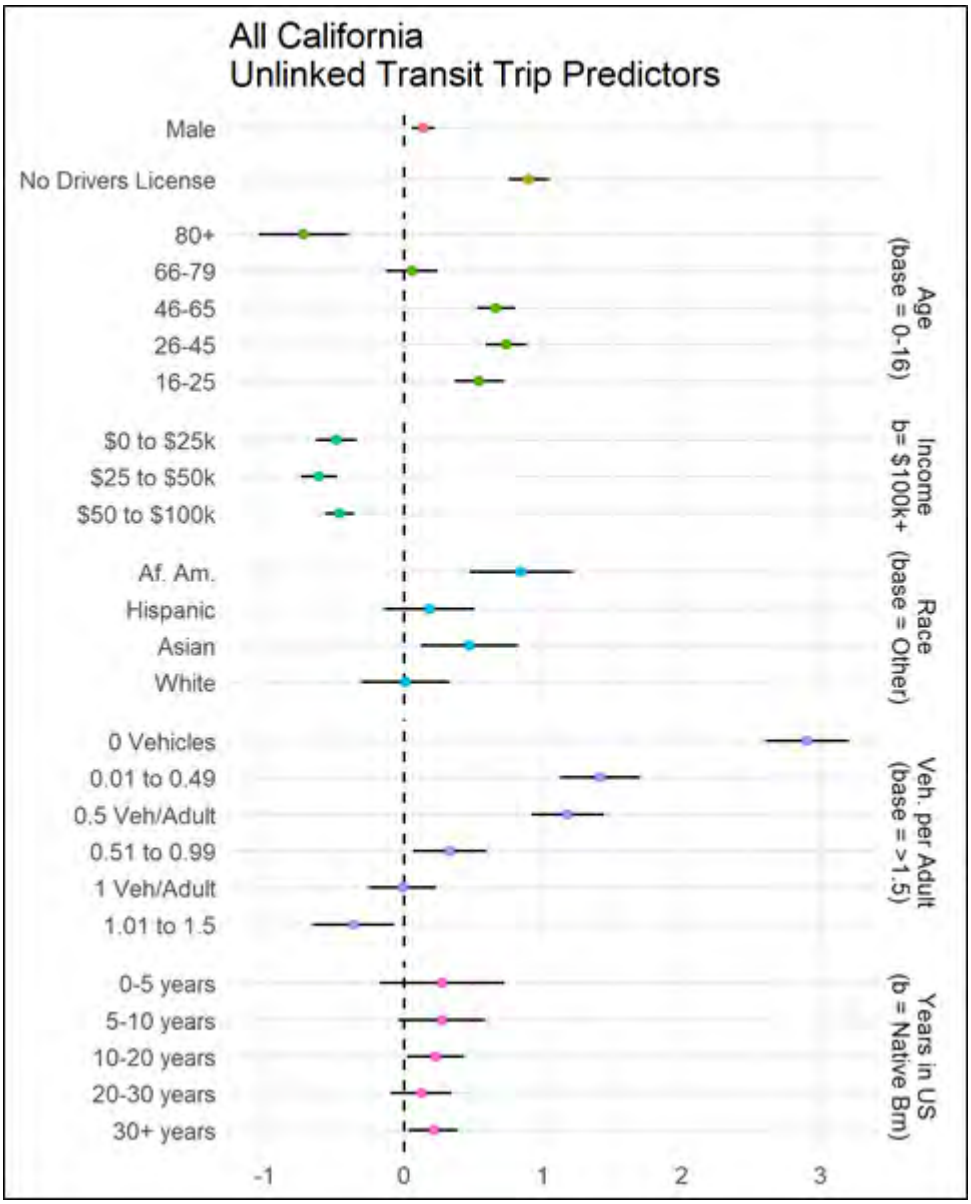


Mean Characteristics of Transit-Rich Neighborhoods:
Change over time in Tracts with High Concentrations of Transit Commuters in 2000

10 Percent	**2000**	**2010**	**2015**
% Transit Use	38%	33%	33%
% Poverty	38%	32%	36%
% Foreign Born	63%	62%	57%
% 0-Vehicle Households	43%	34%	34%
% NH White	9%	10%	8%
N Tracts	48	48	48
% of All Tracts in Region	1.4%	1.2%	1.2%
Total Tracts	3,393	3,954	3,953
60 Percent	**2000**	**2010**	**2015**
% Transit Use	16%	14%	13%
% Poverty	27.79	23.13	26.55
% Foreign Born	47.84	44.31	42.10
% 0-Vehicle Households	22.78%	15.76%	15.68%
% NH White	14.39	17.42	15.86
N Tracts	691	691	691
% of All Tracts in Region	20.4%	17.5%	17.5%
Total Tracts	3,393	3,954	3,953

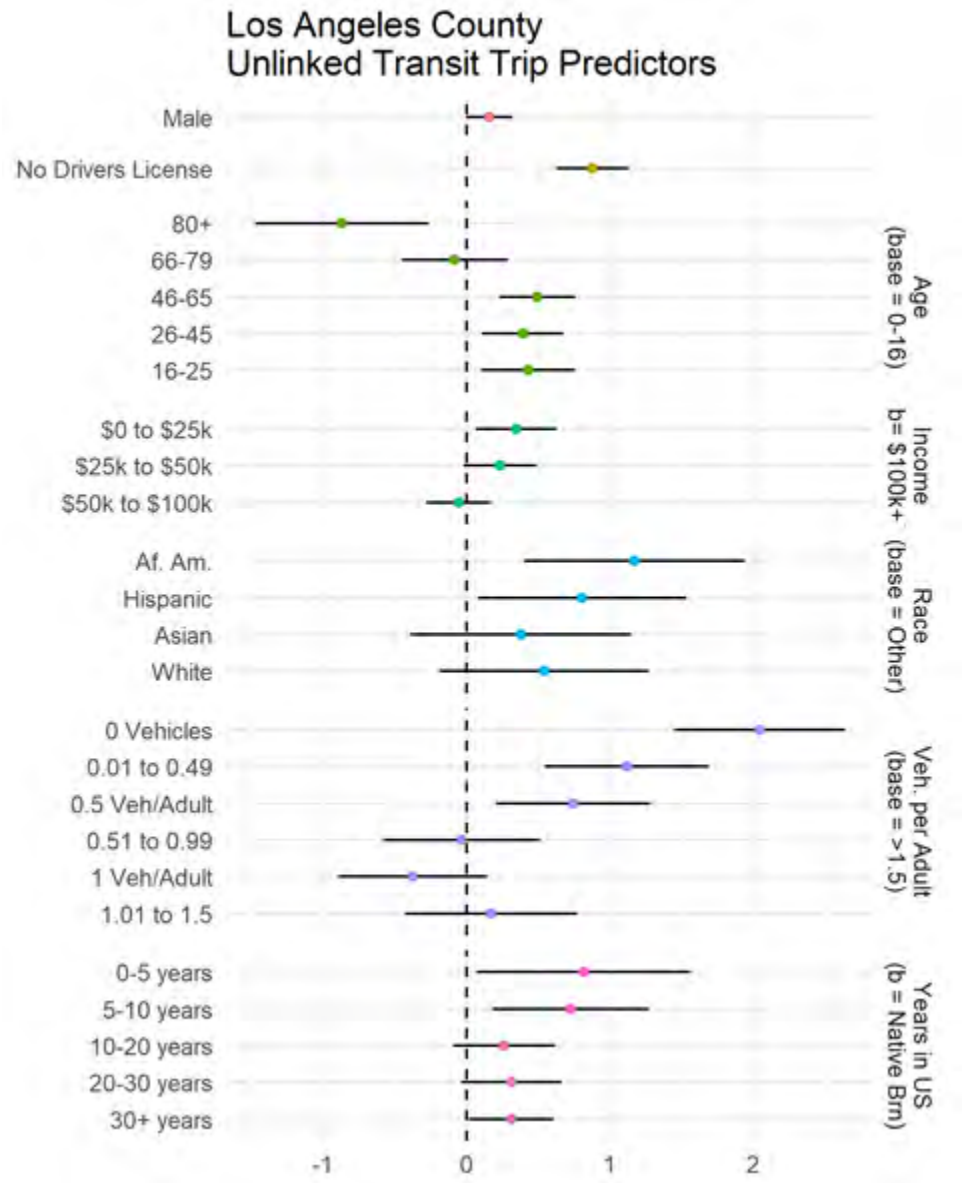
Sources: US Census 2000, ACS 2006-2010, ACS 2011-2015

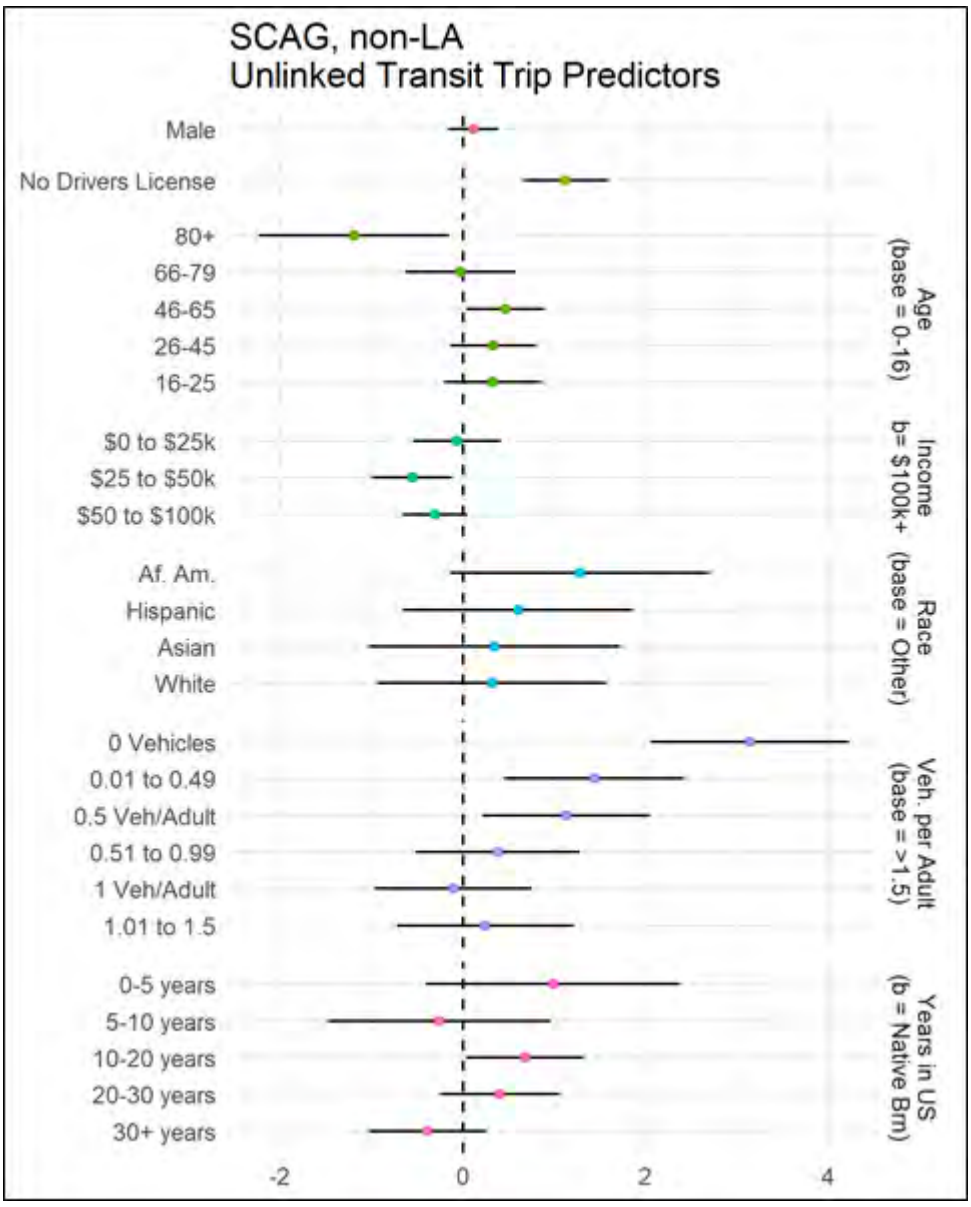
Appendix C

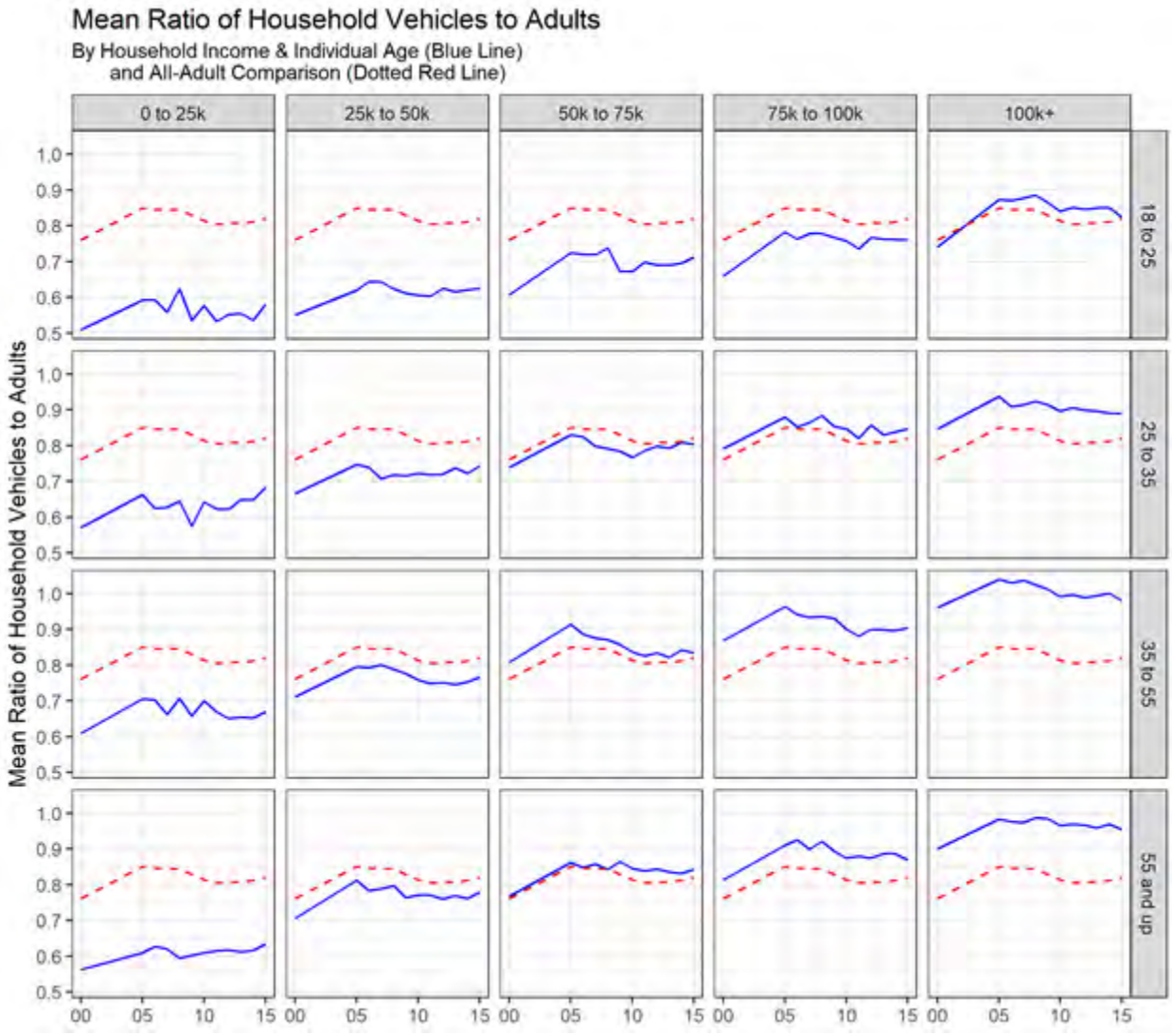


Appendix D

Additional trip predictors and descriptive data.







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PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2008

ESTIMATED UNITED STATES UNLINKED TRANSIT PASSENGER TRIPS

Period	2008	2007	Percent Change 2007-2008
OCTOBER	981,964	946,754	3.72%
NOVEMBER	846,302	870,712	-2.80%
DECEMBER	841,756	808,452	4.12%
Fourth Quarter	2,670,023	2,625,918	1.68%

CALENDAR COMPARISON

	OCTOBER		NOVEMBER		DECEMBER	
	2008	2007	2008	2007	2008	2007
Weekdays	22	22	18	20	21	19
Saturdays	4	4	5	4	4	5
Sundays	4	4	5	4	4	5
Holidays	1	1	2	2	2	2

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS *

	CURRENT YEAR (a)(b)					PRECEDING YEAR (a)(b)					% CHANGE (b)	
MODE	**OCT '08**	**NOV '08**	**DEC '08**	**OCT '08-DEC '08**	**JAN '08-DEC '08**	**OCT '07**	**NOV '07**	**DEC '07**	**OCT '07-DEC '07**	**JAN '07-DEC '07**	**Fourth Quarter**	**Year -to-Date**
	(000's)	(000's)	(000's)	(000's)	(000's)	(000's)	(000's)	(000's)	(000's)	(000's)	(000's)	(000's)
Heavy Rail	318,949	280,977	290,522	890,447	3,570,785	315,646	293,380	280,438	889,464	3,450,429	0.11%	3.49%
Light Rail	41,750	36,985	36,078	114,813	465,283	38,744	37,342	34,992	111,077	429,765	3.36%	8.26%
Commuter Rail	41,669	37,947	38,390	118,006	476,505	40,402	39,259	37,030	116,691	455,118	1.13%	4.70%
Trolleybus	9,877	8,934	8,231	27,043	109,406	9,335	8,441	7,861	25,636	102,868	5.49%	6.36%
Bus Population Group												
2,000,000+	359,551	310,547	301,977	972,075	3,916,271	347,154	316,745	292,918	956,816	3,801,693	1.59%	3.01%
500,000 to 1,999,999	107,550	86,921	85,739	280,211	1,102,168	99,232	90,471	81,593	271,295	1,051,725	3.29%	4.80%
100,000 to 499,999	43,616	35,545	32,038	111,199	430,945	40,574	36,131	29,564	106,269	400,593	4.64%	7.58%
Below 100,000	20,766	15,940	15,578	52,284	191,627	19,159	16,113	13,314	48,586	175,312	7.61%	9.31%
Bus Total	531,483	448,952	435,333	1,415,768	5,641,011	506,118	459,460	417,388	1,382,966	5,429,322	2.37%	3.90%
Demand Response	20,611	17,664	17,727	56,002	222,967	19,194	17,740	16,115	53,049	210,650	5.57%	5.85%
Other (c)	17,624	14,843	15,476	47,944	197,716	17,316	15,091	14,628	47,035	192,437	1.93%	2.74%
United States Total	981,964	846,302	841,756	2,670,023	10,683,673	946,754	870,712	808,452	2,625,918	10,270,589	1.68%	4.02%
Canada	149,839	142,577	123,814	416,230	1,976,567	156,330	141,573	123,274	421,177	1,930,028	-1.17%	2.41%

* Preliminary information based on data from reporting systems.

Note: Data may differ from that included in Federal Transit Administration reports due to differences in data calculation procedures and in periods of time covered.

(a) Transit agencies assigned by urbanized areas or urban places of less than 50,000 population outside urbanized areas based on 2000 U.S. Census Population.

(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

(c) Includes aerial tramway, automated guideway, cable car, ferryboat, inclined plane, monorail, and vanpool.

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HEAVY RAIL
PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2008

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City	Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	CURRENT YEAR (a)(b) OCT '08 (000's)	CURRENT YEAR (a)(b) NOV '08 (000's)	CURRENT YEAR (a)(b) DEC '08 (000's)	CURRENT YEAR (a)(b) OCT '08-DEC '08 (000's)	CURRENT YEAR (a)(b) JAN '08-DEC '08 (000's)	PRECEDING YEAR (a)(b) OCT '07 (000's)	PRECEDING YEAR (a)(b) NOV '07 (000's)	PRECEDING YEAR (a)(b) DEC '07 (000's)	PRECEDING YEAR (a)(b) OCT '07-DEC '07 (000's)	PRECEDING YEAR (a)(b) JAN '07-DEC '07 (000's)	% CHANGE (b) 4th Qtr Chng	% CHANGE (b) YT Chr
CA Los Angeles	Los Angeles County MTA	139.7	3893.1	3593.1	3750.8	11237.0	45457.7	3600.2	3470.1	3415.1	10485.4	42222.5	7.17%	7.66
CA San Francisco	San Francisco Bay Area RTD	379.4	10616.6	9132.6	9521.1	29270.3	117171.2	10242.2	9547.6	9124.6	28914.4	112444.0	1.23%	4.20
DC Washington	Washington Metro Area TA	944.4	26189.9	21452.4	21759.3	69401.6	293235.0	25755.6	22579.4	20315.8	68650.8	283790.5	1.09%	3.33
FL Miami	Miami-Dade Transit Agency	63.8	1757.6	1536.0	1480.8	4774.4	19075.9	1494.1	1431.5	1462.9	4388.5	17627.0	8.79%	8.22
GA Atlanta	Metro Atlanta Rapid Tr Auth	269.7	7982.6	6565.4	6480.8	21028.8	86029.9	7320.7	6741.1	6290.2	20352.0	79239.2	3.33%	8.57
IL Chicago	Chicago Transit Authority	640.7	18947.5	15777.3	14839.3	49564.1	198137.3	17725.7	15419.4	13689.6	46834.7	190272.9	5.83%	4.13
MA Boston	Massachusetts Bay Tr Auth	485.8	14016.0	11701.1	11585.5	37302.6	150408.3	11904.8	11787.9	10882.3	34575.0	139387.6	7.89%	7.91
MD Baltimore	Maryland Transit Admin	53.3	1305.3	1007.5	1049.3	3362.1	14179.7	1170.7	1147.6	1071.3	3389.6	13555.5	-0.81%	4.60
NJ Jersey City	Port Authority of NY & NJ	250.4	6765.0	5734.9	6040.3	18540.2	74937.7	6636.4	5961.9	5673.4	18271.7	71593.5	1.47%	4.67
NJ Lindenwold	Port Authority Transit Corp	36.6	1044.7	787.3	821.3	2653.3	10337.9	863.7	782.0	713.7	2359.4	9406.5	12.46%	9.90
NY New York	MTA New York City Transit	7,880.0	217250.1	192850.8	204576.3	614677.2	2451201.6	219826.4	203935.2	199578.6	623340.2	2383218.1	-1.39%	2.85
NY New York	MTA Staten Island Railway	15.9	412.2	340.3	359.1	1111.6	4380.0	432.4	391.1	348.4	1171.9	4129.3	-5.15%	6.07
OH Cleveland	Greater Cleveland Reg TA	NA	572.0	481.8	483.9	1537.7	5929.7	562.8	479.0	437.0	1478.8	5908.2	3.98%	0.36
PA Philadelphia	Southeastern Penn TA	318.0	7266.6	9276.3	7017.5	23560.4	90999.3	7303.1	9009.2	6831.3	23143.6	89418.7	1.80%	1.77
PR San Juan	Puerto Rico DOT	36.8	929.7	739.8	756.2	2425.7	9304.2	807.4	696.9	603.8	2108.1	8215.2	15.07%	13.26
REPORTED TOTAL		**11,514.4**	**318,948.9**	**280,976.6**	**290,521.5**	**890,447.0**	**3,570,785.4**	**315,646.2**	**293,379.9**	**280,438.0**	**889,464.1**	**3,450,428.7**	**0.11%**	**3.49**
PROJECTED TOTAL			**318,948.9**	**280,976.6**	**290,521.5**	**890,447.0**	**3,570,785.4**	**315,646.2**	**293,379.9**	**280,438.0**	**889,464.1**	**3,450,428.7**	**0.11%**	**3.49**

* Preliminary information based on data from reporting systems.

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LIGHT RAIL
PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2008

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City	Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	CURRENT YEAR (a)(b) OCT '08 (000's)	CURRENT YEAR (a)(b) NOV '08 (000's)	CURRENT YEAR (a)(b) DEC '08 (000's)	CURRENT YEAR (a)(b) OCT '08-DEC '08 (000's)	CURRENT YEAR (a)(b) JAN '08-DEC '08 (000's)	PRECEDING YEAR (a)(b) OCT '07 (000's)	PRECEDING YEAR (a)(b) NOV '07 (000's)	PRECEDING YEAR (a)(b) DEC '07 (000's)	PRECEDING YEAR (a)(b) OCT '07-DEC '07 (000's)	PRECEDING YEAR (a)(b) JAN '07-DEC '07 (000's)	% CHANGE (b) 4th Qtr Chng	% CHANGE (b) YT Chr
CA Los Angeles	Los Angeles County MTA	136.4	3,989.6	3,513.8	3,513.9	11,017.3	45,343.4	3,629.5	3,441.6	3,211.2	10,282.3	42,221.6	7.15%	7.39
CA Oceanside	North County Transit District	7.5	217.0	181.8	173.8	572.6	1,900.9	0.0	0.0	0.0	0.0	0.0	NA	N
CA Sacramento	Sacramento Reg Tr Dist	60.5	1,627.0	1,404.1	1,397.8	4,428.9	17,146.4	1,363.4	1,367.9	1,238.6	3,969.9	14,993.7	11.56%	14.36
CA San Diego	San Diego Trolley, Inc.	103.9	2,892.1	2,906.8	2,788.0	8,586.9	36,054.6	3,192.5	3,212.3	3,337.4	9,742.2	36,836.1	-11.86%	-2.12
CA San Francisco	San Francisco Muni Rwy	156.9	4,488.5	3,908.0	3,933.5	12,330.0	48,889.6	4,466.2	3,908.0	3,933.5	12,307.7	46,167.9	0.18%	5.90
CA San Jose	Santa Clara Valley Trp Auth	34.4	1,031.5	874.9	807.9	2,714.3	10,797.6	888.4	787.7	745.7	2,421.8	10,302.5	12.08%	4.81
CO Denver	Regional Trp District	68.8	2,030.8	1,687.8	1,619.1	5,337.7	20,617.5	1,847.2	1,574.6	1,384.3	4,806.1	18,664.6	11.06%	10.46
FL Tampa	Hillsborough Area Reg TA	0.9	38.9	27.3	40.2	106.4	436.8	40.1	30.3	39.7	110.1	431.8	-3.36%	1.16
LA New Orleans	Regional Transit Auth	15.1	485.4	402.5	402.8	1,290.7	4,708.1	152.9	225.9	293.0	671.8	1,481.9	92.13%	217.71
MA Boston	Massachusetts Bay Tr Auth	229.2	6,957.4	5,838.5	5,489.2	18,285.1	80,337.2	7,110.8	6,811.4	6,186.8	20,109.0	81,843.0	-9.07%	-1.84
MD Baltimore	Maryland Transit Admin	33.6	833.2	646.3	635.7	2,115.2	8,054.1	711.8	680.2	602.8	1,994.8	7,085.1	6.04%	13.68
MN Minneapolis	Metro Transit	30.2	892.7	849.8	844.0	2,586.5	10,221.6	863.7	868.0	843.4	2,575.1	9,100.9	0.44%	12.31
MO Saint Louis	Bi-State Dev Agency	59.0	1,810.6	1,566.5	1,488.4	4,865.5	20,212.7	1,642.1	1,542.4	1,418.5	4,603.0	19,070.0	5.70%	5.99
NC Charlotte	Charlotte Area Transit	21.7	476.4	400.1	424.5	1,301.0	4,975.0	0.0	161.2	356.0	517.2	517.2	151.55%	861.91
NJ Newark	New Jersey Transit Corp	NA	2,060.1	1,704.6	1,842.0	5,606.7	21,858.3	1,790.2	1,683.4	1,675.0	5,148.6	19,710.8	8.90%	10.90
NY Buffalo	Niagara Frontier Trp Auth	26.3	677.6	591.6	599.7	1,868.9	6,869.0	498.5	514.2	414.4	1,427.1	5,543.1	30.96%	23.92
OH Cleveland	Greater Cleveland Reg TA	NA	320.3	307.1	296.7	924.1	3,278.4	296.3	288.6	258.4	843.3	3,198.8	9.58%	2.49
OR Portland	Tri-County Metro Trp Dist	107.6	3,132.7	2,707.0	2,912.0	8,751.7	35,772.9	3,027.6	2,839.0	2,667.8	8,534.4	34,700.4	2.55%	3.09
PA Philadelphia	Southeastern Penn TA	112.6	2,720.0	3,152.3	2,451.1	8,323.4	32,453.3	2,482.1	3,060.5	2,305.3	7,847.9	26,317.6	6.06%	23.31
PA Pittsburgh	Port Auth of Allegheny Co	25.7	676.0	569.0	591.0	1,836.0	7,306.2	647.5	615.1	571.3	1,833.9	6,922.6	0.11%	5.54
TN Memphis	Memphis Area Transit Auth	2.8	100.9	72.3	61.6	234.8	1,060.3	92.2	81.0	53.8	227.0	1,079.3	3.44%	-1.76
TX Dallas	Dallas Area Rapid Transit	69.8	1,851.3	1,571.4	1,652.9	5,075.6	19,826.5	1,662.8	1,493.5	1,530.2	4,686.5	17,990.6	8.30%	10.20
TX Galveston	City of Galveston/Island Tr	0.0	0.0	0.0	0.0	0.0	17.9	1.1	0.8	1.2	3.1	31.5	-100.00%	-43.17
TX Houston	Metro Tr Auth of Harris Co	39.3	1,081.7	906.0	863.6	2,851.3	11,640.2	1,142.2	985.3	883.3	3,010.8	12,013.6	-5.30%	-3.11
UT Salt Lake City	Utah Transit Authority	44.8	1,221.3	1,082.0	1,124.9	3,428.2	13,949.0	1,095.7	1,078.1	960.2	3,134.0	12,425.3	9.39%	12.26%

State and Primary City	Transit Agency	AVG WKDY (000's)	OCT '08 (000's)	NOV '08 (000's)	DEC '08 (000's)	OCT '08-DEC '08 (000's)	JAN '08-DEC '08 (000's)	OCT '07 (000's)	NOV '07 (000's)	DEC '07 (000's)	OCT '07-DEC '07 (000's)	JAN '07-DEC '07 (000's)	4th Qtr Chng	YTD Chng
WA Seattle	King County Dept of Trp	1.3	35.1	29.4	31.3	95.8	414.2	0.0	0.0	0.0	0.0	0.0	NA	N
WA Seattle	Sound Transit	3.2	89.3	72.7	81.9	243.9	930.7	86.4	79.6	69.4	235.4	919.1	3.61%	1.26
WI Kenosha	Kenosha Transit	NA	3.4	3.0	2.2	8.6	65.7	3.4	2.7	2.7	8.8	62.7	-2.27%	4.78
REPORTED TOTAL		**1,391.3**	**41,740.8**	**36,976.6**	**36,069.7**	**114,787.1**	**465,138.1**	**38,734.6**	**37,333.3**	**34,983.9**	**111,051.8**	**429,631.7**	**3.36%**	**8.26**
PROJECTED TOTAL			**41,750.4**	**36,984.9**	**36,077.6**	**114,812.9**	**465,283.4**	**38,743.5**	**37,341.7**	**34,991.6**	**111,076.8**	**429,765.1**	**3.36%**	**8.26**

* Preliminary information based on data from reporting systems.

Note: Data may differ from that included in Federal Transit Administration reports due to differences in data calculation procedures and in periods of time covered.

(a) Transit agencies assigned by urbanized areas or urban places of less than 50,000 population outside urbanized areas based on 2000 U.S. Census Population.

(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

(c) Includes missing agencies (Central Arkansas TA).

(d) Charlotte Area Transit light rail service began on November 24, 2007.

(e) North County Transit District light rail service began on March 9, 2008.

(f) King County DOT light rail service began on December 14, 2007.

(g) City of Galveston light rail service suspended starting in September 2008 due to hurricane damage.

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COMMUTER RAIL
PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2008

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City		Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	CURRENT YEAR (a)(b) OCT '08 (000's)	CURRENT YEAR (a)(b) NOV '08 (000's)	CURRENT YEAR (a)(b) DEC '08 (000's)	CURRENT YEAR (a)(b) OCT '08-DEC '08 (000's)	CURRENT YEAR (a)(b) JAN '08-DEC '08 (000's)	PRECEDING YEAR (a)(b) OCT '07 (000's)	PRECEDING YEAR (a)(b) NOV '07 (000's)	PRECEDING YEAR (a)(b) DEC '07 (000's)	PRECEDING YEAR (a)(b) OCT '07-DEC '07 (000's)	PRECEDING YEAR (a)(b) JAN '07-DEC '07 (000's)	% CHANGE (b) 4th Qtr Chng	% CHANGE (b) YT Chn
CA	Los Angeles	Southern California RRA	43.0	1110.0	891.9	918.8	2920.7	12161.2	1,017.9	917.0	814.2	2,749.1	11,146.8	6.24%	9.10
CA	Oakland	Capitol Corridor Joint Power	NA	157.4	140.3	130.3	428.0	1730.8	134.8	136.7	119.5	391.0	1,490.4	9.46%	16.13
CA	Oceanside	North County Transit District	5.1	139.6	105.3	101.5	346.4	1699.0	126.7	121.9	105.8	354.4	1,615.6	-2.26%	5.16
CA	San Carlos	Caltrain	39.1	1160.5	1007.4	967.0	3134.9	12803.1	996.1	948.4	853.4	2,797.9	11,377.2	12.04%	12.53
CA	Stockton	San Joaquin Reg Rail Com	3.2	86.0	60.0	57.4	203.4	865.7	73.0	63.5	53.2	189.7	755.0	7.22%	14.66
CT	New Haven	Connecticut DOT	2.1	54.1	46.7	47.4	148.2	568.1	44.5	43.0	38.7	126.2	483.7	17.43%	17.45
FL	Pompano Beach	South Florida RTA (Tri-Rail)	14.8	400.8	346.6	343.8	1091.2	4303.6	326.1	306.1	292.9	925.1	3,502.5	17.95%	22.87
IL	Chicago	Metra	324.3	6630.1	6048.7	5906.1	18584.9	77166.9	6,647.1	6,370.6	5,833.4	18,851.1	75,099.6	-1.41%	2.75
IN	Chesterton	Northern IN Commuter TD	13.0	356.9	300.8	320.3	978.0	4180.4	373.4	336.6	319.8	1,029.8	4,245.9	-5.03%	-1.54
MA	Boston	Massachusetts Bay Tr Auth	148.6	3718.0	3202.1	3313.7	10233.8	39721.4	3,546.6	3,290.2	3,127.9	9,964.7	38,961.6	2.70%	1.95
MD	Baltimore	Maryland Transit Admin	30.4	738.7	562.8	614.0	1915.5	8068.7	718.1	637.3	576.2	1,931.6	7,720.3	-0.83%	4.51
ME	Portland	Northern NE Passenger RA	1.3	44.4	39.8	29.7	113.9	482.9	36.2	35.1	34.2	105.5	381.9	7.96%	26.45
NJ	Newark	New Jersey Transit Corp	NA	6656.7	6416.5	6533.1	19606.3	77527.6	6,582.0	6,533.4	6,480.5	19,595.9	74,854.5	0.05%	3.57
NM	Albuquerque	New Mexico Dept of Trp	2.5	61.0	37.6	99.1	197.7	676.7	47.9	36.4	33.1	117.4	500.9	68.40%	35.10
NY	New York	MTA Long Island Rail Road	348.5	8766.0	7816.0	8310.1	24892.1	103215.1	8,768.0	8,432.0	8,144.0	25,344.0	100,368.0	-1.78%	2.84
NY	New York	MTA Metro-North Railroad	291.9	7457.3	6466.7	7119.4	21043.4	82948.7	7,264.1	6,782.1	6,820.0	20,866.2	79,724.7	0.85%	4.04
PA	Harris-Phil	Penn DOT (Keystone)	1.7	50.1	42.6	42.8	135.5	513.9	41.0	40.4	36.8	118.2	436.5	14.64%	17.73
PA	Philadelphia	Southeastern Penn TA	128.0	2900.3	3520.8	2600.7	9021.8	36167.7	2,797.5	3,480.6	2,675.1	8,953.2	33,360.4	0.77%	8.42
TX	Dallas-Ft Worth	Trinity Railway Express	10.5	327.5	214.3	215.7	757.5	2850.4	234.1	204.2	186.2	624.5	2,497.2	21.30%	14.14
UT	Salt Lake City	Utah Transit Authority	5.8	167.6	123.2	133.1	423.9	1385.9	0.0	0.0	0.0	0.0	0.0	NA	N
VA	Alexandria	Virginia Railway Express	15.8	352.7	271.1	297.4	921.2	3817.1	324.0	277.4	245.1	846.5	3,504.1	8.82%	8.93
WA	Seattle	Sound Transit	10.0	259.3	219.3	221.4	700.0	2668.6	231.3	197.5	175.1	603.9	2,156.5	15.91%	23.75
REPORTED TOTAL			**1,439.8**	**41,595.0**	**37,880.5**	**38,322.8**	**117,798.3**	**475,523.5**	**40,330.4**	**39,190.4**	**36,965.1**	**116,485.9**	**454,183.3**	**1.13%**	**4.70**
PROJECTED TOTAL (c)				**41,669.1**	**37,947.1**	**38,389.9**	**118,006.1**	**476,504.5**	**40,402.2**	**39,259.3**	**37,029.8**	**116,691.3**	**455,118.1**	**1.13%**	**4.70%**

State and Primary City	Transit Agency	AVG WKDY (000's)	OCT '08 (000's)	NOV '08 (000's)	DEC '08 (000's)	OCT '08-DEC '08 (000's)	JAN '08-DEC '08 (000's)	OCT '07 (000's)	NOV '07 (000's)	DEC '07 (000's)	OCT '07-DEC '07 (000's)	JAN '07-DEC '07 (000's)	4th Qtr Chng	YTD Chng

* Preliminary information based on data from reporting systems.

Note: Data may differ from that included in Federal Transit Administration reports due to differences in data calculation procedures and in periods of time covered.

(a) Transit agencies assigned by urbanized areas or urban places of less than 50,000 population outside urbanized areas based on 2000 U.S. Census Population.

(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

(c) Includes missing agencies (Alaska Railroad Corp).

(d) Utah Transit Authority services began on April 26, 2008.

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TROLLEY BUS
PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2008

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City	Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	OCT '08 (000's)	NOV '08 (000's)	DEC '08 (000's)	OCT '08-DEC '08 (000's)	JAN '08-DEC '08 (000's)	PRECEDING YEAR (a)(b) OCT '07 (000's)	NOV '07 (000's)	DEC '07 (000's)	OCT '07-DEC '07 (000's)	JAN '07-DEC '07 (000's)	% CHANGE (b) 4th Qtr Chng	YT Chn
CA San Francisco	San Francisco Muni Rwy	224.4	6500.0	5786.7	5495.2	17781.9	73351.2	6,467.5	5,786.7	5,495.2	17,749.4	71,520.0	0.18%	2.56
MA Boston	Massachusetts Bay Tr Auth	12.5	314.5	268.2	284.5	867.2	3798.3	354.2	308.5	276.5	939.2	3,769.3	-7.67%	0.77
PA Philadelphia	Southeastern Penn TA	18.2	445.9	502.2	392.6	1340.7	3516.1	0.0	0.0	0.0	0.0	0.0	NA	N
WA Seattle	King County Dept of Trp	78.8	2203.1	1929.6	1708.7	5841.4	24168.1	2,121.9	1,922.5	1,755.1	5,799.5	23,278.5	0.72%	3.82
REPORTED TOTAL		**333.8**	**9,463.5**	**8,486.7**	**7,881.0**	**25,831.2**	**104,833.7**	**8,943.6**	**8,017.7**	**7,526.8**	**24,488.1**	**98,567.8**	**5.48%**	**6.36**
PROJECTED TOTAL			**9,877.1**	**8,934.3**	**8,231.2**	**27,042.6**	**109,406.2**	**9,334.5**	**8,440.6**	**7,861.3**	**25,636.4**	**102,868.1**	**5.49%**	**6.36**

* Preliminary information based on data from reporting systems.

Note: Data may differ from that included in Federal Transit Administration reports due to differences in data calculation procedures and in periods of time covered.

(a) Transit agencies assigned by urbanized areas or urban places of less than 50,000 population outside urbanized areas based on 2000 U.S. Census Population.

(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

(c) Includes missing agencies (Greater Dayton RTA).

(d) SEPTA service reinstated May 2008.

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LARGEST BUS AGENCIES
PUBLIC TRANSPORTATION RIDERSHIP REPORT

(Transit Agencies in Urbanized Areas of 1,000,000 or more population that operate 400 or more peak-hour buses)

Fourth Quarter 2008

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City	Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	OCT '08 (000's)	NOV '08 (000's)	DEC '08 (000's)	OCT '08-DEC '08 (000's)	JAN '08-DEC '08 (000's)	PRECEDING YEAR (a)(b) OCT '07 (000's)	NOV '07 (000's)	DEC '07 (000's)	OCT '07-DEC '07 (000's)	JAN '07-DEC '07 (000's)	% CHANGE (b) 4TH Qtr Chng	YT Chr
AZ Phoenix	City of Phoenix PTD	171.0	4798.8	3972.5	4101.1	12872.4	48949.6	4305.1	3558.3	3231.8	11095.2	43902.7	16.02%	11.50
CA Los Angeles	Los Angeles County MTA	1,212.8	35454.9	30786.8	30069.3	96311.0	395124.8	34223.6	31150.6	29652.0	95026.2	397727.7	1.35%	-0.65
CA Oakland	Alameda-Contra Costa TD	NA	7248.0	5836.4	5184.6	18269.0	71663.2	7094.4	5712.8	5074.8	17882.0	67810.2	2.16%	5.68
CA Orange	Orange County Transp Auth	214.0	6361.2	5360.5	5051.9	16773.6	68867.2	5981.6	5498.9	5147.5	16628.0	65552.8	0.88%	5.06
CA San Diego	San Diego Transit Corp	93.5	2846.6	2329.6	2247.5	7423.7	29653.2	2417.6	2302.4	2104.7	6824.7	26966.0	8.78%	9.97
CA San Francisco	San Francisco Muni Rwy	273.4	8201.5	6976.0	6703.4	21880.9	91138.6	8160.7	6976.0	6703.4	21840.1	90314.2	0.19%	0.91
CA San Jose	Santa Clara Valley Trp Auth	114.9	3390.3	2853.5	2721.1	8964.9	34774.6	3064.1	2711.9	2524.1	8300.1	32892.1	8.01%	5.72
CO Denver	Regional Trp District	225.5	6430.2	5312.5	5218.7	16961.4	66807.5	5992.9	5286.4	4778.1	16057.4	61513.4	5.63%	8.61
DC Washington	Washington Metro Area TA	445.3	12340.0	10207.8	10451.8	32999.6	135669.7	12174.8	10790.6	9934.0	32899.4	131604.3	0.30%	3.09
FL Miami	Miami-Dade Transit Agency	292.0	7804.1	7249.3	7070.3	22123.7	86409.2	7471.7	6996.3	7156.6	21624.6	84218.3	2.31%	2.60
GA Atlanta	Metro Atlanta Rapid Tr Auth	237.4	6766.0	5735.5	5834.2	18335.7	72112.5	5794.8	5103.1	5236.7	16134.6	66990.3	13.64%	7.65
IL Arlington Heights	PACE Suburban Bus	117.6	3371.2	2691.5	2478.6	8541.3	34653.2	3229.7	2784.6	2468.2	8482.5	33543.3	0.69%	3.31
IL Chicago	Chicago Transit Authority	1,037.2	31133.0	26186.5	24298.1	81617.6	328199.2	29273.9	26024.2	24078.1	79376.2	309271.4	2.82%	6.12
MA Boston	Massachusetts Bay Tr Auth	347.2	9449.6	8215.3	8350.1	26015.0	107354.2	9679.8	8274.1	7467.1	25421.0	104398.5	2.34%	2.83
MD Baltimore	Maryland Transit Admin	301.3	7238.8	5808.6	5922.8	18970.2	73865.1	6048.4	5907.3	5396.7	17352.4	67976.3	9.32%	8.66
MI Detroit	City of Detroit Dept of Trp	129.6	3781.5	3098.0	2895.4	9774.9	38480.7	3225.3	2901.7	2621.5	8748.5	36170.7	11.73%	6.39
MN Minneapolis	Metro Transit	234.1	6510.0	5430.8	5319.6	17260.4	71613.4	6318.6	5670.4	5187.6	17176.6	67865.9	0.49%	5.52
MO Saint Louis	Bi-State Dev Agency	116.5	3414.1	2842.9	2609.3	8866.3	35025.6	3064.7	2781.1	2527.0	8372.8	32176.3	5.89%	8.86
NJ Newark	New Jersey Transit Corp	NA	15200.4	12885.5	13106.1	41192.0	166219.8	14626.6	13339.0	12434.6	40400.2	159736.2	1.96%	4.06
NY New York	MTA New York City Transit	2,385.3	67457.3	59242.7	60382.3	187082.3	746977.4	68338.3	61406.3	58016.4	187761.0	738039.6	-0.36%	1.21
OH Cincinnati	Southwest Ohio RTA	63.9	2027.1	1600.1	1610.3	5237.5	21354.1	2171.1	1921.5	1776.0	5868.6	22709.1	-10.75%	-5.97
OH Cleveland	Greater Cleveland Reg TA	209.5	4668.5	3797.4	3742.2	12208.1	47571.8	4529.3	4032.5	3594.2	12156.0	47663.1	0.43%	-0.19
OR Portland	Tri-County Metro Trp Dist	214.8	6152.0	5214.9	5213.3	16580.2	66759.2	5604.2	5094.9	4897.7	15596.8	62609.6	6.31%	6.63
PA Philadelphia	Southeastern Penn TA	558.3	13214.2	15752.0	12294.8	41261.0	164944.6	13211.3	16287.2	12352.3	41850.8	162135.9	-1.41%	1.73
PA Pittsburgh	Port Auth of Allegheny Co	198.7	5557.0	4661.0	4502.0	14720.0	58373.6	5502.0	4886.0	4283.4	14671.4	59320.4	0.33%	-1.60%

State and Primary City	Transit Agency	AVG WKDY (000's)	OCT '08 (000's)	NOV '08 (000's)	DEC '08 (000's)	OCT '08-DEC '08 (000's)	JAN '08-DEC '08 (000's)	OCT '07 (000's)	NOV '07 (000's)	DEC '07 (000's)	OCT '07-DEC '07 (000's)	JAN '07-DEC '07 (000's)	4TH Qtr Chng	YTD Chng
TX Dallas	Dallas Area Rapid Transit	156.9	4533.1	3559.0	3395.5	11487.6	45419.2	4170.2	3647.5	3284.6	11102.3	44357.1	3.47%	2.39
TX Houston	Metro Tr Auth of Harris Co	269.5	7532.9	6137.8	5681.7	19352.4	81175.3	8169.1	7503.9	7126.2	22799.2	85867.7	-15.12%	-5.46
TX San Antonio	VIA Metropolitan Transit	144.2	4292.0	3669.2	3469.1	11430.3	45893.9	4006.4	3623.6	3470.7	11100.7	41657.6	2.97%	10.17
WA Seattle	King County Dept of Trp	321.8	8882.4	7436.5	6804.9	23123.8	94109.2	8138.2	7402.1	6618.4	22158.7	87187.7	4.36%	7.94
WI Milwaukee	Milwaukee County Tr Sys	177.4	5043.9	4265.1	4067.9	13376.9	50950.6	4839.5	4517.0	3981.6	13338.1	50716.3	0.29%	0.46
REPORTED TOTAL		**10,263.9**	**311,100.6**	**269,115.2**	**260,797.9**	**841,013.7**	**3,380,110.2**	**300,827.9**	**274,092.2**	**253,126.0**	**828,046.1**	**3,282,894.7**	**1.57%**	**2.96**

* Preliminary information based on data from reporting systems.

Note: Data may differ from that included in Federal Transit Administration reports due to differences in data calculation procedures and in periods of time covered.

(a) Transit agencies assigned by urbanized areas or urban places of less than 50,000 population outside urbanized areas based on 2000 U.S. Census Population.

(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

State and Primary City		Transit Agency	Mode	Average Weekday (000's)	Trips for Oct '08 (000's)	Trips for Nov '08 (000's)	Trips for Dec '08 (000's)	Trips Thru Dec '08 (000's)	Trips for Oct '07 (000's)	Trips for Nov '07 (000's)	Trips for Dec '07 (000's)	Trips Thru Dec '07 (000's)	Quarterly Change	Year-to-Da Chan
AL	Birmingham	Birmingham-Jefferson Co TA	DR	0.5	13.0	10.7	12.0	138.8	12.3	10.4	9.6	125.3	10.53%	10.77
AL	Birmingham	Birmingham-Jefferson Co TA	MB	11.4	281.3	222.9	226.6	3,042.4	272.3	249.8	250.2	3,101.3	-5.37%	-1.9(
AL	Birmingham	Birmingham-Jefferson Co TA	TOTAL	11.9	294.3	233.6	238.6	3,181.2	284.6	260.2	259.8	3,226.6	-4.74%	-1.41
AZ	Bullhead City	Bullhead Area Transit System	DR	0.1	1.9	1.2	1.4	20.5	1.9	1.9	1.8	25.0	-19.64%	-18.0(
AZ	Bullhead City	Bullhead Area Transit System	MB	0.5	15.4	12.2	13.4	162.9	13.0	12.4	12.5	148.4	8.18%	9.77
AZ	Bullhead City	Bullhead Area Transit System	TOTAL	0.6	17.3	13.4	14.8	183.4	14.9	14.3	14.3	173.4	4.60%	5.77
AZ	Flagstaff	Coconino County Transp Services	DR	0.1	2.6	2.1	2.1	25.0	1.9	1.8	1.5	21.6	30.77%	15.74
AZ	Flagstaff	Coconino County Transp Services	MB	3.2	96.5	77.3	76.9	1,003.9	77.0	70.0	62.4	792.6	19.72%	26.6(
AZ	Flagstaff	Coconino County Transp Services	TOTAL	3.3	99.1	79.4	79.0	1,028.9	78.9	71.8	63.9	814.2	19.99%	26.37
AZ	Glendale	Glendale Transit	DR	0.3	8.1	6.6	7.8	91.9	7.1	6.8	6.7	83.5	9.22%	10.06
AZ	Glendale	Glendale Transit	MB	0.4	10.3	9.1	9.8	112.0	7.3	6.6	6.3	144.2	44.55%	-22.33
AZ	Glendale	Glendale Transit	TOTAL	0.7	18.4	15.7	17.6	203.9	14.4	13.4	13.0	227.7	26.72%	-10.45
AZ	Phoenix	City of Phoenix PTD	DR	2.0	54.5	44.9	47.8	632.3	59.4	53.1	52.4	653.5	-10.73%	-3.24
AZ	Phoenix	City of Phoenix PTD	MB	171.0	4,798.8	3,972.5	4,101.1	48,949.6	4,305.1	3,558.3	3,231.8	43,902.7	16.02%	11.5(
AZ	Phoenix	City of Phoenix PTD	TOTAL	NA	NA	NA	NA	NA	4,364.5	3,611.4	3,284.2	44,556.2	NA	N
AZ	Phoenix	Valley Metro	DR	0.9	23.7	20.5	22.1	252.4	22.0	20.0	19.0	236.4	8.69%	6.77
AZ	Phoenix	Valley Metro	MB	29.6	803.7	654.9	689.7	8,354.0	771.2	689.3	542.8	7,345.8	7.24%	13.72
AZ	Phoenix	Valley Metro	VP	4.0	92.7	75.5	88.9	887.8	70.6	63.4	53.2	733.6	37.34%	21.02
AZ	Phoenix	Valley Metro	TOTAL	34.5	920.1	750.9	800.7	9,494.2	863.8	772.7	615.0	8,315.8	9.78%	14.17
AZ	Tucson	City of Tucson MTS	MB	62.7	2,095.7	1,751.6	1,737.1	21,015.3	1,787.0	1,617.9	1,493.7	18,425.4	14.00%	14.06
AZ	Tucson	City of Tucson MTS	TOTAL	62.7	2,095.7	1,751.6	1,737.1	21,015.3	1,787.0	1,617.9	1,493.7	18,425.4	14.00%	14.06
CA	Alturas	Modoc Transportation Agency	MB	0.4	9.2	7.8	9.5	126.1	9.4	9.7	9.5	118.5	-7.34%	6.41
CA	Alturas	Modoc Transportation Agency	TOTAL	0.4	9.2	7.8	9.5	126.1	9.4	9.7	9.5	118.5	-7.34%	6.41
CA	Antioch	Eastern Contra Costa Tr Auth	DR	0.5	11.2	9.5	10.3	118.0	9.6	9.3	9.0	107.3	11.11%	9.97
CA	Antioch	Eastern Contra Costa Tr Auth	MB	9.8	272.1	217.2	204.9	2,760.6	240.1	216.5	191.7	2,511.7	7.08%	9.91
CA	Antioch	Eastern Contra Costa Tr Auth	TOTAL	10.3	283.3	226.7	215.2	2,878.6	249.7	225.8	200.7	2,619.0	7.25%	9.91
CA	Bakersfield	Golden Empire Transit District	DR	0.2	6.0	5.0	5.1	62.3	5.7	4.9	4.5	62.9	6.62%	-0.95
CA	Bakersfield	Golden Empire Transit District	MB	25.2	728.7	598.9	585.9	7,442.4	617.5	564.6	526.5	6,595.9	11.99%	12.83
CA	Bakersfield	Golden Empire Transit District	TOTAL	25.4	734.7	603.9	591.0	7,504.7	623.2	569.5	531.0	6,658.8	11.95%	12.7(
CA	Benicia	Rio Vista Delta Breeze	DR	0.0	0.0	0.1	0.2	1.5	0.3	0.3	0.2	4.4	-62.50%	-65.91
CA	Benicia	Rio Vista Delta Breeze	MB	0.0	1.1	0.8	0.8	8.4	0.3	0.3	0.2	3.4	>100%	>10(
CA	Benicia	Rio Vista Delta Breeze	TOTAL	0.0	1.1	0.9	1.0	9.9	0.6	0.6	0.4	7.8	87.50%	26.92

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CA	Concord	Central Contra Costa TA	DR	NA	16.0	13.0	14.6	173.1	15.0	13.5	12.7	161.4	5.83%	7.25
CA	Concord	Central Contra Costa TA	MB	NA	476.6	332.5	NA	NA	421.0	365.2	310.4	4,284.2	NA	N
CA	Concord	Central Contra Costa TA	TOTAL	NA	492.6	345.5	NA	NA	436.0	378.7	323.1	4,445.6	NA	N
CA	Culver City	Culver CityBus	MB	19.9	586.6	484.2	450.4	5,998.0	490.7	432.7	400.1	5,398.6	14.94%	11.10
CA	Culver City	Culver CityBus	TOTAL	19.9	586.6	484.2	450.4	5,998.0	490.7	432.7	400.1	5,398.6	14.94%	11.10
CA	Davis	Unitrans	MB	16.0	442.7	326.7	169.9	3,275.7	438.9	337.1	161.8	3,148.2	0.16%	4.05
CA	Davis	Unitrans	TOTAL	16.0	442.7	326.7	169.9	3,275.7	438.9	337.1	161.8	3,148.2	0.16%	4.05
CA	Delano	Delano Area Rapid Transit	DR	NA	1.4	1.0	1.2	NA	1.1	0.8	0.7	14.7	38.46%	N
CA	Delano	Delano Area Rapid Transit	MB	0.4	11.7	9.4	8.9	NA	8.1	5.4	4.5	68.9	66.67%	N
CA	Delano	Delano Area Rapid Transit	TOTAL	NA	13.1	10.4	10.1	NA	9.2	6.2	5.2	83.6	63.11%	N
CA	Fairfield	Fairfield/Suisun Transit Sys	DR	NA	1.9	NA	NA	NA	2.0	1.8	1.8	21.7	NA	N
CA	Fairfield	Fairfield/Suisun Transit Sys	MB	3.6	100.0	71.0	74.0	1,001.8	92.6	79.0	70.3	913.0	1.28%	9.73
CA	Fairfield	Fairfield/Suisun Transit Sys	TOTAL	NA	101.9	NA	NA	NA	94.6	80.8	72.1	934.7	NA	N
CA	Fresno	Fresno Area Express	DR	0.8	21.4	18.6	18.6	229.6	19.6	17.9	16.5	217.9	8.52%	5.37
CA	Fresno	Fresno Area Express	MB	49.0	1,390.7	1,069.0	1,101.9	14,031.3	1,206.9	1,068.3	941.4	12,518.8	10.73%	12.08
CA	Fresno	Fresno Area Express	TOTAL	49.8	1,412.1	1,087.6	1,120.5	14,260.9	1,226.5	1,086.2	957.9	12,736.7	10.69%	11.97
CA	Glendale	City of Glendale	DR	0.2	5.0	4.1	4.5	NA	5.0	4.2	4.1	55.5	2.26%	N
CA	Glendale	City of Glendale	MB	4.7	198.0	144.4	132.2	NA	207.2	187.0	140.0	2,201.0	-11.16%	N
CA	Glendale	City of Glendale	TOTAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
CA	Lancaster	Antelope Valley Transit Auth	DR	2.6	3.2	2.6	2.6	36.8	2.9	2.7	2.4	34.1	5.00%	7.92
CA	Lancaster	Antelope Valley Transit Auth	MB	NA	320.4	254.1	220.7	3,199.2	279.2	249.4	214.4	2,958.0	7.03%	8.15
CA	Lancaster	Antelope Valley Transit Auth	TOTAL	NA	323.6	256.7	223.3	3,236.0	282.1	252.1	216.8	2,992.1	7.00%	8.15
CA	Livermore	Livermore/Amador Valley TA	DR	0.2	5.7	4.8	5.1	66.6	6.0	5.4	5.0	68.0	-4.88%	-2.06
CA	Livermore	Livermore/Amador Valley TA	MB	8.3	226.4	175.5	178.8	2,296.5	212.4	181.9	168.4	2,179.9	3.20%	5.35
CA	Livermore	Livermore/Amador Valley TA	TOTAL	8.5	232.1	180.3	183.9	2,363.1	218.4	187.3	173.4	2,247.9	2.97%	5.12
CA	Los Angeles	Access Services	DR	6.9	250.4	221.4	227.9	2,711.0	225.3	206.7	194.6	2,466.4	11.67%	9.92
CA	Los Angeles	Access Services	TOTAL	6.9	250.4	221.4	227.9	2,711.0	225.3	206.7	194.6	2,466.4	11.67%	9.92
CA	Los Angeles	Los Angeles County MTA	HR	139.7	3,893.1	3,593.1	3,750.8	45,457.7	3,600.2	3,470.1	3,415.1	42,222.5	7.17%	7.66
CA	Los Angeles	Los Angeles County MTA	LR	136.4	3,989.6	3,513.8	3,513.9	45,343.4	3,629.5	3,441.6	3,211.2	42,221.6	7.15%	7.39
CA	Los Angeles	Los Angeles County MTA	MB	1,212.8	35,454.9	30,786.8	30,069.3	395,124.8	34,223.6	31,150.6	29,652.0	397,727.7	1.35%	-0.65
CA	Los Angeles	Los Angeles County MTA	TOTAL	1,488.9	43,337.6	37,893.7	37,334.0	485,925.9	41,453.3	38,062.3	36,278.3	482,171.8	2.39%	0.78
CA	Los Angeles	Southern California RRA	CR	43.0	1,110.0	891.9	918.8	12,161.2	1,017.9	917.0	814.2	11,146.8	6.24%	9.10
CA	Los Angeles	Southern California RRA	TOTAL	43.0	1,110.0	891.9	918.8	12,161.2	1,017.9	917.0	814.2	11,146.8	6.24%	9.10

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CA	Merced	Merced County Transit (The Bus)	DR	0.5	12.6	9.2	10.5	136.5	13.6	10.5	9.1	114.1	-2.71%	19.63
CA	Merced	Merced County Transit (The Bus)	MB	3.3	84.9	61.9	62.4	828.0	138.1	69.5	55.0	963.3	-20.34%	-14.05
CA	Merced	Merced County Transit (The Bus)	TOTAL	3.8	97.5	71.1	72.9	964.5	151.7	80.0	64.1	1,077.4	-18.36%	-10.48
CA	Modesto	Modesto Area Express	DR	0.4	9.8	8.8	9.2	111.7	9.3	8.6	8.3	104.9	6.11%	6.48
CA	Modesto	Modesto Area Express	MB	11.0	310.4	243.5	240.3	3,189.0	292.4	261.6	242.3	2,994.1	-0.26%	6.51
CA	Modesto	Modesto Area Express	TOTAL	11.4	320.2	252.3	249.5	3,300.7	301.7	270.2	250.6	3,099.0	-0.06%	6.51
CA	Montebello	Montebello Bus Lines	DR	0.2	4.9	4.5	4.9	50.5	1.9	2.2	2.6	18.1	>100%	>100
CA	Montebello	Montebello Bus Lines	MB	37.7	841.1	704.7	665.1	9,778.2	864.0	791.9	734.9	9,732.1	-7.52%	0.47
CA	Montebello	Montebello Bus Lines	TOTAL	37.9	846.0	709.2	670.0	9,828.7	865.9	794.1	737.5	9,750.2	-7.19%	0.81
CA	Monterey	Monterey-Salinas Transit	DR	0.4	10.8	9.1	9.2	107.5	7.7	6.6	5.9	74.3	44.06%	44.68
CA	Monterey	Monterey-Salinas Transit	MB	14.0	425.7	354.7	332.0	4,704.5	410.5	369.9	326.9	4,707.5	0.46%	-0.06
CA	Monterey	Monterey-Salinas Transit	TOTAL	14.4	436.5	363.8	341.2	4,812.0	418.2	376.5	332.8	4,781.8	1.24%	0.63
CA	Norwalk	Norwalk Transit System	DR	0.1	2.6	2.2	2.2	27.3	2.2	1.8	1.7	23.4	22.81%	16.67
CA	Norwalk	Norwalk Transit System	MB	9.7	264.9	205.6	197.7	2,839.7	256.8	209.8	204.8	2,426.0	-0.48%	17.05
CA	Norwalk	Norwalk Transit System	TOTAL	9.8	267.5	207.8	199.9	2,867.0	259.0	211.6	206.5	2,449.4	-0.28%	17.05
CA	Oakland	Alameda-Contra Costa TD	DR	NA	63.2	53.0	56.5	682.8	59.9	52.6	50.1	647.6	6.21%	5.44
CA	Oakland	Alameda-Contra Costa TD	MB	NA	7,248.0	5,836.4	5,184.6	71,663.2	7,094.4	5,712.8	5,074.8	67,810.2	2.16%	5.68
CA	Oakland	Alameda-Contra Costa TD	TOTAL	NA	7,311.2	5,889.4	5,241.1	72,346.0	7,154.3	5,765.4	5,124.9	68,457.8	2.20%	5.68
CA	Oakland	Capitol Corridor Joint Powers Auth	CR	NA	157.4	140.3	130.3	1,730.8	134.8	136.7	119.5	1,490.4	9.46%	16.13
CA	Oakland	Capitol Corridor Joint Powers Auth	TOTAL	NA	157.4	140.3	130.3	1,730.8	134.8	136.7	119.5	1,490.4	9.46%	16.13
CA	Oceanside	North County Transit District	CR	5.1	139.6	105.3	101.5	1,699.0	126.7	121.9	105.8	1,615.6	-2.26%	5.16
CA	Oceanside	North County Transit District	DR	0.4	10.9	9.1	9.1	163.7	14.9	15.6	14.1	189.7	-34.75%	-13.71
CA	Oceanside	North County Transit District	LR	7.5	217.0	181.8	173.8	1,900.9	0.0	0.0	0.0	0.0	NA	N
CA	Oceanside	North County Transit District	MB	29.3	867.7	701.5	648.7	9,565.5	820.7	826.6	747.5	9,973.4	-7.39%	-4.09
CA	Oceanside	North County Transit District	TOTAL	42.4	1,235.2	997.7	933.1	13,329.1	962.3	964.1	867.4	11,778.7	13.32%	13.16
CA	Orange	Orange County Transp Auth	DR	NA	NA	NA	NA	NA	118.2	106.7	93.1	1,251.9	NA	N
CA	Orange	Orange County Transp Auth	MB	214.0	6,361.2	5,360.5	5,051.9	68,867.2	5,981.6	5,498.9	5,147.5	65,552.8	0.88%	5.06
CA	Orange	Orange County Transp Auth	VP	2.9	68.2	50.9	60.7	641.6	NA	NA	NA	NA	NA	N
CA	Orange	Orange County Transp Auth	TOTAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
CA	Oxnard	Gold Coast Transit	DR	0.3	8.3	6.6	6.9	81.6	7.4	6.7	5.9	78.5	9.00%	3.95
CA	Oxnard	Gold Coast Transit	MB	11.6	339.6	262.3	297.7	3,636.9	304.8	271.6	260.6	3,410.5	7.48%	6.64
CA	Oxnard	Gold Coast Transit	TOTAL	11.9	347.9	268.9	304.6	3,718.5	312.2	278.3	266.5	3,489.0	7.51%	6.58
CA	Redding	Redding Area Bus Authority	DR	0.4	7.9	6.3	6.7	83.3	7.2	6.3	5.9	78.8	7.73%	5.71
CA	Redding	Redding Area Bus Authority	MB	2.3	62.4	49.9	52.2	657.1	57.4	52.8	49.8	645.9	2.81%	1.73%
CA	Redding	Redding Area Bus Authority	TOTAL	2.7	70.3	56.2	58.9	740.4	64.6	59.1	55.7	724.7		

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CA	Riverside	Riverside Transit Agency	DR	1.2	32.8	27.0	28.7	334.8	26.3	24.2	22.9	270.9	20.57%	23.59
CA	Riverside	Riverside Transit Agency	MB	26.8	784.3	630.7	608.8	7,712.6	634.4	571.5	536.3	6,877.7	16.16%	12.14
CA	Riverside	Riverside Transit Agency	TOTAL	28.0	817.1	657.7	637.5	8,047.4	660.7	595.7	559.2	7,148.6	16.34%	12.57
CA	Sacramento	Sacramento Reg Tr Dist	DR	NA	NA	NA	NA	NA	29.6	26.9	25.8	320.0	NA	N
CA	Sacramento	Sacramento Reg Tr Dist	LR	60.5	1,627.0	1,404.1	1,397.8	17,146.4	1,363.4	1,367.9	1,238.6	14,993.7	11.56%	14.36
CA	Sacramento	Sacramento Reg Tr Dist	MB	59.4	1,701.8	1,356.5	1,309.4	17,169.8	1,542.2	1,427.8	1,268.5	16,528.1	3.05%	3.88
CA	Sacramento	Sacramento Reg Tr Dist	TOTAL	NA	NA	NA	NA	NA	2,935.2	2,822.6	2,532.9	31,841.8	NA	N
CA	San Bernardino	OMNITRANS	DR	1.7	41.9	32.8	36.0	447.1	41.9	36.9	33.0	462.4	-0.98%	-3.31
CA	San Bernardino	OMNITRANS	MB	49.9	1,465.5	1,189.2	1,139.7	15,041.1	1,294.9	1,155.2	1,084.3	14,557.4	7.36%	3.32
CA	San Bernardino	OMNITRANS	TOTAL	51.6	1,507.4	1,222.0	1,175.7	15,488.2	1,336.8	1,192.1	1,117.3	15,019.8	7.10%	3.12
CA	San Carlos	Caltrain	CR	39.1	1,160.5	1,007.4	967.0	12,803.1	996.1	948.4	853.4	11,377.2	12.04%	12.53
CA	San Carlos	Caltrain	TOTAL	39.1	1,160.5	1,007.4	967.0	12,803.1	996.1	948.4	853.4	11,377.2	12.04%	12.53
CA	San Carlos	San Mateo County Tran Dist	DR	1.2	30.7	26.4	27.2	331.7	30.3	27.4	24.7	320.2	2.31%	3.59
CA	San Carlos	San Mateo County Tran Dist	MB	51.7	1,471.0	1,141.7	1,220.3	14,974.7	1,350.0	1,242.2	1,148.8	14,478.2	2.46%	3.43
CA	San Carlos	San Mateo County Tran Dist	TOTAL	52.8	1,501.7	1,168.1	1,247.5	15,306.4	1,380.3	1,269.6	1,173.5	14,798.4	2.46%	3.43
CA	San Diego	San Diego Metrop Transit System	DR	1.8	49.9	39.4	38.2	585.1	45.8	47.6	40.7	617.0	-4.92%	-5.17
CA	San Diego	San Diego Metrop Transit System	MB	73.2	2,030.7	1,638.6	1,545.0	21,430.7	1,806.5	1,786.2	1,570.0	20,583.5	1.00%	4.12
CA	San Diego	San Diego Metrop Transit System	TOTAL	75.0	2,080.6	1,678.0	1,583.2	22,015.8	1,852.3	1,833.8	1,610.7	21,200.5	0.85%	3.85
CA	San Diego	San Diego Transit Corp	MB	93.5	2,846.6	2,329.6	2,247.5	29,653.2	2,417.6	2,302.4	2,104.7	26,966.0	8.78%	9.97
CA	San Diego	San Diego Transit Corp	TOTAL	93.5	2,846.6	2,329.6	2,247.5	29,653.2	2,417.6	2,302.4	2,104.7	26,966.0	8.78%	9.97
CA	San Diego	San Diego Trolley, Inc.	LR	103.9	2,892.1	2,906.8	2,788.0	36,054.6	3,192.5	3,212.3	3,337.4	36,836.1	-11.86%	-2.12
CA	San Diego	San Diego Trolley, Inc.	TOTAL	103.9	2,892.1	2,906.8	2,788.0	36,054.6	3,192.5	3,212.3	3,337.4	36,836.1	-11.86%	-2.12
CA	San Francisco	Golden Gate Bridge, Hwy & TD	DR	0.4	10.5	8.6	9.0	112.3	9.9	8.7	8.0	105.0	5.64%	6.95
CA	San Francisco	Golden Gate Bridge, Hwy & TD	FB	5.8	171.7	132.9	140.9	1,985.9	170.3	150.7	134.6	2,015.6	-2.22%	-1.47
CA	San Francisco	Golden Gate Bridge, Hwy & TD	MB	24.9	701.0	579.3	577.8	7,515.3	663.7	614.2	547.9	7,237.6	1.77%	3.84
CA	San Francisco	Golden Gate Bridge, Hwy & TD	TOTAL	31.1	883.2	720.8	727.7	9,613.5	843.9	773.6	690.5	9,358.2	1.03%	2.73
CA	San Francisco	San Francisco Bay Area RTD	HR	379.4	10,616.6	9,132.6	9,521.1	117,171.2	10,242.2	9,547.6	9,124.6	112,444.0	1.23%	4.20
CA	San Francisco	San Francisco Bay Area RTD	TOTAL	379.4	10,616.6	9,132.6	9,521.1	117,171.2	10,242.2	9,547.6	9,124.6	112,444.0	1.23%	4.20
CA	San Francisco	San Francisco Muni Rwy	CC	18.0	620.8	503.1	493.6	7,833.8	617.7	503.1	493.6	7,715.7	0.19%	1.53
CA	San Francisco	San Francisco Muni Rwy	LR	156.9	4,488.5	3,908.0	3,933.5	48,889.6	4,466.2	3,908.0	3,933.5	46,167.9	0.18%	5.90
CA	San Francisco	San Francisco Muni Rwy	MB	273.4	8,201.5	6,976.0	6,703.4	91,138.6	8,160.7	6,976.0	6,703.4	90,314.2	0.19%	0.91
CA	San Francisco	San Francisco Muni Rwy	TB	224.4	6,500.0	5,786.7	5,495.2	73,351.2	6,467.5	5,786.7	5,495.2	71,520.0	0.18%	2.56
CA	San Francisco	San Francisco Muni Rwy	TOTAL	672.6	19,810.8	17,173.8	16,625.7	221,213.2	19,712.1	17,173.8	16,625.7	215,717.8	0.18%	2.55

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CA	San Jose	Santa Clara Valley Trp Auth	DR	3.7	99.9	82.7	85.7	1,071.0	97.5	87.4	79.1	1,047.7	1.63%	2.22
CA	San Jose	Santa Clara Valley Trp Auth	LR	34.4	1,031.5	874.9	807.9	10,797.6	888.4	787.7	745.7	10,302.5	12.08%	4.81
CA	San Jose	Santa Clara Valley Trp Auth	MB	114.9	3,390.3	2,853.5	2,721.1	34,774.6	3,064.1	2,711.9	2,524.1	32,892.1	8.01%	5.72
CA	San Jose	Santa Clara Valley Trp Auth	TOTAL	153.0	4,521.7	3,811.1	3,614.7	46,643.2	4,050.0	3,587.0	3,348.9	44,242.3	8.75%	5.43
CA	Santa Barbara	Santa Barbara MTD	DR	0.2	4.6	3.7	3.9	51.6	4.2	3.8	3.7	46.2	4.27%	11.69
CA	Santa Barbara	Santa Barbara MTD	MB	27.4	830.8	651.5	579.0	8,412.6	778.8	667.0	543.9	7,791.8	3.60%	7.97
CA	Santa Barbara	Santa Barbara MTD	TOTAL	27.6	835.4	655.2	582.9	8,464.2	783.0	670.8	547.6	7,838.0	3.60%	7.99
CA	Santa Cruz	Santa Cruz Metro Transit Dist	DR	NA	NA	NA	NA	NA	8.4	7.2	6.7	86.9	NA	N
CA	Santa Cruz	Santa Cruz Metro Transit Dist	MB	19.8	722.2	518.4	319.9	5,858.1	670.9	545.2	355.7	5,671.9	-0.72%	3.28
CA	Santa Cruz	Santa Cruz Metro Transit Dist	TOTAL	NA	NA	NA	NA	NA	679.3	552.4	362.4	5,758.8	NA	N
CA	Santa Monica	Santa Monica's Big Blue Bus	MB	55.2	1,514.9	1,056.1	972.9	16,781.2	1,515.8	1,324.3	1,161.2	19,868.5	-11.43%	-15.54
CA	Santa Monica	Santa Monica's Big Blue Bus	TOTAL	55.2	1,514.9	1,056.1	972.9	16,781.2	1,515.8	1,324.3	1,161.2	19,868.5	-11.43%	-15.54
CA	Simi Valley	City of Simi Valley/Transit	DR	NA	NA	NA	NA	NA	4.0	3.5	3.2	44.0	NA	N
CA	Simi Valley	City of Simi Valley/Transit	MB	1.7	45.7	37.5	36.0	494.7	39.9	32.9	30.0	453.3	15.95%	9.13
CA	Simi Valley	City of Simi Valley/Transit	TOTAL	NA	NA	NA	NA	NA	43.9	36.4	33.2	497.3	NA	N
CA	Stockton	San Joaquin Reg Rail Comm	CR	3.2	86.0	60.0	57.4	865.7	73.0	63.5	53.2	755.0	7.22%	14.66
CA	Stockton	San Joaquin Reg Rail Comm	TOTAL	3.2	86.0	60.0	57.4	865.7	73.0	63.5	53.2	755.0	7.22%	14.66
CA	Stockton	San Joaquin Reg Trans Dist	DR	0.3	7.4	6.4	6.3	87.6	9.2	8.4	7.9	96.0	-21.18%	-8.75
CA	Stockton	San Joaquin Reg Trans Dist	MB	16.9	441.5	366.3	362.6	4,953.3	398.1	395.6	338.2	4,176.0	3.40%	18.61
CA	Stockton	San Joaquin Reg Trans Dist	TOTAL	17.2	448.9	372.7	368.9	5,040.9	407.3	404.0	346.1	4,272.0	2.86%	18.00
CA	Thousand Palms	SunLine Transit Agency	DR	0.3	8.8	7.3	7.7	92.3	7.6	6.9	6.1	82.7	15.53%	11.61
CA	Thousand Palms	SunLine Transit Agency	MB	11.9	349.1	301.9	289.2	3,596.2	307.0	285.1	273.4	3,343.6	8.63%	7.55
CA	Thousand Palms	SunLine Transit Agency	TOTAL	12.2	357.9	309.2	296.9	3,688.5	314.6	292.0	279.5	3,426.3	8.79%	7.65
CA	Torrance	Torrance Transit System	DR	0.3	6.8	6.3	6.0	76.8	6.0	5.6	5.9	72.5	9.14%	5.93
CA	Torrance	Torrance Transit System	MB	14.8	450.2	356.5	355.0	4,820.5	443.2	357.5	325.1	4,598.9	3.19%	4.82
CA	Torrance	Torrance Transit System	TOTAL	15.1	457.0	362.8	361.0	4,897.3	449.2	363.1	331.0	4,671.4	3.28%	4.84
CA	Ventura	Ventura County Transp Comm	DR	0.7	19.5	15.7	15.5	206.6	19.3	18.2	15.1	215.1	-3.61%	-3.95
CA	Ventura	Ventura County Transp Comm	MB	2.7	79.7	63.6	54.4	742.6	59.8	52.6	42.2	597.7	27.88%	24.24
CA	Ventura	Ventura County Transp Comm	TOTAL	3.4	99.2	79.3	69.9	949.2	79.1	70.8	57.3	812.8	19.88%	16.78
CA	Visalia	Visalia City Coach	DR	0.1	2.6	2.4	2.5	32.7	3.1	2.8	2.2	32.3	-7.41%	1.24
CA	Visalia	Visalia City Coach	MB	5.0	139.1	114.5	112.8	1,451.0	123.3	109.7	99.2	1,311.8	10.30%	10.61
CA	Visalia	Visalia City Coach	TOTAL	5.1	141.7	116.9	115.3	1,483.7	126.4	112.5	101.4	1,344.1	9.87%	10.39
CA	Woodland	Yolo County Transportation District	MB	5.9	169.2	143.7	140.7	1,711.1	127.6	116.0	106.4	1,409.6	29.60%	21.39
CA	Woodland	Yolo County Transportation District	TOTAL	5.9	169.2	143.7	140.7	1,711.1	127.6	116.0	106.4	1,409.6	29.60%	21.39%

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CO	Aspen	Roaring Fork Transp Auth	MB	11.8	242.4	244.9	528.1	4,838.3	207.2	230.9	499.4	4,459.3	8.31%	8.5(
CO	Aspen	Roaring Fork Transp Auth	TOTAL	11.8	242.4	244.9	528.1	4,838.3	207.2	230.9	499.4	4,459.3	8.31%	8.5(
CO	Denver	Regional Trp District	DR	6.8	162.0	149.8	155.5	1,789.9	156.1	142.8	131.9	1,638.9	8.47%	9.21
CO	Denver	Regional Trp District	LR	68.8	2,030.8	1,687.8	1,619.1	20,617.5	1,847.2	1,574.6	1,384.3	18,664.6	11.06%	10.4(
CO	Denver	Regional Trp District	MB	225.5	6,430.2	5,312.5	5,218.7	66,807.5	5,992.9	5,286.4	4,778.1	61,513.4	5.63%	8.61
CO	Denver	Regional Trp District	TOTAL	301.1	8,623.0	7,150.1	6,993.3	89,214.9	7,996.2	7,003.8	6,294.3	81,816.9	6.91%	9.04
CO	Grand Junction	Mesa County Reg Transp Office	DR	0.0	0.9	0.7	0.8	9.5	0.8	0.7	0.6	8.4	14.29%	13.1(
CO	Grand Junction	Mesa County Reg Transp Office	MB	2.9	73.9	64.8	70.1	748.7	57.5	52.6	49.7	639.0	30.66%	17.17
CO	Grand Junction	Mesa County Reg Transp Office	TOTAL	2.9	74.8	65.5	70.9	758.2	58.3	53.3	50.3	647.4	30.45%	17.11
CT	Bridgeport	Greater Bridgeport Tr Auth	DR	0.3	8.0	6.4	6.9	91.4	8.7	7.8	7.3	90.2	-10.50%	1.33
CT	Bridgeport	Greater Bridgeport Tr Auth	MB	17.9	511.3	418.8	424.0	5,304.7	443.0	409.2	386.1	4,981.8	9.35%	6.48
CT	Bridgeport	Greater Bridgeport Tr Auth	TOTAL	18.2	519.3	425.2	430.9	5,396.1	451.7	417.0	393.4	5,072.0	8.98%	6.39
CT	Hartford	Connecticut DOT	DR	0.3	8.8	7.2	7.4	90.5	8.0	7.1	5.9	81.4	11.43%	11.18
CT	Hartford	Connecticut DOT	MB	NA	NA	NA	NA	NA	18.0	15.0	13.0	194.8	NA	N
CT	Hartford	Connecticut DOT	TOTAL	NA	NA	NA	NA	NA	26.0	22.1	18.9	276.2	NA	N
CT	Hartford	Connecticut Transit	MB	91.0	2,432.9	1,975.9	2,034.1	26,227.7	2,356.9	2,112.5	1,933.2	24,862.9	0.63%	5.49
CT	Hartford	Connecticut Transit	TOTAL	91.0	2,432.9	1,975.9	2,034.1	26,227.7	2,356.9	2,112.5	1,933.2	24,862.9	0.63%	5.49
CT	Hartford	Greater Hartford Tran Dist	DR	6.5	29.0	24.4	25.5	NA	28.7	25.8	22.5	303.1	2.47%	N
CT	Hartford	Greater Hartford Tran Dist	TOTAL	6.5	29.0	24.4	25.5	NA	28.7	25.8	22.5	303.1	2.47%	N
CT	New Haven	Connecticut DOT	CR	2.1	54.1	46.7	47.4	568.1	44.5	43.0	38.7	483.7	17.43%	17.45
CT	New Haven	Connecticut DOT	MB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
CT	New Haven	Connecticut DOT	TOTAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
CT	Norwalk	Norwalk Transit District	DR	0.4	9.8	7.9	8.1	94.9	8.2	7.3	6.1	86.9	19.44%	9.21
CT	Norwalk	Norwalk Transit District	MB	6.4	186.7	150.6	149.7	1,975.3	179.3	163.3	148.8	1,868.1	-0.90%	5.74
CT	Norwalk	Norwalk Transit District	TOTAL	6.8	196.5	158.5	157.8	2,070.2	187.5	170.6	154.9	1,955.0	-0.04%	5.89
CT	South Windsor	Collins Bus Service	MB	NA	14.7	11.1	11.4	154.2	13.8	11.5	9.5	146.3	6.90%	5.4(
CT	South Windsor	Collins Bus Service	TOTAL	NA	14.7	11.1	11.4	154.2	13.8	11.5	9.5	146.3	6.90%	5.4(
CT	Storrs	UCONN Transp Services	MB	9.4	234.0	157.0	98.4	1,533.4	213.9	158.1	91.6	1,464.3	5.57%	4.72
CT	Storrs	UCONN Transp Services	TOTAL	9.4	234.0	157.0	98.4	1,533.4	213.9	158.1	91.6	1,464.3	5.57%	4.72
CT	Waterbury	North East Transportation Co	DR	0.7	18.2	15.4	13.0	194.4	17.6	16.7	14.3	108.9	-4.12%	78.51
CT	Waterbury	North East Transportation Co	MB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
CT	Waterbury	North East Transportation Co	TOTAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N

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DC	Washington	Washington Metro Area TA	HR	944.4	26,189.9	21,452.4	21,759.3	293,235.0	25,755.6	22,579.4	20,315.8	283,790.5	1.09%	3.33
DC	Washington	Washington Metro Area TA	MB	445.3	12,340.0	10,207.8	10,451.8	135,669.7	12,174.8	10,790.6	9,934.0	131,604.3	0.30%	3.09
DC	Washington	Washington Metro Area TA	TOTAL	1,389.7	38,529.9	31,660.2	32,211.1	428,904.7	37,930.4	33,370.0	30,249.8	415,394.8	0.84%	3.25
DE	Wilmington	Delaware Transit Corp	DR	3.4	83.9	66.7	73.3	894.6	77.0	68.6	63.7	820.4	6.98%	9.04
DE	Wilmington	Delaware Transit Corp	MB	33.1	843.4	667.7	702.5	8,774.0	741.3	676.6	621.1	7,965.9	8.56%	10.14
DE	Wilmington	Delaware Transit Corp	TOTAL	36.5	927.3	734.4	775.8	9,668.6	818.3	745.2	684.8	8,786.3	8.42%	10.04
FL	Bradenton	Manatee County Area Transit	DR	0.3	8.3	6.2	7.2	95.7	9.0	7.9	7.8	97.9	-12.15%	-2.25
FL	Bradenton	Manatee County Area Transit	MB	3.5	125.9	107.2	111.7	1,411.0	108.6	105.6	102.4	1,291.1	8.91%	9.29
FL	Bradenton	Manatee County Area Transit	VP	NA	NA	NA	NA	NA	0.0	0.0	0.0	0.9	NA	N
FL	Bradenton	Manatee County Area Transit	TOTAL	NA	NA	NA	NA	NA	117.6	113.5	110.2	1,389.9	NA	N
FL	Cocoa	Space Coast Area Transit	DR	9.3	36.7	37.3	37.5	411.7	34.6	32.8	32.1	405.6	12.06%	1.50
FL	Cocoa	Space Coast Area Transit	MB	29.3	117.1	117.6	117.7	1,285.3	92.1	91.1	97.5	1,098.1	25.54%	17.05
FL	Cocoa	Space Coast Area Transit	VP	1.5	5.9	5.8	5.9	99.0	12.1	12.1	12.2	149.6	-51.65%	-33.82
FL	Cocoa	Space Coast Area Transit	TOTAL	40.1	159.7	160.7	161.1	1,796.0	138.8	136.0	141.8	1,653.3	15.58%	8.63
FL	Daytona Beach	Votran	DR	0.8	22.4	18.7	19.8	256.5	28.7	25.3	22.7	318.7	-20.60%	-19.52
FL	Daytona Beach	Votran	MB	9.5	277.2	233.3	248.7	3,015.6	255.7	234.7	218.9	2,902.9	7.04%	3.88
FL	Daytona Beach	Votran	VP	0.5	13.3	9.7	8.8	97.4	7.8	7.9	5.3	85.2	51.43%	14.32
FL	Daytona Beach	Votran	TOTAL	NA	NA	NA	NA	NA	292.2	267.9	246.9	3,306.8	NA	N
FL	Fort Lauderdale	Broward County Transit	DR	3.1	92.1	70.2	68.7	943.6	76.5	90.1	69.3	869.9	-2.08%	8.47
FL	Fort Lauderdale	Broward County Transit	FB	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%	N
FL	Fort Lauderdale	Broward County Transit	MB	133.8	3,694.3	3,221.0	3,301.5	41,035.3	3,587.4	3,367.6	3,279.7	41,422.7	-0.17%	-0.94
FL	Fort Lauderdale	Broward County Transit	TOTAL	NA	3,786.4	3,291.2	3,370.2	41,978.9	3,663.9	3,457.7	3,349.0	42,292.6	-0.22%	-0.74
FL	Fort Myers	Lee Tran	DR	0.4	10.4	10.4	8.2	124.8	12.2	10.8	9.8	135.9	-11.59%	-8.17
FL	Fort Myers	Lee Tran	MB	9.5	252.9	230.1	240.5	3,103.3	231.9	228.4	228.7	3,021.8	5.01%	2.70
FL	Fort Myers	Lee Tran	VP	0.1	2.2	2.1	3.2	33.0	2.9	2.7	2.7	26.6	-9.64%	24.06
FL	Fort Myers	Lee Tran	TOTAL	10.1	265.5	242.6	251.9	3,261.1	247.0	241.9	241.2	3,184.3	4.10%	2.41
FL	Gainesville	Regional Transit System	DR	0.1	3.9	3.1	3.2	40.3	2.9	2.5	2.5	29.2	29.11%	38.01
FL	Gainesville	Regional Transit System	MB	41.9	1,110.5	805.3	575.7	9,128.3	1,130.7	860.2	408.6	8,904.9	3.83%	2.51
FL	Gainesville	Regional Transit System	TOTAL	42.0	1,114.4	808.4	578.9	9,168.6	1,133.6	862.7	411.1	8,934.1	3.92%	2.62
FL	Jacksonville	Jacksonville Transp Auth	AG	1.7	51.4	38.3	39.2	512.8	46.1	38.3	35.0	584.8	7.96%	-12.31
FL	Jacksonville	Jacksonville Transp Auth	DR	1.2	33.0	28.0	29.1	351.7	31.0	28.0	26.0	385.6	6.00%	-8.79
FL	Jacksonville	Jacksonville Transp Auth	MB	37.6	1,017.2	833.0	860.0	10,485.4	893.3	833.0	790.1	10,094.0	7.70%	3.88
FL	Jacksonville	Jacksonville Transp Auth	TOTAL	40.4	1,101.6	899.3	928.3	11,349.9	970.4	899.3	851.1	11,064.4	7.66%	2.58
FL	Jacksonville	Runways Transportation Company	MB	NA	1.0	1.1	1.5	11.6	0.8	0.9	1.0	7.3	33.33%	58.90%
FL	Jacksonville	Runways Transportation Company	TOTAL	NA	1.0	1.1	1.5	11.6	0.8	0.9	1.0	7.3	33.33%	58.90%

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FL	Miami	Miami-Dade Transit Agency	AG	27.6	769.0	662.3	740.1	8,723.7	811.8	763.1	760.6	8,838.8	-7.03%	-1.3(
FL	Miami	Miami-Dade Transit Agency	DR	4.6	126.0	148.4	112.7	1,604.4	129.4	123.4	152.2	1,669.1	-4.42%	-3.8
FL	Miami	Miami-Dade Transit Agency	HR	63.8	1,757.6	1,536.0	1,480.8	19,075.9	1,494.1	1,431.5	1,462.9	17,627.0	8.79%	8.2
FL	Miami	Miami-Dade Transit Agency	MB	292.0	7,804.1	7,249.3	7,070.3	86,409.2	7,471.7	6,996.3	7,156.6	84,218.3	2.31%	2.6(
FL	Miami	Miami-Dade Transit Agency	TOTAL	387.9	10,456.7	9,596.0	9,403.9	115,813.2	9,907.0	9,314.3	9,532.3	112,353.2	2.44%	3.0
FL	Orlando	Central Florida RTA	DR	2.2	59.4	50.4	54.4	631.1	51.4	45.8	44.4	559.5	15.96%	12.8(
FL	Orlando	Central Florida RTA	MB	81.1	2,351.6	1,990.8	2,011.1	26,069.7	2,334.7	2,184.3	2,157.8	25,875.5	-4.84%	0.7
FL	Orlando	Central Florida RTA	VP	0.6	17.4	13.9	14.1	197.4	18.9	15.3	13.4	199.0	-4.62%	-0.8(
FL	Orlando	Central Florida RTA	TOTAL	83.9	2,428.4	2,055.1	2,079.6	26,898.2	2,405.0	2,245.4	2,215.6	26,634.0	-4.41%	0.9
FL	Pompano Beach	South Florida RTA (Tri-Rail)	CR	14.8	400.8	346.6	343.8	4,303.6	326.1	306.1	292.9	3,502.5	17.95%	22.8
FL	Pompano Beach	South Florida RTA (Tri-Rail)	MB	1.7	44.8	36.2	38.1	476.4	28.5	28.7	27.3	303.9	40.95%	56.7
FL	Pompano Beach	South Florida RTA (Tri-Rail)	TOTAL	16.5	445.6	382.8	381.9	4,780.0	354.6	334.8	320.2	3,806.4	19.88%	25.5
FL	Sarasota	Sarasota County Area Transit	DR	0.6	17.0	13.2	14.7	192.8	21.8	18.9	16.8	230.8	-21.91%	-16.4
FL	Sarasota	Sarasota County Area Transit	MB	8.4	202.6	207.5	219.9	2,408.0	186.3	166.6	174.1	2,209.6	19.54%	8.9
FL	Sarasota	Sarasota County Area Transit	TOTAL	9.0	219.6	220.7	234.6	2,600.8	208.1	185.5	190.9	2,440.4	15.47%	6.5
FL	St. Petersburg	Pinellas Suncoast Tran Auth	DR	0.8	5.2	5.9	6.0	196.0	21.6	20.1	19.1	251.4	-71.88%	-22.0
FL	St. Petersburg	Pinellas Suncoast Tran Auth	MB	41.1	1,126.5	948.3	982.4	12,652.4	1,062.5	989.0	967.4	11,624.0	1.27%	8.8
FL	St. Petersburg	Pinellas Suncoast Tran Auth	TOTAL	41.9	1,131.7	954.2	988.4	12,848.4	1,084.1	1,009.1	986.5	11,875.4	-0.18%	8.1
FL	Tampa	Hillsborough Area Reg TA	DR	0.3	10.3	7.9	8.2	103.1	9.2	8.5	7.7	89.5	3.94%	15.2(
FL	Tampa	Hillsborough Area Reg TA	LR	0.9	38.9	27.3	40.2	436.8	40.1	30.3	39.7	431.8	-3.36%	1.1
FL	Tampa	Hillsborough Area Reg TA	MB	42.6	1,166.0	942.5	958.5	12,136.6	1,066.7	965.1	913.4	11,389.4	4.14%	6.5
FL	Tampa	Hillsborough Area Reg TA	VP	0.4	8.4	6.7	6.8	91.9	9.2	8.0	7.7	85.9	-12.05%	6.9
FL	Tampa	Hillsborough Area Reg TA	TOTAL	44.2	1,223.6	984.4	1,013.7	12,768.4	1,125.2	1,011.9	968.5	11,996.6	3.74%	6.4
FL	West Palm Beach	Palm Beach County STD	DR	NA	NA	NA	NA	NA	76.0	69.1	65.7	919.5	NA	N
FL	West Palm Beach	Palm Beach County STD	MB	36.9	843.9	699.2	735.6	9,664.4	870.6	804.5	780.7	10,053.7	-7.21%	-3.8
FL	West Palm Beach	Palm Beach County STD	TOTAL	NA	NA	NA	NA	NA	946.6	873.6	846.4	10,973.2	NA	N
GA	Atlanta	Metro Atlanta Rapid Tr Auth	DR	1.6	42.6	36.2	38.5	448.5	34.8	32.1	29.8	383.0	21.30%	17.1(
GA	Atlanta	Metro Atlanta Rapid Tr Auth	HR	269.7	7,982.6	6,565.4	6,480.8	86,029.9	7,320.7	6,741.1	6,290.2	79,239.2	3.33%	8.5
GA	Atlanta	Metro Atlanta Rapid Tr Auth	MB	237.4	6,766.0	5,735.5	5,834.2	72,112.5	5,794.8	5,103.1	5,236.7	66,990.3	13.64%	7.6
GA	Atlanta	Metro Atlanta Rapid Tr Auth	TOTAL	508.6	14,791.2	12,337.1	12,353.5	158,590.9	13,150.3	11,876.3	11,556.7	146,612.5	7.92%	8.1
GA	Gainesville	Hall Area Transit	DR	0.1	2.9	2.2	2.2	30.3	2.9	2.3	2.1	28.8	0.00%	5.2
GA	Gainesville	Hall Area Transit	MB	2.2	10.6	9.0	8.6	104.7	6.5	5.3	5.5	66.0	63.01%	58.6
GA	Gainesville	Hall Area Transit	TOTAL	2.3	13.5	11.2	10.8	135.0	9.4	7.6	7.6	94.8	44.31%	42.4

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GA	Lawrenceville	Gwinnett County DOT	DR	0.1	1.4	1.1	1.2	15.3	1.2	1.1	1.1	10.7	8.82%	42.99
GA	Lawrenceville	Gwinnett County DOT	MB	6.8	214.3	161.6	150.6	2,110.5	170.4	157.2	125.3	1,957.4	16.25%	7.82
GA	Lawrenceville	Gwinnett County DOT	TOTAL	6.9	215.7	162.7	151.8	2,125.8	171.6	158.3	126.4	1,968.1	16.20%	8.01
GA	Savannah	Chatham Area Transit Auth	DR	0.2	5.5	4.7	4.7	61.7	6.3	5.4	4.9	69.4	-10.24%	-11.10
GA	Savannah	Chatham Area Transit Auth	MB	13.5	318.2	254.3	264.3	3,534.2	315.3	293.5	272.2	3,538.6	-5.02%	-0.12
GA	Savannah	Chatham Area Transit Auth	TOTAL	13.7	323.7	259.0	269.0	3,595.9	321.6	298.9	277.1	3,608.0	-5.11%	-0.34
IA	Ames	Ames Transit Agency	DR	0.1	0.9	0.7	0.7	NA	0.9	0.8	0.8	11.2	-8.00%	N
IA	Ames	Ames Transit Agency	MB	21.5	603.0	419.3	403.2	4,740.7	573.6	436.4	257.9	4,405.0	12.43%	7.62
IA	Ames	Ames Transit Agency	TOTAL	21.6	603.9	420.0	403.9	NA	574.5	437.2	258.7	4,416.2	12.39%	N
IA	Des Moines	Des Moines Area Regional TA	DR	7.0	18.7	15.0	15.6	200.6	18.6	16.2	14.3	206.0	0.41%	-2.62
IA	Des Moines	Des Moines Area Regional TA	MB	16.9	434.0	350.0	340.1	4,616.8	400.9	352.3	302.8	3,987.3	6.45%	15.79
IA	Des Moines	Des Moines Area Regional TA	VP	12.1	30.0	24.0	25.1	232.9	12.1	10.6	9.2	130.2	>100%	78.88
IA	Des Moines	Des Moines Area Regional TA	TOTAL	35.9	482.7	389.0	380.8	5,050.3	431.6	379.1	326.3	4,323.5	10.16%	16.81
ID	Boise	Valley Regional Transit	DR	NA	4.0	3.1	NA	NA	4.4	3.8	3.6	40.4	NA	N
ID	Boise	Valley Regional Transit	MB	5.3	139.0	110.8	114.0	1,317.0	105.5	88.4	83.1	1,065.1	31.34%	23.65
ID	Boise	Valley Regional Transit	TOTAL	NA	143.0	113.9	NA	NA	109.9	92.2	86.7	1,105.5	NA	N
IL	Arlington Heights	PACE Suburban Bus	DR	13.5	357.5	304.0	315.4	3,857.8	285.4	314.5	279.8	3,658.0	11.05%	5.46
IL	Arlington Heights	PACE Suburban Bus	MB	117.6	3,371.2	2,691.5	2,478.6	34,653.2	3,229.7	2,784.6	2,468.2	33,543.3	0.69%	3.31
IL	Arlington Heights	PACE Suburban Bus	VP	7.9	193.2	154.1	156.9	1,999.7	174.4	159.9	141.0	1,877.0	6.08%	6.54
IL	Arlington Heights	PACE Suburban Bus	TOTAL	138.9	3,921.9	3,149.6	2,950.9	40,510.7	3,689.5	3,259.0	2,889.0	39,078.3	1.88%	3.67
IL	Chicago	Chicago Transit Authority	DR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%	N
IL	Chicago	Chicago Transit Authority	HR	640.7	18,947.5	15,777.3	14,839.3	198,137.3	17,725.7	15,419.4	13,689.6	190,272.9	5.83%	4.13
IL	Chicago	Chicago Transit Authority	MB	1,037.2	31,133.0	26,186.5	24,298.1	328,199.2	29,273.9	26,024.2	24,078.1	309,271.4	2.82%	6.12
IL	Chicago	Chicago Transit Authority	TOTAL	1,678.0	50,080.5	41,963.8	39,137.4	526,336.5	46,999.6	41,443.6	37,767.7	499,544.3	3.94%	5.36
IL	Chicago	Metra	CR	324.3	6,630.1	6,048.7	5,906.1	77,166.9	6,647.1	6,370.6	5,833.4	75,099.6	-1.41%	2.75
IL	Chicago	Metra	TOTAL	324.3	6,630.1	6,048.7	5,906.1	77,166.9	6,647.1	6,370.6	5,833.4	75,099.6	-1.41%	2.75
IL	Granite City	Madison County Trans Dist	DR	0.6	14.7	11.9	15.3	146.6	12.0	10.9	9.9	138.8	27.74%	5.62
IL	Granite City	Madison County Trans Dist	MB	8.6	243.2	181.1	175.6	2,289.3	211.8	175.7	143.5	2,044.9	12.98%	11.95
IL	Granite City	Madison County Trans Dist	VP	1.2	29.4	22.5	22.1	307.9	27.1	23.0	17.9	297.5	8.82%	3.50
IL	Granite City	Madison County Trans Dist	TOTAL	10.4	287.3	215.5	213.0	2,743.8	250.9	209.6	171.3	2,481.2	13.30%	10.58
IL	Harrisburg	Rides Mass Transit District	MB	1.4	41.0	31.3	32.6	419.3	35.5	30.2	28.7	325.3	11.12%	28.90
IL	Harrisburg	Rides Mass Transit District	TOTAL	1.4	41.0	31.3	32.6	419.3	35.5	30.2	28.7	325.3	11.12%	28.90
IL	Macomb	Go West Transit	MB	NA	208.4	204.5	146.1	1,658.2	209.8	208.6	93.2	1,607.7	9.27%	3.14
IL	Macomb	Go West Transit	TOTAL	NA	208.4	204.5	146.1	1,658.2	209.8	208.6	93.2	1,607.7	9.27%	3.14%

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IL	Moline	Rock Island County MMTD	DR	0.1	1.5	1.5	1.4	17.5	1.5	1.5	1.2	17.1	4.76%	2.34
IL	Moline	Rock Island County MMTD	MB	7.7	253.7	226.1	215.0	2,703.4	195.2	239.1	206.0	2,521.4	8.51%	7.22
IL	Moline	Rock Island County MMTD	TOTAL	7.9	255.2	227.6	216.4	2,720.9	196.7	240.6	207.2	2,538.5	8.49%	7.19
IL	Springfield	Springfield Mass Transit Dist	DR	0.2	4.7	3.6	4.1	50.0	4.5	4.0	3.8	48.7	0.81%	2.67
IL	Springfield	Springfield Mass Transit Dist	MB	5.4	152.8	129.0	133.0	1,527.7	126.5	116.7	109.3	1,301.8	17.67%	17.35
IL	Springfield	Springfield Mass Transit Dist	TOTAL	5.6	157.5	132.6	137.1	1,577.7	131.0	120.7	113.1	1,350.5	17.11%	16.82
IL	Urbana	Champaign-Urbana MTD	DR	0.6	12.0	9.7	10.1	131.9	14.4	12.8	11.2	135.5	-17.19%	-2.66
IL	Urbana	Champaign-Urbana MTD	MB	40.7	1,171.4	899.5	792.9	9,670.0	1,122.8	872.7	558.0	8,863.6	12.15%	9.10
IL	Urbana	Champaign-Urbana MTD	TOTAL	41.3	1,183.4	909.2	803.0	9,801.9	1,137.2	885.5	569.2	8,999.1	11.72%	8.92
IN	Bloomington	Bloomington Public Trp Corp	DR	0.1	2.9	2.4	2.2	31.6	3.2	2.8	2.4	35.4	-10.71%	-10.73
IN	Bloomington	Bloomington Public Trp Corp	MB	12.3	357.1	265.6	228.8	2,830.1	335.5	272.4	161.8	2,570.1	10.63%	10.12
IN	Bloomington	Bloomington Public Trp Corp	TOTAL	12.4	360.0	268.0	231.0	2,861.7	338.7	275.2	164.2	2,605.5	10.40%	9.83
IN	Chesterton	Northern IN Commuter TD	CR	13.0	356.9	300.8	320.3	4,180.4	373.4	336.6	319.8	4,245.9	-5.03%	-1.54
IN	Chesterton	Northern IN Commuter TD	TOTAL	13.0	356.9	300.8	320.3	4,180.4	373.4	336.6	319.8	4,245.9	-5.03%	-1.54
IN	East Chicago	City of East Chicago PT	DR	NA	0.5	0.4	0.4	6.0	0.6	0.5	0.5	6.4	-18.75%	-6.25
IN	East Chicago	City of East Chicago PT	MB	NA	27.0	19.0	21.0	265.0	28.0	21.0	19.0	271.0	-1.47%	-2.21
IN	East Chicago	City of East Chicago PT	TOTAL	NA	27.5	19.4	21.4	271.0	28.6	21.5	19.5	277.4	-1.87%	-2.31
IN	Fort Wayne	Fort Wayne Public Tr Corp	DR	0.2	4.8	3.6	3.4	51.7	4.1	4.4	3.8	47.9	-4.07%	7.93
IN	Fort Wayne	Fort Wayne Public Tr Corp	MB	6.5	170.6	142.6	141.1	2,023.4	183.1	164.2	157.4	1,934.6	-9.99%	4.59
IN	Fort Wayne	Fort Wayne Public Tr Corp	TOTAL	6.7	175.4	146.2	144.5	2,075.1	187.2	168.6	161.2	1,982.5	-9.85%	4.67
IN	Gary	Gary Public Transp Corp	DR	NA	0.9	0.9	0.9	10.5	2.0	1.8	1.8	21.2	-51.79%	-50.47
IN	Gary	Gary Public Transp Corp	MB	3.3	84.6	69.5	68.9	890.7	85.6	76.4	68.4	810.7	-3.21%	9.87
IN	Gary	Gary Public Transp Corp	TOTAL	NA	NA	NA	NA	NA	87.6	78.2	70.2	831.9	NA	N
IN	Indianapolis	Indianapolis Public Trp Corp	DR	1.4	31.6	27.4	28.4	327.3	28.3	25.1	23.3	303.4	13.95%	7.88
IN	Indianapolis	Indianapolis Public Trp Corp	MB	31.4	917.3	726.9	673.4	9,590.1	793.1	726.3	677.3	8,380.8	5.50%	14.43
IN	Indianapolis	Indianapolis Public Trp Corp	TOTAL	32.8	948.9	754.3	701.8	9,917.4	NA	NA	NA	NA	NA	N
IN	Lafayette	Greater Lafayette PTC	DR	0.1	2.1	1.7	1.8	20.6	1.6	1.5	1.4	18.2	24.44%	13.19
IN	Lafayette	Greater Lafayette PTC	MB	23.3	584.8	485.8	415.3	4,945.3	570.0	507.3	275.6	4,646.3	9.83%	6.44
IN	Lafayette	Greater Lafayette PTC	TOTAL	23.4	586.9	487.5	417.1	4,965.9	571.6	508.8	277.0	4,664.5	9.88%	6.46
IN	Muncie	Muncie Indiana Transit Sys	DR	0.3	6.6	5.5	6.0	71.6	7.5	6.4	5.5	82.8	-6.70%	-13.53
IN	Muncie	Muncie Indiana Transit Sys	MB	7.4	199.8	157.3	151.0	1,957.9	193.1	173.5	141.4	1,953.0	0.02%	0.25
IN	Muncie	Muncie Indiana Transit Sys	TOTAL	7.7	206.4	162.8	157.0	2,029.5	200.6	179.9	146.9	2,035.8	-0.23%	-0.31

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IN	South Bend	South Bend Public Transp	DR	0.1	3.9	3.2	3.2	39.0	3.1	2.9	2.6	34.1	19.77%	14.37
IN	South Bend	South Bend Public Transp	MB	9.3	282.2	253.6	204.3	2,792.7	283.0	283.7	198.8	2,615.4	-3.32%	6.78
IN	South Bend	South Bend Public Transp	TOTAL	9.4	286.1	256.8	207.5	2,831.7	286.1	286.6	201.4	2,649.5	-3.06%	6.88
KS	Olathe	Johnson County Transit	DR	0.4	9.2	6.6	7.2	100.9	9.5	8.2	7.2	102.3	-7.63%	-1.37
KS	Olathe	Johnson County Transit	MB	2.1	55.2	41.4	35.6	525.3	42.3	38.6	28.5	388.8	20.84%	35.11
KS	Olathe	Johnson County Transit	TOTAL	2.5	64.4	48.0	42.8	626.2	51.8	46.8	35.7	491.1	15.56%	27.51
KY	Fort Wright	Tr Auth of Northern Kentucky	DR	0.4	10.1	8.5	8.4	107.0	9.3	8.5	7.1	97.5	8.43%	9.74
KY	Fort Wright	Tr Auth of Northern Kentucky	MB	12.1	368.3	292.8	284.6	3,854.5	344.6	311.7	280.4	3,626.5	0.96%	6.29
KY	Fort Wright	Tr Auth of Northern Kentucky	TOTAL	12.5	378.4	301.3	293.0	3,961.5	353.9	320.2	287.5	3,724.0	1.15%	6.38
KY	Lexington	Transit Auth Lexington-Fayette	DR	NA	NA	NA	NA	NA	12.0	10.9	10.3	132.1	NA	N
KY	Lexington	Transit Auth Lexington-Fayette	MB	23.2	524.6	457.2	483.6	NA	496.4	454.6	429.5	5,388.7	6.15%	N
KY	Lexington	Transit Auth Lexington-Fayette	TOTAL	NA	NA	NA	NA	NA	508.4	465.5	439.8	5,520.8	NA	N
KY	Louisville	Transit Auth of River City	DR	1.4	38.0	31.4	32.0	404.9	35.5	32.1	28.8	393.5	5.19%	2.90
KY	Louisville	Transit Auth of River City	MB	50.4	1,458.2	1,171.6	1,144.2	15,775.4	1,496.2	1,353.1	1,192.9	15,866.2	-6.64%	-0.57
KY	Louisville	Transit Auth of River City	TOTAL	51.8	1,496.2	1,203.0	1,176.2	16,180.3	1,531.7	1,385.2	1,221.7	16,259.7	-6.36%	-0.49
KY	Owensboro	Owensboro Transit System	DR	NA	1.8	NA	NA	NA	1.5	NA	NA	NA	NA	N
KY	Owensboro	Owensboro Transit System	MB	NA	27.5	NA	NA	NA	24.7	24.8	25.1	297.0	NA	N
KY	Owensboro	Owensboro Transit System	TOTAL	NA	29.3	NA	NA	NA	26.2	NA	NA	NA	NA	N
KY	Paducah	Paducah Area Transit System	DR	NA	49.1	13.1	13.1	256.2	26.1	20.4	14.1	299.7	24.26%	-14.51
KY	Paducah	Paducah Area Transit System	MB	NA	18.1	18.1	17.1	185.0	36.1	27.4	15.3	256.0	-32.36%	-27.73
KY	Paducah	Paducah Area Transit System	TOTAL	NA	67.2	31.2	30.2	441.2	62.2	47.8	29.4	555.7	-7.75%	-20.60
LA	Baton Rouge	Capital Area Transit System	MB	81.6	444.1	346.4	267.1	3,826.9	451.3	391.8	259.5	3,639.0	-4.08%	5.16
LA	Baton Rouge	Capital Area Transit System	TOTAL	81.6	444.1	346.4	267.1	3,826.9	451.3	391.8	259.5	3,639.0	-4.08%	5.16
LA	New Orleans	Regional Transit Auth	DR	0.4	11.4	9.3	10.1	112.1	7.3	7.0	7.2	80.4	43.26%	39.43
LA	New Orleans	Regional Transit Auth	LR	15.1	485.4	402.5	402.8	4,708.1	152.9	225.9	293.0	1,481.9	92.13%	>100
LA	New Orleans	Regional Transit Auth	MB	24.0	657.4	546.7	544.0	6,536.4	634.5	553.7	507.1	6,746.8	3.11%	-3.12
LA	New Orleans	Regional Transit Auth	TOTAL	39.4	1,154.2	958.5	956.9	11,356.6	794.7	786.6	807.3	8,309.1	28.51%	36.68
MA	Amherst	UMass Transit Service	MB	13.0	369.3	287.6	228.7	2,760.2	340.3	282.7	210.2	2,591.3	6.29%	6.52
MA	Amherst	UMass Transit Service	TOTAL	13.0	369.3	287.6	228.7	2,760.2	340.3	282.7	210.2	2,591.3	6.29%	6.52

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MA	Boston	Massachusetts Bay Tr Auth	CR	148.6	3,718.0	3,202.1	3,313.7	39,721.4	3,546.6	3,290.2	3,127.9	38,961.6	2.70%	1.9
MA	Boston	Massachusetts Bay Tr Auth	DR	6.4	177.3	157.4	157.9	1,896.0	153.7	144.1	129.5	1,648.8	15.28%	14.9
MA	Boston	Massachusetts Bay Tr Auth	FB	3.6	110.3	74.5	69.0	1,220.5	128.5	81.2	63.7	1,378.7	-7.17%	-11.4
MA	Boston	Massachusetts Bay Tr Auth	HR	485.8	14,016.0	11,701.1	11,585.5	150,408.3	11,904.8	11,787.9	10,882.3	139,387.6	7.89%	7.91
MA	Boston	Massachusetts Bay Tr Auth	LR	229.2	6,957.4	5,838.5	5,489.2	80,337.2	7,110.8	6,811.4	6,186.8	81,843.0	-9.07%	-1.8
MA	Boston	Massachusetts Bay Tr Auth	MB	347.2	9,449.6	8,215.3	8,350.1	107,354.2	9,679.8	8,274.1	7,467.1	104,398.5	2.34%	2.8
MA	Boston	Massachusetts Bay Tr Auth	TB	12.5	314.5	268.2	284.5	3,798.3	354.2	308.5	276.5	3,769.3	-7.67%	0.77
MA	Boston	Massachusetts Bay Tr Auth	TOTAL	1,233.2	34,743.1	29,457.1	29,249.9	384,735.9	32,878.4	30,697.4	28,133.8	371,387.5	1.90%	3.5
MD	Baltimore	Maryland Transit Admin	CR	30.4	738.7	562.8	614.0	8,068.7	718.1	637.3	576.2	7,720.3	-0.83%	4.5
MD	Baltimore	Maryland Transit Admin	DR	4.2	96.6	81.1	87.6	1,038.2	84.8	79.7	76.4	852.7	10.13%	21.7
MD	Baltimore	Maryland Transit Admin	HR	53.3	1,305.3	1,007.5	1,049.3	14,179.7	1,170.7	1,147.6	1,071.3	13,555.5	-0.81%	4.6
MD	Baltimore	Maryland Transit Admin	LR	33.6	833.2	646.3	635.7	8,054.1	711.8	680.2	602.8	7,085.1	6.04%	13.6
MD	Baltimore	Maryland Transit Admin	MB	301.3	7,238.8	5,808.6	5,922.8	73,865.1	6,048.4	5,907.3	5,396.7	67,976.3	9.32%	8.6
MD	Baltimore	Maryland Transit Admin	TOTAL	422.8	10,212.6	8,106.3	8,309.4	105,205.8	8,733.8	8,452.1	7,723.4	97,189.9	6.90%	8.2
MD	College Park	Shuttle-UM Transit System	DR	0.1	1.7	1.3	1.5	24.2	2.7	3.0	1.9	28.3	-40.79%	-14.4
MD	College Park	Shuttle-UM Transit System	MB	13.7	367.5	282.1	181.0	2,488.4	308.7	289.9	131.7	2,167.2	13.73%	14.8
MD	College Park	Shuttle-UM Transit System	TOTAL	13.8	369.2	283.4	182.5	2,512.6	311.4	292.9	133.6	2,195.5	13.17%	14.4
MD	Largo	Prince Georges County Transp	DR	0.6	14.1	11.8	13.2	155.7	13.9	11.9	11.2	154.1	5.68%	1.0
MD	Largo	Prince Georges County Transp	MB	13.9	360.2	253.4	276.8	3,652.8	300.4	282.2	232.7	3,041.2	9.21%	20.1
MD	Largo	Prince Georges County Transp	TOTAL	14.5	374.3	265.2	290.0	3,808.5	314.3	294.1	243.9	3,195.3	9.06%	19.1
MD	Rockville	Montgomery County Ride-On	MB	96.4	2,772.6	2,339.1	2,392.8	29,110.2	2,718.7	2,440.3	2,273.7	29,196.0	0.97%	-0.2
MD	Rockville	Montgomery County Ride-On	TOTAL	NA	NA	NA	NA	NA	2,718.7	2,440.3	2,273.7	29,196.0	NA	N
ME	Portland	Northern NE Passenger RA	CR	1.3	44.4	39.8	29.7	482.9	36.2	35.1	34.2	381.9	7.96%	26.4
ME	Portland	Northern NE Passenger RA	TOTAL	1.3	44.4	39.8	29.7	482.9	36.2	35.1	34.2	381.9	7.96%	26.4
MI	Ann Arbor	Ann Arbor Transportation Auth	DR	0.6	17.5	14.9	14.6	182.3	16.1	14.4	12.8	172.1	8.55%	5.9
MI	Ann Arbor	Ann Arbor Transportation Auth	MB	23.3	650.2	508.8	452.8	6,046.9	596.0	516.3	403.8	5,547.8	6.31%	9.0
MI	Ann Arbor	Ann Arbor Transportation Auth	TOTAL	23.9	667.7	523.7	467.4	6,229.2	612.1	530.7	416.6	5,719.9	6.37%	8.9
MI	Battle Creek	City of Battle Creek	DR	0.1	2.4	2.0	2.3	26.8	2.3	2.3	2.1	27.3	0.00%	-1.8
MI	Battle Creek	City of Battle Creek	MB	2.0	49.7	40.2	39.3	508.5	44.1	40.4	35.9	465.3	7.31%	9.2
MI	Battle Creek	City of Battle Creek	TOTAL	2.1	52.1	42.2	41.6	535.3	46.4	42.7	38.0	492.6	6.92%	8.6
MI	Bay City	Bay Metropolitan Transp Auth	DR	0.2	5.1	3.8	4.0	59.1	5.7	5.1	4.8	62.0	-17.31%	-4.6
MI	Bay City	Bay Metropolitan Transp Auth	MB	2.0	50.5	38.8	38.0	554.1	59.0	50.5	45.2	551.3	-17.71%	0.5
MI	Bay City	Bay Metropolitan Transp Auth	TOTAL	2.2	55.6	42.6	42.0	613.2	64.7	55.6	50.0	613.3	-17.67%	-0.0

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MI	Detroit	City of Detroit Dept of Trp	DR	0.9	24.3	21.1	20.8	261.0	19.0	19.0	19.0	218.5	16.14%	19.45
MI	Detroit	City of Detroit Dept of Trp	MB	129.6	3,781.5	3,098.0	2,895.4	38,480.7	3,225.3	2,901.7	2,621.5	36,170.7	11.73%	6.39
MI	Detroit	City of Detroit Dept of Trp	TOTAL	130.5	3,805.8	3,119.1	2,916.2	38,741.7	3,244.3	2,920.7	2,640.5	36,389.2	11.76%	6.46
MI	Detroit	Detroit Transp Corp/DPM	AG	4.3	127.6	121.1	131.5	2,059.6	139.1	132.1	145.0	2,320.6	-8.65%	-11.25
MI	Detroit	Detroit Transp Corp/DPM	TOTAL	4.3	127.6	121.1	131.5	2,059.6	139.1	132.1	145.0	2,320.6	-8.65%	-11.25
MI	Flint	Mass Transportation Authority	DR	2.6	71.0	57.3	52.9	670.7	62.9	55.9	49.2	642.2	7.86%	4.44
MI	Flint	Mass Transportation Authority	MB	19.1	576.0	431.1	402.5	5,537.8	492.8	441.0	404.6	4,811.1	5.32%	15.10
MI	Flint	Mass Transportation Authority	TOTAL	21.7	647.0	488.4	455.4	6,208.5	555.7	496.9	453.8	5,453.3	5.60%	13.85
MI	Grand Rapids	Interurban Transit Partnership	DR	1.2	40.5	33.9	34.3	423.4	38.7	34.0	31.7	411.9	4.12%	2.79
MI	Grand Rapids	Interurban Transit Partnership	MB	36.8	1,063.3	817.8	658.8	8,894.8	943.9	787.2	586.3	7,891.2	9.60%	12.72
MI	Grand Rapids	Interurban Transit Partnership	TOTAL	38.0	1,103.8	851.7	693.1	9,318.2	982.6	821.2	618.0	8,303.1	9.36%	12.23
MI	Lansing	Capital Area Transp Authority	DR	1.8	47.5	38.7	39.2	502.5	49.3	43.5	38.9	503.4	-4.78%	-0.18
MI	Lansing	Capital Area Transp Authority	MB	43.3	1,315.0	1,075.2	719.9	10,963.6	1,197.6	1,078.8	670.6	10,222.6	5.53%	7.25
MI	Lansing	Capital Area Transp Authority	TOTAL	45.1	1,362.5	1,113.9	759.1	11,466.1	1,246.9	1,122.3	709.5	10,726.0	5.09%	6.90
MI	Monroe	Lake Erie Transp Commission	DR	0.5	11.7	9.5	9.7	125.4	12.1	10.9	8.8	133.2	-2.83%	-5.86
MI	Monroe	Lake Erie Transp Commission	MB	1.0	23.0	19.6	19.4	261.4	22.6	27.8	19.5	259.6	-11.30%	0.69
MI	Monroe	Lake Erie Transp Commission	TOTAL	1.5	34.7	29.1	29.1	386.8	34.7	38.7	28.3	392.8	-8.65%	-1.53
MI	Muskegon Heights	Muskegon Area Transit Sys	DR	0.0	1.1	1.0	1.0	12.2	1.3	1.2	1.1	14.1	-13.89%	-13.48
MI	Muskegon Heights	Muskegon Area Transit Sys	MB	2.1	60.8	48.3	49.3	612.2	53.4	47.8	45.5	538.9	7.98%	13.60
MI	Muskegon Heights	Muskegon Area Transit Sys	TOTAL	2.1	61.9	49.3	50.3	624.4	54.7	49.0	46.6	553.0	7.45%	12.91
MI	Port Huron	Blue Water Area Transp Comm	DR	9.2	44.1	35.7	40.0	474.2	45.1	39.4	33.2	452.4	1.78%	4.82
MI	Port Huron	Blue Water Area Transp Comm	MB	13.0	59.9	54.9	54.8	NA	NA	NA	NA	NA	NA	N
MI	Port Huron	Blue Water Area Transp Comm	TOTAL	22.2	104.0	90.6	94.8	NA	NA	NA	NA	NA	NA	N
MN	Anoka	Anoka County Office of Transit	DR	0.2	5.7	5.0	5.1	57.0	4.7	4.1	4.0	52.1	23.44%	9.40
MN	Anoka	Anoka County Office of Transit	MB	1.7	41.1	32.2	34.2	439.9	36.4	31.9	28.8	383.0	10.71%	14.86
MN	Anoka	Anoka County Office of Transit	TOTAL	1.9	46.8	37.2	39.3	496.9	41.1	36.0	32.8	435.1	12.19%	14.20
MN	Burnsville	Minnesota Valley Transit Auth	DR	0.1	2.4	2.0	2.2	24.9	2.0	1.7	1.4	20.7	29.41%	20.29
MN	Burnsville	Minnesota Valley Transit Auth	MB	9.7	242.2	189.1	194.9	2,613.2	229.1	198.9	168.5	2,448.4	4.98%	6.73
MN	Burnsville	Minnesota Valley Transit Auth	TOTAL	9.8	244.6	191.1	197.1	2,638.1	231.1	200.6	169.9	2,469.1	5.19%	6.84
MN	Minneapolis	Metro Transit	LR	30.2	892.7	849.8	844.0	10,221.6	863.7	868.0	843.4	9,100.9	0.44%	12.31
MN	Minneapolis	Metro Transit	MB	234.1	6,510.0	5,430.8	5,319.6	71,613.4	6,318.6	5,670.4	5,187.6	67,865.9	0.49%	5.52
MN	Minneapolis	Metro Transit	TOTAL	264.3	7,402.7	6,280.6	6,163.6	81,835.0	7,182.3	6,538.4	6,031.0	76,966.8	0.48%	6.33

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MN	Plymouth	Plymouth Metrolink & DAR	DR	0.0	5.5	4.0	4.1	57.0	6.1	5.0	4.3	64.3	-11.69%	-11.35
MN	Plymouth	Plymouth Metrolink & DAR	MB	1.8	43.9	32.9	35.0	480.1	45.7	39.6	32.7	479.1	-5.25%	0.21
MN	Plymouth	Plymouth Metrolink & DAR	TOTAL	1.8	49.4	36.9	39.1	537.1	51.8	44.6	37.0	543.4	-6.00%	-1.16
MO	Kansas City	Kansas City Area Trp Auth	DR	1.7	44.9	38.4	38.8	500.5	40.3	39.4	37.0	458.1	4.63%	9.26
MO	Kansas City	Kansas City Area Trp Auth	MB	55.7	1,561.9	1,280.6	1,245.8	16,616.7	1,370.9	1,257.3	1,133.6	14,868.1	8.68%	11.76
MO	Kansas City	Kansas City Area Trp Auth	VP	0.2	5.7	4.5	4.9	69.8	6.3	5.7	5.0	71.9	-11.18%	-2.92
MO	Kansas City	Kansas City Area Trp Auth	TOTAL	57.6	1,612.5	1,323.5	1,289.5	17,187.0	1,417.5	1,302.4	1,175.6	15,398.1	8.47%	11.62
MO	Saint Louis	Bi-State Dev Agency	DR	2.5	64.3	54.8	57.3	710.8	61.5	57.3	54.1	672.4	2.02%	5.71
MO	Saint Louis	Bi-State Dev Agency	LR	59.0	1,810.6	1,566.5	1,488.4	20,212.7	1,642.1	1,542.4	1,418.5	19,070.0	5.70%	5.99
MO	Saint Louis	Bi-State Dev Agency	MB	116.5	3,414.1	2,842.9	2,609.3	35,025.6	3,064.7	2,781.1	2,527.0	32,176.3	5.89%	8.86
MO	Saint Louis	Bi-State Dev Agency	TOTAL	178.0	5,289.0	4,464.2	4,155.0	55,949.1	4,768.3	4,380.8	3,999.6	51,918.7	5.78%	7.76
MO	Springfield	City Utilities of Springfield	DR	0.1	1.7	1.5	1.4	17.4	1.6	1.3	1.2	16.7	12.20%	4.19
MO	Springfield	City Utilities of Springfield	MB	5.3	145.5	116.9	117.7	1,568.1	145.1	130.2	119.2	1,914.8	-3.65%	-18.11
MO	Springfield	City Utilities of Springfield	TOTAL	5.4	147.2	118.4	119.1	1,585.5	146.7	131.5	120.4	1,931.5	-3.49%	-17.91
MS	Jackson	Jackson Public Transportation	DR	0.9	2.0	2.0	2.0	28.9	2.4	2.3	2.0	31.0	-10.45%	-6.77
MS	Jackson	Jackson Public Transportation	MB	1.8	46.1	37.4	40.2	566.8	68.1	59.2	56.2	741.3	-32.59%	-23.54
MS	Jackson	Jackson Public Transportation	TOTAL	2.7	48.1	39.4	42.2	595.7	70.5	61.5	58.2	772.3	-31.81%	-22.87
NC	Boone	AppalCART	MB	5.2	179.5	125.1	82.1	1,145.5	150.7	117.6	46.4	975.7	22.88%	17.40
NC	Boone	AppalCART	TOTAL	5.2	179.5	125.1	82.1	1,145.5	150.7	117.6	46.4	975.7	22.88%	17.40
NC	Chapel Hill	Chapel Hill Transit	MB	28.4	745.7	606.6	437.8	6,637.0	716.4	571.5	359.6	5,788.7	8.66%	14.65
NC	Chapel Hill	Chapel Hill Transit	TOTAL	28.4	745.7	606.6	437.8	6,637.0	716.4	571.5	359.6	5,788.7	8.66%	14.65
NC	Charlotte	Charlotte Area Transit	DR	1.8	43.9	35.0	35.1	455.9	39.1	36.5	33.2	474.1	4.78%	-3.84
NC	Charlotte	Charlotte Area Transit	LR	21.7	476.4	400.1	424.5	4,975.0	0.0	161.2	356.0	517.2	>100%	>100
NC	Charlotte	Charlotte Area Transit	MB	88.1	2,033.9	1,629.5	1,620.4	20,680.5	1,795.1	1,635.6	1,455.7	19,119.5	8.13%	8.16
NC	Charlotte	Charlotte Area Transit	VP	1.1	23.5	18.6	21.7	255.1	20.0	19.7	19.2	235.3	8.32%	8.41
NC	Charlotte	Charlotte Area Transit	TOTAL	112.6	2,577.7	2,083.2	2,101.7	26,366.5	1,854.2	1,853.0	1,864.1	20,346.1	21.38%	29.59
NC	Greensboro	Greensboro Transit Auth	DR	0.6	17.8	15.4	14.0	198.6	17.8	15.9	13.8	180.8	-0.63%	9.85
NC	Greensboro	Greensboro Transit Auth	MB	13.7	395.3	315.5	295.8	3,860.2	343.6	317.3	277.8	3,923.4	7.23%	-1.61
NC	Greensboro	Greensboro Transit Auth	TOTAL	14.3	413.1	330.9	309.8	4,058.8	361.4	333.2	291.6	4,104.2	6.85%	-1.11
NC	Resrch Trigle Park	Triangle Transit Authority	MB	4.2	123.4	85.3	75.3	1,100.0	87.7	75.5	58.3	885.0	28.22%	24.29
NC	Resrch Trigle Park	Triangle Transit Authority	VP	1.9	43.6	34.3	40.7	446.0	36.5	31.4	30.0	394.1	21.14%	13.17
NC	Resrch Trigle Park	Triangle Transit Authority	TOTAL	6.1	167.0	119.6	116.0	1,546.0	124.2	106.9	88.3	1,279.1	26.05%	20.87

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NJ	Jersey City	Port Authority of NY & NJ	AG	5.8	170.6	154.0	187.0	1,941.9	160.2	171.9	178.1	1,794.4	0.27%	8.22
NJ	Jersey City	Port Authority of NY & NJ	FB	6.8	168.6	130.3	137.7	1,792.9	176.3	147.3	122.1	1,816.7	-2.04%	-1.31
NJ	Jersey City	Port Authority of NY & NJ	HR	250.4	6,765.0	5,734.9	6,040.3	74,937.7	6,636.4	5,961.9	5,673.4	71,593.5	1.47%	4.67
NJ	Jersey City	Port Authority of NY & NJ	TOTAL	263.0	7,104.2	6,019.2	6,365.0	78,672.5	6,972.9	6,281.1	5,973.6	75,204.6	1.36%	4.61
NJ	Lindenwold	Port Authority Transit Corp	HR	36.6	1,044.7	787.3	821.3	10,337.9	863.7	782.0	713.7	9,406.5	12.46%	9.90
NJ	Lindenwold	Port Authority Transit Corp	TOTAL	36.6	1,044.7	787.3	821.3	10,337.9	863.7	782.0	713.7	9,406.5	12.46%	9.90
NJ	Newark	New Jersey Transit Corp	CR	NA	6,656.7	6,416.5	6,533.1	77,527.6	6,582.0	6,533.4	6,480.5	74,854.5	0.05%	3.57
NJ	Newark	New Jersey Transit Corp	LR	NA	2,060.1	1,704.6	1,842.0	21,858.3	1,790.2	1,683.4	1,675.0	19,710.8	8.90%	10.90
NJ	Newark	New Jersey Transit Corp	MB	NA	15,200.4	12,885.5	13,106.1	166,219.8	14,626.6	13,339.0	12,434.6	159,736.2	1.96%	4.06
NJ	Newark	New Jersey Transit Corp	TOTAL	NA	23,917.2	21,006.6	21,481.2	265,605.7	22,998.8	21,555.8	20,590.1	254,301.5	1.93%	4.45
NM	Albuquerque	New Mexico Dept of Trp	CR	2.5	61.0	37.6	99.1	676.7	47.9	36.4	33.1	500.9	68.40%	35.10
NM	Albuquerque	New Mexico Dept of Trp	MB	1.4	36.7	26.3	22.0	399.7	31.8	27.9	23.3	330.3	2.41%	21.01
NM	Albuquerque	New Mexico Dept of Trp	TOTAL	3.9	97.7	63.9	121.1	1,076.4	79.7	64.3	56.4	831.2	41.07%	29.50
NM	Las Cruces	City of Las Cruces-RdRUNR Tr	DR	0.2	5.8	4.4	4.5	59.2	5.7	4.6	4.1	56.6	2.08%	4.59
NM	Las Cruces	City of Las Cruces-RdRUNR Tr	MB	2.2	68.4	51.4	47.4	651.9	66.9	60.7	50.8	717.3	-6.28%	-9.12
NM	Las Cruces	City of Las Cruces-RdRUNR Tr	TOTAL	2.4	74.2	55.8	51.9	711.1	72.6	65.3	54.9	773.9	-5.65%	-8.11
NV	Las Vegas	RTC of Southern Nevada	DR	3.3	91.7	72.0	85.6	1,015.8	82.9	71.0	67.7	905.5	12.50%	12.18
NV	Las Vegas	RTC of Southern Nevada	MB	198.6	6,185.0	5,411.1	5,207.6	67,336.1	5,768.6	5,215.9	4,993.7	64,242.6	5.17%	4.82
NV	Las Vegas	RTC of Southern Nevada	TOTAL	201.9	6,276.7	5,483.1	5,293.2	68,351.9	5,851.5	5,286.9	5,061.4	65,148.1	5.27%	4.92
NV	Reno	Regional Transportation Comm	DR	0.7	21.1	18.0	19.9	239.4	21.3	19.6	18.9	248.4	-1.34%	-3.62
NV	Reno	Regional Transportation Comm	MB	23.8	809.8	664.6	683.6	9,092.5	788.8	744.6	685.9	8,865.4	-2.76%	2.56
NV	Reno	Regional Transportation Comm	TOTAL	24.5	830.9	682.6	703.5	9,331.9	810.1	764.2	704.8	9,113.8	-2.72%	2.39
NV	Stateline	South Tahoe Area Transit Authority	DR	NA	1.8	NA	NA	NA	2.6	2.3	2.5	32.2	NA	N
NV	Stateline	South Tahoe Area Transit Authority	MB	NA	41.0	NA	NA	NA	25.0	27.0	109.0	792.0	NA	N
NV	Stateline	South Tahoe Area Transit Authority	TOTAL	NA	42.8	NA	NA	NA	27.6	29.3	111.5	824.2	NA	N
NY	Albany	Capital District Transp Auth	DR	0.8	19.3	17.0	17.6	213.7	17.0	16.9	15.8	195.7	8.45%	9.20
NY	Albany	Capital District Transp Auth	MB	52.8	1,479.2	1,214.8	1,202.1	15,052.2	1,320.1	1,165.8	1,057.2	13,302.7	9.96%	13.15
NY	Albany	Capital District Transp Auth	TOTAL	53.5	1,498.5	1,231.8	1,219.7	15,265.9	1,337.1	1,182.7	1,073.0	13,498.4	9.94%	13.09
NY	Buffalo	Niagara Frontier Trp Auth	DR	0.5	12.4	10.8	10.7	129.1	10.3	9.7	8.9	109.8	17.30%	17.58
NY	Buffalo	Niagara Frontier Trp Auth	LR	26.3	677.6	591.6	599.7	6,869.0	498.5	514.2	414.4	5,543.1	30.96%	23.92
NY	Buffalo	Niagara Frontier Trp Auth	MB	78.9	2,190.0	1,875.9	1,827.6	21,381.0	1,993.7	1,808.6	1,672.1	20,029.6	7.66%	6.75
NY	Buffalo	Niagara Frontier Trp Auth	TOTAL	105.7	2,880.0	2,478.3	2,438.0	28,379.1	2,502.5	2,332.5	2,095.4	25,682.5	12.49%	10.50
NY	Garden City	MTA Long Island Bus	DR	1.4	35.3	30.3	31.2	378.4	32.6	29.5	26.9	352.3	8.76%	7.41
NY	Garden City	MTA Long Island Bus	MB	108.1	2,974.4	2,535.6	2,579.2	32,649.2	2,993.1	2,701.8	2,522.6	32,088.2	-1.56%	1.75%
NY	Garden City	MTA Long Island Bus	TOTAL	109.5	3,009.7	2,565.9	2,610.4	33,027.6	3,025.7	2,731.3	2,549.5	32,440.5		

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NY	Ithaca	Tompkins Consol Area Transit	MB	12.5	357.6	295.5	230.5	3,231.7	330.4	292.6	177.5	3,098.8	10.38%	4.29
NY	Ithaca	Tompkins Consol Area Transit	TOTAL	12.5	NA	NA	NA	NA	330.4	292.6	177.5	3,098.8	NA	N
NY	New York	MTA Long Island Rail Road	CR	348.5	8,766.0	7,816.0	8,310.1	103,215.1	8,768.0	8,432.0	8,144.0	100,368.0	-1.78%	2.84
NY	New York	MTA Long Island Rail Road	TOTAL	348.5	8,766.0	7,816.0	8,310.1	103,215.1	8,768.0	8,432.0	8,144.0	100,368.0	-1.78%	2.84
NY	New York	MTA Metro-North Railroad	CR	291.9	7,457.3	6,466.7	7,119.4	82,948.7	7,264.1	6,782.1	6,820.0	79,724.7	0.85%	4.04
NY	New York	MTA Metro-North Railroad	FB	1.0	23.1	18.2	20.0	250.3	21.2	18.3	16.1	205.7	10.25%	21.68
NY	New York	MTA Metro-North Railroad	MB	1.5	35.6	29.0	33.7	412.8	38.2	34.2	30.6	393.3	-4.56%	4.96
NY	New York	MTA Metro-North Railroad	TOTAL	294.4	7,516.0	6,513.9	7,173.1	83,611.8	7,323.5	6,834.6	6,866.7	80,323.7	0.85%	4.09
NY	New York	MTA New York City Transit	DR	24.6	679.1	621.6	629.7	7,243.6	565.9	519.3	432.6	5,872.0	27.18%	23.36
NY	New York	MTA New York City Transit	HR	7,880.0	217,250.1	192,850.8	204,576.3	2,451,201.6	219,826.4	203,935.2	199,578.6	2,383,218.1	-1.39%	2.85
NY	New York	MTA New York City Transit	MB	2,385.3	67,457.3	59,242.7	60,382.3	746,977.4	68,338.3	61,406.3	58,016.4	738,039.6	-0.36%	1.21
NY	New York	MTA New York City Transit	TOTAL	10,289.9	285,386.5	252,715.1	265,588.3	3,205,422.6	288,730.6	265,860.8	258,027.6	3,127,129.7	-1.10%	2.50
NY	New York	MTA Staten Island Railway	HR	15.9	412.2	340.3	359.1	4,380.0	432.4	391.1	348.4	4,129.3	-5.15%	6.07
NY	New York	MTA Staten Island Railway	TOTAL	15.9	412.2	340.3	359.1	4,380.0	432.4	391.1	348.4	4,129.3	-5.15%	6.07
NY	New York	New York City DOT	FB	62.0	1,819.3	1,579.7	1,659.8	20,045.7	1,804.6	1,525.1	1,597.6	19,513.3	2.67%	2.73
NY	New York	New York City DOT	MB	2.6	65.2	51.3	53.7	704.6	67.2	57.8	46.9	679.6	-0.99%	3.68
NY	New York	New York City DOT	TOTAL	64.7	1,884.5	1,631.0	1,713.5	20,750.3	1,871.8	1,582.9	1,644.5	20,192.9	2.55%	2.76
NY	Syracuse	Centro of Cayuga	MB	1.7	40.2	34.5	38.4	444.4	30.7	29.8	29.1	355.3	26.23%	25.08
NY	Syracuse	Centro of Cayuga	TOTAL	1.7	40.2	34.5	38.4	444.4	30.7	29.8	29.1	355.3	26.23%	25.08
NY	Syracuse	Centro of Oswego	MB	1.7	40.1	35.7	33.6	336.4	27.1	25.9	19.4	312.8	51.10%	7.54
NY	Syracuse	Centro of Oswego	TOTAL	1.7	40.1	35.7	33.6	336.4	27.1	25.9	19.4	312.8	51.10%	7.54
NY	Syracuse	CNY Centro	DR	0.3	4.6	6.0	6.3	80.1	6.8	6.3	6.2	75.0	-12.44%	6.80
NY	Syracuse	CNY Centro	MB	44.1	1,098.0	935.1	795.3	10,645.5	941.8	842.5	711.9	9,576.9	13.31%	11.16
NY	Syracuse	CNY Centro	TOTAL	44.4	1,102.6	941.1	801.6	10,725.6	948.6	848.8	718.1	9,651.9	13.11%	11.12
OH	Canton	Stark Area RTA	DR	0.5	14.6	11.4	11.4	148.1	15.2	13.6	11.6	155.9	-7.43%	-5.00
OH	Canton	Stark Area RTA	MB	7.3	209.6	176.6	181.4	2,246.9	188.4	175.5	167.6	2,080.8	6.79%	7.98
OH	Canton	Stark Area RTA	TOTAL	7.8	224.2	188.0	192.8	2,395.0	203.6	189.1	179.2	2,236.7	5.79%	7.08
OH	Cincinnati	Southwest Ohio RTA	DR	0.8	22.1	18.4	19.0	238.4	22.2	19.8	18.1	249.4	-1.00%	-4.41
OH	Cincinnati	Southwest Ohio RTA	MB	63.9	2,027.1	1,600.1	1,610.3	21,354.1	2,171.1	1,921.5	1,776.0	22,709.1	-10.75%	-5.97
OH	Cincinnati	Southwest Ohio RTA	TOTAL	64.7	2,049.2	1,618.5	1,629.3	21,592.5	2,193.3	1,941.3	1,794.1	22,958.5	-10.65%	-5.95

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OH	Cleveland	Greater Cleveland Reg TA	DR	NA	45.3	38.2	41.1	507.2	45.5	42.2	39.2	481.0	-1.81%	5.45
OH	Cleveland	Greater Cleveland Reg TA	HR	NA	572.0	481.8	483.9	5,929.7	562.8	479.0	437.0	5,908.2	3.98%	0.36
OH	Cleveland	Greater Cleveland Reg TA	LR	NA	320.3	307.1	296.7	3,278.4	296.3	288.6	258.4	3,198.8	9.58%	2.49
OH	Cleveland	Greater Cleveland Reg TA	MB	209.5	4,668.5	3,797.4	3,742.2	47,571.8	4,529.3	4,032.5	3,594.2	47,663.1	0.43%	-0.19
OH	Cleveland	Greater Cleveland Reg TA	TOTAL	NA	5,606.1	4,624.5	4,563.9	57,287.1	5,433.9	4,842.3	4,328.8	57,251.1	1.30%	0.06
OH	Columbus	Central Ohio Transit Auth	DR	0.7	18.7	16.6	17.7	198.0	15.5	14.3	13.5	166.5	22.40%	18.92
OH	Columbus	Central Ohio Transit Auth	MB	57.0	1,625.4	1,309.0	1,277.6	16,330.1	1,423.0	1,290.6	1,129.8	14,880.6	9.59%	9.74
OH	Columbus	Central Ohio Transit Auth	TOTAL	57.7	1,644.1	1,325.6	1,295.3	16,528.1	1,438.5	1,304.9	1,143.3	15,047.1	9.73%	9.84
OH	Delaware	Delaware Area Transit Agency	MB	0.2	5.1	3.3	3.4	48.8	5.6	4.8	4.5	53.1	-20.81%	-8.10
OH	Delaware	Delaware Area Transit Agency	TOTAL	0.2	5.1	3.3	3.4	48.8	5.6	4.8	4.5	53.1	-20.81%	-8.10
OH	Grand River	LAKETRAN	DR	1.3	32.1	25.9	27.1	354.4	33.0	29.7	25.8	362.6	-3.84%	-2.26
OH	Grand River	LAKETRAN	MB	2.3	60.0	45.6	43.8	623.1	56.9	49.4	42.0	589.5	0.74%	5.70
OH	Grand River	LAKETRAN	TOTAL	3.7	92.1	71.5	70.9	977.5	89.9	79.1	67.8	952.1	-0.97%	2.67
OH	Kent	Portage Area Reg Trp Auth	DR	NA	10.1	8.0	8.5	118.6	13.2	11.2	9.2	151.2	-20.83%	-21.56
OH	Kent	Portage Area Reg Trp Auth	MB	NA	189.5	132.5	76.0	1,299.0	189.3	142.7	75.5	1,223.0	-2.33%	6.21
OH	Kent	Portage Area Reg Trp Auth	TOTAL	NA	199.6	140.5	84.5	1,417.6	202.5	153.9	84.7	1,374.2	-3.74%	3.16
OH	Zanesville	South East Area Transit	DR	0.1	1.7	1.2	0.9	16.8	1.9	1.4	1.8	16.9	-25.49%	-0.59
OH	Zanesville	South East Area Transit	MB	0.3	5.2	5.5	5.4	70.5	5.9	5.9	6.5	63.2	-12.02%	11.55
OH	Zanesville	South East Area Transit	TOTAL	0.4	6.9	6.7	6.3	87.3	7.8	7.3	8.3	80.1	-14.96%	8.99
OK	Oklahoma City	Central Oklahoma TA	DR	0.2	5.5	4.5	4.8	63.0	5.8	5.3	4.3	61.3	-3.90%	2.77
OK	Oklahoma City	Central Oklahoma TA	MB	8.8	255.1	209.7	200.6	2,652.0	227.9	201.9	167.8	2,597.7	11.35%	2.09
OK	Oklahoma City	Central Oklahoma TA	TOTAL	9.1	260.6	214.2	205.4	2,715.0	233.7	207.2	172.1	2,659.0	10.96%	2.11
OK	Tulsa	Metro Tulsa Transit Auth	MB	11.0	269.1	210.7	200.5	2,704.3	228.0	198.9	159.6	2,387.9	15.99%	13.25
OK	Tulsa	Metro Tulsa Transit Auth	TOTAL	11.0	269.1	210.7	200.5	2,704.3	228.0	198.9	159.6	2,387.9	15.99%	13.25
OR	Portland	Tri-County Metro Trp Dist	DR	3.5	102.4	87.8	67.1	1,105.2	102.2	92.3	87.7	1,100.7	-8.82%	0.41
OR	Portland	Tri-County Metro Trp Dist	LR	107.6	3,132.7	2,707.0	2,912.0	35,772.9	3,027.6	2,839.0	2,667.8	34,700.4	2.55%	3.09
OR	Portland	Tri-County Metro Trp Dist	MB	214.8	6,152.0	5,214.9	5,213.3	66,759.2	5,604.2	5,094.9	4,897.7	62,609.6	6.31%	6.63
OR	Portland	Tri-County Metro Trp Dist	TOTAL	325.9	9,387.1	8,009.7	8,192.4	103,637.3	8,734.0	8,026.2	7,653.2	98,410.7	4.82%	5.31
OR	Salem	Salem-Keizer Transit	DR	0.4	11.4	8.4	7.4	125.6	11.1	9.7	10.1	121.0	-11.97%	3.80
OR	Salem	Salem-Keizer Transit	MB	17.5	474.5	370.9	370.4	5,157.1	460.6	403.8	369.3	5,053.3	-1.45%	2.05
OR	Salem	Salem-Keizer Transit	TOTAL	17.9	485.9	379.3	377.8	5,282.7	471.7	413.5	379.4	5,174.3	-1.71%	2.09
PA	Butler	Butler Transit Authority	MB	6.5	21.6	18.7	19.5	225.3	18.6	17.2	16.1	190.2	15.22%	18.45
PA	Butler	Butler Transit Authority	TOTAL	6.5	21.6	18.7	19.5	225.3	18.6	17.2	16.1	190.2	15.22%	18.45

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PA	Charleroi	Mid Mon Valley Transit Auth	MB	1.6	41.6	33.4	27.3	372.0	35.0	31.1	24.3	339.2	13.16%	9.67
PA	Charleroi	Mid Mon Valley Transit Auth	TOTAL	1.6	41.6	33.4	27.3	372.0	35.0	31.1	24.3	339.2	13.16%	9.67
PA	Greensburg	Westmoreland County TA	DR	0.0	0.7	0.6	0.6	NA	0.5	0.4	0.4	4.8	46.15%	N
PA	Greensburg	Westmoreland County TA	MB	1.7	41.5	32.4	33.3	NA	35.3	31.3	26.1	360.8	15.64%	N
PA	Greensburg	Westmoreland County TA	TOTAL	1.7	42.2	33.0	33.9	NA	35.8	31.7	26.5	365.6	16.06%	N
PA	Harrisburg	Cumberland-Dauphin-Harrisburg TA	DR	0.8	18.6	15.3	16.9	204.6	18.5	16.4	14.8	210.7	2.21%	-2.90
PA	Harrisburg	Cumberland-Dauphin-Harrisburg TA	MB	9.7	254.6	205.4	210.9	2,670.7	228.6	201.9	184.2	2,429.6	9.14%	9.92
PA	Harrisburg	Cumberland-Dauphin-Harrisburg TA	TOTAL	10.4	273.2	220.7	227.8	2,875.3	247.1	218.3	199.0	2,640.3	8.62%	8.90
PA	Harris-Phil	Penn DOT (Keystone)	CR	1.7	50.1	42.6	42.8	513.9	41.0	40.4	36.8	436.5	14.64%	17.73
PA	Harris-Phil	Penn DOT (Keystone)	TOTAL	1.7	50.1	42.6	42.8	513.9	41.0	40.4	36.8	436.5	14.64%	17.73
PA	Johnstown	Cambria County Transit Auth	DR	0.0	0.4	0.3	0.3	3.3	0.2	0.2	0.2	3.2	66.67%	3.12
PA	Johnstown	Cambria County Transit Auth	IP	0.2	8.7	4.8	3.1	101.6	9.7	4.4	3.9	103.7	-7.78%	-2.03
PA	Johnstown	Cambria County Transit Auth	MB	3.0	98.0	82.2	86.2	1,128.3	93.2	85.7	87.0	1,127.1	0.19%	0.11
PA	Johnstown	Cambria County Transit Auth	TOTAL	3.2	107.1	87.3	89.6	1,233.2	103.1	90.3	91.1	1,234.0	-0.18%	-0.06
PA	Lancaster	Red Rose Transit Authority	DR	1.2	29.3	23.9	25.8	326.1	30.2	27.2	24.7	344.7	-3.78%	-5.40
PA	Lancaster	Red Rose Transit Authority	MB	7.2	220.5	163.0	163.3	2,116.8	183.6	170.9	157.0	1,947.4	6.90%	8.70
PA	Lancaster	Red Rose Transit Authority	TOTAL	8.3	249.8	186.9	189.1	2,442.9	213.8	198.1	181.7	2,292.1	5.42%	6.58
PA	Lebanon	County of Lebanon Tr Auth	DR	0.2	5.6	4.6	5.0	61.8	5.4	5.2	4.6	60.3	0.00%	2.49
PA	Lebanon	County of Lebanon Tr Auth	MB	1.1	29.7	25.3	26.1	329.8	25.9	24.0	23.8	270.1	10.04%	22.10
PA	Lebanon	County of Lebanon Tr Auth	TOTAL	1.3	35.3	29.9	31.1	391.6	31.3	29.2	28.4	330.4	8.32%	18.52
PA	Philadelphia	Southeastern Penn TA	CR	128.0	2,900.3	3,520.8	2,600.7	36,167.7	2,797.5	3,480.6	2,675.1	33,360.4	0.77%	8.42
PA	Philadelphia	Southeastern Penn TA	DR	6.1	145.0	172.1	133.6	1,782.9	144.9	169.3	130.6	1,769.4	1.33%	0.76
PA	Philadelphia	Southeastern Penn TA	HR	318.0	7,266.6	9,276.3	7,017.5	90,999.3	7,303.1	9,009.2	6,831.3	89,418.7	1.80%	1.77
PA	Philadelphia	Southeastern Penn TA	LR	112.6	2,720.0	3,152.3	2,451.1	32,453.3	2,482.1	3,060.5	2,305.3	26,317.6	6.06%	23.31
PA	Philadelphia	Southeastern Penn TA	MB	558.3	13,214.2	15,752.0	12,294.8	164,944.6	13,211.3	16,287.2	12,352.3	162,135.9	-1.41%	1.73
PA	Philadelphia	Southeastern Penn TA	TB	18.2	445.9	502.2	392.6	3,516.1	0.0	0.0	0.0	0.0	NA	N
PA	Philadelphia	Southeastern Penn TA	TOTAL	1,141.2	26,692.0	32,375.7	24,890.3	329,863.9	25,938.9	32,006.8	24,294.6	313,002.0	2.09%	5.39
PA	Pittsburgh	Port Auth of Allegheny Co	DR	5.9	157.0	131.5	136.5	1,701.2	159.8	138.9	129.8	1,704.5	-0.82%	-0.19
PA	Pittsburgh	Port Auth of Allegheny Co	IP	2.4	94.9	81.1	80.0	1,143.8	94.7	86.1	82.2	1,085.0	-2.66%	5.42
PA	Pittsburgh	Port Auth of Allegheny Co	LR	25.7	676.0	569.0	591.0	7,306.2	647.5	615.1	571.3	6,922.6	0.11%	5.54
PA	Pittsburgh	Port Auth of Allegheny Co	MB	198.7	5,557.0	4,661.0	4,502.0	58,373.6	5,502.0	4,886.0	4,283.4	59,320.4	0.33%	-1.60
PA	Pittsburgh	Port Auth of Allegheny Co	TOTAL	232.7	6,484.9	5,442.6	5,309.5	68,524.8	6,404.0	5,726.1	5,066.7	69,032.5	0.23%	-0.74
PA	Reading	Berks Area Reading Trp Auth	DR	0.9	20.7	17.4	17.8	224.9	20.8	18.1	16.1	220.5	1.64%	2.00
PA	Reading	Berks Area Reading Trp Auth	MB	10.2	273.9	228.9	242.7	2,958.3	259.5	239.2	230.1	2,753.4	2.29%	7.44%
PA	Reading	Berks Area Reading Trp Auth	TOTAL	11.1	294.6	246.3	260.5	3,183.2	280.3	257.3	246.2	2,973.9	2.25%	7.04%

State and Primary City		Transit Agency	Mode	Average Weekday (000's)	Trips for Oct '08 (000's)	Trips for Nov '08 (000's)	Trips for Dec '08 (000's)	Trips Thru Dec '08 (000's)	Trips for Oct '07 (000's)	Trips for Nov '07 (000's)	Trips for Dec '07 (000's)	Trips Thru Dec '07 (000's)	Quarterly Change	Year-to-Da Chan
PA	Rochester	Beaver County Transit Authority	DR	0.4	8.8	7.1	7.1	94.4	9.2	8.0	6.9	99.9	-4.56%	-5.51
PA	Rochester	Beaver County Transit Authority	MB	3.1	76.4	61.9	64.5	808.1	67.1	61.1	55.6	704.3	10.34%	14.74
PA	Rochester	Beaver County Transit Authority	TOTAL	3.5	85.2	69.0	71.6	902.5	76.3	69.1	62.5	804.2	8.61%	12.22
PA	Scotrun	Monroe County Transp Auth	MB	0.9	30.9	24.2	24.2	323.3	31.2	27.7	24.5	252.1	-4.92%	28.24
PA	Scotrun	Monroe County Transp Auth	TOTAL	0.9	30.9	24.2	24.2	323.3	31.2	27.7	24.5	252.1	-4.92%	28.24
PA	Williamsport	Williamsport Bureau of Tr	DR	0.0	0.1	0.1	0.2	1.6	0.2	0.1	0.1	1.8	0.00%	-11.11
PA	Williamsport	Williamsport Bureau of Tr	MB	4.4	116.9	98.2	103.5	1,329.7	107.5	101.1	101.6	1,244.5	2.71%	6.85
PA	Williamsport	Williamsport Bureau of Tr	TOTAL	4.4	117.0	98.3	103.7	1,331.3	107.7	101.2	101.7	1,246.3	2.70%	6.82
PR	San Juan	Puerto Rico DOT	HR	36.8	929.7	739.8	756.2	9,304.2	807.4	696.9	603.8	8,215.2	15.07%	13.26
PR	San Juan	Puerto Rico DOT	MB	7.1	181.0	145.0	143.0	2,076.5	171.6	184.7	163.4	2,235.3	-9.76%	-7.10
PR	San Juan	Puerto Rico DOT	TOTAL	43.9	1,110.7	884.8	899.2	11,380.7	979.0	881.6	767.2	10,450.5	10.16%	8.90
TN	Chattanooga	Chattanooga Area RTA	DR	NA	3.9	3.3	3.4	43.4	4.0	3.5	3.1	42.6	0.00%	1.88
TN	Chattanooga	Chattanooga Area RTA	IP	NA	28.3	18.8	12.1	385.7	38.8	24.3	16.4	374.6	-25.53%	2.96
TN	Chattanooga	Chattanooga Area RTA	MB	NA	253.5	199.7	186.1	2,789.0	261.6	225.0	198.0	2,712.6	-6.62%	2.82
TN	Chattanooga	Chattanooga Area RTA	TOTAL	NA	285.7	221.8	201.6	3,218.1	304.4	252.8	217.5	3,129.8	-8.47%	2.82
TN	Clarksville	Clarksville Transit System	DR	0.1	3.1	2.5	2.7	35.0	3.2	2.8	2.6	35.3	-3.49%	-0.85
TN	Clarksville	Clarksville Transit System	MB	2.4	66.3	55.5	56.2	723.3	60.3	54.8	54.5	644.4	4.95%	12.24
TN	Clarksville	Clarksville Transit System	TOTAL	2.5	69.4	58.0	58.9	758.3	63.5	57.6	57.1	679.7	4.55%	11.56
TN	Memphis	Memphis Area Transit Auth	DR	0.9	23.6	18.8	19.1	254.5	23.5	20.4	18.6	254.0	-1.60%	0.20
TN	Memphis	Memphis Area Transit Auth	LR	2.8	100.9	72.3	61.6	1,060.3	92.2	81.0	53.8	1,079.3	3.44%	-1.76
TN	Memphis	Memphis Area Transit Auth	MB	37.7	1,006.0	808.1	884.2	10,414.5	940.6	852.1	847.2	10,393.0	2.21%	0.21
TN	Memphis	Memphis Area Transit Auth	TOTAL	41.3	1,130.5	899.2	964.9	11,729.3	1,056.3	953.5	919.6	11,726.3	2.23%	0.03
TN	Nashville	Metropolitan Transit Auth	DR	NA	24.4	20.7	21.3	266.2	21.8	20.1	18.7	234.5	9.57%	13.52
TN	Nashville	Metropolitan Transit Auth	MB	NA	872.7	673.9	678.1	9,118.9	818.0	741.1	696.6	8,614.1	-1.37%	5.86
TN	Nashville	Metropolitan Transit Auth	TOTAL	NA	897.1	694.6	699.4	9,385.1	839.8	761.2	715.3	8,848.6	-1.09%	6.06
TX	Austin	Capital Metropolitan Trp Auth	DR	2.3	62.1	48.9	56.8	706.8	63.1	56.2	53.0	677.4	-2.61%	4.34
TX	Austin	Capital Metropolitan Trp Auth	MB	137.0	4,177.8	3,114.7	2,666.7	37,082.9	3,766.0	3,593.1	2,537.2	34,580.0	0.64%	7.24
TX	Austin	Capital Metropolitan Trp Auth	VP	1.4	32.9	24.3	24.4	351.0	29.8	25.6	21.1	322.0	6.67%	9.01
TX	Austin	Capital Metropolitan Trp Auth	TOTAL	140.7	4,272.8	3,187.9	2,747.9	38,140.7	3,858.9	3,674.9	2,611.3	35,579.4	0.63%	7.20
TX	Bryan	Brazos Transit District	DR	0.1	6.7	5.3	5.4	63.9	5.2	4.5	4.0	58.2	27.01%	9.79
TX	Bryan	Brazos Transit District	MB	1.0	23.3	17.4	18.0	240.4	22.5	19.3	17.8	227.0	-1.51%	5.90
TX	Bryan	Brazos Transit District	TOTAL	1.1	30.0	22.7	23.4	304.3	27.7	23.8	21.8	285.2	3.82%	6.70

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TX	Corpus Christi	Corpus Christi Regional TA	DR	0.9	19.6	15.6	16.6	210.4	16.7	16.5	16.4	202.5	4.44%	3.9(
TX	Corpus Christi	Corpus Christi Regional TA	FB	0.0	0.0	0.0	0.0	24.1	0.0	0.0	0.0	0.0	0.00%	N
TX	Corpus Christi	Corpus Christi Regional TA	MB	20.6	499.0	399.1	394.8	5,238.8	485.7	426.7	407.5	4,958.5	-2.05%	5.6
TX	Corpus Christi	Corpus Christi Regional TA	VP	0.0	0.7	0.9	0.8	21.2	0.6	0.3	1.3	17.4	9.09%	21.8
TX	Corpus Christi	Corpus Christi Regional TA	TOTAL	21.5	519.3	415.6	412.2	5,494.5	503.0	443.5	425.2	5,178.4	-1.79%	6.1(
TX	Dallas	Dallas Area Rapid Transit	DR	2.5	68.4	55.8	58.1	742.4	65.7	58.1	53.1	699.9	3.05%	6.07
TX	Dallas	Dallas Area Rapid Transit	LR	69.8	1,851.3	1,571.4	1,652.9	19,826.5	1,662.8	1,493.5	1,530.2	17,990.6	8.30%	10.2(
TX	Dallas	Dallas Area Rapid Transit	MB	156.9	4,533.1	3,559.0	3,395.5	45,419.2	4,170.2	3,647.5	3,284.6	44,357.1	3.47%	2.3
TX	Dallas	Dallas Area Rapid Transit	TOTAL	229.2	6,452.8	5,186.2	5,106.5	65,988.1	5,898.7	5,199.1	4,867.9	63,047.6	4.88%	4.6
TX	Dallas-Ft Worth	Trinity Railway Express	CR	10.5	327.5	214.3	215.7	2,850.4	234.1	204.2	186.2	2,497.2	21.30%	14.14
TX	Dallas-Ft Worth	Trinity Railway Express	TOTAL	10.5	327.5	214.3	215.7	2,850.4	234.1	204.2	186.2	2,497.2	21.30%	14.14
TX	El Paso	El Paso Mass Transit Dept	DR	0.6	19.2	15.5	16.1	227.0	22.8	19.8	18.1	241.7	-16.31%	-6.08
TX	El Paso	El Paso Mass Transit Dept	MB	43.0	1,249.1	1,094.2	1,073.0	12,858.5	1,127.5	1,062.4	1,005.2	12,501.0	6.92%	2.8
TX	El Paso	El Paso Mass Transit Dept	TOTAL	43.6	1,268.3	1,109.7	1,089.1	13,085.5	1,150.3	1,082.2	1,023.3	12,742.7	6.49%	2.6
TX	Fort Worth	Fort Worth Trp Auth	DR	1.4	33.0	28.5	30.0	360.7	29.7	28.0	26.3	321.4	8.93%	12.23
TX	Fort Worth	Fort Worth Trp Auth	MB	22.0	565.3	506.7	463.5	6,337.1	575.6	516.0	472.0	6,265.0	-1.80%	1.1
TX	Fort Worth	Fort Worth Trp Auth	VP	2.7	23.0	19.0	20.0	552.6	52.8	49.0	50.3	569.3	-59.24%	-2.9
TX	Fort Worth	Fort Worth Trp Auth	TOTAL	26.0	621.3	554.2	513.5	7,250.4	658.1	593.0	548.6	7,155.7	-6.15%	1.32
TX	Galveston	City of Galveston/Island Tr	DR	0.0	0.6	0.5	0.4	23.3	2.4	2.1	2.0	27.4	-76.92%	-14.9
TX	Galveston	City of Galveston/Island Tr	LR	0.0	0.0	0.0	0.0	17.9	1.1	0.8	1.2	31.5	-100.00%	-43.17
TX	Galveston	City of Galveston/Island Tr	MB	0.0	47.7	43.9	35.1	1,002.4	98.8	89.7	89.0	1,150.8	-54.34%	-12.9(
TX	Galveston	City of Galveston/Island Tr	TOTAL	0.0	48.3	44.4	35.5	1,043.6	102.3	92.6	92.2	1,209.7	-55.35%	-13.7
TX	Houston	Metro Tr Auth of Harris Co	DR	5.9	131.8	111.7	114.7	1,413.7	135.6	119.2	112.1	1,446.2	-2.37%	-2.2
TX	Houston	Metro Tr Auth of Harris Co	LR	39.3	1,081.7	906.0	863.6	11,640.2	1,142.2	985.3	883.3	12,013.6	-5.30%	-3.11
TX	Houston	Metro Tr Auth of Harris Co	MB	269.5	7,532.9	6,137.8	5,681.7	81,175.3	8,169.1	7,503.9	7,126.2	85,867.7	-15.12%	-5.4
TX	Houston	Metro Tr Auth of Harris Co	VP	10.6	249.0	193.8	203.6	2,584.6	219.9	190.0	155.6	2,201.8	14.31%	17.3
TX	Houston	Metro Tr Auth of Harris Co	TOTAL	325.2	8,995.4	7,349.3	6,863.6	96,813.8	9,666.8	8,798.4	8,277.2	101,529.3	-13.22%	-4.6
TX	Laredo	El Metro	DR	0.2	5.1	4.1	3.5	50.6	4.6	4.1	3.6	50.4	3.25%	0.4(
TX	Laredo	El Metro	MB	13.2	316.1	255.9	272.1	4,034.9	402.1	363.2	370.3	4,358.5	-25.67%	-7.42
TX	Laredo	El Metro	TOTAL	13.4	321.2	260.0	275.6	4,085.5	406.7	367.3	373.9	4,408.9	-25.36%	-7.34
TX	Lewisville	Denton County Transportation Auth	DR	0.2	4.6	3.5	3.3	45.1	3.4	3.1	2.6	37.1	25.27%	21.5
TX	Lewisville	Denton County Transportation Auth	MB	9.7	296.6	208.0	103.0	1,937.8	278.1	212.3	92.9	1,778.8	4.17%	8.9
TX	Lewisville	Denton County Transportation Auth	TOTAL	9.9	301.2	211.5	106.3	1,982.9	281.5	215.4	95.5	1,815.9	4.49%	9.2(

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TX	Lubbock	Citibus	DR	0.3	9.6	7.7	7.7	97.9	8.7	7.6	7.1	93.2	6.84%	5.04
TX	Lubbock	Citibus	MB	11.5	348.5	273.5	122.3	2,742.5	400.5	310.5	137.5	2,872.0	-12.28%	-4.51
TX	Lubbock	Citibus	TOTAL	11.8	358.1	281.2	130.0	2,840.4	409.2	318.1	144.6	2,965.2	-11.77%	-4.21
TX	San Antonio	VIA Metropolitan Transit	DR	3.8	100.9	82.7	86.0	1,086.8	98.4	86.4	80.7	1,081.7	1.54%	0.47
TX	San Antonio	VIA Metropolitan Transit	MB	144.2	4,292.0	3,669.2	3,469.1	45,893.9	4,006.4	3,623.6	3,470.7	41,657.6	2.97%	10.17
TX	San Antonio	VIA Metropolitan Transit	TOTAL	148.1	4,392.9	3,751.9	3,555.1	46,980.7	4,104.8	3,710.0	3,551.4	42,739.3	2.94%	9.92
TX	Waco	Waco Transit System	DR	0.2	7.2	5.7	5.8	75.2	6.7	6.0	5.5	73.3	2.75%	2.59
TX	Waco	Waco Transit System	MB	2.3	73.0	58.3	48.5	706.0	68.9	58.7	46.6	643.9	3.21%	9.64
TX	Waco	Waco Transit System	TOTAL	2.5	80.2	64.0	54.3	781.2	75.6	64.7	52.1	717.2	3.17%	8.92
UT	Logan	Logan/Cache Valley TD	DR	0.1	2.5	2.0	2.2	26.8	2.4	2.1	1.7	25.2	8.06%	6.35
UT	Logan	Logan/Cache Valley TD	MB	7.1	200.2	153.1	125.5	1,930.3	181.8	152.9	117.5	1,720.0	5.88%	12.23
UT	Logan	Logan/Cache Valley TD	TOTAL	7.2	202.7	155.1	127.7	1,957.1	184.2	155.0	119.2	1,745.2	5.91%	12.14
UT	Salt Lake City	Utah Transit Authority	CR	5.8	167.6	123.2	133.1	1,385.9	0.0	0.0	0.0	0.0	NA	N
UT	Salt Lake City	Utah Transit Authority	DR	1.9	43.6	36.1	39.6	481.1	44.7	40.1	34.2	484.3	0.25%	-0.66
UT	Salt Lake City	Utah Transit Authority	LR	44.8	1,221.3	1,082.0	1,124.9	13,949.0	1,095.7	1,078.1	960.2	12,425.3	9.39%	12.26
UT	Salt Lake City	Utah Transit Authority	MB	89.0	2,169.4	1,832.0	1,910.8	22,080.7	2,005.2	1,886.3	1,762.6	20,981.0	4.56%	5.24
UT	Salt Lake City	Utah Transit Authority	VP	5.7	134.4	118.9	118.9	1,658.0	147.5	142.3	143.4	1,656.3	-14.08%	0.10
UT	Salt Lake City	Utah Transit Authority	TOTAL	147.3	3,736.3	3,192.2	3,327.3	39,554.7	3,293.1	3,146.8	2,900.4	35,546.9	9.80%	11.27
VA	Alexandria	Alexandria Transit Company	MB	13.8	370.4	300.7	314.2	4,054.6	354.1	310.7	287.5	3,875.0	3.47%	4.63
VA	Alexandria	Alexandria Transit Company	TOTAL	13.8	370.4	300.7	314.2	4,054.6	354.1	310.7	287.5	3,875.0	3.47%	4.63
VA	Alexandria	Virginia Railway Express	CR	15.8	352.7	271.1	297.4	3,817.1	324.0	277.4	245.1	3,504.1	8.82%	8.93
VA	Alexandria	Virginia Railway Express	TOTAL	15.8	352.7	271.1	297.4	3,817.1	324.0	277.4	245.1	3,504.1	8.82%	8.93
VA	Arlington	Arlington Transit (ART)	MB	4.7	129.2	108.0	114.2	1,382.6	100.8	94.5	89.3	1,114.0	23.47%	24.11
VA	Arlington	Arlington Transit (ART)	TOTAL	4.7	129.2	108.0	114.2	1,382.6	100.8	94.5	89.3	1,114.0	23.47%	24.11
VA	Fairfax	City of Fairfax CUE Bus	MB	4.5	108.2	85.6	80.9	1,080.6	102.1	86.2	69.6	1,064.7	6.51%	1.49
VA	Fairfax	City of Fairfax CUE Bus	TOTAL	4.5	108.2	85.6	80.9	1,080.6	102.1	86.2	69.6	1,064.7	6.51%	1.49
VA	Fairfax	Fairfax County Dept of Transp	MB	32.7	906.5	715.9	769.6	9,420.7	765.2	695.0	593.6	8,363.3	16.47%	12.64
VA	Fairfax	Fairfax County Dept of Transp	TOTAL	32.7	906.5	715.9	769.6	9,420.7	765.2	695.0	593.6	8,363.3	16.47%	12.64
VA	Hampton	Hampton Roads Transit	DR	0.9	23.5	19.8	21.2	250.8	21.7	19.1	18.7	238.0	8.40%	5.38
VA	Hampton	Hampton Roads Transit	FB	0.6	25.0	18.5	14.9	368.0	29.9	22.0	15.4	393.2	-13.22%	-6.41
VA	Hampton	Hampton Roads Transit	MB	74.4	3,146.4	1,004.5	1,511.1	24,250.9	2,300.7	2,506.1	1,692.0	24,329.7	-12.88%	-0.32
VA	Hampton	Hampton Roads Transit	VP	0.8	25.6	13.7	13.4	231.6	17.1	16.3	14.8	195.3	9.34%	18.59
VA	Hampton	Hampton Roads Transit	TOTAL	76.7	3,220.5	1,056.5	1,560.6	25,101.3	2,369.4	2,563.5	1,740.9	25,156.2	-12.53%	-0.22

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VA	Richmond	Greater Richmond Transit Co	DR	0.9	20.4	18.9	19.7	237.5	21.0	19.2	17.7	224.8	1.90%	5.65
VA	Richmond	Greater Richmond Transit Co	MB	37.4	976.8	777.4	790.9	10,045.9	928.2	815.1	717.3	9,613.3	3.43%	4.50
VA	Richmond	Greater Richmond Transit Co	VP	1.9	43.3	36.4	42.0	434.9	32.1	30.6	29.6	339.0	31.85%	28.29
VA	Richmond	Greater Richmond Transit Co	TOTAL	40.2	1,040.5	832.7	852.6	10,718.3	981.3	864.9	764.6	10,177.1	4.40%	5.32
VA	Williamsburg	Williamsburg Area Transport	DR	0.0	0.5	0.4	0.5	5.2	0.5	0.5	0.3	4.6	7.69%	13.04
VA	Williamsburg	Williamsburg Area Transport	MB	2.0	60.8	44.8	62.0	811.7	54.7	54.3	42.2	725.0	10.85%	11.96
VA	Williamsburg	Williamsburg Area Transport	TOTAL	2.0	61.3	45.2	62.5	816.9	55.2	54.8	42.5	729.6	10.82%	11.97
VA	Woodbridge	PRTC Omni-Ride	MB	12.3	302.8	236.7	244.8	3,080.4	248.9	220.8	194.4	2,737.4	18.10%	12.53
VA	Woodbridge	PRTC Omni-Ride	TOTAL	12.3	302.8	236.7	244.8	3,080.4	248.9	220.8	194.4	2,737.4	18.10%	12.53
WA	Bremerton	Kitsap Transit	DR	1.5	39.0	32.2	27.2	428.6	39.5	35.4	30.5	438.7	-6.64%	-2.30
WA	Bremerton	Kitsap Transit	FB	1.6	45.7	35.9	33.2	523.9	42.7	37.7	33.4	465.9	0.88%	12.45
WA	Bremerton	Kitsap Transit	MB	13.9	376.7	309.1	285.6	4,110.0	349.2	321.1	286.0	3,871.1	1.58%	6.17
WA	Bremerton	Kitsap Transit	VP	1.4	29.6	26.4	22.7	312.9	26.7	23.9	20.8	300.3	10.22%	4.20
WA	Bremerton	Kitsap Transit	TOTAL	18.5	491.0	403.6	368.7	5,375.4	458.1	418.1	370.7	5,076.0	1.32%	5.90
WA	Everett	Everett Transit System	DR	0.3	10.3	8.7	7.5	111.6	9.6	8.4	8.3	102.7	0.76%	8.67
WA	Everett	Everett Transit System	MB	8.2	239.6	197.2	203.7	2,513.6	201.1	184.6	173.0	2,226.5	14.64%	12.89
WA	Everett	Everett Transit System	TOTAL	8.5	249.9	205.9	211.2	2,625.2	210.7	193.0	181.3	2,329.2	14.02%	12.71
WA	Everett	Snohomish County PTBA	DR	0.6	19.8	17.1	13.9	214.6	19.8	17.6	16.2	212.2	-5.22%	1.13
WA	Everett	Snohomish County PTBA	MB	35.1	1,008.8	806.2	713.0	10,259.7	877.9	778.6	668.8	9,058.4	8.72%	13.26
WA	Everett	Snohomish County PTBA	VP	3.1	65.9	68.0	60.4	855.4	70.9	63.8	53.6	738.4	3.19%	15.85
WA	Everett	Snohomish County PTBA	TOTAL	38.8	1,094.5	891.3	787.3	11,329.7	968.6	860.0	738.6	10,009.0	8.02%	13.20
WA	Olympia	Intercity Transit	DR	0.2	12.8	10.7	10.0	133.6	11.9	10.8	9.8	135.1	3.08%	-1.11
WA	Olympia	Intercity Transit	MB	13.7	440.8	341.3	337.5	4,318.3	351.4	311.1	265.4	3,635.9	20.66%	18.77
WA	Olympia	Intercity Transit	VP	0.5	68.1	69.2	69.2	729.8	50.9	47.1	45.2	553.9	44.20%	31.76
WA	Olympia	Intercity Transit	TOTAL	14.5	521.7	421.2	416.7	5,181.7	414.2	369.0	320.4	4,324.9	23.20%	19.81
WA	Port Angeles	Clallam Transit System	DR	NA	5.9	5.1	4.4	61.7	4.7	5.6	4.3	60.2	5.48%	2.49
WA	Port Angeles	Clallam Transit System	MB	3.6	95.7	95.7	74.8	1,040.3	82.1	72.1	72.0	902.1	17.68%	15.32
WA	Port Angeles	Clallam Transit System	TOTAL	NA	101.6	100.8	79.2	1,102.0	86.8	77.7	76.3	962.3	16.94%	14.52
WA	Richland	Ben Franklin Transit	DR	2.1	50.7	41.5	42.8	530.8	48.6	42.0	38.0	520.8	4.98%	1.92
WA	Richland	Ben Franklin Transit	MB	13.7	382.3	296.0	285.2	3,804.5	328.1	284.4	252.8	3,358.7	11.35%	13.27
WA	Richland	Ben Franklin Transit	VP	4.7	104.5	92.5	107.2	1,141.1	83.8	77.9	77.2	858.9	27.33%	32.86
WA	Richland	Ben Franklin Transit	TOTAL	20.5	537.5	430.0	435.2	5,476.4	460.5	404.3	368.0	4,738.4	13.78%	15.57

State and Primary City		Transit Agency	Mode	Average Weekday (000's)	Trips for Oct '08 (000's)	Trips for Nov '08 (000's)	Trips for Dec '08 (000's)	Trips Thru Dec '08 (000's)	Trips for Oct '07 (000's)	Trips for Nov '07 (000's)	Trips for Dec '07 (000's)	Trips Thru Dec '07 (000's)	Quarterly Change	Year-to-Da Chan
WA	Seattle	King County Dept of Trp	DR	3.6	108.7	91.5	74.3	1,155.9	104.0	94.2	86.4	1,139.8	-3.55%	1.41
WA	Seattle	King County Dept of Trp	LR	1.3	35.1	29.4	31.3	414.2	0.0	0.0	0.0	0.0	NA	N
WA	Seattle	King County Dept of Trp	MB	321.8	8,882.4	7,436.5	6,804.9	94,109.2	8,138.2	7,402.1	6,618.4	87,187.7	4.36%	7.94
WA	Seattle	King County Dept of Trp	TB	78.8	2,203.1	1,929.6	1,708.7	24,168.1	2,121.9	1,922.5	1,755.1	23,278.5	0.72%	3.82
WA	Seattle	King County Dept of Trp	VP	10.6	238.8	232.7	231.2	2,769.0	200.2	192.9	173.7	2,322.2	23.98%	19.24
WA	Seattle	King County Dept of Trp	TOTAL	416.1	11,468.1	9,719.7	8,850.4	122,616.4	10,564.3	9,611.7	8,633.6	113,928.2	4.26%	7.63
WA	Seattle	Sound Transit	CR	10.0	259.3	219.3	221.4	2,668.6	231.3	197.5	175.1	2,156.5	15.91%	23.75
WA	Seattle	Sound Transit	LR	3.2	89.3	72.7	81.9	930.7	86.4	79.6	69.4	919.1	3.61%	1.26
WA	Seattle	Sound Transit	MB	44.5	1,219.5	1,023.6	1,000.2	12,528.8	988.6	901.4	835.8	10,688.8	18.99%	17.21
WA	Seattle	Sound Transit	TOTAL	57.7	1,568.1	1,315.6	1,303.5	16,128.1	1,306.3	1,178.5	1,080.3	13,764.4	17.45%	17.17
WA	Spokane	Spokane Transit Authority	DR	1.9	49.4	41.5	31.1	509.9	45.3	41.9	38.8	502.4	-3.17%	1.49
WA	Spokane	Spokane Transit Authority	MB	37.5	1,110.6	899.0	783.1	11,110.3	896.5	823.9	762.1	9,436.7	12.50%	17.74
WA	Spokane	Spokane Transit Authority	VP	0.8	19.8	16.3	17.3	224.3	14.8	13.9	13.1	168.1	27.75%	33.43
WA	Spokane	Spokane Transit Authority	TOTAL	40.3	1,179.8	956.8	831.5	11,844.5	956.6	879.7	814.0	10,107.2	11.99%	17.19
WA	Vancouver	Clark Co Pub Trp Benefit Area	DR	0.8	22.6	19.2	15.1	245.9	22.1	19.7	18.5	230.5	-5.64%	6.68
WA	Vancouver	Clark Co Pub Trp Benefit Area	MB	22.6	639.9	516.0	508.0	6,526.1	562.7	514.9	444.2	5,735.2	9.34%	13.79
WA	Vancouver	Clark Co Pub Trp Benefit Area	TOTAL	23.4	662.5	535.2	523.1	6,772.0	584.8	534.6	462.7	5,965.7	8.77%	13.52
WA	Wenatchee	Chelan-Douglas PTBA	DR	0.0	7.6	6.3	6.9	82.7	6.7	6.3	6.1	74.5	8.90%	11.01
WA	Wenatchee	Chelan-Douglas PTBA	MB	3.2	93.6	73.8	76.1	944.4	76.2	66.9	61.5	805.9	19.01%	17.19
WA	Wenatchee	Chelan-Douglas PTBA	VP	NA	0.4	0.4	0.6	6.8	0.6	0.6	0.6	9.5	-22.22%	-28.42
WA	Wenatchee	Chelan-Douglas PTBA	TOTAL	NA	101.6	80.5	83.6	1,033.9	83.5	73.8	68.2	889.9	17.83%	16.18
WI	Kenosha	Kenosha Transit	DR	0.0	1.9	1.5	1.6	18.3	1.6	1.4	1.3	17.2	16.28%	6.40
WI	Kenosha	Kenosha Transit	LR	NA	3.4	3.0	2.2	65.7	3.4	2.7	2.7	62.7	-2.27%	4.78
WI	Kenosha	Kenosha Transit	MB	7.1	178.7	150.6	123.3	1,769.9	177.4	160.6	127.1	1,641.7	-2.69%	7.81
WI	Kenosha	Kenosha Transit	TOTAL	NA	184.0	155.1	127.1	1,853.9	182.4	164.7	131.1	1,721.6	-2.51%	7.68
WI	La Crosse	La Crosse Municipal Tr Utililty	DR	0.3	8.7	7.2	7.1	92.1	8.2	8.0	7.8	91.9	-4.17%	0.22
WI	La Crosse	La Crosse Municipal Tr Utililty	MB	4.6	109.0	92.0	88.1	1,087.1	94.9	88.5	86.3	950.8	7.19%	14.34
WI	La Crosse	La Crosse Municipal Tr Utililty	TOTAL	4.9	117.7	99.2	95.2	1,179.2	103.1	96.5	94.1	1,042.7	6.26%	13.09
WI	Madison	Metro Transit	DR	0.8	25.6	21.8	19.9	267.4	22.5	24.0	18.9	261.7	2.91%	2.18
WI	Madison	Metro Transit	MB	52.6	1,458.2	1,254.9	1,128.1	13,433.3	1,364.6	1,223.0	1,036.1	12,672.3	6.00%	6.01
WI	Madison	Metro Transit	TOTAL	53.4	1,483.8	1,276.7	1,148.0	13,700.7	1,387.1	1,247.0	1,055.0	12,934.0	5.95%	5.93
WI	Milwaukee	Milwaukee County Tr Sys	DR	3.9	106.0	88.9	85.9	1,129.5	103.2	92.9	79.4	1,092.0	1.92%	3.43
WI	Milwaukee	Milwaukee County Tr Sys	MB	177.4	5,043.9	4,265.1	4,067.9	50,950.6	4,839.5	4,517.0	3,981.6	50,716.3	0.29%	0.46
WI	Milwaukee	Milwaukee County Tr Sys	VP	0.1	3.1	2.5	2.5	26.3	1.9	1.7	1.3	25.1	65.31%	4.78
WI	Milwaukee	Milwaukee County Tr Sys	TOTAL	181.5	5,153.0	4,356.5	4,156.3	52,106.4	4,944.6	4,611.6	4,062.3	51,833.4	0.35%	0.53%

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WI	Waukesha	Waukesha Metro Transit	DR	0.1	2.9	2.5	2.3	32.9	3.0	2.9	2.3	32.3	-6.10%	1.86
WI	Waukesha	Waukesha Metro Transit	MB	4.9	133.9	108.2	105.2	1,411.9	133.9	120.8	110.5	1,378.8	-4.90%	2.40
WI	Waukesha	Waukesha Metro Transit	TOTAL	5.0	136.8	110.7	107.5	1,444.8	136.9	123.7	112.8	1,411.1	-4.93%	2.39
WV	Huntington	The Transit Authority	DR	1.3	3.4	2.7	2.5	36.7	3.8	3.5	3.2	42.2	-18.10%	-13.03
WV	Huntington	The Transit Authority	MB	2.7	72.2	59.5	62.5	790.1	71.0	64.6	62.1	781.8	-1.77%	1.06
WV	Huntington	The Transit Authority	TOTAL	4.0	75.6	62.2	65.0	826.8	74.8	68.1	65.3	824.0	-2.59%	0.34
WV	Parkersburg	Mid-Ohio Valley Transit Auth	DR	0.0	0.6	0.5	0.5	7.2	0.7	0.6	0.6	7.7	-15.79%	-6.49
WV	Parkersburg	Mid-Ohio Valley Transit Auth	MB	1.0	25.8	22.6	23.3	283.3	22.4	21.8	20.4	241.0	10.99%	17.55
WV	Parkersburg	Mid-Ohio Valley Transit Auth	TOTAL	1.0	26.4	23.1	23.8	290.5	23.1	22.4	21.0	248.7	10.23%	16.81

CANADA

Province and City		Transit Agency	Mode	Average Weekday (000's)	Trips for Oct '08 (000's)	Trips for Nov '08 (000's)	Trips for Dec '08 (000's)	Trips Thru Dec '08 (000's)	Trips for Oct '07 (000's)	Trips for Nov '07 (000's)	Trips for Dec '07 (000's)	Trips Thru Dec '07 (000's)	Quarterly Change	Year-to-Da Char
AB	Calgary	Calgary Transit	LR	297.5	8,102.9	7,453.1	7,036.9	83,750.3	7,008.9	6,901.4	6,101.8	69,990.2	12.90%	19.6(
AB	Calgary	Calgary Transit	MB	290.1	7,900.5	7,266.8	6,861.1	81,872.5	6,833.7	6,728.9	5,949.3	74,079.4	12.90%	10.5
AB	Calgary	Calgary Transit	TOTAL	587.5	16003.4	14719.9	13898.0	165622.8	13842.6	13630.3	12051.1	144069.6	12.90%	14.9(
AB	Edmonton	Edmonton Transit System	LR	NA	1,356.4	1,342.6	1,277.2	14,393.4	1,318.2	1,206.2	1,248.8	13,354.8	5.38%	7.7(
AB	Edmonton	Edmonton Transit System	MB	NA	8,617.4	8,529.2	8,113.8	91,440.6	8,374.6	7,663.0	7,933.8	84,842.4	5.38%	7.7(
AB	Edmonton	Edmonton Transit System	TOTAL	NA	9973.8	9871.8	9391.0	105834.0	9692.8	8869.2	9182.6	98197.2	5.38%	7.7(
BC	Burnaby	Greater Vancouver Transp Auth	AG	NA	6,636.8	6,397.1	6,146.5	73,528.9	6,195.7	6,618.5	5,665.2	71,213.0	3.79%	3.2
BC	Burnaby	Greater Vancouver Transp Auth	CR	NA	248.3	213.1	214.5	2,682.4	238.3	229.6	190.6	2,532.5	2.64%	5.9
BC	Burnaby	Greater Vancouver Transp Auth	DR	NA	129.7	127.9	99.1	1,490.4	124.4	129.5	102.4	1,416.7	0.11%	5.2(
BC	Burnaby	Greater Vancouver Transp Auth	FB	NA	450.2	389.8	408.5	5,536.5	438.0	401.6	384.5	5,400.8	1.99%	2.5
BC	Burnaby	Greater Vancouver Transp Auth	MB	NA	14,077.7	12,801.1	12,988.2	155,067.4	13,188.9	13,223.2	11,004.2	148,170.0	6.55%	4.6(
BC	Burnaby	Greater Vancouver Transp Auth	TB	NA	6,011.3	5,547.4	5,680.2	65,591.9	5,929.7	5,929.7	4,944.1	66,691.8	2.59%	-1.6
BC	Burnaby	Greater Vancouver Transp Auth	TOTAL	NA	27554.0	25476.4	25537.0	303897.5	26115.0	26532.1	22291.0	295424.8	4.84%	2.8
BC	Vancouver	West Coast Express	CR	10.8	247.1	211.9	213.7	2,670.4	238.3	229.6	190.6	2,544.4	2.16%	4.9
BC	Vancouver	West Coast Express	MB	NA	5.8	5.2	4.9	63.4	3.7	3.7	3.0	27.0	52.88%	>10(
BC	Vancouver	West Coast Express	TOTAL	NA	252.9	217.1	218.6	2733.8	242.0	233.3	193.6	2571.4	2.95%	6.3
BC	Victoria	BC Transit	DR	1.1	34.2	31.0	27.0	376.2	34.5	33.3	28.5	369.3	-4.26%	1.8
BC	Victoria	BC Transit	MB	96.5	2,488.8	2,419.8	2,204.1	27,152.0	2,447.4	2,343.4	1,890.1	25,908.1	6.46%	4.8(
BC	Victoria	BC Transit	TOTAL	97.6	2523.0	2450.8	2231.1	27528.2	2481.9	2376.7	1918.6	26277.4	6.31%	4.7(
NS	Dartmouth	Metro Transit	FB	NA	113.5	87.9	72.5	1,363.7	NA	NA	NA	NA	NA	
NS	Dartmouth	Metro Transit	MB	NA	1,728.0	1,605.0	1,589.7	18,173.4	NA	NA	NA	NA	NA	
NS	Dartmouth	Metro Transit	TOTAL	NA	1841.5	1692.9	1662.2	19537.1	NA	NA	NA	NA	NA	
ON	Brampton	Brampton Transit	MB	NA	1,240.3	1,109.3	914.0	12,324.6	1,113.4	1,059.7	815.2	11,063.8	9.21%	11.4(
ON	Brampton	Brampton Transit	TOTAL	NA	1240.3	1109.3	914.0	12324.6	1113.4	1059.7	815.2	11063.8	9.21%	11.4(
ON	Ottawa	OC Transpo/Para Transpo	DR	2.7	71.2	68.7	62.8	786.2	70.1	69.6	55.2	779.7	4.00%	0.8
ON	Ottawa	OC Transpo/Para Transpo	LR	4.9	366.2	NA	NA	NA	349.6	330.5	234.3	2,841.6	NA	
ON	Ottawa	OC Transpo/Para Transpo	MB	400.7	12,780.2	12,666.6	3,509.5	132,208.7	12,394.4	12,797.8	11,103.4	134,620.6	-20.22%	-1.7
ON	Ottawa	OC Transpo/Para Transpo	TOTAL	408.3	13217.6	NA	NA	NA	12814.1	13197.9	11392.9	138241.9	NA	
ON	Richmond Hill	York Region Transit	MB	67.4	1,662.5	1,654.8	1,422.9	24,303.0	2,378.7	2,303.4	1,833.8	24,602.4	-27.25%	-1.2
ON	Richmond Hill	York Region Transit	TOTAL	67.4	1662.5	1654.8	1422.9	24303.0	2378.7	2303.4	1833.8	24602.4	-27.25%	-1.2
ON	Toronto	GO Transit	CR	162.5	3,939.2	3,664.0	3,271.4	43,218.0	3,778.3	3,858.7	2,845.3	40,764.9	3.74%	6.0
ON	Toronto	GO Transit	MB	43.5	1,306.3	1,044.7	837.4	12,200.4	1,179.9	1,141.6	759.5	11,142.2	3.49%	9.5(
ON	Toronto	GO Transit	TOTAL	206.1	5245.5	4708.7	4108.8	55418.4	4958.2	5000.3	3604.8	51907.1	3.68%	6.7(

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ON	Toronto	Toronto Transit Commission	DR	6.4	158.2	164.0	163.2	2,139.2	169.0	173.0	150.7	2,103.5	-1.48%	1.7(
ON	Toronto	Toronto Transit Commission	HR	927.7	25,454.6	24,900.3	24,355.2	280,217.7	29,550.8	25,207.3	22,929.0	286,200.0	-3.83%	-2.0
ON	Toronto	Toronto Transit Commission	IR	48.8	1,467.7	1,459.0	1,380.1	15,850.4	1,548.8	1,339.3	1,255.5	16,225.8	3.94%	-2.3
ON	Toronto	Toronto Transit Commission	LR	285.0	7,149.0	7,058.1	6,756.0	80,982.5	9,174.1	7,368.3	6,850.5	89,551.6	-10.39%	-9.5
ON	Toronto	Toronto Transit Commission	MB	1,250.2	36,284.3	34,569.7	28,423.4	387,306.6	40,644.0	33,008.0	27,792.6	377,852.5	-2.14%	2.5(
ON	Toronto	Toronto Transit Commission	TOTAL	2,518.1	70513.8	68151.1	61077.9	766496.4	81086.7	67095.9	58978.3	771933.4	-3.58%	-0.7(
QC	Montreal	Agence Metropolitaine de Transport	CR	65.9	1,516.5	1,355.0	1,358.8	15,698.3	1,471.1	1,472.1	1,159.4	15,098.3	3.11%	3.9
QC	Montreal	Agence Metropolitaine de Transport	MB	5.6	135.9	127.0	83.6	1,253.8	133.4	132.5	87.4	1,276.1	-1.92%	-1.7
QC	Montreal	Agence Metropolitaine de Transport	TOTAL	71.4	1652.4	1482.0	1442.4	16952.1	1604.5	1604.6	1246.8	16374.4	2.71%	3.5

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27-Feb-20

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PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2019

ESTIMATED UNITED STATES UNLINKED TRANSIT PASSENGER TRIPS

Period	2019 (000's)	2018 (000's)	Percent Change 2018-2019
OCTOBER	923,004	929,830	-0.73%
NOVEMBER	818,489	817,128	0.17%
DECEMBER	792,326	764,302	3.67%
Fourth Quarter	2,533,819	2,511,260	0.90%

CALENDAR COMPARISON

	OCTOBER		NOVEMBER		DECEMBER	
	2019	2018	2019	2018	2019	2018
Weekdays	22	22	19	20	21	20
Saturdays	4	4	5	4	4	5
Sundays	4	4	4	4	5	5
Holidays	1	1	2	2	1	1

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS *

	CURRENT YEAR (a)(b)					PRECEDING YEAR (a)(b)					% CHANGE (b)	
MODE	**OCT '19** (000's)	**NOV '19** (000's)	**DEC '19** (000's)	**OCT '19-DEC '19** (000's)	**JAN '19-DEC '19** (000's)	**OCT '18** (000's)	**NOV '18** (000's)	**DEC '18** (000's)	**OCT '18-DEC '18** (000's)	**JAN '18-DEC '18** (000's)	**Fourth Quarter**	**Year -to-Date**
Heavy Rail	352,592	320,156	316,866	989,614	3,797,708	347,231	304,866	286,057	938,154	3,712,458	5.49%	2.30%
Light Rail	45,603	39,968	39,050	124,621	503,272	48,563	43,314	40,643	132,521	526,981	-5.96%	-4.50%
Commuter Rail	46,319	41,993	42,167	130,478	515,768	44,849	41,467	40,025	126,341	499,063	3.27%	3.35%
Trolleybus	7,537	6,593	6,361	20,491	81,507	7,356	6,511	6,208	20,075	79,670	2.07%	2.31%
Bus Population Group												
2,000,000+	295,233	259,032	247,117	801,381	3,222,689	304,434	266,580	253,170	824,185	3,258,926	-2.77%	-1.11%
500,000 to 1,999,999	81,187	70,505	67,626	219,318	864,171	82,528	72,504	67,382	222,413	873,482	-1.39%	-1.07%
100,000 to 499,999	41,097	34,596	29,187	104,881	399,047	40,961	35,317	29,033	105,311	402,242	-0.41%	-0.79%
Below 100,000	18,909	14,875	13,186	46,971	171,663	18,944	14,957	11,322	45,224	171,689	3.86%	-0.02%
Bus Total	436,426	379,009	357,116	1,172,551	4,657,569	446,867	389,358	360,907	1,197,132	4,706,339	-2.05%	-1.04%
Demand Response	19,116	17,096	16,790	53,001	209,307	18,767	17,000	16,226	51,993	205,509	1.94%	1.85%
Other (c)	15,412	13,674	13,976	43,063	180,194	16,196	14,613	14,236	45,045	186,022	-4.40%	-3.13%
United States Total	923,004	818,489	792,326	2,533,819	9,945,325	929,830	817,128	764,302	2,511,260	9,916,042	0.90%	0.30%
Canada	242,080	235,445	209,797	687,321	2,774,045	228,937	224,253	196,820	650,009	2,635,684	5.74%	5.25%

* Preliminary information based on data from reporting systems.

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(a) Transit agencies assigned by urbanized areas or urban places of less than 50,000 population outside urbanized areas based on 2010 U.S. Census Population.

(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

(c) Includes aerial tramway, automated guideway, cable car, ferryboat, inclined plane, monorail, and vanpool.

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HEAVY RAIL
PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2019

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City	Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	CURRENT YEAR (a)(b) OCT '19 (000's)	CURRENT YEAR (a)(b) NOV '19 (000's)	CURRENT YEAR (a)(b) DEC '19 (000's)	CURRENT YEAR (a)(b) OCT '19-DEC '19 (000's)	CURRENT YEAR (a)(b) JAN '19-DEC '19 (000's)	PRECEDING YEAR (a)(b) OCT '18 (000's)	PRECEDING YEAR (a)(b) NOV '18 (000's)	PRECEDING YEAR (a)(b) DEC '18 (000's)	PRECEDING YEAR (a)(b) OCT '18-DEC '18 (000's)	PRECEDING YEAR (a)(b) JAN '18-DEC '18 (000's)	% CHANGE (b) 4th Qtr Chng	% CHANGE (b) YT Chr
CA Los Angeles	Los Angeles County MTA	130.9	3,578.9	3,302.5	3,401.1	10,282.5	41,775.1	3,794.7	3,582.3	3,621.3	10,998.3	43,300.6	-6.51%	-3.52
CA San Francisco	San Francisco Bay Area RTD	421.1	11,304.9	9,711.6	9,294.4	30,310.9	123,510.1	11,480.0	9,597.2	9,223.6	30,300.8	125,576.4	0.03%	-1.65
DC Washington	Washington Metro Area TA	816.7	22,837.6	19,057.4	17,702.0	59,597.0	237,701.1	21,181.9	17,790.9	16,031.6	55,004.4	226,349.6	8.35%	5.02
FL Miami	Miami-Dade Transit Agency	62.6	1,643.2	1,469.4	1,433.9	4,546.5	18,073.1	1,757.2	1,656.9	1,553.8	4,967.9	19,282.5	-8.48%	-6.27
GA Atlanta	Metro Atlanta Rapid Tr Auth	NA	5,626.7	5,039.1	4,867.2	15,533.0	63,998.5	6,019.5	5,257.3	4,816.2	16,093.0	64,854.0	-3.48%	-1.32
IL Chicago	Chicago Transit Authority	695.3	20,582.7	17,448.4	15,923.6	53,954.7	218,467.0	21,551.5	18,271.1	16,109.7	55,932.3	225,895.1	-3.54%	-3.29
MA Boston	Massachusetts Bay Tr Auth	475.3	13,116.8	11,184.0	10,262.5	34,563.3	152,339.7	14,625.0	12,757.3	11,399.6	38,781.9	155,748.8	-10.88%	-2.19
MD Baltimore	Maryland Transit Admin	36.6	701.4	604.4	609.2	1,915.0	7,325.5	627.0	579.0	559.8	1,765.8	8,270.6	8.45%	-11.43
NJ Jersey City	Port Authority of NY & NJ	306.7	8,274.1	7,165.0	7,080.3	22,519.4	90,276.6	8,252.3	7,360.7	6,970.7	22,583.7	89,664.3	-0.28%	0.68
NJ Lindenwold	Port Authority Transit Corp	38.4	1,027.8	894.7	895.7	2,818.2	11,107.5	1,007.1	892.3	856.8	2,756.2	10,789.6	2.25%	2.95
NY New York	MTA New York City Transit	9,117.4	253,609.9	235,137.3	236,357.7	725,104.9	2,723,960.1	246,416.1	217,622.2	206,071.1	670,109.4	2,629,607.6	8.21%	3.59
NY New York	MTA Staten Island Railway	28.5	724.7	609.6	604.8	1,939.1	7,741.0	797.7	695.1	640.6	2,133.4	8,129.6	-9.11%	-4.78
OH Cleveland	Greater Cleveland Reg TA	15.9	523.5	484.0	460.0	1,467.5	5,958.0	586.6	522.6	466.4	1,575.6	6,249.8	-6.86%	-4.67
PA Philadelphia	Southeastern Penn TA	329.2	8,523.3	7,626.2	7,566.8	23,716.3	90,240.8	8,596.3	7,825.4	7,331.1	23,752.8	93,546.4	-0.15%	-3.53
PR San Juan	Puerto Rico DOT	20.3	516.3	422.6	406.3	1,345.2	5,233.9	538.0	455.3	405.1	1,398.4	5,192.9	-3.80%	0.79
REPORTED TOTAL		**12,494.9**	**352,591.8**	**320,156.2**	**316,865.5**	**989,613.5**	**3,797,708.0**	**347,230.9**	**304,865.6**	**286,057.4**	**938,153.9**	**3,712,457.8**	**5.49%**	**2.30**
PROJECTED TOTAL			**352,591.8**	**320,156.2**	**316,865.5**	**989,613.5**	**3,797,708.0**	**347,230.9**	**304,865.6**	**286,057.4**	**938,153.9**	**3,712,457.8**	**5.49%**	**2.30**

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(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

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LIGHT RAIL
PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2019

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City	Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	CURRENT YEAR (a)(b) OCT '19 (000's)	CURRENT YEAR (a)(b) NOV '19 (000's)	CURRENT YEAR (a)(b) DEC '19 (000's)	CURRENT YEAR (a)(b) OCT '19-DEC '19 (000's)	CURRENT YEAR (a)(b) JAN '19-DEC '19 (000's)	PRECEDING YEAR (a)(b) OCT '18 (000's)	PRECEDING YEAR (a)(b) NOV '18 (000's)	PRECEDING YEAR (a)(b) DEC '18 (000's)	PRECEDING YEAR (a)(b) OCT '18-DEC '18 (000's)	PRECEDING YEAR (a)(b) JAN '18-DEC '18 (000's)	% CHANGE (b) 4th Qtr Chng	% CHANGE (b) YT Chr
AR Little Rock	Rock Region Metro	NA	10.1	7.8	10.1	28.0	127.1	3.2	2.5	7.5	13.2	42.8	>100%	>100
AZ Phoenix	Valley Metro Rail, Inc.	47.0	1,387.7	1,315.4	1,204.5	3,907.6	15,060.2	1,366.5	1,300.6	1,198.8	3,865.9	15,406.3	1.08%	-2.25
AZ Tucson	City of Tucson MTS	3.1	98.7	89.0	66.8	254.5	873.1	104.1	95.0	56.1	255.2	907.5	-0.27%	-3.79
CA Los Angeles	Los Angeles County MTA	161.3	3,834.5	4,418.7	4,666.5	12,919.7	51,395.8	5,664.0	5,423.1	5,427.2	16,514.3	64,715.7	-21.77%	-20.58
CA Oceanside	North County Transit District	7.8	241.9	195.7	175.2	612.8	2,475.8	238.3	189.8	148.7	576.8	2,403.2	6.24%	3.02
CA Sacramento	Sacramento Reg Tr Dist	38.4	1,059.0	896.9	879.0	2,834.9	11,180.1	1,025.6	833.6	819.4	2,678.6	10,464.7	5.84%	6.84
CA San Diego	San Diego Metrop Transit Sy	117.7	3,551.9	3,124.4	2,879.5	9,555.8	38,047.3	3,389.1	3,077.0	2,957.4	9,423.5	37,139.7	1.40%	2.44
CA San Francisco	San Francisco Muni Rwy	157.7	4,490.6	3,871.6	3,829.4	12,191.6	49,519.6	4,531.6	4,171.5	3,634.2	12,337.3	49,971.7	-1.18%	-0.90
CA San Jose	Santa Clara Valley Trp Auth	26.7	769.8	681.3	664.2	2,115.3	8,335.1	811.1	677.0	682.4	2,170.5	8,538.9	-2.54%	-2.39
CO Denver	Regional Trp District	95.3	2,392.9	2,003.3	1,905.7	6,301.9	24,585.3	2,355.5	2,179.9	2,173.8	6,709.2	25,669.7	-6.07%	-4.22
DC Washington	District Dept of Transp	2.4	80.5	66.8	56.0	203.3	1,093.4	102.2	92.9	90.3	285.4	1,145.3	-28.77%	-4.53
FL Tampa	Hillsborough Area Reg TA	2.4	78.5	85.7	95.7	259.9	902.7	53.2	55.6	91.1	199.9	423.0	30.02%	>100
GA Atlanta	Metro Atlanta Rapid Tr Auth	NA	16.4	18.2	19.5	54.1	255.6	13.7	10.9	12.3	36.9	280.8	46.61%	-8.97
LA New Orleans	Regional Transit Auth	5.6	198.8	114.8	185.1	498.7	5,289.4	659.0	553.1	541.3	1,753.4	7,712.9	-71.56%	-31.42
MA Boston	Massachusetts Bay Tr Auth	137.7	4,099.1	3,424.7	3,121.8	10,645.6	47,161.5	5,074.3	4,276.0	3,623.8	12,974.1	53,715.6	-17.95%	-12.20
MD Baltimore	Maryland Transit Admin	25.3	628.3	562.8	536.8	1,727.9	6,508.7	613.6	590.3	584.8	1,788.7	7,157.0	-3.40%	-9.06
MN Minneapolis	Metro Transit	75.3	2,339.0	1,971.3	1,876.2	6,186.5	25,299.4	2,449.0	2,098.2	1,881.7	6,428.9	24,955.7	-3.77%	1.38
MO Saint Louis	Bi-State Dev Agency	38.9	1,167.6	992.7	943.6	3,103.9	13,088.0	1,144.1	1,009.0	965.2	3,118.3	13,210.2	-0.46%	-0.93
NC Charlotte	Charlotte Area Transit	29.9	822.3	743.7	714.0	2,280.0	8,892.1	564.9	654.3	591.1	1,810.3	7,376.5	25.95%	20.55
NJ Newark	New Jersey Transit Corp	NA	2,119.0	1,846.2	2,022.8	5,988.0	23,983.3	2,220.5	1,891.0	2,036.7	6,148.2	24,085.9	-2.61%	-0.43
NY Buffalo	Niagara Frontier Trp Auth	15.1	424.4	350.4	341.1	1,115.9	4,394.0	445.3	399.3	362.0	1,206.6	4,492.2	-7.52%	-2.19
OH Cleveland	Greater Cleveland Reg TA	3.9	130.1	118.8	112.0	360.9	1,477.7	146.6	122.8	119.8	389.2	1,638.1	-7.27%	-9.79
OR Portland	Tri-County Metro Trp Dist	119.6	3,442.5	3,114.1	3,022.7	9,579.3	38,388.2	3,482.1	3,198.7	2,987.8	9,668.6	38,953.1	-0.92%	-1.45
PA Philadelphia	Southeastern Penn TA	89.4	2,346.6	2,071.0	2,023.2	6,440.8	24,321.2	2,375.7	2,165.5	2,053.9	6,595.1	24,868.2	-2.34%	-2.20
PA Pittsburgh	Port Auth of Allegheny Co	NA	681.9	600.2	568.0	1,850.1	7,364.3	669.3	576.2	544.1	1,789.6	7,328.1	3.38%	0.49%

State and Primary City	Transit Agency	AVG WKDY (000's)	OCT '19 (000's)	NOV '19 (000's)	DEC '19 (000's)	OCT '19-DEC '19 (000's)	JAN '19-DEC '19 (000's)	OCT '18 (000's)	NOV '18 (000's)	DEC '18 (000's)	OCT '18-DEC '18 (000's)	JAN '18-DEC '18 (000's)	4th Qtr Chng	YTD Chng
TX Dallas	Dallas Area Rapid Transit	92.0	3,210.2	2,092.3	2,084.3	7,386.8	28,069.0	3,162.4	2,350.1	2,139.8	7,652.3	28,759.2	-3.47%	-2.40
TX El Paso	El Paso Mass Transit Dept	1.6	28.1	32.2	34.9	95.2	271.9	0.0	0.0	66.7	66.7	66.7	42.73%	>100
TX Houston	Metro Tr Auth of Harris Co	60.3	1,689.5	1,341.6	1,370.3	4,401.4	18,409.1	1,728.7	1,483.2	1,337.0	4,548.9	18,806.3	-3.24%	-2.11
UT Salt Lake City	Utah Transit Authority	56.9	1,640.1	1,409.2	1,394.1	4,443.4	16,871.8	1,592.0	1,480.5	1,404.9	4,477.4	17,899.6	-0.76%	-5.74
VA Hampton	Hampton Roads Transit	4.2	123.0	101.7	96.6	321.3	1,345.1	141.5	99.8	90.9	332.2	1,461.5	-3.28%	-7.96
WA Seattle	King County Dept of Trp	6.0	175.5	148.0	136.6	460.1	1,863.4	161.1	139.7	131.2	432.0	1,685.7	6.50%	10.54
WA Seattle	Sound Transit	83.2	2,289.3	2,134.1	1,991.8	6,415.2	26,010.4	2,237.8	2,091.8	1,857.7	6,187.3	25,348.7	3.68%	2.61
REPORTED TOTAL		**1,504.8**	**45,567.8**	**39,944.6**	**39,028.0**	**124,540.4**	**502,859.6**	**48,526.0**	**43,288.9**	**40,619.6**	**132,434.5**	**526,630.5**	**-5.96%**	**-4.51**
PROJECTED TOTAL (c)			**45,602.8**	**39,968.1**	**39,050.2**	**124,621.1**	**503,271.8**	**48,563.3**	**43,314.4**	**40,642.8**	**132,520.5**	**526,981.2**	**-5.96%**	**-4.50**

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(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

(c) Includes missing agencies (Rock Region Metro and Kenosha Transit).

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COMMUTER RAIL
PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2019

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City		Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	CURRENT YEAR (a)(b) OCT '19 (000's)	CURRENT YEAR (a)(b) NOV '19 (000's)	CURRENT YEAR (a)(b) DEC '19 (000's)	CURRENT YEAR (a)(b) OCT '19-DEC '19 (000's)	CURRENT YEAR (a)(b) JAN '19-DEC '19 (000's)	PRECEDING YEAR (a)(b) OCT '18 (000's)	PRECEDING YEAR (a)(b) NOV '18 (000's)	PRECEDING YEAR (a)(b) DEC '18 (000's)	PRECEDING YEAR (a)(b) OCT '18-DEC '18 (000's)	PRECEDING YEAR (a)(b) JAN '18-DEC '18 (000's)	% CHANGE (b) 4th Qtr Chng	% CHANGE (b) YT Chr
AK	Anchorage	Alaska Railroad Corporation	0.2	1.0	1.2	2.9	5.1	203.4	1.1	1.1	2.0	4.2	199.7	21.43%	1.85
CA	Los Angeles	Southern California RRA	38.5	989.0	835.4	810.6	2,635.0	10,803.6	991.2	858.5	758.8	2,608.5	10,691.1	1.02%	1.05
CA	Oakland	Capitol Corridor Joint Power	6.0	162.5	152.7	141.5	456.7	1,791.7	162.4	147.7	131.5	441.6	1,725.5	3.42%	3.84
CA	Oceanside	North County Transit District	4.2	111.0	94.6	84.0	289.6	1,362.8	115.8	108.3	93.2	317.3	1,434.7	-8.73%	-5.01
CA	San Carlos	Caltrain	67.5	1,726.4	1,472.7	1,428.4	4,627.5	18,693.5	1,605.7	1,470.2	1,356.5	4,432.4	18,855.7	4.40%	-0.86
CA	San Francisco	San Francisco Bay Area RT	8.2	217.5	184.0	178.1	579.6	2,292.0	211.6	179.0	168.5	559.1	1,316.1	3.67%	74.15
CA	San Rafael	Sonoma-Marin Area Rail Tr	NA	57.2	65.0	58.2	180.4	714.0	65.5	52.8	51.7	170.0	714.5	6.12%	-0.07
CA	Stockton	San Joaquin Reg Rail Comm	4.8	141.7	115.0	101.4	358.1	1,492.4	151.6	122.9	99.0	373.5	1,479.3	-4.12%	0.89
CO	Denver	Regional Trp District	40.0	947.9	841.3	848.2	2,637.4	9,711.3	674.9	629.1	592.7	1,896.7	7,613.0	39.05%	27.56
CT	New Haven	Connecticut DOT	2.2	57.0	51.2	51.5	159.7	660.5	48.1	44.5	43.1	135.7	599.3	17.69%	10.21
FL	Orlando	SunRail	6.3	143.6	128.8	129.5	401.9	1,571.8	127.6	118.7	110.8	357.1	1,114.7	12.55%	41.01
FL	Pompano Beach	South Florida RTA (Tri-Rail)	14.8	409.0	364.8	365.5	1,139.3	4,505.1	397.4	371.8	354.1	1,123.3	4,413.9	1.42%	2.07
IL	Chicago	Metra	274.0	5,868.3	5,407.0	5,217.8	16,493.1	66,783.6	6,013.0	5,619.7	5,183.9	16,816.6	68,446.2	-1.92%	-2.43
IN	Chesterton	Northern IN Commuter TD	10.9	288.9	262.5	273.4	824.8	3,283.6	294.8	272.6	265.3	832.7	3,399.4	-0.95%	-3.41
MA	Boston	Massachusetts Bay Tr Auth	121.7	2,911.5	2,592.2	2,680.0	8,183.7	32,420.4	2,920.0	2,682.9	2,589.3	8,192.2	32,249.1	-0.10%	0.53
MD	Baltimore	Maryland Transit Admin	30.0	855.1	709.5	713.3	2,277.9	9,084.2	854.0	746.8	648.1	2,248.9	9,236.2	1.29%	-1.65
ME	Portland	Northern NE Passenger RA	1.6	50.4	47.6	46.3	144.3	574.8	43.8	42.8	40.2	126.8	533.0	13.80%	7.84
MN	Minneapolis	Metro Transit	2.5	62.8	51.6	53.5	167.9	767.5	66.0	58.4	52.7	177.1	787.4	-5.19%	-2.53
NJ	Newark	New Jersey Transit Corp	NA	7,837.4	7,418.6	7,354.0	22,610.0	88,319.6	7,739.2	7,427.4	7,356.1	22,522.7	86,753.4	0.39%	1.81
NM	Albuquerque	New Mexico Dept of Trp	2.4	69.9	52.1	52.9	174.9	743.6	72.0	57.8	54.0	183.8	770.0	-4.84%	-3.43
NY	New York	MTA Long Island Rail Road	385.4	10,221.9	9,633.1	9,765.9	29,620.9	117,783.4	9,358.4	8,761.6	8,671.5	26,791.5	106,299.2	10.56%	10.80
NY	New York	MTA Metro-North Railroad	311.8	7,854.5	6,931.2	7,245.4	22,031.1	86,459.0	7,872.2	7,202.1	7,224.5	22,298.8	86,389.4	-1.20%	0.08
OR	Portland	Tri-County Metro Trp Dist	1.4	34.5	28.0	25.1	87.6	361.6	38.0	30.7	25.0	93.7	398.5	-6.51%	-9.26
PA	Harris-Phil	Penn DOT (Keystone)	5.1	145.3	135.4	140.5	421.2	1,584.6	143.6	138.2	130.1	411.9	1,532.5	2.26%	3.40
PA	Philadelphia	Southeastern Penn TA	134.6	3,393.8	2,994.4	3,029.4	9,417.6	35,594.8	3,165.1	2,885.3	2,756.2	8,806.6	34,373.4	6.94%	3.55%

State and Primary City		Transit Agency	AVG WKDY (000's)	OCT '19 (000's)	NOV '19 (000's)	DEC '19 (000's)	OCT '19-DEC '19 (000's)	JAN '19-DEC '19 (000's)	OCT '18 (000's)	NOV '18 (000's)	DEC '18 (000's)	OCT '18-DEC '18 (000's)	JAN '18-DEC '18 (000's)	4th Qtr Chng	YTD Chng
TN	Nashville	Regional Transp Auth	NA	28.7	23.1	23.1	74.9	292.5	27.4	22.7	21.6	71.7	298.8	4.46%	-2.11
TX	Austin	Capital Metropolitan Trp Aut	2.2	49.0	43.9	44.1	137.0	671.2	82.5	60.1	52.8	195.4	807.8	-29.89%	-16.91
TX	Dallas-Ft Worth	Trinity Railway Express	7.2	226.9	155.9	155.1	537.9	1,987.6	208.0	153.9	135.6	497.5	1,980.5	8.12%	0.36
TX	Fort Worth	Trinity Metro	NA	41.9	44.7	51.2	137.8	545.0	0.0	0.0	0.0	0.0	0.0	NA	N
TX	Lewisville	Denton County Transportatio	1.5	44.5	30.6	26.4	101.5	382.4	45.4	36.6	25.5	107.5	407.3	-5.58%	-6.11
UT	Salt Lake City	Utah Transit Authority	19.2	503.8	428.0	410.3	1,342.1	5,193.8	500.1	442.1	406.0	1,348.2	5,082.1	-0.45%	2.20
VA	Alexandria	Virginia Railway Express	17.2	423.8	329.0	317.6	1,070.4	4,517.0	410.2	346.0	290.5	1,046.7	4,528.0	2.26%	-0.24
WA	Seattle	Sound Transit	17.9	442.1	367.6	341.5	1,151.2	4,615.6	442.0	374.7	334.1	1,150.8	4,632.8	0.03%	-0.37
REPORTED TOTAL			**1,539.0**	**46,318.8**	**41,992.7**	**42,166.6**	**130,478.1**	**515,767.9**	**44,848.6**	**41,467.0**	**40,024.9**	**126,340.5**	**499,062.5**	**3.27%**	**3.35**
PROJECTED TOTAL				**46,318.8**	**41,992.7**	**42,166.6**	**130,478.1**	**515,767.9**	**44,848.6**	**41,467.0**	**40,024.9**	**126,340.5**	**499,062.5**	**3.27%**	**3.35**

* Preliminary information based on data from reporting systems.

Note: Data may differ from that included in Federal Transit Administration reports due to differences in data calculation procedures and in periods of time covered.

(a) Transit agencies assigned by urbanized areas or urban places of less than 50,000 population outside urbanized areas based on 2000 U.S. Census Population.

(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

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TROLLEY BUS
PUBLIC TRANSPORTATION RIDERSHIP REPORT
Fourth Quarter 2019

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City	Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	OCT '19 (000's)	NOV '19 (000's)	DEC '19 (000's)	OCT '19-DEC '19 (000's)	JAN '19-DEC '19 (000's)	PRECEDING YEAR (a)(b) OCT '18 (000's)	NOV '18 (000's)	DEC '18 (000's)	OCT '18-DEC '18 (000's)	JAN '18-DEC '18 (000's)	% CHANGE (b) 4th Qtr Chng	YT Chr
CA San Francisco	San Francisco Muni Rwy	167.4	5,008.6	4,449.5	4,303.3	13,761.4	54,381.0	4,754.8	4,146.5	4,162.1	13,063.4	52,728.9	5.34%	3.13
MA Boston	Massachusetts Bay Tr Auth	9.8	265.9	227.7	203.2	696.8	2,889.5	290.0	249.3	206.6	745.9	2,769.9	-6.58%	4.32
PA Philadelphia	Southeastern Penn TA	16.9	434.4	392.0	388.4	1,214.8	4,715.6	465.8	417.8	393.9	1,277.5	4,262.2	-4.91%	10.64
WA Seattle	King County Dept of Trp	67.0	1,631.5	1,359.2	1,305.1	4,295.8	17,365.5	1,654.0	1,534.5	1,287.9	4,476.4	17,950.4	-4.03%	-3.26
REPORTED TOTAL		**261.1**	**7,340.4**	**6,428.4**	**6,200.0**	**19,968.8**	**79,351.6**	**7,164.6**	**6,348.1**	**6,050.5**	**19,563.2**	**77,711.4**	**2.07%**	**2.11**
PROJECTED TOTAL (c)			**7,536.7**	**6,593.3**	**6,361.0**	**20,491.0**	**81,507.1**	**7,356.2**	**6,510.9**	**6,207.6**	**20,074.7**	**79,669.5**	**2.07%**	**2.31**

* Preliminary information based on data from reporting systems.

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(a) Transit agencies assigned by urbanized areas or urban places of less than 50,000 population outside urbanized areas based on 2000 U.S. Census Population.

(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

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LARGEST BUS AGENCIES
PUBLIC TRANSPORTATION RIDERSHIP REPORT

(Transit Agencies in Urbanized Areas of 1,000,000 or more population that operate 300 or more peak-hour buses, plus a selection of other large bus operators)

Fourth Quarter 2019

ESTIMATED UNLINKED TRANSIT PASSENGER TRIPS

State and Primary City	Transit Agency	CURRENT YEAR (a)(b) AVG WKDY (000's)	OCT '19 (000's)	NOV '19 (000's)	DEC '19 (000's)	OCT '19-DEC '19 (000's)	JAN '19-DEC '19 (000's)	PRECEDING YEAR (a)(b) OCT '18 (000's)	NOV '18 (000's)	DEC '18 (000's)	OCT '18-DEC '18 (000's)	JAN '18-DEC '18 (000's)	% CHANGE (b) 4th Qtr Chng	YT Chr
AZ Phoenix	City of Phoenix PTD	108.3	3,081.9	2,699.8	2,603.5	8,385.2	33,222.5	3,267.0	3,077.1	2,817.3	9,161.4	35,384.8	-8.47%	-6.11
CA Long Beach	Long Beach Transit	75.8	2,219.4	1,837.7	1,858.0	5,915.1	23,132.8	2,216.3	1,864.8	1,908.5	5,989.6	23,453.4	-1.24%	-1.37
CA Los Angeles	Los Angeles County MTA	865.6	26,065.7	21,760.6	20,954.6	68,780.9	278,109.9	25,080.2	22,438.5	20,988.1	68,506.8	275,775.9	0.40%	0.85
CA Oakland	Alameda-Contra Costa TD	215.5	5,186.0	4,460.1	4,174.7	13,820.8	53,883.9	5,148.2	4,329.2	4,031.0	13,508.4	52,309.1	2.31%	3.01
CA Orange	Orange County Transp Auth	119.8	3,529.4	2,998.2	2,851.3	9,378.9	37,292.5	3,590.4	3,168.0	2,907.8	9,666.2	38,886.9	-2.97%	-4.10
CA San Diego	San Diego Metrop Transit Sy	163.0	4,809.7	3,963.2	3,560.9	12,333.8	48,032.2	4,690.8	3,987.1	3,537.6	12,215.5	47,734.8	0.97%	0.62
CA San Francisco	San Francisco Muni Rwy	334.6	9,724.1	8,383.3	8,177.4	26,284.8	104,950.2	9,820.2	8,413.4	8,515.3	26,748.9	107,199.8	-1.74%	-2.10
CA San Jose	Santa Clara Valley Trp Auth	92.0	2,631.1	2,271.4	2,145.7	7,048.2	27,367.4	2,659.0	2,217.5	2,262.6	7,139.1	27,994.0	-1.27%	-2.24
CA Santa Monica	Santa Monica's Big Blue Bus	43.5	1,305.4	1,080.3	949.1	3,334.8	12,823.3	1,258.6	1,072.8	909.9	3,241.3	12,818.0	2.88%	0.04
CO Denver	Regional Trp District	265.2	6,272.9	5,561.0	5,681.7	17,515.6	69,870.3	5,679.8	4,929.4	4,917.1	15,526.3	62,788.6	12.81%	11.28
DC Washington	Washington Metro Area TA	340.1	9,564.3	8,175.6	7,927.6	25,667.5	105,469.8	10,030.8	8,617.0	8,151.3	26,799.1	109,054.8	-4.22%	-3.29
FL Miami	Miami-Dade Transit Agency	163.5	4,507.0	4,197.2	4,127.0	12,831.2	49,909.7	4,554.9	4,245.5	4,081.6	12,882.0	51,030.1	-0.39%	-2.20
FL Orlando	Central Florida RTA	68.7	1,946.0	1,798.0	1,726.6	5,470.6	22,536.6	2,067.7	1,915.7	1,772.4	5,755.8	22,762.1	-4.96%	-0.99
GA Atlanta	Metro Atlanta Rapid Tr Auth	NA	4,905.4	3,590.8	3,777.6	12,273.8	50,018.3	4,197.7	3,769.3	3,554.5	11,521.5	49,316.7	6.53%	1.42
IL Arlington Heights	PACE Suburban Bus	112.2	2,451.5	2,070.3	1,996.9	6,518.7	26,186.0	2,628.1	2,235.4	2,045.8	6,909.3	27,689.7	-5.65%	-5.43
IL Chicago	Chicago Transit Authority	760.2	21,800.4	19,304.4	18,593.6	59,698.4	237,276.5	22,736.8	19,724.0	18,543.8	61,004.6	242,172.9	-2.14%	-2.02
MA Boston	Massachusetts Bay Tr Auth	381.2	10,637.5	9,403.4	8,797.1	28,838.0	113,483.2	10,784.8	9,506.9	8,656.4	28,948.1	115,236.7	-0.38%	-1.52
MD Baltimore	Maryland Transit Admin	270.6	6,342.2	5,538.9	5,255.7	17,136.8	67,925.7	6,472.1	5,530.7	5,036.4	17,039.2	67,678.6	0.57%	0.37
MD Rockville	Montgomery County Ride-O	68.5	1,978.4	1,657.4	1,566.0	5,201.8	20,717.7	1,971.7	1,657.9	1,546.1	5,175.7	20,952.8	0.50%	-1.12
MI Detroit	City of Detroit Dept of Trp	NA	2,233.0	1,848.4	1,839.7	5,921.1	22,680.0	2,204.0	1,877.7	1,784.8	5,866.5	23,291.6	0.93%	-2.63
MN Minneapolis	Metro Transit	171.6	4,735.2	4,106.2	3,885.5	12,726.9	51,860.1	4,967.9	4,387.5	4,009.1	13,364.5	54,910.4	-4.77%	-5.56
MO Saint Louis	Bi-State Dev Agency	70.2	2,028.9	1,787.0	1,751.5	5,567.4	22,492.7	2,164.5	1,834.8	1,772.3	5,771.6	23,243.3	-3.54%	-3.23
NJ Newark	New Jersey Transit Corp	NA	13,970.8	12,159.0	11,670.6	37,800.4	150,997.3	14,170.1	12,271.2	11,835.9	38,277.2	150,831.0	-1.25%	0.11
NV Las Vegas	RTC of Southern Nevada	200.2	6,150.8	5,431.6	5,314.2	16,896.6	65,266.1	5,957.7	5,352.9	5,192.7	16,503.3	64,579.6	2.38%	1.06
NY New York	MTA New York City Transit	2,259.1	64,429.9	58,671.7	55,039.2	178,140.8	732,636.8	70,053.1	61,142.9	59,790.1	190,986.1	734,640.9	-6.73%	-0.27%

State and Primary City	Transit Agency	AVG WKDY (000's)	OCT '19 (000's)	NOV '19 (000's)	DEC '19 (000's)	OCT '19-DEC '19 (000's)	JAN '19-DEC '19 (000's)	OCT '18 (000's)	NOV '18 (000's)	DEC '18 (000's)	OCT '18-DEC '18 (000's)	JAN '18-DEC '18 (000's)	4th Qtr Chng	YTD Chng
OH Cincinnati	Southwest Ohio RTA	46.3	1,321.1	1,058.8	1,027.7	3,407.6	13,245.1	1,360.7	1,128.7	1,055.9	3,545.3	13,750.5	-3.88%	-3.68
OH Cleveland	Greater Cleveland Reg TA	82.1	2,362.1	1,985.2	1,839.6	6,186.9	24,757.4	2,460.7	2,083.0	1,912.9	6,456.6	25,549.1	-4.18%	-3.10
OH Columbus	Central Ohio Transit Auth	61.5	1,811.1	1,597.5	1,443.4	4,852.0	19,145.1	1,800.6	1,586.4	1,456.7	4,843.7	18,914.0	0.17%	1.22
OR Portland	Tri-County Metro Trp Dist	186.0	5,281.7	4,660.2	4,531.6	14,473.5	57,373.5	5,156.2	4,633.8	4,254.4	14,044.4	56,727.1	3.06%	1.14
PA Philadelphia	Southeastern Penn TA	491.5	13,020.0	11,252.6	11,118.4	35,391.0	137,328.2	13,207.8	11,641.0	11,048.8	35,897.6	141,806.7	-1.41%	-3.16
PA Pittsburgh	Port Auth of Allegheny Co	NA	5,234.2	4,419.6	4,185.1	13,838.9	54,832.8	5,331.7	4,536.6	4,119.6	13,987.9	54,871.9	-1.07%	-0.07
TX Dallas	Dallas Area Rapid Transit	124.2	3,517.8	3,041.0	3,054.4	9,613.2	38,598.5	2,705.0	2,450.5	2,185.1	7,340.6	29,631.1	30.96%	30.26
TX Houston	Metro Tr Auth of Harris Co	224.0	6,323.4	5,480.4	5,425.3	17,229.1	67,353.1	6,237.0	5,457.2	5,163.4	16,857.6	66,930.7	2.20%	0.63
TX San Antonio	VIA Metropolitan Transit	80.9	3,268.2	2,968.7	2,911.1	9,148.0	35,350.1	3,107.1	2,892.2	2,745.4	8,744.7	34,921.2	4.61%	1.23
VA Hampton	Hampton Roads Transit	33.2	913.9	790.9	789.7	2,494.5	10,660.6	1,017.1	895.5	853.9	2,766.5	11,239.2	-9.83%	-5.15
WA Seattle	King County Dept of Trp	332.6	9,624.6	8,508.6	7,876.6	26,009.8	103,934.8	9,538.5	8,423.4	7,700.7	25,662.6	104,261.4	1.35%	-0.31
WI Milwaukee	Milwaukee County Tr Sys	86.1	2,455.3	2,166.4	2,028.9	6,650.6	26,447.3	2,710.9	2,367.4	2,181.5	7,259.8	29,071.3	-8.39%	-9.03
REPORTED TOTAL		**8,898.0**	**277,640.3**	**242,685.4**	**232,457.5**	**752,783.2**	**3,017,168.0**	**283,005.7**	**247,662.9**	**235,246.7**	**765,915.3**	**3,029,410.7**	**-1.71%**	**-0.40**

* Preliminary information based on data from reporting systems.

Note: Data may differ from that included in Federal Transit Administration reports due to differences in data calculation procedures and in periods of time covered.

(a) Transit agencies assigned by urbanized areas or urban places of less than 50,000 population outside urbanized areas based on 2000 U.S. Census Population.

(b) Year-to-date ridership adjusted for data received after closing dates of previous issues.

State and Primary City		Transit Agency	Mode	Average Weekday (000's)	Trips for Oct '19 (000's)	Trips for Nov '19 (000's)	Trips for Dec '19 (000's)	Trips Thru Dec '19 (000's)	Trips for Oct '18 (000's)	Trips for Nov '18 (000's)	Trips for Dec '18 (000's)	Trips Thru Dec '18 (000's)	Quarterly Change	Year-to-Da Chan
AK	Anchorage	Alaska Railroad Corporation	CR	0.2	1.0	1.2	2.9	203.4	1.1	1.1	2.0	199.7	21.43%	1.85
AK	Anchorage	Alaska Railroad Corporation	TOTAL	0.2	1.0	1.2	2.9	203.4	1.1	1.1	2.0	199.7	21.43%	1.85
AR	Little Rock	Rock Region Metro	DR	NA	9.4	8.0	7.8	97.6	8.7	7.5	7.2	93.5	7.69%	4.39
AR	Little Rock	Rock Region Metro	LR	NA	10.1	7.8	10.1	127.1	3.2	2.5	7.5	42.8	>100%	>100
AR	Little Rock	Rock Region Metro	MB	8.3	225.0	188.5	187.2	2,351.8	211.1	184.0	172.5	2,240.6	5.83%	4.96
AR	Little Rock	Rock Region Metro	TOTAL	NA	244.5	204.3	205.1	2,576.5	223.0	194.0	187.2	2,376.9	8.23%	8.40
AZ	Flagstaff	N. AZ Intergovernmental Public TA	DR	0.0	2.0	1.6	1.6	20.2	1.8	1.5	1.5	23.9	8.33%	-15.48
AZ	Flagstaff	N. AZ Intergovernmental Public TA	MB	7.7	293.5	231.1	171.0	2,507.6	305.0	246.3	173.0	2,531.1	-3.96%	-0.93
AZ	Flagstaff	N. AZ Intergovernmental Public TA	VP	0.0	0.8	0.7	0.6	9.5	0.8	0.9	0.7	8.3	-12.50%	14.46
AZ	Flagstaff	N. AZ Intergovernmental Public TA	TOTAL	7.7	296.3	233.4	173.2	2,537.3	307.6	248.7	175.2	2,563.3	-3.91%	-1.01
AZ	Glendale	Glendale Transit	DR	0.2	5.9	4.7	5.0	67.1	7.9	6.9	6.3	79.2	-26.07%	-15.28
AZ	Glendale	Glendale Transit	MB	0.4	11.0	9.8	10.1	126.6	11.1	10.4	10.8	121.6	-4.33%	4.11
AZ	Glendale	Glendale Transit	TOTAL	0.6	16.9	14.5	15.1	193.7	19.0	17.3	17.1	200.8	-12.92%	-3.54
AZ	Phoenix	City of Phoenix PTD	DR	1.0	31.2	27.8	28.4	352.3	30.3	28.0	27.1	342.4	2.34%	2.89
AZ	Phoenix	City of Phoenix PTD	MB	108.3	3,081.9	2,699.8	2,603.5	33,222.5	3,267.0	3,077.1	2,817.3	35,384.8	-8.47%	-6.11
AZ	Phoenix	City of Phoenix PTD	TOTAL	109.3	3,113.1	2,727.6	2,631.9	33,574.8	3,297.3	3,105.1	2,844.4	35,727.2	-8.37%	-6.02
AZ	Phoenix	Valley Metro	DR	2.2	60.8	54.8	56.3	734.8	52.0	48.3	46.4	580.3	17.18%	26.62
AZ	Phoenix	Valley Metro	MB	46.0	1,271.5	1,135.3	1,054.6	13,549.5	1,322.6	1,209.7	1,043.2	14,213.4	-3.19%	-4.67
AZ	Phoenix	Valley Metro	VP	NA	90.1	77.7	74.7	998.2	88.4	79.0	78.5	982.1	-1.38%	1.64
AZ	Phoenix	Valley Metro	TOTAL	NA	1,422.4	1,267.8	1,185.6	15,282.5	1,463.0	1,337.0	1,168.1	15,775.8	-2.33%	-3.13
AZ	Phoenix	Valley Metro Rail, Inc.	LR	47.0	1,387.7	1,315.4	1,204.5	15,060.2	1,366.5	1,300.6	1,198.8	15,406.3	1.08%	-2.25
AZ	Phoenix	Valley Metro Rail, Inc.	TOTAL	47.0	1,387.7	1,315.4	1,204.5	15,060.2	1,366.5	1,300.6	1,198.8	15,406.3	1.08%	-2.25
AZ	Scottsdale	City of Scottsdale	MB	3.5	81.8	69.8	70.4	839.0	63.1	61.9	56.0	745.2	22.65%	12.59
AZ	Scottsdale	City of Scottsdale	TOTAL	3.5	81.8	69.8	70.4	839.0	63.1	61.9	56.0	745.2	22.65%	12.59
AZ	Tucson	City of Tucson MTS	DR	1.8	48.0	41.0	39.9	533.8	49.4	44.2	41.5	553.2	-4.59%	-3.51
AZ	Tucson	City of Tucson MTS	LR	3.1	98.7	89.0	66.8	873.1	104.1	95.0	56.1	907.5	-0.27%	-3.79
AZ	Tucson	City of Tucson MTS	MB	46.0	1,272.0	1,119.8	1,067.5	13,796.8	1,321.8	1,239.5	1,132.5	14,764.4	-6.35%	-6.55
AZ	Tucson	City of Tucson MTS	TOTAL	50.8	1,418.7	1,249.8	1,174.2	15,203.7	1,475.3	1,378.7	1,230.1	16,225.1	-5.91%	-6.30
CA	Alturas	Modoc Transportation Agency	MB	0.6	13.8	11.1	11.2	144.5	12.8	10.4	12.0	129.7	2.56%	11.41
CA	Alturas	Modoc Transportation Agency	TOTAL	0.6	13.8	11.1	11.2	144.5	12.8	10.4	12.0	129.7	2.56%	11.41
CA	Anaheim	Anaheim Resort Transportation	MB	15.4	698.9	625.2	713.7	8,417.1	920.8	778.1	851.1	9,809.1	-20.09%	-14.19
CA	Anaheim	Anaheim Resort Transportation	TOTAL	15.4	698.9	625.2	713.7	8,417.1	920.8	778.1	851.1	9,809.1	-20.09%	-14.19

Modes: MB - Bus, DR - Demand Response, CR - Commuter Rail, HR - Heavy Rail, LR - Light Rail, AG - Automated Guideway, CC - Cable Car, FB - Ferry Boat, IP - Inclined Plane, IR - Intermediate Rail, MO - Monorail, TB - Trolleybus, VP - Vanpool

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CA	Antioch	Eastern Contra Costa Tr Auth	DR	0.8	19.2	16.4	16.7	186.2	13.6	12.3	12.3	139.4	36.91%	33.57
CA	Antioch	Eastern Contra Costa Tr Auth	MB	6.0	156.1	127.9	134.4	1,691.8	180.1	143.7	133.6	2,064.8	-8.53%	-18.06
CA	Antioch	Eastern Contra Costa Tr Auth	TOTAL	6.8	175.3	144.3	151.1	1,878.0	193.7	156.0	145.9	2,204.2	-5.02%	-14.80
CA	Bakersfield	Golden Empire Transit District	DR	0.2	5.2	4.6	5.8	58.4	5.0	4.4	4.3	55.7	13.87%	4.85
CA	Bakersfield	Golden Empire Transit District	MB	22.0	566.1	478.1	664.4	6,247.9	593.2	524.6	481.0	6,333.2	6.87%	-1.35
CA	Bakersfield	Golden Empire Transit District	TOTAL	22.2	571.3	482.7	670.2	6,306.3	598.2	529.0	485.3	6,388.9	6.93%	-1.29
CA	Concord	Central Contra Costa TA	DR	0.5	13.1	10.9	11.1	149.1	14.1	11.9	11.6	149.2	-6.65%	-0.07
CA	Concord	Central Contra Costa TA	MB	13.2	368.5	292.3	270.1	3,463.8	325.8	263.4	243.0	3,366.5	11.86%	2.89
CA	Concord	Central Contra Costa TA	TOTAL	13.7	381.6	303.2	281.2	3,612.9	339.9	275.3	254.6	3,515.7	11.06%	2.76
CA	Culver City	Culver CityBus	MB	16.0	433.1	371.6	360.6	4,569.5	453.3	424.6	380.5	4,838.7	-7.40%	-5.56
CA	Culver City	Culver CityBus	TOTAL	16.0	433.1	371.6	360.6	4,569.5	453.3	424.6	380.5	4,838.7	-7.40%	-5.56
CA	Davis	Unitrans	MB	18.8	556.2	415.5	223.3	3,995.5	487.9	287.2	202.7	3,824.8	22.21%	4.46
CA	Davis	Unitrans	TOTAL	18.8	556.2	415.5	223.3	3,995.5	487.9	287.2	202.7	3,824.8	22.21%	4.46
CA	Fairfield	Fairfield/Suisun Transit Sys	DR	0.1	1.7	1.4	1.3	19.7	2.2	1.8	1.7	24.1	-22.81%	-18.26
CA	Fairfield	Fairfield/Suisun Transit Sys	MB	3.3	87.0	70.9	62.4	886.3	88.5	71.5	63.4	921.3	-1.39%	-3.80
CA	Fairfield	Fairfield/Suisun Transit Sys	TOTAL	3.4	88.7	72.3	63.7	906.0	90.7	73.3	65.1	945.4	-1.92%	-4.17
CA	Fresno	Fresno Area Express	DR	0.7	20.3	16.6	15.9	219.2	20.7	17.4	16.1	217.7	-2.58%	0.69
CA	Fresno	Fresno Area Express	MB	35.1	1,006.0	910.0	837.7	10,648.7	983.9	901.2	836.8	10,194.2	1.17%	4.46
CA	Fresno	Fresno Area Express	TOTAL	35.8	1,026.3	926.6	853.6	10,867.9	1,004.6	918.6	852.9	10,411.9	1.10%	4.38
CA	Gardena	Gardena Municipal Bus Lines	DR	0.0	2.1	1.4	1.7	22.0	1.7	1.7	1.7	22.1	1.96%	-0.45
CA	Gardena	Gardena Municipal Bus Lines	MB	11.7	296.3	239.1	229.9	2,955.4	283.4	246.0	220.9	3,016.2	2.00%	-2.02
CA	Gardena	Gardena Municipal Bus Lines	TOTAL	11.7	298.4	240.5	231.6	2,977.4	285.1	247.7	222.6	3,038.3	2.00%	-2.00
CA	Hesperia	Victor Valley Transit Authority	DR	NA	17.7	14.9	15.4	190.8	17.1	15.5	14.3	187.3	2.35%	1.87
CA	Hesperia	Victor Valley Transit Authority	MB	NA	156.5	125.1	111.1	1,528.5	104.8	126.4	109.7	1,406.0	15.20%	8.71
CA	Hesperia	Victor Valley Transit Authority	VP	NA	54.8	46.3	46.9	566.5	51.0	46.3	42.6	590.3	5.79%	-4.03
CA	Hesperia	Victor Valley Transit Authority	TOTAL	NA	229.0	186.3	173.4	2,285.8	172.9	188.2	166.6	2,183.6	11.56%	4.68
CA	Lancaster	Antelope Valley Transit Auth	DR	0.2	5.1	4.4	4.2	52.2	4.8	4.2	3.7	50.6	7.87%	3.16
CA	Lancaster	Antelope Valley Transit Auth	MB	7.9	234.6	188.5	164.0	2,374.1	209.8	170.7	153.8	2,298.2	9.88%	3.30
CA	Lancaster	Antelope Valley Transit Auth	TOTAL	8.1	239.7	192.9	168.2	2,426.3	214.6	174.9	157.5	2,348.8	9.84%	3.30
CA	Livermore	Livermore/Amador Valley TA	DR	1.7	4.2	3.5	3.5	47.1	4.3	3.9	3.7	48.2	-5.88%	-2.28
CA	Livermore	Livermore/Amador Valley TA	MB	6.9	193.7	148.5	141.1	1,761.9	171.1	132.8	124.3	1,667.8	12.87%	5.64
CA	Livermore	Livermore/Amador Valley TA	TOTAL	8.6	197.9	152.0	144.6	1,809.0	175.4	136.7	128.0	1,716.0	12.36%	5.42

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CA	Long Beach	Long Beach Transit	DR	0.1	3.5	3.1	3.0	37.7	3.7	3.2	3.0	38.6	-3.03%	-2.33
CA	Long Beach	Long Beach Transit	FB	0.1	4.4	3.2	1.8	92.5	0.0	0.0	0.0	74.5	NA	24.16
CA	Long Beach	Long Beach Transit	MB	75.8	2,219.4	1,837.7	1,858.0	23,132.8	2,216.3	1,864.8	1,908.5	23,453.4	-1.24%	-1.37
CA	Long Beach	Long Beach Transit	TOTAL	76.0	2,227.3	1,844.0	1,862.8	23,263.0	2,220.0	1,868.0	1,911.5	23,566.5	-1.09%	-1.29
CA	Los Angeles	Access Services	DR	15.2	429.0	387.6	383.9	4,663.5	402.9	361.7	342.6	4,451.7	8.43%	4.76
CA	Los Angeles	Access Services	TOTAL	15.2	429.0	387.6	383.9	4,663.5	402.9	361.7	342.6	4,451.7	8.43%	4.76
CA	Los Angeles	Los Angeles County MTA	HR	130.9	3,578.9	3,302.5	3,401.1	41,775.1	3,794.7	3,582.3	3,621.3	43,300.6	-6.51%	-3.52
CA	Los Angeles	Los Angeles County MTA	LR	161.3	3,834.5	4,418.7	4,666.5	51,395.8	5,664.0	5,423.1	5,427.2	64,715.7	-21.77%	-20.58
CA	Los Angeles	Los Angeles County MTA	MB	865.6	26,065.7	21,760.6	20,954.6	278,109.9	25,080.2	22,438.5	20,988.1	275,775.9	0.40%	0.85
CA	Los Angeles	Los Angeles County MTA	TOTAL	1,157.8	33,479.1	29,481.8	29,022.2	371,280.8	34,538.9	31,443.9	30,036.6	383,792.2	-4.20%	-3.26
CA	Los Angeles	Southern California RRA	CR	38.5	989.0	835.4	810.6	10,803.6	991.2	858.5	758.8	10,691.1	1.02%	1.05
CA	Los Angeles	Southern California RRA	TOTAL	38.5	989.0	835.4	810.6	10,803.6	991.2	858.5	758.8	10,691.1	1.02%	1.05
CA	Modesto	Modesto Area Express	DR	NA	7.4	6.7	6.6	81.7	7.1	6.3	6.1	81.8	6.15%	-0.12
CA	Modesto	Modesto Area Express	MB	NA	223.7	180.3	164.7	2,201.5	194.2	163.2	150.1	2,055.3	12.06%	7.11
CA	Modesto	Modesto Area Express	TOTAL	NA	231.1	187.0	171.3	2,283.2	201.3	169.5	156.2	2,137.1	11.84%	6.84
CA	Montebello	Montebello Bus Lines	DR	0.2	6.7	5.7	5.3	69.1	6.0	5.5	5.5	73.0	4.12%	-5.34
CA	Montebello	Montebello Bus Lines	MB	20.8	491.0	419.4	402.9	5,191.7	503.7	445.4	407.0	5,557.0	-3.16%	-6.57
CA	Montebello	Montebello Bus Lines	TOTAL	21.0	497.7	425.1	408.2	5,260.8	509.7	450.9	412.5	5,630.0	-3.07%	-6.56
CA	Monterey	Monterey-Salinas Transit	DR	0.7	19.8	16.9	15.5	203.8	18.9	16.6	14.7	207.4	3.98%	-1.74
CA	Monterey	Monterey-Salinas Transit	MB	11.6	373.5	316.2	269.6	4,145.7	384.0	326.8	290.5	4,259.9	-4.19%	-2.68
CA	Monterey	Monterey-Salinas Transit	TOTAL	12.3	393.3	333.1	285.1	4,349.5	402.9	343.4	305.2	4,467.3	-3.80%	-2.64
CA	Napa	Napa County Transportation and Pla	DR	0.4	8.9	7.3	6.7	97.9	9.0	6.8	6.3	97.4	3.62%	0.51
CA	Napa	Napa County Transportation and Pla	MB	3.3	79.2	66.7	66.4	894.4	85.3	67.9	58.0	941.4	0.52%	-4.99
CA	Napa	Napa County Transportation and Pla	TOTAL	3.7	88.1	74.0	73.1	992.3	94.3	74.7	64.3	1,038.8	0.81%	-4.48
CA	Norwalk	Norwalk Transit System	DR	0.4	2.4	1.8	1.9	24.5	2.1	1.9	1.8	22.9	5.17%	6.99
CA	Norwalk	Norwalk Transit System	MB	5.5	149.4	118.7	103.1	1,432.4	147.6	122.6	97.1	1,443.2	1.06%	-0.75
CA	Norwalk	Norwalk Transit System	TOTAL	5.9	151.8	120.5	105.0	1,456.9	149.7	124.5	98.9	1,466.1	1.13%	-0.63
CA	Oakland	Alameda-Contra Costa TD	DR	2.8	67.1	56.3	57.8	735.0	64.4	57.3	56.4	759.3	1.74%	-3.20
CA	Oakland	Alameda-Contra Costa TD	MB	215.5	5,186.0	4,460.1	4,174.7	53,883.9	5,148.2	4,329.2	4,031.0	52,309.1	2.31%	3.01
CA	Oakland	Alameda-Contra Costa TD	TOTAL	218.4	5,253.1	4,516.4	4,232.5	54,618.9	5,212.6	4,386.5	4,087.4	53,068.4	2.31%	2.92
CA	Oakland	Capitol Corridor Joint Powers Auth	CR	6.0	162.5	152.7	141.5	1,791.7	162.4	147.7	131.5	1,725.5	3.42%	3.84
CA	Oakland	Capitol Corridor Joint Powers Auth	TOTAL	6.0	162.5	152.7	141.5	1,791.7	162.4	147.7	131.5	1,725.5	3.42%	3.84

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CA	Oceanside	North County Transit District	CR	4.2	111.0	94.6	84.0	1,362.8	115.8	108.3	93.2	1,434.7	-8.73%	-5.01
CA	Oceanside	North County Transit District	DR	0.5	13.2	12.2	11.7	157.0	16.3	13.9	12.6	181.1	-13.32%	-13.31
CA	Oceanside	North County Transit District	LR	7.8	241.9	195.7	175.2	2,475.8	238.3	189.8	148.7	2,403.2	6.24%	3.02
CA	Oceanside	North County Transit District	MB	21.2	622.5	519.9	462.4	6,301.3	626.1	532.8	478.2	6,478.1	-1.97%	-2.73
CA	Oceanside	North County Transit District	TOTAL	33.7	988.6	822.4	733.3	10,296.9	996.5	844.8	732.7	10,497.1	-1.15%	-1.91
CA	Orange	Orange County Transp Auth	DR	4.6	158.0	134.5	132.4	1,696.4	151.8	134.7	120.1	1,647.3	4.50%	2.98
CA	Orange	Orange County Transp Auth	MB	119.8	3,529.4	2,998.2	2,851.3	37,292.5	3,590.4	3,168.0	2,907.8	38,886.9	-2.97%	-4.10
CA	Orange	Orange County Transp Auth	VP	18.5	109.4	88.8	83.2	1,172.6	114.2	99.6	81.1	1,254.1	-4.58%	-6.50
CA	Orange	Orange County Transp Auth	TOTAL	142.9	3,796.8	3,221.5	3,066.9	40,161.5	3,856.4	3,402.3	3,109.0	41,788.3	-2.72%	-3.89
CA	Oxnard	Gold Coast Transit	DR	0.4	9.9	8.5	8.5	114.7	10.8	9.3	9.1	118.3	-7.88%	-3.04
CA	Oxnard	Gold Coast Transit	MB	11.3	326.9	286.8	269.3	3,499.0	338.3	290.4	274.9	3,538.7	-2.28%	-1.12
CA	Oxnard	Gold Coast Transit	TOTAL	11.7	336.8	295.3	277.8	3,613.7	349.1	299.7	284.0	3,657.0	-2.45%	-1.18
CA	Redding	Redding Area Bus Authority	DR	0.2	3.9	3.1	3.3	46.7	4.7	4.1	4.0	50.5	-19.53%	-7.52
CA	Redding	Redding Area Bus Authority	MB	2.6	54.6	50.0	44.8	578.6	57.2	48.4	47.1	625.2	-2.16%	-7.45
CA	Redding	Redding Area Bus Authority	TOTAL	2.8	58.5	53.1	48.1	625.3	61.9	52.5	51.1	675.7	-3.50%	-7.46
CA	Redondo Beach	City of Redondo Beach	DR	0.0	1.3	1.0	0.9	13.2	1.3	1.2	1.1	14.2	-11.11%	-7.04
CA	Redondo Beach	City of Redondo Beach	MB	1.2	36.1	27.6	25.8	359.6	35.0	28.2	26.2	358.0	0.11%	0.45
CA	Redondo Beach	City of Redondo Beach	TOTAL	1.2	37.4	28.6	26.7	372.8	36.3	29.4	27.3	372.2	-0.32%	0.16
CA	Riverside	Riverside Transit Agency	DR	1.3	34.1	29.3	29.0	390.0	37.3	33.0	30.9	410.9	-8.70%	-5.09
CA	Riverside	Riverside Transit Agency	MB	27.7	834.7	686.1	598.8	8,228.3	842.0	724.7	622.9	8,287.2	-3.20%	-0.71
CA	Riverside	Riverside Transit Agency	TOTAL	29.0	868.8	715.4	627.8	8,618.3	879.3	757.7	653.8	8,698.1	-3.44%	-0.92
CA	Sacramento	Sacramento Reg Tr Dist	DR	0.5	42.0	36.0	10.7	117.3	38.5	33.2	33.1	381.7	-67.94%	-69.27
CA	Sacramento	Sacramento Reg Tr Dist	LR	38.4	1,059.0	896.9	879.0	11,180.1	1,025.6	833.6	819.4	10,464.7	5.84%	6.84
CA	Sacramento	Sacramento Reg Tr Dist	MB	37.8	1,043.7	883.9	835.8	10,029.0	1,034.5	819.3	795.5	9,956.5	4.31%	0.73
CA	Sacramento	Sacramento Reg Tr Dist	TOTAL	NA	2,144.7	1,816.8	NA	NA	2,098.6	1,686.1	1,648.0	20,802.9	NA	N
CA	San Bernardino	OMNITRANS	DR	1.2	30.7	25.5	25.6	344.2	34.1	29.2	26.9	369.6	-9.31%	-6.87
CA	San Bernardino	OMNITRANS	MB	35.2	1,025.4	851.0	802.6	10,540.0	1,019.5	897.4	801.4	10,605.8	-1.45%	-0.62
CA	San Bernardino	OMNITRANS	TOTAL	36.4	1,056.1	876.5	828.2	10,884.2	1,053.6	926.6	828.3	10,975.4	-1.70%	-0.83
CA	San Carlos	Caltrain	CR	67.5	1,726.4	1,472.7	1,428.4	18,693.5	1,605.7	1,470.2	1,356.5	18,855.7	4.40%	-0.86
CA	San Carlos	Caltrain	TOTAL	67.5	1,726.4	1,472.7	1,428.4	18,693.5	1,605.7	1,470.2	1,356.5	18,855.7	4.40%	-0.86
CA	San Carlos	San Mateo County Tran Dist	DR	1.1	29.9	26.6	25.8	334.7	31.6	27.4	26.0	346.3	-3.18%	-3.35
CA	San Carlos	San Mateo County Tran Dist	MB	37.4	1,057.5	911.9	857.9	10,808.0	1,039.6	876.4	827.2	10,870.9	3.07%	-0.58
CA	San Carlos	San Mateo County Tran Dist	TOTAL	38.5	1,087.4	938.5	883.7	11,142.7	1,071.2	903.8	853.2	11,217.2	2.88%	-0.66

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CA	San Diego	San Diego Metrop Transit System	DR	1.6	43.3	36.2	36.1	474.9	46.8	41.2	36.6	544.1	-7.22%	-12.72
CA	San Diego	San Diego Metrop Transit System	LR	117.7	3,551.9	3,124.4	2,879.5	38,047.3	3,389.1	3,077.0	2,957.4	37,139.7	1.40%	2.44
CA	San Diego	San Diego Metrop Transit System	MB	163.0	4,809.7	3,963.2	3,560.9	48,032.2	4,690.8	3,987.1	3,537.6	47,734.8	0.97%	0.62
CA	San Diego	San Diego Metrop Transit System	TOTAL	282.3	8,404.9	7,123.8	6,476.5	86,554.4	8,126.7	7,105.3	6,531.6	85,418.6	1.11%	1.33
CA	San Francisco	Golden Gate Bridge, Hwy & TD	DR	0.4	8.8	7.9	7.7	118.0	11.7	10.2	9.6	129.2	-22.54%	-8.67
CA	San Francisco	Golden Gate Bridge, Hwy & TD	FB	8.0	220.8	174.1	160.0	2,445.7	221.2	165.8	160.4	2,527.0	1.37%	-3.22
CA	San Francisco	Golden Gate Bridge, Hwy & TD	MB	10.3	272.6	236.5	222.3	3,081.9	291.1	240.0	222.0	3,153.6	-2.88%	-2.27
CA	San Francisco	Golden Gate Bridge, Hwy & TD	TOTAL	18.7	502.2	418.5	390.0	5,645.6	524.0	416.0	392.0	5,809.8	-1.60%	-2.83
CA	San Francisco	San Francisco Bay Area RTD	AG	2.6	74.9	68.9	70.7	846.6	82.7	76.0	70.9	931.5	-6.58%	-9.11
CA	San Francisco	San Francisco Bay Area RTD	CR	8.2	217.5	184.0	178.1	2,292.0	211.6	179.0	168.5	1,316.1	3.67%	74.15
CA	San Francisco	San Francisco Bay Area RTD	HR	421.1	11,304.9	9,711.6	9,294.4	123,510.1	11,480.0	9,597.2	9,223.6	125,576.4	0.03%	-1.65
CA	San Francisco	San Francisco Bay Area RTD	TOTAL	431.9	11,597.3	9,964.5	9,543.2	126,648.7	11,774.3	9,852.2	9,463.0	127,824.0	0.05%	-0.92
CA	San Francisco	San Francisco Muni Rwy	CC	14.9	526.9	399.9	405.5	5,719.9	576.9	442.5	431.3	6,286.9	-8.16%	-9.02
CA	San Francisco	San Francisco Muni Rwy	LR	157.7	4,490.6	3,871.6	3,829.4	49,519.6	4,531.6	4,171.5	3,634.2	49,971.7	-1.18%	-0.90
CA	San Francisco	San Francisco Muni Rwy	MB	334.6	9,724.1	8,383.3	8,177.4	104,950.2	9,820.2	8,413.4	8,515.3	107,199.8	-1.74%	-2.10
CA	San Francisco	San Francisco Muni Rwy	TB	167.4	5,008.6	4,449.5	4,303.3	54,381.0	4,754.8	4,146.5	4,162.1	52,728.9	5.34%	3.13
CA	San Francisco	San Francisco Muni Rwy	TOTAL	674.5	19,750.2	17,104.3	16,715.6	214,570.7	19,683.5	17,173.9	16,742.9	216,187.3	-0.06%	-0.75
CA	San Francisco	Water Emergency Tr Auth	FB	10.1	310.7	236.4	213.4	3,218.6	278.2	196.4	191.7	2,923.4	14.14%	10.10
CA	San Francisco	Water Emergency Tr Auth	TOTAL	10.1	310.7	236.4	213.4	3,218.6	278.2	196.4	191.7	2,923.4	14.14%	10.10
CA	San Jose	Santa Clara Valley Trp Auth	DR	1.5	41.1	35.3	34.2	452.6	37.6	32.9	33.8	434.4	6.04%	4.19
CA	San Jose	Santa Clara Valley Trp Auth	LR	26.7	769.8	681.3	664.2	8,335.1	811.1	677.0	682.4	8,538.9	-2.54%	-2.39
CA	San Jose	Santa Clara Valley Trp Auth	MB	92.0	2,631.1	2,271.4	2,145.7	27,367.4	2,659.0	2,217.5	2,262.6	27,994.0	-1.27%	-2.24
CA	San Jose	Santa Clara Valley Trp Auth	TOTAL	120.2	3,442.0	2,988.0	2,844.1	36,155.1	3,507.7	2,927.4	2,978.8	36,967.3	-1.49%	-2.20
CA	San Rafael	Sonoma-Marin Area Rail Tr Dist (S	CR	NA	57.2	65.0	58.2	714.0	65.5	52.8	51.7	714.5	6.12%	-0.07
CA	San Rafael	Sonoma-Marin Area Rail Tr Dist (S	TOTAL	NA	57.2	65.0	58.2	714.0	65.5	52.8	51.7	714.5	6.12%	-0.07
CA	Santa Barbara	Santa Barbara MTD	DR	0.2	5.7	4.8	4.8	61.1	5.3	4.6	4.4	56.4	6.99%	8.33
CA	Santa Barbara	Santa Barbara MTD	MB	23.7	729.2	568.7	434.4	6,503.3	697.8	563.7	429.0	6,379.1	2.47%	1.95
CA	Santa Barbara	Santa Barbara MTD	TOTAL	23.9	734.9	573.5	439.2	6,564.4	703.1	568.3	433.4	6,435.5	2.51%	2.00
CA	Santa Cruz	Santa Cruz Metro Transit Dist	DR	0.3	7.4	6.4	6.1	75.4	7.0	6.0	5.7	71.7	6.42%	5.16
CA	Santa Cruz	Santa Cruz Metro Transit Dist	MB	18.6	616.1	482.8	304.2	5,078.7	589.1	491.7	318.2	4,931.3	0.29%	2.99
CA	Santa Cruz	Santa Cruz Metro Transit Dist	TOTAL	18.9	623.5	489.2	310.3	5,154.1	596.1	497.7	323.9	5,003.0	0.37%	3.02
CA	Santa Monica	Santa Monica's Big Blue Bus	DR	0.0	3.6	3.2	3.0	45.1	0.4	3.0	3.0	17.9	53.13%	>100
CA	Santa Monica	Santa Monica's Big Blue Bus	MB	43.5	1,305.4	1,080.3	949.1	12,823.3	1,258.6	1,072.8	909.9	12,818.0	2.88%	0.04
CA	Santa Monica	Santa Monica's Big Blue Bus	TOTAL	43.5	1,309.0	1,083.5	952.1	12,868.4	1,259.0	1,075.8	912.9	12,835.9	2.98%	0.25

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CA	Simi Valley	City of Simi Valley/Transit	DR	0.1	3.3	3.2	3.0	38.7	3.8	3.2	3.0	42.0	-5.00%	-7.86
CA	Simi Valley	City of Simi Valley/Transit	MB	0.8	21.4	18.3	17.6	226.8	23.0	17.6	28.6	251.0	-17.20%	-9.64
CA	Simi Valley	City of Simi Valley/Transit	TOTAL	0.9	24.7	21.5	20.6	265.5	26.8	20.8	31.6	293.0	-15.66%	-9.39
CA	Stockton	San Joaquin Reg Rail Comm	CR	4.8	141.7	115.0	101.4	1,492.4	151.6	122.9	99.0	1,479.3	-4.12%	0.89
CA	Stockton	San Joaquin Reg Rail Comm	TOTAL	4.8	141.7	115.0	101.4	1,492.4	151.6	122.9	99.0	1,479.3	-4.12%	0.89
CA	Stockton	San Joaquin Reg Trans Dist	DR	0.6	14.8	13.2	13.8	150.6	6.2	5.7	5.2	62.2	>100%	>100
CA	Stockton	San Joaquin Reg Trans Dist	MB	12.3	333.0	281.8	257.0	3,498.8	337.7	276.8	255.7	3,413.9	0.18%	2.49
CA	Stockton	San Joaquin Reg Trans Dist	TOTAL	12.9	347.8	295.0	270.8	3,649.4	343.9	282.5	260.9	3,476.1	2.96%	4.99
CA	Thousand Palms	SunLine Transit Agency	DR	0.5	13.9	12.3	12.1	154.6	12.9	11.2	9.7	147.0	13.31%	5.17
CA	Thousand Palms	SunLine Transit Agency	MB	13.3	385.0	339.0	322.0	4,049.3	382.7	349.3	323.5	3,974.5	-0.90%	1.88
CA	Thousand Palms	SunLine Transit Agency	TOTAL	13.8	398.9	351.3	334.1	4,203.9	395.6	360.5	333.2	4,121.5	-0.46%	2.00
CA	Torrance	Torrance Transit System	DR	0.2	4.5	4.0	4.2	58.9	6.0	5.5	5.4	68.8	-24.85%	-14.39
CA	Torrance	Torrance Transit System	MB	12.1	344.9	287.8	273.2	3,610.3	314.7	312.8	301.3	3,692.8	-2.47%	-2.23
CA	Torrance	Torrance Transit System	TOTAL	12.3	349.4	291.8	277.4	3,669.2	320.7	318.3	306.7	3,761.6	-2.87%	-2.46
CA	Vallejo	Solano County Transit (SolTrans)	DR	0.1	2.7	2.4	2.7	36.0	3.2	2.8	2.6	33.0	-9.30%	9.09
CA	Vallejo	Solano County Transit (SolTrans)	MB	5.0	128.2	107.2	96.3	1,320.3	145.0	111.9	105.9	1,432.6	-8.57%	-7.84
CA	Vallejo	Solano County Transit (SolTrans)	TOTAL	5.1	130.9	109.6	99.0	1,356.3	148.2	114.7	108.5	1,465.6	-8.59%	-7.46
CA	Ventura	Ventura County Transp Comm	MB	2.4	68.0	55.5	44.8	642.1	73.5	55.0	46.3	644.8	-3.72%	-0.42
CA	Ventura	Ventura County Transp Comm	TOTAL	2.4	68.0	55.5	44.8	642.1	73.5	55.0	46.3	644.8	-3.72%	-0.42
CA	Visalia	Visalia City Coach	DR	0.1	3.7	3.2	3.0	39.8	3.7	3.2	3.0	39.3	0.00%	1.27
CA	Visalia	Visalia City Coach	MB	4.3	119.1	96.1	92.4	1,216.6	128.1	104.4	93.8	1,360.1	-5.73%	-10.55
CA	Visalia	Visalia City Coach	TOTAL	4.4	122.8	99.3	95.4	1,256.4	131.8	107.6	96.8	1,399.4	-5.56%	-10.22
CA	West Covina	Foothill Transit	MB	38.7	1,110.3	950.7	855.4	11,751.8	1,191.6	1,039.1	925.6	12,452.6	-7.60%	-5.63
CA	West Covina	Foothill Transit	TOTAL	38.7	1,110.3	950.7	855.4	11,751.8	1,191.6	1,039.1	925.6	12,452.6	-7.60%	-5.63
CA	Woodland	Yolo County Transportation District	MB	2.6	107.2	95.1	88.0	1,160.1	112.3	95.1	88.3	1,213.4	-1.83%	-4.39
CA	Woodland	Yolo County Transportation District	TOTAL	2.6	107.2	95.1	88.0	1,160.1	112.3	95.1	88.3	1,213.4	-1.83%	-4.39
CO	Aspen	Roaring Fork Transp Auth	DR	0.5	10.5	11.4	18.5	173.8	9.9	12.5	17.9	163.6	0.25%	6.23
CO	Aspen	Roaring Fork Transp Auth	MB	11.8	266.5	249.3	568.8	5,244.2	218.2	240.6	516.2	4,979.5	11.24%	5.32
CO	Aspen	Roaring Fork Transp Auth	TOTAL	12.2	277.0	260.7	587.3	5,418.0	228.1	253.1	534.1	5,143.1	10.80%	5.35
CO	Colorado Springs	Mountain Metropolitan Transit	DR	0.6	14.2	12.1	12.6	162.0	21.2	18.2	16.5	217.8	-30.41%	-25.62
CO	Colorado Springs	Mountain Metropolitan Transit	MB	9.9	275.7	234.1	238.0	3,215.2	277.4	248.1	227.3	3,082.9	-0.66%	4.29
CO	Colorado Springs	Mountain Metropolitan Transit	VP	0.1	3.7	2.7	2.8	42.6	4.4	3.9	2.9	45.4	-17.86%	-6.17
CO	Colorado Springs	Mountain Metropolitan Transit	TOTAL	10.6	293.6	248.9	253.4	3,419.8	303.0	270.2	246.7	3,346.1	-2.93%	2.20

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CO	Denver	Regional Trp District	CR	40.0	947.9	841.3	848.2	9,711.3	674.9	629.1	592.7	7,613.0	39.05%	27.56
CO	Denver	Regional Trp District	DR	4.6	105.9	93.2	95.5	1,193.3	116.2	102.4	91.0	1,240.9	-4.84%	-3.84
CO	Denver	Regional Trp District	LR	95.3	2,392.9	2,003.3	1,905.7	24,585.3	2,355.5	2,179.9	2,173.8	25,669.7	-6.07%	-4.22
CO	Denver	Regional Trp District	MB	265.2	6,272.9	5,561.0	5,681.7	69,870.3	5,679.8	4,929.4	4,917.1	62,788.6	12.81%	11.28
CO	Denver	Regional Trp District	VP	0.8	17.7	17.6	18.8	209.0	17.6	17.7	18.7	209.0	0.19%	0.00
CO	Denver	Regional Trp District	TOTAL	406.0	9,737.3	8,516.4	8,549.9	105,569.2	8,844.0	7,858.5	7,793.3	97,521.2	9.42%	8.25
CO	Fort Collins	Transfort	DR	0.0	3.6	3.3	3.5	39.1	3.5	3.0	2.7	37.5	13.04%	4.27
CO	Fort Collins	Transfort	MB	17.1	504.7	408.8	348.4	4,467.0	486.3	391.6	287.2	4,406.9	8.31%	1.36
CO	Fort Collins	Transfort	TOTAL	17.1	508.3	412.1	351.9	4,506.1	489.8	394.6	289.9	4,444.4	8.35%	1.39
CO	Grand Junction	Mesa County Reg Transp Office	DR	0.1	3.2	2.7	2.8	34.7	2.8	2.5	2.5	29.9	11.54%	16.05
CO	Grand Junction	Mesa County Reg Transp Office	MB	2.4	66.1	56.7	56.5	725.3	64.0	56.6	54.9	747.2	2.17%	-2.93
CO	Grand Junction	Mesa County Reg Transp Office	TOTAL	2.5	69.3	59.4	59.3	760.0	66.8	59.1	57.4	777.1	2.56%	-2.20
CT	Bridgeport	Greater Bridgeport Tr Auth	DR	NA	9.1	8.2	7.4	98.7	9.0	8.0	7.6	93.9	0.41%	5.11
CT	Bridgeport	Greater Bridgeport Tr Auth	MB	NA	485.9	425.0	386.1	5,178.8	499.6	439.0	411.9	5,199.1	-3.96%	-0.39
CT	Bridgeport	Greater Bridgeport Tr Auth	TOTAL	NA	495.0	433.2	393.5	5,277.5	508.6	447.0	419.5	5,293.0	-3.88%	-0.29
CT	Hartford	Connecticut DOT	DR	0.2	6.4	5.5	4.8	67.8	6.2	5.5	5.3	67.5	-1.76%	0.44
CT	Hartford	Connecticut DOT	MB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
CT	Hartford	Connecticut DOT	TOTAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
CT	Hartford	Connecticut Transit	MB	NA	2,582.2	2,124.5	2,029.5	26,135.2	2,495.4	2,072.1	2,038.5	26,495.2	1.97%	-1.36
CT	Hartford	Connecticut Transit	TOTAL	NA	2,582.2	2,124.5	2,029.5	26,135.2	2,495.4	2,072.1	2,038.5	26,495.2	1.97%	-1.36
CT	Hartford	Greater Hartford Tran Dist	DR	2.0	48.4	41.9	39.0	519.0	47.3	42.7	40.1	504.7	-0.61%	2.83
CT	Hartford	Greater Hartford Tran Dist	TOTAL	2.0	48.4	41.9	39.0	519.0	47.3	42.7	40.1	504.7	-0.61%	2.83
CT	New Haven	Connecticut DOT	CR	2.2	57.0	51.2	51.5	660.5	48.1	44.5	43.1	599.3	17.69%	10.21
CT	New Haven	Connecticut DOT	TOTAL	2.2	57.0	51.2	51.5	660.5	48.1	44.5	43.1	599.3	17.69%	10.21
CT	New Haven	Greater New Haven Transit Dist	DR	0.8	21.4	19.4	18.1	232.7	21.4	19.7	18.3	231.5	-0.84%	0.52
CT	New Haven	Greater New Haven Transit Dist	TOTAL	0.8	21.4	19.4	18.1	232.7	21.4	19.7	18.3	231.5	-0.84%	0.52
CT	Norwalk	Norwalk Transit District	DR	0.5	10.8	9.5	9.0	126.6	9.9	8.0	7.8	100.2	14.01%	26.35
CT	Norwalk	Norwalk Transit District	MB	5.0	125.4	108.4	96.8	1,328.0	131.7	115.5	105.0	1,398.8	-6.13%	-5.06
CT	Norwalk	Norwalk Transit District	TOTAL	5.5	136.2	117.9	105.8	1,454.6	141.6	123.5	112.8	1,499.0	-4.76%	-2.96
DC	Washington	District Dept of Transp	LR	2.4	80.5	66.8	56.0	1,093.4	102.2	92.9	90.3	1,145.3	-28.77%	-4.53
DC	Washington	District Dept of Transp	MB	11.2	409.9	277.6	262.8	5,597.5	346.8	302.9	310.1	4,223.8	-0.99%	32.52
DC	Washington	District Dept of Transp	TOTAL	13.6	490.4	344.4	318.8	6,690.9	449.0	395.8	400.4	5,369.1	-7.36%	24.62

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DC	Washington	Washington Metro Area TA	HR	816.7	22,837.6	19,057.4	17,702.0	237,701.1	21,181.9	17,790.9	16,031.6	226,349.6	8.35%	5.02
DC	Washington	Washington Metro Area TA	MB	340.1	9,564.3	8,175.6	7,927.6	105,469.8	10,030.8	8,617.0	8,151.3	109,054.8	-4.22%	-3.29
DC	Washington	Washington Metro Area TA	TOTAL	1,156.8	32,401.9	27,233.0	25,629.6	343,170.9	31,212.7	26,407.9	24,182.9	335,404.4	4.23%	2.32
DE	Wilmington	Delaware Transit Corp	DR	3.5	92.2	78.2	77.3	968.3	88.9	77.5	72.1	929.7	3.86%	4.15
DE	Wilmington	Delaware Transit Corp	MB	24.9	668.2	575.6	549.8	7,246.2	671.1	569.1	536.8	7,077.3	0.93%	2.39
DE	Wilmington	Delaware Transit Corp	TOTAL	28.4	760.4	653.8	627.1	8,214.5	760.0	646.6	608.9	8,007.0	1.28%	2.59
FL	Bradenton	Manatee County Area Transit	DR	0.4	8.9	7.6	7.4	98.4	8.6	7.8	7.4	97.1	0.42%	1.34
FL	Bradenton	Manatee County Area Transit	MB	4.7	124.5	120.7	118.4	1,494.7	122.4	113.6	108.1	1,379.2	5.67%	8.37
FL	Bradenton	Manatee County Area Transit	TOTAL	5.1	133.4	128.3	125.8	1,593.1	131.0	121.4	115.5	1,476.3	5.33%	7.91
FL	Fort Myers	Lee Tran	DR	NA	12.0	11.3	11.2	141.6	12.2	11.5	10.5	135.4	0.88%	4.58
FL	Fort Myers	Lee Tran	MB	8.6	239.3	220.2	226.9	2,947.8	245.6	234.2	227.2	3,073.4	-2.91%	-4.09
FL	Fort Myers	Lee Tran	VP	0.2	3.6	3.8	3.6	63.0	4.6	6.1	5.2	75.5	-30.82%	-16.56
FL	Fort Myers	Lee Tran	TOTAL	NA	254.9	235.3	241.7	3,152.4	262.4	251.8	242.9	3,284.3	-3.33%	-4.02
FL	Jacksonville	Jacksonville Transp Auth	AG	2.8	69.8	56.9	54.8	770.1	81.6	68.2	57.7	843.3	-12.53%	-8.68
FL	Jacksonville	Jacksonville Transp Auth	DR	1.3	36.6	31.6	26.9	375.9	35.0	31.8	30.1	379.3	-1.86%	-0.90
FL	Jacksonville	Jacksonville Transp Auth	FB	1.1	35.8	34.1	31.5	457.4	0.0	35.1	32.6	403.8	49.78%	13.27
FL	Jacksonville	Jacksonville Transp Auth	MB	31.2	889.7	783.8	754.9	9,765.4	958.4	848.0	792.7	10,262.0	-6.57%	-4.84
FL	Jacksonville	Jacksonville Transp Auth	TOTAL	36.3	1,031.9	906.4	868.1	11,368.8	1,075.0	983.1	913.1	11,888.4	-5.55%	-4.37
FL	Miami	Miami-Dade Transit Agency	AG	31.8	831.2	799.6	849.8	9,051.4	790.5	735.2	767.2	8,815.7	8.19%	2.67
FL	Miami	Miami-Dade Transit Agency	DR	5.9	162.7	144.4	138.6	1,779.3	162.6	145.7	136.1	1,753.8	0.29%	1.45
FL	Miami	Miami-Dade Transit Agency	HR	62.6	1,643.2	1,469.4	1,433.9	18,073.1	1,757.2	1,656.9	1,553.8	19,282.5	-8.48%	-6.27
FL	Miami	Miami-Dade Transit Agency	MB	163.5	4,507.0	4,197.2	4,127.0	49,909.7	4,554.9	4,245.5	4,081.6	51,030.1	-0.39%	-2.20
FL	Miami	Miami-Dade Transit Agency	TOTAL	263.8	7,144.1	6,610.6	6,549.3	78,813.5	7,265.2	6,783.3	6,538.7	80,882.1	-1.38%	-2.56
FL	Orlando	Central Florida RTA	DR	2.9	62.5	56.1	54.1	840.0	78.9	73.6	79.8	824.0	-25.66%	1.94
FL	Orlando	Central Florida RTA	MB	68.7	1,946.0	1,798.0	1,726.6	22,536.6	2,067.7	1,915.7	1,772.4	22,762.1	-4.96%	-0.99
FL	Orlando	Central Florida RTA	VP	1.4	43.8	38.2	37.6	410.9	31.5	33.2	31.1	351.2	24.84%	17.00
FL	Orlando	Central Florida RTA	TOTAL	73.0	2,052.3	1,892.3	1,818.3	23,787.5	2,178.1	2,022.5	1,883.3	23,937.3	-5.28%	-0.63
FL	Orlando	SunRail	CR	6.3	143.6	128.8	129.5	1,571.8	127.6	118.7	110.8	1,114.7	12.55%	41.01
FL	Orlando	SunRail	TOTAL	6.3	143.6	128.8	129.5	1,571.8	127.6	118.7	110.8	1,114.7	12.55%	41.01
FL	Pompano Beach	South Florida RTA (Tri-Rail)	CR	14.8	409.0	364.8	365.5	4,505.1	397.4	371.8	354.1	4,413.9	1.42%	2.07
FL	Pompano Beach	South Florida RTA (Tri-Rail)	MB	3.0	84.9	72.1	80.1	959.7	85.6	82.2	80.0	941.8	-4.32%	1.90
FL	Pompano Beach	South Florida RTA (Tri-Rail)	TOTAL	17.8	493.9	436.9	445.6	5,464.8	483.0	454.0	434.1	5,355.7	0.39%	2.04

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FL	St. Petersburg	Pinellas Suncoast Tran Auth	DR	1.1	30.6	27.5	27.4	368.6	35.1	32.2	30.3	396.1	-12.40%	-6.94
FL	St. Petersburg	Pinellas Suncoast Tran Auth	MB	36.2	1,019.9	929.6	930.2	11,654.5	1,032.8	948.1	905.6	11,553.6	-0.24%	0.87
FL	St. Petersburg	Pinellas Suncoast Tran Auth	TOTAL	37.3	1,050.5	957.1	957.6	12,023.1	1,067.9	980.3	935.9	11,949.7	-0.63%	0.61
FL	Tallahassee	StarMetro-City of Tallahassee	DR	3.0	8.2	8.4	8.1	102.7	8.6	8.7	8.0	107.2	-2.37%	-4.20
FL	Tallahassee	StarMetro-City of Tallahassee	MB	NA	220.1	268.5	167.1	2,536.8	184.2	280.1	175.9	2,728.5	2.42%	-7.03
FL	Tallahassee	StarMetro-City of Tallahassee	TOTAL	NA	228.3	276.9	175.2	2,639.5	192.8	288.8	183.9	2,835.7	2.24%	-6.92
FL	Tampa	Hillsborough Area Reg TA	DR	0.8	19.0	16.0	15.7	199.3	18.6	15.8	14.5	179.4	3.68%	11.09
FL	Tampa	Hillsborough Area Reg TA	LR	2.4	78.5	85.7	95.7	902.7	53.2	55.6	91.1	423.0	30.02%	>100
FL	Tampa	Hillsborough Area Reg TA	MB	39.0	1,094.1	981.2	957.8	11,938.0	1,093.8	1,003.4	949.4	11,581.4	-0.44%	3.08
FL	Tampa	Hillsborough Area Reg TA	TOTAL	42.2	1,191.6	1,082.9	1,069.2	13,040.0	1,165.6	1,074.8	1,055.0	12,183.8	1.47%	7.03
FL	West Palm Beach	Palm Beach County STD	DR	3.4	84.0	72.4	71.7	889.5	82.9	71.6	66.9	854.3	3.03%	4.12
FL	West Palm Beach	Palm Beach County STD	MB	30.7	835.2	744.4	716.7	8,988.7	854.0	769.8	740.5	9,130.1	-2.88%	-1.55
FL	West Palm Beach	Palm Beach County STD	TOTAL	34.1	919.2	816.8	788.4	9,878.2	936.9	841.4	807.4	9,984.4	-2.37%	-1.06
GA	Atlanta	Georgia Regional Trp Auth	MB	7.6	190.5	140.4	125.0	1,865.4	175.4	149.0	116.4	1,863.7	3.43%	0.09
GA	Atlanta	Georgia Regional Trp Auth	TOTAL	7.6	190.5	140.4	125.0	1,865.4	175.4	149.0	116.4	1,863.7	3.43%	0.09
GA	Atlanta	Metro Atlanta Rapid Tr Auth	DR	NA	76.5	67.7	67.0	845.3	68.7	62.1	63.5	757.5	8.70%	11.59
GA	Atlanta	Metro Atlanta Rapid Tr Auth	HR	NA	5,626.7	5,039.1	4,867.2	63,998.5	6,019.5	5,257.3	4,816.2	64,854.0	-3.48%	-1.32
GA	Atlanta	Metro Atlanta Rapid Tr Auth	LR	NA	16.4	18.2	19.5	255.6	13.7	10.9	12.3	280.8	46.61%	-8.97
GA	Atlanta	Metro Atlanta Rapid Tr Auth	MB	NA	4,905.4	3,590.8	3,777.6	50,018.3	4,197.7	3,769.3	3,554.5	49,316.7	6.53%	1.42
GA	Atlanta	Metro Atlanta Rapid Tr Auth	TOTAL	NA	10,625.0	8,715.8	8,731.3	115,117.7	10,299.6	9,099.6	8,446.5	115,209.0	0.81%	-0.08
HI	Honolulu	City & Cnty of Honolulu DOTS	DR	NA	NA	NA	NA	NA	105.1	99.6	97.5	1,180.7	NA	N
HI	Honolulu	City & Cnty of Honolulu DOTS	MB	184.8	5,244.2	4,914.9	4,859.6	60,369.2	5,521.5	5,176.1	4,981.8	62,341.1	-4.21%	-3.16
HI	Honolulu	City & Cnty of Honolulu DOTS	TOTAL	NA	NA	NA	NA	NA	5,626.6	5,275.7	5,079.3	63,521.8	NA	N
IA	Ames	Ames Transit Agency	DR	0.0	0.7	0.6	0.7	8.6	0.6	0.6	0.6	8.2	11.11%	4.88
IA	Ames	Ames Transit Agency	MB	26.4	792.9	577.8	472.9	5,834.3	858.1	647.7	343.6	6,459.9	-0.31%	-9.68
IA	Ames	Ames Transit Agency	TOTAL	26.4	793.6	578.4	473.6	5,842.9	858.7	648.3	344.2	6,468.1	-0.30%	-9.67
IA	Des Moines	Des Moines Area Regional TA	DR	0.4	9.7	8.3	8.6	108.2	9.4	8.3	7.7	101.7	4.72%	6.39
IA	Des Moines	Des Moines Area Regional TA	MB	13.5	391.9	308.7	302.4	4,048.4	391.4	352.7	296.5	4,178.6	-3.61%	-3.12
IA	Des Moines	Des Moines Area Regional TA	VP	0.8	20.6	15.7	16.2	214.9	21.7	19.6	16.0	237.6	-8.38%	-9.55
IA	Des Moines	Des Moines Area Regional TA	TOTAL	14.6	422.2	332.7	327.2	4,371.5	422.5	380.6	320.2	4,517.9	-3.67%	-3.24
ID	Ketchum	Mountain Rides Transportation Auth	DR	NA	0.3	0.3	0.5	2.0	0.3	0.2	0.2	4.2	57.14%	-52.38
ID	Ketchum	Mountain Rides Transportation Auth	MB	NA	29.1	26.9	63.6	545.0	25.4	26.7	65.6	520.8	1.61%	4.65
ID	Ketchum	Mountain Rides Transportation Auth	VP	NA	4.2	2.8	5.1	41.0	3.6	2.3	1.7	36.7	59.21%	11.72
ID	Ketchum	Mountain Rides Transportation Auth	TOTAL	NA	33.6	30.0	69.2	588.0	29.3	29.2	67.5	561.7	5.40%	4.68

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ID	Moscow	Smart Transit	DR	0.1	1.2	1.0	1.1	12.9	1.2	1.0	0.9	12.7	6.45%	1.57
ID	Moscow	Smart Transit	MB	0.7	17.7	13.9	13.2	181.2	17.7	14.9	13.7	161.7	-3.24%	12.06
ID	Moscow	Smart Transit	TOTAL	0.7	18.9	14.9	14.3	194.1	18.9	15.9	14.6	174.4	-2.63%	11.30
IL	Arlington Heights	PACE Suburban Bus	DR	17.0	457.8	417.0	407.8	5,085.2	462.6	417.6	404.4	5,138.3	-0.16%	-1.03
IL	Arlington Heights	PACE Suburban Bus	MB	112.2	2,451.5	2,070.3	1,996.9	26,186.0	2,628.1	2,235.4	2,045.8	27,689.7	-5.65%	-5.43
IL	Arlington Heights	PACE Suburban Bus	VP	6.0	143.2	122.8	122.7	1,581.8	154.3	138.5	121.9	1,739.4	-6.27%	-9.06
IL	Arlington Heights	PACE Suburban Bus	TOTAL	135.2	3,052.5	2,610.1	2,527.4	32,853.0	3,245.0	2,791.5	2,572.1	34,567.4	-4.86%	-4.96
IL	Chicago	Chicago Transit Authority	DR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%	N
IL	Chicago	Chicago Transit Authority	HR	695.3	20,582.7	17,448.4	15,923.6	218,467.0	21,551.5	18,271.1	16,109.7	225,895.1	-3.54%	-3.29
IL	Chicago	Chicago Transit Authority	MB	760.2	21,800.4	19,304.4	18,593.6	237,276.5	22,736.8	19,724.0	18,543.8	242,172.9	-2.14%	-2.02
IL	Chicago	Chicago Transit Authority	TOTAL	1,455.5	42,383.1	36,752.8	34,517.2	455,743.5	44,288.3	37,995.1	34,653.5	468,068.0	-2.81%	-2.63
IL	Chicago	Metra	CR	274.0	5,868.3	5,407.0	5,217.8	66,783.6	6,013.0	5,619.7	5,183.9	68,446.2	-1.92%	-2.43
IL	Chicago	Metra	TOTAL	274.0	5,868.3	5,407.0	5,217.8	66,783.6	6,013.0	5,619.7	5,183.9	68,446.2	-1.92%	-2.43
IL	Granite City	Madison County Trans Dist	DR	0.2	5.6	4.6	4.4	56.0	5.3	4.5	4.2	58.2	4.29%	-3.78
IL	Granite City	Madison County Trans Dist	MB	7.1	202.1	165.7	149.2	2,013.2	201.9	165.3	146.3	2,018.2	0.68%	-0.25
IL	Granite City	Madison County Trans Dist	VP	0.3	7.9	6.1	5.2	88.7	9.9	7.4	6.2	110.7	-18.30%	-19.87
IL	Granite City	Madison County Trans Dist	TOTAL	7.6	215.6	176.4	158.8	2,157.9	217.1	177.2	156.7	2,187.1	-0.04%	-1.34
IL	Macomb	Go West Transit	MB	2.1	68.7	52.5	33.9	665.4	110.2	82.9	52.1	943.1	-36.75%	-29.45
IL	Macomb	Go West Transit	TOTAL	2.1	68.7	52.5	33.9	665.4	110.2	82.9	52.1	943.1	-36.75%	-29.45
IL	Moline	Rock Island County MMTD	DR	0.3	7.4	6.4	6.8	72.8	5.8	5.2	5.2	66.2	27.16%	9.97
IL	Moline	Rock Island County MMTD	FB	0.0	0.0	0.0	0.0	30.6	0.3	0.0	0.0	42.6	-100.00%	-28.17
IL	Moline	Rock Island County MMTD	MB	10.4	286.1	262.6	230.5	3,135.7	292.9	259.3	242.5	3,164.9	-1.95%	-0.92
IL	Moline	Rock Island County MMTD	TOTAL	10.7	293.5	269.0	237.3	3,239.1	299.0	264.5	247.7	3,273.7	-1.41%	-1.06
IL	Normal	Bloomington-Normal Public Transit	DR	0.3	8.0	7.1	6.9	88.2	8.5	7.5	7.2	92.1	-5.17%	-4.23
IL	Normal	Bloomington-Normal Public Transit	MB	8.6	261.5	216.8	174.4	2,421.4	264.6	218.1	171.5	2,326.8	-0.23%	4.07
IL	Normal	Bloomington-Normal Public Transit	TOTAL	8.9	269.5	223.9	181.3	2,509.6	273.1	225.6	178.7	2,418.9	-0.40%	3.75
IL	Peoria	Greater Peoria Mass Tr Dist	DR	0.4	13.2	11.5	11.5	143.3	13.4	11.3	11.5	143.6	0.00%	-0.21
IL	Peoria	Greater Peoria Mass Tr Dist	MB	7.9	235.9	199.4	195.9	2,514.8	248.4	215.7	207.2	2,678.6	-5.97%	-6.12
IL	Peoria	Greater Peoria Mass Tr Dist	TOTAL	8.3	249.1	210.9	207.4	2,658.1	261.8	227.0	218.7	2,822.2	-5.67%	-5.81
IL	Rockford	Rockford Mass Transit Dist	DR	0.5	12.5	11.3	10.8	132.1	11.8	10.3	10.3	128.3	6.79%	2.96
IL	Rockford	Rockford Mass Transit Dist	MB	5.2	140.2	121.8	129.6	1,488.8	143.3	133.3	123.8	1,564.8	-2.20%	-4.86
IL	Rockford	Rockford Mass Transit Dist	TOTAL	5.7	152.7	133.1	140.4	1,620.9	155.1	143.6	134.1	1,693.1	-1.52%	-4.26

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IL	Springfield	Sangamon Mass Transit District	DR	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
IL	Springfield	Sangamon Mass Transit District	MB	NA	147.0	127.2	123.4	1,493.3	148.0	127.9	118.6	1,527.9	0.79%	-2.26
IL	Springfield	Sangamon Mass Transit District	TOTAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
IL	Urbana	Champaign-Urbana MTD	DR	0.6	15.0	13.4	12.5	138.5	12.8	11.5	10.8	127.7	16.52%	8.46
IL	Urbana	Champaign-Urbana MTD	MB	44.6	1,330.3	1,062.7	859.9	11,231.6	1,359.6	1,147.5	908.8	11,656.4	-4.77%	-3.64
IL	Urbana	Champaign-Urbana MTD	TOTAL	45.1	1,345.3	1,076.1	872.4	11,370.1	1,372.4	1,159.0	919.6	11,784.1	-4.56%	-3.51
IN	Chesterton	Northern IN Commuter TD	CR	10.9	288.9	262.5	273.4	3,283.6	294.8	272.6	265.3	3,399.4	-0.95%	-3.41
IN	Chesterton	Northern IN Commuter TD	TOTAL	10.9	288.9	262.5	273.4	3,283.6	294.8	272.6	265.3	3,399.4	-0.95%	-3.41
IN	Fort Wayne	Fort Wayne Public Tr Corp	DR	0.2	7.2	6.1	5.6	71.7	7.7	6.9	6.5	84.6	-10.43%	-15.25
IN	Fort Wayne	Fort Wayne Public Tr Corp	MB	5.0	143.4	126.4	124.7	1,578.5	160.0	137.0	130.8	1,693.1	-7.78%	-6.77
IN	Fort Wayne	Fort Wayne Public Tr Corp	TOTAL	5.2	150.6	132.5	130.3	1,650.2	167.7	143.9	137.3	1,777.7	-7.91%	-7.17
IN	Indianapolis	Indianapolis Public Trp Corp	DR	1.0	25.4	22.7	22.9	282.2	25.6	24.0	22.7	299.8	-1.80%	-5.87
IN	Indianapolis	Indianapolis Public Trp Corp	MB	24.7	926.2	788.2	698.3	9,245.0	821.3	714.5	686.3	8,815.5	8.58%	4.87
IN	Indianapolis	Indianapolis Public Trp Corp	TOTAL	25.7	951.6	810.9	721.2	9,527.2	846.9	738.5	709.0	9,115.3	8.25%	4.52
IN	Lafayette	Greater Lafayette PTC	DR	0.1	2.9	2.6	2.5	31.4	2.7	2.5	2.3	27.1	6.67%	15.87
IN	Lafayette	Greater Lafayette PTC	MB	19.1	565.4	505.4	305.7	5,068.3	542.3	491.2	286.8	4,713.4	4.26%	7.53
IN	Lafayette	Greater Lafayette PTC	TOTAL	19.2	568.3	508.0	308.2	5,099.7	545.0	493.7	289.1	4,740.5	4.27%	7.58
IN	Muncie	Muncie Indiana Transit Sys	DR	0.2	5.0	4.3	4.1	55.4	5.0	4.7	4.9	54.1	-8.22%	2.40
IN	Muncie	Muncie Indiana Transit Sys	MB	4.9	131.6	113.1	101.9	1,351.7	134.2	114.1	105.0	1,337.5	-1.90%	1.06
IN	Muncie	Muncie Indiana Transit Sys	TOTAL	5.1	136.6	117.4	106.0	1,407.1	139.2	118.8	109.9	1,391.6	-2.15%	1.11
IN	South Bend	South Bend Public Transp	DR	0.3	7.5	6.7	6.6	83.4	7.2	7.0	6.0	76.0	2.97%	9.74
IN	South Bend	South Bend Public Transp	MB	5.3	150.1	133.7	122.2	1,509.6	144.9	130.1	115.1	1,554.0	4.08%	-2.86
IN	South Bend	South Bend Public Transp	TOTAL	5.6	157.6	140.4	128.8	1,593.0	152.1	137.1	121.1	1,630.0	4.02%	-2.27
KS	Olathe	Johnson County Transit	DR	0.2	4.9	3.9	4.0	55.6	5.3	4.3	3.9	58.6	-5.19%	-5.12
KS	Olathe	Johnson County Transit	MB	1.8	46.3	36.8	30.2	449.4	46.5	37.5	28.2	443.2	0.98%	1.40
KS	Olathe	Johnson County Transit	TOTAL	2.0	51.2	40.7	34.2	505.0	51.8	41.8	32.1	501.8	0.32%	0.64
KS	Wichita	Wichita Transit	MB	4.2	118.4	101.2	99.7	1,274.1	114.9	100.3	91.0	1,181.9	4.28%	7.80
KS	Wichita	Wichita Transit	TOTAL	4.2	118.4	101.2	99.7	1,274.1	114.9	100.3	91.0	1,181.9	4.28%	7.80
KY	Bowling Green	Community Action of Southern KY	DR	0.1	1.7	1.4	1.3	16.0	1.4	1.2	0.9	12.9	25.71%	24.03
KY	Bowling Green	Community Action of Southern KY	MB	0.4	9.2	7.7	7.3	92.6	8.0	7.3	6.3	77.8	12.04%	19.02
KY	Bowling Green	Community Action of Southern KY	TOTAL	0.5	10.9	9.1	8.6	108.6	9.4	8.5	7.2	90.7	13.94%	19.74

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KY	Fort Wright	Tr Auth of Northern Kentucky	DR	0.4	8.7	7.3	7.1	92.4	8.8	7.6	7.0	92.3	-1.28%	0.11
KY	Fort Wright	Tr Auth of Northern Kentucky	MB	10.4	282.0	234.0	218.0	2,914.6	289.2	253.7	221.7	3,064.0	-4.00%	-4.88
KY	Fort Wright	Tr Auth of Northern Kentucky	TOTAL	10.8	290.7	241.3	225.1	3,007.0	298.0	261.3	228.7	3,156.3	-3.92%	-4.73
KY	Lexington	Transit Auth Lexington-Fayette	DR	1.0	20.8	21.8	19.1	234.6	21.0	18.5	17.7	222.5	7.87%	5.44
KY	Lexington	Transit Auth Lexington-Fayette	MB	19.2	468.2	391.9	350.4	4,325.5	462.7	391.5	305.8	4,065.9	4.35%	6.38
KY	Lexington	Transit Auth Lexington-Fayette	VP	0.1	1.7	1.3	1.2	18.8	2.1	1.8	1.6	23.7	-23.64%	-20.68
KY	Lexington	Transit Auth Lexington-Fayette	TOTAL	20.3	490.7	415.0	370.7	4,578.9	485.8	411.8	325.1	4,312.1	4.39%	6.19
KY	Louisville	Transit Auth of River City	DR	1.9	50.2	44.3	43.0	559.5	50.6	45.3	43.4	552.5	-1.29%	1.27
KY	Louisville	Transit Auth of River City	MB	59.3	966.2	825.3	742.3	10,172.3	1,113.3	949.3	795.8	11,552.2	-11.36%	-11.94
KY	Louisville	Transit Auth of River City	TOTAL	61.2	1,016.4	869.6	785.3	10,731.8	1,163.9	994.6	839.2	12,104.7	-10.89%	-11.34
KY	Owensboro	Owensboro Transit System	DR	NA	1.8	1.5	1.5	18.8	1.8	1.6	1.6	19.0	-4.00%	-1.05
KY	Owensboro	Owensboro Transit System	MB	NA	27.4	24.9	29.0	321.7	24.4	23.0	24.9	254.9	12.45%	26.21
KY	Owensboro	Owensboro Transit System	TOTAL	NA	29.2	26.4	30.5	340.5	26.2	24.6	26.5	273.9	11.38%	24.32
LA	New Orleans	Regional Transit Auth	DR	8.1	20.0	17.8	17.7	224.7	21.8	18.4	17.4	228.9	-3.65%	-1.83
LA	New Orleans	Regional Transit Auth	LR	5.6	198.8	114.8	185.1	5,289.4	659.0	553.1	541.3	7,712.9	-71.56%	-31.42
LA	New Orleans	Regional Transit Auth	MB	31.7	903.2	876.4	846.9	9,953.1	892.8	772.5	765.4	9,951.5	8.06%	0.02
LA	New Orleans	Regional Transit Auth	TOTAL	45.4	1,122.0	1,009.0	1,049.7	15,467.2	1,573.6	1,344.0	1,324.1	17,893.3	-25.01%	-13.56
MA	Amherst	UMass Transit Service	MB	13.4	443.2	325.7	250.6	3,209.4	415.4	319.5	253.2	3,281.1	3.18%	-2.19
MA	Amherst	UMass Transit Service	TOTAL	13.4	443.2	325.7	250.6	3,209.4	415.4	319.5	253.2	3,281.1	3.18%	-2.19
MA	Boston	Massachusetts Bay Tr Auth	CR	121.7	2,911.5	2,592.2	2,680.0	32,420.4	2,920.0	2,682.9	2,589.3	32,249.1	-0.10%	0.53
MA	Boston	Massachusetts Bay Tr Auth	DR	5.9	160.5	147.3	140.7	1,812.3	167.4	157.1	150.7	1,904.1	-5.62%	-4.82
MA	Boston	Massachusetts Bay Tr Auth	FB	5.2	146.0	108.3	95.8	1,635.9	141.5	106.3	89.7	1,522.6	3.73%	7.44
MA	Boston	Massachusetts Bay Tr Auth	HR	475.3	13,116.8	11,184.0	10,262.5	152,339.7	14,625.0	12,757.3	11,399.6	155,748.8	-10.88%	-2.19
MA	Boston	Massachusetts Bay Tr Auth	LR	137.7	4,099.1	3,424.7	3,121.8	47,161.5	5,074.3	4,276.0	3,623.8	53,715.6	-17.95%	-12.20
MA	Boston	Massachusetts Bay Tr Auth	MB	381.2	10,637.5	9,403.4	8,797.1	113,483.2	10,784.8	9,506.9	8,656.4	115,236.7	-0.38%	-1.52
MA	Boston	Massachusetts Bay Tr Auth	TB	9.8	265.9	227.7	203.2	2,889.5	290.0	249.3	206.6	2,769.9	-6.58%	4.32
MA	Boston	Massachusetts Bay Tr Auth	TOTAL	1,136.9	31,337.3	27,087.6	25,301.1	351,742.5	34,003.0	29,735.8	26,716.1	363,146.8	-7.44%	-3.14
MD	Baltimore	Maryland Transit Admin	CR	30.0	855.1	709.5	713.3	9,084.2	854.0	746.8	648.1	9,236.2	1.29%	-1.65
MD	Baltimore	Maryland Transit Admin	DR	12.4	267.0	249.6	246.4	2,585.7	273.9	248.7	237.3	2,967.0	0.41%	-12.85
MD	Baltimore	Maryland Transit Admin	HR	36.6	701.4	604.4	609.2	7,325.5	627.0	579.0	559.8	8,270.6	8.45%	-11.43
MD	Baltimore	Maryland Transit Admin	LR	25.3	628.3	562.8	536.8	6,508.7	613.6	590.3	584.8	7,157.0	-3.40%	-9.06
MD	Baltimore	Maryland Transit Admin	MB	270.6	6,342.2	5,538.9	5,255.7	67,925.7	6,472.1	5,530.7	5,036.4	67,678.6	0.57%	0.37
MD	Baltimore	Maryland Transit Admin	TOTAL	374.8	8,794.0	7,665.2	7,361.4	93,429.8	8,840.6	7,695.5	7,066.4	95,309.4	0.92%	-1.97

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MD	Largo	Prince Georges County Transp	DR	0.3	6.8	5.4	5.5	68.6	7.5	6.4	4.9	97.4	-5.85%	-29.57
MD	Largo	Prince Georges County Transp	MB	10.5	269.6	176.8	227.7	2,635.9	274.0	214.9	178.9	2,701.3	0.94%	-2.42
MD	Largo	Prince Georges County Transp	TOTAL	10.8	276.4	182.2	233.2	2,704.5	281.5	221.3	183.8	2,798.7	0.76%	-3.37
MD	Rockville	Montgomery County Ride-On	DR	0.0	1.4	1.0	1.8	NA	NA	NA	NA	NA	NA	N
MD	Rockville	Montgomery County Ride-On	MB	68.5	1,978.4	1,657.4	1,566.0	20,717.7	1,971.7	1,657.9	1,546.1	20,952.8	0.50%	-1.12
MD	Rockville	Montgomery County Ride-On	TOTAL	68.5	1,979.8	1,658.4	1,567.8	NA	NA	NA	NA	NA	NA	N
ME	Portland	Northern NE Passenger RA	CR	1.6	50.4	47.6	46.3	574.8	43.8	42.8	40.2	533.0	13.80%	7.84
ME	Portland	Northern NE Passenger RA	TOTAL	1.6	50.4	47.6	46.3	574.8	43.8	42.8	40.2	533.0	13.80%	7.84
MI	Battle Creek	Battle Creek Transit	DR	0.1	2.2	1.9	1.9	22.5	2.3	2.0	1.9	25.2	-3.23%	-10.71
MI	Battle Creek	Battle Creek Transit	MB	1.4	34.9	29.4	27.6	342.5	38.2	32.1	28.1	376.4	-6.61%	-9.01
MI	Battle Creek	Battle Creek Transit	TOTAL	1.5	37.1	31.3	29.5	365.0	40.5	34.1	30.0	401.6	-6.41%	-9.11
MI	Detroit	City of Detroit Dept of Trp	MB	NA	2,233.0	1,848.4	1,839.7	22,680.0	2,204.0	1,877.7	1,784.8	23,291.6	0.93%	-2.63
MI	Detroit	City of Detroit Dept of Trp	TOTAL	NA	2,233.0	1,848.4	1,839.7	22,680.0	2,204.0	1,877.7	1,784.8	23,291.6	0.93%	-2.63
MI	Flint	Mass Transportation Authority	DR	2.2	57.6	49.0	48.1	562.5	47.1	41.3	40.5	536.6	20.02%	4.83
MI	Flint	Mass Transportation Authority	MB	13.3	361.7	315.9	301.7	4,011.4	445.5	373.9	350.2	4,277.9	-16.27%	-6.23
MI	Flint	Mass Transportation Authority	TOTAL	15.5	419.3	364.9	349.8	4,573.9	492.6	415.2	390.7	4,814.5	-12.67%	-5.00
MI	Grand Rapids	Interurban Transit Partnership	DR	1.2	31.1	27.7	27.5	345.1	32.4	28.9	27.3	350.9	-2.60%	-1.65
MI	Grand Rapids	Interurban Transit Partnership	MB	38.1	1,088.8	894.8	733.4	10,012.0	1,147.3	942.1	730.2	10,109.7	-3.64%	-0.97
MI	Grand Rapids	Interurban Transit Partnership	VP	0.1	2.9	2.2	2.2	30.9	3.0	2.6	2.3	37.2	-7.59%	-16.94
MI	Grand Rapids	Interurban Transit Partnership	TOTAL	39.4	1,122.8	924.7	763.1	10,388.0	1,182.7	973.6	759.8	10,497.8	-3.62%	-1.05
MI	Kalamazoo	Kalamazoo Metro Transit Sys	DR	0.7	17.2	14.3	12.7	168.8	16.0	13.8	12.2	166.9	5.24%	1.14
MI	Kalamazoo	Kalamazoo Metro Transit Sys	MB	9.5	270.3	235.1	206.6	2,623.7	256.4	227.9	203.6	2,647.5	3.50%	-0.90
MI	Kalamazoo	Kalamazoo Metro Transit Sys	TOTAL	10.2	287.5	249.4	219.3	2,792.5	272.4	241.7	215.8	2,814.4	3.60%	-0.78
MI	Lansing	Capital Area Transp Authority	DR	1.7	42.0	38.4	35.7	484.0	46.5	41.1	38.3	500.8	-7.78%	-3.35
MI	Lansing	Capital Area Transp Authority	MB	44.8	1,300.9	1,115.7	704.4	10,684.9	1,235.6	1,085.4	670.9	10,122.6	4.31%	5.55
MI	Lansing	Capital Area Transp Authority	TOTAL	46.5	1,342.9	1,154.1	740.1	11,168.9	1,282.1	1,126.5	709.2	10,623.4	3.83%	5.13
MI	Monroe	Lake Erie Transp Commission	DR	0.5	10.8	8.5	8.6	118.0	11.2	9.3	8.6	118.6	-4.12%	-0.51
MI	Monroe	Lake Erie Transp Commission	MB	1.0	27.4	23.9	24.0	308.1	29.7	26.1	24.3	310.3	-5.99%	-0.71
MI	Monroe	Lake Erie Transp Commission	TOTAL	1.5	38.2	32.4	32.6	426.1	40.9	35.4	32.9	428.9	-5.49%	-0.65
MI	Muskegon Heights	Muskegon Area Transit Sys	DR	0.1	1.5	1.2	1.3	17.3	1.9	1.6	1.5	22.1	-20.00%	-21.72
MI	Muskegon Heights	Muskegon Area Transit Sys	MB	1.6	41.1	35.2	35.7	454.9	44.6	39.1	35.3	465.5	-5.88%	-2.28
MI	Muskegon Heights	Muskegon Area Transit Sys	TOTAL	1.7	42.6	36.4	37.0	472.2	46.5	40.7	36.8	487.6	-6.45%	-3.16

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MI	Port Huron	Blue Water Area Transp Comm	DR	2.3	59.5	45.6	46.0	597.6	60.6	51.5	45.5	628.3	-4.12%	-4.89
MI	Port Huron	Blue Water Area Transp Comm	MB	3.3	79.9	62.8	71.0	894.2	88.2	79.5	79.8	954.8	-13.66%	-6.35
MI	Port Huron	Blue Water Area Transp Comm	TOTAL	5.6	139.4	108.4	117.0	1,491.8	148.8	131.0	125.3	1,583.1	-9.95%	-5.77
MN	Burnsville	Minnesota Valley Transit Auth	DR	0.0	2.2	1.6	1.4	22.1	2.5	2.1	1.8	21.7	-18.75%	1.84
MN	Burnsville	Minnesota Valley Transit Auth	MB	9.8	251.8	208.1	191.3	2,758.8	260.0	226.7	193.5	2,849.5	-4.26%	-3.18
MN	Burnsville	Minnesota Valley Transit Auth	TOTAL	9.8	254.0	209.7	192.7	2,780.9	262.5	228.8	195.3	2,871.2	-4.40%	-3.15
MN	Eden Prairie	Southwest Metro Transit	DR	0.4	10.0	8.6	8.2	108.6	10.9	9.4	8.5	102.6	-6.94%	5.85
MN	Eden Prairie	Southwest Metro Transit	MB	3.6	83.4	69.3	71.7	997.5	88.2	76.1	60.2	1,021.7	-0.04%	-2.37
MN	Eden Prairie	Southwest Metro Transit	TOTAL	4.0	93.4	77.9	79.9	1,106.1	99.1	85.5	68.7	1,124.3	-0.83%	-1.62
MN	Minneapolis	Metro Transit	CR	2.5	62.8	51.6	53.5	767.5	66.0	58.4	52.7	787.4	-5.19%	-2.53
MN	Minneapolis	Metro Transit	LR	75.3	2,339.0	1,971.3	1,876.2	25,299.4	2,449.0	2,098.2	1,881.7	24,955.7	-3.77%	1.38
MN	Minneapolis	Metro Transit	MB	171.6	4,735.2	4,106.2	3,885.5	51,860.1	4,967.9	4,387.5	4,009.1	54,910.4	-4.77%	-5.56
MN	Minneapolis	Metro Transit	TOTAL	249.3	7,137.0	6,129.1	5,815.2	77,927.0	7,482.9	6,544.1	5,943.5	80,653.5	-4.45%	-3.38
MN	Plymouth	Plymouth Metrolink & DAR	DR	0.1	3.5	2.8	2.8	35.9	2.8	2.9	2.4	27.6	12.35%	30.07
MN	Plymouth	Plymouth Metrolink & DAR	MB	1.8	46.4	36.8	33.9	487.0	47.5	39.6	32.8	491.7	-2.34%	-0.96
MN	Plymouth	Plymouth Metrolink & DAR	TOTAL	1.9	49.9	39.6	36.7	522.9	50.3	42.5	35.2	519.3	-1.41%	0.69
MN	Saint Cloud	St. Cloud Metrop Trans Comm	DR	NA	14.4	12.6	13.2	155.0	13.4	12.4	11.7	143.1	7.20%	8.32
MN	Saint Cloud	St. Cloud Metrop Trans Comm	MB	NA	144.7	126.7	114.2	1,477.5	165.5	145.2	125.8	1,654.7	-11.66%	-10.71
MN	Saint Cloud	St. Cloud Metrop Trans Comm	TOTAL	NA	159.1	139.3	127.4	1,632.5	178.9	157.6	137.5	1,797.8	-10.17%	-9.19
MO	Kansas City	Kansas City Area Trp Auth	DR	0.3	6.6	5.5	4.8	66.5	36.7	32.4	32.6	415.8	-83.38%	-84.01
MO	Kansas City	Kansas City Area Trp Auth	MB	38.7	1,083.4	933.0	918.5	12,164.8	1,136.5	1,095.1	924.5	12,525.6	-7.01%	-2.88
MO	Kansas City	Kansas City Area Trp Auth	VP	NA	NA	NA	NA	NA	5.5	4.5	4.0	53.7	NA	N
MO	Kansas City	Kansas City Area Trp Auth	TOTAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	N
MO	Saint Louis	Bi-State Dev Agency	DR	1.5	41.8	37.4	35.9	489.2	46.5	42.0	41.7	546.8	-11.60%	-10.53
MO	Saint Louis	Bi-State Dev Agency	LR	38.9	1,167.6	992.7	943.6	13,088.0	1,144.1	1,009.0	965.2	13,210.2	-0.46%	-0.93
MO	Saint Louis	Bi-State Dev Agency	MB	70.2	2,028.9	1,787.0	1,751.5	22,492.7	2,164.5	1,834.8	1,772.3	23,243.3	-3.54%	-3.23
MO	Saint Louis	Bi-State Dev Agency	TOTAL	110.7	3,238.3	2,817.1	2,731.0	36,069.9	3,355.1	2,885.8	2,779.2	37,000.3	-2.59%	-2.51
MO	Springfield	City Utilities of Springfield	DR	NA	1.8	1.6	1.4	21.0	2.1	1.7	1.6	21.5	-11.11%	-2.33
MO	Springfield	City Utilities of Springfield	MB	4.2	114.2	100.8	101.7	1,281.3	119.8	105.6	101.1	1,280.7	-3.00%	0.05
MO	Springfield	City Utilities of Springfield	TOTAL	NA	116.0	102.4	103.1	1,302.3	121.9	107.3	102.7	1,302.2	-3.13%	0.01
MT	Missoula	Missoula Urban Transportation Distr	DR	0.1	3.7	2.9	3.3	41.7	3.5	3.4	3.5	36.2	-4.81%	15.19
MT	Missoula	Missoula Urban Transportation Distr	MB	5.6	136.0	120.8	115.8	1,539.0	142.4	122.0	116.4	1,573.6	-2.15%	-2.20
MT	Missoula	Missoula Urban Transportation Distr	TOTAL	5.7	139.7	123.7	119.1	1,580.7	145.9	125.4	119.9	1,609.8	-2.22%	-1.81

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NC	Burlington	Link Transit (City of Burlington, NC)	DR	0.0	0.5	0.5	0.5	4.9	0.4	0.5	0.3	4.2	25.00%	16.67
NC	Burlington	Link Transit (City of Burlington, NC)	MB	0.4	9.2	8.2	7.8	101.0	9.8	8.5	6.1	88.2	3.28%	14.51
NC	Burlington	Link Transit (City of Burlington, NC)	TOTAL	0.4	9.7	8.7	8.3	105.9	10.2	9.0	6.4	92.4	4.30%	14.61
NC	Chapel Hill	Chapel Hill Transit	DR	0.2	6.7	5.8	5.4	71.3	6.4	5.5	4.5	65.3	9.15%	9.19
NC	Chapel Hill	Chapel Hill Transit	MB	27.8	744.4	589.0	448.7	6,191.2	663.7	544.2	614.0	6,529.5	-2.18%	-5.18
NC	Chapel Hill	Chapel Hill Transit	TOTAL	28.0	751.1	594.8	454.1	6,262.5	670.1	549.7	618.5	6,594.8	-2.08%	-5.04
NC	Charlotte	Charlotte Area Transit	DR	0.9	23.3	19.9	21.4	258.5	24.1	21.7	18.7	263.8	0.16%	-2.01
NC	Charlotte	Charlotte Area Transit	LR	29.9	822.3	743.7	714.0	8,892.1	564.9	654.3	591.1	7,376.5	25.95%	20.55
NC	Charlotte	Charlotte Area Transit	MB	42.0	1,149.8	996.6	978.7	12,659.9	1,257.0	1,053.8	938.8	13,648.2	-3.83%	-7.24
NC	Charlotte	Charlotte Area Transit	VP	0.6	11.3	11.6	11.4	140.2	12.1	9.1	12.1	136.9	3.00%	2.41
NC	Charlotte	Charlotte Area Transit	TOTAL	73.4	2,006.7	1,771.8	1,725.5	21,950.7	1,858.1	1,738.9	1,560.7	21,425.4	6.71%	2.45
NC	Greensboro	Greensboro Transit Auth	DR	1.0	26.5	22.5	22.1	285.2	25.0	22.5	17.7	265.5	9.05%	7.42
NC	Greensboro	Greensboro Transit Auth	MB	10.8	301.4	253.5	229.0	3,128.4	311.5	275.9	206.2	3,272.3	-1.22%	-4.40
NC	Greensboro	Greensboro Transit Auth	TOTAL	11.8	327.9	276.0	251.1	3,413.6	336.5	298.4	223.9	3,537.8	-0.44%	-3.51
NC	Resrch Trigle Park	GoTriangle	DR	0.3	6.3	5.4	5.1	63.6	6.5	5.5	4.3	70.9	3.07%	-10.30
NC	Resrch Trigle Park	GoTriangle	MB	5.9	160.8	130.2	110.8	1,687.8	161.1	131.5	102.4	1,575.8	1.72%	7.11
NC	Resrch Trigle Park	GoTriangle	VP	0.3	8.1	6.4	6.6	116.3	16.8	14.6	15.3	188.2	-54.82%	-38.20
NC	Resrch Trigle Park	GoTriangle	TOTAL	6.4	175.2	142.0	122.5	1,867.7	184.4	151.6	122.0	1,834.9	-4.00%	1.79
NC	Winston-Salem	Piedmont Auth for Regional Transp	MB	1.7	43.3	36.0	34.7	460.7	43.3	35.5	27.2	438.8	7.55%	4.99
NC	Winston-Salem	Piedmont Auth for Regional Transp	VP	0.8	20.3	17.8	18.5	238.3	17.4	20.1	19.7	240.0	-1.05%	-0.71
NC	Winston-Salem	Piedmont Auth for Regional Transp	TOTAL	2.5	63.6	53.8	53.2	699.0	60.7	55.6	46.9	678.8	4.53%	2.98
NJ	Jersey City	Port Authority of NY & NJ	AG	NA	NA	NA	NA	NA	267.8	266.2	285.6	2,853.6	NA	N
NJ	Jersey City	Port Authority of NY & NJ	FB	4.6	136.1	98.3	84.4	1,395.0	146.7	105.4	83.1	1,371.8	-4.89%	1.69
NJ	Jersey City	Port Authority of NY & NJ	HR	306.7	8,274.1	7,165.0	7,080.3	90,276.6	8,252.3	7,360.7	6,970.7	89,664.3	-0.28%	0.68
NJ	Jersey City	Port Authority of NY & NJ	TOTAL	NA	NA	NA	NA	NA	8,666.8	7,732.3	7,339.4	93,889.7	NA	N
NJ	Lindenwold	Port Authority Transit Corp	HR	38.4	1,027.8	894.7	895.7	11,107.5	1,007.1	892.3	856.8	10,789.6	2.25%	2.95
NJ	Lindenwold	Port Authority Transit Corp	TOTAL	38.4	1,027.8	894.7	895.7	11,107.5	1,007.1	892.3	856.8	10,789.6	2.25%	2.95
NJ	Newark	New Jersey Transit Corp	CR	NA	7,837.4	7,418.6	7,354.0	88,319.6	7,739.2	7,427.4	7,356.1	86,753.4	0.39%	1.81
NJ	Newark	New Jersey Transit Corp	LR	NA	2,119.0	1,846.2	2,022.8	23,983.3	2,220.5	1,891.0	2,036.7	24,085.9	-2.61%	-0.43
NJ	Newark	New Jersey Transit Corp	MB	NA	13,970.8	12,159.0	11,670.6	150,997.3	14,170.1	12,271.2	11,835.9	150,831.0	-1.25%	0.11
NJ	Newark	New Jersey Transit Corp	TOTAL	NA	23,927.2	21,423.8	21,047.4	263,300.2	24,129.8	21,589.6	21,228.7	261,670.3	-0.82%	0.62
NM	Albuquerque	City of Albuquerque T & PD	DR	NA	24.4	19.8	19.5	256.0	24.4	21.4	19.0	254.9	-1.70%	0.43
NM	Albuquerque	City of Albuquerque T & PD	MB	NA	815.3	694.7	738.8	9,016.7	837.6	758.2	670.5	9,571.3	-0.77%	-5.79
NM	Albuquerque	City of Albuquerque T & PD	TOTAL	NA	839.7	714.5	758.3	9,272.7	862.0	779.6	689.5	9,826.2	-0.80%	-5.63

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NM	Albuquerque	New Mexico Dept of Trp	CR	2.4	69.9	52.1	52.9	743.6	72.0	57.8	54.0	770.0	-4.84%	-3.43
NM	Albuquerque	New Mexico Dept of Trp	MB	0.9	22.2	17.2	16.1	232.6	22.1	18.6	14.3	236.8	0.91%	-1.77
NM	Albuquerque	New Mexico Dept of Trp	TOTAL	3.3	92.1	69.3	69.0	976.2	94.1	76.4	68.3	1,006.8	-3.52%	-3.04
NM	Española	North Central Regional Transit Distri	MB	1.1	24.1	19.2	25.4	295.0	24.4	21.0	22.1	291.8	1.78%	1.10
NM	Española	North Central Regional Transit Distri	TOTAL	1.1	24.1	19.2	25.4	295.0	24.4	21.0	22.1	291.8	1.78%	1.10
NM	Las Cruces	City of Las Cruces-RdRUNR Tr	DR	0.2	5.3	4.1	4.0	53.5	5.5	4.3	3.8	55.7	-1.47%	-3.95
NM	Las Cruces	City of Las Cruces-RdRUNR Tr	MB	2.0	63.4	50.7	44.2	560.8	57.1	48.2	36.2	558.8	11.87%	0.36
NM	Las Cruces	City of Las Cruces-RdRUNR Tr	TOTAL	2.2	68.7	54.8	48.2	614.3	62.6	52.5	40.0	614.5	10.70%	-0.03
NM	Los Alamos	Los Alamos County, Atomic City Tra	DR	0.0	0.6	0.5	0.5	6.7	0.6	0.4	0.5	6.2	6.67%	8.06
NM	Los Alamos	Los Alamos County, Atomic City Tra	MB	1.4	47.1	24.3	22.8	454.6	44.5	25.8	21.5	435.4	2.61%	4.41
NM	Los Alamos	Los Alamos County, Atomic City Tra	TOTAL	1.4	47.7	24.8	23.3	461.3	45.1	26.2	22.0	441.6	2.68%	4.46
NM	Santa Fe	Santa Fe Trails - City of Santa Fe	MB	NA	66.0	52.6	53.0	751.6	69.3	61.6	58.2	822.5	-9.25%	-8.62
NM	Santa Fe	Santa Fe Trails - City of Santa Fe	TOTAL	NA	66.0	52.6	53.0	751.6	69.3	61.6	58.2	822.5	-9.25%	-8.62
NV	Las Vegas	RTC of Southern Nevada	DR	4.9	128.8	112.0	114.7	1,393.0	121.2	107.7	103.9	1,343.7	6.82%	3.67
NV	Las Vegas	RTC of Southern Nevada	MB	200.2	6,150.8	5,431.6	5,314.2	65,266.1	5,957.7	5,352.9	5,192.7	64,579.6	2.38%	1.06
NV	Las Vegas	RTC of Southern Nevada	TOTAL	205.1	6,279.6	5,543.6	5,428.9	66,659.1	6,078.9	5,460.6	5,296.6	65,923.3	2.47%	1.12
NV	Reno	RTC of Washoe County	DR	0.8	19.6	17.1	17.5	224.8	19.6	17.8	17.0	241.7	-0.37%	-6.99
NV	Reno	RTC of Washoe County	MB	24.3	704.7	611.9	627.3	7,640.9	634.6	565.0	532.8	7,241.9	12.21%	5.51
NV	Reno	RTC of Washoe County	TOTAL	25.1	724.3	629.0	644.8	7,865.7	654.2	582.8	549.8	7,483.6	11.83%	5.11
NY	Albany	Capital District Transp Auth	DR	1.1	30.6	28.5	28.0	343.5	29.3	27.0	27.9	308.6	3.44%	11.31
NY	Albany	Capital District Transp Auth	MB	51.2	1,465.8	1,258.5	1,163.8	15,153.3	1,543.5	1,323.5	1,224.9	15,393.9	-4.98%	-1.56
NY	Albany	Capital District Transp Auth	TOTAL	52.3	1,496.4	1,287.0	1,191.8	15,496.8	1,572.8	1,350.5	1,252.8	15,702.5	-4.81%	-1.31
NY	Albion	Orleans Transit Service	DR	0.0	0.3	0.3	0.3	3.3	0.3	0.3	0.2	3.6	12.50%	-8.33
NY	Albion	Orleans Transit Service	MB	0.1	3.5	3.0	3.4	38.4	2.7	2.5	2.5	31.0	28.57%	23.87
NY	Albion	Orleans Transit Service	TOTAL	0.1	3.8	3.3	3.7	41.7	3.0	2.8	2.7	34.6	27.06%	20.52
NY	Batavia	Batavia Bus Service	DR	0.0	1.1	1.0	0.8	11.0	1.3	1.2	0.9	13.3	-14.71%	-17.29
NY	Batavia	Batavia Bus Service	MB	0.1	3.3	3.1	2.4	34.5	4.0	3.6	2.8	41.3	-15.38%	-16.46
NY	Batavia	Batavia Bus Service	TOTAL	0.2	4.4	4.1	3.2	45.5	5.3	4.8	3.7	54.6	-15.22%	-16.67
NY	Buffalo	Niagara Frontier Trp Auth	DR	0.8	21.9	19.1	18.6	227.2	20.0	18.1	16.3	213.5	9.56%	6.42
NY	Buffalo	Niagara Frontier Trp Auth	LR	15.1	424.4	350.4	341.1	4,394.0	445.3	399.3	362.0	4,492.2	-7.52%	-2.19
NY	Buffalo	Niagara Frontier Trp Auth	MB	69.9	1,938.6	1,608.9	1,536.4	19,994.4	2,032.9	1,783.6	1,708.7	19,138.0	-7.99%	4.47
NY	Buffalo	Niagara Frontier Trp Auth	TOTAL	85.8	2,384.9	1,978.4	1,896.1	24,615.6	2,498.2	2,201.0	2,087.0	23,843.7	-7.76%	3.24

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NY	Canandaigua	Canandiagua Area Transit Service	DR	0.0	0.2	0.2	0.2	4.0	0.6	0.5	0.4	6.5	-60.00%	-38.46
NY	Canandaigua	Canandiagua Area Transit Service	MB	0.7	20.8	18.6	18.9	231.5	22.2	20.2	20.0	250.1	-6.57%	-7.44
NY	Canandaigua	Canandiagua Area Transit Service	TOTAL	0.7	21.0	18.8	19.1	235.5	22.8	20.7	20.4	256.6	-7.82%	-8.22
NY	Dansville	Livingston Area Transp Svce	DR	0.1	1.9	1.7	1.7	22.2	1.8	1.7	1.7	20.7	1.92%	7.25
NY	Dansville	Livingston Area Transp Svce	MB	0.5	14.9	15.2	8.9	132.2	14.4	14.6	9.4	133.8	1.56%	-1.20
NY	Dansville	Livingston Area Transp Svce	TOTAL	0.6	16.8	16.9	10.6	154.4	16.2	16.3	11.1	154.5	1.61%	-0.06
NY	Ithaca	Tompkins Consol Area Transit	DR	0.2	4.8	3.9	4.2	55.7	4.9	4.5	4.0	53.4	-3.73%	4.31
NY	Ithaca	Tompkins Consol Area Transit	MB	17.9	470.3	411.7	265.7	4,236.4	473.9	422.2	246.4	4,168.7	0.46%	1.62
NY	Ithaca	Tompkins Consol Area Transit	VP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%	N
NY	Ithaca	Tompkins Consol Area Transit	TOTAL	18.1	475.1	415.6	269.9	4,292.1	478.8	426.7	250.4	4,222.1	0.41%	1.66
NY	Jamaica	AirTrain JFK	AG	NA	808.6	722.6	677.0	8,538.2	739.9	690.0	710.1	8,221.0	3.19%	3.86
NY	Jamaica	AirTrain JFK	TOTAL	NA	808.6	722.6	677.0	8,538.2	739.9	690.0	710.1	8,221.0	3.19%	3.86
NY	Lyons	Wayne Area Transp Service	DR	0.0	0.5	0.4	0.4	5.8	0.4	0.4	0.6	5.3	-7.14%	9.43
NY	Lyons	Wayne Area Transp Service	MB	0.9	27.1	15.6	14.7	216.3	28.6	16.4	15.8	224.4	-5.59%	-3.61
NY	Lyons	Wayne Area Transp Service	TOTAL	0.9	27.6	16.0	15.1	222.1	29.0	16.8	16.4	229.7	-5.63%	-3.31
NY	New York	MTA Bus Company	MB	386.6	12,344.2	11,065.1	10,581.1	135,003.2	12,968.8	11,487.1	10,992.3	137,618.5	-4.11%	-1.90
NY	New York	MTA Bus Company	TOTAL	386.6	12,344.2	11,065.1	10,581.1	135,003.2	12,968.8	11,487.1	10,992.3	137,618.5	-4.11%	-1.90
NY	New York	MTA Long Island Rail Road	CR	385.4	10,221.9	9,633.1	9,765.9	117,783.4	9,358.4	8,761.6	8,671.5	106,299.2	10.56%	10.80
NY	New York	MTA Long Island Rail Road	TOTAL	385.4	10,221.9	9,633.1	9,765.9	117,783.4	9,358.4	8,761.6	8,671.5	106,299.2	10.56%	10.80
NY	New York	MTA Metro-North Railroad	CR	311.8	7,854.5	6,931.2	7,245.4	86,459.0	7,872.2	7,202.1	7,224.5	86,389.4	-1.20%	0.08
NY	New York	MTA Metro-North Railroad	FB	0.7	17.9	14.1	12.4	172.9	17.8	15.1	12.8	164.4	-2.84%	5.17
NY	New York	MTA Metro-North Railroad	MB	1.5	36.2	31.7	31.6	406.0	37.9	33.5	29.9	399.7	-1.78%	1.58
NY	New York	MTA Metro-North Railroad	TOTAL	314.0	7,908.6	6,977.0	7,289.4	87,037.9	7,927.9	7,250.7	7,267.2	86,953.5	-1.21%	0.10
NY	New York	MTA New York City Transit	DR	35.0	980.7	928.4	925.2	10,853.7	912.3	867.4	894.8	9,881.5	5.97%	9.84
NY	New York	MTA New York City Transit	HR	9,117.4	253,609.9	235,137.3	236,357.7	2,723,960.1	246,416.1	217,622.2	206,071.1	2,629,607.6	8.21%	3.59
NY	New York	MTA New York City Transit	MB	2,259.1	64,429.9	58,671.7	55,039.2	732,636.8	70,053.1	61,142.9	59,790.1	734,640.9	-6.73%	-0.27
NY	New York	MTA New York City Transit	TOTAL	11,411.5	319,020.5	294,737.4	292,322.1	3,467,450.6	317,381.5	279,632.5	266,756.0	3,374,130.0	4.90%	2.77
NY	New York	MTA Staten Island Railway	HR	28.5	724.7	609.6	604.8	7,741.0	797.7	695.1	640.6	8,129.6	-9.11%	-4.78
NY	New York	MTA Staten Island Railway	TOTAL	28.5	724.7	609.6	604.8	7,741.0	797.7	695.1	640.6	8,129.6	-9.11%	-4.78
NY	New York	New York City DOT	FB	NA	1,820.2	1,575.9	1,899.0	22,935.2	2,303.1	2,046.5	2,062.1	24,775.7	-17.42%	-7.43
NY	New York	New York City DOT	MB	1.3	31.1	25.5	24.0	355.1	37.3	29.7	25.5	459.5	-12.86%	-22.72
NY	New York	New York City DOT	TOTAL	NA	1,851.3	1,601.4	1,923.0	23,290.3	2,340.4	2,076.2	2,087.6	25,235.2	-17.35%	-7.71

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NY	Rochester	Lift Line	DR	0.8	22.2	19.9	19.2	240.9	20.5	18.4	17.8	222.2	8.11%	8.42
NY	Rochester	Lift Line	TOTAL	0.8	22.2	19.9	19.2	240.9	20.5	18.4	17.8	222.2	8.11%	8.42
NY	Rochester	Rochester Genesee RTA	MB	48.0	1,338.7	1,156.1	1,145.1	14,441.2	1,406.4	1,233.3	1,171.3	14,626.7	-4.49%	-1.27
NY	Rochester	Rochester Genesee RTA	TOTAL	48.0	1,338.7	1,156.1	1,145.1	14,441.2	1,406.4	1,233.3	1,171.3	14,626.7	-4.49%	-1.27
NY	Rock Glen	Wyoming Transit Service	DR	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%	N
NY	Rock Glen	Wyoming Transit Service	MB	0.2	5.4	3.3	3.3	48.7	7.1	3.3	3.3	44.6	-12.41%	9.19
NY	Rock Glen	Wyoming Transit Service	TOTAL	NA	5.4	3.3	3.3	48.7	7.1	3.3	3.3	44.6	-12.41%	9.19
NY	Syracuse	CNY Centro	DR	NA	17.0	15.0	14.7	185.0	17.0	15.5	15.7	184.6	-3.11%	0.22
NY	Syracuse	CNY Centro	MB	NA	1,033.0	834.0	665.2	9,787.6	1,047.9	857.9	731.0	10,168.4	-3.97%	-3.74
NY	Syracuse	CNY Centro	TOTAL	NA	1,050.0	849.0	679.9	9,972.6	1,064.9	873.4	746.7	10,353.0	-3.95%	-3.67
NY	Waterloo	Seneca Transit Service	DR	0.1	1.4	1.4	1.6	15.7	1.2	0.9	1.1	15.0	37.50%	4.67
NY	Waterloo	Seneca Transit Service	MB	0.2	4.1	3.2	3.5	44.5	4.2	3.5	3.4	43.6	-2.70%	2.06
NY	Waterloo	Seneca Transit Service	TOTAL	0.3	5.5	4.6	5.1	60.2	5.4	4.4	4.5	58.6	6.29%	2.73
OH	Akron	METRO Regional Transit Authority	DR	0.9	26.4	22.5	22.7	276.1	24.3	21.4	19.6	271.1	9.65%	1.84
OH	Akron	METRO Regional Transit Authority	MB	16.3	456.0	383.1	357.8	4,683.3	471.1	407.8	379.1	4,872.0	-4.86%	-3.87
OH	Akron	METRO Regional Transit Authority	TOTAL	17.2	482.4	405.6	380.5	4,959.4	495.4	429.2	398.7	5,143.1	-4.14%	-3.57
OH	Canton	Stark Area RTA	DR	0.0	15.2	13.9	12.8	158.9	15.5	14.2	13.1	161.2	-2.10%	-1.43
OH	Canton	Stark Area RTA	MB	7.3	196.6	169.5	163.9	2,183.4	217.1	184.7	174.7	2,289.9	-8.07%	-4.65
OH	Canton	Stark Area RTA	TOTAL	7.3	211.8	183.4	176.7	2,342.3	232.6	198.9	187.8	2,451.1	-7.65%	-4.44
OH	Cincinnati	Southwest Ohio RTA	DR	0.8	19.4	17.6	17.2	226.2	21.3	18.7	17.3	228.1	-5.41%	-0.83
OH	Cincinnati	Southwest Ohio RTA	MB	46.3	1,321.1	1,058.8	1,027.7	13,245.1	1,360.7	1,128.7	1,055.9	13,750.5	-3.88%	-3.68
OH	Cincinnati	Southwest Ohio RTA	TOTAL	47.1	1,340.5	1,076.4	1,044.9	13,471.3	1,382.0	1,147.4	1,073.2	13,978.6	-3.91%	-3.63
OH	Cleveland	Greater Cleveland Reg TA	DR	0.2	51.2	46.3	46.9	574.7	42.2	35.4	34.3	427.6	29.04%	34.40
OH	Cleveland	Greater Cleveland Reg TA	HR	15.9	523.5	484.0	460.0	5,958.0	586.6	522.6	466.4	6,249.8	-6.86%	-4.67
OH	Cleveland	Greater Cleveland Reg TA	LR	3.9	130.1	118.8	112.0	1,477.7	146.6	122.8	119.8	1,638.1	-7.27%	-9.79
OH	Cleveland	Greater Cleveland Reg TA	MB	82.1	2,362.1	1,985.2	1,839.6	24,757.4	2,460.7	2,083.0	1,912.9	25,549.1	-4.18%	-3.10
OH	Cleveland	Greater Cleveland Reg TA	TOTAL	102.2	3,066.9	2,634.3	2,458.5	32,767.8	3,236.1	2,763.8	2,533.4	33,864.6	-4.38%	-3.24
OH	Columbus	Central Ohio Transit Auth	DR	0.8	22.4	20.3	20.1	253.2	23.3	21.2	20.5	258.4	-3.38%	-2.01
OH	Columbus	Central Ohio Transit Auth	MB	61.5	1,811.1	1,597.5	1,443.4	19,145.1	1,800.6	1,586.4	1,456.7	18,914.0	0.17%	1.22
OH	Columbus	Central Ohio Transit Auth	TOTAL	62.3	1,833.5	1,617.8	1,463.5	19,398.3	1,823.9	1,607.6	1,477.2	19,172.4	0.12%	1.18
OH	Delaware	Delaware Area Transit Agency	MB	0.3	7.0	6.1	6.1	73.3	6.6	6.1	5.1	70.8	7.87%	3.53
OH	Delaware	Delaware Area Transit Agency	TOTAL	0.3	7.0	6.1	6.1	73.3	6.6	6.1	5.1	70.8	7.87%	3.53

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OH	Grand River	LAKETRAN	DR	1.1	25.6	22.2	21.2	290.8	26.9	24.1	20.8	288.8	-3.90%	0.69
OH	Grand River	LAKETRAN	MB	1.5	40.9	33.4	30.2	423.4	42.4	37.2	30.8	437.5	-5.34%	-3.22
OH	Grand River	LAKETRAN	TOTAL	2.6	66.5	55.6	51.4	714.2	69.3	61.3	51.6	726.3	-4.77%	-1.67
OH	Kent	Portage Area Reg Trp Auth	DR	NA	7.0	6.0	5.5	75.3	7.2	6.3	5.6	82.9	-3.14%	-9.17
OH	Kent	Portage Area Reg Trp Auth	MB	NA	149.1	117.1	61.5	1,080.7	151.9	118.9	61.8	1,140.9	-1.47%	-5.28
OH	Kent	Portage Area Reg Trp Auth	TOTAL	NA	156.1	123.1	67.0	1,156.0	159.1	125.2	67.4	1,223.8	-1.56%	-5.54
OH	New Lexington	Perry County Transit	DR	NA	4.8	4.4	4.3	53.3	4.7	3.7	4.1	54.9	8.00%	-2.91
OH	New Lexington	Perry County Transit	TOTAL	NA	4.8	4.4	4.3	53.3	4.7	3.7	4.1	54.9	8.00%	-2.91
OH	Toledo	Toledo Area Reg Transit Auth	DR	0.9	24.9	22.0	20.3	270.9	26.6	24.1	22.1	293.0	-7.69%	-7.54
OH	Toledo	Toledo Area Reg Transit Auth	MB	6.5	171.2	145.2	133.0	1,734.1	223.6	185.5	185.6	2,279.4	-24.43%	-23.92
OH	Toledo	Toledo Area Reg Transit Auth	TOTAL	7.4	196.1	167.2	153.3	2,005.0	250.2	209.6	207.7	2,572.4	-22.61%	-22.06
OH	Youngstown	Western Reserve Trans Auth	DR	0.1	3.2	2.6	2.9	35.9	3.8	3.4	3.0	39.7	-14.71%	-9.57
OH	Youngstown	Western Reserve Trans Auth	MB	5.1	138.3	117.9	109.7	1,474.0	140.6	120.8	113.2	1,434.0	-2.32%	2.79
OH	Youngstown	Western Reserve Trans Auth	TOTAL	5.2	141.5	120.5	112.6	1,509.9	144.4	124.2	116.2	1,473.7	-2.65%	2.46
OK	Lawton	Lawton Area Tr System (LATS)	MB	1.1	30.0	26.7	25.4	322.5	31.1	29.4	25.1	334.6	-4.09%	-3.62
OK	Lawton	Lawton Area Tr System (LATS)	TOTAL	1.1	30.0	26.7	25.4	322.5	31.1	29.4	25.1	334.6	-4.09%	-3.62
OK	Oklahoma City	Central Oklahoma TA	DR	0.2	5.3	4.5	4.5	59.1	5.1	4.9	4.4	59.1	-0.69%	0.00
OK	Oklahoma City	Central Oklahoma TA	MB	10.0	273.5	240.0	247.0	3,032.1	262.7	237.8	215.0	2,911.8	6.29%	4.13
OK	Oklahoma City	Central Oklahoma TA	TOTAL	10.2	278.8	244.5	251.5	3,091.2	267.8	242.7	219.4	2,970.9	6.15%	4.05
OR	Eugene	Lane Transit District	DR	0.6	13.2	11.5	12.8	160.4	14.9	13.2	12.6	160.0	-7.86%	0.25
OR	Eugene	Lane Transit District	MB	35.4	1,009.8	866.0	755.8	9,925.9	1,001.5	868.8	692.9	10,222.9	2.67%	-2.91
OR	Eugene	Lane Transit District	TOTAL	36.0	1,023.0	877.5	768.6	10,086.3	1,016.4	882.0	705.5	10,382.9	2.50%	-2.86
OR	Portland	Tri-County Metro Trp Dist	CR	1.4	34.5	28.0	25.1	361.6	38.0	30.7	25.0	398.5	-6.51%	-9.26
OR	Portland	Tri-County Metro Trp Dist	DR	3.2	84.2	75.5	76.6	946.6	87.4	79.2	77.0	996.2	-3.00%	-4.98
OR	Portland	Tri-County Metro Trp Dist	LR	119.6	3,442.5	3,114.1	3,022.7	38,388.2	3,482.1	3,198.7	2,987.8	38,953.1	-0.92%	-1.45
OR	Portland	Tri-County Metro Trp Dist	MB	186.0	5,281.7	4,660.2	4,531.6	57,373.5	5,156.2	4,633.8	4,254.4	56,727.1	3.06%	1.14
OR	Portland	Tri-County Metro Trp Dist	TOTAL	310.1	8,842.9	7,877.8	7,656.0	97,069.9	8,763.7	7,942.4	7,344.2	97,074.9	1.36%	-0.01
OR	Salem	Salem-Keizer Transit	DR	0.5	13.0	10.1	10.8	137.4	13.2	11.1	10.4	140.3	-2.31%	-2.07
OR	Salem	Salem-Keizer Transit	MB	18.3	332.8	275.8	266.9	3,167.8	282.0	234.8	211.6	2,956.7	20.19%	7.14
OR	Salem	Salem-Keizer Transit	TOTAL	18.8	345.8	285.9	277.7	3,305.2	295.2	245.9	222.0	3,097.0	19.17%	6.72
PA	Allentown	Lehigh & Northampton Trp Auth	DR	1.3	32.1	27.3	25.1	346.9	34.5	28.2	27.5	362.6	-6.32%	-4.33
PA	Allentown	Lehigh & Northampton Trp Auth	MB	14.3	414.7	368.1	341.0	4,375.1	419.9	359.8	356.7	4,397.1	-1.11%	-0.50
PA	Allentown	Lehigh & Northampton Trp Auth	TOTAL	15.6	446.8	395.4	366.1	4,722.0	454.4	388.0	384.2	4,759.7	-1.49%	-0.79

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PA	Altoona	Altoona Metro Transit	DR	NA	0.8	0.7	0.7	9.5	1.1	0.9	0.9	11.6	-24.14%	-18.1(
PA	Altoona	Altoona Metro Transit	MB	2.0	54.2	47.0	42.3	550.9	58.2	47.2	42.2	544.3	-2.78%	1.21
PA	Altoona	Altoona Metro Transit	TOTAL	NA	55.0	47.7	43.0	560.4	59.3	48.1	43.1	555.9	-3.19%	0.81
PA	Harrisburg	Cumberland-Dauphin-Harrisburg TA	DR	NA	19.8	18.0	16.9	220.7	20.8	17.3	16.4	209.9	0.37%	5.15
PA	Harrisburg	Cumberland-Dauphin-Harrisburg TA	MB	NA	193.7	159.9	154.0	2,044.7	186.0	151.6	148.1	1,992.8	4.51%	2.60
PA	Harrisburg	Cumberland-Dauphin-Harrisburg TA	TOTAL	NA	213.5	177.9	170.9	2,265.4	206.8	168.9	164.5	2,202.7	4.09%	2.85
PA	Harris-Phil	Penn DOT (Keystone)	CR	5.1	145.3	135.4	140.5	1,584.6	143.6	138.2	130.1	1,532.5	2.26%	3.40
PA	Harris-Phil	Penn DOT (Keystone)	TOTAL	5.1	145.3	135.4	140.5	1,584.6	143.6	138.2	130.1	1,532.5	2.26%	3.40
PA	Johnsonburg	Area Transp Auth NC PA	DR	0.5	14.7	11.9	11.6	148.1	13.8	12.8	11.7	148.4	-0.26%	-0.20
PA	Johnsonburg	Area Transp Auth NC PA	MB	8.9	27.6	23.6	21.3	238.1	21.0	18.2	14.9	210.4	34.01%	13.17
PA	Johnsonburg	Area Transp Auth NC PA	VP	NA	NA	NA	NA	NA	0.7	0.6	0.6	8.3	NA	N
PA	Johnsonburg	Area Transp Auth NC PA	TOTAL	NA	NA	NA	NA	NA	35.5	31.6	27.2	367.1	NA	N
PA	Johnstown	Cambria County Transit Auth	DR	0.0	0.6	0.6	0.5	6.9	0.6	0.6	0.6	7.0	-5.56%	-1.43
PA	Johnstown	Cambria County Transit Auth	IP	0.1	6.6	4.0	3.2	64.6	5.7	2.6	2.8	53.1	24.32%	21.66
PA	Johnstown	Cambria County Transit Auth	MB	3.0	96.4	87.3	84.4	1,049.0	93.2	84.4	84.1	997.8	2.45%	5.13
PA	Johnstown	Cambria County Transit Auth	TOTAL	3.1	103.6	91.9	88.1	1,120.5	99.5	87.6	87.5	1,057.9	3.28%	5.92
PA	Lancaster	Red Rose Transit Authority	DR	1.0	24.1	19.8	19.7	279.3	27.2	23.7	21.4	290.6	-12.03%	-3.89
PA	Lancaster	Red Rose Transit Authority	MB	7.2	169.5	149.8	137.9	1,785.9	169.0	145.9	140.2	1,774.3	0.46%	0.65
PA	Lancaster	Red Rose Transit Authority	TOTAL	8.1	193.6	169.6	157.6	2,065.2	196.2	169.6	161.6	2,064.9	-1.25%	0.01
PA	Lebanon	County of Lebanon Tr Auth	DR	0.2	4.5	3.9	3.8	49.9	4.7	4.0	3.6	48.3	-0.81%	3.31
PA	Lebanon	County of Lebanon Tr Auth	MB	1.0	27.1	23.3	23.1	306.3	28.6	23.6	26.4	314.3	-6.49%	-2.55
PA	Lebanon	County of Lebanon Tr Auth	TOTAL	1.2	31.6	27.2	26.9	356.2	33.3	27.6	30.0	362.6	-5.72%	-1.77
PA	Philadelphia	Southeastern Penn TA	CR	134.6	3,393.8	2,994.4	3,029.4	35,594.8	3,165.1	2,885.3	2,756.2	34,373.4	6.94%	3.55
PA	Philadelphia	Southeastern Penn TA	DR	5.2	122.3	145.3	111.2	1,514.6	124.3	140.0	113.7	1,502.6	0.21%	0.80
PA	Philadelphia	Southeastern Penn TA	HR	329.2	8,523.3	7,626.2	7,566.8	90,240.8	8,596.3	7,825.4	7,331.1	93,546.4	-0.15%	-3.53
PA	Philadelphia	Southeastern Penn TA	LR	89.4	2,346.6	2,071.0	2,023.2	24,321.2	2,375.7	2,165.5	2,053.9	24,868.2	-2.34%	-2.20
PA	Philadelphia	Southeastern Penn TA	MB	491.5	13,020.0	11,252.6	11,118.4	137,328.2	13,207.8	11,641.0	11,048.8	141,806.7	-1.41%	-3.16
PA	Philadelphia	Southeastern Penn TA	TB	16.9	434.4	392.0	388.4	4,715.6	465.8	417.8	393.9	4,262.2	-4.91%	10.64
PA	Philadelphia	Southeastern Penn TA	TOTAL	1,066.8	27,840.4	24,481.5	24,237.4	293,715.2	27,935.0	25,075.0	23,697.6	300,359.5	-0.19%	-2.21
PA	Pittsburgh	Port Auth of Allegheny Co	DR	NA	122.1	107.4	106.8	1,379.6	127.1	112.7	108.1	1,428.6	-3.33%	-3.43
PA	Pittsburgh	Port Auth of Allegheny Co	IP	NA	86.5	77.4	67.4	1,013.0	97.9	77.5	82.9	1,202.6	-10.45%	-15.77
PA	Pittsburgh	Port Auth of Allegheny Co	LR	NA	681.9	600.2	568.0	7,364.3	669.3	576.2	544.1	7,328.1	3.38%	0.49
PA	Pittsburgh	Port Auth of Allegheny Co	MB	NA	5,234.2	4,419.6	4,185.1	54,832.8	5,331.7	4,536.6	4,119.6	54,871.9	-1.07%	-0.07
PA	Pittsburgh	Port Auth of Allegheny Co	TOTAL	NA	6,124.7	5,204.6	4,927.3	64,589.7	6,226.0	5,303.0	4,854.7	64,831.2	-0.78%	-0.37

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PA	Reading	Berks Area Reading Trp Auth	DR	0.9	23.2	18.8	17.4	238.4	22.0	19.3	18.0	231.3	0.17%	3.07
PA	Reading	Berks Area Reading Trp Auth	MB	10.8	254.5	225.5	212.8	2,720.2	262.0	224.7	223.6	2,849.3	-2.46%	-4.53
PA	Reading	Berks Area Reading Trp Auth	TOTAL	11.7	277.7	244.3	230.2	2,958.6	284.0	244.0	241.6	3,080.6	-2.26%	-3.96
PA	Rochester	Beaver County Transit Authority	DR	0.3	7.2	6.1	5.8	79.4	7.6	6.9	6.5	81.0	-9.05%	-1.98
PA	Rochester	Beaver County Transit Authority	MB	2.3	61.6	51.7	49.6	704.0	73.7	63.4	58.7	800.6	-16.80%	-12.07
PA	Rochester	Beaver County Transit Authority	TOTAL	2.6	68.8	57.8	55.4	783.4	81.3	70.3	65.2	881.6	-16.05%	-11.14
PA	Scranton	County of Lackawanna Transit Syst	DR	0.6	17.0	14.2	12.3	167.7	14.7	11.4	12.8	152.8	11.83%	9.75
PA	Scranton	County of Lackawanna Transit Syst	MB	3.6	93.5	82.6	74.9	1,003.5	91.0	79.5	75.0	943.8	2.24%	6.33
PA	Scranton	County of Lackawanna Transit Syst	TOTAL	4.2	110.5	96.8	87.2	1,171.2	105.7	90.9	87.8	1,096.6	3.55%	6.80
PA	State College	Centre Area Transp Auth	DR	NA	2.7	2.4	2.3	28.4	2.7	2.3	2.3	30.7	1.37%	-7.49
PA	State College	Centre Area Transp Auth	MB	23.8	861.9	646.2	513.0	6,454.6	849.8	623.9	347.2	6,508.9	10.99%	-0.83
PA	State College	Centre Area Transp Auth	VP	NA	12.7	11.4	10.3	151.8	14.0	12.6	11.5	164.5	-9.71%	-7.72
PA	State College	Centre Area Transp Auth	TOTAL	NA	877.3	660.0	525.6	6,634.8	866.5	638.8	361.0	6,704.1	10.53%	-1.03
PA	Williamsport	Williamsport Bureau of Tr	DR	0.1	0.1	0.1	0.1	1.2	0.1	0.1	0.1	1.2	0.00%	0.00
PA	Williamsport	Williamsport Bureau of Tr	MB	4.5	115.9	110.0	104.2	1,352.6	118.0	107.7	103.6	1,326.9	0.24%	1.94
PA	Williamsport	Williamsport Bureau of Tr	TOTAL	4.6	116.0	110.1	104.3	1,353.8	118.1	107.8	103.7	1,328.1	0.24%	1.94
PR	San Juan	Puerto Rico DOT	HR	20.3	516.3	422.6	406.3	5,233.9	538.0	455.3	405.1	5,192.9	-3.80%	0.79
PR	San Juan	Puerto Rico DOT	MB	5.7	140.7	117.7	118.3	1,480.0	89.1	76.4	71.2	942.4	59.15%	57.05
PR	San Juan	Puerto Rico DOT	TOTAL	26.0	657.0	540.3	524.6	6,713.9	627.1	531.7	476.3	6,135.3	5.31%	9.43
SC	Charleston	Charleston Area RTA	DR	0.2	6.9	6.2	6.1	76.4	6.6	6.2	5.8	72.9	3.23%	4.80
SC	Charleston	Charleston Area RTA	MB	10.2	304.8	258.6	237.2	3,155.6	299.8	254.2	216.3	3,064.4	3.93%	2.98
SC	Charleston	Charleston Area RTA	TOTAL	10.5	311.7	264.8	243.3	3,232.0	306.4	260.4	222.1	3,137.3	3.92%	3.02
SC	Clemson	Clemson Area Transit	MB	NA	67.7	56.8	40.1	667.8	83.4	67.1	47.2	730.0	-16.74%	-8.52
SC	Clemson	Clemson Area Transit	TOTAL	NA	67.7	56.8	40.1	667.8	83.4	67.1	47.2	730.0	-16.74%	-8.52
SC	Columbia	Central Midlands Regional Transit A	DR	0.4	15.5	14.1	12.1	111.4	6.2	6.1	5.5	68.3	>100%	63.10
SC	Columbia	Central Midlands Regional Transit A	MB	8.4	229.6	202.9	196.3	2,566.1	245.8	218.7	196.7	2,637.4	-4.90%	-2.70
SC	Columbia	Central Midlands Regional Transit A	VP	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.00%	N
SC	Columbia	Central Midlands Regional Transit A	TOTAL	8.8	245.1	217.0	208.4	2,679.0	252.0	224.8	202.2	2,705.7	-1.25%	-0.99
SC	Greenville	Greenville Transit Authority	DR	0.0	0.8	0.7	0.7	8.8	0.8	0.6	0.5	9.9	15.79%	-11.11
SC	Greenville	Greenville Transit Authority	MB	2.5	70.2	52.8	53.2	825.7	81.5	60.9	53.9	897.5	-10.24%	-8.00
SC	Greenville	Greenville Transit Authority	TOTAL	2.5	71.0	53.5	53.9	834.5	82.3	61.5	54.4	907.4	-9.99%	-8.03
SD	Sioux Falls	Sioux Area Metro	DR	0.3	7.6	6.6	6.9	82.6	8.6	7.6	7.0	91.2	-9.05%	-9.43
SD	Sioux Falls	Sioux Area Metro	MB	2.5	71.2	63.3	61.0	769.3	74.5	67.2	57.4	781.9	-1.81%	-1.61
SD	Sioux Falls	Sioux Area Metro	TOTAL	2.8	78.8	69.9	67.9	851.9	83.1	74.8	64.4	873.1	-2.56%	-2.43

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TN	Chattanooga	Chattanooga Area RTA	DR	NA	5.3	4.9	4.8	57.0	5.3	4.8	4.3	53.8	4.17%	5.9
TN	Chattanooga	Chattanooga Area RTA	IP	NA	46.7	34.1	23.1	508.9	51.4	28.5	22.0	490.9	1.96%	3.67
TN	Chattanooga	Chattanooga Area RTA	MB	NA	197.3	169.4	153.8	2,120.8	191.6	160.5	154.1	2,131.6	2.82%	-0.51
TN	Chattanooga	Chattanooga Area RTA	TOTAL	NA	249.3	208.4	181.7	2,686.7	248.3	193.8	180.4	2,676.3	2.71%	0.39
TN	Franklin	Franklin Transit Authority	DR	NA	2.9	2.3	2.0	27.9	2.7	2.3	2.1	26.5	1.41%	5.28
TN	Franklin	Franklin Transit Authority	MB	NA	4.7	3.5	11.1	59.6	7.6	3.7	5.0	49.2	18.40%	21.14
TN	Franklin	Franklin Transit Authority	TOTAL	NA	7.6	5.8	13.1	87.5	10.3	6.0	7.1	75.7	13.25%	15.59
TN	Knoxville	Knoxville Area Transit	DR	0.3	6.2	5.6	5.5	67.6	6.6	5.5	4.8	65.0	2.37%	4.00
TN	Knoxville	Knoxville Area Transit	MB	9.5	251.0	227.9	209.7	2,722.4	254.0	217.9	198.6	2,684.7	2.70%	1.40
TN	Knoxville	Knoxville Area Transit	TOTAL	9.8	257.2	233.5	215.2	2,790.0	260.6	223.4	203.4	2,749.7	2.69%	1.47
TN	Memphis	Memphis Area Transit Auth	DR	NA	NA	NA	NA	NA	17.3	15.2	14.2	193.6	NA	N
TN	Memphis	Memphis Area Transit Auth	LR	NA	NA	NA	NA	NA	34.5	22.8	21.7	302.0	NA	N
TN	Memphis	Memphis Area Transit Auth	MB	18.7	493.7	404.5	452.4	5,590.7	561.2	471.9	474.2	6,055.7	-10.40%	-7.68
TN	Memphis	Memphis Area Transit Auth	TOTAL	NA	NA	NA	NA	NA	613.0	509.9	510.1	6,551.3	NA	N
TN	Murfreesboro	City of Murfreesboro	MB	0.8	16.9	13.4	14.7	195.0	20.7	15.7	14.1	220.9	-10.89%	-11.72
TN	Murfreesboro	City of Murfreesboro	TOTAL	0.8	16.9	13.4	14.7	195.0	20.7	15.7	14.1	220.9	-10.89%	-11.72
TN	Nashville	Metropolitan Transit Auth	DR	NA	36.6	29.7	29.2	384.7	38.2	32.2	30.1	425.5	-4.98%	-9.59
TN	Nashville	Metropolitan Transit Auth	MB	28.8	808.2	701.2	681.1	9,118.5	862.4	755.0	716.2	9,372.7	-6.13%	-2.71
TN	Nashville	Metropolitan Transit Auth	TOTAL	NA	844.8	730.9	710.3	9,503.2	900.6	787.2	746.3	9,798.2	-6.08%	-3.01
TN	Nashville	Regional Transp Auth	CR	NA	28.7	23.1	23.1	292.5	27.4	22.7	21.6	298.8	4.46%	-2.11
TN	Nashville	Regional Transp Auth	MB	0.7	16.2	13.1	12.4	178.6	17.1	14.2	12.6	184.9	-5.01%	-3.41
TN	Nashville	Regional Transp Auth	VP	0.2	6.4	5.1	5.4	75.7	11.0	8.7	7.2	118.8	-37.17%	-36.28
TN	Nashville	Regional Transp Auth	TOTAL	NA	51.3	41.3	40.9	546.8	55.5	45.6	41.4	602.5	-6.32%	-9.24
TX	Austin	Capital Metropolitan Trp Auth	CR	2.2	49.0	43.9	44.1	671.2	82.5	60.1	52.8	807.8	-29.89%	-16.91
TX	Austin	Capital Metropolitan Trp Auth	DR	2.4	69.9	62.1	61.8	730.8	61.4	55.3	53.0	694.7	14.20%	5.20
TX	Austin	Capital Metropolitan Trp Auth	MB	94.7	2,849.5	2,412.0	2,231.0	29,365.4	2,817.4	2,412.3	2,091.0	27,822.2	2.35%	5.55
TX	Austin	Capital Metropolitan Trp Auth	VP	2.2	48.9	44.3	46.0	552.2	51.5	48.5	40.5	534.5	-0.93%	3.31
TX	Austin	Capital Metropolitan Trp Auth	TOTAL	101.5	3,017.3	2,562.3	2,382.9	31,319.6	3,012.8	2,576.2	2,237.3	29,859.2	1.74%	4.89
TX	Bryan	Brazos Transit District	DR	0.2	6.5	5.6	5.5	68.7	6.7	5.7	4.5	66.5	4.14%	3.31
TX	Bryan	Brazos Transit District	MB	1.1	27.6	22.5	22.0	299.3	36.8	30.7	26.6	398.9	-23.38%	-24.97
TX	Bryan	Brazos Transit District	TOTAL	1.3	34.1	28.1	27.5	368.0	43.5	36.4	31.1	465.4	-19.19%	-20.93

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TX	Corpus Christi	Corpus Christi Regional TA	DR	0.8	19.2	16.2	16.0	210.4	18.7	16.6	15.8	197.6	0.59%	6.48
TX	Corpus Christi	Corpus Christi Regional TA	MB	19.0	458.1	389.9	374.7	4,975.2	491.5	420.5	396.5	5,095.2	-6.56%	-2.36
TX	Corpus Christi	Corpus Christi Regional TA	VP	0.2	6.1	6.0	6.4	59.0	2.0	2.2	2.0	12.3	>100%	>100
TX	Corpus Christi	Corpus Christi Regional TA	TOTAL	20.0	483.4	412.1	397.1	5,244.6	512.2	439.3	414.3	5,305.1	-5.36%	-1.14
TX	Dallas	Dallas Area Rapid Transit	DR	2.1	75.9	65.0	63.2	828.7	74.0	67.0	61.9	785.1	0.59%	5.55
TX	Dallas	Dallas Area Rapid Transit	LR	92.0	3,210.2	2,092.3	2,084.3	28,069.0	3,162.4	2,350.1	2,139.8	28,759.2	-3.47%	-2.40
TX	Dallas	Dallas Area Rapid Transit	MB	124.2	3,517.8	3,041.0	3,054.4	38,598.5	2,705.0	2,450.5	2,185.1	29,631.1	30.96%	30.26
TX	Dallas	Dallas Area Rapid Transit	VP	1.6	41.0	38.6	35.8	487.8	39.4	39.4	39.3	476.3	-2.29%	2.41
TX	Dallas	Dallas Area Rapid Transit	TOTAL	219.9	6,844.9	5,236.9	5,237.7	67,984.0	5,980.8	4,907.0	4,426.1	59,651.7	13.10%	13.97
TX	Dallas-Ft Worth	Trinity Railway Express	CR	7.2	226.9	155.9	155.1	1,987.6	208.0	153.9	135.6	1,980.5	8.12%	0.36
TX	Dallas-Ft Worth	Trinity Railway Express	TOTAL	7.2	226.9	155.9	155.1	1,987.6	208.0	153.9	135.6	1,980.5	8.12%	0.36
TX	El Paso	El Paso Mass Transit Dept	DR	0.9	24.2	21.4	20.7	269.3	23.4	20.9	19.5	265.0	3.92%	1.62
TX	El Paso	El Paso Mass Transit Dept	LR	1.6	28.1	32.2	34.9	271.9	0.0	0.0	66.7	66.7	42.73%	>100
TX	El Paso	El Paso Mass Transit Dept	MB	33.6	1,119.1	1,014.8	1,053.3	12,304.5	1,124.9	1,056.7	985.1	12,806.6	0.65%	-3.92
TX	El Paso	El Paso Mass Transit Dept	TOTAL	36.0	1,171.4	1,068.4	1,108.9	12,845.7	1,148.3	1,077.6	1,071.3	13,138.3	1.56%	-2.23
TX	Fort Worth	Trinity Metro	CR	NA	41.9	44.7	51.2	545.0	0.0	0.0	0.0	0.0	NA	N
TX	Fort Worth	Trinity Metro	DR	NA	35.6	31.3	31.0	401.4	32.7	29.5	27.6	360.4	9.02%	11.38
TX	Fort Worth	Trinity Metro	MB	NA	471.4	414.5	413.9	5,121.0	443.6	417.1	381.0	5,155.9	4.68%	-0.68
TX	Fort Worth	Trinity Metro	VP	NA	16.7	14.3	13.2	190.3	15.3	15.2	13.6	202.4	0.23%	-5.98
TX	Fort Worth	Trinity Metro	TOTAL	NA	565.6	504.8	509.3	6,257.7	491.6	461.8	422.2	5,718.7	14.84%	9.43
TX	Houston	Metro Tr Auth of Harris Co	DR	7.1	195.7	169.3	171.7	2,110.7	188.6	172.3	165.7	2,053.3	1.92%	2.80
TX	Houston	Metro Tr Auth of Harris Co	LR	60.3	1,689.5	1,341.6	1,370.3	18,409.1	1,728.7	1,483.2	1,337.0	18,806.3	-3.24%	-2.11
TX	Houston	Metro Tr Auth of Harris Co	MB	224.0	6,323.4	5,480.4	5,425.3	67,353.1	6,237.0	5,457.2	5,163.4	66,930.7	2.20%	0.63
TX	Houston	Metro Tr Auth of Harris Co	VP	6.5	164.2	128.7	117.9	1,799.7	177.2	147.5	126.2	1,896.1	-8.89%	-5.08
TX	Houston	Metro Tr Auth of Harris Co	TOTAL	297.9	8,372.8	7,120.0	7,085.2	89,672.6	8,331.5	7,260.2	6,792.3	89,686.4	0.87%	-0.02
TX	Lewisville	Denton County Transportation Auth	CR	1.5	44.5	30.6	26.4	382.4	45.4	36.6	25.5	407.3	-5.58%	-6.11
TX	Lewisville	Denton County Transportation Auth	DR	0.1	3.9	3.1	2.9	39.8	3.5	2.9	1.4	34.7	26.92%	14.70
TX	Lewisville	Denton County Transportation Auth	MB	9.8	317.6	230.4	109.5	2,340.7	344.6	275.6	123.5	2,389.9	-11.59%	-2.06
TX	Lewisville	Denton County Transportation Auth	TOTAL	11.4	366.0	264.1	138.8	2,762.9	393.5	315.1	150.4	2,831.9	-10.49%	-2.44
TX	Lubbock	Citibus	DR	0.4	9.8	8.3	8.1	102.9	8.5	7.7	7.1	95.4	12.45%	7.86
TX	Lubbock	Citibus	MB	16.4	523.9	393.1	143.1	3,486.7	537.7	442.3	130.7	3,646.0	-4.56%	-4.37
TX	Lubbock	Citibus	TOTAL	16.8	533.7	401.4	151.2	3,589.6	546.2	450.0	137.8	3,741.4	-4.21%	-4.06

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TX	Port Arthur	Port Arthur Transit	DR	NA	2.0	1.6	1.6	19.2	1.7	1.3	1.2	16.9	23.81%	13.61
TX	Port Arthur	Port Arthur Transit	MB	NA	9.6	7.6	7.6	102.1	7.3	5.1	6.2	84.4	33.33%	20.97
TX	Port Arthur	Port Arthur Transit	TOTAL	NA	11.6	9.2	9.2	121.3	9.0	6.4	7.4	101.3	31.58%	19.74
TX	San Antonio	VIA Metropolitan Transit	DR	4.0	102.2	90.5	90.0	1,120.3	102.5	88.7	80.2	1,135.2	4.16%	-1.31
TX	San Antonio	VIA Metropolitan Transit	MB	80.9	3,268.2	2,968.7	2,911.1	35,350.1	3,107.1	2,892.2	2,745.4	34,921.2	4.61%	1.23
TX	San Antonio	VIA Metropolitan Transit	TOTAL	84.9	3,370.4	3,059.2	3,001.1	36,470.4	3,209.6	2,980.9	2,825.6	36,056.4	4.60%	1.15
TX	Sugar Land	Fort Bend County Public Transporta	DR	0.6	13.3	10.4	10.3	136.6	12.4	9.9	9.3	131.5	7.59%	3.88
TX	Sugar Land	Fort Bend County Public Transporta	MB	0.8	26.6	19.6	18.6	275.4	26.1	19.7	16.9	261.1	3.35%	5.48
TX	Sugar Land	Fort Bend County Public Transporta	TOTAL	1.3	39.9	30.0	28.9	412.0	38.5	29.6	26.2	392.6	4.77%	4.94
TX	Waco	Waco Transit System	DR	0.3	6.8	5.7	5.8	70.0	6.5	5.6	5.1	66.8	6.40%	4.79
TX	Waco	Waco Transit System	MB	4.5	126.3	97.1	67.4	1,148.6	143.3	107.9	52.6	1,204.7	-4.28%	-4.66
TX	Waco	Waco Transit System	TOTAL	4.8	133.1	102.8	73.2	1,218.6	149.8	113.5	57.7	1,271.5	-3.71%	-4.16
UT	Salt Lake City	Utah Transit Authority	CR	19.2	503.8	428.0	410.3	5,193.8	500.1	442.1	406.0	5,082.1	-0.45%	2.20
UT	Salt Lake City	Utah Transit Authority	DR	3.2	78.2	64.1	61.5	803.2	77.2	68.7	59.7	835.6	-0.88%	-3.88
UT	Salt Lake City	Utah Transit Authority	LR	56.9	1,640.1	1,409.2	1,394.1	16,871.8	1,592.0	1,480.5	1,404.9	17,899.6	-0.76%	-5.74
UT	Salt Lake City	Utah Transit Authority	MB	72.6	1,959.9	1,659.0	1,542.2	20,303.0	1,940.5	1,667.8	1,456.9	19,216.6	1.89%	5.65
UT	Salt Lake City	Utah Transit Authority	VP	3.5	77.9	86.5	72.1	1,065.2	82.8	98.3	85.1	1,182.3	-11.16%	-9.90
UT	Salt Lake City	Utah Transit Authority	TOTAL	155.5	4,259.9	3,646.8	3,480.2	44,237.0	4,192.6	3,757.4	3,412.6	44,216.2	0.21%	0.05
VA	Alexandria	Virginia Railway Express	CR	17.2	423.8	329.0	317.6	4,517.0	410.2	346.0	290.5	4,528.0	2.26%	-0.24
VA	Alexandria	Virginia Railway Express	TOTAL	17.2	423.8	329.0	317.6	4,517.0	410.2	346.0	290.5	4,528.0	2.26%	-0.24
VA	Blacksburg	Blacksburg Transit	DR	0.1	2.7	2.1	2.0	27.5	2.8	2.4	1.9	29.5	-4.23%	-6.78
VA	Blacksburg	Blacksburg Transit	MB	21.6	659.2	469.4	326.6	4,665.0	650.9	497.6	210.5	4,336.7	7.08%	7.57
VA	Blacksburg	Blacksburg Transit	TOTAL	21.7	661.9	471.5	328.6	4,692.5	653.7	500.0	212.4	4,366.2	7.02%	7.47
VA	Fairfax	City of Fairfax CUE Bus	MB	2.1	62.4	45.1	43.4	601.4	63.6	50.0	42.9	595.2	-3.58%	1.04
VA	Fairfax	City of Fairfax CUE Bus	TOTAL	2.1	62.4	45.1	43.4	601.4	63.6	50.0	42.9	595.2	-3.58%	1.04
VA	Fairfax	Fairfax County Dept of Transp	MB	26.9	777.0	678.6	573.2	8,298.7	756.2	679.7	618.1	8,287.9	-1.23%	0.13
VA	Fairfax	Fairfax County Dept of Transp	TOTAL	26.9	777.0	678.6	573.2	8,298.7	756.2	679.7	618.1	8,287.9	-1.23%	0.13
VA	Hampton	Hampton Roads Transit	DR	1.3	35.1	31.5	31.0	383.8	30.7	27.4	24.6	356.0	18.02%	7.81
VA	Hampton	Hampton Roads Transit	FB	0.5	21.0	14.2	13.0	291.6	20.3	18.2	12.6	315.1	-5.68%	-7.46
VA	Hampton	Hampton Roads Transit	LR	4.2	123.0	101.7	96.6	1,345.1	141.5	99.8	90.9	1,461.5	-3.28%	-7.96
VA	Hampton	Hampton Roads Transit	MB	33.2	913.9	790.9	789.7	10,660.6	1,017.1	895.5	853.9	11,239.2	-9.83%	-5.15
VA	Hampton	Hampton Roads Transit	VP	0.5	10.7	9.4	8.9	118.9	12.7	11.0	9.5	128.1	-12.65%	-7.18
VA	Hampton	Hampton Roads Transit	TOTAL	39.7	1,103.7	947.7	939.2	12,800.0	1,222.3	1,051.9	991.5	13,499.9	-8.42%	-5.18

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VA	Williamsburg	Williamsburg Area Transport	DR	0.0	1.2	1.2	1.1	13.1	1.0	0.9	0.9	10.3	25.00%	27.1
VA	Williamsburg	Williamsburg Area Transport	MB	6.0	208.8	152.7	174.4	2,143.8	219.0	164.1	194.9	2,190.8	-7.28%	-2.1
VA	Williamsburg	Williamsburg Area Transport	TOTAL	6.0	210.0	153.9	175.5	2,156.9	220.0	165.0	195.8	2,201.1	-7.13%	-2.0
VA	Woodbridge	PRTC Omni-Ride	MB	NA	230.4	180.5	171.4	2,358.5	226.3	183.7	163.0	2,378.9	1.62%	-0.8
VA	Woodbridge	PRTC Omni-Ride	TOTAL	NA	230.4	180.5	171.4	2,358.5	226.3	183.7	163.0	2,378.9	1.62%	-0.8
VT	Burlington	Green Mountain Transit	DR	NA	4.6	3.8	4.9	50.1	4.3	4.0	3.9	43.6	9.02%	14.9
VT	Burlington	Green Mountain Transit	MB	NA	227.0	189.9	178.4	2,291.8	231.9	203.9	178.6	2,302.6	-3.11%	-0.4
VT	Burlington	Green Mountain Transit	TOTAL	NA	231.6	193.7	183.3	2,341.9	236.2	207.9	182.5	2,346.2	-2.87%	-0.1
WA	Bremerton	Kitsap Transit	DR	1.1	27.7	23.7	23.2	308.5	26.9	24.5	22.3	295.7	1.22%	4.3
WA	Bremerton	Kitsap Transit	FB	3.8	101.7	77.4	70.5	1,046.5	76.6	69.6	64.3	852.7	18.57%	22.7
WA	Bremerton	Kitsap Transit	MB	8.8	220.4	183.7	170.3	2,344.9	236.6	202.2	164.9	2,509.9	-4.85%	-6.5
WA	Bremerton	Kitsap Transit	VP	0.6	13.6	11.3	11.0	153.3	15.1	13.5	11.8	167.9	-11.14%	-8.7
WA	Bremerton	Kitsap Transit	TOTAL	14.2	363.4	296.1	275.0	3,853.2	355.2	309.8	263.3	3,826.2	0.67%	0.7
WA	Everett	Snohomish County PTBA	DR	0.7	17.9	15.6	14.8	190.6	18.4	16.4	15.2	200.1	-3.40%	-4.7
WA	Everett	Snohomish County PTBA	MB	36.1	989.5	847.3	772.9	10,078.2	922.2	800.5	679.7	9,576.0	8.63%	5.2
WA	Everett	Snohomish County PTBA	VP	3.1	75.3	66.2	61.8	863.6	79.3	73.6	65.4	886.3	-6.87%	-2.5
WA	Everett	Snohomish County PTBA	TOTAL	39.8	1,082.7	929.1	849.5	11,132.4	1,019.9	890.5	760.3	10,662.4	7.14%	4.4
WA	Olympia	Intercity Transit	DR	NA	19.3	16.7	17.4	209.4	17.5	15.9	15.9	187.3	8.32%	11.8
WA	Olympia	Intercity Transit	MB	12.7	363.0	317.7	309.5	4,029.8	337.6	295.8	262.5	3,763.4	10.53%	7.0
WA	Olympia	Intercity Transit	VP	5.7	42.7	35.9	39.9	459.8	42.3	36.3	35.2	492.3	4.13%	-6.6
WA	Olympia	Intercity Transit	TOTAL	NA	425.0	370.3	366.8	4,699.0	397.4	348.0	313.6	4,443.0	9.74%	5.7
WA	Richland	Ben Franklin Transit	DR	1.3	33.4	28.2	27.5	377.4	39.2	31.1	28.5	442.0	-9.82%	-14.6
WA	Richland	Ben Franklin Transit	MB	7.5	206.9	170.0	154.4	2,096.8	199.6	166.0	142.4	2,033.0	4.59%	3.1
WA	Richland	Ben Franklin Transit	VP	2.4	63.7	48.8	48.8	652.9	58.6	50.5	45.0	646.2	4.67%	1.0
WA	Richland	Ben Franklin Transit	TOTAL	11.2	304.0	247.0	230.7	3,127.1	297.4	247.6	215.9	3,121.2	2.73%	0.1
WA	Seattle	King County Dept of Trp	DR	2.8	103.7	89.4	87.1	1,084.4	96.2	87.9	82.2	1,027.0	5.22%	5.5
WA	Seattle	King County Dept of Trp	LR	6.0	175.5	148.0	136.6	1,863.4	161.1	139.7	131.2	1,685.7	6.50%	10.5
WA	Seattle	King County Dept of Trp	MB	332.6	9,624.6	8,508.6	7,876.6	103,934.8	9,538.5	8,423.4	7,700.7	104,261.4	1.35%	-0.3
WA	Seattle	King County Dept of Trp	TB	67.0	1,631.5	1,359.2	1,305.1	17,365.5	1,654.0	1,534.5	1,287.9	17,950.4	-4.03%	-3.2
WA	Seattle	King County Dept of Trp	VP	13.3	314.3	261.3	279.2	3,337.0	316.5	283.9	258.6	3,496.6	-0.49%	-4.5
WA	Seattle	King County Dept of Trp	TOTAL	421.6	11,849.6	10,366.5	9,684.6	127,585.1	11,766.3	10,469.4	9,460.6	128,421.1	0.64%	-0.6

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WA Seattle	Sound Transit	CR	17.9	442.1	367.6	341.5	4,615.6	442.0	374.7	334.1	4,632.8	0.03%	-0.37
WA Seattle	Sound Transit	DR	0.2	6.4	5.7	5.9	69.3	6.1	5.5	5.4	65.3	5.88%	6.13
WA Seattle	Sound Transit	LR	83.2	2,289.3	2,134.1	1,991.8	26,010.4	2,237.8	2,091.8	1,857.7	25,348.7	3.68%	2.61
WA Seattle	Sound Transit	MB	58.1	1,600.9	1,354.9	1,268.6	17,435.9	1,650.2	1,429.1	1,321.1	18,181.6	-4.00%	-4.10
WA Seattle	Sound Transit	TOTAL	159.4	4,338.7	3,862.3	3,607.8	48,131.2	4,336.1	3,901.1	3,518.3	48,228.4	0.45%	-0.20
WA Seattle	Washington State Ferries	FB	59.3	1,870.0	1,789.0	1,796.5	23,881.2	1,907.8	1,809.9	1,828.1	24,690.4	-1.63%	-3.28
WA Seattle	Washington State Ferries	TOTAL	59.3	1,870.0	1,789.0	1,796.5	23,881.2	1,907.8	1,809.9	1,828.1	24,690.4	-1.63%	-3.28
WA Spokane	Spokane Transit Authority	DR	1.7	41.3	35.5	33.8	441.7	44.5	39.8	34.6	475.1	-6.98%	-7.03
WA Spokane	Spokane Transit Authority	MB	38.9	935.4	809.7	745.0	10,018.4	960.2	847.5	730.3	10,069.4	-1.89%	-0.51
WA Spokane	Spokane Transit Authority	VP	0.6	14.3	12.1	11.9	154.8	14.4	13.0	11.5	157.7	-1.54%	-1.84
WA Spokane	Spokane Transit Authority	TOTAL	41.1	991.0	857.3	790.7	10,614.9	1,019.1	900.3	776.4	10,702.2	-2.11%	-0.82
WA Tacoma	Pierce Transit	DR	1.0	26.8	23.4	22.5	289.8	26.5	24.0	22.6	298.9	-0.55%	-3.04
WA Tacoma	Pierce Transit	MB	27.5	769.9	671.2	621.8	8,376.5	799.8	714.3	636.5	8,653.6	-4.08%	-3.20
WA Tacoma	Pierce Transit	VP	2.8	68.4	57.4	54.2	739.9	71.0	63.4	52.9	783.2	-3.90%	-5.53
WA Tacoma	Pierce Transit	TOTAL	31.2	865.1	752.0	698.5	9,406.2	897.3	801.7	712.0	9,735.7	-3.96%	-3.38
WA Vancouver	Clark Co Pub Trp Benefit Area	DR	0.9	24.7	21.7	21.4	264.3	23.7	21.5	20.5	257.6	3.20%	2.60
WA Vancouver	Clark Co Pub Trp Benefit Area	MB	19.6	538.6	476.9	467.4	5,989.7	533.5	486.8	450.4	5,917.3	0.83%	1.22
WA Vancouver	Clark Co Pub Trp Benefit Area	VP	0.2	3.7	3.0	3.1	40.9	4.2	3.3	3.1	44.2	-7.55%	-7.47
WA Vancouver	Clark Co Pub Trp Benefit Area	TOTAL	20.7	567.0	501.6	491.9	6,294.9	561.4	511.6	474.0	6,219.1	0.87%	1.22
WA Wenatchee	Chelan-Douglas PTBA	DR	0.2	5.6	4.5	4.6	58.2	4.3	3.9	3.3	51.0	27.83%	14.12
WA Wenatchee	Chelan-Douglas PTBA	MB	3.7	95.7	78.1	78.9	941.7	90.8	76.4	67.1	910.4	7.85%	3.44
WA Wenatchee	Chelan-Douglas PTBA	TOTAL	3.9	101.3	82.6	83.5	999.9	95.1	80.3	70.4	961.4	8.79%	4.00
WI Green Bay	Green Bay Metro Transit	DR	0.1	3.0	2.5	2.4	31.5	3.0	2.7	2.4	34.2	-2.47%	-7.89
WI Green Bay	Green Bay Metro Transit	MB	4.3	128.0	110.3	105.2	1,292.1	121.4	107.6	102.9	1,275.7	3.50%	1.29
WI Green Bay	Green Bay Metro Transit	TOTAL	4.4	131.0	112.8	107.6	1,323.6	124.4	110.3	105.3	1,309.9	3.35%	1.05
WI Madison	Metro Transit	DR	0.4	10.8	9.7	9.3	113.2	10.5	9.6	8.9	154.8	2.76%	-26.87
WI Madison	Metro Transit	MB	49.3	1,419.6	1,229.3	977.1	12,856.5	1,445.0	1,288.5	987.9	13,230.6	-2.56%	-2.83
WI Madison	Metro Transit	TOTAL	49.7	1,430.4	1,239.0	986.4	12,969.7	1,455.5	1,298.1	996.8	13,385.4	-2.52%	-3.11
WI Milwaukee	Milwaukee County Tr Sys	DR	1.7	47.0	41.5	41.3	513.5	47.4	43.3	40.1	520.6	-0.76%	-1.36
WI Milwaukee	Milwaukee County Tr Sys	MB	86.1	2,455.3	2,166.4	2,028.9	26,447.3	2,710.9	2,367.4	2,181.5	29,071.3	-8.39%	-9.03
WI Milwaukee	Milwaukee County Tr Sys	TOTAL	87.8	2,502.3	2,207.9	2,070.2	26,960.8	2,758.3	2,410.7	2,221.6	29,591.9	-8.26%	-8.89
WI Port Washington	Ozaukee County Transit Services	DR	0.3	9.7	8.5	8.0	108.1	10.2	9.3	8.4	112.1	-6.09%	-3.57
WI Port Washington	Ozaukee County Transit Services	MB	0.2	4.9	3.8	3.5	51.3	5.8	4.8	3.9	63.0	-15.86%	-18.57
WI Port Washington	Ozaukee County Transit Services	TOTAL	0.5	14.6	12.3	11.5	159.4	16.0	14.1	12.3	175.1	-9.43%	-8.97

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WI	Racine	Belle Urban System	DR	NA	3.7	3.4	3.1	38.5	3.4	3.0	2.8	36.7	10.87%	4.9(
WI	Racine	Belle Urban System	MB	NA	86.6	74.0	72.7	952.7	104.6	90.7	83.4	1,073.8	-16.29%	-11.2
WI	Racine	Belle Urban System	TOTAL	NA	90.3	77.4	75.8	991.2	108.0	93.7	86.2	1,110.5	-15.42%	-10.7
WV	Morgantown	Mountain Line Transit Authority	DR	0.0	2.3	0.1	0.4	2.8	0.1	0.0	0.0	1.4	>100%	100.0(
WV	Morgantown	Mountain Line Transit Authority	MB	3.6	101.3	78.1	62.6	873.1	113.4	81.9	46.4	988.4	0.12%	-11.67
WV	Morgantown	Mountain Line Transit Authority	TOTAL	3.7	103.6	78.2	63.0	875.9	113.5	81.9	46.4	989.8	1.24%	-11.51

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AB	Banff	Bow Valley Regional Transit Service	MB	1.6	50.0	45.1	55.1	982.7	49.7	42.5	55.7	916.8	1.56%	7.19
AB	Banff	Bow Valley Regional Transit Service	TOTAL	1.6	50.0	45.1	55.1	982.7	49.7	42.5	55.7	916.8	1.56%	7.19
AB	Calgary	Calgary Transit	LR	313.8	8,595.8	8,609.8	7,592.4	91,604.6	8,566.9	8,449.0	7,661.9	91,029.1	0.49%	0.63
AB	Calgary	Calgary Transit	MB	267.3	6,511.1	6,521.6	5,751.0	72,848.3	6,489.1	6,399.8	5,803.6	72,388.5	0.49%	0.64
AB	Calgary	Calgary Transit	TOTAL	581.1	15,106.9	15,131.4	13,343.4	164,452.9	15,056.0	14,848.8	13,465.5	163,417.6	0.49%	0.63
AB	Edmonton	Edmonton Transit System	LR	NA	3,796.7	3,806.0	3,573.7	39,264.8	3,757.5	3,713.7	3,763.8	39,448.7	-0.52%	-0.47
AB	Edmonton	Edmonton Transit System	MB	NA	9,619.1	9,642.7	9,054.2	99,480.0	9,519.8	9,408.9	9,535.9	99,945.8	-0.52%	-0.47
AB	Edmonton	Edmonton Transit System	TOTAL	NA	13,415.8	13,448.7	12,627.9	138,744.8	13,277.3	13,122.6	13,299.7	139,394.5	-0.52%	-0.47
AB	Leduc	City of Leduc, Leduc Transit Service	MB	NA	12.2	11.7	7.8	107.1	11.0	10.3	6.8	95.0	12.81%	12.74
AB	Leduc	City of Leduc, Leduc Transit Service	TOTAL	NA	12.2	11.7	7.8	107.1	11.0	10.3	6.8	95.0	12.81%	12.74
BC	Burnaby	Greater Vancouver Transp Auth	AG	512.4	14,833.3	13,631.8	12,755.7	165,061.6	14,302.2	13,541.2	12,465.4	160,014.8	2.26%	3.15
BC	Burnaby	Greater Vancouver Transp Auth	CR	10.3	242.7	218.5	179.9	2,606.8	235.8	225.2	165.8	2,484.2	2.28%	4.94
BC	Burnaby	Greater Vancouver Transp Auth	FB	17.0	521.2	418.8	449.5	6,263.4	526.2	481.1	483.8	6,196.9	-6.81%	1.07
BC	Burnaby	Greater Vancouver Transp Auth	MB	863.9	25,479.8	22,556.8	20,476.1	277,043.8	24,699.2	23,267.9	19,864.6	267,185.7	1.00%	3.69
BC	Burnaby	Greater Vancouver Transp Auth	TB	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00%	N
BC	Burnaby	Greater Vancouver Transp Auth	TOTAL	NA	41,077.0	36,825.9	33,861.2	450,975.6	39,763.4	37,515.4	32,979.6	435,881.6	1.37%	3.46
BC	Victoria	BC Transit	DR	1.6	35.7	34.7	32.4	378.8	34.5	32.4	28.0	387.0	8.32%	-2.12
BC	Victoria	BC Transit	MB	118.4	2,834.2	2,656.8	2,321.9	29,963.3	2,735.5	2,609.2	2,214.6	28,978.1	3.35%	3.40
BC	Victoria	BC Transit	TOTAL	120.0	2,869.9	2,691.5	2,354.3	30,342.1	2,770.0	2,641.6	2,242.6	29,365.1	3.42%	3.33
MB	Brandon	City of Brandon	MB	3.9	104.1	97.7	82.1	1,050.1	91.7	92.5	74.8	943.2	9.61%	11.33
MB	Brandon	City of Brandon	TOTAL	3.9	104.1	97.7	82.1	1,050.1	91.7	92.5	74.8	943.2	9.61%	11.33
ON	Brampton	Brampton Transit	MB	112.3	3,102.3	2,864.8	2,345.3	31,914.4	2,956.5	2,771.8	2,237.1	31,239.1	4.36%	2.16
ON	Brampton	Brampton Transit	TOTAL	112.3	3,102.3	2,864.8	2,345.3	31,914.4	2,956.5	2,771.8	2,237.1	31,239.1	4.36%	2.16
ON	Oakville	Oakville Transit	DR	0.6	13.0	12.8	11.7	144.9	12.3	12.2	10.5	142.6	7.14%	1.61
ON	Oakville	Oakville Transit	MB	13.2	372.2	360.3	287.3	3,943.7	377.2	370.8	292.8	4,051.3	-2.02%	-2.66
ON	Oakville	Oakville Transit	TOTAL	13.8	385.2	373.1	299.0	4,088.6	389.5	383.0	303.3	4,193.9	-1.72%	-2.51
ON	Richmond Hill	York Region Transit	MB	75.1	2,053.2	1,900.4	1,576.3	21,666.6	2,031.8	1,954.7	1,622.1	21,772.7	-1.40%	-0.49
ON	Richmond Hill	York Region Transit	TOTAL	75.1	2,053.2	1,900.4	1,576.3	21,666.6	2,031.8	1,954.7	1,622.1	21,772.7	-1.40%	-0.49
ON	Toronto	GO Transit	CR	230.5	5,798.4	5,466.4	4,434.1	62,441.0	5,364.5	5,315.7	4,015.1	59,292.2	6.83%	5.31
ON	Toronto	GO Transit	MB	56.1	1,662.4	1,572.5	1,216.6	17,001.7	1,692.2	1,632.4	1,223.3	16,914.5	-2.12%	0.52
ON	Toronto	GO Transit	TOTAL	286.5	7,460.8	7,038.9	5,650.7	79,442.7	7,056.7	6,948.1	5,238.4	76,206.7	4.71%	4.25

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ON	Toronto	Toronto Transit Commission	DR	13.3	330.1	340.2	319.4	4,116.0	327.8	434.6	303.3	4,155.9	-7.13%	-0.96
ON	Toronto	Toronto Transit Commission	HR	1,557.7	41,563.1	41,278.8	35,901.2	461,103.3	35,504.6	35,446.4	30,836.4	400,551.5	16.66%	15.12
ON	Toronto	Toronto Transit Commission	IR	44.6	1,219.9	1,237.5	1,220.9	13,380.0	1,451.9	1,406.7	1,278.9	15,695.0	-11.10%	-14.75
ON	Toronto	Toronto Transit Commission	LR	530.6	14,523.6	14,896.1	14,168.7	165,690.6	5,612.5	5,605.4	4,935.0	64,917.0	>100%	>100
ON	Toronto	Toronto Transit Commission	MB	1,281.4	35,788.6	34,977.9	30,299.2	400,166.1	40,872.6	39,328.9	34,443.4	460,292.3	-11.84%	-13.06
ON	Toronto	Toronto Transit Commission	TOTAL	3,427.6	93,425.3	92,730.5	81,909.4	1,044,456.0	83,769.4	82,222.0	71,797.0	945,611.7	12.73%	10.45
QC	Montreal	Societe de transport de Montreal	DR	15.0	414.6	404.5	353.5	4,434.1	398.4	390.4	329.8	4,206.0	4.83%	5.42
QC	Montreal	Societe de transport de Montreal	HR	1,421.2	37,408.4	36,999.0	30,767.3	400,280.9	35,959.5	36,035.3	29,190.0	383,147.7	3.94%	4.47
QC	Montreal	Societe de transport de Montreal	MB	979.5	25,194.1	24,881.3	24,563.8	284,407.9	25,356.0	25,273.8	23,977.2	282,513.2	0.04%	0.67
QC	Montreal	Societe de transport de Montreal	TOTAL	2,415.7	63,017.1	62,284.8	55,684.6	689,122.9	61,713.9	61,699.5	53,497.0	669,866.9	2.30%	2.87

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DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF HOUSING POLICY DEVELOPMENT
2020 W. El Camino Avenue, Suite 500
Sacramento, CA 95833
(916) 263-2911 / FAX (916) 263-7453
www.hcd.ca.gov

August 22, 2019

Kome Ajise, Executive Director
Southern California Association of Governments
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017

Dear Executive Director Ajise:

RE: Regional Housing Need Determination

This letter provides the Southern California Association of Governments (SCAG) its determination of the Regional Housing Need Determination. Pursuant to Government Code (Gov. Code) section 65584.01, the Department of Housing and Community Development (HCD) is required to provide the determination of SCAG's existing and projected housing need.

In assessing SCAG's regional housing need, HCD and SCAG staff completed an extensive consultation process starting in March 2017 through August 2019 covering the methodology, data sources, and timeline. HCD also consulted with Walter Schwarm of the California Department of Finance (DOF) Demographic Research Unit.

Attachment 1 displays the minimum regional housing need determination of **1,344,740** total units among four income categories for SCAG to distribute among its local governments. Attachment 2 explains the methodology applied pursuant to Gov. Code section 65584.01.

As you know, SCAG is responsible for adopting a RHNA allocation methodology for the *projection* period beginning June 30, 2021 and ending October 15, 2029. Pursuant to Gov. Code section 65584(d), SCAG's RHNA allocation methodology must further the following objectives:

(1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households.
(2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.
(3) Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.

(4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.
(5) Affirmatively furthering fair housing.

Pursuant to Gov. Code section 65584.04(e), to the extent data is available, SCAG shall include the factors listed in Gov. Code section 65584.04(e)(1-12) to develop its RHNA allocation methodology, and pursuant to Gov. Code section 65584.04(f), SCAG must explain in writing how each of these factors was incorporated into the RHNA allocation methodology and how the methodology furthers the statutory objectives described above. Pursuant to Government Code section 65584.04(h), SCAG must consult with HCD and submit its draft allocation methodology to HCD for review.

HCD appreciates the active role of SCAG staff in providing data and input throughout the consultation period. Pursuant to Government Code section 65584.01(c)(1), HCD may accept or reject the information provided by the council of governments or modify its own assumptions based on this information.

The Department especially thanks Ping Chang, Ma'Ayn Johnson, Kevin Kane, and Sarah Jepson. The Department looks forward to its continued partnership with SCAG and its member jurisdictions and assisting SCAG in its planning efforts to accommodate the region's share of housing need.

If HCD can provide any additional assistance, or if you, or your staff, have any questions, please contact Megan Kirkeby, Assistant Deputy Director for Fair Housing, at *megan.kirkeby@hcd.ca.gov*.

Sincerely,

Megan Kirkeby
Assistant Deputy Director for Fair Housing

ATTACHMENT 1

HCD REGIONAL HOUSING NEED DETERMINATION

SCAG: June 30, 2021 – October 15, 2029 (8.3 years)

Income Category	Percent	Housing Unit Need
Very-Low*	26.1%	350,998
Low	15.3%	206,338
Moderate	16.7%	225,152
Above-Moderate	41.8%	562,252
Total	**100.0%**	**1,344,740**
* Extremely-Low	14.5%	Included in Very-Low Category

Notes:

Income Distribution:
Income categories are prescribed by California Health and Safety Code (Section 50093, et.seq.). Percents are derived based on ACS reported household income brackets and regional median income, then adjusted based on the percent of cost-burdened households in the region compared with the percent of cost burdened households nationally.

ATTACHMENT 2

HCD REGIONAL HOUSING NEED DETERMINATION
SCAG: June 30, 2021 – October 15, 2029 (8.3 years)

Methodology

SCAG: June 30, 2021-October 15, 2029 (8.3 Years) HCD Determined Population, Households, & Housing Need					
1.	**Population: DOF 6/30/2029 projection adjusted +3.5 months to 10/15/2029**				20,455,355
2.	*- Group Quarters Population: DOF 6/30/2029 projection adjusted +3.5 months to 10/15/2029*				-363,635
3.	**Household (HH) Population: October 15, 2029**				20,079,930
	Household Formation Groups	**HCD Adjusted DOF Projected HH Population**	***DOF HH Formation Rates***	**HCD Adjusted DOF Projected Households**	
		20,079,930		6,801,760	
	under 15 years	3,292,955	n/a	n/a	
	15 – 24 years	2,735,490	6.45%	176,500	
	25 – 34 years	2,526,620	32.54%	822,045	
	35 – 44 years	2,460,805	44.23%	1,088,305	
	45 – 54 years	2,502,190	47.16%	1,180,075	
	55 – 64 years	2,399,180	50.82%	1,219,180	
	65 – 74 years	2,238,605	52.54%	1,176,130	
	75 – 84 years	1,379,335	57.96%	799,455	
	85+	544,750	62.43%	340,070	
4.	**Projected Households (Occupied Unit Stock)**				6,801,760
5.	+ Vacancy Adjustment (2.63%)				178,896
6.	+ Overcrowding Adjustment (6.76%)				459,917
7.	+ Replacement Adjustment (.50%)				34,010
8.	*- Occupied Units (HHs) estimated (June 30, 2021)*				-6,250,261
9.	+ Cost Burden Adjustment (Lower Income: 10.63%, Moderate and Above Moderate Income: 9.28%)				120,418
6th Cycle Regional Housing Need Assessment (RHNA)					**1,344,740**

Explanation and Data Sources

1-4. Population, Group Quarters, Household Population, & Projected Households: Pursuant to Government Code Section 65584.01, projections were extrapolated from Department of Finance (DOF) projections. Population reflects total persons. Group Quarter Population reflects persons in a dormitory, group home, institution, military, etc. that do not require residential housing. Household Population reflects persons requiring residential housing. Projected Households reflect the propensity of persons, by age-groups, to form households at different rates based on Census trends.

5. Vacancy Adjustment: HCD applies a vacancy adjustment based on the difference between a standard 5% vacancy rate and the region's current "for rent and sale" vacancy percentage to provide healthy market vacancies to facilitate housing availability and resident mobility. The adjustment is the difference between standard 5% and region's current vacancy rate (2.37%) based on the 2013-2017 5-year American Community Survey (ACS) data. For SCAG that difference is 2.63%.

6. Overcrowding Adjustment: In region's where overcrowding is greater than the U.S overcrowding rate of 3.35%, HCD applies an adjustment based on the amount the region's overcrowding rate (10.11%) exceeds the U.S. overcrowding rate (3.35%) based on the 2013-2017 5-year ACS data. For SCAG that difference is 6.76%.

Continued on next page

7. Replacement Adjustment: HCD applies a replacement adjustment between .5% & 5% to total housing stock based on the current 10-year average of demolitions in the region's local government annual reports to Department of Finance (DOF). For SCAG, the 10-year average is .14%, and SCAG's consultation package provided additional data on this input indicating it may be closer to .41%; in either data source the estimate is below the minimum replacement adjustment so the minimum adjustment factor of .5% is applied.

8. Occupied Units: Reflects DOF's estimate of occupied units at the start of the projection period (June 30, 2021).

9. Cost Burden Adjustment: HCD applies an adjustment to the projected need by comparing the difference in cost-burden by income group for the region to the cost-burden by income group for the nation. The very-low and low income RHNA is increased by the percent difference (70.83%-60.20%=10.63%) between the region and the national average cost burden rate for households earning 80% of area median income and below, then this difference is applied to very low- and low-income RHNA proportionate to the share of the population these groups currently represent. The moderate and above-moderate income RHNA is increased by the percent difference (20.48%-11.20%=9.28%) between the region and the national average cost burden rate for households earning above 80% Area Median Income, then this difference is applied to moderate and above moderate income RHNA proportionate to the share of the population these groups currently represent. Data is from 2011-2015 Comprehensive Housing Affordability Strategy (CHAS).

Final RHNA Allocation Methodology

EXECUTIVE SUMMARY

SCAG is required to develop a final RHNA methodology to distribute existing and projected housing need for the 6th cycle RHNA for each jurisdiction, which will cover the planning period October 2021 through October 2029. Following extensive feedback from stakeholders during the proposed methodology comment period and an extensive policy discussion, SCAG's Regional Council voted to approve the Draft RHNA Methodology on November 7, 2019, as described below, and provide it to the State Department of Housing and Community Development (HCD) for their statutory review. On January 13, 2020, HCD completed its review of the draft methodology and found that it furthers the five statutory objectives of RHNA and on March 4, 2020, SCAG's Regional Council voted to approve the Final RHNA Methodology. The overall framework for this methodology is included in the table below and further described in the rest of this document.

Projected need	Existing need	Income categories
Household growth 2020-2030	Transit accessibility (HQTA population 2045)	150% social equity adjustment minimum
Future vacancy need	Job accessibility	0-30% additional adjustment for areas with lowest or highest resource concentration
Replacement need	Residual distribution within the county	

HOUSING CRISIS

There is no question that there is an ongoing housing crisis throughout the State of California. A variety of measures indicate the extent of the crisis including overcrowding and cost-burdened households, but the underlying cause is due to insufficient housing supply despite continuing population growth over recent decades.

As part of the RHNA process SCAG must develop a final RHNA methodology, which will determine each jurisdiction's draft RHNA allocation as a share of the regional determination of existing and projected housing need provided by the California Department of Housing and Community Development (HCD). There are several requirements outlined by Government Code Section 65584.04, which will be covered in different sections of this packet:

- Allocation methodology, per Government Code 65584.04(a)
- How the allocation methodology furthers the objectives State housing law, per GC 65584.04(f)

- How local planning factors are incorporated into the RHNA methodology, per GC 65584.04(f)
- Furthering the objectives of affirmatively furthering fair housing (AFFH), per GC 65584.04(d)
- Public engagement, per GC 65584.04(d)

Additionally, SCAG has developed a dynamic estimator tool and data appendix that contains a full set of various underlying data and assumptions to support the methodology. Due to the size of the appendix, a limited number of printed copies are available. SCAG has posted the dynamic estimator tool and full methodology appendix, on its RHNA webpage: www.scag.ca.gov/rhna.

Per State housing law, the RHNA methodology must distribute existing and projected housing need to all jurisdictions. The following section provides the final methodology for distributing projected and existing need to jurisdictions from the RHNA regional determination provided by the California Department of Housing and Community Development (HCD) pursuant to Government Code Section 65584.01.

Guiding Principles for RHNA Methodology

In addition to furthering the five objectives pursuant to Government Code 65585(d), there are several guiding principles that SCAG staff has developed to use as the basis for developing the distribution mechanism for the RHNA methodology. These principles are based on the input and guidance provided by the RHNA Subcommittee during their discussions on RHNA methodology between February 2019 and June 2019.

1. The housing crisis is a result of housing building not keeping up with growth over the last several decades. The RHNA allocation for all jurisdictions is expected to be higher than the 5th RHNA cycle.
2. Each jurisdiction must receive a fair share of their regional housing need. This includes a fair share of planning for enough housing for all income levels, and consideration of factors that indicate areas that have high and low concentration of access to opportunity.
3. It is important to emphasize the linkage to other regional planning principles to develop more efficient land use patterns, reduce greenhouse gas emissions, and improve overall quality of life.

The jurisdictional boundaries used in the recommended RHNA methodology will be based on those as of August 31, 2016. Spheres of influence in unincorporated county areas are considered within unincorporated county boundaries for purposes of RHNA.

Proposed RHNA Allocation Methodology

The proposed RHNA methodology, which was released for public review on August 1, contained three (3) options to distribute HCD's regional determination for existing and projected need for the

SCAG region. HCD provided SCAG a final regional determination of 1,341,827 units for the 6th cycle RHNA on October 15, 2019.[1]

The three options were developed based on RHNA Subcommittee feedback on various factors at their meetings between February and June 2019 and feedback from stakeholders. SCAG solicited formal public comment on the three options and any other factors, modifications, or alternative options during the public comment period, which commenced on August 1 and concluded on September 13, 2019.

Four public hearings were conducted to formally receive verbal and written comments on the proposed RHNA methodology, in addition to one public information session with a total participation of approximately 250 people. Almost 250 written comments were submitted to SCAG specifically on the proposed methodology and over 35 verbal comments were shared at four (4) public hearings held in August 2019.

Draft and Final RHNA Allocation Methodology

Based on comments received during the public comment period, staff recommended a combination of the three options in the proposed methodology further enhanced by factors specifically suggested by stakeholders.

On November 7, 2019, SCAG's Regional Council voted to approve the Draft RHNA Methodology. The approved draft methodology included modifications to the staff-recommended draft methodology for calculating existing housing need to more closely align the methodology with job and transit accessibility factors.

On January 13, 2020, HCD completed their statutory review and found that SCAG's Draft RHNA Methodology furthers the five statutory objectives of RHNA, which allows SCAG to finalize the RHNA methodology and issue draft RHNA allocations to each individual jurisdiction. HCD's comment letter, which can be found at www.scag.ca.gov/rhna, notes:

> *"HCD has completed its review of the methodology and finds that the draft SCAG RHNA methodology furthers the five statutory objectives of RHNA. HCD acknowledges the complex task of developing a methodology to allocate RHNA to 197 diverse jurisdictions while furthering the five statutory objectives of RHNA. This methodology generally distributes more RHNA, particularly lower income RHNA, near jobs, transit, and resources linked to long term improvements of life outcomes. In particular, HCD applauds the use of objective factors specifically linked the statutory objectives in the existing need methodology."*

Following this finding, staff recommended the draft RHNA methodology as the final RHNA methodology. On March 5, 2020, SCAG's Regional Council approved Resolution No. 20-619-2

[1] On September 5, 2019, the SCAG Regional Council voted to object to HCD the regional determination of 1,344,740, per Government Code Section 65584.01, that was provided on August 15, 2019. After review of SCAG's objection letter, HCD provided a final regional determination of 1,341,827 units on October 15, 2019.

adopting the Final RHNA Methodology for the Sixth Housing Element Cycle. Following the formal distribution of draft RHNA allocations based on the Final RHNA methodology and a separate appeals phase described in Government Code 65584.05 et seq., RHNA allocations will be finalized in approximately October 2020.

The next section describes the final RHNA methodology mechanism to distribute the 1,341,827 housing units determined by HCD to all SCAG jurisdictions.

Determining Existing Need and Projected Need

SCAG's final RHNA methodology starts with the total regional determination provided by HCD and separates existing need from projected need.

Projected need is considered as household growth for jurisdictions between the RHNA projection period between July 1, 2021 and October 1, 2029, in addition to a calculated future vacancy need and replacement need. For projected household growth, SCAG's Connect SoCal growth forecast for the years 2020-2030 is used as the basis for calculating projected housing unit need for the region. The anticipated growth in households over this period is multiplied by 0.825 to approximate growth during the 8.25-year RHNA projection period of July 1, 2021 to October 1, 2029.

For several jurisdictions, SCAG's growth forecast includes projected household growth on tribal land. For these jurisdictions, SCAG's estimate of household growth on tribal land from July 1, 2021 to October 1, 2029 is subtracted from the jurisdictional projected household growth (see note in the accompanying dynamic estimator tool). A vacancy adjustment of 1.5% for owner-occupied units and 5% for renter-occupied units representing healthy-market vacancy will be applied to projected household growth to determine future vacancy need. Next a replacement need is added, which is an estimate of expected replacement need over the RHNA period. **Based on these components, the regional projected need is 504,970 units.**

Existing need is considered the remainder of the regional determination after projected need is subtracted. **Based on this consideration, the regional existing need is 836,857 units.**

Determining a Jurisdiction's RHNA Allocation (Existing and Projected Need)

In determining the existing need and projected need for the region, the methodology applies a three-step process to determine a jurisdiction's RHNA allocation by income category:

1. Determine a jurisdiction's projected housing need
    a. Assign household growth to jurisdictions based on SCAG's Connect SoCal Regional Transportation Plan/Sustainable Communities Strategy Growth Forecast between 2020 and 2030
    b. Calculate a jurisdiction's future vacancy need by applying a healthy market vacancy rate separately to the jurisdiction's owner and renter households
    c. Assign a replacement need to jurisdictions based on each jurisdiction's share of regional net replacement need based on information collected from the replacement need survey submitted by local jurisdictions

2. Determine a jurisdiction's existing housing need
    a. Assign 50 percent of regional existing need based on a jurisdiction's share of region's population within the high quality transit areas (HQTAs) based on future 2045 HQTAs
    b. Assign 50 percent of regional existing need based on a jurisdiction's share of the region's jobs that can be accessed within a 30-minute driving commute
    c. For extremely disadvantaged communities (hereafter "DACs," see definition below), identify residual existing need, which is defined herein as total housing need in excess of household growth between 2020 and 2045[2]. DACs are jurisdictions with more than half of the population living in high segregation and poverty or low resource areas as defined by the California Tax Credit Allocation Committee (TCAC)/HCD Opportunity Index Scores further described in the document.
    d. Reallocate residual existing need by county to non-DAC jurisdictions within the same county based on the formula in (a) and (b) above, i.e. 50% transit accessibility and 50% job accessibility.

3. Determine a jurisdiction's total housing need
    a. Add a jurisdiction's projected housing need from (1) above to its existing housing need from (2) above to determine its total housing need.

4. Determine four RHNA income categories (very low, low, moderate, and above moderate)
    a. Use a minimum 150% social equity adjustment
    b. Add an additional percentage of social equity adjustment to jurisdictions that have a high concentration of very low or very high resource areas using the California Tax Credit Allocation Committee (TCAC)'s index scoring
        i. Add a 10% social equity adjustment to areas that are designated as 70-80% very high or very low resource area
        ii. Add a 20% social equity adjustment to areas that are designated as 81-90% very high or very low resource area
        iii. Add a 30% social equity adjustment to areas that are designated as 91-100% very high or very low resource area

Methodology Component	Assigned units
Projected need: Household growth	466,958
Projected need: Future vacancy need	14,467
Projected need: Replacement need	23,545
Projected need subtotal	504,970

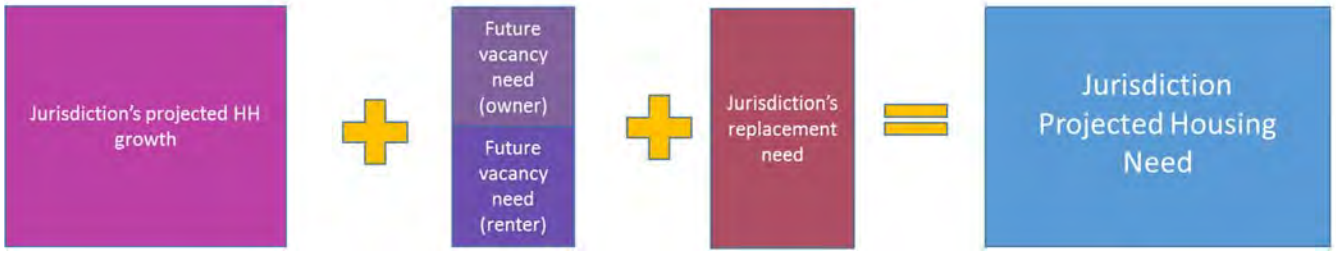
[2] Since HCD's regional determination of 1,341,827 exceeds SCAG's 2020-2045 household growth forecast of 1,297,000 by 3.46 percent, for the purposes of existing need allocation, exceeding "local input" or more accurately, Connect SoCal Growth Forecast, household growth shall mean exceeding 1.0368 times household growth.

	Percentage of Existing Need	Assigned units
Existing need: Transit accessibility	50%	418,429
Existing need: Job accessibility	50%	418,428
Existing need subtotal	836,857	

Total regional need	1,341,827

Step 1: Determine Projected Housing Need

The first step of the RHNA methodology is to determine a jurisdiction's projected need. From the regional determination, projected need is considered to be regional household growth, regional future vacancy need, and regional replacement need.



To determine a jurisdiction's projected need, the methodology uses a three-step process:

a. Determine the jurisdiction's regional projected household growth based on local input
b. Determine future vacancy need based on a jurisdiction's existing composition of owner and renter households and apply a vacancy rate on projected household growth based on the following:
    a. Apply a 1.5% vacancy need for owner households
    b. Apply a 5.0% vacancy need for renter households
c. Determine a jurisdiction's net replacement need based on replacement need survey results

Step 1a: Projected Household Growth

SCAG's Connect SoCal regional growth forecast reflects recent and past trends, key demographic and economic assumptions, and local, regional, state, and national policy. SCAG's regional growth forecasting process also emphasizes the participation of local jurisdictions and other stakeholders. The growth forecast process kicked off on May 30, 2017 with a panel of experts meeting wherein fifteen academic scholars and leading practitioners in demographics and economics were invited to review key input assumptions for the growth forecast including expected job growth, labor force

participation, birth rates, immigration and household formation rates. SCAG staff then incorporated the recommendations of the panel of experts into a preliminary range of population, household, and employment growth figures for 2016, 2020, 2030, 2035, and 2045 for the region and six counties individually.

SCAG further projects jurisdiction-level and sub-jurisdiction-level employment, population, and households using several major data sources, including:

- California Department of Finance (DOF) population and household estimates;
- California Employment Development Department (EDD) jobs report by industry;
- 2015 existing land use and General Plans from local jurisdictions;
- 2010 Census and the latest ACS data (2013-2017 5-year samples);
- County assessor parcel databases;
- 2011 and 2015 Business Installment data from InfoGroup; and
- SCAG's 2016 RTP/SCS growth forecast.

On October 31, 2017, the preliminary small area (i.e. jurisdiction and sub-jurisdiction) growth forecasts were released to local jurisdictions for their comments and input. This kicked off SCAG's *Bottom-Up Local Input and Envisioning Process* which provided each local jurisdiction with their preliminary growth forecast information as well as several other data elements both produced by SCAG and other agencies which are related to the development of Connect SoCal. Data map books were generated and provided electronically and in hard copy format and included detailed parcel-level land use data, information on resource areas, farmland, transportation, geographical boundaries and the draft growth forecast. Complete information on the Data map books and the Bottom-Up Local Input and Envisioning Process can be found at http://scagrtpscs.net/Pages/DataMapBooks.aspx. Over the next eight months, SCAG staff conducted one-on-one meetings with all 197 local jurisdictions to explain methods and assumptions behind the jurisdiction and sub-jurisdiction growth forecast as well as to provide an opportunity to review, edit, and approve SCAG's preliminary forecast for population, employment, and households for 2016, 2020, 2030, 2035, and 2045.

Between October 2018 and February 2019, SCAG reviewed local input on the growth forecast and other data map book elements. The local input growth forecast was evaluated at the county and regional level for the base year of 2016 and the horizon year of 2045 and was found to be technically sound. Specifically, as it relates to SCAG's local input household forecast:

- The forecast generates a 2045 regional unemployment rate of 4.7 percent which is reasonable based on past trends and ensured that the forecast is balanced, i.e. there are not too many jobs for the number of anticipated workers
- The forecast generates a 2045 population-to-household ratio of 2.9 which is consistent with the preliminary forecast and reflects expert-anticipated decreases in this ratio, ensuring that there are not too many people for the anticipated number of households region-wide
- From 2020-2045, the forecast anticipates household growth of 21 percent and population growth of 15 percent, indicating an alleviation of the region's current housing shortage over this future period.

SCAG's growth forecast for the years 2020-2030 is used as the basis for calculating projected housing unit need. Because the 6th cycle RHNA projection period covers July 1, 2021 through October 15, 2029, it is necessary to adjust reported household growth between 2020 and 2030 and adjust it to an 8.25 year projection period. The anticipated growth in households over this period is multiplied by 0.825 to approximate growth during the 8.25-year RHNA projection period (July 1, 2021 to October 15, 2029).

Step 1b: Future Vacancy Need

The purpose of a future vacancy need is to ensure that there are enough vacant units to support a healthy housing market that can genuinely accommodate projected household growth. An undersupply of vacant units can prevent new households from forming or moving into a jurisdiction. Formulaically, future vacancy need is a percentage applied to the jurisdiction's household growth by tenure type (owner and renter households). While individual jurisdictions may experience different vacancy rates at different points in time, future vacancy need is independent of existing conditions and instead is a minimum need to support household growth.

To calculate a jurisdiction's future vacancy need, its proportion of owner-occupied units and renter-occupied units are determined using American Community Survey (ACS) 2013-2017 data—the most recent available at the time of the draft methodology's development. The percentages are applied to the jurisdiction's projected household growth from the previous step, which results in the number of projected households that are predicted to be owners and those that are predicted to be renters.

Next, two different vacancy rates are applied based on the regional determination provided by HCD. The recommended methodology uses 1.5 percent for owner-occupied units and a rate of 5 percent for renter-occupied units. The difference is due to the higher rates of turnover generally reported by renter units in comparison to owner-occupied units. The vacancy rates are applied to their respective tenure category to determine how many future vacant units are needed by tenure and then added together to get the total future vacancy need.

Step 1c: Replacement Need

Residential units are demolished for a variety of reasons including natural disasters, fire, or desire to construct entirely new residences. Each time a unit is demolished, a household is displaced and disrupts the jurisdiction's pattern of projected household growth. The household may choose to live in a vacant unit or leave the jurisdiction, of which both scenarios result in negative household growth through the loss of a vacant unit for a new household or subtracting from the jurisdictions number of households.

For these reasons, replacement need is a required component of the regional determination provided by HCD. The methodology's replacement need will be calculated using a jurisdiction's net replacement need based on data submitted for the replacement need survey, which was conducted between March and April 2019.

Each jurisdiction's data on historical demolitions between reporting years 2008 and 2018, which was collected from the California Department of Finance (DOF), was tabulated and provided to

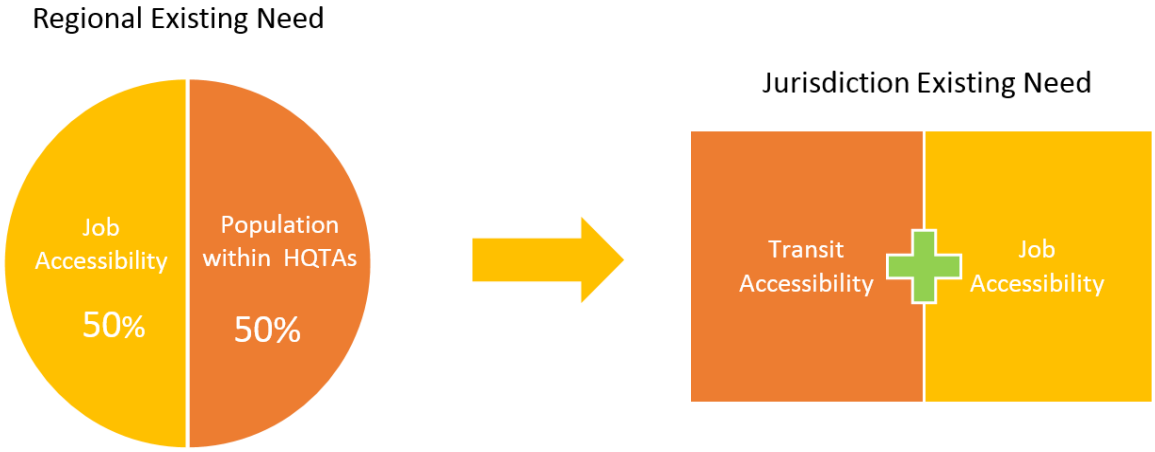
jurisdictions in the replacement need survey. Jurisdictions were asked to provide data on units that replaced the reported demolished units. A net replacement need was determined based on this information for each jurisdiction.

After determining each of the projected housing need components, they are combined to determine a jurisdiction's projected housing need.

Step 2: Determine Existing Housing Need

After determining a jurisdiction's projected need, the next step is to determine a jurisdiction's existing need. Following the above discussion and based on HCD's determination of total regional housing need, existing need is defined as the total need minus the projected need—approximately 62 percent of the entire regional determination. SCAG's Regional Council determined that the regional existing need be split into two parts:

- Fifty (50) percent on population near transit (HQTA), or 31 percent of total need
- Fifty (50) percent on job accessibility, or 31 percent of total need



Step 2a: Share of Regional HQTA Population

The next step involves the consideration of proximity to transit to distribute fifty (50) percent of the region's existing housing need, in an effort to better align transportation and housing planning.

For several years, SCAG has developed a measure called High Quality Transit Areas (HQTAs) which are areas within a half-mile of transit stations and corridors with at least a fifteen (15) minute headway during peak hours for bus service. HQTAs are based on state statutory definitions of high-quality transit corridors (HQTCs) and major transit stops. For the development of Connect SoCal, freeway-running HQTCs have been excluded from HQTAs to better reflect the level of service they provide to nearby areas.

Planned HQTCs and major transit stops for future years are improvements that are expected to be implemented by transit agencies by the Connect SoCal horizon year of 2045. SCAG updates its inventory with the quadrennial adoption of each RTP/SCS; however, planning and environmental

impact studies may be completed by transit agencies more frequently. Therefore, HQTAs in future years reflect the best information currently available to SCAG regarding the location of future high-quality transit service accessibility. More detailed information on HQTA-related definitions is available in the data appendix.

50 percent of the regional existing housing need will be distributed based on a jurisdiction's share of regional residential population within an HQTA, based on the HQTA boundaries used in the final Connect SoCal Plan anticipated to be adopted by SCAG in April 2020. Not all jurisdictions have an HQTA within their jurisdictional boundaries and thus may not receive existing need based on this factor.

Step 2b: Job Accessibility

The concept behind job accessibility is to further the statewide housing objective and SCAG's Connect SoCal objective of improving the relationship between jobs and housing. While none of the three options presented in the proposed RHNA methodology included a factor directly based on job accessibility, an overwhelming number of public comments expressed support for the methodology to include this specific component.

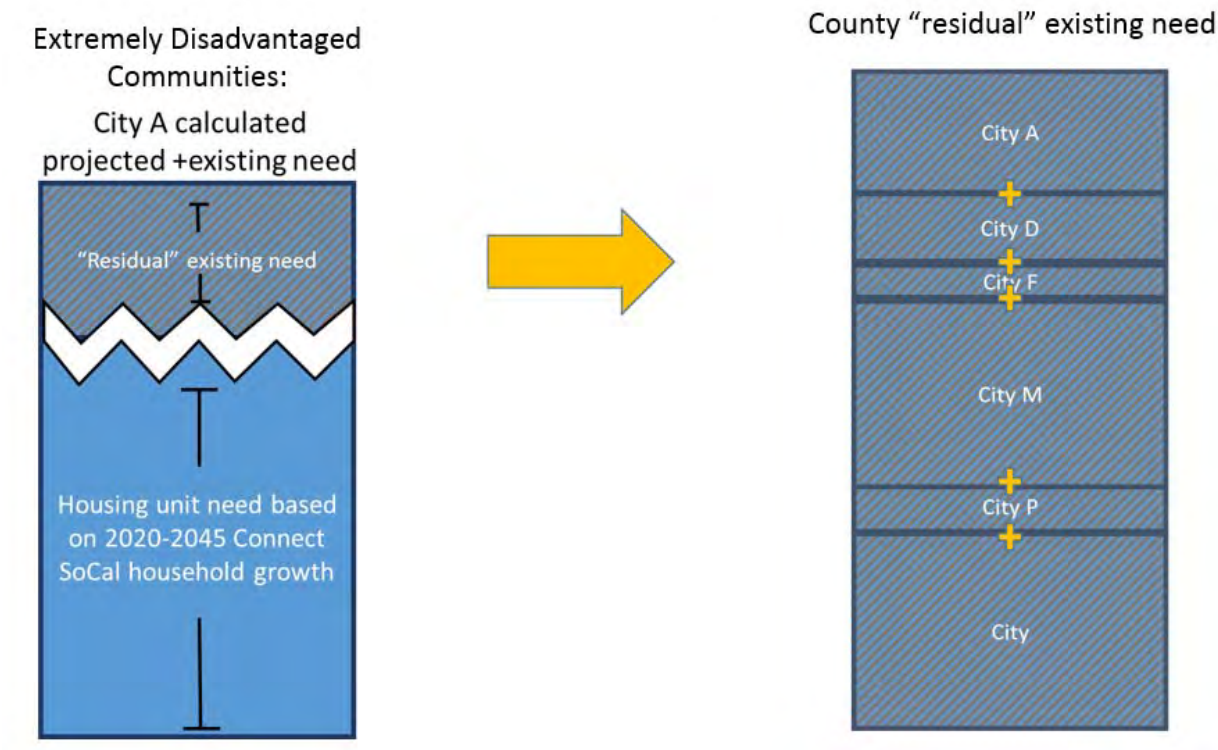
The methodology assigns fifty (50) percent of regional existing need based on job accessibility. Job accessibility is based on the share of the region's jobs accessible by a thirty (30) minute commute by car in 2045. Importantly, the RHNA methodology's job access factor is *not* based on the number of jobs within a jurisdiction from SCAG's Connect SoCal Plan or any other data source. Rather, it is a measure based on of how many jobs can be *accessed* from that jurisdiction within a 30-minute commute, which includes jobs in other jurisdictions. Since over 80 percent of SCAG region workers live and work in different jurisdictions, genuinely improving the relationship between jobs and housing necessitates an approach based on job access rather than the number of jobs in a jurisdiction.

These job accessibility data are derived at the transportation analysis zone (TAZ) level from travel demand modelling output from SCAG's final Connect SoCal Plan. SCAG realizes that in many jurisdictions, especially larger ones, job access many not be uniform in all parts of the city or county. However, since the RHNA process requires allocating housing need at the jurisdictional-level, staff reviewed several ways to measure the typical commuter's experience in each jurisdiction. Ultimately, the share of the region's jobs that could be accessed by a jurisdiction's *median TAZ* was found to be the best available measure of job accessibility for that jurisdiction. Based on this measure, in central parts of the region, residents of some jurisdictions can access as much as 23 percent of the region's jobs in a 30 minute car commute, while the average across all the region's jurisdictions was 10.5 percent.

This measure is multiplied by a jurisdiction's share of total population in order to allocate housing unit need to jurisdictions. This important step ensures that the potential beneficiaries of greater accessibility (i.e., the population in a jurisdiction with good job access) are captured in the methodology. Based on this approach, jurisdictions with limited accessibility to jobs will receive a smaller RHNA allocation based on this component.

Step 2c: "Residual" Adjustment Factor for Existing Need

In many jurisdictions defined as "disadvantaged communities (DACs)", the calculated projected and existing need is higher than its household growth between 2020 and 2045, as determined by the SCAG Growth Forecast used in the final Connect SoCal regional plan. Those DAC jurisdictions that have a need as determined by the RHNA methodology as higher than its 2020 to 2045 household growth[3] will be considered as generating "residual" existing need. Residual need will be subtracted from jurisdictional need in these cases so that the maximum a DAC jurisdiction will receive for existing need is equivalent to its 2020 to 2045 household growth. Not all DAC jurisdictions will have a residual existing need.



A county total of residual existing need will be calculated and then redistributed with the same county to non-DAC jurisdictions. The redistribution will be assigned to jurisdictions based on transit accessibility (50%) and job accessibility (50%), and will exclude DAC jurisdictions which have over 50% of their populations in very low resource areas using California Tax Credit Allocation Committee (TCAC)/HCD Opportunity Indices.

Very low resource areas are areas that have least access to opportunity as measured by indicators such as poverty levels, low wage job proximity, math and reading proficiency, and pollution levels. This mechanism will help to further AFFH objectives since residual existing RHNA need, which includes additional affordable units, will be assigned to areas that are not identified as those with the

[3] Since HCD's regional determination of 1,341,827 exceeds SCAG's 2020-2045 household growth forecast of 1,297,000 by 3.68 percent, for the purposes of existing need allocation, exceeding "local input" or "Connect SoCal" household growth shall mean exceeding 1.0368 times household growth.

lowest resources, which will increase access to opportunity. A full discussion on the TCAC opportunity indicators is provided in the following section on social equity adjustment. Data relating to the TCAC opportunity indicator categories for each jurisdiction can be found in the RHNA methodology data appendix and in the accompanying RHNA allocation estimator tool on the RHNA webpage: www.scag.ca.gov/rhna.

Step 3: Determining Total Housing Need

After determining a jurisdiction's projected housing need from step 1 and its existing housing need from step 2, the sum of the projected and existing need becomes a jurisdiction's total housing need.

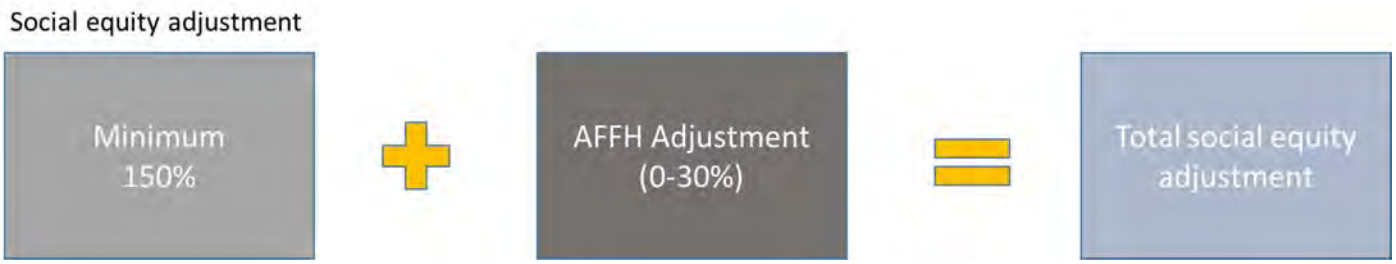
Step 4: Determining Four Income Categories through Social Equity Adjustment

After determining a jurisdiction's total RHNA allocation, the next step is to assign the total into four RHNA income categories. The four RHNA income categories are:

- Very low (50 percent or less of the county median income);
- Low (50-80 percent);
- Moderate (80 to 120 percent); and
- Above moderate (120 percent and above)

The fourth RHNA objective specifically requires that the RHNA methodology allocate a lower proportion of housing need in jurisdictions that already have a disproportionately high concentration of those households in comparison to the county distribution. Additionally, the fifth objective, affirmatively furthering fair housing (AFFH), requires that the RHNA methodology further the objectives of addressing significant disparities in housing needs and access to opportunity in order to overcome patterns of segregation.

To further these two objectives, the RHNA methodology includes a minimum 150 percent social equity adjustment and an additional 10 to 30 percent added in areas with significant populations that are defined as very low or very high resource areas, referred to as an AFFH adjustment. This determines the distribution of four income categories for each jurisdiction.



A social equity adjustment ensures that jurisdictions accommodate their fair share of each income category. First, the percentage of each jurisdiction's distribution of four income categories is determined using the county median income as a benchmark. For example, in Los Angeles County, a household earning less than $30,552 annually, or 50 percent of the county median income, would be considered a very low income household. A household in Los Angeles County earning more than $73,218 annually, or 120 percent of the county median income, would be counted in the above moderate category. The number of households in each category is summed and then a percentage of each category is then calculated.

For reference, below is the median household income by county.

- Imperial County: $44,779
- Los Angeles County: $61,015
- Orange County: $81,851
- Riverside County: $60,807
- San Bernardino County: $57,156
- Ventura County: $81,972
- SCAG region: $64,114

Source: American Community Survey (ACS) 2013-2017 5-year estimates

Once a jurisdiction's household income distribution by category is determined, the percentage is compared to the county's percentage of existing household income distribution. For example, if a jurisdiction has an existing distribution of 30 percent of very low income households while the county is 25 percent, the jurisdiction is considered as having an overconcentration of very low income households compared to the county. A social equity adjustment ensures that the jurisdiction will be assigned a smaller percentage of very low income households for its RHNA allocation than both what it and the county currently experience.

If the jurisdiction is assigned a social equity adjustment of 150 percent, the formula to calculate its very low income percentage is:

Household Income Level	**Formula to Calculate City A Social Equity Adjustment of 150%**
Very Low Income	30%-[(30%-25%)x1.5] = 22.5%

In this example, 22.5 percent of the jurisdiction's total RHNA allocation would be assigned to the very low income category. This adjustment is lower than both its existing household income distribution (30 percent) and the existing county distribution (25 percent).

The inverse occurs in higher income categories. Assuming 20 percent of a jurisdiction's households are above moderate income while 25 percent of the county's households are above moderate income, the jurisdiction will be assigned a distribution of 27.5 percent for above moderate income need.

Household Income Level	**Formula to Calculate City A Social Equity Adjustment of 150%**
Above moderate income	20%-[(20%-25%)x1.5] = 27.5%

If the adjustment was 100 percent a jurisdiction's distribution would be exactly the same as the County's distribution. Conceptually a 150 percent adjustment means that the City meets the County distribution and goes beyond that threshold by 50 percent, resulting in a higher or lower distribution than the County depending on what existing conditions are in the City. The higher the adjustment, the more noticeable the difference between the jurisdiction's existing household income distribution and its revised distribution.

The RHNA methodology recommends a minimum of 150 percent social equity adjustment with an additional 10, 20, or 30 percent added depending on whether the jurisdiction is considered a very low or very high resource area based on its Opportunity Index score.

In 2015 the U.S. Department of Housing and Urban Development (HUD) developed a set of "Opportunity Indices" to help states and localities identify factors that contribute to fair housing issues in their region and comply with the federal Fair Housing Act. In late 2017, a Task Force convened by HCD and the California Tax Credit Allocation Committee (TCAC) released an "Opportunity mapping" tool based on these HUD indices to identify areas in California that can "offer low-income children and adults the best chance at economic advancement, high educational attainment, and good physical and mental health."[4]

The TCAC and HCD Opportunity mapping tool includes a total of eleven (11) census-tract level indices to measure exposure to opportunity in local communities. The indices are based on measures of economic, environmental, and educational opportunities within communities. Regional patterns of segregation are also identified based on this tool. Below is a summary table of the 11 indices sorted by type:

Economic	Environment	Education
Poverty	CalEnviroScreen 3.0 indicators • *Ozone* • *PM2.5* • *Diesel PM* • *Drinking water contaminates* • *Pesticides* • *Toxic releases from facilities* • *Traffic density* • *Cleanup sites* • *Groundwater threats* • *Hazardous waste* • *Impaired water bodies* • *Solid waste sites*	Math proficiency
Adult education		Reading proficiency
Employment		High school graduation rates
Low-wage job proximity		Student poverty rate
Median home value		

[4] California Fair Housing Taskforce Revised opportunity Mapping Technology, Updated November 27, 2018: https://www.treasurer.ca.gov/ctcac/opportunity/final-opportunity-mapping-methodology.pdf

Based on its respective access to opportunity, each census tract is given a score that designates it under one of the following categories:

- High segregation & poverty
- Low resource
- Moderate resource
- High resource
- Highest resource

Tract-level indices were summed to the jurisdictional-level by SCAG using area-weighted interpolation. Using 2013-2017 American Community Survey population data, SCAG determined the share of each jurisdiction's population in each of these five categories. For example:

	Lowest Resource				Very High Resource
Opportunity Indicator Category	High segregation & poverty	Low resource	Moderate resource	High resource	Highest resource
City A Percentage of population	10%	10%	30%	30%	20%
City B Percentage of population	90%	5%	5%	0%	0%
City C Percentage of population	0%	0%	10%	15%	75%

The recommended methodology determines high resource concentration using the "very high" resource area score. The recommended methodology determines "lowest" resource areas by combining the two lowest measures. In the above table, City B would be considered to have a much higher concentration of lower resource areas than City A. City C would be considered to have a much higher concentration of highest resource areas. [5]

- High segregation & Poverty + Low Resource = Lowest Resource
- Highest Resource

Jurisdictions that are identified as having between 70 and 100 percent of the population within a lowest or very high resource area are assigned an additional 10 and 30 percent social equity adjustment:

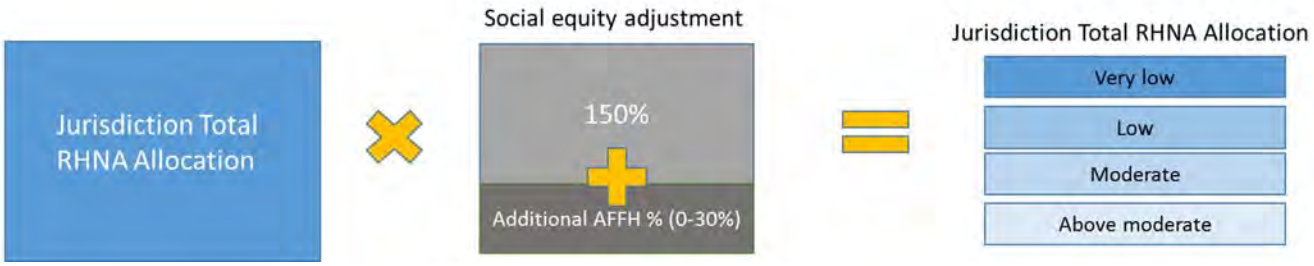
[5] As a cross-reference, if City B has both a high job and transit accessibility it would be exempt from the redistribution of residual existing need from the RHNA methodology's Step 2d because more than 50 percent of its population is within a very low resource area. On the other hand City A and City C, if they have a high job and transit access, would not be exempt from receiving regional residual need because they have only 20 percent and 0 percent of their respective population within a very low resource area.

Concentration of population within very low or very high resource area	Additional social equity adjustment
70-80%	+10%
80-90%	+20%
90-100%	+30%

In the example table, City B would receive an additional social equity adjustment of 30% because 95% of its population is within a lowest resource area (sum of high segregation & poverty and low resource measures). City C would receive an additional social equity adjustment of 10% because 75% of its population is within a very high resource area. City A would not receive a further adjustment because it does not have a high enough concentration of population within either the lowest or very high resource categories.

Assigning a higher social equity adjustment based on Opportunity Indices will result in a higher percentage of affordable housing units to areas that have higher resources. Concurrently, it will assign a lower percentage of affordable housing in areas where they is already an overconcentration. Because Opportunity Indices consider factors such as access to lower wage jobs, poverty rates, and school proficiency, the social equity adjustment in the RHNA methodology will result in factors beyond simply household income distribution. This additional adjustment will help to adjust the disparity in access to fair housing across the region, furthering the AFFH objective required in State housing law.

Once the social equity adjustment is determined, it is used to assign need to the four income categories.



Final Adjustments

On a regional level the final RHNA allocation plan must be the same as the regional determination, by income category, provided by HCD. The final RHNA methodology will result in slight differences, among income categories, since income categories are required to use county distributions as benchmarks and the HCD determination does not include county-level benchmarks. For this reason, after the initial income categories are determined for jurisdictions, SCAG will apply a normalization adjustment to the draft fsRHNA allocation to ensure that the regional total by income category is maintained.

Additionally, in the event that a jurisdiction receives an allocation of zero (0) units under the RHNA methodology a minimum RHNA allocation of eight (8) units would be assigned. Government Code Section 65584.04(m)(2) requires that the final RHNA allocation plan ensure that each jurisdiction receive an allocation of units for low- and very low income households. Under these circumstances, SCAG will assign those jurisdictions a minimum of four (4) units in the very low income category and four (4) units in the low income category for a draft RHNA allocation of eight (8) units.

Meeting the Objectives of RHNA

Government Code Section 65584.04(a) requires that the RHNA methodology furthers the five objectives of the Regional Housing Needs Assessment:

(1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households.

(2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.

(3) Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.

(4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.

(5) Affirmatively furthering fair housing.

> (e) For purposes of this section, "affirmatively furthering fair housing" means taking meaningful actions, in addition to combating discrimination, that overcome patterns of segregation and foster inclusive communities free from barriers that restrict access to opportunity based on protected characteristics. Specifically, affirmatively furthering fair housing means taking meaningful actions that, taken together, address significant disparities in housing needs and in access to opportunity, replacing segregated living patterns with truly integrated and balanced living patterns, transforming racially and ethnically concentrated areas of poverty into areas of opportunity, and fostering and maintaining compliance with civil rights and fair housing laws.

On January 13, 2020, HCD completed its review of SCAG's draft RHNA methodology and found that it furthers the five statutory objectives of RHNA.

Local Planning Factors

As part of the development of the proposed RHNA methodology, SCAG must conduct a survey of planning factors that identify local conditions and explain how each of the listed factors are incorporated into the RHNA methodology. This survey, also known as the "Local Planning Factor" survey, is a specific requirement for the RHNA methodology process and is separate from the local review process of the Growth Forecast used as the basis for determining future growth in the Connect SoCal plan.

The survey was distributed to all SCAG jurisdictions in mid-March 2019 with a posted due date of May 30, 2019. One-hundred and nine (109) jurisdictions, or approximately 55%, submitted a response to the local planning factor survey. To facilitate the conversation about local planning factors, between October 2017 and October 2018 SCAG included these factors as part of the local input survey and surveyed a binary yes/no as to whether these factors impacted jurisdictions. The formal local planning factor survey was pre-populated with the pre-survey answers to help facilitate survey response. The full packet of local planning factor surveys can be downloaded at www.scag.ca.gov/rhna.

SCAG staff reviewed each of the submitted surveys to analyze planning factors opportunities and constraints across the region. The collected information was used to ensure that the methodology will equitably distribute housing need and that underlying challenges as a region are collectively addressed.

(1) Each member jurisdiction's existing and projected jobs and housing relationship. This shall include an estimate, based on readily available data, of the number of low-wage jobs within the jurisdiction and how many housing units within the jurisdiction are affordable to low-wage workers as well as an estimate, based on readily available data, of projected job growth and projected household growth by income level within each member jurisdiction during the planning period.

The RHNA methodology directly considers job accessibility and determines a portion of housing need for each jurisdiction based on this factor. Using transportation analysis zones as a basis, the percentage of jobs accessible within a 30 minute drive for a jurisdiction's population is determined and then weighted based on the jurisdiction's population size to determine individual shares of regional jobs accessible. Based on a review of other potential mechanisms to factor in jobs into the RHNA methodology, SCAG staff has determined that this mechanism most closely aligns with the goals of State housing law.

A supplemental analysis of the impact of the draft RHNA methodology's impact on jobs-housing relationships and low-wage jobs-housing relationships was provided to the Regional Council on February 5, 2020.

(2) The opportunities and constraints to development of additional housing in each member jurisdiction, including all of the following:

(A) Lack of capacity for sewer or water service due to federal or state laws, regulations or regulatory actions, or supply and distribution decisions made by a sewer or water service provider other than the local jurisdiction that preclude the jurisdiction from providing necessary infrastructure for additional development during the planning period.

(B) The availability of land suitable for urban development or for conversion to residential use, the availability of underutilized land, and opportunities for infill development and increased residential densities. The council of governments may not limit its consideration of suitable housing sites or land suitable for urban development to existing zoning ordinances and land use restrictions of a locality, but shall consider the potential for increased residential development under alternative zoning ordinances and land use restrictions. The determination of available land suitable for urban development may exclude lands where the Federal Emergency Management Agency (FEMA) or the Department of Water Resources has determined that the flood management infrastructure designed to protect that land is not adequate to avoid the risk of flooding.

(C) Lands preserved or protected from urban development under existing federal or state programs, or both, designed to protect open space, farmland, environmental habitats, and natural resources on a long-term basis, including land zoned or designated for agricultural protection or preservation that is subject to a local ballot measure that was approved by the voters of that jurisdiction that prohibits or restricts conversion to non-agricultural uses.

(D) County policies to preserve prime agricultural land, as defined pursuant to Section 56064, within an unincorporated and land within an unincorporated area zoned or designated for agricultural protection or preservation that is subject to a local ballot measure that was approved by the voters of that jurisdiction that prohibits or restricts its conversion to non-agricultural uses.

Consideration of the above planning factors have been incorporated into the Growth Forecast process and results by way of analysis of aerial land use data, general plan, parcel level property data, open space, agricultural land and resource areas, and forecast surveys distributed to local jurisdictions. The bottom-up Local Input and Envisioning Process, which is used as the basis for both RHNA and SCAG's Connect SoCal (Regional Transportation Plan/Sustainable Communities Strategy) started with an extensive outreach effort involving all local jurisdictions regarding their land use and development constraints. All local jurisdictions were invited to provide SCAG their respective growth perspective and input. The RHNA methodology directly incorporates local input on projected household growth, which should be a direct reflection of local planning factors such as lack of water or sewer capacity, FEMA-designated flood sites, and open space and agricultural land protection.

Prior RHNA cycles did not promote direct linkage to transit proximity and the methodology encourages more efficient land use patterns by utilizing existing as well as future planned transportation infrastructure and preserves areas designated as open space and agricultural

lands. In particular the inclusion of transit proximity places an increased emphasis on infill opportunities and areas that are more likely to support higher residential densities.

(3) *The distribution of household growth assumed for purposes of a comparable period of regional transportation plans and opportunities to maximize the use of public transportation and existing transportation infrastructure.*

As indicated above, the Growth Forecast used as the basis for the Connect SoCal Plan is also used as the basis for projected household growth in the RHNA methodology. The weighting of a jurisdiction's population share within an HQTA directly maximizes the use of public transportation and existing transportation infrastructure.

(4) *Agreements between a county and cities in a county to direct growth toward incorporated areas of the county, and land within an unincorporated area zoned or designated for agricultural protection or preservation that is subject to a local ballot measure that was approved by the voters of the jurisdiction that prohibits or restricts conversion to nonagricultural uses.*

This planning factor has been identified through the local input process and local planning factor survey collection as affecting growth within Ventura County. The urban growth boundary, known as Save Our Agricultural Resources (SOAR), is an agreement between the County of Ventura and its incorporated cities to direct growth toward incorporated areas, and was recently extended to 2050. Based on the input collected, SCAG staff has concluded that this factor is already reflected in the RHNA methodology since it was considered and incorporated into the local input submitted by jurisdictions.

(5) *The loss of units contained in assisted housing developments, as defined in paragraph (9) of subdivision (a) of Section 65583 that changed to non-low-income use through mortgage prepayment, subsidy contract expirations, or termination of use restrictions.*

The conversion of low income units into non-low income units is not explicitly addressed through the distribution of existing and projected housing need. Staff has provided statistics in the RHNA methodology appendix on the potential loss of units in assisted housing developments. The loss of such units affects the proportion of affordable housing needed within a community and the region as a whole.

Local planning factor survey responses indicate that the impact of this factor is not regionally uniform. Many jurisdictions that replied some units are at-risk for losing their affordability status in the near future have indicated that they are currently reviewing and developing local resources to address the potential loss. Based on this, SCAG staff has determined that at-risk units are best addressed through providing data on these units as part of the RHNA methodology and giving local jurisdictions the discretion to address this factor and adequately plan for any at-risk unit loss in preparing their housing elements.

(6) The percentage of existing households at each of the income levels listed in subdivision (e) of Section 65584 that are paying more than 30 percent and more than 50 percent of their income in rent.

An evaluation of survey responses reveals that cost-burdened households, or those who pay at least 30 percent of their household income on housing costs, is a prevalent problem throughout the region. The RHNA methodology also includes in its appendix data from the ACS 2013-2017 on cost-burdened statistics for households who pay more than 30 percent of their income on housing by owner and renter, and for renter households who pay 50 percent or more of their income on housing. The general trend is seen in both high and low income communities, suggesting that in most of the SCAG region high housing costs are a problem for all income levels.

Nonetheless a large number of jurisdictions indicated in the survey that overpaying for housing costs disproportionately impacts lower income households in comparison to higher income households. This issue is exacerbated in areas where there is not enough affordable housing available, particularly in higher income areas. For this reason, the RHNA methodology incorporates not only a 150 percent social equity adjustment, but also uses the TCAC Opportunity Indices to distribute the RHNA allocation into the four income categories in areas identified as being the highest resource areas of the region. The Opportunity Indices include a proximity to jobs indicator, particularly for low-wage jobs, which identifies areas with a high geographical mismatch between low wage jobs and affordable housing. Increasing affordable housing supply in these areas can help alleviate cost-burden experienced by local lower income households because more affordable options will be available.

The reason for using social equity adjustment and opportunity indices to address cost-burden households rather than assigning total need is because it is impossible to determine through the methodology how and why the cost-burden is occurring in a particular jurisdiction. Cost-burden is a symptom of housing need and not its cause. A jurisdiction might permit a high number of units but still experiences cost-burden because other jurisdictions restrict residential permitting. Or, a jurisdiction might have a large number of owner-occupied housing units that command premium pricing, causing cost-burden for high income households and especially on lower income households due to high rents from high land costs. An analysis of existing need indicators by jurisdiction, which is part of the RHNA methodology data appendix, does not reveal a single strong trend to base a distribution methodology for cost-burden and thus the RHNA methodology distributes this existing need indicator regionally using social equity adjustment and Opportunity Indices rather than to where the indicators exist.

(7) The rate of overcrowding.

An evaluation of survey responses indicates that there is a variety of trends in overcrowding throughout the region. Overcrowding is defined as more than 1.01 persons per room (not bedroom) in a housing unit. Some jurisdictions have responded that overcrowding is a severe issue, particularly for lower income and/or renter households, while others have

responded that overcrowding is not an issue at all. At the regional determination level HCD applied an overcrowding component, which is a new requirement for the 6th RHNA cycle. Because

Similar to cost-burden, overcrowding is caused by an accumulated housing supply deficit and is considered an indicator of existing housing need. The reason for not assigning need directly based on this indicator is because it is impossible to determine through the methodology how and why the overcrowding is occurring in a particular jurisdiction. A jurisdiction that has an overcrowding rate higher than the regional average might be issuing more residential permits than the regional average while the surrounding jurisdictions might not have overcrowding issues but issue fewer permits than the regional average. An analysis of existing need indicators by jurisdiction, which is part of the RHNA methodology data appendix, does not reveal a single strong trend to base a distribution methodology for overcrowding and thus the methodology distributes this existing need indicator regionally rather than to where the indicators exist.

While not specifically surveyed, several jurisdictions have indicated that density has affected their jurisdictions and have requested that the methodology should consider this as a factor. While density is not directly addressed as a factor, the social equity adjustment indirectly addresses density particularly for lower income jurisdictions. In housing elements, jurisdictions most demonstrate that a site is affordable for lower income households by applying a "default density", defined in State housing law as either 20 or 30 dwelling units per acre depending on geography and population. In other words, a site that is zoned at 30 dwelling units per acre is automatically considered as meeting the zoning need for a low income household.

However there is not a corresponding default density for above moderate income zoning. Assigning a lower percentage of lower income households than existing conditions indirectly reduces future density since the jurisdiction can zone at lower densities if it so chooses. While this result does not apply to higher income jurisdictions, directing growth toward less dense areas for the explicit purpose of reducing density is in direct contradiction to the objectives of state housing law, especially for promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development pattern.

(8) The housing needs of farmworkers.

The RHNA methodology appendix provides data on agricultural jobs by jurisdiction as well as workers by place of residence. The survey responses indicate that most jurisdictions do not have agricultural land or only have small agricultural operations that do not necessarily require designated farmworker housing. For the geographically concentrated areas that do have farmworker housing, responses indicate that many jurisdictions already permit or are working to allow farmworker housing by-right in the same manner as other agricultural uses are allowed. Jurisdictions that are affected by the housing needs of farmworkers can be assumed to have considered this local factor when submitting feedback on SCAG's Growth

Forecast. A number of jurisdictions reiterated their approach in the local planning factor survey response.

Similar to at-risk units, the RHNA methodology does not include a distribution mechanism to distribute farmworker housing. However, SCAG has provided data in its RHNA methodology appendix related to this factor and encourages local jurisdictions to adequately plan for this need in their housing elements.

(9) *The housing needs generated by the presence of a private university or a campus of the California State University or the University of California within any member jurisdiction.*

SCAG staff has prepared a map outlining the location of four-year private and public universities in the SCAG region along with enrollment numbers from the California School Campus Database (2018). Based on an evaluation of survey responses that indicated a presence of a university within their boundaries, SCAG staff concludes that most housing needs related to university enrollment are addressed and met by dormitories provided by the institution both on- and off-campus. No jurisdiction expressed concern in the surveys about student housing needs due to the presence of a university within their jurisdiction.

However, some jurisdictions have indicated outside of the survey that off-campus student housing is an important issue within their jurisdictions and are in dialogue with HCD to determine how this type of housing can be integrated into their local housing elements. Because this circumstance applies to only a handful of jurisdictions, it is recommended that housing needs generated by a public or private university be addressed in the jurisdiction's housing element if it is applicable.

(10) *The loss of units during a state of emergency that was declared by the Governor pursuant to the California Emergency Services Act (Chapter 7 (commencing with Section 8550) of Division 1 of Title 2), during the planning period immediately preceding the relevant revision pursuant to Section 65588 that have yet to be rebuilt or replaced at the time of the analysis.*

Replacement need, defined as units that have been demolished but not yet replaced, are included as a component of projected housing need in the RHNA methodology. To determine this number, HCD reviewed historical demolition permit data between 2008 and 2017 (reporting years 2009 and 2018) as reported by the California Department of Finance (DOF), and assigned SCAG a regional replacement need of 0.5% of projected and existing need, or 34,010 units.

There have been several states of emergency declared for fires in the SCAG region that have destroyed residential units, as indicated by several jurisdictions in their local planning factor survey responses. Survey responses indicate that a total of 1,785 units have been lost regionally from fires occurring after January 1, 2018. Units lost from fires that occurred prior to January 1, 2018, have already been counted in the replacement need for the 6th RHNA cycle.

In spring 2019, SCAG conducted a replacement need survey with jurisdictions to determine units that have been replaced on the site of demolished units reported. Region wide 23,545 of the region's demolished units still needed to be replaced based on survey results. The sum of the number of units needing to be replaced based on the replacement need survey and the number of units reported as lost due to recent states of emergency, or 25,330, is lower than HCD's regional determination of replacement need of 34,010. One can reasonably conclude that units lost based on this planning factor are already included in the regional total and distributed, and thus an extra mechanism to distribute RHNA based on this factor is not necessary to meet the loss of units.

(11) The region's greenhouse gas emissions targets provided by the State Air Resources Board pursuant to Section 65080.

An assessment of survey responses indicate that a number of jurisdictions in the SCAG region are developing efforts for more efficient land use patterns and zoning that would result in greenhouse gas emissions. These include a mix of high-density housing types, neighborhood based mixed-use zoning, climate action plans, and other local efforts to reduce greenhouse gas emissions at the regional level.

The RHNA methodology includes a distribution of 50 percent of regional existing need based on a jurisdiction's share of regional population within an HQTA. The linkage between housing planning and transportation planning will allow for a better alignment between the RHNA allocation plan and the Connect SoCal RTP/SCS. It will promote more efficient development land use patterns, encourage transit use, and importantly reduce greenhouse gas emissions. This will in turn support local efforts already underway to support the reduction of regional greenhouse gas emissions.

Moreover the RHNA methodology includes the Growth Forecast reviewed with local input as a distribution component, particularly for projected housing need. Local input is a basis for SCAG's Connect SoCal Plan, which addresses greenhouse gas emissions at the regional level since it is used to reach the State Air Resources Board regional targets. An analysis of the consistency between the RHNA and Connect SoCal Plan is included as an attachment to this document.

(12) Any other factors adopted by the council of governments that further the objectives listed in subdivision (d) of Section 65584, provided that the council of governments specifies which of the objectives each additional factor is necessary to further. The council of governments may include additional factors unrelated to furthering the objectives listed in subdivision (d) of Section 65584 so long as the additional factors do not undermine the objectives listed in subdivision (d) of Section 65584 and are applied equally across all household income levels as described in subdivision (f) of Section 65584 and the council of governments makes a finding that the factor is necessary to address significant health and safety conditions.

No other planning factors were adopted by SCAG to review as a specific local planning factor.

Affirmatively Furthering Fair Housing (AFFH)

Among a number of changes due to recent RHNA legislation is the inclusion of affirmatively furthering fair housing (AFFH) as both an addition to the listed State housing objectives of Government Section 65588 and to the requirements of RHNA methodology as listed in Government Code Section 65584.04(b) and (c), which includes surveying jurisdictions on AFFH issues and strategies and developing a regional analysis of findings from the survey.

AFFH Survey

The AFFH survey accompanied the required local planning factor survey and was sent to all SCAG jurisdictions in mid-March 2019 with a posted due date of May 30, 2019. Ninety (90) of SCAG's 197 jurisdictions completed the AFFH survey, though some jurisdictions indicated that they would not be submitting the AFFH survey due to various reasons. The full packet of surveys submitted prior to the development of the proposed methodology packet can be downloaded at www.scag.ca.gov/rhna.

Jurisdictions were asked various questions regarding fair housing issues, strategies and actions. These questions included:

- Describe demographic trends and patterns in your jurisdiction over the past ten years. Do any groups experience disproportionate housing needs?
- To what extent do the following factors impact your jurisdiction by contributing to segregated housing patterns or racially or ethnically-concentrated areas of poverty?
- To what extent do the following acts as determinants for fair housing and compliance issues in your jurisdiction?
- What are your public outreach strategies to reach disadvantaged communities?
- What steps has your jurisdiction undertaken to overcome historical patterns of segregation or remove barriers to equal housing opportunity?

The survey questions were based on the U.S. Department of Housing and Urban Development (HUD) Analysis of Impediments to Fair Housing Choice survey that each jurisdiction, or their designated local Housing Authority, must submit to HUD to receive Community Development Block Grant (CDBG) funds. For the AFFH survey, jurisdictions were encouraged to review their HUD-submitted surveys to obtain data and information that would be useful for submitting the AFFH survey.

Pursuant to Government Code Section 65584.04(c), the following is an analysis of the survey results.

Themes

Several demographic themes emerged throughout the SCAG region based on submitted AFFH surveys. A high number of jurisdictions indicated that their senior populations are increasing and many indicated that the fixed income typically associated with senior populations might have an effect on housing affordability. Other jurisdictions have experienced an increase in minority populations, especially among Latino and Asian groups. There is also a trend of the loss of young adults (typically younger than 30) and a decrease in the number of families with children in more suburban locations due to the rise in housing costs.

Barriers

There was a wide variety of barriers reported in the AFFH survey, though a number of jurisdictions indicated they did not have any reportable barriers to fair access to housing. Throughout the SCAG region, communities of all types reported that community opposition to all types of housing was an impediment to housing development. Sometimes the opposition occurred in existing low income and minority areas. Some jurisdictions indicated that high opportunity resource areas currently do not have a lot of affordable housing or Section 8 voucher units while at the same time, these areas have a fundamental misunderstanding of who affordable housing serves and what affordable housing buildings actually look like. Based on these responses, it appears that community opposition to housing, especially affordable housing and the associated stigma with affordable housing, is a prevalent barrier throughout the SCAG region.

Other barriers to access to fair housing are caused by high land and development costs since they contribute to very few affordable housing projects being proposed in higher opportunity areas. The high cost of housing also limits access to fair housing and is a significant contributing factor to disparities in access to opportunity. Increasing property values were reported across the region and some jurisdictions indicated that they are occurring in existing affordable neighborhoods and can contribute to gentrification and displacement. Additionally, during the economic downturn a large number of Black and Latino homeowners were disproportionately impacted by predatory lending practices and therefore entered foreclosure in higher numbers than other populations.

Other barriers reported in the AFFH survey include the lack of funding available to develop housing after the dissolution of redevelopment agencies in 2012. Moreover, some jurisdictions indicated that the lack of regional cooperation contributes to segregation.

Strategies to Overcome Barriers

All submitted AFFH surveys indicated that their respective jurisdictions employed at least a few strategies to overcome barriers to access fair housing. These strategies ranged from local planning and zoning tools to funding assistance to innovative outreach strategies.

In regard to planning and zoning tools, a number of jurisdictions indicated they have adopted inclusionary zoning ordinances or an in-lieu fee to increase the number of affordable units within their jurisdictions. Others have adopted an accessory dwelling unit (ADU) ordinance with accommodating standards to allow for higher densities in existing single-family zone neighborhoods. A few jurisdictions indicated that they have adopted an unpermitted dwelling unit (UDU) ordinance, which legalizes unpermitted units instead of removing them provided that the units meet health and safety codes. In addition to ADU and UDU ordinances, some jurisdictions have also adopted density bonuses, which allow a project to exceed existing density standards if it meets certain affordability requirements. Some responses in the survey indicate that the establishment of some of these tools and standards have reduced community opposition to projects. In addition, some jurisdictions responded that they have reduced review times for residential permit approvals and reduced or waived fees associated with affordable housing development.

To combat gentrification and displacement, some jurisdictions have established rent-stabilization ordinances while others have established a rent registry so that the jurisdiction can monitor rents

and landlord practices. Some jurisdictions have adopted relocation plans and others are actively seeking to extend affordability covenants for those that are expiring.

In regard to funding, SCAG jurisdictions provide a wide variety of support to increase the supply of affordable housing and increase access to fair housing. A number of jurisdictions provide citywide rental assistance programs for low income households and some indicated that their programs include favorable home purchasing options. Some of these programs also encourage developers to utilize the local first-time homebuyer assistance program to specifically qualify lower income applicants.

Other jurisdictions indicate that they manage housing improvement programs to ensure that their existing affordable housing stock is well maintained. Some AFFH surveys describe local multiple rental assistance programs, including Section 8 Housing Choice vouchers and financial support of tenant/landlord arbitration or mediation services.

Some jurisdictions indicated that they have focused on mobile homes as a way to increase access to fair housing. There are programs described that assist households that live in dilapidated and unsafe mobile homes in unpermitted mobile home parks by allowing the household to trade in their mobile home in exchange for a new one in a permitted mobile park. Other programs include rental assistance specifically for households who live in mobile homes.

In regard to community outreach, a large number of jurisdictions in the SCAG region have established or are seeking to establish innovative partnerships to increase access to fair housing and reduce existing barriers. Many jurisdictions work with fair housing advocacy groups such as the Housing Rights Center, which provide community workshops, counseling, and tenant-landlord mediation services. Other jurisdictions have established landlord-tenant commissions to resolve housing disputes and provide services to individuals with limited resources. Some jurisdictions have partnered with advocacy groups, such as the League of United Latin American Citizens (LULAC), to hold community-based workshops featuring simultaneous multi-lingual translations. Other innovative partnerships created by jurisdictions include those with local schools and school districts and public health institutions to engage disadvantaged groups and provide services to areas with limited resources.

A large number of jurisdictions have also indicated that they have increased their social media presence to reach more communities. Others have also increased their multi-lingual outreach efforts to ensure that limited-English proficiency populations have the opportunity to engage in local fair housing efforts.

Based on the AFFH surveys submitted by jurisdictions, while there is a wide range of barriers to fair housing opportunities in the SCAG region there is also a wide range of strategies to help overcome these barriers at the local level.

Meeting AFFH Objectives on a Regional Basis

To work towards the objective of AFFH, several benchmarks were reviewed as potential indicators of increasing access to fair housing and removing barriers that led to historical segregation patterns.

Opportunity Indices

The objectives of affirmatively furthering fair housing are to not only overcome patterns of segregation, but to also increase access to opportunity for historically marginalized groups, particularly in racially and ethnically concentrated areas of poverty. In 2015 the U.S. Department of Housing and Urban Development (HUD) developed a set of indices, known as "Opportunity Indices" to help states and jurisdictions identify factors that contribute to fair housing issues in their region and comply with the federal Fair Housing Act.

In 2015 the U.S. Department of Housing and Urban Development (HUD) developed a set of indices, known as "Opportunity Indices" to help states and jurisdictions identify factors that contribute to fair housing issues in their region and comply with the federal Fair Housing Act. In late 2017, a Task Force convened by HCD and the California Tax Credit Allocation Committee (TCAC) released an "Opportunity mapping" tool based on these HUD indices to identify areas in California that can "offer low-income children and adults the best chance at economic advancement, high educational attainment, and good physical and mental health."

The TCAC and HCD Opportunity mapping tool includes a total of eleven (11) census-tract level indices to measure exposure to opportunity in local communities. Regional patterns of segregation can be identified based on this tool. The indices are based on indicators such as poverty levels, low wage job proximity, pollution, math and reading proficiency. Below is a summary table of the 11 indices sorted by type:

Economic	Environment	Education
Poverty	CalEnviroScreen 3.0 indicators • *Ozone* • *PM2.5* • *Diesel PM* • *Drinking water contaminates* • *Pesticides* • *Toxic releases from facilities* • *Traffic density* • *Cleanup sites* • *Groundwater threats* • *Hazardous waste* • *Impaired water bodies* • *Solid waste sites*	Math proficiency
Adult education		Reading proficiency
Employment		High school graduation rates
Low-wage job proximity		Student poverty rate
Median home value		

To further the objectives of AFFH, SCAG utilizes the Opportunity indices tool at multiple points in the RHNA methodology. Jurisdictions that have the highest concentration of population in low resource areas are exempted from receiving regional residual existing need, which will result in fewer units

assigned to areas identified as having high rates of poverty and racial segregation. Additionally, jurisdictions with the highest concentration of population within highest resource areas will receive a higher social equity adjustment, which will result in more access to opportunity for lower income households.

Public Engagement

The development of a comprehensive RHNA methodology requires comprehensive public engagement. Government Code Section 65584.04(d) requires at least one public hearing to receive oral and written comments on the proposed methodology, and also requires SCAG to distribute the proposed methodology to all jurisdictions and requesting stakeholders, along with publishing the proposed methodology on the SCAG website. The official public comment period on the proposed RHNA methodology began on August 1, 2019 after Regional Council action and concluded on September 13, 2019.

To maximize public engagement opportunities, SCAG staff hosted four public workshops to receive verbal and written comment on the proposed RHNA methodology and an additional public information session in August 2019:

- August 15, 6-8 p.m. Public Workshop, Los Angeles (View-only webcasting available)
- August 20, 1-3 p.m. Public Workshop, Los Angeles (Videoconference at SCAG regional offices and View-only webcasting available)
- August 22, 1-3 p.m., Public Workshop, Irvine
- August 27, 6-8 p.m., Public Workshop, San Bernardino (View-only webcasting available)
- August 29, 1-3pm Public Information Session, Santa Clarita

Approximately 250 people attended the workshops in-person, at videoconference locations, or via webcast. Over 35 individual verbal comments were shared over the four workshops.

To increase participation from individuals and stakeholders that are unable to participate during regular working hours, two of the public workshops were be held in the evening hours. One of the workshops was held in the Inland Empire. SCAG will worked with its Environmental Justice Working Group (EJWG) and local stakeholder groups to reach out to their respective contacts in order to maximize outreach to groups representing low income, minority, and other traditionally disadvantaged populations.

Almost 250 written comments were submitted by the comment deadline and included a wide range of stakeholders. Approximately 50 percent were from local jurisdictions and subregions, and the other 50 percent were submitted by advocacy organizations, industry groups, residents and resident groups, and the general public. All of the comments received, both verbal and written, were reviewed by SCAG staff, and were used as the basis for developing the RHNA methodology.

The increased involvement by the number of jurisdictions and stakeholders beyond the municipal level compared to prior RHNA cycles indicate an increased level of interest by the public in the housing crisis and its solutions, and the efforts of SCAG to meet these interests. As part of its housing

program initiatives, SCAG will continue to reach out to not only jurisdictions, but to advocacy groups and traditionally disadvantaged communities that have not historically participated in the RHNA process and regional housing planning. These efforts will be expanded beyond the RHNA program and will be encompassed into addressing the housing crisis at the regional level and ensuring that those at the local and community level can be part of solutions to the housing crisis.

Additional RHNA Methodology Supporting Materials

Please note that additional supporting materials for the RHNA Methodology have been posted on SCAG's RHNA website at www.scag.ca.gov/rhna including Data Appendix, Local Planning Factor Survey Responses and Affirmatively Furthering Fair Housing Survey Responses.

UCLA | HOUSING & HOSPITALITY SERVICES

STUDENT HOUSING MASTER PLAN

2016-2026

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EXECUTIVE SUMMARY

The UCLA Student Housing Master Plan — consistent with predecessor UCLA Student Housing Master Plans — outlines a set of long-term strategic aspirations for the housing program at UCLA. Together with key planning principles described in the document, the updated Master Plan is intended to directly link housing program goals to institutional objectives in support of the campus academic mission.

In light of increasing demand for University-owned housing, the Master Plan acknowledges the importance of university housing to support undergraduate students during their transition to UCLA. In addition, university housing provides much needed academic, leadership, and personal growth experiences to support retention and to enrich the quality of the undergraduate experience at UCLA. The Master Plan also endorses the importance of housing as a resource to support recruitment of graduate and professional students and to provide assistance during their transition to the University.

UCLA Housing & Hospitality Services' primary mission is to continue the transformation of UCLA from a commuter to a residential campus minimizing the need for vehicle trips to and from campus and ensuring affordable housing options for Bruin generations to come.

Our secondary mission is to create environments that empower residents, guests, and team members to reach their fullest potential. We do this by investing in healthy and innovative dining concepts, and building and renovating our facilities to ensure that living in university accommodations is a pleasant, safe, and healthy experience. We also provide exceptional fitness and recreational facilities in convenient locations, and offer a wide variety of study spaces to enhance the living and learning experience at UCLA.

KEY PLANNING PRINCIPLES

There are seven key planning principles to guide the Master Plan:

1. *University housing is a vital resource to support the recruitment, transition, personal growth and development, academic achievement, retention, and graduation of undergraduate students.*
2. *Affordability and living options must be considered in developing the student housing program.*
3. *Limited land and resources require a high density living model in order to maximize the number of students housed, with a focus on a high quality living experience.*
4. *Housing is a vital resource used to support the recruitment and retention of graduate and professional students.*
5. *University housing helps create a supportive and cohesive student community by integrating the housing program with other aspects of campus life.*
6. *Allocation strategies must be refined to ensure that housing resources support both academic program objectives and student recruitment and retention goals.*
7. *Housing needs of postdoctoral scholars should be addressed after the campus has met the housing needs of graduate and professional students.*

HOUSING GOALS

The seven key planning principles led to the following four overarching goals with respect to the campus housing program:

GOAL 1: University housing will be guaranteed to all entering first-year students for a period of four years.

GOAL 2: University housing will be guaranteed to all new transfer students for a period of two years.

GOAL 3: University housing will be guaranteed to new graduate and professional students for a period of two years. University housing will be guaranteed to new graduate and professional student families with dependent children for as long as the student is making normal progress to degree conferment for up to seven years.

GOAL 4: University housing will be available to single postdoctoral scholars for a period of two years, as supply is available. University housing will be available to new postdoctoral scholars with dependent children for as long as the individual is participating in a postgraduate program for up to seven years, as supply is available.

OVERVIEW

In 1986, UCLA drafted its first comprehensive Student Housing Master Plan, designed to provide direction to the campus in addressing student housing needs in support of the institution's academic mission. Subsequent revisions of the Student Housing Master Plan were completed in 1990, 2000, 2007, 2010, and 2011.

In 2016, an updated housing supply and demand analysis was conducted to assess changes in critical assumptions concerning campus enrollment projections, available student housing inventory, and occupancy expectations. The assumptions were as follows:

- Accommodate the proposed increase of undergraduate students.
- Align triple projections to meet current trend information and assist in understanding when final guarantees can be met.
- Update take-rate percentages to match evolved trends for housing for both graduate and undergraduate students.

THE CAMPUS PLANNING ENVIRONMENT

Since the last Master Plan was approved in 2011, the campus planning environment has significantly changed. While the planning principles and goals remain consistent with institutional objectives, housing enrollment and guaranteed student housing acceptance rates for first, third-year undergraduate students, first-year transfer students, and graduate students have increased significantly. All UC campuses are increasing enrollment of California residents over the next four years. It is assumed that the current projected enrollment increases for the next four years would be 1,500 Full Time Enrolled Students (FTE) or 2,100 headcount over the 28,500 base in fall 2015, which represents a 7 percent increase. More specifically, the fall 2016 cohort would grow by 600 freshman and 150 transfer students, all of the increases coming from the California resident component of UCLA incoming students. These numbers continue to be evaluated by the Office of the President an UC campuses and could evolve in response to California resident enrollment targets.

Normally, a 7 percent increase in student enrollment would not necessarily place a significant stress on the existing campus facilities. However, when coupled with the 14 percent enrollment increase that occurred between fall 2010 and fall 2014, which the campus is still in the process of absorbing, the cumulative impact presents serious challenges.

For undergraduate students, the continued increase in housing demand highlights the success of the housing program, which has transformed UCLA from what was once predominantly a commuter campus to a residential campus. In a span of approximately 25 years, the campus has fostered the development of a unique residential environment, one in which the majority of undergraduates – and nearly all lower division students – live on or within walking distance of campus in a combination of University-owned housing and in private sector housing in Westwood.

As the residential campus has evolved, the College of Letters and Science, Residential Life, and Housing & Hospitality Services have developed a collaborative partnership focused on a wide array of academic-oriented opportunities and academic support services for on-campus housing residents and, to some extent, for undergraduate students who live off campus. These programs and support services are offered within campus residential facilities, providing a unique benefit to students living on or adjacent to campus.

UCLA has aspired to provide a four-year guarantee of housing for all first year undergraduate students and a two-year guarantee for all new transfer students, while concurrently reducing the number of triple accommodations. In pursuit of these objectives, an additional 1,500 bed spaces were constructed and added to the on-campus housing inventory, along with additional recreation and dining space. Originally, it was anticipated that the addition of these 1,500 beds would enable UCLA to increase the guarantee for transfer students to a two-year standard, while freshmen would remain at the three-year guarantee. As a result of the student enrollment increase of FY 2011 through FY 2014, however, these additional bed spaces were utilized to absorb this enrollment expansion, at the expense of increasing the housing guarantees. Concurrently, the undergraduate off-campus apartment inventory was being increased. Landfair Vista was acquired in 2014, adding 178 beds. Landfair and Glenrock Apartments were both redeveloped to add a net of 131 beds in fall 2014. Gayley Court, formerly Faculty Gayley, was converted in 2013 to undergraduate housing, netting 284 beds. The Margan Apartments will also be redeveloped starting in 2017, and return to inventory in 2019 with an additional 143 beds. Thus, the total incremental off-campus apartment inventory increase by 2019 will be 736 beds.

Housing has also concluded an aggressive systems renovation cycle for the on-campus housing inventory. Over the last decade, buildings were taken offline during the academic year in order to complete necessary systems improvements: mechanical, electrical, plumbing, and infrastructure refurbishments to existing buildings. Decreasing the inventory while enrollment has been simultaneously growing, resulted in higher than desired triple occupancy percentages. This cycle is concluding with completion of the Delta Terrace renovation this academic year. All on-campus inventory will be online for the 2016-2017 academic year. With systems renovations complete, the planned renovations over the next two decades will be light in nature, targeting: carpet, paint, wall vinyl, and when possible incorporating energy efficient elements. These light renovations will typically be initiated during the summer and will be completed prior to fall student move-in.

Dining is an essential element in providing a quality residential experience. The housing program has not only focused on adding additional seating to accommodate recent enrollment increases, but has also invested in infrastructure improvements to gain efficiencies in food production and increase quality. As part of the phased buildout in 2013, an all-you-care-to-eat dining facility, *Bruin Plate*, in Carnesale Commons was added. Bruin Plate innovated platform dining, featuring locally-sourced produce and meats from nearby farms, sustainable seafood, unprocessed and preservative-free items, organic foods, cage-free eggs, nutrient-packed ingredients, and expanded vegetarian and vegan options, in a light-filled venue with a capacity of 710 seats.

In Winter 2017, Housing introduced a new boutique, *The Study at Hedrick*. This new space innovates how students can eat and study together. The Study is an artisanal bakery with flexible study space that adds 350 seats. It will be the first 24-hour eatery and study space of its kind in higher education.

For graduate students, additional graduate housing must continue to be a campus priority. With the completion of Weyburn Terrace II in 2013 and the Hilgard Houses in 2010, which collectively provide 1,960 apartment-style beds for single graduate students, the campus is able to provide housing to approximately 24 percent of graduate and professional students. In addition, the campus is able to provide academic departments with a limited number of bed spaces to allocate to graduate students, but does not have sufficient inventory to guarantee housing to all graduate students. The University's inability to offer guaranteed housing to all newly recruited graduate students presents a serious challenge to the campus when competing against other educational institutions.

CHALLENGES FOR THE FUTURE

Despite the notable success in planning for and meeting student housing needs, several challenges face the campus housing program. Of greatest significance is that the current demand for housing significantly exceeds existing supply. While UCLA is able to guarantee university housing for three years to every new freshman student who currently requests such housing, a large portion of the guarantees are being met by housing three students in rooms originally designed for two (referred to as "triples"). Between the mid-1970s and the late 1980s, the on-campus housing program operated at 100 percent occupancy. Since the early 1990s, occupancy with triple rooms has exceeded 125 percent. Even with the additional beds from new developments, redevelopments, conversion of faculty buildings, and renovations, Housing is meeting current guarantees by maintaining higher than desired triple occupancy percentages.

Without additional beds, the projected enrollment increases for FY 2017 through FY 2020 will result in triple occupancy that will exceed 75 percent.

This result is in stark comparison to the aspiration to provide a four-year guarantee for freshmen and a two-year guarantee for transfers with triple occupancy in the range of 60-65 percent. Cuts in state funding and the resulting increases in tuition have put a strain on financial resources for students and families. To lessen the impact, UCLA Housing continues to contain costs to keep university housing affordable and accessible.

Finally, meeting the demands for graduate student housing remains a priority for the housing program. The Weyburn Terrace Phase II Graduate Student Housing Project added 500 apartment-style beds and reduced the current shortfall of beds for single graduate students. It is clear that to resolve the graduate housing shortfall, the campus will need to continue to supplement existing inventory with the purchase and development of additional apartment buildings.

KEY PLANNING PRINCIPLES

A fundamental tenet underlying the Master Plan is the aspiration to continue the significant progress made to date in transforming UCLA to a residential campus. Eight key planning principles dealing with the philosophy and intent of the UCLA housing program support the continuing transformation process as well as other institutional goals for student recruitment, retention, and academic progress. These principles are summarized below.

1

On-campus housing is a vital resource to support the recruitment, transition, personal growth and development, academic achievement, retention, and graduation of undergraduate students.

UCLA's excellent academic reputation continues to attract undergraduate students to the campus — in fact, the number of undergraduate applications far exceeds available admissions space each year. As competition has increased for students of the very highest caliber, the campus has begun to use more sophisticated recruitment strategies to help attract the most sought-after students. Top high school graduates, especially students from under-represented minority backgrounds and non-residents, typically receive offers of admission from multiple highly-selective institutions. To be competitive, UCLA must be able to offer these students an array of campus services, support, and resources designed to enhance the attractiveness of campus life at UCLA.

Many institutions with which UCLA competes offer guaranteed housing for entering undergraduates for varying lengths of time up to four years. Thus, the availability of on-campus housing at UCLA is vital to recruiting highly desirable entering undergraduate students. For entering undergraduate students, on-campus housing helps ease the transition to university life by providing numerous benefits in addition to convenience and affordability.

On-campus housing facilities are within walking distance of classrooms, libraries, laboratories, recreation facilities, and other campus resources. In addition, within on-campus housing facilities, undergraduate students can take advantage of numerous types of academic programs, academic support services, personal growth and leadership opportunities, community activities, and a wide range of employment opportunities. For example, programs such as the Faculty-in-Residence program help break down the barriers associated with attending a large university and make one-to-one interaction with faculty not only possible, but common. Additionally, the majority of the parents of these entering undergraduates want their children to live on campus because of UCLA's reputation for providing safe accommodations with a variety of programs and services that promote academic success, personal growth, and development opportunities.

Unlike graduate and professional students who typically have some experience living on their own, most new undergraduate students come to the University with little or no independent living experience. They must learn to be successful in a highly competitive academic environment, while adjusting to the challenges of living independently and making decisions that will impact their personal lives. Similarly, transfer students come to the University in the middle of their educational program. These entering UCLA students must quickly adjust to the rigors of academia while adapting to their new residential environment.

Additionally, dedicated space is available within residential facilities specifically for academic counseling, tutoring services, and for regularly scheduled classes, seminars, and review sessions. This intellectually and socially rich living environment nurtures academic achievement, retention, cognitive development, intellectual growth, and personal maturation. Substantial amounts of research show that living on campus has a significant positive influence on completion of a bachelor's degree, improvement of critical thinking skills and intellectual aptitude, and an increase in personal autonomy and independence.

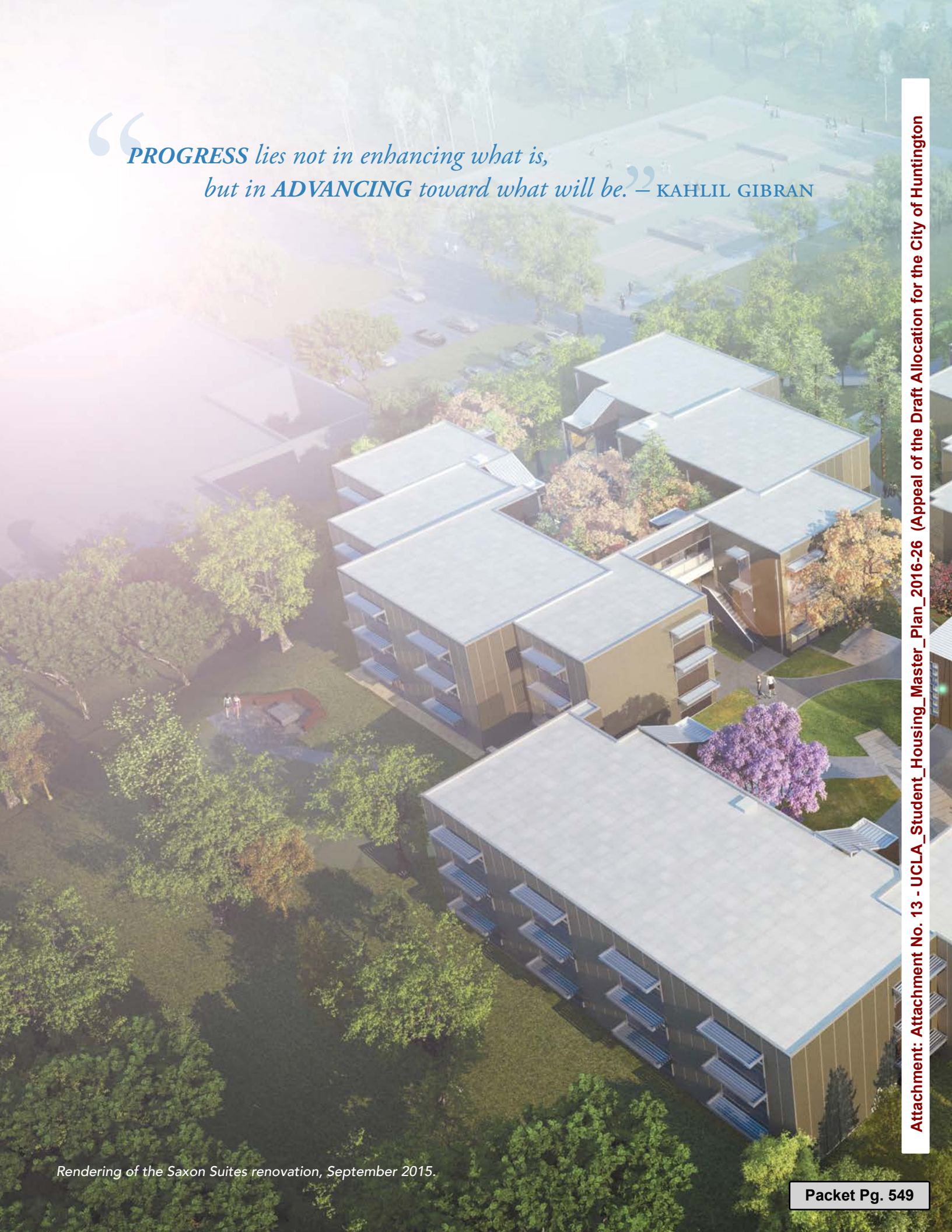
The Master Plan acknowledges the importance of housing as a primary resource to support undergraduate student recruitment and transition to the University. The provisions and guarantees incorporated into the Master Plan ensure that institutional recruitment needs for undergraduates are addressed and that new undergraduate students and transfer students are supported during their transition period to the University. Furthermore, the provisions contained in the Master Plan acknowledge the importance of supporting student retention and academic achievement for all undergraduates who continue living on campus.

2

Affordability and living options must be considered in developing the student housing program.

Of primary importance to the success of a student housing program is the relative affordability of University-owned housing compared to housing available in the private sector. Given the nature of the community surrounding UCLA, the types and amount of housing available proximate to campus, and the competition by non-students for housing in these desirable neighborhoods, it seems likely that student demand for affordable University-owned housing will continue to be strong in the foreseeable future.

*“**PROGRESS** lies not in enhancing what is,*
*but in **ADVANCING** toward what will be.”* – KAHLIL GIBRAN



Rendering of the Saxon Suites renovation, September 2015.

Current University housing options generally meet the criteria of being lower in cost than most comparable alternatives in the community. Similarly, UCLA's on-campus housing program, which includes various dining options, is very competitive with similar room and board programs offered at other University of California campuses. The Westwood housing market for rental properties is becoming unreachable for the vast majority of students. Studies[1] indicate that Westwood market rents could increase as much as 46 percent within the next eight years. Additionally, most of the inventory was constructed in the 1940s and 1950s. Limitations imposed by the Westwood Site Specific Plan leave little financial incentive for owners of existing inventory to renovate or redevelop their parcels into more modern facilities. Thus, it is probable that the Westwood housing inventory will be stagnant in terms of availability and quality but rapidly escalating in terms of cost.

3

Limited land and resources require a high density living model in order to maximize the number of students housed, with a focus on a high quality living experience.

To meet the demands for proximate on-campus student housing, a model of high density living was implemented to maximize the number of students that could be accommodated. The UCLA Housing program has invested in four key areas to provide a high-quality, holistic living experience:

1. **Diverse & Healthy Dining Options**
   We are continuing to invest in the health of our students and guests with innovative dining concepts like *Bruin Plate*. This anchor facility focuses on fresh, wholesome, nutritionally-balanced food and beverage options, and best practices in sustainability in food service operations. Other award-winning and popular dining concepts include *FEAST at Rieber* with a daily rotating pan-Asian menu and a Mediterranean-based menu featured at *Covel Residential Restaurant*.

2. **Convenient Fitness & Recreation Facilities**
   As part of our on campus residential community, the *Bruin Fitness Center (BFit)* opened in fall 2015 on the ground floor of Carnesale Commons. Other facilities include Hedrick basketball courts, Spieker Aquatic Center, and Sunset Canyon Recreation Center, which features an Olympic size pool. The close proximity of fitness facilities to on-campus housing supports the university's Healthy Campus Initiative.

3. **Clean & Well-maintained Living Spaces**
   The 20-year plan at H&HS is to keep every residential building on a continual renovation and refurbishment schedule. By fall quarter 2016, all on- and off-campus inventory will be new or freshly renovated (within the last seven to eight years) with a business model to ensure this work can continue for decades without requiring dramatic year over year increases to housing fees.

[1] Chiland, Elijah. "Rents Already Soaring Along L.A.'s Unopened Expo Line." March 18, 2016. www.lacurbed.com

4. **Flexible & Proximate Study Spaces**
   Opening Winter 2017, *The Study at Hedrick* will be specially designed to meet the needs of today's students and their demand for late night study space. The Study will feature natural light, around-the-clock coffee and snacks, power outlets, reliable WiFi access, and a variety of comfortable options for private, communal, and group studying. The Study complements other study spaces created within and adjacent to on-campus housing.

4

Housing is a resource that should be used to support the recruitment of graduate and professional students.

In 2013, Phase II of the Weyburn Terrace Single Graduate Student Housing Project was completed. This project provided much needed on-campus guaranteed housing, increasing capacity to 1,960 single graduate bed spaces.

The need for additional housing for graduate students is closely linked to UCLA's position as a worldwide leader in graduate education and research. UCLA seeks to recruit and retain the very best graduate students worldwide, and the quality, affordability, and proximity of housing to campus is integral to successfully recruiting new graduate students in all academic disciplines and professions. This is especially true for graduate students from outside southern California, where the availability of housing is beneficial to their adjustment to the Los Angeles metropolitan area and lifestyle.

While undergraduate students have been predominantly from California, many graduate and professional students come to UCLA from all over the world. Moreover, creation of dedicated on-campus graduate student housing provides an opportunity to create a graduate student community where traditional learning experiences can evolve and support new and creative levels of interdisciplinary focus and exchange. This potential is yet another means by which UCLA can continue to distinguish itself in graduate education.

Guaranteed housing for graduate students is also a critical recruitment mechanism. Students coming to campus from outside the Los Angeles basin value the availability of University-owned housing to help them become established in Los Angeles while adjusting to coursework at UCLA. Furthermore, housing on or proximate to campus benefits graduate and professional students by reducing commuting and transportation challenges and promotes access to and use of resources available to students on campus. Finally, University-owned housing is more affordable than comparable private sector housing, so graduate and professional student's benefit from the associated cost savings of living in University housing.

In acknowledgement of the critical role housing plays in supporting graduate and professional student recruitment, the Master Plan contains provisions to address the ongoing housing needs of incoming graduate and professional students and student families.

5

On-campus housing helps create a supportive and cohesive student community.

An important benefit of University-owned housing is the cohesive nature of the community formed by groups of students living in close proximity to one another. Opportunities for interactions among students from different personal backgrounds, interests, and academic pursuits contribute to the richness of the living environment. The student community formed within University-owned housing facilities contributes to the discovery and learning process. Student residents meet other students, form friendships, and participate in intellectual discussions that add to the quality of student life at UCLA.

Students who live on campus in the residential community benefit greatly from the various academic, social, and learning programs that are available. They also benefit from physical proximity to campus facilities and to services and programs such as libraries, health and counseling centers, recreation programs, student organization activities, and other campus-based academic and support services. These opportunities make for a richer educational experience and enhance the depth and breadth of student life. The Master Plan continues to support the development of on-campus housing which fosters a cohesive student community.

6

A successful residential campus integrates housing programs with other aspects of campus life.

The concept of a residential campus must extend beyond the physical facilities of residence halls, apartment buildings, and meeting places. Like any master planned community, a residential campus is an integrated approach to the total student experience. At UCLA, the residential community comprises of nearly all entering undergraduates and approximately 80 percent of second-year undergraduates (100 percent of those who have lived in on-campus housing their first-year and apply for a second year), and about 40 percent of third-year undergraduates. In the future, increasing percentages of transfer and upper division students, as well as single graduate and professional students, will join this community.

The sheer size of the residential community dictates that consideration be given to the impact of the community on campus programs, activities, and facilities that serve not only student residents, but the entire UCLA community of students, faculty and staff. Of critical consideration is the impact of an increasing student community on recreation facilities and programs. The capacities of existing facilities — including both indoor facilities, such as the John Wooden Center, and outdoor facilities, such as the Sunset Canyon Recreation Center — are likely to be exceeded by the introduction of additional campus residents, and the impact will be noted by all users. Development of new

facilities, particularly facilities in close proximity to student housing, is essential to ensure that the entire campus community will continue to have reasonable access to recreation facilities.

The development of new academic support facilities (that promote student counseling, tutoring, study groups, student-faculty interactions, student services, etc.) will be essential to compliment those currently available. These existing facilities are used with increasing frequency for both formal and informal undergraduate instruction. Additional space with the flexibility to accommodate academic programs will be required to support the growing student community on or near the northwest quadrant of campus. Additionally, in-room computing and additional computer labs will still be required to provide for the increasing convergence of technology and academic instruction/research, even at the undergraduate level.

Other services and programs that may be impacted by the growing student residential community include parking, campus transportation, campus-wide student programming, and commercial retail services. The impact of a growing residential campus on recreation and academic facilities as well as on other campus services and programs must be carefully evaluated as programmatic and physical goals for the campus housing program are developed.

Another factor key to the success of the student housing program is the array of housing options available to students. While residence hall-style housing is ideal for nearly all entering undergraduates who have just completed high school, it is not preferred by graduate students, older students, those returning to school after an absence, or those with families. And — while triple room accommodations are preferred by some students for a variety of reasons, including their lower cost— these should only be offered to those students who specifically request them.

For these reasons, University-owned housing must remain affordable and an array of different types of housing options must be available to meet the needs of a diverse group of UCLA students. The quality and type of housing provided by the campus will directly impact the success of the housing program in addressing student needs and preferences. The Master Plan includes, as a critical planning premise, the consideration of cost as a key attribute of existing and future University-owned housing, and includes provisions for a variety of housing options on- and off-campus to meet the unique needs of diverse groups of students.

7

Allocation strategies must be refined to ensure that housing resources support both academic program objectives and student recruitment and retention goals.

As additional housing is made available for students, advisory committees which have been appointed by the Chancellor to determine how such resources are allocated must also evolve. These committees of faculty, students, and administrators apply housing allocation methodologies consistent with academic program goals and student recruitment and retention strategies. As has been the practice in the past, advisory groups can assist the housing program in the development of appropriate allocation policies and procedures, particularly with respect to housing for graduate and professional students. Such policies and procedures will be subject to review and reconsideration as housing supply and needs change over time.

8

Housing needs of postdoctoral scholars should be addressed after the campus has met the housing needs of graduate and professional students.

Postdoctoral scholars participate in ongoing research and scholarly activities at UCLA. These individuals work with UCLA faculty members to advance their own academic careers while continuing to learn from others more senior in their field. Postdoctoral scholars are very often from foreign countries and are likely to be married or have children. They are highly recruited to come to UCLA and their contributions have immeasurable positive impact on the academic excellence of the institution.

Postdoctoral scholars face challenges similar to those of graduate and professional students in finding affordable housing proximate to campus. The availability of University-owned housing provides essential support for the scholars who currently take advantage of the resource, helping to ease their transition to Los Angeles and minimizing commuting and transportation requirements. The Master Plan acknowledges the institutional benefit of providing affordable housing to postdoctoral scholars and includes provisions to continue to support these essential members of the UCLA academic community after the housing needs of graduate and professional students are satisfied.

HOUSING GOALS

Based on the principles discussed above, the following goals for housing provisions and guarantees for UCLA students are in place. These goals are meant to be long-term strategic aspirations for the housing program at UCLA and are directly linked to UCLA's academic mission. The goals will guide future changes and growth in the housing program. Actual implementation of the Master Plan will take place as programmatic and physical goals for the campus housing program are developed. These programmatic and physical goals will translate the underlying principles into actuality and will change over time as contemporary needs dictate.

These goals are consistent with the current evolution and planning for student housing into the next decade (2011-2021) while embracing the fundamental tenets of the earlier Master Plans.

GOAL 1: University housing will be guaranteed to all entering first-year students for a period of four years.

The benefits of living on campus for undergraduates are well documented. The UCLA housing program has been carefully designed to provide an environment that supports academic achievement and stimulates intellectual and personal growth. By extending the housing guarantee for entering freshman from three years to four years, UCLA will ensure that undergraduate students have available to them the best possible housing and programmatic options to sustain excellence for the duration of their academic studies.

GOAL 2: University housing will be guaranteed to all new transfer students for a period of two years.

To correspond with the four-year housing guarantee offered to entering freshmen, entering transfer students will be guaranteed University-owned housing for a period of two years. This guarantee will help ensure that transfer students have opportunities to access the myriad of programs and support services designed to facilitate their successful transition to the University and their timely completion of a degree.

GOAL 3: University housing will be guaranteed to new graduate and professional students for a period of two years. University housing will be guaranteed to new graduate and professional students with dependent children for as long as the student is making normal academic progress to degree for up to seven years.

By offering graduate and professional students, including health science and medical interns and residents, a guarantee of University-owned housing, the campus will improve its ability to recruit the very best students. The two-year guarantee will provide a resource for entering graduate and professional students to assist them in becoming established and adjusted to academic life at UCLA and will help promote a community of learning where returning residents can provide mentoring and support to entering graduate students. By extending the housing guarantee for students with dependent children, the campus will ensure that families are not disrupted during the normal course of graduate study as long as students are making satisfactory progress to degree. Graduate and professional students with children will remain eligible for housing as long as their department certifies that they are making normal academic progress for up to seven years.

GOAL 4: University housing will be available to single postdoctoral scholars for a period of two years, as supply is available. University housing will be available to new postdoctoral scholars with dependent children for as long as the individual is participating in a postgraduate program, for up to seven years, as supply is available.

The campus acknowledges the important contributions of postdoctoral scholars and the importance of housing as a resource to support postdoctoral scholars. After demand for housing among graduate and professional students has been met, UCLA will offer housing to postdoctoral scholars for a period of two years for single postdoctoral scholars and for the duration of the program up to seven years for postdoctoral scholars with dependent children.

IMPLICATIONS OF THE REVISED MASTER PLAN GOALS & RECOMMENDATIONS

Implementation of the updated Master Plan supports continued efforts to increase the supply of University-owned housing because of the real and perceived benefits for UCLA students, for the campus and surrounding communities, and, ultimately, for the educational effectiveness of the institution. While mindful of existing limitations in the Long-Range Development Plan (LRDP) and of the need to preserve a balance among the uses of limited campus space, including a balance between housing, recreation, academic purposes, and open space, it is clear that new beds must be obtained in order for the updated Master Plan goals to be met.

In 1986 when the first Master Plan was developed, UCLA was essentially a commuter campus, with only about 12 percent of the student population living on campus, and a total of about 32 percent of students living either in University-owned housing or in privately-owned housing within one mile of campus. With successful implementation of the Master Plan, with all guarantees met and triple accommodations reduced to meet need, the campus will house more than 51 percent of the student population.

Today, UCLA's residential community accommodates about 38 percent of the student population. Academic programs in the residential setting are thriving. Residential students, their families, faculty, and the surrounding community have praised the results. As the foregoing sections point out, to meet the projected housing demand, UCLA will need to implement the Master Plan goals and develop additional housing. In addition, the campus must continue to review the private sector apartment inventory adjacent to and within five miles of campus and be prepared to purchase available buildings when opportunities present themselves.

To estimate and assess future requirements for University-owned housing, information about the total planned and approved supply of University-owned housing was evaluated alongside the current and projected student demand for housing. Housing program staff developed projections of future demand based on actual UCLA student housing trends. These demand figures are preliminary estimates only and will be revised and updated prior to any decision to build more housing. Adequate assurance of sufficient future student demand will be factored into the detailed analysis that will be required for the approval of any future housing projects. Additionally, campus land use, LRDP, and Environment Impact Report (EIR) issues will be thoroughly addressed prior to the development of new student housing.

SUPPORTING FACTORS FOR INCREASING INVENTORY OF UNIVERSITY-OWNED STUDENT HOUSING

The most critical factor is that current housing inventory does not allow the campus to meet the housing guarantees of the Master Plan. In addition, rooms that were designed for double occupancy are currently housing three students. Triple rooms should be at the request of the student rather tahn the required option in order to meet high housing demands.

Further, second-year transfer students, fourth-year students, and students who have never lived in the residence halls and therefore not eligible for the three-year guarantee are not guaranteed housing. With regards to graduate students, the campus aspires to provide two years of guaranteed housing to all those who desire it.

IMPACT OF UPDATED STUDENT HOUSING MASTER PLAN RECOMMENDATIONS

Increasing the supply of University-owned housing would benefit UCLA immeasurably. Progress toward these goals will be made in a systematic, measured manner, as has been the case since implementation of the first Master Plan

in 1986. As indicated earlier, new housing will only be developed after careful planning and consultation about potential benefits, costs, and trade-offs. Furthermore, the allocation of future housing inventory among various categories of students will be carefully planned to meet the most pressing campus goals. These cautionary notes notwithstanding, additional new housing inventory will be needed in the near term to support current and projected demand.

THE RECOMMENDED PATH FORWARD

A fundamental tenet underlying the housing objectives is the aspiration to continue the significant progress achieved to date in transforming UCLA to a residential campus. To enhance current quality or in the event projected enrollment is further increased, the undergraduate housing capacity should be increased by at least 4,500 beds. With the addition of the 4,500 beds, assuming projected enrollment growth is not further increased, triple occupancy will be reduced to 60-70 percent, while increasing the guarantee to four years for freshmen students and two years for transfer students.

Potential building sites should be explored on the Northwest Campus Zone and the Southwest Campus Zone. The developments will need to focus on addressing the demand of upper division student preferences as well as developments that are aligned with single graduate student demand.

Planning for new housing, both on- and off-campus should begin immediately to allow UCLA to meet the updated Master Plan 2011-2025 guarantees to today's students and to the growing numbers of students who will matriculate through 2025. Planning must include an assessment of the potential impact of increased housing on the delivery of student services, recreation facilities and programs, on-campus parking and transportation programs, and other campus services and facilities. Collaboration between the housing program and other campus service providers will ensure the successful growth of the student housing program, while retaining high levels of service quality and access to campus facilities for the entire campus community.

The campus should also work toward developing and acquiring off-campus apartments, particularly in the north Westwood Village. Adding housing inventory via this paradigm could achieve an increase in guarantees, help ensure affordable housing for students in the future, and further UCLA's transition to a residential campus. An increase in off- campus housing also does not impact the dining program and thus would not need any additional dining capacity. In addition increasing inventory off-campus, we will begin to address the shortfall for the graduate student population.

Adding both on- and off-campus housing will help ensure that UCLA continues to provide high-quality, safe, and affordable housing to students and protect future generations of Bruins from rapidly escalating rates for Westwood area rentals.

Our vision is to accommodate all UCLA students who wish to reside in university-provided housing. By increasing bed inventory, UCLA Housing will be able offer options to any enrolled student that would best ensure their health, well-being and academic success while at UCLA.

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— VISION STATEMENT

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Attachment No. 14 - UCLA_LRDP_Amendment_Final_SEIR-January2018

Due to the large file size (118MB), this attachment cannot be included with the agenda packet. It can be downloaded at:

https://www.dropbox.com/s/rt8mvi4n2gkhi5p/HuntingtonBeach-Attachment14.pdf?dl=0

CSU The California State University

BASIC NEEDS INITIATIVE

STUDY OF STUDENT BASIC NEEDS

January 2018

JANUARY 2018
This research was funded by the California State University Office of the Chancellor
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Executive Summary

A higher education degree is viewed by many as the greatest opportunity for long-term economic stability, a pathway toward asset growth, and debt management (Ma, Pender, & Welch, 2016). However, many students experience barriers to meeting their basic needs as they strive to earn a higher education degree. Phase 1 of the CSU Chancellor's Office study of basic needs was released in 2016. That study focused on *housing security* and *very low food security* for students, primarily from the perspectives of staff, faculty, and administrators.

Phase 2 is a mixed-methods study (N=24,537) that explored experiences of students with *homelessness, low* and *very low food security*. A survey was distributed to a census sample across 23 CSU campuses with an average participation rate of 5.76% (n=24,324). The sample was largely representative of the general student body. Student participants volunteered and were selected for focus groups and interviews based on reported levels of homelessness and food insecurity from the survey. Interview and focus group data were collected at 11 CSU campuses with students (n=213) who identified as either or both housing and food insecure on the quantitative survey.

This is the most comprehensive mixed-methods study of university students' unmet basic needs and the relationship to student success ever completed within a 4-year higher education system. Previous research either: (a) sampled from a different population, such as community college students (Goldrick-Rab, Richardson, & Hernandez, 2017), or unaccompanied homeless youth (Au & Hyatt, 2017); (b) only examined food security (Martinez, Webb, Frongillo, & Ritchie, 2017; Freudenberg, Manzo, Jone, Kwan, Tsui, & Gagnon, 2011; Martinez, Maynard, & Ritchie, 2016); (c) was conducted at a single campus (Chaparro, Zaghloul, Holck, & Dobbs, 2009; Patton-Lopez, Lopez-Cevallos, Cancel-Tirado, & Vazquez, 2014); or, (d) used a convenience sampling (Buch, Langley, Johnson, & Coleman, 2016; Davidson & Morrell, 2015). Findings from this study are groundbreaking and provide not only the prevalence of university student homelessness and food insecurity, but living examples from students about what they surmount in order to succeed at their dreams of earning a higher education degree.

Students who reported food insecurity, homelessness, or both also experienced physical and mental health consequences that were associated with lower academic achievement. They also reported higher rates of "inactive days," where poor physical or mental health kept them from their usual activities such as school, work, self-care, and recreational activities.

Students described how experiencing food insecurity and homelessness influenced most facets of life, including academic struggle, long work hours, and negative impact on mental and physical health.

Students who identified as Black/ African-American and first-generation to attend college experienced the highest rates of food insecurity (65.9%) and homelessness (18%).

CalFresh and campus emergency food pantry use increased with students who reported low and very-low food security; however, utilization rates were still very low at the time of data collection.

41.6%

of CSU students reported food insecurity, of those 20% experience *low food security* and 21.6% *very low food security*. National prevalence rates for food insecurity among U.S. households in 2016 was 12.3% (low and very low food security combined (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2017), making the case for college students emerging as a new food insecure population of concern, having a far higher risk of food insecurity than the general U.S. population.

10.9%

of CSU students reported experiencing homelessness one or more times in the last 12 months based on the combined Housing and Urban Development and the U.S. Department of Education definitions.

Recommendations

Student success is associated with students having their basic needs met. Food and housing security are social problems that are influenced by many factors. Therefore, responding to students who are homeless or food insecure will require complex, long-term approaches to solution building, including:

- Develop affordable housing and food options for students
- Targeted strategies to address the student populations that reported the highest levels of food insecurity and homelessness, particularly first generation African American college students
- Conduct longitudinal research exploring basic needs security as predictors and protective factors for persistence and degree completion in alignment with the CSU effort to increase graduation rates and decrease time to degree completion
- Incorporate staff as single points of contact who are trained in trauma-informed perspective in programmatic responses to students experiencing food and housing insecurity and co-locate space for the contact and students
- Identify and institute creative campaigns to develop a campus culture of awareness and response to support students who experience significant material hardships
- Utilize strategies like CalFresh enrollment and food pantries as preventative measures for food insecurity

Next Steps

The enormity of the level of unmet basic needs among CSU students is daunting; and yet, campuses across the CSU are making heroic efforts to increase support and resources for students who face material hardship to increase holistic student success. Phase 3 of the CSU study of basic needs will include a mixed-methods evaluation of student need and use of services, a reporting of the current status of available support across the 23 CSU campuses, and program evaluations of support programs at two campuses (California State University, Long Beach and Humboldt State University).

INTRODUCTION

The California State University (CSU) is the largest system of senior higher education in the country, with 23 campuses, 50,000 faculty and staff and 484,000 students. The CSU educates the most ethnically, economically and academically diverse student body in the nation. Created in 1960, the mission of the CSU is to provide high-quality, affordable education to meet the ever-changing needs of California. With its commitment to quality, opportunity, and student success, the CSU is renowned for superb teaching, innovative research and for producing job-ready graduates. Each year, the CSU awards more than 120,000 degrees. One in every 20 Americans holding a college degree is a graduate of the CSU and the alumni are 3.4 million strong.

A higher education degree is viewed by many as the greatest opportunity for long-term economic stability, a pathway to asset growth, and debt management (Ma, Pender, & Welch, 2016). Beyond this important financial stability, college facilitates personal and academic (Howard, 2003) growth and a sense of community membership (Holland, 2010; Perna, 2000; Rendón, Jalomo, & Nora, 2000; Renn & Arnold, 2003). This engenders cohesion both for the student and the community, fostering students' desire to continue to make commitments to the communities in which they live. In the last five decades, the gap in earnings between those with and without a degree has risen, making college degrees more important than ever (Pew Research Center, 2014). However, the price of college attendance and the cost of living have markedly increased. Even with a full financial aid package that often includes loans (or future college loan debt), college students with low incomes at 4-year public colleges in 2011-12 had $12,000 in total expenses after financial aid options were exhausted (Ma & Baum, 2015). In order to close this price gap, students are cutting costs of their basic needs such as food and housing. The data provided in this report confirms the need for investment in policy and practice to support students experiencing food insecurity and homelessness. Advancements in improvements directed at basic needs are vital for the short and long term health and academic success of university students.

BACKGROUND

Food Security

Evidence demonstrates that when low income households are unable to meet their survival needs (i.e., food, housing, health, heating, and transportation), food budgets are sacrificed first (Nord, Andrews, & Carlson, 2005). Similarly, college students with limited resources are also skipping meals to make ends meet. Previous research conducted with college students found that between 21% and 52% of students experienced food insecurity including reduced intake of food, nutritional deficits, and/or worry about having access to enough food (Chaparro, Zaghloul, Holck, & Dobbs, 2009; Crutchfield, 2016; Freudenberg et al., 2011; Goldrick-Rab, Broton, & Eisenberg, 2015; Martinez, Maynard, & Ritchie, 2016). In a study of 10 community colleges across the United States, 39% of students were found to have low food security (Goldrick-Rab, Broton, & Eisenberg, 2015). Similarly, 39% of City University of New York (CUNY) students were found to be food insecure (Chaparro, Zaghloul, Holck, & Dobbs, 2009). In a study of the University of California system, Martinez, Maynard, and Ritchie (2016) found that 42% of students experienced food insecurity (23% low and 19% very low food security).

There is limited research about the effects of food insecurity on the health and academic performance of college students; however, research among children in K-12 education systems provides insight. For children, food insecurity has been linked with higher risk for adverse effects across multiple life domains, including greater risk for lower academic performance (Feeding America, 2017; Winicki & Jemison, 2003) and negative health outcomes (Casey, et. al, 2005). College students, many of whom are young adults, may be experiencing similar effects (Latiner, et al., 2016; O'Neill & Maguire, 2017; Cady, 2014). O'Neill and Maguire (2017) found that students experiencing food insecurity reported health issues such as headaches and low energy. They also reported having trouble concentrating in class and studying at home when they did not have access to enough food. Food insecurity also negatively impacts energy levels and concentration and may make it more challenging to achieve academic success (Crutchfield, 2016; Goldrick-Rab, Richardson, & Hernandez, 2017; Martinez, Maynard, & Ritchie, 2016). Patton-López, et al. (2014) found that good academic performance was related to higher food security and having fair or poor health was associated with lower food security. One intervention that holds promise as a buffer against the negative effects of food insecurity is implementing CalFresh outreach on college campuses (the statewide version of the Supplemental Nutrition Assistance Program (SNAP) formerly known as food stamps). Frongillo, Jyoti and Jones (2006) found that using food stamps was associated with better learning outcomes among school-age children.

Empirical research is inadequate on the possible impacts of college student food insecurity on student success indicators related to academic performance, health, and mental health. In addition, evidence demonstrating interventions that may buffer negative outcomes are still missing from the literature. This study explores these areas in an effort to develop more effective support for students' holistic health, wellbeing, and academic achievement.

Homelessness and Housing Security

Students across the United States are experiencing homelessness and housing insecurity in higher education. Recent research suggests that housing insecurity impacts a significant number of college students in a variety of higher education institutions. Research at the University of Massachusetts Boston found that 5.4% of students experienced homelessness and 45% of participants reported housing insecurity (Silva et al., 2105). The City University of New York (CUNY) reported that 40% of students experienced housing instability (Tsui et al., 2011). Community colleges appear to have higher rates, ranging from 30% to 50% of students experiencing housing insecurity and 13% to 14% experiencing homelessness (Goldrick-Rab, Richardson, & Hernandez, 2017; Wood, Harris & Delgado, 2016). Research has also suggested that students who experience homelessness struggle to meet a variety of competing needs, including management of personal and financial responsibilities and navigating the college environment (Crutchfield, 2016; Goldrick-Rab, Broton, & Eisenberg, 2015; Goldrick-Rab, Richardson, & Hernandez, 2017; Gupton, 2017)

The issue of housing instability is complex in that students enter higher education with many competing budgetary requirements often not covered by financial aid (Goldrick-Rab, 2016). As affordable housing becomes less available across California, students have little to compete with against high market value rental environments. Further, stigmatization of homelessness may cause students to hide their unstable housing status (Gupton, 2017; Tierney & Hallett, 2012). Homelessness and housing security among college students may make it more challenging to achieve academic success (Crutchfield, 2016; Goldrick-Rab, Richardson, & Hernandez, 2017).

Due to the current gaps in knowledge regarding the issues of homelessness and food insecurity, this study provides quantitative and qualitative descriptions of the prevalence and scope of food insecurity and homelessness among CSU students, as they are related to academic performance and health.

METHODOLOGY

Quantitative Methods

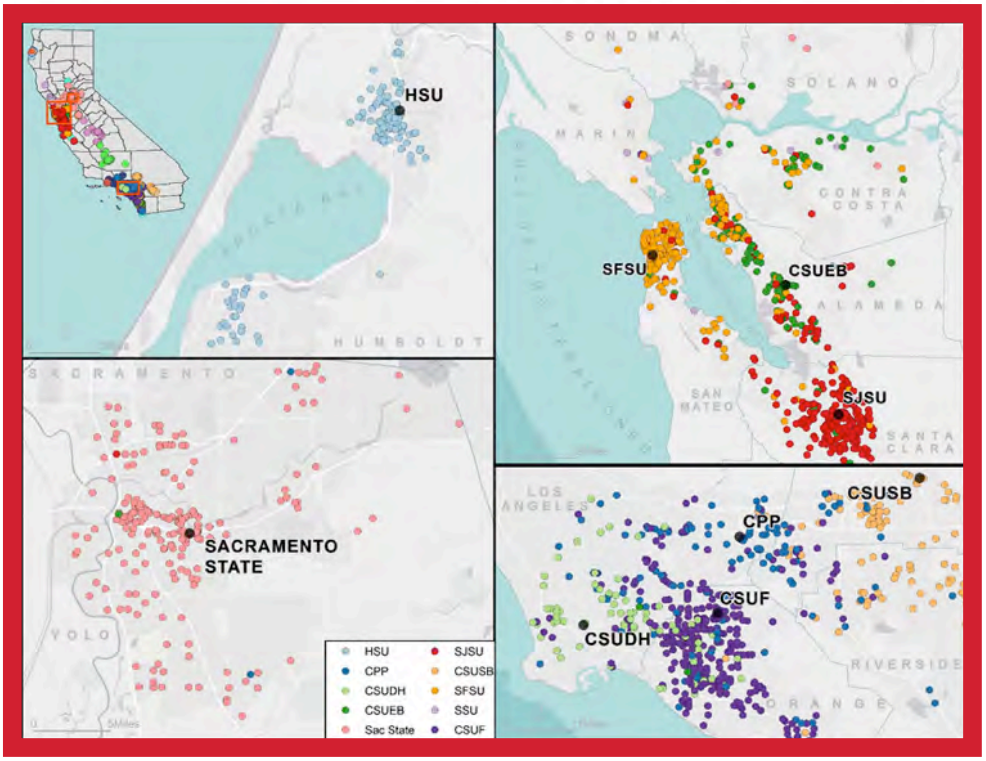


Figure 1
Survey respondents reported living locations based on their nearest major cross streets.

The Phase 2 survey was distributed to a census sample of students via email across all 23 CSU campuses an average of 5.76% participation across each campus for the survey (*n*=24,324) [see Appendix A for campus level response rates]. A total of 37,351 students began the survey and 27,805 completed the survey. Of those (*n*=24,324) completed the survey with no missing responses, which provided the most conservative estimate of food security and homelessness. The average completion rate, the percentage of students who started the survey and completed it, across campuses was 74.4%. The survey was administered on 21 campuses between late October and November, 2016; on one campus between late November and mid-December, 2016; and, on one campus in mid-January and early February, 2017. The surveys were open for approximately three weeks, with one email invitation and two reminders sent out (totaling three). Students were able to enter their names in a raffle to win one of two $40 Target gift cards. A campus point person, identified by a campus administrator, worked with the research team to recruit students and administer the survey electronically via campus email address. The marketing team through the CSU Office of the Chancellor created marketing materials (e.g., press release, flyer, social media template posts) for the campus point person to disseminate in order to encourage student participation. Students often lived in proximity to the campus where they attended classes, although in metro-areas there were neighborhoods where students from multiple campuses were represented [see Figure 1].

To measure *food security*, the United States Department of Agriculture Economic Research Service U.S. Adult Food Security Survey Module (10 items) was utilized, using a 30-day time frame. Administration of the type of food security scale was determined using a screening question about sharing meals. Individuals that reported sharing most of their meals were screened into the household food security survey module. All others were

administered the individual food security survey module. The USDA instrument is widely used to measure the concept of U.S. household food security (Bickel, Nord, Price, Hamilton, and Cook, 2000). In 2015, the U.S. Adult Food Security Survey Module (6 items) was piloted in a sample of students at Humboldt State University (HSU) (*N*=1,504). Representatives from USDA ERS conducted a psychometric assessment of the HSU food security scales (combined, household, and individual) that suggested that responses fit the measurement model adequately (Rabbitt and Colmen-Jensen, 2016). A recommendation was made to use the (10-item) for future surveys, which was implemented for this study.

There is no instrument being used to consistently measure housing insecurity among college students. The survey questions for this study were created directly from the definitions used to assess for *homelessness* based on the U.S. Housing and Urban Development (HUD) and the U.S. Department of Education (DOE) definitions, drawn from differing subsections of the McKinney-Vento Act. A 12-month timeframe was used to account for residential change patterns over breaks in the academic schedule. Measures of academic and personal concerns came from subscales of the Presenting Problems Scale. The measure has been validated in college student populations (Erdur-Baker, Aberson, Barrow, & Draper, 2006). Measures of physical health, mental health, and inactive days were drawn from the CORE Healthy Days Measures recommended by the U. S. Department of Health and Human Services (2000), which has been found to be valid and reliable among diverse populations (Center for Disease Control and Prevention, 2016).

A note about measuring homelessness: Many people, particularly youth who are homeless based on both the HUD and DOE definitions, may not identify using that label or be hesitant to do so (Farrugia, 2011; Tierney & Hallett, 2012; Toolis & Hammack, 2015). Therefore, this study included question sets that allowed students to recount where they lived as categorized under the HUD and DOE definitions without explicitly requiring that they label themselves as homeless.

Spatial Methods

Data were used from the Phase 2 survey in which students entered the city and location of two streets that intersected near their residence. Geographic data, along with scores on the USDA Adult Food Security Survey Module (10-item) and affirmative responses on the HUD and DOE indexes were then computed and entered into an enterprise-level relational database, PostgreSQL. The streets were correlated with spatial data collected from the State of California. The food and housing indexes were then interpolated between the individual responses to create continuous surfaces over the state of California. Cal Poly San Luis Obispo, Chico State University, CSU Long Beach, CSU Los Angeles, Maritime Academy and San Diego State University spatial data were not included.

Qualitative Methods

Qualitative data were collected at 11 CSU campu with students (*n*=213) who identified as housi insecure, food insecure, or both on the quantitat survey between January and June 2016. Campu were selected for qualitative data collection w the goal to represent experiences from northe southern, and central California and to inclu perspectives from urban, rural, and suburb areas. Student participants volunteered and w selected for interviews and focus groups based reported levels of food insecurity and homelessn from the survey. Participants were offered a $15 g card as an incentive to participate. Students part ipated in semistructured interviews and foc groups, which lasted 60-90 minutes. Participa were asked broad, open-ended questions abo their experiences with food and housing in curity. Interviews and focus groups took pla between January and June, 2017 at Cal Poly S Luis Obispo (SLO), CSU Bakersfield (CSUB), C Dominguez Hills (CSUDH), CSU Long Beach, C Los Angeles (CSULA), CSU Northridge (CSUN), C San Bernardino (CSUSB), Fresno State Univers (FSU), Humboldt State University (HSU), San Die State University (SDSU), and San Francisco St University (SFSU). Demographic information abo the sample for qualitative methods is located Appendix B. Students were asked to select pse onyms to protect their privacy.

For a more in-depth description of the resea tools and their construction, please refer to t Researching Basic Needs in Higher Educati measurement guide (Crutchfield & Maguire, 201

SAMPLE

Comparison of Demographics of Survey Participants to Overall CSU Student Population

Overall survey sample characteristics were similar to the demographics of the CSU student body [see Appendix A]. Percentages of racial and ethnic groups were similar, with the percentage of White participants (39.5%) and Asian/Pacific Islander participants (22.9%) represented slightly higher within the sample. The distribution of class standing was similar between the sample and the CSU student body. The largest difference is regarding gender, where females are 56.2% of the student body, but 72.4% of the sample. Women often have much higher response rates then men on surveys (Sax, Gilmartin, & Bryant, 2003; Underwood, Kim, & Matier, 2000).

Defining Food Security

The USDA ERS Ranges of Food Security (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2017) are described in the following manner:

Food security

- **High food security:** no reported indications of food-access problems or limitations.

- **Marginal food security:** one or two reported indications—typically of anxiety over food sufficiency or shortage of food in the house. Little or no indication of changes in diets or food intake.

Food insecurity

- **Low food security:** reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.

- **Very low food security:** Reports of multiple indications of disrupted eating patterns and reduced food intake.

Understanding Low and Very Low Food Security in the Words of Students

Low Food Security

Phase 1 of the study highlighted a focus on *very low food security* for students. The Phase 2 study included an exploration of food insecurity of students experiencing both *low* and *very low food security*, emphasizing the important similarities and differences in the experiences of students across that end of the food security spectrum. Dilbert (CSUSB) experienced low food security in that he could afford food, but had a reduced quality of food and experienced ongoing stress and fear associated with access to food due to financial constraints.

> **"I got food from [the pantry] once and I just, I remember leaving and thinking to myself, "Damn, this is meant for somebody who actually needs it." In my head, I was like, "I don't actually need it." So, I tried to never go again, because to my understanding I was like, "Well, I can afford food. I can't afford great food, but I can afford food." Umm...It was tough."**
>
> Dibert ***CSUSB***

Like many other participants, Dilbert felt guilty for utilizing his campus pantry because he felt that there was a hierarchy of need; he was not "needy" enough even though he had constant stress about having the food he needed. Alejandro (SDSU) was low food secure, but his concern led him to skip meals, "I do skip meals because it's not necessarily I don't have the money...I don't want to waste the money because what if I need it for something else or I can use it for another thing I guess?"

Very Low Food Security

Not all students experience food insecurity because they come to higher education with low income status. Like some of her peers, Tiffany (CSULB) had not previously experienced food insecurity. When Tiffany applied for financial aid, her mother had a successful job that provided a contribution for tuition so high that she was not eligible for financial aid. Unfortunately, her mother lost her job two months after the start of the semester which led to her diminished access to food.

> **"It's been difficult. Well, 'cause in the beginning when I first got here I didn't really have a lot of money and I didn't have any grants. So basically what I used to eat 3 days out of the week was like Minute Maid and chips and that'd be it...I had maybe a dollar and then I had to make it like, stretch out of like, 2 days and then 3rd day...I wouldn't eat anything cause I didn't have any money."**
>
> Tiffany ***CSULB***

Defining Homelessness

The instruments developed for this study assessed for both the definition of homelessness used by the U.S. Housing and Urban Development (HUD) and the U.S. Department of Education (DOE), both drawn from differing subtitles of the McKinney-Vento Act. HUD defines homelessness as sheltered (in a HUD funded emergency shelter, transitional housing, and supportive housing) and unsheltered (on the streets, in abandoned buildings, or other places not meant for human habitation) [Homeless Emergency Assistance and Rapid Transition to Housing Act of 2009 (P.L. 111-22, Section 1003)].

The U. S. Department of Education (DOE) uses the education sub-title of the McKinney-Vento Act's definitions of homelessness, which includes youth who lack a fixed, regular, and adequate nighttime residence; and unaccompanied, which includes youth not in the physical custody of a parent or guardian. This broader definition was used as the foundation for homelessness determinations for K-12 students and therefore allows for comparison of data with elementary and secondary educational studies, which have been shown to be more commonly descriptive of youth or young adult homelessness (Ausikaitis, et al., 2015; Dworsky, 2008; Mawhinney-Rhoads & Stahler, 2006; Tierney, Gupton, & Hallett, 2008). Public school officials (K-12) identified 88,966 unaccompanied homeless youth for the 2013-2014 school year (U.S. Department of Education, 2014). This DOE definition of homelessness is legally required as a determinant for rights and access for students in the K-12, but is also legally required for post-secondary programs under the Higher Education Act. Higher education requirements include stipulations for FAFSA financial needs analysis and eligibility for TRIO and GEAR UP programs.

Understanding Homelessness and Unstable Housing in the Words of Students

Students shared vividly about how living on the financial edge can quickly turn into a housing crisis. Elizabeth (FSU), explained the experience of becoming homeless after being unexpectedly evicted from what she thought was a stable living situation.

> **"And then come June he tells us we need to be out of our house by the end of our lease, because he's selling the house. And so that put me in a hard position 'cause me paying for everything [out of pocket], I didn't set aside money for a deposit anywhere or anything. And so, I ended up being homeless for about four months. Sleeping on friends' couches, staying in my car."**
>
> Elizabeth ***FSU***

When she started the semester, Elizabeth had budgeted very carefully to include her housing, but like many students, her budget did not include large unanticipated costs. At the time of his interview, Jaime (CSUDH) was housing insecure. He paid his rent regularly, but his landlord was pushing him out of his current housing to try to move someone in who could pay higher rent. Jamie (CSUDH) said, "My landlord is crazy, she's turned off the water, turned off the light...she's very strict, I feel like I live in a jail...especially now that's when the one rooms are going above $600 in LA County." Despite living in a situation that felt like living in "jail," at times without water or power, Jaime chose to stay in his living arrangement because he could not afford to move elsewhere. Jaime is housing insecure in that the landlord is taking action to push him out and there are no other fiscally available options.

FINDINGS

Prevalence of Food Insecurity

Overall, 41.6% of CSU students reported food insecurity (*N*=24,324), of those 20% (*n*=4,875) experienced low food security and 21.6% (*n*=5,263) very low food security. Conversely 36% (*n*=8,732) reported high food security and 22.4% (*n*=5,454) reported marginal food security. National prevalence rates for food insecurity for all U.S. households is 12.3% (USDA ERS, 2017), making the case for college students as an emerging population with a higher risk for food insecurity. The areas around some of the CSUs in more rural locations (HSU, CSUF, and CSUMB) showed higher levels of food insecurity while urban cities showed a complex mosaic of small areas of security next to areas of insecurity [see Figure 2].

Food Security by demographic groups

Overall, 41.6% of CSU students reported food insecurity in the low and very low food security ranges. The rate of food insecurity for women (42.6%) was slightly higher than for men (39.3%). First generation college students reported higher food insecurity (49.0%) than non-first generation college students (36.9%). Students who received Pell Grants (51.4%) reported higher rates of food insecurity than the CSU average. Transfer students (43.2%) had somewhat higher than average rates of food insecurity. Students who are former foster youth (62.9%) had much higher than average rates of food insecurity. EOP (57.8%) students also had much higher than average rates food insecurity. ESL (49.2%) students had higher than average rates food insecurity. Dreamers (46.7%) and DACA students (44.6%) had higher than average rates of food insecurity. Full time students (42.3%) had higher food insecurity than part time students (38.6%). Graduate students (33.8%) and freshmen (36.1%) had the lowest rates of food insecurity, while sophomores (41.8%), juniors (46.4%), and seniors (45.4%) had higher rates of food insecurity. The average rate of food security for Asian non-Hispanic was 64.7% and for White non-Hispanic was 62.7% and these two groups reported the highest levels of food security when compared to the CSU average (58.4%).

When the intersection of first generation students and race and ethnicity were examined, disparities become more obvious. Students who reported being both first generation to attend college and Black/African American showed the highest levels of food insecurity (65.9%). Students who identified as Asian and were not the first in their families to attend college were the most food secure [see Table 1]. Students who had their own children also reported a high level of food insecurity. Students who were former foster youth (62.9%) had much higher than average food insecurity.

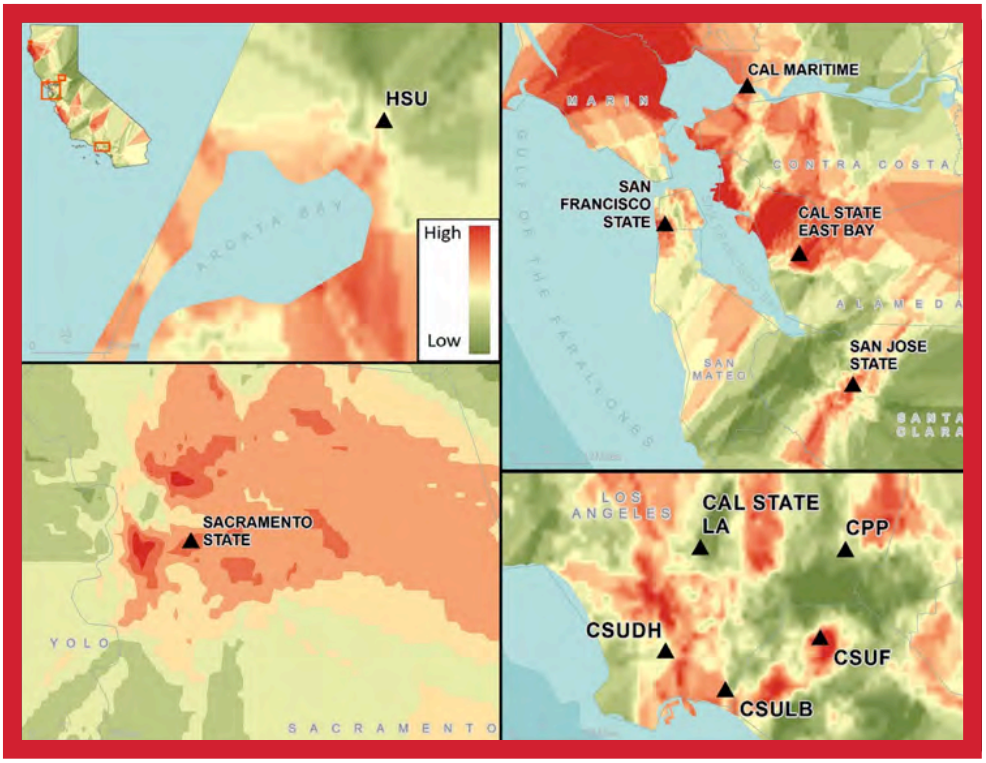


Figure 2
CSU Student Food Insecurity. Interpolated surface for California from the food security index values. The more food secure students are represented by the green, while the less food secure students are represented by red.

	High Food Security %	Marginal Food Security %	Low Food Security %	Very Low Food Security %
White/First generation	30.8%	21.8%	21.2%	26.1%
Asian/First generation	32.2%	25.3%	21.2%	21.4%
Black/African American/ First generation	17.6%	16.5%	25%	40.9%
Native Hawaiian or Other Pacific Islander /First generation	26%	20.7%	20.1%	33.1%
Hispanic Participants/ First generation	26.8%	23.8%	23.9%	25.6%
Other/First generation	26%	24%	23.9%	26.1%

Table 1
Percentage of student food security range by race/ethnicity and first generation college student status.

Prevalence of Homelessness

Overall, 10.9% (*n*=2,661) of CSU students reported being homeless (*n*=24,324). Homelessness was determined by one or more affirmative responses on the combined HUD and DOE definitions in the last 12 months. The heat map illustrates the actual number of students who reported one or more indicators of homelessness on the survey based on the HUD and DOE definitions and shows the density of students who were homeless across California. More students were homeless in urban areas, the primary exception being rural Humboldt County [see Figure 3].

Homelessness by demographic groups

Overall, 10.9% (*n*=2,661) of CSU students on average reported being homeless one or more times in the last 12 months. Students who identified as Black/African American on average experienced homelessness at higher rates (14%) than other racial groups (9.8-11.5%). Non-Hispanic students (11.2) experienced homelessness at slightly higher rates on average than Hispanic students (10.1%). Men (14.1%) experienced homelessness more often than women (9.6%). First generation college students reported slightly higher than average rates of homelessness (11.2%), and higher rates than non-first generation college students (10.7%). Students who received Pell Grants had higher than average rates of homelessness (12.6%). Transfer students had higher than average rates of homelessness (12.9%). Students who were former foster youth (24.9%) had notably higher rates of homelessness. International (15.7%) students had higher than average homelessness. EOP (13.4%) students reported higher than average rates of homelessness. Students who speak English as a second language (12.6%) had higher than average rates of homelessness. Dreamers (10.1%) and Deferred Action for Childhood Action (DACA) students (9.1%) had lower than average rates of homelessness. Disparities among demographics were clearer when the intersection of first generation college students and race and ethnicity were examined. Students who identified as Black/African American and first generation college students (18%) experienced homelessness at much higher rates than any other racial or ethnic group who were also the first in their generation to attend college (9.6-12.6%) [see Table 2]. Full-time students (11%) reported homelessness at similar rates as part time students (11.1%). Disparities in class standing existed where freshmen (8%) and sophomores (9.5%) had lower rates of homelessness, and juniors (11.8%), seniors (12.2%), and graduate students (11.4%) had higher rates.

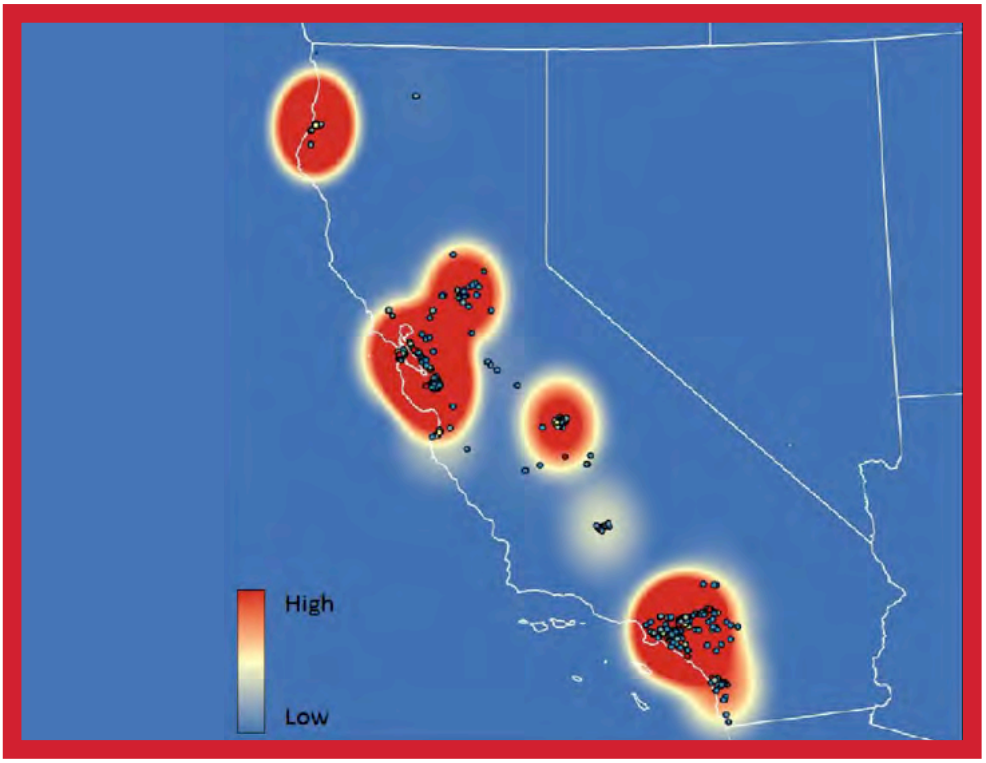


Figure 3
CSU Student Homelessness. Red areas expand as the number of students who reported homelessness goes up. Dots darken when students indicated multiple indicators of homelessness.

	Homeless %	Housed %
White/First generation	12.6%	87.4%
Asian/First generation	9.6%	90.4%
Black/African American/ First generation	18%	82%
Native Hawaiian or Other Pacific Islander /First generation	8.9%	91.1%
Hispanic Participants/ First generation	10.1%	89.9%
Other/First generation	10.4%	89.6%

Table 2
Percentage of student homelessness by race/ethnicity and first generation college student status.

ACADEMIC ACHIEVEMENT, MENTAL AND PHYSICAL HEALTH, AND PERSONAL CONCERNS

Findings of the current study suggest that students who report food insecurity and homelessness as a pattern scored more adversely on indicators of health, mental health, and days of inactivity. Qualitative data were consistent with data from the survey, as students described how having unmet basic needs negatively influenced most of the facets of life. They described working long hours, struggling academically, and having negative impacts on their mental and physical health.

Academics

Many students experiencing food insecurity, homelessness, or both had lower GPAs and higher academic concerns than students who reported being food secure and/or housed [see Figures 4 and 5].

As noted in the qualitative interviews, there was a strong connection between not having enough to eat and academic success. Susan (CSUDH), like so many of her peers, worked hard to make food stretch as long as possible. Both the stress to make food last and the lack of food consumption influenced her ability to function academically.

> **"I would get bananas and I will cut it in half. I'd eat only half in the morning, and then I would wait five hours, then eat the other half, just so I have something in my stomach consistently...I would struggle to concentrate for sure, because sometimes that's all I could think about was where was my next meal going to come from. At the same time, I would always push myself to just keep going, just keep going, just keep going."**
>
> Susan ***CSUDH***

Brandon (SDSU) said that his peers in class had a "running joke" and would ask him if he had eaten each day. He said, "Because there are times where I just don't. It's just like I could definitely see that, whether it was class participation or quality of work, could have a direct effect." Students found themselves working to balance college graduation as a long-term goal with work to ensure they had food to eat. Peter (CSUN) said,

> **"It was one of those semesters all my classes were really intensive, to the point where I actually had to make the decision, do I sacrifice work so I can dedicate the time I need for these classes, and get started again? Or do I risk failing these classes so I have money? I went with the study side. I dedicated the time to the studies, and my belt went down two notches."**
>
> Peter ***CSUN***

In interviews, students described a variety of ways in which housing insecurity or homelessness influenced their educational outcomes. Clark (SFSU) and Gabrielle (CSUDH) were clear that they had the academic skill to achieve, but that housing instability negatively impacted their GPAs. Clark felt he had to sacrifice a class to succeed in other classes and manage the challenges of housing instability. He said, "This semester when my housing was really insecure was rough. I got a D in one class...I just cut down one in order to get fairly good grades in the others...It's better now and for the foreseeable future." Gabrielle (CSUDH) also spoke of how being highly mobile influenced her grades. She said, "It affects my studying if I don't know where I'm going to go, where am I studying or am I concentrating on studying because I'm not worried about where I'm going to go." Surprisingly, other students who experienced homelessness talked of high overall GPAs because they had additional study time as they found refuge in the library and in other common spaces on campus because they had no other place to go. This was consistent with results that suggest that though students who experienced homelessness did have lower GPAs, the difference among their housed peers was small. Students said they spent long hours studying in the student union, the library, and other spaces around campus where they could arrive early and leave late without disruption and feel safe. Patricia (CSUDH) spoke about feeling lucky that she found a job in the library. She said, "That's been awesome, because their hours are very flexible and it keeps me up and out, because...I would have been in the library anyway." She, like many others, reported a strong GPA because she spent so much time on campus.

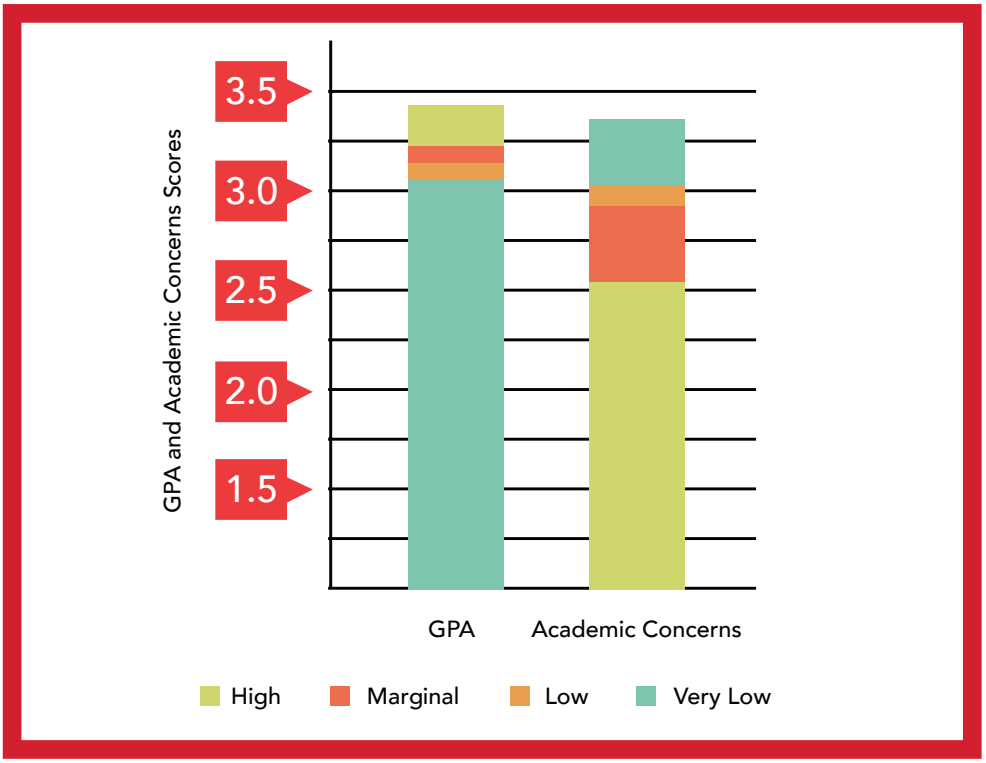


Figure 4
Food security as it is related to academics.

Note. GPA was based on self-report. Academic Concerns were created from the Presenting Problems Scale using a continuous variable from 1-5 based on current level of stress, where the score goes up with greater concern.

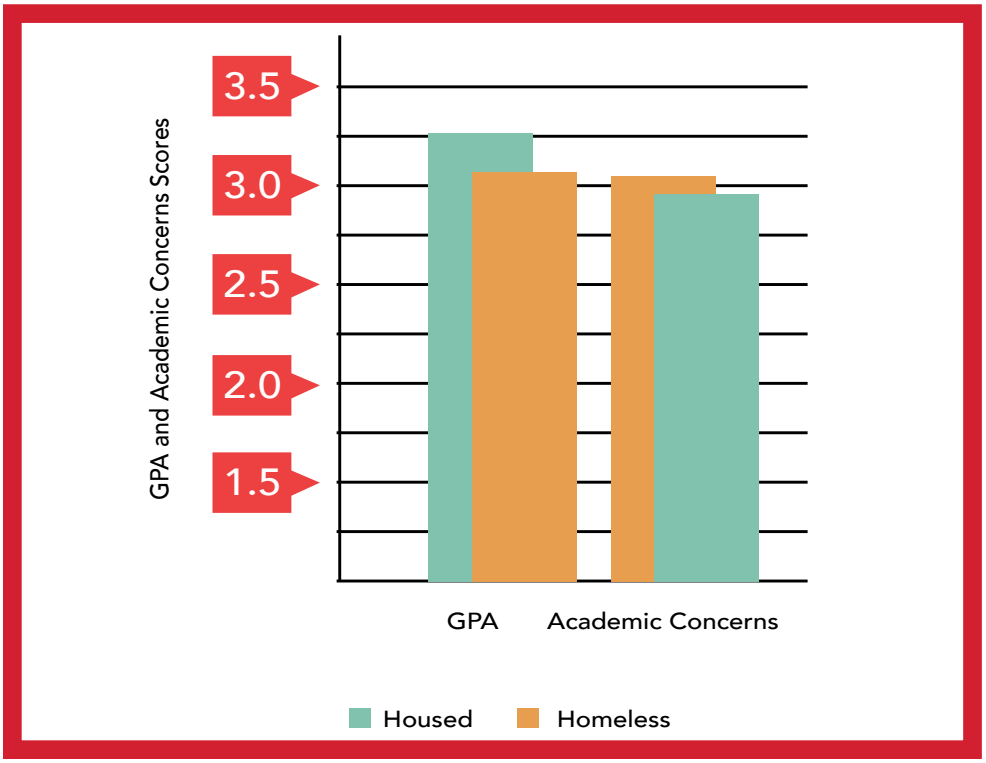


Figure 5
Homelessness as it is related to academics.

Note. GPA was based on self-report. Academic Concerns were created from the Presenting Problems Scale using a continuous variable from 1-5 based on current level of stress, where the score goes up with greater concern.

Students experiencing homelessness emphasized how difficult it was to make constant trade-offs, persistently being required to determine what to prioritize. Clark and Gabrielle reported that they had average or high GPAs; however, thinking about or seeking a place to stay was "like a job," and caused stress, anxiety, lack of focus, and difficulty finding time and locations to study in a quiet place.

Mental and Physical Health and Personal Concerns

Further, the negotiation of needs often generated great stress for students, exacerbating challenges to their personal concerns and mental health, which was often inextricable from physical health. Students who were food insecure, homeless, or both reported poorer mental health more often in the past 30 days than students who were food secure or housed. Poor mental health was defined as the number of days per month students self-reported stress, depression, and problems with emotions [see Figures 6 and 7]. Students reported high levels of personal concerns on the survey when basic needs were unmet [see Figure 8]. Personal concerns were indicated on the survey with items such as anxiety, fear, irritability, depression, among other worries and real stressors were often described during interviews. Priscilla (CSUSB) discussed the mental and physical impact of low food security. Priscilla said, "I would save money and get the cheapest foods and, I started feeling really lethargic, just nasty, you don't get the energy...We have this whole focus, this whole responsibility on our shoulders..."

There were also heavy tolls for homeless students' physical health as well. Food insecure and homeless students as a pattern scored more adversely on physical health indicators. They reported having far more days with physical health issues, such as physical illness and injury, than their secure peers [see Figures 6 and 7].

Bernard (SFSU), like most of his peers in the study, discussed the physical repercussions of eating on a minimal budget. He experienced food insecurity and homelessness, and discussed the challenges of working multiple jobs to make ends meet, taking courses, and finding time and money to eat.

> **"Canned foods just don't do it. Yesterday, all of a sudden I started with these tremors in my arms. Ugh, nutrition [laughs]. Just not enough time, not enough money. It's very hard to concentrate. You're exhausted. You couldn't read a book and you fall asleep. It's not easy, even in class."**
>
> Bernard ***SFSU***

Charles (SLO) mentioned that he goes to bed hungry often in order to make his financial aid stretch, but realized it was having a physical impact. He said, "I was just incredibly dizzy. I just realized I need food to function."

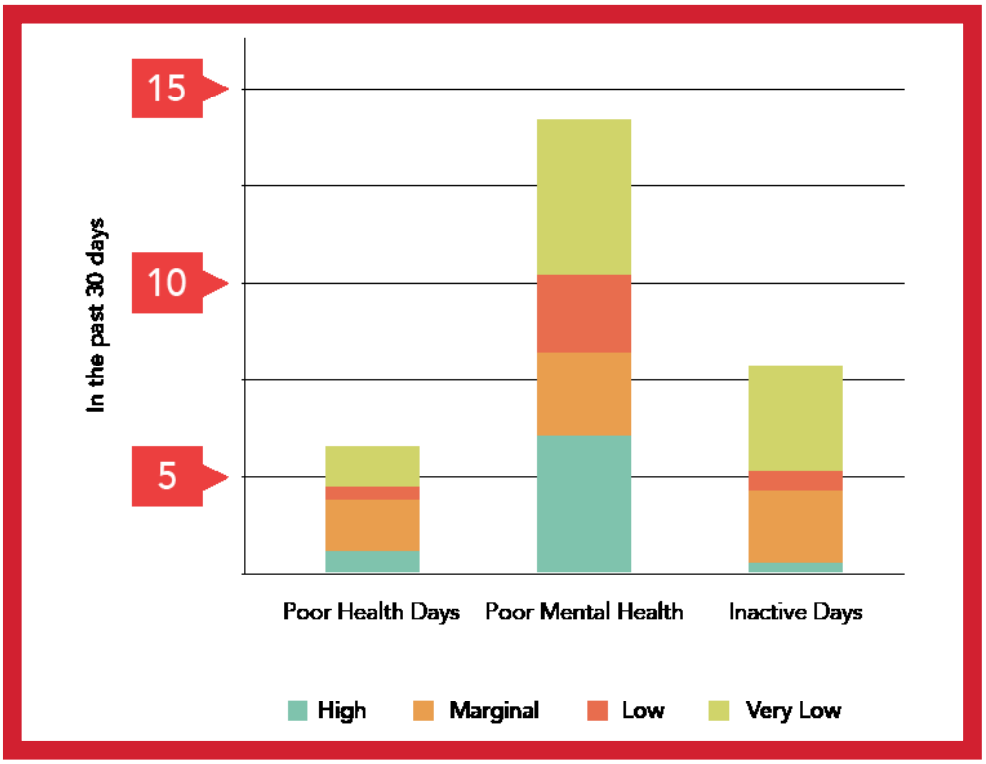
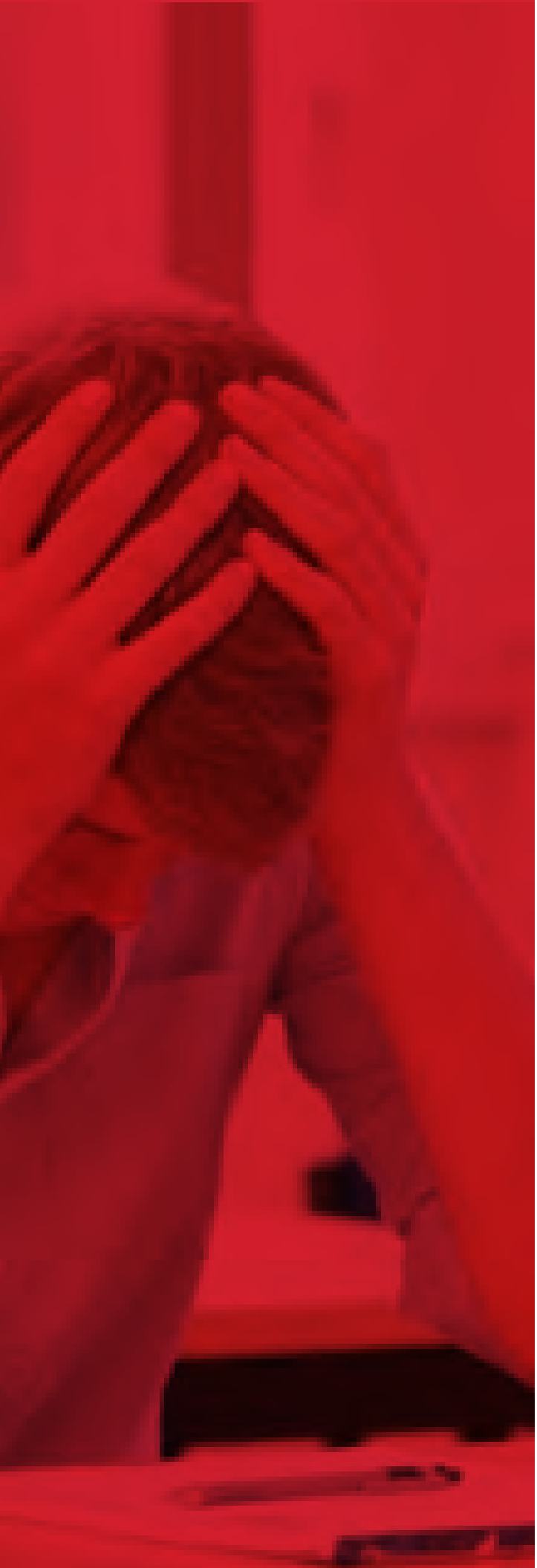


Figure 6
Food security as it is related to health.

In interviews and focus groups, students universally discussed how experiencing homelessness increased their stress and decreased their physical well-being because they were constantly looking for places to sleep. Many students also recounted poor health associated with the inability to access cooked food and showers and with sleeping in places not intended for human habitation, such as cars or storage units. Elizabeth's (FSU) experience mirrored many others who lived in public spaces and who couch -or dorm- surfed.



Elizabeth and others discussed that experiencing homelessness had an influence on all aspects of their lives. Stress permeated their academic success, physical and mental health, and personal relationships. Like others, Elizabeth never considered that she would become homeless because she perceived that experience through the lens of a stereotype about what homelessness was. She found that her experiences, her ability to do something as basic as taking a shower, was challenged in ways she had never anticipated.

> **"Friend's couches, ya know, a couple nights in my car. Thankfully it was warm enough to where I'm not freezing to death in the car...It was difficult... because when you think about being homeless you think about the people on the streets and whatnot. But really, it can be anybody. And I never thought it would happen to me. So my friends were willing enough to let me stay on their couches, which I am very appreciative of. What really got to me though, one morning when I stayed at a certain friend's house and her room-mate was kind of getting annoyed I was there, and I didn't want to overstay my welcome...and I had left that day before showering, and so it really hit me like I didn't have a place to shower. Something I would never want to wish upon anybody to go through."**
>
> Elizabeth ***FSU***

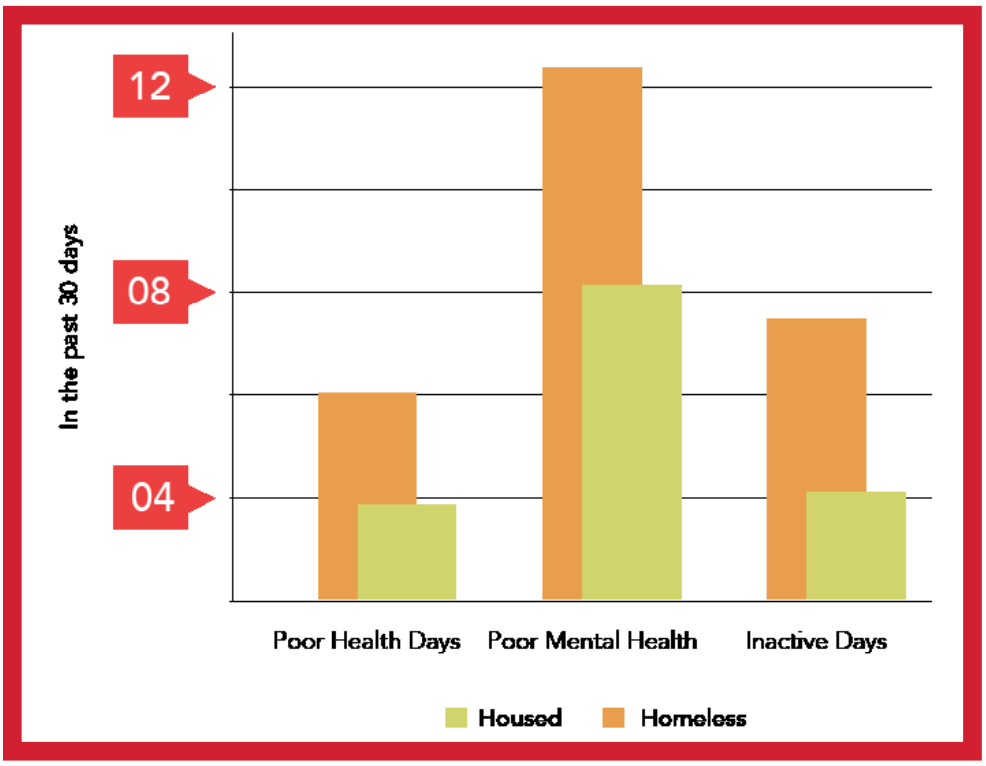


Figure 7
Homelessness as it is related to health.

Inactive Days

The student narratives illustrate the constant struggle to juggle the demands of not having enough time along with chronic material hardship of not having enough to eat or knowing where they were going to stay next while working hard to succeed in classes. For some the demands were untenable and this was clear in the data. Students who were food insecure, homeless, or both consistently indicated that they missed more days of school, work and recreation because of feeling mentally or physically down than their counterparts who were more food secure, housed or both [see Figure 7].

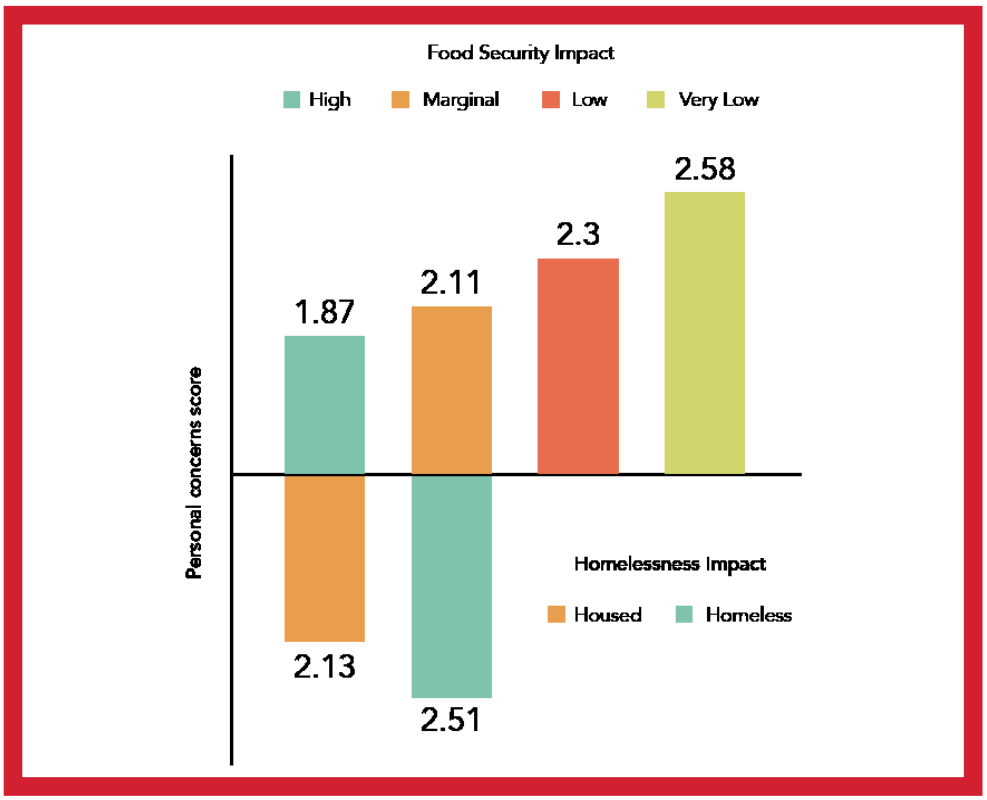


Figure 8
Food security and homelessness as related to personal concerns.

CHALLENGES AND COPING STRATEGIES FOR MEETING BASIC NEEDS

Both quantitative and qualitative data indicated that students go to great lengths to meet their basic needs within their budgets. Some students experiencing food insecurity reported struggling to buy groceries because they did not know how to budget well (26.6%) or that paying bills was confusing (17.3%). However, the number one reason students experiencing food insecurity reported not being able to afford groceries was the lack of money (70.4%), compared with food secure students who reported a lack of money at a far lower rate (17.2%) [see Figure 9]. Students were also asked for reasons they may not buy groceries that go beyond financial reasons. Some food insecure students did not have access to desirable food (31.1%), or they were unable to shop and prepare a balanced meal (19.2%). Some were too busy or forgot to eat (10.2%), or were dieting (10.2%). However, most students could not afford groceries simply because they did not have enough money in their budgets.

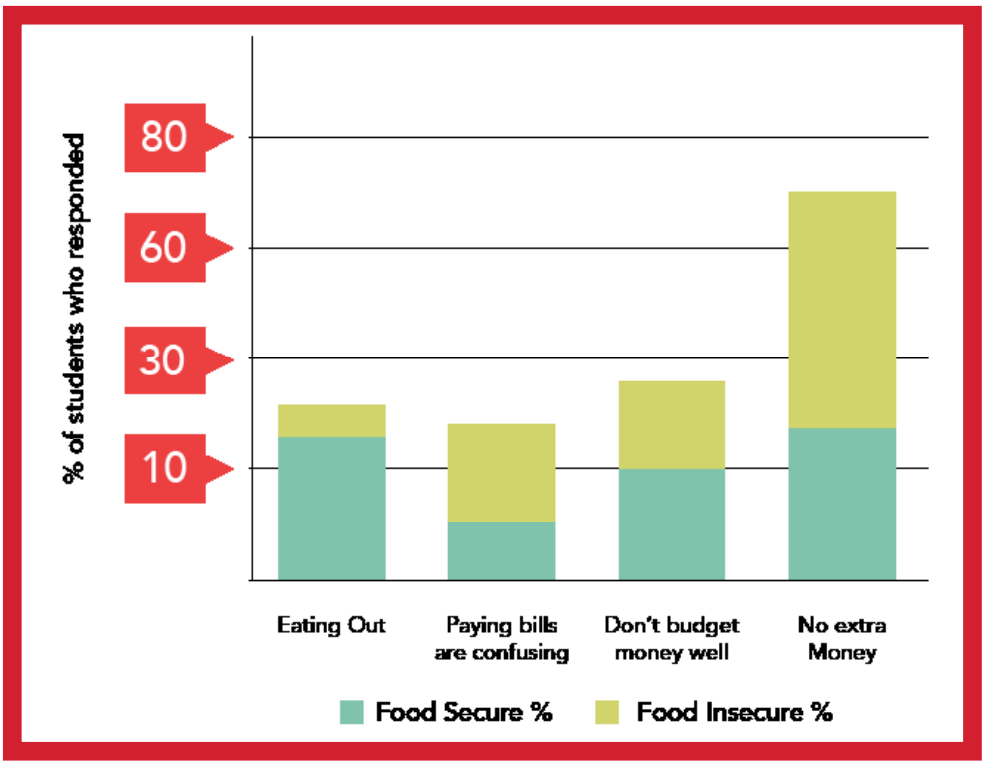


Figure 9
Budgeting explanations for why students could not buy groceries.

Work study was an opportunity for many students who qualify for financial aid to earn education and living costs for college. In interviews and focus groups, many students discussed how important on campus employment was, especially because on campus jobs often provided skill building and learning opportunities, linked them to campus resources, tended to be more flexible around course needs, and were close to class locations. In speaking about her work study position, Christy (SDSU) spoke about how helpful her supervisor was and that she was able to earn much needed experience and money. She said, "I usually do around 11 hours a week depending on the week, when they need me and stuff. It's a very flexible job so I enjoy it." Dolly (FSU) also had a work study employment, and this mitigated her anxiety about her financial well-being and allowed her more time to study. She said, "I think it was helpful because it was really, it didn't really cause me that much stress. Especially being a full time college student. I couldn't really find a full time job because that would be even more stress."

However, few students were able to access this benefit. Only 7% of survey respondents reported securing a work study position. Many students spoke about the difficulty in finding work study opportunities, or having work study employment, but being limited to very few hours, which sometimes meant they had to seek a second job off campus to make ends meet. Like Maggie (CSULA), work study opportunities were few and far between, "it's really difficult to find a job on campus. It has been so hard for me, I've been applying since last semester and still, like I haven't gotten anything."

Participants were asked what resources they used if they ran out of money for food. Many students discussed how the end of the semester and breaks in the academic year were most challenging. Evelyn (SFSU) spoke about the summer, "By the end of the semester financial aid (was) gone...You might be able to increase your hours at your job but then that extra income you're making has to be used for rent. The food doesn't really happen... summer's probably the toughest." Both food secure and food insecure students reported that their friends, family, or roommates gave them money for food (29.3% and 31.8%, respectively). Similarly, 25.2% of food secure students and 35% of food insecure students reported that friends, family, or

roommates would provide them with food. Nadine (CSUB), who was experiencing both homelessness and food insecurity spoke about her reliance on friends, saying, "I was crashing on my friend's couches, they were buying me dinner. So it's one of those things like I know I have that option. I don't like to use it, because you sort of start to feel like a mooch, and it's not a good feeling, you know?"

Students listed other cost saving strategies to meet basic needs, including attending events where food was available, living in small apartments with many people, choosing inexpensive food options that last, and combining food with that of other struggling students. Abel (SFSU) said that he attended events on campus for free food. He said, "I feel bad taking it because I am manipulating for food to survive. I will stay for their entire event and get their information to ease my guilt." Lalith (SDSU) discussed not buying a bed in order to live on $500 a month, which included the cost of her rent, contribution to utilities, food, and educational expenses. He said, "I mean I didn't purchase any furniture or anything. I even sleep in a sleeping bag... I got used to it because I feel like when I came here it's like -- because of the tuition and stuff."

Use of On-Campus Supports

On campus basic needs supports appeared to be underutilized at the time data was collected. CalFresh and campus emergency food pantry utilization increased for students reporting low and very low food security when compared with those who were food secure. However, only 10.1% of students who reported very low food security and 7.5% of students who reported low food security used CalFresh at the time of the survey. Food insecure students also reported low utilization of campus food pantries; only 12.7% of students who reported very low food security and 9.8% of students who reported low food security used this resource.

Students were asked about awareness and use of food pantries, CalFresh application assistance, Electronic Benefits Transfer (EBT) use, campus gardens, emergency housing, counseling and health centers [See Appendix C]. Many students reported that they had never heard of the on-campus services, or that they were not offered at their campus. The majority of students were unaware of emergency housing services being offered on their campus or reported these supports were not offered (71.4%). Of all students surveyed, many students indicated they were unaware of a food pantry located on their campus, or reported the service was not offered (51.9%); 35.8% had heard about a campus food pantry, but never used it. However, those students that did know about services welcomed support.

Tom (CSUN) discussed how welcome he felt at the food pantry at his campus after having some hesitation about going there. He said, "I remember the first time I went, I was like, 'I really need this, I'm super hungry' they're like, 'Trust me, we work here. We eat here too.'... I felt like I had to justify why I was there to them, and they don't need that. They don't need that information, they just want you to be happy and healthy." However, students' experiences with food pantries were mixed. One student was living in her car and chose to access a food pantry on her campus. Her experience there made her hesitant to return.

The student was living in her car, but felt like the pantry was not a place she could use. Many students suggested that food pantries were helpful; however, eligibility requirements or even just the message or tone of the person working there made a difference.

A similar trend was observed with access of CalFresh application assistance, where 39.5% of all surveyed students had never heard of this service and 49.5% had heard of CalFresh, but never applied. Students were asked to report on why on-campus services were not used. Approximately a third (31.7%) of the sample indicated that they did not need assistance from the services listed.

> **We have a food pantry that you're just supposed to be able go and get food from when you're hungry, but myself and other students have experience where you go in there and it's like, "You can't come in here." Or, "this is supposed to be a temporary solution. You're just not supposed to keep coming here and getting everything you want." ...The message was that I shouldn't keep coming down here, it was okay for me to come a few times but I need to move on.**

Another 19.6% perceived that they did not qualify for these services. Students also reported not having time to access services (24%) and not knowing how to access services (30.2%). The number one reason services were not utilized was students had never heard of them (42%). Like many of her peers, Sunny (SDSU) mentioned that it would be helpful to have someone on campus to help facilitate accessing services. She said, "I just really want to advocate for someone who can act as a liaison between students and organizations... [like] someone who helped people [get] information regarding CalFresh. If we had that on campus, I think that would be super helpful (Sunny, SDSU)." Underutilization may indicate an opportunity to increase coordination, outreach and awareness-building on campus about services and supports offered, including how to qualify.

In interviews and focus groups, students were asked if they had hesitated to use services designated for those experiencing food or housing insecurity. While some said they did initially hesitate to use services, many discussed that their physical and mental well-being outweighed their desire to keep their circumstances private. In speaking about CalFresh, Jessica (HSU) said, "But it's very much like I would not survive without them, so I don't really care what the stigma is because it's a necessity."

Rain (CSULB) discussed that she felt it was vitally important to have services that stigma could not be an option. She spoke about how relieved she was after receiving emergency housing.

Many students discussed how having normalcy on campus about use of services allowed them to find out about and feel comfortable with using services.

> **I remember the first night, I remember just walking in there [crying] and there's two bunk beds or three bunk beds in the room they put me in. And its own restroom...[laughs], and before that I was jumping around, occasionally sleeping on a friends' floor, or whatever in a little corner, you know, whatever I could find. I'm walking into this big room and was like "oh my gosh this is for me, are you kidding? [and] The meals were heavenly, oh my gosh. I -- throughout this entire time I had a couple of different priorities. It was like definitely school, that was priority number one because even though my immediate needs were not being met that great I knew that in the long run it'd benefit me.**
>
> Rain **CSULB**

CalFresh: California's Federal Supplemental Nutrition Assistance Program (SNAP)

> **"I don't remember how much I got a month, but that was the only semester in college I've ever made the dean's list. I was getting healthy food. When I think about money problems, obviously, it consumes you...I was getting the nutrition, I was getting the energy. I was awake and eating breakfast every morning. It made a difference."**
>
> Fiona **SDSU**

A small percentage of students reported not using campus support for basic needs, including CalFresh, due to feeling embarrassed (11.2%) or not believing in the use of social services (2.1%). However, of those students who knew about CalFresh, many understood that need outweighed stigma. Fernanda (CSUB) spoke about hearing about CalFresh and spreading the word to her peers. She said, "I see that they're struggling and I tell them. I'm very open about getting food stamps. I'm not embarrassed on that thing."

CalFresh is a potentially significant buffer against food insecurity for college students. CalFresh eligibility for students is primarily dependent on student status, the number of people in the household, household income, federal work rule, and the federal work rule exemptions. Results from the survey indicate that close to 70% of CSU students would be eligible for CalFresh by household income alone. When all factors were considered, less than half of those in financial need would receive these critical basic need funds.

Many students spoke about CalFresh as a fundamental way to access food. Fiona (SDSU) spoke about how critical CalFresh was to her physical and mental health and the impact it had on her academic success.

Although 6.1% of CSU wide respondents used the benefit in the past, only 4.9% reported that they were currently enrolled in the CalFresh program. One reason CalFresh may be largely underutilized is because federal and state eligibility criteria categorically disqualify most full time college students from benefits. There are specific criteria that allow students to be exempt from disqualification (i.e., being employed 20 hours a week or an average of 80 hours a month, a single parent of a dependent household member under the age of 12, and enrolled full time [12 units], among others) (California Association of Food Banks, 2017). Elizabeth (HSU), like many others, spoke about how these restrictions made her choose between meeting requirements and attending college. She said, "It's hard being a student working on minimum wage and affording your food too. It's also hard being a student and working at the same time. But if you don't work, you can't get food stamps, so you've got to weigh your time pretty well."

Additionally, college student CalFresh eligibility is complicated and often leaves students and service providers confused. This might be explained by the inconsistency between the state and federal government guidelines about how college students qualify for CalFresh. When students were asked about their ability to qualify for CalFresh, 37.3% reported they thought they could qualify with the CalFresh student exemptions. Based on SNAP federal income guidelines, 68.4% of students reported they could qualify for CalFresh. Student response suggested that a conservative estimate of the percentage of CSU students that could qualify for CalFresh by both the state and federal criteria is 27.4% [See Table 3]. Given that only 4.9% of students

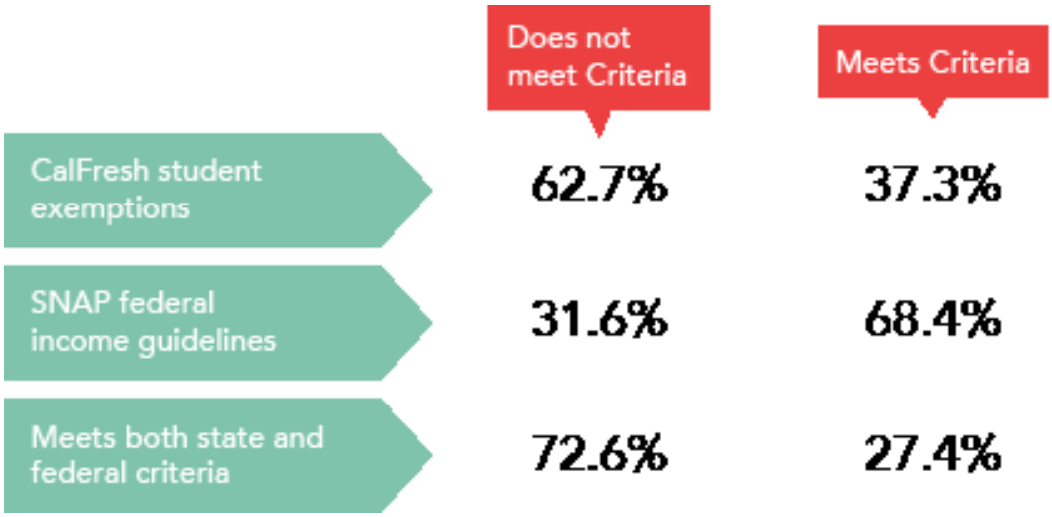


TABLE 3
College Student CalFresh Eligibility.

reported being current users, there are still many students who may qualify and benefit from this important support.

Another barrier to CalFresh use was the lack of awareness about benefits and how to apply. Although the state has a CalFresh Outreach program to increase awareness, help residents complete the CalFresh application, assist with the verification documents and follow-up over the 30-day application process, most CSU campuses are only just beginning to conduct CalFresh Application Assistance on their campuses (CSU, Chico, Center for Healthy Communities CalFresh Outreach Program, 2017). This lack of CalFresh awareness across the CSU system may help explain why 39.5% of all student respondents reported they had never heard of CalFresh or they believed it was not offered on their campus, and 49.5% of students had heard of it, but never used it. In interviews and focus groups, many students spoke about not knowing about CalFresh or had attempted to enroll in CalFresh off campus and received misleading or incorrect information about their eligibility. As Ella (CSUSB) noted, "I needed to prove that I worked and I needed to prove that I needed it. So it did take a while to actually prove that I was a student and I was working 'cause they have different requirements for students, so it's not that simple." Many were told that, as students, they were not eligible for CalFresh at all.

CONCLUSIONS AND RECOMMENDATIONS

It is clear that food and housing security shape the personal and academic progress of students. The enormity of the level of unmet basic needs among CSU students is daunting; and yet, campuses across the CSU are making heroic efforts to increase support and resources for students' who face material hardship to increase holistic student success. Further significant responses to student basic needs are required if students experiencing barriers to basic needs are to be retained to graduation. Responding to students who are housing or food insecure will require complex, long term approaches to solution building.

Develop affordable food and housing options for students. Students who experience food and housing insecurity spoke at length about the negative repercussions of food and homelessness, including ramifications on their physical, mental, and academic success. By far, students responded that they simply did not have enough money to purchase groceries (70.4%). The overarching narrative about the problem must reflect the truth about what students are experiencing. Students need places to live that are within reasonable means. Continued work on the implementation of California House Bill 1228 to provide priority access to housing for students experiencing homelessness over breaks is required. Emergency responses to basic needs (i.e. food pantries, free on campus meals, emergency housing) must include healthy and affordable food options. Long-term responses to food security may include developing food and housing options within the economic means of the student population.

Target strategies to address the student populations that reported the highest levels of food insecurity and homeless, first generation Black/African American college students. The disproportionate incidence of food and housing insecurity is clear. Initiatives to address educational opportunity gaps for students of color and first generation college students must include the linkage to basic needs. Linkages across programs intended to enhance educational and interpersonal experiences can be made by single points of contact, facilitating support for students.

Conduct longitudinal research exploring basic needs security as predictors and protective factors that may promote persistence and degree completion in alignment with the CSU effort to increase graduation rates and decrease time to degree completion. This report is focused on the current status of students, but longitudinal research is required to determine educational, professional, health and personal outcomes for students beyond today. Congruent with the CSU's ongoing efforts to increase graduation rates and decrease time to degree completion, longitudinal study is necessary to understand how food and housing insecurity impacts student success. Additionally, it is urgent that there be continued development and evaluation of interventions intended to increase basic needs security.

Incorporate single points of contact who are trained in trauma-informed perspective in programmatic responses to students experiencing food and housing insecurity and co-locate space for the contact and students. Single points of contact must be instituted on campuses to lead in coordination of programs and services and linkage to a community of students with similar experiences. Single points of contact need to be trained in

trauma-informed approaches to ensure that interactions with students recognize their specific needs and honors their experiences. Further, students who experienced homelessness discussed needing spaces on campus to rest or study, where they spent long hours to avoid unsafe or unstable housing. Associated space for programs and services is needed so that students have areas to seek support, convene, study, and find respite.

Identify and institute creative campaigns to develop a campus culture of awareness and response to support students who experience significant material hardships. Students report navigating a variety of challenges on their own. The vast majority of students sought thoughtful, high touch support networks on campus. For these support networks to exist in more idiosyncratic ways, it is essential that institutions attend to the climate and culture around food and housing security so that staff, faculty, and administrators are able to identify and support students in need. Institutional agents must be educated on how to identify indicators of food and housing insecurity, be up-to-date on campus resources and support structures, and develop the skills needed to create a safe environment for students to come forward.

Utilize campus-based CalFresh enrollment and other strategies as a preventative measure for food insecurity. Results suggest that enrollment in CalFresh can be a mitigating factor for food insecurity. Unfortunately, students report barriers to accessing CalFresh. Advocacy and collaborative work continues to support increased access to CalFresh for students. State support with the signing of AB 1930 and AB 1747 and state funding for "hunger free campuses" supports movement in a positive direction. Strategies for continued support for CalFresh enrollment and other long term responses to food security are required. On campus enrollment for CalFresh would help facilitate navigation of barriers. Continued advocacy to increase college student eligibility exemptions are needed. Going to school is work, and enrolled college units need to be counted as 'work' toward the 20 hours per week or more exemption. Further, students reported availability of emergency food on campus as helpful. Continuing to offer emergency food for students and marketing availability to the whole student body may reduce food insecurity in the short-term while longer-term more sustainable practices are developed.

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Appendices

Appendix A

Table 4
Campus Survey Participation Rates

Campus	%	Survey Administration Dates
Bakersfield	4.5%	10/31-11/21/2016
Channel Islands	3.3%	11/28-12/19/2016
Chico	5.8%	10/31-11/21/2016
Dominguez Hills	3.7%	10/31-11/21/2016
East Bay	4.9%	10/31-11/21/2016
Fullerton	4.6%	10/31-11/21/2016
Fresno	6.2%	10/31-11/21/2016
Humboldt	16.6%	10/3-10/24/16
Long Beach	5.2%	10/26-11/16/2016
Los Angeles	2.09%	11/4-11/25/2016
*Maritime	4.8%	1/11-2/2/2017
Monterey	9.16%	10/31-11/21/2016
Northridge	3.03%	11/8-11/21/2016
Pomona	4.2%	10/31-11/20/2016
Sacramento	5.9%	10/31-11/21/2016
San Bernardino	6.3%	10/26-11/16/2016
San Diego	4.29%	11/8-11/29/2016
San Francisco	4.5%	11/1-11/21/2016
San Jose	6.8%	10/31-11/21/2016
San Marcos	7.8%	10/31-11/21/2016
Stanislaus	3.1%	10/31-11/21/2016
Sonoma	5.4%	11/2-11/21/2016
San Luis Obispo	10.3%	10/31-11/21/2016

Note. Surveys administered fall, 2016.
*Maritime survey administered spring, 2017.

Appendix B
Qualitative Data Collection Sample

Table 5
Qualitative data collection n

Campus	*n* = Interviews	*n* = Focus Group	Total
CSUB	11	3	14
CSUDH	10	9	19
CSULA	5	13	18
CSUN	12	17	29
CSUSB	4	13	17
FSU	5	9	14
HSU	5	11	16
CSULB	14	16	30
SDSU	8	21	29
SFSU	11	6	17
SLO	7	3	10
Total	**92**	**121**	**213**

Table 6
Qualitative sample

	Numbers by race						
Campus	Black/African American	White	Latinx	Asian	Bi/ multi	Native American	Decline to state
CSUB	1	6	5	1	1	0	0
CSUDH	6	5	6	0	2	0	0
CSULA	2	3	10	0	3	0	0
CSUN	4	9	8	3	4	0	1
CSUSB	5	3	7	0	1	1	0
FSU	1	4	7	1	0	0	1
HSU	0	10	3	0	2	0	1
CSULB	3	9	8	5	4	0	1
SDSU	1	8	7	6	6	0	1
SFSU	1	3	6	1	6	0	0
SLO	0	6	0	1	3	0	0
Total	**24**	**66**	**67**	**18**	**32**	**1**	**5**

Table 7

Qualitative sample gender and age

	Gender				Age			
Campus	Male	Female	Trans/gender atypical	Decline to state	18-20	21-25	26-30	Over 30
CSUB	2	11	0	1	4	6	3	1
CSUDH	5	14	0	0	3	3	8	5
CSULA	2	16	0	0	5	7	1	5
CSUN	11	18	0	0	6	11	6	6
CSUSB	5	12	0	0	3	11	1	2
FSU	5	9	0	0	2	5	0	7
HSU	3	13	0	0	3	12	1	0
CSULB	5	24	1	0	8	11	7	4
SDSU	11	18	0	0	5	10	7	7
SFSU	5	12	0	0	2	4	4	7
SLO	4	5	1	0	3	7	0	0
Total	**58**	**152**	**2**	**1**	**44**	**87**	**38**	**44**

Appendix C

Table 8

Sample and CSU student population demographics compared

Demographics		Study Sample n = 24,324	CSU 2016-2017 Academic Year n = 478,638
Race			
	Asian/Other Pacific Islander	22.9%	16.3%
	Black/African American	5.7%	4.2%
	White	39.5%	24.6%
Ethnicity			
	Hispanic	40.7%	38.6%
	Non-Hispanic	59.3%	-
Gender			
	Male	25.9%	43.8%
	Female	72.4%	56.2%
	Transgender	0.5%	-
	Do not identify as any of the above	0.6%	-
Class Standing			
	Freshman	16.7%	19%
	Sophomore	11.4%	12.2%
	Junior	26.8%	24.3%
	Senior	31.2%	33%
	Graduate Student	13.9%	11.6%
PT/FT Status			
	Full time	89.1%	83.7%
	Part time	10.4%	16.3%
First Generation Student			
	Yes	39.2%	33.3%
	No	60.8%	66.6%
Age			
	Range	18-79	17-Over 59
	Mean	23.57	22.86
	Median	22	

Appendix D

Table 9
Students report why they do not use support services

	Campus supports %	*Off-campus supports %*
Does not qualify for services	19.6	22.9
Has not heard of services	42	43
Does not have time to access services	24	12.5
Does not have transportation to access services	4	3.2
Does not know how to access services	30.2	20.6
Does not believe in using services	2.1	1.8
Feels embarrassed to use services	11.2	5.8
Already uses one or more the services	15.2	8.9
Does not need assistance	31.7	31.7

Appendix E

Table 9

Food Security and CalFresh Use

	Never heard of it %	Heard of it but never used it %	Used it in the past %	Currently use it %
High Food Security	39.1	54.2	3.9	2.9
Marginal Food Security	36.3	52	6.4	5.3
Low Food Security	33	50.2	9.3	7.5
Very Low Food Security	32.5	46.2	11.2	10.1

Table 10

Food Security and Campus Food Pantry Use

	Never heard of it %	Heard of it but never used it %	Used it in the past %	Currently use it %
High Food Security	37.3	53.3	5.5	3.8
Marginal Food Security	33.8	50.2	8.8	7.2
Low Food Security	33.2	45.3	11.7	9.8
Very Low Food Security	37.1	38.2	12	12.7

MEMORANDUM

DATE: **September 2, 2020**

TO: **City of Huntington Beach**

FROM: **Bitian Chen**

RE: **Community Housing Demand (2021-2030) of UC and CSU campuses in the SCAG Region**

Terra Nova performed a preliminary analysis on the community housing demand of University of California (UC) and California State University (CSU) campuses within the Southern California Association of Governments (SCAG) region in the next ten years. The purpose for this analysis is to assess whether student enrollment in these colleges will increase the need for existing off-campus housing or land acquisition for future housing development by a significant amount that reduces housing and/or land available for local jurisdictions to meet their RHNA numbers.

Within the SCAG region, there are three main UC campuses, plus UCR Palm Desert, and eight CSU campuses plus CSUSB Palm Desert (see full list below). The two institutions with locations in Palm Desert are listed separately, because campus master plans normally cover the main campus only and CSUSB Palm Desert has its own master plan. Given its limited full-time equivalent (FTE) students and faculty/staff, UCR Palm Desert is not included in the aggregated result.

UC Irvine

UCLA

UC Riverside

UC Riverside (Palm Desert)

Cal State Channel Islands

Cal State Dominguez Hills

Cal State Long Beach

Cal State Fullerton

Cal State Los Angeles

Cal State Northridge

Cal Poly Pomona

Cal State San Bernardino

Cal State San Bernardino (Palm Desert)

UC Irvine
Source: UCI 2007 Long Range Development Plan Final EIR; LRDP Student Housing Amendment approved by the Regents on September 18, 2019.

According to Table 4.10-8 in the FEIR, student enrollment will grow by 12,169 from year 2005-06 to year 2025-26. The 2007 LRDP envisions an increase of approximately 6,815 student bed spaces on campus, for a total of 17,637 beds (FEIR Table 4.10-9). The University amended the 2007 LRDP to increase the on-campus student housing program from 17,637 beds to 22,000 beds, an overall increase of 4,363 beds. This would result in a total of 11,178 additional beds to serve the growth increment.

Amortized:	From 2005/06 to 2025/26, an additional 12,169 students 6,815 + 4,363 = 11,178 new beds
In the next 10 years:	12,169 - 11,178 = 991 students in non-university housing

UCLA
Source: UCLA Long Range Development Plan Amendment (2017) and Student Housing Projects Final Subsequent Environmental Impact Report SCH No. 2017051024.

According to the FEIR, by fall 2025, it is projected that there would be an increase in the 3-quarter weekday (regular session) on-campus population of approximately 9,158 individuals compared to 2014–2015 baseline conditions. This increase includes 1,237 students, 5,578 employees (academic and staff), and 2,343 other individuals.

The UCLA LRDP has identified a potential to develop up to 6,900 beds on five campus sites. With the exception of the Warren Hall site, which would also provide graduate student beds, each of the proposed housing projects would provide undergraduate beds. It is estimated that 1,962 of these would be occupied by current students living on campus in triple rooms designed for two beds. The remaining 4,938 student beds would be occupied by students not currently living on campus (new students, returning student residents, transfer students and graduate students).

Amortized:	From 2014/15 to 2025, an additional 1,237 FTE students (UCLA do not have goals for staff/faculty housing) 4,938 of the 6,900 new beds would be occupied by students not currently living on campus (new students, returning student residents, transfer students and graduate students).
In the next 10 years:	1,237 - 4,938 = -3,701 students in non-university housing

UCLA will reduce community housing need by 3,701 beds. However, it may be less likely to continue adding as many new beds after 2025, the buildout of 2017 LRDP.

UC Riverside
Source: Initial Study (IS) for the University of California, Riverside 2021 Long Range Development Plan Project No. 958098.

According to the IS, approximately 6,395 new students and faculty/staff would be expected to reside in non-affiliated, off-campus housing units, conservatively assumed to all be either in the City of Riverside or Riverside County more broadly. In 2019, the persons per household rate for the City of Riverside was 3.28 and 3.2 for Riverside County (DOF 2019). Assuming those rates are maintained to 2035, the proposed 2021 Long Range Development Plan (LRDP) could generate a need for approximately 1,950 housing units over the proposed 15-year life of the LRDP. The contribution of new residents would be incremental; using a conservative estimate of even housing unit need year over year, approximately 130 housing units would be needed each year over the proposed 15-year life of the 2021 LRDP.

Amortized: 6395/15 = 426.3 students and faculty/staff 1,950/15 = 130 units
In the next 10 years: 426.3*10 = 4,264 students and faculty/staff in non-university housing
130*10 = 1,300 housing units based on 2019 persons per household rate

This analysis may be conservative, as it assumes that it is possible that multiple students would cohabitate (based on the average household size of over 3 persons per household).

Cal State San Bernardino
Source: Final Environmental Impact Report 2016 Campus Master Plan California State University, San Bernardino.

CSU San Bernardino is primarily a commuter campus with the majority of students and faculty already residing within San Bernardino and Riverside counties and commuting to campus from their residences; this pattern will continue under the proposed Master Plan (85.2% of the students attending CSUSB in Fall 2014 resided in Riverside or San Bernardino counties). The purpose of the 2016 Master Plan is to support and advance the University's educational mission by providing a guide to the development of the physical campus and its facilities over the next twenty to twenty-five years in order to accommodate a projected enrollment of 25,000 FTE students (by 2035 in FEIR). Currently, the University's enrollment has already reached 18,070 FTEs.

The plan calls for greatly expanded student housing totaling around 3,300 new beds integrated into residential precincts complete with dining opportunities, new student amenities and additional and enhanced athletic playfields that combine to support a vibrant 24/7 LIVE- LEARN-WORK-PLAY campus life.

Amortized: (25,000-18,070)/20 = 346.5 students 3,300/20 = 165 beds
In the next 10 years: (346.5-165)*10 = 1,815 students in non-university housing

CSUSB Palm Desert
Source: CSUSB PDC Final EIR 2016 Campus Master Plan.

The Palm Desert campus currently serves as an off-campus center (satellite campus) for the California State University San Bernardino main campus and helps to reinforce the University's mission and its educational processes. The CSU San Bernardino Palm Desert 169.4-acre campus is part of a rapidly developing portion of the City of Palm Desert within the Coachella Valley. The existing campus development consists of four buildings within an approximately 55-acre campus area. The 2016 Master Plan provides concentrates campus development within an approximately 85-acre compact area at the southwestern corner of the PDC campus land, incorporating the existing PDC campus facilities and structuring the bulk of campus growth eastwards over the next 20 years. The remaining campus area will remain as unlandscaped open space.

The 2016 Master Plan provides a framework for implementation of the University's goals and programs, by identifying needed facilities and improvements to accommodate a gradual growth in student enrollment projected to reach 8,000 FTEs by 2035. Student Housing will add approximately 616 beds in new residence halls. Currently, the University's enrollment has already reached 1,200 FTEs.

Amortized: (8,000 – 1,200)/20 = 340 FTEs
616 beds/20 = 30.8 beds
In the next 10 years: (340 – 30.8)*10 = 3,092 students in non-university housing

Note: The CSU system conducted a study on the system capacity for the potential need for an additional CSU campus among five potential locations, for which the near 170-acre CSUSB Palm Desert campus was a top candidate. However, the study found that projected 2035 enrollment demand alone does not justify the development of a new 7,500 FTES (Full-Time Equivalent Student) CSU campus at any of the five evaluated locations, assuming construction of the physical capacity identified in the approved Master Plans at all 23 campuses is funded. Given the study results and recent budget cuts due to the COVID-19 pandemic, the CSU board and chancellor responded to the study that looked at Palm Desert, Stockton/Stanislaus County, Concord, Chula Vista and San Mateo County, that if a new campus is built, it will be well into the future, if at all. Therefore, the 2016 Master Plan is a more likely future scenario for the Palm Desert campus and is thus used in this analysis of community housing demand.

Cal State Northridge
Source: Final CSUN 2005 Master Plan Update (Updated Feb. 24, 2006).

In the Fall of 2005, there were 25,139 full-time equivalent students, and the campus has reached its limit of
25,000 FTES. California State University Northridge determined that it would need to increase its cap to 35,000 FTES, allowing for the possibility of adding 10,000 new FTES over the course of that 30-year period. The Master Plan allocates space for up to 2,688 new student residential bed-spaces.

Amortized:	(35,000 – 25,139)/30 = 328.7 FTES
	2,688/30 = 89.6 new beds
In the next 10 years:	(328.7 – 89.6)*10 = 2,391 off-campus student residents

Cal State Fullerton
Source: California State University, Fullerton Master Plan Update Final Environmental Impact Report State Clearinghouse No. 2019080575.

The Campus Master Plan would add approximately 7,000 total FTE students by 2039 compared to the 2016/2017 academic year: 3,000 on-campus student residents and 4,000 off-campus student residents.

Amortized:	4,000/(2039-2017) = 181.8
In the next 10 years:	181.8*10 = 1,819 off-campus student residents

Cal State Channel Islands
Source: CI 2025 Vision Plan (updated in 2014); 32 Acre Development Update, Site Authority Board, April 17, 2017.

The CI 2025 Vision Plan (equivalent to a campus master plan in most other campuses) is intended to guide the growth of the campus from approximately 4,300 full-time equivalent students (FTES) 2013-2014 to 15,000 FTES in 2025. The plan allows 4,500 beds on campus in the long term to accommodate approximately 30% of the 15,000 FTES. In 2013-2014, on-campus housing had a design capacity of 820 beds. Due to an increase in students and increased demand for on-campus housing, singles have converted to doubles and doubles have converted to triples for a total of 1,155 students living on-campus. Off-campus, in University Glen, an additional 124 students are housed in singles and doubles even though the design capacity is 108 beds.

Under the existing CSUCI Specific Reuse Plan, the approximately 32-acre site within the East Campus Residential Neighborhood, or University Glen is entitled for 242 single-family residential units. Under the proposed CSUCI Specific Reuse Plan Amendment and Phase 2 Development of the East Campus Residential Neighborhood Project, up to 600 residential units would be developed on the 32 acres of vacant land. The 600 residential units would include 66 town houses (for sale), 54 single family houses (for sale), 310 market rate apartments, and 170 senior living apartments (age restricted). While University Glen was intended to provide housing for faculty, some units were set aside as student beds. Therefore, the Phase 2 University Glen would provide a maximum of 620 student beds (assume the market rate apartments are 2-bedroom units based on alternative plans).

Amortized:	(15,000 - 4,300)/(2025-2013) = 891.7 students
	(4,500 + 620 – 1,155)/(2025-2013) = 330.4 beds
In the next 10 years:	(891.7 – 330.4)*10 = 5,613 students in non-university housing

Cal Poly Pomona

Source: California State Polytechnic University Pomona Campus Master Plan Revision (21 February 2012); California State Polytechnic University, Pomona Master Plan Update, MP Advisory Committee Update, May 1, 2019 (Part 2); Headcount and FTES by Term, Academic and College Year Averages, 2000-2001 through 2019-2020, California State Polytechnic University, Pomona Academic Research and Resources 4/2/2020; Personal communication with Julie Tsang, University Planner at Cal Poly Pomona, August 27th 2020.

The Campus Master Plan updated in 2012 anticipates a campus buildout to accommodate 20,000 full-time equivalent (FTE) students by 2030. Based on the university's Academic Research and Resources FTES data, the 20,000 FTE goal was exceeded in 2016-2017 academic year (21,377 FTE). The university is in the process of updating the campus master plan and completed preliminary analysis and workshops by 2020. However, the draft plan is not yet available as confirmed by the university planner due to delays caused by the pandemic. A new future enrollment cap is not yet available.

The 2019-2020 academic year average enrollment was 23,795 FTE. Assuming linear growth from 2000 to 2020 based on the academic year average FTES data, in 2029-2030 academic year the enrollment would be 26,358 FTE, an increase of 2,563 from the 2019-2020 academic year.

According to the Master Plan Update, MP Advisory Committee Update presentation dated May 1, 2019, completion of Phase I (open 2020), Phase II (open 2023-24) and Phase III (tentative open 2028-29) potentially adds 1,500 beds to on-campus housing capacity.

Amortized:	2,563/10 = 256.3 students
	1,500/10= 150 beds
In the next 10 years:	(256.3 – 150)*10 = 1,063 students in non-university housing

Cal State Long Beach

Source: California State University, Long Beach Campus Master Plan Revision May 2018; Addendum to The Final Environmental Impact Report (State Clearinghouse #2007061092) Campus Master Plan Housing Expansion Phase I – Parkside North Housing Project, July 2019; Personal communication with Michael Gardner, Director of Campus Planning & Sustainability, California State University, Long Beach, August 27th 2020.

The 2008 Campus Master Plan anticipated enrollment growth to 31,000 FTE through 2020, as noted in the FEIR Addendum for Housing Expansion Phase I (July 2019). An update schedule of the campus master plan or more recent information is not available. Mr. Gardner kindly provided the following data: The 2019-2020 enrollment was about 30,060 FTE; given the pandemic situation, the university is planning for roughly 1% growth over the next two years as of 2020, then 2% per year through 2030. The 2029-2030 enrollment is estimated at 35,929 FTE based on these data, an increase of 5,869 from the 2019-2020 level.

The 2008 Campus Master Plan provides for 2,014 new beds in both the Parkside and Hillside Residential Housing complexes in two phases. As of the FEIR Addendum for Housing Expansion Phase I (July 2019), none of these bed spaces had been built on the campus.

Amortized:	5,869/10 = 586.9 students 2,014/10 = 201.4 beds (assuming all student housing development under the 2008 campus master plan would be complete between 2020 and 2030)
In the next 10 years:	(586.9 – 201.4)*10 = 3,855 students in non-university housing

Cal State Dominguez Hills

Source: California State University Dominguez Hills Guidelines for 2018 Master Plan; Final Environmental Impact Report State Clearinghouse No. 2017081035, Cal State University, Dominguez Hills Campus Master Plan, September 2019.

The 2016-2017 enrollment was 11,004.1 full-time-equivalent students (FTES). CSUDH's 2018 Campus Master Plan provides a framework for development of the University's campus that accommodates growth from the current enrollment of approximately 11,000 FTES to the maximum enrollment of 20,000 FTES in the next twenty years (over a planning horizon extending to 2035 according to the FEIR).

The 2018 Campus Master Plan allows an estimated net 1,590 new beds. According to the FEIR, the existing Pueblo Domingo Student Housing with 649 student beds will be replaced by the new student apartment housing with approximately 990 student beds, resulting in a net increase of 341 student beds on campus. In addition to the replacement of the existing on-campus housing, the master plan includes approximately 2,150 campus apartment housing available for faculty, staff, students, and the general public with leasing priority as follows: university faculty and staff; students; employees of another CSU campus; employees of educational partners of the university which are covered by an agreement with the university, graduates from a CSU campus; and lastly members of the general public. The new campus Residence Halls (part of the new University Village) will include housing for 1,100 students and a dining facility.

Amortized:	(20,000-11,004.1)/20 = 449.8 students 1,590/20 = 79.5 beds (assuming 1,100 beds in new Residence Halls, 341 net beds at student apartments, and 149 beds from the 2,150-unit campus apartment housing together make up the 1,590 planned estimate student beds)
In the next 10 years:	(449.8 – 79.5)*10 = 3,703 students in non-university housing

Cal State Los Angeles

Source: Personal communication with R. Yancey Modesto, Director of Facilities Planning and Construction,
California State University, Los Angeles, September 1st 2020; Cal State LA Housing and Residence Life website (https://www.calstatela.edu/housing/new-housing-designed-student-

success-set-open-fall-2021), accessed September 1st 2020; Cal State LA Institutional Effectiveness website, (https://www.calstatela.edu/InstitutionalEffectiveness/student-enrollment), accessed September 1st 2020.

According to the student enrollment data on the Institutional Effectiveness website, Spring 2020 enrollment was 20,187.6 FTE. Mr. Yancey Modesto kindly provided the following information: CSU LA is in the process of starting a campus master/academic plan which may take several years to complete; CSU LA is planned for a capacity of 25,000 FTE's with a modest projection of 1.5% -2% in the next 5 years as dictated by the CSU Chancellor's Office.

Student Housing East, an eight-story facility offering 1,500 beds for freshmen and sophomores, is currently under construction and expected to open fall 2021. Mr. Modesto confirmed that CSU LA does not have any other planned housing facilities in the foreseeable future.

Amortized:	(20,187.6*(1+2%)^10 - 20,187.6)/10 = 442.1 students
	1,500/10 = 150 beds
In the next 10 years:	(442.1 –150)*10 = 2,921 students in non-university housing

Results and Conclusion

Amortized for the next ten years (2021-2030), UC Irvine, UC Riverside, UCLA, Cal Poly Pomona, and seven other Cal State Universities (Fullerton, Northridge, Channel Islands, San Bernardino and the Palm Desert campus, Long Beach, Dominguez Hills, Los Angeles) in the SCAG region are projected to add a total of 27,826 students (including staff/faculty for UCR) in non-university housing. This represents 2.07% of the total RHNA for SCAG, and 5.5% of the total Projected Need as calculated by SCAG.

It should be noted that the aggregated demand is an estimate based on assumptions and averaging over time. For example, the impact of future student enrollment in UCLA on community housing demand may be underestimated based on the current addition of housing units. While the on-campus housing capacity is based on master plan buildout, funding availability and other factors may affect the actual completion time of housing development. It should also be noted that some colleges (e.g. Cal State San Bernardino) may have a higher number of commuting students from their own homes, some of whom may not need on- or off-campus housing. The results herein may assist the City in determining the impact of the community housing demand of local colleges on housing resources/lands available as it relates to SCAG's allocation of the RHNA without consideration of university demand for off-campus housing.

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May 1, 2020

TO: California Coastal Commissioners and Interested Public

FROM: John Ainsworth, Executive Director
Susan Hansch, Chief Deputy Director
Madeline Cavalieri, Statewide Coastal Program Manager
Kelsey Ducklow, Environmental Scientist

SUBJECT: **Briefing and consideration of adopting "Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action"**

SUMMARY OF STAFF RECOMMENDATION

In early 2020, Secretary Crowfoot (California Natural Resources Agency) and Secretary Blumenfeld (CalEPA) convened state entities with coastal climate resilience responsibilities, including the Coastal Commission, to develop "Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action" (Exhibit 1). This effort recognizes that California's coast, bays, estuaries, and ocean are critical to the state's environmental and economic security, integral to our quality of life, and an iconic part of the state's legacy, but face ongoing and increasing threats from climate change and sea level rise. The participating agencies developed the Principles for Aligned State Action in order to improve effectiveness in addressing this immediate challenge.

The principles fall into six main categories: Develop and utilize best available science; build coastal resilience partnerships; improve coastal resilience communications; support local leadership and address local conditions; strengthen alignment around coastal resilience; and implement and learn from coastal resilience projects.

These principles are meant to guide unified, effective action towards sea level rise resilience for California's coastal communities, ecosystems, and economies, and are consistent with and complementary to the Coastal Commission's ongoing work to address sea level rise.

Staff is recommending **adoption** of "Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action".

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EXHIBITS

I. MOTION AND RESOLUTION

Motion:

I move that the Commission adopt "Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action".

Staff Recommendation of Approval:

Staff recommends a **YES** vote. Passage of this motion will result in the Commission's adoption of the attached state sea level rise planning principles. The motion passes only by an affirmative vote by a majority of the Commissioners present.

Resolution of Approval:

The Commission hereby adopts "Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action".

II. DISCUSSION

A. Background

In early 2020, Secretary Crowfoot (California Natural Resources Agency) and Secretary Blumenfeld (CalEPA) convened state entities with coastal, bay, and shoreline climate resilience responsibilities, with the broad goal of developing a set of principles for use in planning, policy setting, project development, and decision making that will guide a unified approach to addressing sea level rise throughout California. Participants included CNRA, CalEPA, SF Bay Conservation and Development Commission, California Coastal Commission, California Energy Commission, California Department of Fish and Wildlife, Caltrans, Delta Stewardship Council, Department of Water Resources, Ocean Protection Council, Governor's Office of Planning and Research, Office of Emergency Services, State Coastal Conservancy, State Lands Commission, State Parks, State Water Resources Control Board, and Strategic Growth Council.

Together, these agencies recognized that California's coast, bays, estuaries, and ocean are critical to the state's environmental and economic security, integral to our quality of life, and an iconic part of the state's legacy. Yet these coastal areas, and in turn Californians' safety, local and state economies, critical infrastructure, and natural resources are at risk from sea level rise that could be as much as 7 feet or more by 2100. Combined with shorter-term changes such as extreme storms, King Tides, and El Niño events, many coastal areas are already feeling the effects of sea level rise. Without planning and adaptation, future sea level rise will result in significant impacts to communities, with considerable environmental justice implications, upwards of hundreds of billions of dollars in impacts to property and development, impacts to statewide and

regional water supplies, and damage to or loss of beaches, tidepools, wetlands, and other coastal habitats.

In order to improve effectiveness in addressing this immediate challenge, the participating agencies co-developed and endorsed a set of sea level rise principles for aligned state action. These principles will support and enhance California's ongoing efforts related to climate change mitigation and adaptation, enabling the State to scale up its coastal resiliency efforts by creating consistent, efficient decision-making processes and improving collaboration across state, local, tribal, and federal partners. Such enhanced alignment will support proactive adaptation planning and implementation that will save money, allow communities to test and leverage adaptation solutions, prevent impacts, and improve resiliency of coastal areas and frontline communities. The principles for aligned state action are summarized below and included as Exhibit 1.

B. Summary of Principles for Aligned State Action

1. Develop and utilize best available science
   - Apply best available science to planning, decision-making, project design, and implementation
   - Utilize a minimum target of 3.5 feet of sea level rise by 2050, and more protective targets for 2050/2100 for critical infrastructure
2. Build coastal resilience partnerships
   - Coordinate regularly on SLR resilience issues, policies, planning, processes, mandates, permitting, information, funding, and projects
   - Collaboratively collect, share, and publicize the latest information on SLR
   - Build strong relationships with all partners at all levels of government, and with the public, nonprofits, businesses, and other stakeholders
   - Coordinate and partner with tribes to ensure inclusive and multicultural stewardship of lands and waters subject to SLR
3. Improve coastal resilience communications
   - Align SLR messaging and implement a coordinated public awareness and education campaign
   - Increase transparency, efficiency, and alignment of state and local coastal resilience processes, policymaking, and decision-making
4. Support local leadership and address local conditions
   - Support local planning and adaptation policies and projects that address local and regional conditions
   - Evaluate and learn from local conditions
   - Prioritize early protection of and capacity building for the most under-resourced and vulnerable frontline communities
5. Strengthen alignment around coastal resilience

- Develop and apply baseline, Administration-wide SLR assumptions, projections, targets, terms, and standards into coastal projects, retrofits, planning, funding, regulatory, and permitting initiatives
- Ensure that up-to-date SLR resilience planning is in place coastwide
- Collaboratively work to pursue and develop specific funding sources
- Avoid creating unnecessary duplication of existing state agency authority

6. Implement and learn from coastal resilience projects
   - Protect and enhance public trust natural and cultural resources
   - Protect critical public water-dependent infrastructure, ports, harbor districts, and other evolving public trust needs and uses
   - Prioritize the use of nature-based adaptation measures
   - Build coastal resilience by increasing the number of restoration and adaptation projects
   - Prevent impacts from SLR to public access

C. Relationship to Ongoing CCC Sea Level Rise Work

These Principles for Aligned State Action are consistent with and complementary to the Coastal Commission's ongoing efforts to address sea level rise, and adoption of these principles will support and enhance the Commission's efforts to work with local governments, state agencies, tribes, members of the public, and others to ensure protection of coastal resources even as sea levels rise.

In 2015, the Coastal Commission adopted its Sea Level Rise Policy Guidance, which was updated in 2018 to incorporate new sea level rise science and projections. The Policy Guidance includes a set of Guiding Principles that are similar to many of the Principles for Aligned State Action. Some of these include direction to use best available science; to use a precautionary approach by considering high or extreme sea level rise projections, particularly for high-risk decisions like those for critical infrastructure; to consider local conditions, goals, and priorities when developing adaptation strategies; to account for the social and economic needs of the people of the state, including by considering environmental justice implications; to maximize protection of public access, recreation, and sensitive coastal resources, including public trust and water-dependent uses; to maximize natural shoreline values and processes, including through encouraging nature-based adaptation solutions; to coordinate planning and regulatory decision making with appropriate local, state, and federal partners; and to maximize public participation in planning and regulatory processes.

These Guiding Principles guide the Commission's approach to addressing sea level rise, and the new Principles for Aligned State Action will further support these efforts. A critical component of this work is providing best available science on sea level rise projections to use in planning and decision-making. Consistent with the OPC State Sea-Level Rise Guidance, the Commission's Sea Level Rise Policy Guidance, and the Principles for Aligned State Action, the Commission will continue to recognize the 2017

Rising Seas Report and the 2018 State Sea-Level Rise Guidance as best available science, and will work with planners and project applicants to assess an appropriate range of sea level rise scenarios. As reflected in both the OPC and CCC guidance documents, sea level rise analyses should account for the anticipated life of the project/planning horizon, project-specific characteristics such as adaptive capacity and risk tolerance, and acute increases in sea level from extreme storms, tidal events, and other temporary phenomena. Importantly, the statewide guidance and Principles for Aligned State Action recognize the need to incorporate a precautionary approach by considering higher amounts of sea level rise, particularly for high-risk projects like critical infrastructure. The Principles for Aligned State Action also include a target of 3.5 feet of sea level rise by 2050 for planning purposes, which sets a precautionary minimum baseline and which will provide a metric by which to measure statewide progress on adapting to sea level rise.

The Coastal Commission is also committed to coordinating with local governments, state and federal agency partners, tribes, and other stakeholders as called for in the Principles. The Coastal Commission has a long history of working with local governments to address coastal hazards and protect coastal resources. Over the last seven years, the LCP Grant Program has helped support local government efforts to complete sea level rise vulnerability assessments, develop adaptation plans, and update LCPs to better address sea level rise in a way the considers local context as well as statewide goals. The grant program also has and will continue to provide an important information-sharing resource with respect to best practices for planning, consideration of environmental justice challenges, development of specific policy approaches, and implementation of adaptation options.

The Coastal Commission also routinely works with other state and federal partners on projects to plan for and address sea level rise. Examples include coordination with an interagency team to support alignment of LCPs, General Plans, Local Hazard Mitigation Plans and others to ensure coastal resiliency; work with the State Lands Commission on an ongoing project to understand the public trust implications of sea level rise; a formalized Plan for Improved Agency Partnering with Caltrans that includes a focus on addressing sea level rise; and coordination with multiple state agencies to support the Commission's development of adaptation guidance for critical infrastructure. Additionally, the Commission is an active participant in several interagency groups like the State Coastal Leadership Group on Sea Level Rise and various Climate Action Teams that play an integral role in supporting climate change planning and adaptation.

Similarly, the Coastal Commission has and will continue to work with state agencies, local governments, and other project applicants in developing and permitting adaptation solutions and projects that account for sea level rise. Recent adaptation success stories include a managed retreat project at Surfer's Point in Ventura, which included the relocation of a parking lot and bike path, along with beach and dune restoration; the realignment of a portion of Highway 1 near Piedras Blancas to allow for the removal of riprap and restoration of natural shoreline processes; and a living shoreline and dune restoration project in Cardiff to provide protection for a portion of Highway 101. The Coastal Commission also recently certified an amendment to the San Francisco LCP

that lays the foundation for implementing multiple sea level rise adaptation strategies, including the eventual removal of the southern portion of the Great Highway, enhancement of bike and pedestrian access opportunities, and beach and dune restoration. Each of these examples highlight the critical need for strong coordination and alignment between the Coastal Commission and other stakeholders to encourage and support successful coastal resilience strategies.

Lastly, the Coastal Commission has recently adopted both a Tribal Consultation Policy and an Environmental Justice Policy, which both speak to the need to maximize outreach and participation in planning and decision-making more broadly, and in particular to consider underrepresented, vulnerable, differently impacted, and other unique persons or communities. The Principles for Aligned State Action reflect the need to support and work with these communities to ensure adaptation planning is carried out in an equitable and inclusive manner.

The Coastal Commission is encouraged by the enhanced focus on statewide efforts to address sea level rise and support coastal resilience that is reflected in the Principles for Aligned State Actions and staff recommends adoption of these principles.

Chapter 5

Addressing Sea Level Rise in Local Coastal Programs

The Coastal Act requires that the 61 cities and 15 counties in coastal California prepare Local Coastal Programs (LCPs) to govern land use and development in the coastal zone inland of the mean high tide. LCPs become effective only after the Commission certifies their conformity with the policies of Chapter 3 of the Coastal Act.

LCPs contain the ground rules for future development and protection of resources in the coastal zone. Each LCP includes a Land Use Plan (LUP) and an Implementation Plan (IP). The LUP specifies the kinds, locations, and intensity of uses, and contains a required Public Access Component to ensure that maximum recreational opportunities and public access to the coast is provided. The IP includes measures to implement the LUP, such as zoning ordinances. LCPs are prepared by local governments and submitted to the Coastal Commission for review for consistency with Coastal Act requirements.[24]

Once an LCP's certification becomes effective, the local government becomes responsible for reviewing most Coastal Development Permit (CDP) applications. However, the Commission retains continuing permit authority over some lands (for example, over tidelands, submerged lands, and public trust lands) and authority to act on appeals for certain categories of local CDP decisions.

To be consistent with the Coastal Act hazard avoidance and resource protection policies, it is critical that local governments with coastal resources at risk from sea level rise certify or update Local Coastal Programs that provide a means to prepare for and mitigate these impacts. The overall LCP update and certification process has not changed. Now, however, the impacts of accelerated sea level rise should be addressed in the hazard and coastal resource analyses, alternatives analyses, community outreach, public involvement, and regional coordination. This Guidance is designed to complement and enhance the existing LCP certification and update steps. Although the existing LCP certification and update processes are still the same, sea level rise calls for new regional planning approaches, new strategies, and enhanced community participation.

LCPs are essential tools to fully implementing sea level rise adaptation efforts. Since many existing LCPs were certified in the 1980s and 1990s, it is important that future amendments of the LCPs consider sea level rise and adaptation planning at the project and community level, as appropriate. The *California Climate Adaptation Strategy* (CNRA 2009) and *Safeguarding California* (CNRA 2014) specifically identify LCPs as a mechanism for adaptation planning along the California coast. For general guidance on updating LCPs, see the LCP Update Guide, available here: https://www.coastal.ca.gov/rflg/.

[24] In addition there are other areas of the coast where other plans may be certified by the Commission, including Port Master Plans for ports governed by Chapter 8 of the Coastal Act, Long Range Development Plans for state universities or colleges, and Public Works Plans for public infrastructure and facilities. Following certification of these types of plans by the Commission, some permitting may be delegated pursuant to the Coastal Act provisions governing the specific type of plan.

Steps for Addressing Sea Level Rise in Local Coastal Programs and Other Plans

The Commission recommends the following six steps to address sea level rise as part of the development of an LCP, LCP Amendment, or other plan.[25] These steps can be modified and adapted to fit the needs of individual planning efforts and communities and to address the specific coastal resource and development issues of a community, such as addressing bluff erosion or providing for effective redevelopment, infill, and concentration of development in already developed areas. At the start of an LCP update to address sea level rise or a new LCP project, local government planners should contact their local Coastal Commission district office to discuss the LCP goals and to establish a plan for Coastal Commission staff coordination and public involvement throughout the entire process. A key element of any LCP project is public involvement. This can include establishing technical and community stakeholder advisory committees, establishing an interdepartmental sea level rise team of City and County staff representatives, and planning a series of public workshops to gather feedback, in addition to the required public hearings on the LCP.

The steps of this process are illustrated in Figure 9 and described below. They are similar to the standard steps of a long-range planning process and should be familiar to local planners. Steps 1-3 are often referred to as a "sea level rise vulnerability assessment" in other sea level rise planning contexts and therefore are similar to other sea level rise-related resources.

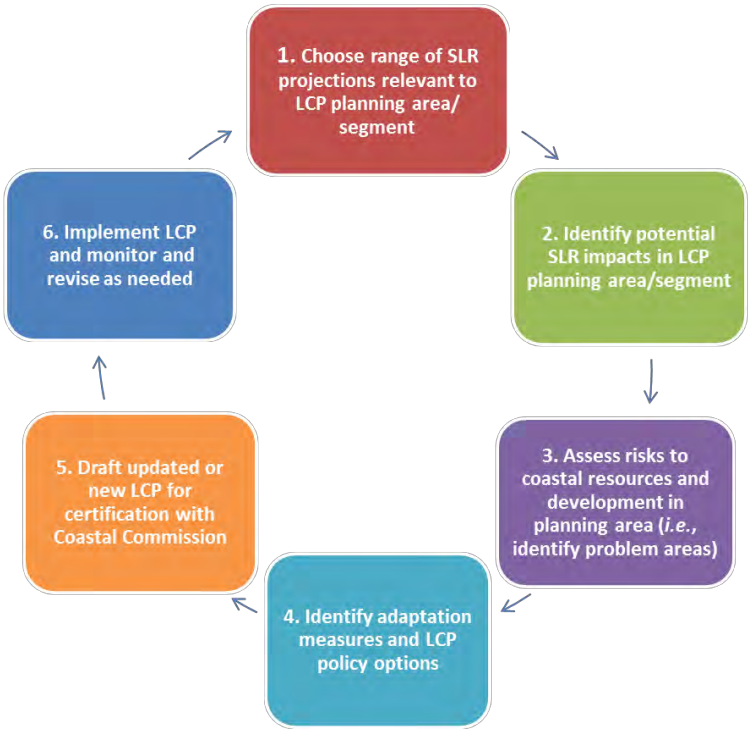


Figure 9. Sea level rise adaptation planning process for new and updated Local Coastal Programs

[25] This Guidance uses the term 'LCP process' to refer to the LCP process, but many of the concepts included here are applicable to other planning processes, including Long Range Development Plans, Public Works Plans, and Port Master Plans. For example, recommendations for how to analyze sea level rise impacts and perform a vulnerability assessment are broadly applicable. Many adaptation strategies may also be applicable, though in all cases, individual actions taken will vary based on relevant policies, local conditions, feasibility, and other factors.

The Coastal Commission also offers a *Local Coastal Program (LCP) Update Guide* (2013b) that outlines the broad process for amending or certifying an LCP, and there is naturally some overlap between the content of that document and this Sea Level Rise Policy Guidance document. The general LCP amendment steps are outlined below, in a flow chart (see Appendix D), and in the LCP Tips/Best Practices document (2013c), which is available in the *Resources for Local Governments* section of the Commission's website. Local governments should contact the Coastal Commission planner for their area when pursuing a new LCP or LCP amendment.

1. **Initial Amendment scoping and development:** Conduct issues assessment, identify need for amendment, prepare preliminary draft, coordinate with Commission staff, and share early drafts
2. **Local Amendment process:** Notify public, conduct local outreach and hearings, meet with Commission staff to discuss any issues, and adopt LCP at the local level
3. **Prepare Submittal:** assemble LCP materials, discuss with Commission staff prior to submittal, transmit to Coastal Commission, and make available to public
4. **Process Amendment at Coastal Commission:** Commission staff will review submittal within 10 working days for completeness; will address outstanding information needs; will prepare and write staff report; hold public hearing and vote; and transmit action to local government
5. **Effectuate Amendment:** Local acceptance of any modifications or resubmittal within 6 months, finalize local approval, and complete Coastal Commission Executive Director check-off
6. **Implement LCP Amendment, monitor and revise as necessary.**

The step-by-step process for incorporating sea level rise into LCPs outlined in the rest of this chapter fits into these broader LCP amendment steps. Local government planners should use the LCP Update Guide in conjunction with the Sea Level Rise Policy Guidance to inform the LCP.

Use scenario-based analysis

The Guidance recommends using a method called "scenario-based analysis" (described in Chapter 3 of this Guidance). Since sea level rise projections are not exact, but rather presented in ranges, scenario-based planning includes examining the consequences of multiple sea level rise amounts, plus extreme water levels from storms and El Niño events. The goal of scenario-based analysis for sea level rise is to understand where and at what point sea level rise, and the combination of sea level rise and storms, pose risks to coastal resources or threaten the health and safety of a developed area. This approach allows planners to understand the full range of possible impacts that can be reasonably expected based on the best available science, and build an understanding of the overall risk posed by potential future sea level rise. For example, if there are large changes in the hazard zones between two sea level rise amounts, additional analyses may help determine the tipping points when viable land uses will change. In general, scenario-based analyses can help determine the long-term compatibility of certain areas with certain land uses. For further description of this method, see Chapter 3.

Include other topics as applicable or desired

This Guidance recommends a number of analyses that will generate useful information related to sea level rise and other environmental vulnerabilities. Performing these analyses (and the overall planning process) may provide a useful opportunity to include other studies that will complement the goals of Local Coastal Programs and provide valuable insights for community concerns. For example, planners should expand the Coastal Act consideration of lower cost visitor serving facilities to include considerations of social equity and environmental justice in the analyses by determining how climate hazards or the adaptation measures might differentially impact various demographics. Additionally, planners may want to incorporate analysis of the economic implications of various options for adaptation. Important topics such as these should be incorporated into the analyses already underway for the sake of efficiency.

Leverage analyses and share information with other planning-related processes and documents

Sea level rise is addressed in many other planning-related documents and by many other agencies and organizations. Planners should be aware of these documents and the on-going work of state and federal agencies and make an effort to share information in cases where analyses required for some of these documents may overlap with the studies appropriate for sea level rise planning in LCPs. Additionally, these agencies, organizations, and planning efforts may be good resources from which to gather information when performing these analyses for LCP updates.

For example, there is overlap between the required elements of a Local Hazard Mitigation Plan (LHMP) and Local Coastal Programs, and the Commission recommends coordinating an LHMP update with an LCP update if possible. As part of an LHMP, local governments identify the natural hazards that impact their community, identify actions to reduce the losses from those hazards, and establish a coordinated process to implement the plan.[26] In order to be eligible for certain types of non-emergency disaster assistance, including funding for hazard mitigation projects, local governments are required by FEMA to complete an LHMP[27] and to update the plan every 5 years. Any sea level rise hazard avoidance strategies included in an LCP certification or update, such as relocation of critical facilities must be included in the LHMP narrative to be eligible for funding from FEMA to implement future projects. If a local government has recently updated their LHMP, the city or county can add narrative information on sea level rise strategies through an addendum to the plan, referred to by FEMA as an annex.[28]

In many cases, the analyses and adaptation options identified in this Guidance could be used for hazard mitigation plans or vice versa, as the goal of each of these planning processes is to

[26] http://www.fema.gov/media-library-data/20130726-1524-20490-5927/67fr8844.pdf

[27] Note that recent revisions to the State Mitigation Plan Review Guide, set to go into effect in March 2016, will require states to analyze the probability and possible impacts due to future hazard events in a way that includes the projected changes in natural hazards resulting from climate change. Failure to include such considerations may result in a state's ineligibility for certain non-emergency mitigation grants.

[28] For more information on how to complete or update an LHMP, visit http://hazardmitigation.calema.ca.gov/ or contact the Cal OES office and a hazard mitigation technical expert can assist local governments with the planning process. For contact information, visit http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/contacts.

minimize or avoid impacts from coastal hazards. As a result, there may be opportunities to leverage funding and share work efforts.

A number of other similar planning processes, projects, and documents are listed in Figure 10, and planners may be able to use these studies in the LCP planning process, or, alternatively, share analyses and information performed for LCP planning with the groups working on related projects. Additionally, the forthcoming State of California Planning for Sea Level Rise Database (established by Assembly Bill 2516 and pursuant to Public Resources Code Sections 30961-30968) may become an important tool for identifying past and/or ongoing actions that stakeholders have implemented to address sea level rise. In any case, information sharing is highly recommended to promote efficiency.

Coordinate regionally as appropriate

Many impacts of sea level rise will transcend jurisdictional boundaries. Similarly, the adaptation decisions made by coastal communities could themselves have consequences that affect areas outside the local jurisdiction. For these reasons, regional coordination will often enhance the effectiveness of local adaptation decisions. Indeed, many of the projects identified in Figure 10 have taken this regional approach. Planners should keep this concept in mind as they work through these steps and coordinate regionally where appropriate and possible.

Representative Adaptation Planning Stakeholders

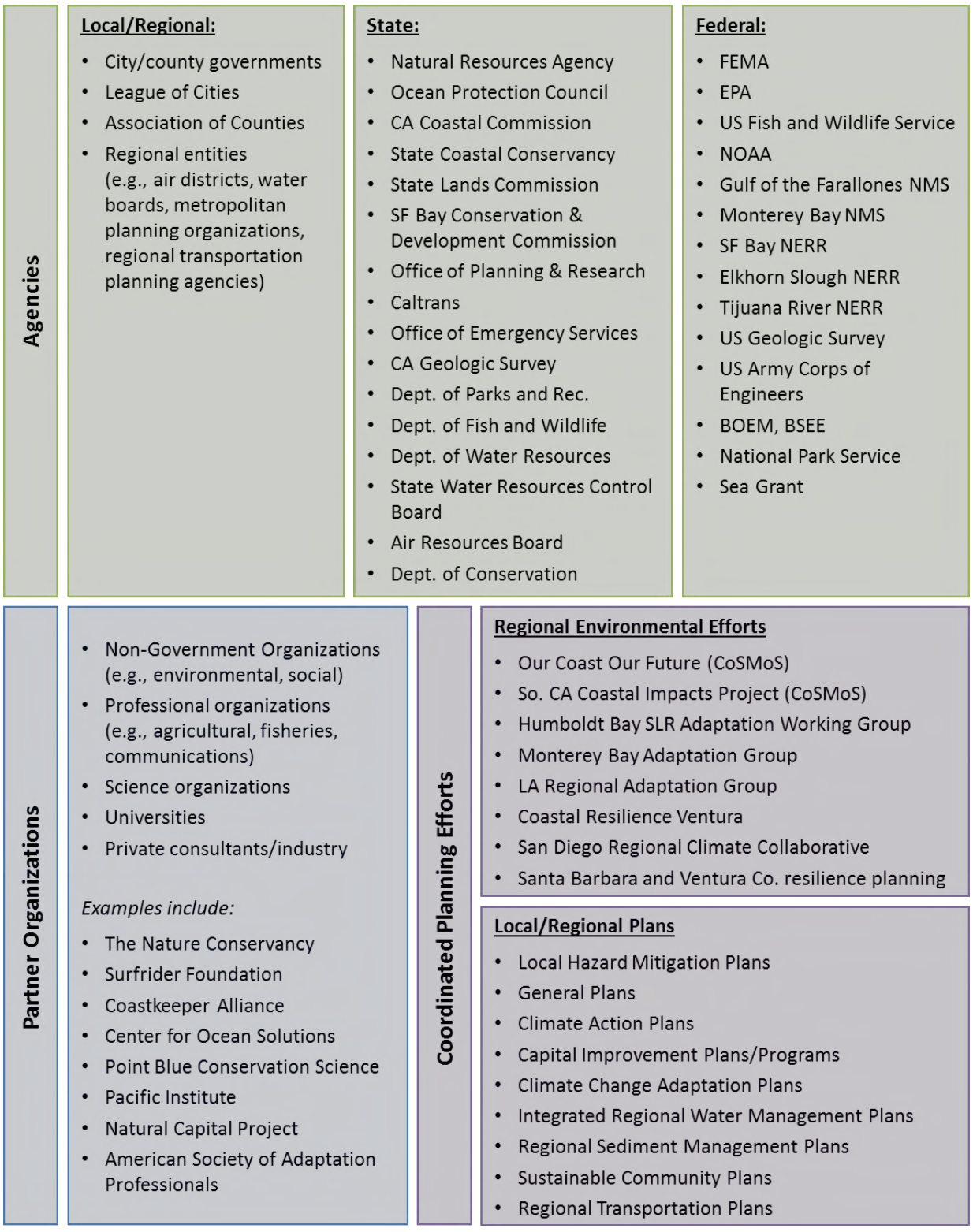


Figure 10. Agencies, organizations, and planning efforts related to sea level rise adaptation

Step 1 – Determine range of sea level rise projections relevant to LCP planning

The first step in incorporating sea level rise into the LCP planning process is to identify locally relevant sea level rise scenarios that may occur at given time steps into the future. These scenarios will be carried through the rest of the steps in the sea level rise LCP planning process. Follow these steps to determine the locally relevant sea level rise projections to use in the subsequent steps:

- **Determine planning horizons of concern:** The Coastal Commission recommends taking a long-term view when analyzing sea level rise impacts because the land use decisions made today will affect what happens over the long-term. For example, development constructed today is likely to remain in place over the next 75-100 years, or longer. In practice, many jurisdictions have completed assessments that look at sea level rise vulnerabilities through approximately 2100. Understanding short-term vulnerabilities is also important, and the Coastal Commission recommends assessing vulnerabilities in intermediate planning horizons. For example, many jurisdictions have assessed sea level rise scenarios that correspond to years 2030 and 2050, in line with information provided in the 2012 National Research Council (NRC) report. These time periods may be used, or local governments may identify other relevant planning horizons for their plans and development scenarios, as long as the projections for those time frames are based on the best available and relevant scientific projections.

- **Determine the full range of sea level rise projections from the best available science:** Using best available science, currently the 2018 OPC SLR Guidance (or other comparable study, provided that it is peer reviewed, widely accepted within the scientific community, and locally relevant), determine the range of sea level rise for the planning horizons of concern. The sea level rise projections for the San Francisco tide gauge from the 2018 OPC SLR Guidance are presented in Table 4 below (projection tables for all 12 California tide gauges are presented in Appendix G)[29]. See below for a discussion of scenario-based planning in the LCP context. The LCP should include a policy to use the best available science about sea level rise.

[29] More detailed refinement of sea level rise projections is not considered necessary at this time, as variations from the nearby tide gauges will often be quite small, and may be insignificant compared to other sources of uncertainty. However, the Coastal Commission recognizes that other studies exist with localized data, for example those completed in the Humboldt Bay region, which may also be appropriate for use.

Table 4. Sea Level Rise Projections for the San Francisco Tide Gauge[30] (OPC 2018)

Projected Sea Level Rise (in feet): *San Francisco*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2
2110*	3.5	7.3	11.9
2120	4.1	8.6	14.2
2130	4.6	10.0	16.6
2140	5.2	11.4	19.1
2150	5.8	13.0	21.9

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[30] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

- **Choose multiple sea level rise scenarios based on range of sea level rise projections.** The Coastal Commission recommends that all communities evaluate the impacts from the "medium-high risk aversion" scenario. Local governments should also include the "extreme risk aversion" scenario to evaluate the vulnerability of planned or existing assets that have little to no adaptive capacity, that would be irreversibly destroyed or significantly costly to repair, and/or would have considerable public health, public safety, or environmental impacts should that level of sea level rise occur. Planners may also consider evaluating the lower projections (those with a higher probability) to gain an understanding on what is likely to be vulnerable regardless of modeling uncertainty and future greenhouse gas emissions.

  In addition to evaluating the worst-case scenario, planners need to understand the minimum amount of sea level rise that will cause impacts for their community, and how these impacts will change over time, with different amounts of sea level rise. Planners should evaluate enough scenarios to be able to answer the following:

  - What are the impacts from the worst-case scenario of the highest possible sea level rise plus elevated water levels from high tide, El Niño and a 100-year storm?
  - What is the minimum amount of sea level rise that causes inundation, flooding, or erosion concerns?
  - How do inundation, flooding, and erosion concerns change with different amounts of sea level rise?
  - Are there any tipping points where sea level rise impacts become more severe? (For example, is there a point at which seawalls or levees are overtopped?)

  There are two main ways to choose scenarios from which to evaluate sea level rise: by sea level rise amount or by time-period. Tools that provide maps by sea level rise amount can then be linked to the relevant time period, as shown below in the *Our Coast Our Future* example. There is no single accepted sea level rise mapping methodology for the state of California. Local governments can choose whether to use existing sea level rise tools or to develop their own scenarios and maps. See below for information on scenarios and modeling outputs generated by existing sea level rise modeling tools.

Examples of Choosing Scenarios with Existing Sea Level Rise Modeling Tools

For California, there are two primary methods for identifying sea level rise scenarios, based on two of the currently available SLR mapping tools: CoSMoS (Our Coast Our Future) and Coastal Resilience Ventura (The Nature Conservancy). The type of tool available for sea level rise mapping in a planning area can be a deciding factor for which scenarios to use in the analysis. The Coastal Commission recommends using as many scenarios as necessary to fully analyze the potential impacts to coastal resources, human health, and safety rather than a specific tool or number of scenarios. Examples for choosing scenarios based on the tools available are described below.

Example 1: Identify SLR amounts, then relate to likely time period(s) of occurrence

This method involves first examining different amounts of sea level rise and storm events, and second, looking at the 2018 OPC SLR Guidance projections to determine the range of years during which those impacts could potentially occur. For example, the Our Coast Our Future CoSMoS-based tool provides sea level rise maps for 9 different amounts in 25 cm (0.8 ft) intervals, three different storm scenarios (annual, 20-year, and 100-year), and a king tide scenario. With this tool, users can first evaluate different amounts of sea level rise and storms, determine how different amounts of sea level rise and storm situations affect the planning area, and then determine when the increased water level is likely to occur based on the OPC Guidance projections. The CosMoS tool is currently available from Point Arena (in Mendocino County) through the Mexico border, and an expansion throughout the rest of the state is planned for 2018/2019. The NOAA Sea Level Rise and Coastal Flooding Impacts viewer similarly provides maps for different amounts of sea level rise (in this case, in 1-ft increments), but does not include impacts from storms, erosion or waves. A methodology for adding in these additional impacts is described in Appendix B.

Example 2: Choose applicable years, then identify high, intermediate, and low scenarios

For this method, planners pick specific years, determine the range of sea level rise amounts that could occur by that year, and examine the consequences of three or more sea level rise amounts within that range. For example, the Coastal Resilience Ventura Tool (The Nature Conservancy) provides maps showing inundation, flooding, wave impact zone, and erosion risk zones with low, medium, and high sea level rise scenarios for the years 2030, 2060, and 2100. For local governments within Ventura County, planners may choose to evaluate scenarios according to the 2030, 2060, and 2100 time periods. The model provides maps for both flooding and erosion.

Expected outcomes from Step 1: *Upon completing this step, a range of regionally- or locally-relevant sea level rise projections for the time periods of concern should be established. Based on the range of projections, planners will have identified a low, high, and one or more intermediate projections. These projections are the sea level rise scenarios that will be carried through the rest of the planning process.*

Step 2 – Identify potential physical sea level rise impacts in LCP planning

The next step is to identify the physical hazards and impacts (referred to comprehensively as sea level rise impacts) associated with current and future sea level. As described in Section C of Chapter 3 of this Guidance, broad categories of sea level rise impacts may include inundation, flooding, wave impacts, erosion, and saltwater intrusion. In this step, planners should analyze these physical impacts and their various sub-components in order to understand current and future local hazard conditions. The analysis should answer the following basic questions:

- What are the existing hazard conditions that threaten the planning area?
- What is the projected change in hazard conditions due to locally appropriate sea level rise projections and planning horizons of concern?

This analysis should include the following topics, as applicable:

- Local Water Conditions (See Appendix B for a detailed methodology)
  - Current tidal datum[31] and future inundation
  - Water level changes from storm surge, atmospheric pressure, the Pacific Decadal Oscillation (PDO), the El Niño Southern Oscillation (ENSO), and/or other basin-wide phenomena
  - Wave impacts and wave runup, including wave runup from a 100-year storm, and based on tides, other water level changes, and future beach and bluff erosion
  - Flooding from extreme events such as storms with intervals greater than 100 years, tsunamis, *etc.*
- Shoreline change (See Appendix B for more information)
  - Current shoreline erosion rates. For future cliff and dune erosion rates, modify historic erosion rates, to account for the influence of sea level rise (*e.g.*, work by the Pacific Institute – Heberger *et al*. 2009; Revell *et al*. 2011). If possible, modify long-term beach erosion rates to account for changes in El Niño frequency, storm intensity, sediment supply or changing transport conditions. Analyzing wetland responses to sea level rise may require site-specific analyses of various physical and biological factors as described in Heberger *et al.* 2009.
  - Sedimentation rates
- Water quality
  - Current and future saltwater intrusion areas

[31] Tidal datums are based on the latest National Tidal Datum Epoch (NTDE) published by NOAA and are the mean of the observed sea levels over a 19-year period. The latest published epoch is 1983-2001. This tidal epoch can be considered equivalent to the year 2000 baseline for the OPC projections.

- Current and potential future coastal water pollution issues due to inundation of toxic soils, rising water tables, and increases in nonpoint source pollution

Use existing models, tools, reports, historic records, and other materials (Table 5) to develop or double check the identified hazard areas. Document the current and future hazard areas in the Land Use Plan using maps, GIS products, graphics, tables, charts, figures, descriptions, or other means. This process should be repeated for each planning horizon and/or sea level rise scenario defined in Step 1.

Expected outcomes from Step 2: *Upon completing this step, the potential current and future impacts to the planning area from sea level rise hazards should be identified based on sea level rise projections. These should include impacts from the high, low, and intermediate sea level rise scenarios for the planning horizon(s) of concern. Maps, GIS layers, graphics, figures, charts, tables, descriptions, or another system should be developed to communicate the impacts of current and future hazards.*

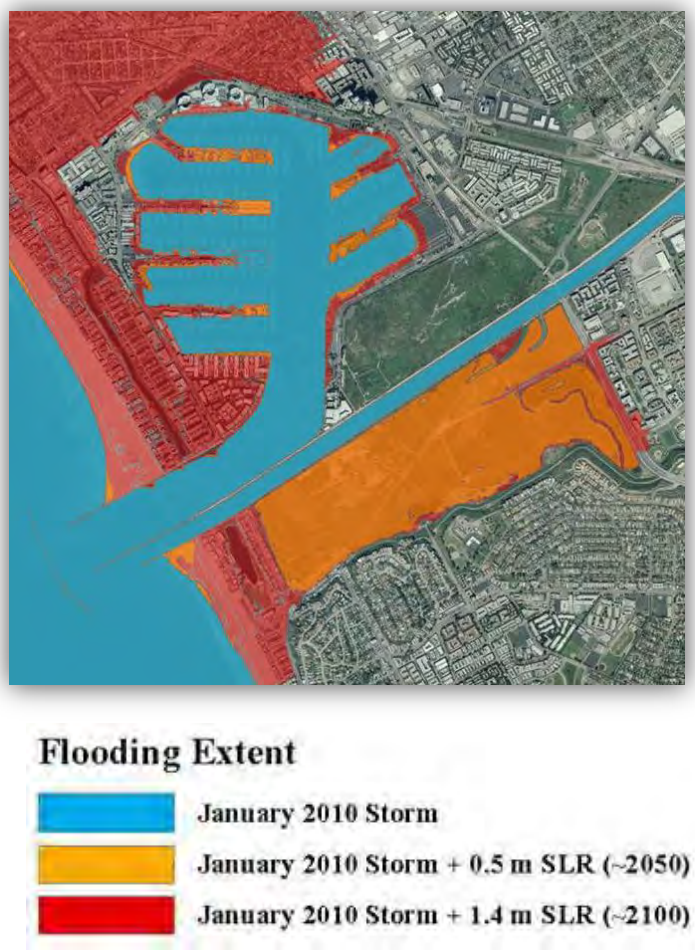


Figure 11. Example of analysis of SLR impacts. Flooding hazards predicted from the CoSMoS hindcast of the January 2010 storm, with and without sea level rise (SLR) scenarios, in the region of Venice and Marina del Rey, CA. (*Source*: Barnard *et al.* 2014).

Resources for Sea Level Rise Mapping

Table 5 includes a list of sea level rise mapping tools. The tools vary in their complexity: some are considered "bathtub models," because they show future inundation with simple rise in sea level (and no changes to the shoreline caused by other forces). Others include factors like erosion, storms, and fluvial inputs. These tools provide a useful first look at possible sea level rise impacts, but may need to be supplemented with additional, site- or topic-specific analyses, depending on the region. See Appendix B for additional information on determining hazard impacts and tools for mapping sea level rise.

Table 5. Sea Level Rise Mapping Tools

Tool	Description	Link
Statewide		
NOAA Sea Level Rise and Coastal Flooding Impacts Viewer	Displays potential future sea levels with a slider bar. Communicates spatial uncertainty of mapped sea level rise, overlays social and economic data onto sea level rise maps, and models potential marsh migration due to sea level rise. Maps do not include any influence of beach or dune erosion.	NOAA Office for Coastal Management, http://coast.noaa.gov/digitalcoast/tools/slr
Cal-Adapt – Exploring California's Climate	Represents inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting from different increments of sea level rise coupled with extreme storm events. Incorporates real, time series water level data from past (near 100 year) storm events to capture the dynamic effect of storm surges in modeling inundation using a three dimensional hydrodynamic model (per Radke, 2017).	http://cal-adapt.org/tools/slr-calflod-3d/
Pacific Institute Sea Level Rise Maps	Downloadable PDF maps showing the coastal flood and erosion hazard zones from the 2009 study. Data are overlaid on aerial photographs and show major roads. Also available are an interactive online map and downloadable maps showing sea level rise, population and property at risk, miles of vulnerable roads and railroads, vulnerable power plants and wastewater treatment plants, and wetland migration potential.	http://www.pacinst.org/reports/sea_level_rise/maps/ For the 2009 report *The Impacts of Sea-Level Rise on the California Coast* visit: http://pacinst.org/publication/the-impacts-of-sea-level-rise-on-the-california-coast/

Climate Central Surging Seas	Overlays sea level rise data with socio-economic information and ability to analyze property values, population, socio-economic status, ethnicity, and income or areas at risk. Can compare exposure across the state or a county.	http://sealevel.climatecentral.org/ssrf/california
Coastal Storm Modeling System (CoSMoS); tool hosted by Our Coast Our Future	Currently available for Point Arena to the Mexico border, with a statewide expansion anticipated in 2018/2019. The Coastal Storm Modeling System (CoSMoS) is a dynamic modeling approach that allows detailed predictions of coastal flooding due to both future sea level rise and storms, and integrated with long-term coastal evolution (i.e., beach changes and cliff/bluff retreat)	https://walrus.wr.usgs.gov/coastal_processes/cosmos/ http://data.pointblue.org/apps/ocof/cms/
TNC Coastal Resilience	An online mapping tool showing potential impacts from sea level rise and coastal hazards designed to help communities develop and implement solutions that incorporate ecosystem-based adaptation approaches. Available statewide with more detailed modelling for Monterey Bay, Santa Barbara, Ventura, and Santa Monica.	http://maps.coastalresilience.org/california/
Humboldt Bay Sea Level Rise Adaptation Project	This project is a multi-phased, regional collaboration. Phase I produced the *Humboldt Bay Shoreline Inventory, Mapping, and Sea Level Rise Vulnerability Assessment* which describes current shoreline conditions and vulnerabilities under the current tidal regime. Phase II included hydrodynamic modeling to develop vulnerability maps of areas surrounding Humboldt Bay vulnerable to inundation from existing and future sea levels. Phase II produced the *Humboldt Bay Sea Level Rise Modeling Inundation Mapping Report* and the *Humboldt Bay Sea Level Rise Conceptual Groundwater Model*.	All reports are available at: http://humboldtbay.org/humboldt-bay-sea-level-rise-adaptation-planning-project

Step 3 – Assess potential risks from sea level rise to coastal resources and

After sea level rise impacts are identified and mapped in Step 2, the next Step is to determine whether sea level rise poses any risks, or potential problems, for coastal resources and development in the LCP planning area (refer to Chapter 4 for a description of the potential consequences of sea level rise for coastal resources). Next, assess whether the LCP planning area's current and planned land uses are appropriate or consistent with Coastal Act or LCP policies given those impacts, or if those land uses should be revised. This step requires an understanding of several characteristics of the coastal resources and development typically found within various land use types. (Much of this information can be produced in a vulnerability assessment, an analysis that is commonly conducted in the planning and climate change adaptation field. See Appendix C for a list of recent sea level rise vulnerability assessments.) Account for potential impacts to vulnerable, low-income communities and consider coastal development and resources, including but not limited to:

- Existing and planned development
- Coastal-dependent development and uses such as harbors, wharfs, ports, marinas, and commercial and recreational fishing areas and facilities
- Critical infrastructure[32] such as wastewater treatment plants, transportation infrastructure, and some power plants and energy transmission infrastructure
- Public accessways, beaches and other recreation areas, and the California Coastal Trail
- State Highway 1, 101, and other state and local roads that provide access to the coast
- Wetlands, environmentally sensitive habitat area (ESHA), and other coastal habitats and sensitive species
- Agricultural areas
- Cultural sites and archaeological or paleontological resources
- Visitor-serving development and uses

Conduct the following tasks for each planning horizon (*e.g.*, the years 2030, 2050, and 2100, or other planning horizons):

1. For the planning horizon of interest, determine what development and coastal resources may be subjected to the sea level rise impacts expected for that time period. Map the coastal resources and development that lie within the sea level rise impact areas for the given time period. (Remember to address the wide range of resources listed above, including both natural resources and development.)

[32] Critical infrastructure can vary widely from community to community, and may also include fire stations, police stations, and hospitals. For planning purposes, a jurisdiction should determine criticality based on the relative importance of its various assets for the delivery of vital services, the protection of special populations, and other important functions, as well as the social, environmental, and economic risks associated with loss of or damage to such assets.

2. Determine if sea level rise impacts are a problem or benefit for each resource, and if so, when and to what degree the resource will be impacted. In some instances, sea level rise may result in the creation of new habitat areas that could help to alleviate impacts from the loss of similar habitat in other locations. However, it is more likely, especially in heavily urbanized areas, that sea level rise will result in a net loss of habitat unless steps are taken to preserve these systems.

   To accomplish this, consider a wide range of characteristics of each resource, including the following. The questions listed under each characteristic might help guide the consideration of each of these characteristics. These questions are meant to be suggestions rather than a standardized approach, and planners may use scientific literature, best professional judgment, or a variety of other resources to gain a conceptual understanding of the important resources and vulnerabilities in their jurisdictions.

   a. **Exposure.** Will sea level rise impacts affect the resource/development at all?
      i. Are coastal resources and community assets exposed to sea level rise impacts?
      ii. Is the resource already exposed to hazards such as waves, flooding, erosion, or saltwater intrusion? If it is, will sea level rise increase hazard exposure?

   b. **Sensitivity.** If resources are exposed, to what degree will coastal resources/development be affected by sea level rise impacts? A simple way to think about this concept is to consider *how easily affected* the resource or development is in regard to sea level rise impacts.
      i. How quickly will the resource respond to the impact from sea level rise?
      ii. Will the resource/development be harmed if environmental conditions change just a small amount? What are the physical characteristics of resource/asset (*e.g.*, geology, soil characteristics, hydrology, coastal geomorphology, topography, bathymetry, land cover, land use)? Do any of those characteristics make the resource especially sensitive?
      iii. Are there thresholds or tipping points beyond which sensitivity to sea level rise increases?

   c. **Adaptive Capacity.** How easily can the resource successfully adapt to sea level rise impacts?
      i. How well can the resource/development accommodate changes in sea level?
      ii. Is rate of change faster than the ability of the resource/development to adapt?
      iii. How easily can development be modified to cope with flooding, inundation, and/or erosion? Can structures be elevated or relocated?

iv. Are there adaptation efforts already underway? Are there any factors that limit the success of adaptation efforts?

v. Do beaches, wetlands and other coastal habitats have room to migrate inland? What is the overall health of existing wetlands and coastal habitats?

vi. Are there any other climate change-related impacts to consider? Are there any non-climate stressors that could impair ability to adapt to sea level rise?

vii. Is there potential for habitat creation as a result of sea level rise?

viii. What are the options to protect, redesign (*e.g.*, elevate), or relocate inland any existing public accessways, recreational beaches, and segments of the Coastal Trail to cope with rising sea levels? Is lateral access compromised with sea level rise?

d. **Consequences.** When sea level rise and/or sea level rise adaptation measures have impact(s) upon a resource, what are the economic, ecological, social, cultural, and legal consequences?

i. How severely could each resource be affected? At what scale?

ii. Are there cumulative consequences?

iii. Are there ripple effects, or secondary consequences to consider?

iv. Will human responses cause further adverse impacts?

e. **Land Use Constraints.** Given the location of sea level rise impacts and the resources currently located in those areas, should the types and intensities of land use be altered to minimize hazards and protect coastal resources?

i. What is the current pattern of development? Is the area largely developed or does it have significant areas of undeveloped land?

ii. Is the area served by infrastructure that is vulnerable to sea level rise impacts?

iii. Are large areas of land under common ownership or is land mostly subdivided into smaller lots in separate ownership?

iv. What conditions does the land use type, development, or resource require to either exist or fulfill its intended purpose?

v. Is it a coastal-dependent use? What is its ideal proximity to the coast?

vi. For new development, what is the expected lifespan? Is it economically feasible to locate it in a sea level rise impact area for a certain period of time before it is removed or relocated?

vii. For existing development, what are the options available to minimize hazards to the development and protect coastal resources? Note that in

certain situations, the Coastal Act allows existing structures to be protected (Coastal Act Section 30235). What are the coastal resource impacts of such protection, and are there feasible alternatives that avoid shoreline armoring, such as options to provide incentives to property owners to relocate or remove at-risk structures?

viii. For a natural resource or habitat, what conditions does it require to persist?

ix. Where would resources/development ideally be located after sea level rise causes environmental conditions to shift?

x. What changes to existing LCP requirements or other land use restrictions are necessary to maximize opportunities for avoiding hazards or relocating threatened existing development?

After going through the questions listed above, and others that may be relevant to the planning exercise, synthesize the information and determine where sea level rise impacts currently pose problems for coastal resources, what problems may develop over time as sea level rises, and how urgent the problems are. Create maps illustrating the location and extent of vulnerable land uses, such as critical facilities, wastewater infrastructure, and State Highway 1 and other coastal access roadways. This information can also be summarized in narrative form. The analysis should identify resources and development likely to be impacted by sea level rise at various periods in the future, and thus the issues that need to be resolved in the LCP planning process.

Remember that these assessments are not static; existing risks will change and new risks will arise with changes in a community, the emergence of new threats, new information, and the implementation of adaptation actions. For this reason, the analysis should be updated as needed to reflect changes in sea level rise projections, changes in land use patterns, or new threats.

Expected outcomes from Step 3*: Descriptions of the characteristics that influence risk, including exposure, sensitivity, and adaptive capacity of each coastal resource to sea level rise impacts under each sea level rise scenario identified in Step 1 at the selected planning horizons, along with the expected consequences of those impacts for the resource and broader community. Maps of resources and/or land uses at risk could be produced.*

Example for Step 3

To illustrate the process described in Step 3, consider a hypothetical planning area that includes multiple coastal resources and land use types, including a coastal wetland, bluff-top residential development with a fronting beach, and a wastewater treatment facility, that need to be addressed in the planning process. After Steps 1 and 2, portions of the planning area are found to be subject to current and future sea level rise impacts.

Step 3.1: Map the coastal resources (in this case the wetland, development, and wastewater treatment facility) for the range of time periods and sea level rise projections.

Step 3.2

a. **Exposure**

- *Wetland:* The wetland is highly exposed to flooding and inundation from sea level rise. By the year 2030, portions of the wetland will trap sediment at a rate such that the elevation keeps pace with sea level rise. By 2050, a portion of the wetland will become inundated and converted to open water, and by 2100 the entire area will be converted to open water. The wetland will be completely lost by this time period if it is not able to move inland.
- *Bluff-top Residential Development:* Houses in the residential development are not exposed to sea level rise impacts in 2030. However, a high rate of retreat along the fronting beach and bluff will put front-line houses in danger of being undermined by the year 2050, and the entire development may be lost by 2100.
- *Wastewater Treatment Facility:* Given that the wastewater treatment plant is set back somewhat from the water, it will not be exposed to impacts from sea level rise until 2050. By 2050, however, portions of the infrastructure will be exposed to impacts from elevated water levels due to 100-year storm events and El Niño occurrences. By 2100, significant portions of the facility will be exposed to flooding as the surrounding area is eroded and inundated.

b. **Sensitivity**

- *Wetland:* The wetland has high sensitivity to changes in sea level because its functioning is highly-dependent on local physical parameters such as water flow, tidal fluctuation, sediment supply, and water quality. Although it currently has good sediment supply, good water quality, and a number of other characteristics, small changes in sea level rise by 2050 may alter the function of the wetland. In addition, there are concerns that beyond 2050 the wetland will not be able to keep up with accelerated sea level rise, thus increasing sensitivity to further changes in sea level.
- *Bluff-top Residential Development:* The residential development has moderate to high sensitivity to longer-term sea level rise changes. By 2050, the front-line houses will no longer be safe enough for occupancy. Moreover, infrastructure such as roads, sewage systems, and power networks may be damaged as the bluff-face erodes.
- *Wastewater Treatment Facility:* The facility is moderately sensitive to sea level rise. Flooding and erosion from sea level rise could cause damage of the facility, pumps and

other equipment, but the facility was initially built to withstand a high degree of storm and related impacts.

c. **Adaptive Capacity**

- *Wetland:* Unlike many wetlands in the State of California, this particular wetland has a moderate-high adaptive capacity because it has the ability to both accumulate sediment and grow upwards, and, given that the land upland of the wetland is preserved as open space, it can migrate inland. However, by 2050, a part or all of the existing wetland area could be converted to open water if the wetland is not able to migrate inland or accumulate sediment at a rate that keeps pace with sea level rise. In this case, for example, a public trail will need to be relocated to allow inland migration of the new intertidal zone. Additionally, adaptive capacity may be reduced if pollution increases (*e.g.*, as a result of damage to adjacent development) and disrupts the normal functioning of the wetland.
- *Bluff-top Residential Development:* The residential development has a moderate adaptive capacity. As houses become threatened over time, a scenario of managed retreat would allow houses to be removed incrementally and eventually be relocated to safer areas. The feasibility of managed retreat can depend upon lot sizes, ownership patterns, land use restrictions in the safer areas, and the availability of public or private financing. In addition, a protective structure such as a seawall would minimize threats to the residence due to erosion, though if the development is protected by shoreline structures, the fronting beach will eventually be lost.
- *Wastewater Treatment Facility:* The wastewater treatment facility has a very low adaptive capacity. It is large and has expensive infrastructure so it cannot be elevated, and relocation is costly and difficult. In order to be protected in its current location, new structures will need to be built.

d. **Consequences**

- *Wetland:* In many situations, the loss of wetland area is a high risk since wetlands provide flood protection, water quality enhancement, and essential habitat for fish and bird species. However, in this case, wetland migration is not restricted by inland development, so the risks for this wetland are slight to moderate, depending upon the suitability of the inland area for establishment of wetland plants and potential changes in water temperature and water quality. In the short term, the wetland will likely continue to function at normal levels. However, if it eventually can't keep up with sea level rise or if there are barriers to migration, loss of the habitat will result in a loss of important ecosystem services.
- *Bluff-top Residential Development:* The housing development has medium to high risk through 2100. The option to either relocate houses or protect them with a seawall means that they could continue to exist. Importantly, a system of managed retreat will allow for the continued existence of the fronting beach and all of its social, economic, and environmental benefits, whereas the construction of a seawall will result in the loss of the beach and these benefits.

- *Wastewater Treatment Facility:* Given its low adaptive capacity and high sensitivity to higher levels of sea level rise, the wastewater treatment facility is at high risk. Loss or damage to the facility could result in serious social, economic, and environmental consequences. Flooding of the facility and surrounding areas will cause damage to infrastructure and loss of facility function. This could lead to discharge of untreated sewage, which would have adverse impacts to water quality and could impair the health of nearshore ecosystems. Sea level rise could also cause outflow pipes to back up with seawater, leading to inland flooding and additional water quality problems. However, efforts to protect the structure may have unintended consequences including loss of surrounding habitat areas.

e. **Land Use Constraints (discussed further in Step 4)**

- *Wetland:* The high adaptive capacity of the wetland means that minimizing risk to this resource may be accomplished by ensuring that there is space available for it to move into. Land use policies designed to protect areas inland of the current wetland area will be necessary.
- *Bluff-top Residential Development:* The area in question will eventually become incompatible with the current use. Development will not begin to be exposed to sea level rise impacts until 2050, but it is important to start planning now about how best to address the risks to the houses. Managed retreat would necessitate identifying feasible locations into which houses could be moved or a plan to abandon and remove houses. Such a plan might include a Transfer of Development Rights program in which homes are encouraged in less hazardous areas. If a managed retreat strategy is not in place, existing structures may qualify for shoreline protection. Shoreline protection would likely exacerbate beach erosion, degrade public access, impair shoreline habitat, and alter visual character.
- *Wastewater Treatment Facility:* The biggest risk in this scenario is to the wastewater treatment facility. It should be determined how likely it is that the facility will be able to be protected throughout the rest of its expected lifespan under even the highest sea level rise scenarios. It may be that the wastewater treatment facility becomes an incompatible use under future conditions. If so, plans should be made to relocate at-risk portions of the facility, as feasible, or to phase out the facility.

Note that this is a simplified example used to demonstrate the process described in Step 3. Decisions about how to address various challenges presented by sea level rise will be more complex than those illustrated above and may require prioritizing the different resources based on Coastal Act requirements taking into account the goals and circumstances of the community and the various characteristics of each resource. An understanding of the exposure, sensitivity, adaptive capacity, consequences, and land use constraints for the particular resources and scenarios will need to be kept in mind as planners move into Step 4 to identify possible adaptation strategies. Updated LCP policies and ordinances should be considered to support strategy implementation over the long term.

Step 4 – Identify LCP adaptation strategies to minimize risks

Whether as part of a new LCP or as part of an amendment to update an existing LCP, coastal planners should work with the Coastal Commission and relevant stakeholders at all steps, but particularly to evaluate potential options and adaptation strategies to address the sea level rise impacts identified in Step 2 and the risks to coastal resources identified in Step 3. Planners will then develop new or revised land use designations, policies, standards, or ordinances to implement the adaptation strategies in the LCP.

An LCP as certified by the Commission should already have land use policies, standards, and ordinances to implement Coastal Act Chapter 3 policies, including policies to avoid and mitigate hazards, and to protect coastal resources. However, in older LCPs, many of these policies may not address changing conditions adequately enough to protect coastal resources over time as sea level rises. Similarly, policies to protect resources and address coastal hazards may not reflect new techniques that can be utilized to adaptively manage coastal resources in a dynamic environment. As such, the LCP should be evaluated to identify the land use designations, policies, or ordinances that need to be amended. An LCP update may need to include a variety of adaptation measures depending on the nature and location of the vulnerability. In addition, local governments may need to add new "programmatic" changes to address sea level rise, such as transfer of development credit programs, regional sediment management programs, or a land acquisition program.

In Steps 1-3, planners will have analyzed several possible sea level rise scenarios, and this analysis will have revealed valuable information about areas and specific coastal resources that are especially vulnerable to sea level rise hazards under possible scenarios. The results should show areas that are particularly resilient to future change and trigger points at which sea level hazards will become particularly relevant to certain areas. Step 3d (identifying the *Consequences* of sea level rise impacts) and Step 3e (considering the *Land use constraints*) will be particularly useful in thinking through what resources are particularly vulnerable and what the local priorities may be.

In Step 4, planners should weigh information from the previous steps, keeping in mind the hazard avoidance and resource protection policies of the Coastal Act, and begin identifying, choosing, and/or developing adaptation strategies to be included in a new or updated LCP. The options available to minimize risks from sea level rise are dependent upon the specifics of the local community, and will vary widely depending on whether the area is an urban, fully-developed waterfront, or a rural, undeveloped coastline. In undeveloped areas, the options may be clear: strictly limit new development in sea level rise hazard zones.

However, in urban areas, sea level rise can present unprecedented challenges, and the options are less clear. The Coastal Act allows for protection of certain existing structures. However, armoring can pose significant impacts to coastal resources. To minimize impacts, innovative, cutting-edge solutions will be needed, such as the use of living shorelines to protect existing infrastructure, restrictions on redevelopment of properties in hazardous areas, managed retreat, partnerships with land trust organizations to convert at risk areas to open space, or transfer of development rights programs. Strategies will need to be tailored to the specific needs of each

community based on the resources at risk, should be evaluated for resulting impacts to coastal resources, and should be developed through a public process, in close consultation with the Coastal Commission and in line with the Coastal Act.

Adaptation strategies should be selected based upon the local conditions, the results of the scenario-based analysis, and Coastal Act requirements, taking into account the particular goals of the local community. If certain adaptation strategies should be implemented when conditions reach pre-identified trigger points, those caveats should be included in the LCP. Similarly, LCP adaptation policies should be developed and implemented in such a way as to be flexible and adaptive enough that they can be changed or updated as conditions change or if sea level rise impacts are significantly different than anticipated. Additionally, many adaptation strategies should be implemented in a coordinated way through both the LCP and individual CDPs. For example, current land uses that will conflict with future conditions may be amended through updated zoning designations in an LCP. In turn, zoning designations could carry out specific policies or requirements regarding new development or redevelopment that need to be addressed in a CDP to ensure that projects are resilient over time. Planners are encouraged to work with Coastal Commission staff to ensure compliance with the Coastal Act and to coordinate and share information with other local partners including those in charge of emergency management, law enforcement, and related services, and those identified in Figure 10 as applicable and feasible.

A key issue that should be addressed in the LCP is the evaluation of strategies to minimize hazards related to existing development. Under the Coastal Act, certain improvements and repairs to existing development are exempt from CDP requirements. Non-exempt improvements and any repairs that involve the replacement of 50% or more of a structure, however, generally require a CDP and must conform to the standards of the relevant Local Coastal Program or Coastal Act.[33] Redevelopment, therefore, should minimize hazards from sea level rise. For existing structures currently sited in at-risk locations, the process of redeveloping the structure may require the structure to be moved or modified to ensure that the structure and coastal resources are not at risk due to impacts from sea level rise. As described in Guiding Principle 6, sequential renovation or replacement of small portions of existing development should be considered in total. LCPs should include policies that specify that multiple smaller renovations that amount to alteration of 50% or more of the original structure should require a Coastal Development Permit, and require that the entire structure to be brought into conformance with the standards of the Local Coastal Program or Coastal Act.[34]

[33] Section § 13252(b) of the Commission's regulations states that "unless destroyed by natural disaster, the replacement of 50 percent or more of a single family residence, seawall, revetment, bluff retaining wall, breakwater, groin or any other structure is not repair and maintenance under Coastal Act Section 30610(d) but instead constitutes a replacement structure requiring a Coastal Development Permit."

[34] In addition, for existing structures located between the first public road and the sea or within 300 feet of the inland extent of a beach, improvements that increase the height or internal floor area by more than 10% normally require a CDP. (Cal. Code Regs., tit. 14, §§13250(b)(4), 13253(b)(4).) Depending upon the location of the structure, smaller improvements may also require a CDP. (Cal. Code Regs., tit. 14, §§ 13250(b), 13253(b).)

General Adaptation Strategies:

Chapter 7 describes a number of adaptation policies and strategies and is organized by resource type to allow users to easily identify the types of policies that may be relevant to local resource vulnerabilities. However, there are a number of adaption strategies or related actions that apply to a variety of resources or that may be generally useful when adopting or updating an LCP. Some of these adaptation strategies and actions are broadly described below.

- **Update resource inventory and maps**: An important first step for addressing sea level rise hazards and vulnerabilities in a new or updated LCP will be to compile a set of maps that clearly show the current locations of the range of coastal resources present in an LCP jurisdiction (*e.g.*, beaches and public accessways; agricultural land, wetlands, ESHA, and other coastal habitats; energy, wastewater, transportation, and other critical infrastructure; and archaeological and paleontological resources), as well as existing land use designations, and hazard areas. It may also be helpful to map possible future conditions based on the analysis done in Steps 1-3. Doing so will help planners begin to identify possible land use and zoning changes and other adaptation strategies that will be necessary to meet hazard avoidance and resource protection goals.
- **Update land use designations and zoning ordinances**: One of the most common methods of regulating land use is through zoning designations and ordinances, and updating these policies is one of the most fundamental ways of responding to sea level rise impacts. Planners may address particular vulnerabilities and local priorities by updating land use designations and zoning ordinances to protect specific areas and/or resources. For example, areas that are particularly vulnerable to sea level rise impacts can be designated as hazard zones and specific regulations can be used to limit new development and/or to encourage removal of existing development in such zones. Similarly, open areas can be designated as conservation zones in order to protect and provide upland areas for wetland and habitat migration or for additional agricultural land.
- **Update siting and design standards**: Updated siting and design standards may go hand in hand with updated land use designations and zoning ordinances in that specific standards may be required for development or projects in certain zones. For example, development in hazard zones may require additional setbacks, limits for first floor habitable space, innovative stormwater management systems, special flood protection measures, mitigation measures for unavoidable impacts, relocation and removal triggers and methodologies, and so on.
- **Establish methods to monitor local changes from sea level rise**: Add policies that establish actions to conduct long-term sea level rise monitoring and research on areas of key uncertainties, areas sensitive to small changes in sea level rise, or areas with high sea level rise risk.
- **Research and data collection**: Support research to address key data gaps and better utilize existing information. Local governments may find it useful to collaborate with local, regional, and state partners to pursue new research to better understand the factors controlling sea level rise, baseline shoreline conditions, ecosystem responses to sea level rise, potential impacts and vulnerabilities, and the efficacy of adaptation tools. Related efforts may include monitoring programs designed to track trends in local shoreline

change, flooding extent and frequency, or water quality. Monitoring of the results of various adaptation strategies and protective structures could be included as part of a Coastal Development Permit for projects in hazard zones.

- **Outreach and education**: Education and outreach efforts involve formal instruction and provision of information to stakeholders, and can help generate support for planning and action implementation. It is important to coordinate with partners and include all relevant stakeholders in these processes, particularly those that are typically isolated, such as low-income or underserved communities. For many people, sea level rise is a new issue. Information on sea level rise science and potential consequences may motivate stakeholders to take an active role in updating the LCP for sea level rise issues, or in the vulnerability and risk assessment efforts. Additionally, education efforts regarding the risks of sea level rise as well as possible adaptation strategies may encourage people to take proactive steps to retrofit their homes to be more resilient or to choose to build in less hazardous areas.

As stated above, a more extensive and detailed list of possible adaptation strategies can be found in Chapter 7. The list should neither be considered a checklist from which all options need to be added to an LCP, nor is it an exhaustive list of all possible adaptation strategies. Sea level rise adaptation is still an evolving field and decision makers will need to be innovative and flexible to respond to changing conditions, new science, and new adaptation opportunities. The important point is to analyze current and future risks from sea level rise, determine local priorities and goals for protection of coastal resources and development, and identify what land use designations, zoning ordinances, and other adaptation strategies can be used to meet those goals within the context of the Coastal Act.

***Expected outcomes from Step 4**: Identified sections of the LCP that need to be updated, a list of adaptation measures applicable to the LCP, and new policies and ordinances to implement the adaptation measures.*

Step 5 – Draft updated or new LCP for certification with the Coastal Commission

Once potential adaptation strategies have been identified, LCP policies that address sea level rise should be incorporated into a new LCP or LCP amendment. For jurisdictions with a certified LCP, adaptation measures will be implemented through development of amendments to the certified LCPs. For jurisdictions that currently do not have a certified LCP, the sea level rise policies will be part of the development of a new LCP. In areas without a certified LCP, the Coastal Commission generally retains permitting authority, and the standard of review for development is generally Chapter 3 of the California Coastal Act.

As noted in Step 4, sea level rise has the potential to affect many types of coastal resources in an LCP planning area/segment, and it is likely that policies throughout the LCP will need to be revised or developed to address impacts from sea level rise. Two major types of updates to the LCP will likely be needed to address sea level rise:

1. New or revised policies/ordinances that apply to all development in the planning area. For example, policies such as "All new development shall be sited and designed to minimize risks from sea level rise over the life of the structure."
2. Updated land use and zoning designations, as well as programs to facilitate adaptive community responses, to reduce risks to specific coastal resources. For example, the LCP could modify the zoning of undeveloped land located upland of wetlands from residential to open space in order to provide the opportunity for wetlands to migrate inland, and protect wetlands for the future.

Local government staff should work closely with Coastal Commission staff and relevant stakeholders, including ensuring there is opportunity for public input, to develop the new LCP or LCP amendments. Once the updates and plans are complete, local governments will submit to the Commission for certification. The Commission may either certify or deny the LCP or LCP amendment as submitted, or it may suggest modifications. If the Commission adopts suggested modifications, the local government may adopt the modifications for certification or refuse the modifications and resubmit a revised LCP for additional Commission review. For more information on updating LCPs, see https://www.coastal.ca.gov/rflg/.

Expected outcomes from Step 5*: Certified/updated LCP with policies and land use designations that address sea level rise and related hazards and ensure protection of coastal resources to the maximum extent feasible.*

Step 6 – Implement LCP and monitor and revise as needed

Upon certification of the updated LCP, sea level rise adaptation strategies will be implemented through the certified implementing ordinances and related processes and actions (*e.g.*, local review of CDPs, proactive action plans). Additionally, an important component of successful adaptation is to secure funds for implementation, regularly monitor progress and results, and update any policies and approaches as needed. Sea level rise projections should be re-evaluated and updated as necessary.

- **Secure resources for implementation:** There are a number of different sources of funds available to help local governments implement adaptation strategies. For example, the Coastal Commission, the Ocean Protection Council, and the Coastal Conservancy have grant programs designed to support local adaptation efforts (see Chapter 1 for additional details on each of these programs).

  As described previously there may also be overlap between LCP planning and Local Hazard Mitigation planning. FEMA's Hazard Mitigation Assistance (HMA) grant programs provide significant opportunities to reduce or eliminate potential losses to State, Indian Tribal government, and local assets through hazard mitigation planning and project grant funding. Currently, there are three programs: the Hazard Mitigation Grant Program (HMGP); Pre-Disaster Mitigation (PDM); and Flood Mitigation Assistance

(FMA)[35]. Cal OES administers the HMA and FMA programs. More information can be found at http://www.caloes.ca.gov/cal-oes-divisions/recovery/disaster-mitigation-technical-support/404-hazard-mitigation-grant-program or the FEMA HMA Web site at https://www.fema.gov/hazard-mitigation-assistance.

A list compiled by Cal OES of additional funding options for hazard mitigation can be found in Appendix E. The Commission recognizes that funding opportunities are constantly evolving, that demand for funding is increasing, and that there is a significant need for the development of additional funding opportunities.

- **Identify key resources to monitor:** Certain species can be indicators of whether sea level rise is affecting an ecosystem. For instance, the presence of certain plant species can indicate the salinity of soils. Also, monitoring plans should reflect the outcome of the scenario-based analysis of sea level rise. Some adaptation measures might be earmarked for implementation when a certain amount of sea level rise (or a particular sea level rise impact) occurs. Monitoring programs should ensure that these triggers are recognized and responded to at the appropriate time.

- **Periodically Update LCPs:** Local governments should try to review their vulnerability and risk assessments on a regular basis as significant new scientific information becomes available and propose amendments as appropriate. Given the evolving nature of sea level rise science, policies may need to be updated as major scientific advancements are made, changing what is considered the best available science. Modify the current and future hazard areas on a five to ten year basis or as necessary to allow for the incorporation of new sea level rise science, monitoring results, and information on coastal conditions. Regular evaluation of LCPs is important to make sure policies and adaptation strategies are effective in reducing impacts from sea level rise.

***Expected outcomes from Step 6**: Plan to monitor the LCP planning area for sea level rise and other impacts and for effectiveness of various adaptation strategies that are implemented; plan to revise the LCP when conditions change or science is updated.*

This six-step process discussed in this chapter is illustrated in the flowchart below (Figure 12). Notice that the process is circular. Because sea level rise science will be refined and updated in the future, planners should periodically repeat this six-step process to update and improve their LCPs.

For additional resources and examples of ways to incorporate sea level rise into the LCP, see Appendix C.

[35] Each HMA program was authorized by separate legislative action, and as such, each program differs slightly in scope and intent.

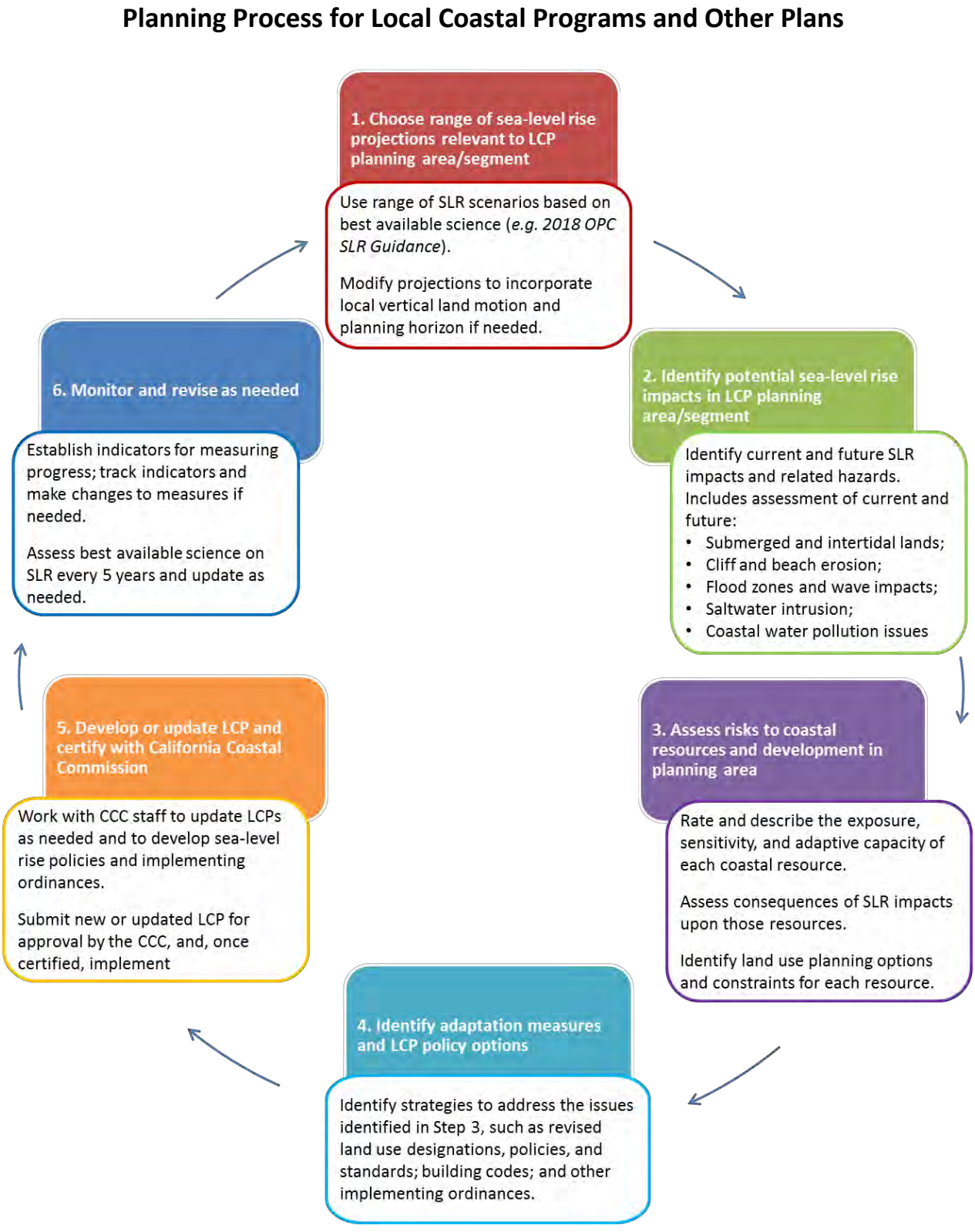


Figure 12. Flowchart for addressing sea level rise in Local Coastal Programs and other plans

Chapter 7

Adaptation Strategies

Chapters 5 and 6 provide guidance on the sequential processes for addressing sea level rise in Local Coastal Programs (LCPs) and Coastal Development Permits (CDPs). This chapter describes some of the specific adaptation strategies to consider in these planning and development review processes. Given the range of impacts that could occur as a result of sea level rise, and the uncertainties surrounding projections of sea level rise over the lifetimes of many coastal projects, communities, planners, coastal managers and project applicants will need to use adaptation strategies to effectively address coastal hazard risks, and protect coastal resources over time.

As described in Chapters 5 and 6, adaptation strategies should be chosen based on the specific risks and vulnerabilities of a region or project site and the applicable Coastal Act and LCP requirements, with due consideration of local priorities and goals. Adaptation strategies may involve modifications to land use plans, regulatory changes, project modifications, or permit conditions that focus on avoidance or minimization of risks and the protection of coastal resources.

Some adaptation strategies may require land use plans or proposed projects to anticipate longer-run impacts now, such as assuring that critical infrastructure is built to last a long time without being put in danger, or rezoning hazardous areas as open space. Other adaptation strategies may build adaptive capacity into the plan or project itself, so that future changes in hazard risks can be effectively addressed while ensuring long-term resource protection. In most cases, especially for LCP land use and implementation plans, multiple adaptation strategies will need to be employed. For projects, adaptation strategies may be addressed through initial siting and design and through conditions that provide for specific adaptation over time.

The next sections provide an overview of the general categories of adaptation options, followed by a description of various specific adaptation strategies organized by type of coastal resource, as outlined in Chapter 3 of the California Coastal Act.

The adaptation options described in this chapter are intended to provide guidance for potential LCP and permitting strategies. Not all strategies listed here will be appropriate for every jurisdiction, nor is this an exhaustive list of options. However, as described in Chapters 5 and 6, all local governments and all project applicants should analyze the possible effects of sea level rise and evaluate how the strategies in this chapter, or additional supplemental strategies, could be implemented in LCPs or CDPs to minimize the adverse effects of sea level rise.

General Adaptation Categories

There are a number of options for how to address the risks and impacts associated with sea level rise. Choosing to "do nothing" or following a policy of "non-intervention" may be considered an adaptive response, but in most cases, the strategies for addressing sea level rise hazards will require proactive planning to ensure protection of coastal resources and development. Such proactive adaptation strategies generally fall into three main categories: protect, accommodate, and retreat.

For purposes of implementing the Coastal Act, no single category or even specific strategy should be considered the "best" option as a rule. Different types of strategies will be appropriate in different locations and for different hazard management and resource protection goals. The effectiveness of different adaptation strategies will vary across both spatial and temporal scales. In many cases, a hybrid approach that uses strategies from multiple categories will be necessary,

and the suite of strategies chosen may need to change over time. As discussed later in the document, the legal context of various options will also need to be considered in each situation and ultimately, adaptive responses will need to be consistent with the Coastal Act. Nonetheless, it is useful to think about the general categories of adaptation strategies to help frame the consideration of land use planning and regulatory options in specific communities and places along the coast.

Protect: Protection strategies refer to those strategies that employ some sort of engineered structure or other measure to defend development (or other resources) in its current location without changes to the development itself. Protection strategies can be further divided into "hard" and "soft" defensive measures or armoring. "Hard" armoring refers to engineered structures such as seawalls, revetments, and bulkheads that defend against coastal hazards like wave impacts, erosion, and flooding. Such armoring is a fairly common response to coastal hazards, but it can result in serious negative impacts to coastal resources, particularly as sea level rises. Most significantly, hard structures form barriers that impede the ability of natural beaches and habitats to migrate inland over time. If they are unable to move inland, public recreational beaches, wetlands, and other habitats will be lost as sea level continues to rise. This process is commonly referred to as "passive erosion," which is the narrowing of beaches due to the fact that the back of the beach on an eroding shoreline has been fixed in place (Flick *et al*. 2012). Other detrimental impacts may include negative visual impacts or interference with other ecosystem services.

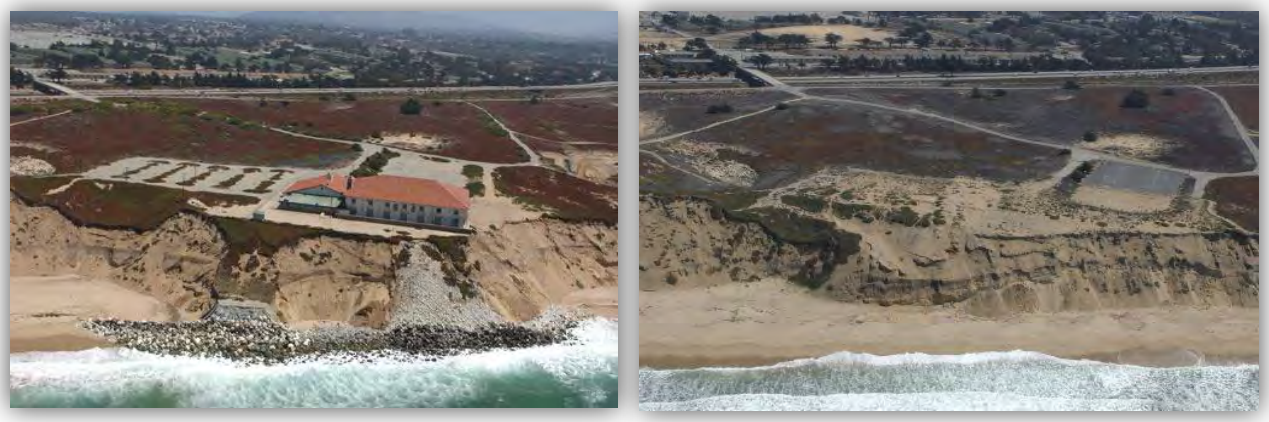


Figure 15. Photo depicting passive erosion. (*Left*) Passive erosion in front of a revetment at Fort Ord, illustrating the loss of beach where the development prevents the shoreline from migrating landward. The beach continues to migrate inland on either side of the revetment. (*Right*) Recovery of the beach following removal of the revetment and blufftop structure. (*Source:* California Coastal Records Project).

"Soft" armoring refers to the use of natural or "green" infrastructure like beaches, dune systems, wetlands, and other systems to buffer coastal areas. Strategies like beach nourishment, dune management, or the construction of "living shorelines" capitalize on the natural ability of these systems to protect coastlines from coastal hazards while also providing benefits such as habitat, recreation area, more pleasing visual impacts, and the continuation or enhancement of ecosystem services. The engineering of green infrastructure is a somewhat newer concept in some cases, and because of this, the effectiveness of different strategies in different types of environments is not necessarily well-known or tested. In cases in which natural infrastructure might not be

completely effective or may not be preferred, a hybrid approach using both hard and natural infrastructure could be considered. As described in Principle 10 of this Guidance and in the *Safeguarding California* plan (CNRA 2014), priority should be given to options that protect, enhance, and maximize coastal resources and access, including giving full consideration to innovative nature-based approaches such as living shoreline techniques or managed/planned retreat. Although the Coastal Act clearly provides for potential protection strategies for "existing development", it also directs that new development be sited and designed to not require future protection that may alter a natural shoreline.

Accommodate: Accommodation strategies refer to those strategies that employ methods that modify existing developments or design new developments to decrease hazard risks and thus increase the resiliency of development to the impacts of sea level rise. On an individual project scale, these accommodation strategies include actions such as elevating structures, retrofits and/or the use of materials meant to increase the strength of development, building structures that can easily be moved and relocated, or using extra setbacks. On a community-scale, accommodation strategies include any of the land use designations, zoning ordinances, or other measures that require the above types of actions, as well as strategies such as clustering development in less vulnerable areas or requiring mitigation actions to provide for protection of natural areas even as development is protected. As with protection strategies, some accommodation strategies could result in negative impacts to coastal resources. Elevated structures may block coastal views or detract from community character; pile-supported structures may, through erosion, develop into a form of shore protection that interferes with coastal processes, blocks access, and, at the extreme, results in structures looming over or directly on top of the beach.

Figure 16. Photo depicting "managed retreat" and restoration. Surfers' Point Managed Shoreline Retreat project in which the parking lot was moved back and beach area was restored. (*Aerial composite by Rick Wilborne (February 28, 2013); photo courtesy of Surfrider Foundation*)

Retreat: Retreat strategies are those strategies that relocate or remove existing development out of hazard areas and limit the construction of new development in vulnerable areas. These strategies include land use designations and zoning ordinances that encourage building in more resilient areas or gradually removing and relocating existing development. Acquisition and buy-out programs, transfer of development rights programs, and removal of structures where the right to protection was waived (*i.e.*, via permit condition) are examples of strategies designed to encourage managed retreat.

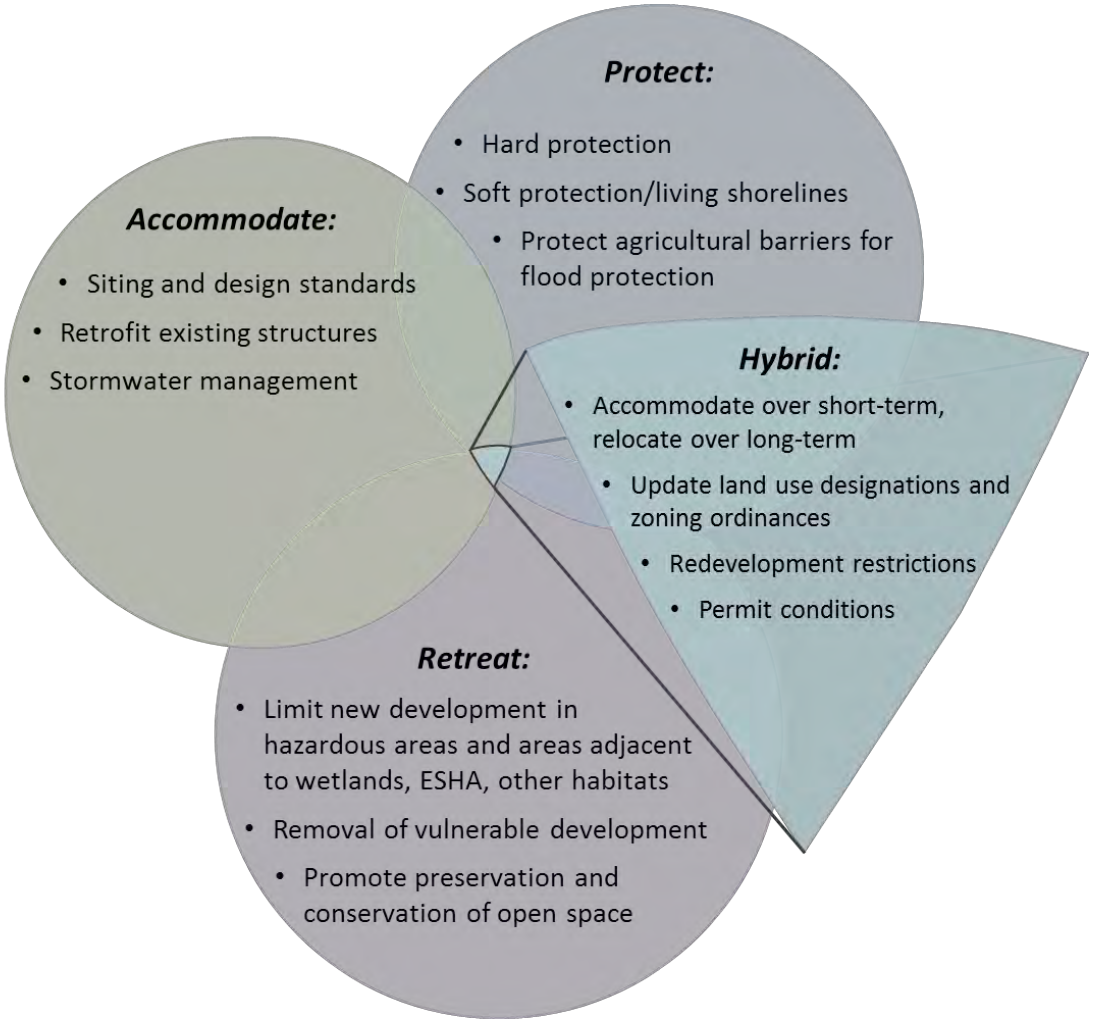


Figure 17. Examples of general adaptation strategies

SPECIFIC ADAPTATION STRATEGIES

The following sections, organized by category of coastal resource, present measures that local governments and coastal planners should consider including in their LCPs or individual CDPs. The purpose of this organization is to allow coastal managers and project applicants to easily find strategies that will help address the specific resource vulnerabilities identified in Steps 1-3 of the LCP and CDP processes laid out in Chapters 5 and 6. In the development of LCP policies, local governments should use adaptation measures that best implement the statewide resource protection and hazard policies of the Coastal Act at the local level given the diverse geography and conditions of different areas.

As part of identifying adaptation strategies, local governments should carefully examine the potential impacts to coastal resources that could occur from various adaptation strategies. Some adaptation strategies will need to be implemented incrementally over time as conditions change, and many strategies will need to be implemented through both the LCP and CDP to be effective. For each issue area, there is a description of potential impacts that could occur due to sea level rise and a list of adaptation tools or actions to minimize impacts. To skip to a topic, click on the links below.

The lists in these sections should be considered neither checklists from which all options need to be used, nor exhaustive lists of all possible adaptation strategies. Sea level rise adaptation is an evolving field, and policy language, cost considerations, effectiveness of various strategies, and other topics are continuing to be developed. Planners, applicants, and partners will need to think creatively and adaptively respond to changing conditions, new science, and new adaptation opportunities, and the Coastal Commission will continue to support and collaborate on these efforts.

Additionally, sea level rise planning may involve a number of trade-offs among various competing interests, and no single adaptation strategy will be able to accomplish all planning objectives. Economic and social implications of various adaptation options will likely play into the planning process at the local level. The important point is to analyze current and future risks from sea level rise, determine local priorities and goals for protection of coastal resources and development in light of Coastal Act requirements, and identify what land use designations, zoning ordinances, and other adaptation strategies can be used to meet those goals.

A. Coastal Development and Hazards

The Coastal Act requires that new development be sited and designed to be safe from hazards and to not adversely impact coastal resources (Coastal Act Sections 30235 and 30253). The main goals that relate to hazards and coastal development are:

- Update land use designations, zoning maps, and ordinances to account for changing hazard zones
- Include sea level rise in hazard analyses and policies
- Plan and locate new development to be safe from hazards, not require protection over its entire lifespan, and be protective of coastal resources
- Incorporate sea level rise adaptation into redevelopment policies
- Encourage the removal of development that is threatened by sea level rise
- Use "soft" or "natural" solutions as a preferred alternative for protection of existing endangered structures
- Limit bluff and shoreline protective devices to protect existing endangered structures
- Require special considerations for critical infrastructure and facilities
- Protect transportation infrastructure

Chapter 3 of the Guidance covers the impacts to coastal development that might result from sea level rise. Certified LCPs should already have policies and standards to assure that coastal development is safe over its anticipated lifetime and that it does not adversely impact other coastal resources. However, LCP policies and standards may need to be updated in light of new knowledge and to consider sea level rise hazards. Adaptation options have been developed to support the development goals of the Coastal Act through both LCP policies and CDP conditions, and the following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Update land use designations, zoning maps, and ordinances to account for changing hazard zones

A.1 **Establish mapped hazard zones or overlays:** Update land uses and zoning requirements to minimize risks from sea level rise in identified hazard zones or overlay areas. For example, limit new development in current and future sea level hazard zones and encourage removal of existing development when threatened.

A.1a **Identify zones that require a more rigorous sea level rise hazards analysis**: Specify areas where a closer analysis of sea level rise is necessary at the permit application stage to avoid or minimize coastal hazards and impacts to coastal

resources. Ensure that the most up-to-date information on sea level rise is incorporated in such analyses.

Goal: Include sea level rise in hazard analyses and policies

A.2 **Update policies to require sea level rise to be included in hazard analyses and management plans**: LCP policies should include requirements to analyze projected sea level rise. Consider specific projection scenarios to be analyzed. (See Chapter 3 of the Guidance for a description of scenario planning.) LCPs could also specify which analyses are required for various types of projects/development (see Step 2 of Chapters 5 and 6 or Appendix B for suggested analyses).

A.2a **Site-specific evaluation of sea level rise**: Update policies, ordinances, and permit application requirements to include a required site-specific evaluation of coastal hazards due to sea level rise over the full projected life of any proposed development. Analyses should be conducted by a certified Civil Engineer or Engineering Geologist with expertise in coastal processes.

A.2b **Incorporate wave runup zones and sea level rise in coastal flood hazard maps:** Develop coastal flood maps that include areas that will be subject to wave action and flooding due to sea level rise. These maps may be able to rely upon existing flood maps, such as the FEMA Flood Insurance Rate Maps, for current flood areas and base conditions, but should be augmented to include future conditions, including sea level rise, likely to occur through the life of proposed new development.

A.2c **Incorporate sea level rise into calculations of the Geologic Setback Line**: Update geotechnical report requirements for establishing the Geologic Setback Line (bluff setback) to include consideration of bluff retreat due to sea level rise in addition to historic bluff retreat data, future increase in storm or El Niño events, and any known site-specific conditions. The report should be completed by a licensed Geotechnical Engineer or an Engineering Geologist.

A.2d **Include sea level rise in wave runup, storm surge, and tsunami hazard assessments**[44]: Sea level rise should be included in wave runup analyses, including storm event and tsunami hazard assessments. This should include evaluating tsunami loads/currents on maritime facilities and coastal structures. Since tsunami wave runup can be quite large, sea level rise projections of only a few inches may not have a large impact on these assessments. However, for time periods or scenarios where sea level rise projections are large (perhaps 1 ft or more), it would be appropriate to include sea level rise because it could change the results to a significant degree.

[44] Tsunami evacuation maps are based upon current sea level conditions and they will need to be updated with changes in sea level.

A.3 **Establish shoreline management plans to address long-term shoreline change due to sea level rise**: Create policies that require a management plan for priority areas that are subject to sea level rise hazards, and incorporate the plan into the larger LCP if applicable. Similar to an LCP, shoreline management plans generally include the short and long term goals for the specified area, the management actions and policies necessary for reaching those goals, and any necessary monitoring to ensure effectiveness and success. Incorporate strategies necessary to manage and adapt to changes in wave, flooding, and erosion hazards due to sea level rise.

Goal: Plan and locate new development to be safe from hazards, not require protection over its entire lifespan, and be protective of coastal resources

A.4 **Limit new development in hazardous areas**: Restrict or limit construction of new development in zones or overlay areas that have been identified or designated as hazardous areas to avoid or minimize impacts to coastal resources and property from sea level rise impacts.

A.5 **Cluster development away from hazard areas**: Concentrate development away from hazardous areas. Update any existing policies that cluster development to reflect additional hazard zones due to sea level rise.

A.5a **Concentration of development/smart growth**: Require development to concentrate in areas that can accommodate it without significant adverse effects on coastal resources. This strategy is applicable for community wide planning through an LCP, but may also apply to CDPs for subdivisions or for larger developments involving large or multiple lots.

A.5b **Transfer of Development Rights programs (TDR)**: Restrict development in one area ("sending area") and allow for the transfer of development rights to another area more appropriate for intense use ("receiving area"). LCPs can establish policies to implement a TDR program to restrict development in areas vulnerable to sea level rise and allow for transfer of development rights to parcels with less vulnerability to hazards. A TDR program can encourage the relocation of development away from at-risk locations, and may be used in combination with a buy-out program.

A.6 **Develop adequate setbacks for new development**: Ensure structures are set back far enough inland from the beach or bluff edge such that they will not be endangered by erosion (including sea level rise induced erosion) over the life of the structure, *without the use of a shoreline protective device*. When used to address future risk, setbacks are normally defined by a measurable distance from an identifiable location such as a bluff edge, line of vegetation, dune crest, or roadway. Establish general guidance and criteria for setbacks in LCPs that consider changes in retreat due to sea level rise. Require detailed, site-specific analyses through LCPs and CDPs to determine the size of the setback, taking into consideration sea level rise and establish the expected life of the

structure (for example, the time period over which the setback should be effective).

Figure 18. Photo depicting a development setback in Pismo Beach. (*Source:* California Coastal Records Project)

A.7 **Limit subdivisions in areas vulnerable to sea level rise**: Prohibit any new land divisions, including subdivisions, lot splits, lot line adjustments, and/or certificates of compliance that create new beachfront or blufftop lots unless the lots can meet specific criteria that ensure that when the lots are developed, the development will not be exposed to hazards or pose any risks to protection of coastal resources.

A.8 **Update development siting, code, and design standards to avoid, minimize, or reduce risks from coastal hazards and extreme events**: Establish and implement building codes and standards for building siting and construction that avoid or minimize risks from flooding and erosion and increase resilience to extreme events within sea level rise hazard zones. Such standards and applicable building code provisions should be included in LCPs as additional development controls in areas that are identified in the LCP as hazard areas, and applied in specific projects through a CDP.

A.8a **Update flood protection measures to incorporate both FEMA and Coastal Act requirements:** Require new development located in areas subject to current or future flood/wave action to be sited and designed to be capable of withstanding such impacts in compliance with both FEMA and Coastal Act requirements. For example, ensure that implementation of adaptation measures such as elevation of habitable areas, break-away walls, *etc*. will be consistent with both LCP and FEMA provisions.

A.8b **Limit basements and first floor habitable space**: Where applicable, in areas likely to be subject to current or future flood/wave action, revise residential building standards to prohibit habitable space at elevations subject to wave/flood risk. Specifically address potential impacts of basements on long-range adaptation options such as landward relocation or removal.

A.8c **Evaluate impacts from flood protection measures:** Require new development that must be located in areas likely subject to current or future flood/wave action or elevated groundwater to evaluate potential impacts to adjacent or nearby properties from all proposed structural flood protection measures to ensure that these measures will not create adverse direct and/or cumulative impacts either on-site or off-site.

A.9 Analyze options for removal when planning and designing new development: Design options should not place an undue burden on future property owners or coastal resources. For new development in high hazard areas or resource-constrained areas where managed retreat might be an appropriate option at some time in the future, ensure that foundation designs or other aspects of the development will not preclude future incremental relocation or managed retreat. Foundation and building elements, such as deepened perimeter foundations, caissons or basements, may be difficult to remove in the future, or their removal may put adjacent properties at risk. Alternative design options should be considered, and employed if site conditions allow.

A.9a **Develop a plan to remove or relocate structures that become threatened:** Require new development authorized through a CDP that is subject to wave action, erosion, or other hazards to be removed or relocated if it becomes threatened in the future.

A.9b **Identify triggers for incremental removal of structures on constrained lots**: When a lot is not large enough to accommodate development that avoids coastal hazards for the expected life of the development, develop a project option that minimizes hazards from the identified sea level rise scenarios for as long as possible, and then requires incremental retreat once certain triggers are met.

Triggers for relocation or removal of the structure would be determined by changing site conditions such as when erosion is within a certain distance of the foundation; when monthly high tides are within a certain distance of the finished floor elevation; when building officials prohibit occupancy; or when the wetland buffer area decreases to a certain width.

A.9c **Avoid shoreline protection for new development:** Require CDPs for new development in hazardous locations to include as a condition of approval a waiver of rights to future shoreline protection that would substantially alter natural landforms or cause other adverse coastal resource impacts.

A.9d **Limit the use of foundations or basements that can interfere with coastal processes:** In locations where foundation or building elements, such as deepened perimeter foundations, caissons or basements may be exposed to wave action through rising sea level or erosion, require analysis of less extensive foundation or building options.

A.9e **Develop triggers for foundation and structure removal:** If no less damaging foundation alternatives are possible, ensure that the foundation design allows for incremental removal as the foundation elements become exposed, and develop pre-established triggers, for example when the bluff edge or shoreline comes within a certain distance of the foundation, for incremental or complete removal that will avoid future resource impacts.

Figure 19. Photo depicting eroding bluff and exposed caissons in Encinitas, CA. (*Photograph by Lesley Ewing*)

A.10 Ensure that current and future risks are assumed by the property owner: New development should be undertaken in such a way that the consequences from development in high hazard areas will not be passed on to public or coastal resources. Recognize that over time, sea level rise will cause the public trust boundary to move inland. Establish standards, permit conditions, and deed restrictions that ensure that current and future risks are assumed by the property owner. Consider policies that would encourage or require property owners to set aside money, such as in the form of a bond, as a contingency if it becomes necessary to modify, relocate, or remove development that becomes threatened in the future.

A.11 Real estate disclosure: Require sellers of real estate to disclose permit conditions related to coastal hazards, or property defects or vulnerabilities, including information about known current and potential future vulnerabilities to sea level rise, to prospective buyers prior to closing escrow.

Goal: Incorporate sea level rise adaptation into redevelopment policies

A.12 Avoid the expansion or perpetuation of existing structures in at-risk locations: On an eroding shoreline, the seaward portions of an existing structure may become threatened as the setback or buffer zone between the structure and the mean high tide line or bluff edge is reduced due to erosion of the beach or bluff. When the seaward portion of the structure no longer meets the standards or setback that would be required for new development, it becomes a "non-conforming" structure for purposes of redevelopment policies and regulations. The following should be considered, as consistent with the Coastal Act, FEMA policies, and other relevant standards, to address existing non-conforming development to avoid the need for shoreline or bluff protective devices and associated impacts to coastal resources.

A.12a **Update non-conforming structure policies and definitions**: Develop policies and regulations to define non-conforming development in the area between the sea and the first coastal roadway or other known hazard zones to avoid perpetuating development that may become at risk and require a new protective device or extend the need for an existing protective device.

A.12b **Limit redevelopment or upgrades to existing structures in at risk locations**: Use redevelopment policies or regulations to limit expansions, additions, or substantial renovations of existing structures in danger from erosion. Require removal of non-conforming portions of the existing structure, when possible, when a remodel or renovation is proposed.

A.12c **Limit foundation work within the geologic setback area:** To facilitate removal of non-conforming portions of an existing structure, use LCP regulations and CDPs to limit new or replacement foundations or substantial improvements, other than repair and maintenance, to the existing foundation when located seaward of the Geologic Setback line. Approve significant new foundation work only when it is located inland of the setback line for new development and when it will not interfere with coastal processes in the future.

A.12d **Limit increases to existing non-conformities:** Use LCP regulations and CDPs to allow non-exempt repair and maintenance and modifications only if they do not increase the size or degree of non-conformity of the existing structure. For shoreline or blufftop development, any decrease in the existing non-conforming setback would increase the degree of non-conformity.

A.12e **Limit additions to non-conforming structures:** Use LCP regulations and CDPs to acknowledge that additions to existing structures should be considered new development that must conform to the standards for new development including but not limited to avoiding future protective devices. Consider limitations on the size of additions unless non-conforming portions of the structure are removed.

A.12f **Address existing protection of non-conforming structures:** Use LCP regulations and CDP conditions to put current and future property owners on notice that if there is currently shoreline or bluff protection for an existing structure, the structure is likely at-risk and improvements to that structure in its current location may be limited. Also, consider acknowledging that any rights to

retain the existing protective device(s) apply only to the structure that existed at the time the protective device was constructed or permitted.

A.13 **Redevelopment of existing structures:** Define "redevelopment" as, at a minimum, replacement of 50% or more of an existing structure. Other options that may be used to define what constitutes redevelopment or a replacement structure could include 1) limits on the extent of replacement of major structural components such as the foundation or exterior walls, or 2) improvements costing more than 50% of the assessed or appraised value of the existing structure. The redevelopment definition should take into consideration existing conditions and pattern of development, potential impacts to coastal resources, and the need for bluff or shoreline protective devices if the structure remains in its current, non-conforming location.

A.13a **Require redevelopment to meet the standards for new development:** Use LCPs and CDPs to require that renovations meeting the threshold for redevelopment should not be approved unless the entire structure meets the standards for new development, including but not limited to a waiver of right to protection. Specify that if any existing non-conforming elements are permitted to remain, those non-conforming elements are not subject to rights to protection pursuant to Coastal Act Section 30235.

A.13b **Include cumulative improvement or additions to existing structures in the definition of redevelopment:** Use LCP regulations to acknowledge that demolition, renovation, or replacement of less than 50% (or less) of an existing structure constitutes redevelopment when the proposed improvements would result cumulatively in replacement of more than 50% of the existing structure from an established date, such as certification of the LUP.

A.14 **Remove existing shoreline protective devices**: On properties with existing shoreline protective devices, use regulations to require removal of the protective device when the structure requiring protection is redeveloped or removed. If removal is not possible, require a waiver of any rights to retain the protective device to protect any structure other than the one that existed at the time the protective device was constructed or permitted.

Goal: Encourage the removal of development that is threatened by sea level rise

A.15 **Use Rolling Easements**: The term "rolling easement" refers to the policy or policies intended to allow coastal lands and habitats including beaches and wetlands to migrate landward over time as the mean high tide line and public trust boundary moves inland with sea level rise. Such policies often restrict the use of shoreline protective structures (such as the "no future seawall" limitation sometimes used by the Commission), limit new development, and encourage the removal of structures that are seaward (or become seaward over time) of a designated boundary. This boundary may be designated based on such variables as the mean high tide line, dune vegetation line, or other dynamic line or legal requirement. Despite the term "rolling easements," not all of the strategies related to rolling easements actually involve the use of recorded easements.

A.16 **Develop an incentive program to relocate existing development at risk**: Provide incentives to relocate development out of hazardous areas and to acquire oceanfront properties damaged by storms, where relocation is not feasible. Consider creating a relocation fund through increased development fees, *in lieu* fees, or other funding mechanisms.

A.17 **Transfer of Development Rights programs (TDR)**: See Strategy A.5b above.

A.18 **Acquisition and buyout programs**: Acquisition includes the acquiring of land from the individual landowner(s). Structures are typically demolished or relocated, the property is restored, and future development on the land is restricted. Such a program is often used in combination with a TDR program that can provide incentives for relocation. Undeveloped lands are conserved as open space or public parks. LCPs can include policies to encourage the local government to establish an acquisition plan or buyout program to acquire property at risk from flooding or other hazards.

Goal: Use "soft" or "natural" solutions as a preferred alternative for protection of existing endangered structures

A.19 **Require the use of green infrastructure as a preferred alternative**: Under appropriate shoreline conditions, require or encourage development to use "soft" or "natural" solutions or "living shorelines" as an alternative to the placement of hard shoreline protection in order to protect development or other resources and to enhance natural resource areas. Examples of soft solutions include vegetative planting, dune restoration, and sand nourishment.

A.19a **Establish a beach nourishment program and protocols**: New policies may be needed to address increased demand or need for beach nourishment with sea level rise. Policies within an LCP may identify locations where nourishment may be appropriate; establish a beach nourishment program and protocols for conducting beach nourishment; establish criteria for the design, construction, and management of the nourishment area; and/or establish measures to minimize adverse biological resource impacts from deposition of material, such as sand compatibility specifications, timing or seasonal restrictions, and identification of environmentally preferred locations for deposits. Beach nourishment programs should also consider how nourishment options may need to change over time as sea level rises.

A.19b **Dune management**: Establish management actions to maintain and restore dunes and natural dune processes. Dunes provide buffers against erosion and flooding by trapping windblown sand, storing excess beach sand, and protecting inland areas, and they also provide habitat. This is likely most effective for areas with some existing dune habitat and where there is sufficient space to expand a foredune beach for sand exchange between the more active (beach) and stable (dune) parts of the ecosystem. LCPs can identify existing dune systems and develop or encourage management plans to enhance and restore these areas,

including consideration of ways that the system will change with rising sea level. CDPs for dune management plans may need to include periodic reviews so the permitted plans can be updated to address increased erosion from sea level rise, and the need for increased sand retention and replenishment.

Figure 20. Photo depicting dune restoration at Surfer's Point, Ventura. (*Photograph courtesy of Surfrider Foundation*)

A.19c **Regional Sediment Management (RSM) programs**: Develop a Regional Sediment Management (RSM) program including strategies designed to allow the use of natural processes to solve engineering problems. To be most effective, RSM programs include the entire watershed, account for effects of human activities on sediment, protect and enhance coastal ecosystems, and maintain safe access to beaches for recreational purposes. LCPs can support development of an RSM program and its implementation, and the program should be periodically updated to address on-going changes from sea level rise. Natural boundaries for RSM may overlap within several LCPs, so regional cooperation may be needed for best implementation. Individual actions such as a beach nourishment project would be accomplished through a CDP. Many coastal RSM programs have already been developed and can be used as a resource. See the *Coastal Sediment Management Workgroup* website (and Appendix C) for more information.

A.19d **Maintenance or restoration of natural sand supply**: Adjustment of the sediment supply has been one of the ways natural systems have accommodated

changes from sea level. Maintenance or restoration of sediment involves identifying natural sediment supplies and removing and/or modifying existing structures or actions that impair natural sand supply, such as dams or sand mining. LCPs could include policies and implementing standards that support nature-based responses to sea level rise by maintaining and restoring natural sand supply. Where applicable, develop policies and standards to prohibit sand mining, regulate sand replenishment, and promote removal of dams or the by-passing of sand around dams. Plans should take into consideration changes in sand supply due to sea level rise and may identify and designate high priority areas for restoring natural processes. These actions and policies can also be implemented through a Regional Sediment Management (RSM) program.

A.19e **Beneficial reuse of sediment through dredging management**: Dredging involves the removal of sediment from harbor areas to facilitate boat and ship traffic or from wetland areas for restoration. Dredging management actions and plans may need to be updated to account for elevated water levels. Policies can be developed with an LCP and/or carried out through a CDP to facilitate delivery of clean sediment extracted from dredging to nearby beaches or wetland areas where needed. Beneficial reuse of sediment in this way can be coordinated through a Regional Sediment Management (RSM) program and/or through coordination with other jurisdictions.

Goal: Allow bluff and shoreline protective devices only to protect existing endangered structures

A.20 Use hard protection only if allowable and if no feasible less damaging alternative exists: "Hard" coastal protection is a broad term for most engineered features such as seawalls, revetments, cave fills, and bulkheads that block the landward retreat of the shoreline. In some cases, caissons and pilings may also be considered hard shoreline protective devices. Due to adverse effects on shoreline sand supply and beach area available for public use, such protective devices should be avoided when feasible. Under current law, shoreline protection for existing structures in danger from erosion may be allowed if coastal resource impacts are avoided or minimized and fully mitigated where unavoidable.

A.20a **Retention of existing shoreline protection**: On intensely developed, urbanized shorelines, if the removal of armoring would put existing development at risk and not otherwise result in significant protection or enhancement of coastal resources, it may be appropriate to allow properly designed shoreline armoring to remain for the foreseeable future, subject to conditions that provide for potential future removal in coordination with surrounding development. However, the proper short term responses, longer term adaptation measures, and mitigation of on-going resource impacts should be determined through updated context-specific LCP planning and consideration of the existing rights and responsibilities of development in the area (see strategies A.21 – A.25).

A.21 **Require monitoring of the structure:** Require periodic monitoring of the shoreline protective device to examine for structural damage, excessive scour, or other impacts from coastal hazards and sea level rise. Ensure that the structures remain within the initial footprint and that they retain functional stability.

A.22 **Conditional approval of shoreline protective device**: Use LCP regulations and permit conditions to require monitoring of impacts to shoreline processes and beach width both at the project site and the broader area and/or littoral cell as feasible, and provide for such actions as removal or modification of armoring in the future if it is no longer needed for protection or if site conditions change.

A.22a **Limit the authorization of shoreline protective devices to the development being protected:** Use LCP regulations and CDP conditions to require permits for bluff and shoreline protective devices to expire when the currently existing structure requiring protection is redeveloped, is no longer present, or no longer requires a protective device, whichever occurs first. Prior to expiration of the permit, the property owner should apply for a Coastal Development Permit to remove the protective device, or to modify or retain it if removal is not feasible at that time.

A.22b **Require assessment of impacts from existing pre-Coastal Act or permitted shoreline armoring:** Use LCP regulations and permit conditions to specify that expansion and/or alteration of a pre-Coastal Act or legally permitted bluff or shoreline protective device requires a new CDP and the review should include an assessment of changes to geologic site and beach conditions including but not limited to, changes in beach width relative to sea level rise, implementation of any long-term, large scale sand replenishment or shoreline restoration programs, and any ongoing impacts to public access and recreation from the existing device.

A.22c **Reassess impacts and need for existing armoring over time:** Use LCP regulations and CDPs to provide for reassessment of the impacts from protective devices at specific trigger points, including when substantial improvement or redevelopment of the structure requiring protection is proposed, or when existing armoring is being modified or expanded. Reassessment should consider the effect any significant improvement to a structure requiring protection will have on the length of time the protective device will remain, and if the existing armoring is still required, acknowledge that it is authorized to protect the existing structure only. The CDP review should assess existing site conditions and evaluate options to modify, replace, or remove the existing device in a manner that would eliminate or mitigate any identified impacts that may be occurring on public access and recreation, scenic views, sand supply, and other coastal resources, if feasible.

A.23 **Require mitigation for impacts of shoreline protective devices**: For unavoidable public resource impacts from shoreline structures permitted under the Coastal Act, require mitigation of resource impacts over the life of the structure as a condition of approval for the development permit. For example, require landowners to pay mitigation fees and/or complete other mitigation actions for the loss of sandy beach and other

adverse impacts on public access and recreation due to shoreline protection devices. Importantly, mitigation measures should be planned in such a way that sea level rise will not impair their efficacy over time. Other mitigation measures could include acquisition of other shoreline property for public recreational purposes, construction of public access and recreational improvements along the shoreline, and/or easements to protect lateral access along the shoreline in areas where seawalls eliminate sandy beach.

A.23a **Reassess mitigation over time as necessary:** Impacts of shoreline structures, including to shoreline and sand supply, public access and recreation, ecosystem values, and other relevant coastal resources, should be fully mitigated. Where reassessment of an approved structure is authorized, phasing of necessary mitigation may be appropriate.

A.24 Limit retention of existing shore protection: On lots with existing pre-Coastal Act or permitted armoring, consider requiring a waiver of rights to retain such protection for any structures other than the structure that existed at the time the armoring was constructed or permitted.

A.25 Removal of shoreline protection structures: The removal of shoreline protection structures can open beach or wetland areas to natural processes and provide for natural responses to sea level rise. LCPs can specify priority areas where shoreline protection structures should be removed if they are no longer needed or in a state of great disrepair, including areas where structures threaten the survival of wetlands and other habitats, beaches, trails, and other recreational areas. Once these priority areas have been identified, assessment of potential re-siting of structures and removal of armoring could be required by a CDP as redevelopment occurs.

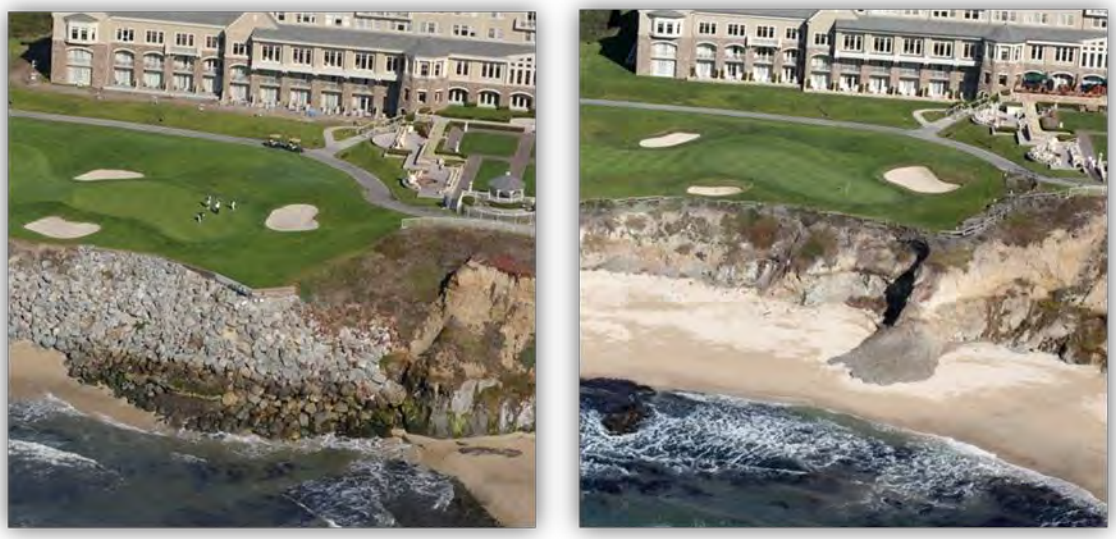


Figure 21. Photo depicting removal of shoreline protective structure. Removal of rock revetment restores access and allows natural bluff erosion at the Ritz Carlton in Half Moon Bay. (*Source:* California Coastal Records Project)

A.25a **Remove shoreline protective structures located on public lands:** Over time, sea level rise will cause the public trust boundary to move inland. If the structures

as originally approved were located on uplands but that land becomes subject to the public trust in the future, the State Lands Commission or any local government or other entity acting as trustee for public trust lands could require the structures to be removed. The Commission or local governments could approve permit conditions to ensure permittees obtain authorization to retain or remove structures if they ever become located on public trust lands. Removal might also be accomplished through non-regulatory means such as offering incentives for removal to property owners or by incorporating removal of public structures into Capital Improvement Plans.

Goal: Require special considerations for critical infrastructure and facilities

A.26 **Plan ahead to preserve function of critical facilities**: Addressing sea level rise impacts to critical facilities and infrastructure will likely be more complex than for other resources and may require greater amounts of planning time, impacts analyses, public input, and funding. To address these complexities, establish measures that ensure continued function of critical infrastructure, or the basic facilities, service, networks, and systems needed for the functioning of a community. Programs and measures within an LCP could include identification of critical infrastructure that is vulnerable to SLR hazards, establishment of a plan for managed relocation of at-risk facilities, and/or other measures to ensure functional continuity of the critical services provided by infrastructure at risk from sea level rise and extreme storms. Repair and maintenance, elevation or spot-repair of key components, or fortification of structures where consistent with the Coastal Act may be implemented through CDPs.

A.26a **Develop or update a long-term public works plan for critical facilities to address sea level rise**: Develop a long-term management plan to address the complexities of planning for sea level rise that incorporates any potential maintenance, relocation, or retrofits and structural changes to critical facilities to accommodate changes in sea level, and obtain Coastal Commission certification.

A.27 **Apply high sea level rise projections for siting and design of critical facilities:** Given the planning complexities, high costs, and potential impacts resulting from damage, there is reason to be particularly cautious when planning and designing new critical facilities and/or retrofitting existing facilities. Ensure that critical facilities are designed to function even if the highest projected amounts of sea level rise occur and that sites with hazardous materials are protected from worst-case scenario sea level rise impacts.

A.27a **Design coastal-dependent infrastructure to accommodate worst case scenario sea level rise**: Include policies that would require proposals and/or expansion plans to address sea level rise for coastal dependent infrastructure that must necessarily be sited in potentially hazardous areas, such as industrial, energy, and port facilities. Such facilities should be designed to withstand worst case future impacts while minimizing risks to other coastal resources through initial siting, design, and/or inclusion of features that will allow for future adaptation.

A.28 Site and design wastewater disposal systems to avoid risks from sea level rise: Wastewater treatment and disposal systems are particularly challenging in that they are often located in areas that will be impacted by sea level rise. Ensure that these systems are not adversely affected by the impacts of sea level rise over the full life of the structure and ensure that damage to these facilities would not result in impacts to water quality or other coastal resources. Avoid locating new facilities in hazardous areas if possible. If complete avoidance is not possible, minimize elements of the system that are in hazardous areas (for example, locate the main facility on higher ground and only place pump stations in potentially hazardous areas), and design any facilities in hazardous areas to withstand worst-case scenario sea level rise impacts.

Goal: Protect transportation infrastructure

A.29 Identify priorities for adaptation planning and response: Carry out vulnerability analyses to identify chronic problem areas that are highly subject to erosion, wave impacts, flooding, or other coastal hazards or that maybe become so in the near future. Coordinate with Caltrans and local public works/transportation agencies to address high priority areas and increase monitoring efforts of chronic problem areas.

A.30 Add policies to address impacts to transportation routes: If transportation facilities are at risk from sea level rise, coordinate with Caltrans and local public works/transportation agencies to establish new alternative transportation routes or a plan to ensure continued alternative transportation and parking is available that allows for continued access to beaches and other recreation areas.

A.30a **Integrate LCP/land use planning processes with transportation planning processes:** Updates and changes to LCPs and other land use planning efforts should be jointly planned, evaluated, and implemented with Coordinated System Management Plans, Regional Transportation Plans, and other transportation planning efforts to ensure that long-term land use and access goals and needs are aligned.

A.31 Allow for phased implementation of realignment and relocation projects: In some cases it may be necessary to make incremental changes in transportation networks so that access to and along the coast can be maintained while also addressing coastal hazards over the long-term. For example, a phased approach may allow for interim shoreline protection to maintain an existing road alignment while future realignment plans are evaluated and pursued. Such phased approaches should be coordinated with Caltrans and local public works/transportation agencies and aligned with long-term LCP planning and adaptation goals. Individual projects will be implemented through CDPs.

Figure 22. Photo depicting planned retreat for major public infrastructure. The Piedras Blancas Highway 1 Realignment will move nearly 3 miles (5km) of Highway 1 500 ft (152 m) inland. (*Source:* California Coastal Records Project)

A.32 Plan and design transportation systems to accommodate anticipated sea level rise impacts: Ensure that transportation networks are designed to function even if the highest projected sea level rise amounts occur. Efforts to realign, retrofit, and/or protect infrastructure should be coordinated with Caltrans, local public works/transportation agencies, and LCP planning efforts, and individual projects will be implemented through CDPs.

A.32a **Retrofit existing transportation infrastructure as necessary:** In instances where relocation is not an option, repair damage and/or retrofit existing structures to better withstand sea level rise impacts. For example, use stronger materials, elevate bridges or sections of roadways, and build larger or additional drainage systems to address flooding concerns.

A.32b **Build redundancy into the system:** Provide alternate routes, as possible, to allow for access to and along the coast in instances in which sections of roadways may become temporarily impassible as a result of coastal hazards. Ensure that alternate route information is provided to residents and visitors to coastal areas.

A.33 Incorporate sea level rise considerations into Port Master Plans and other port activities: Ensure that ports and related infrastructure are designed to function given anticipated sea level rise. In some cases, this may mean initially designing structures to accommodate projected sea level rise impacts. Other options may include planning for and ensuring capacity for future adaptive actions.

A.33a **Retrofit existing port infrastructure as necessary**: Given the coastal-dependent nature of many port structures, it may not be feasible to site or relocate development to avoid hazards. In these instances it may be more appropriate to include efforts to accommodate and withstand sea level rise during actions to

repair or retrofit existing structures. Options may include using more robust designs or materials or elevating structures.

A.33b **Minimize resource impacts that may result from future use of shoreline protective structures**: If existing, coastal-dependent port structures require shoreline protective structures, minimize resource impacts as feasible and consistent with Chapter 3 and/or Chapter 8 of the Coastal Act, as applicable, by encouraging inland expansion of protective devices rather than further fill of coastal waters.

A.33c **Ensure that linkages to overland transportation networks are able to adapt to sea level rise impacts**: Coordinate with relevant stakeholders to ensure that linkages between port infrastructure and overland transportation networks will be resilient to future sea level rise impacts.

A.33d **Ensure that lessees and other parties understand sea level rise risks and vulnerabilities**: Coordinate with lessees and other stakeholders to ensure that they understand the risks associated with development in hazard areas as well as the responsibilities that come with such development.

B. Public Access and Recreation

One of the highest priorities in the Coastal Act is the mandate to maximize public access and recreational opportunities to and along the coast. The main goals and Coastal Act policies (Sections 30210, 30220, 30221, 30213) that relate to public access and recreation are to:

- Maximize public access and recreational use by protecting beaches and other coastal areas suitable for such use
- Protect lower cost visitor and recreational facilities and accessways

Chapter 3 of the Guidance covers the impacts to public access and recreation that might result from sea level rise or the interaction of sea level rise with development patterns. Certified LCPs should already have policies and standards to assure that existing public access and visitor serving amenities are protected and that maximum public access is both planned for and provided with new development when warranted. However, LCP policies and standards may need to be updated to consider sea level rise hazards. Adaptation options have been developed to support the access goals of the Coastal Act through both LCP policies and CDP conditions, and the following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Maximize public access and recreational use by protecting beaches and other coastal areas

B.1 **Incorporate sea level rise into a comprehensive beach management strategy**: Update or develop a new comprehensive beach management strategy to address loss of beach areas, including loss of lateral access, or changes in beach management due to sea level rise. Establish a program to minimize loss of beach area through, as may be appropriate, a beach nourishment program; restoring sand and sediment supply to the littoral cell; removal, adjustments, or maintenance to shoreline protection structures; use of man-made structures such as terminal groins or artificial reefs to retain sediment; or other actions.

B.1a **Develop a sediment management and sand replenishment strategy**: Identify natural sediment supplies and remove and/or modify existing structures or actions that impair natural sand supply, such as dams or sand mining. LCPs could include policies and implementing standards that support nature-based responses to sea level rise by maintaining and restoring natural sand supply. Where applicable, develop policies and standards to prohibit sand mining, regulate sand replenishment, and promote removal of dams or the by-passing of sand around dams. Plans should take into consideration changes in sand supply due to sea level rise. These actions and policies can also be implemented through a Regional Sediment Management (RSM) program.

B.2 **Plan ahead to replace loss of access and recreation areas:** Identify replacement opportunities or otherwise plan ahead for how to replace recreation areas and accessways that will be lost due to inundation or damage associated with sea level rise. An LCP could designate and zone lands for this through, for example, a phased overlay or other regulatory measures that ensure that access and recreational areas are available in the future. Local governments may choose to provide additional incentives to encourage creation of new recreation areas or opportunities. Such incentives could include grant for protection new recreation areas or tax breaks for recreation related businesses.

B.2a **Protect existing open space adjacent to the coast**: Plan for future coastal recreational space and parkland by protecting open space adjacent to coastal habitats so that beaches and other habitats can migrate or so that there is open space available as parkland or other areas are lost.

B.2b **Plan for removal of structures that limit inland migration of beaches**: Seawalls and other development adjacent to beaches and other coastal habitats will impede the ability of these habitats to migrate inland and will therefore result in the inundation and eventual loss of these areas. Consideration should be given to removing and relocating these structures to ensure that beaches and other habitats are able to persist over time. Additional detail on removal of structures can be found above in the "Coastal Development and Hazards" section of this chapter.

Goal: Protect lower cost visitor and recreational facilities and accessways

B.3 **Site and design access sites and facilities to minimize impacts**: Add policies that require public access sites, segments of the CCT, and recreation and visitor-serving facilities to be sited and designed to avoid impacts from sea level rise, while maximizing public access and recreation opportunities. Examples of siting and design standards for development can be found in section A. Where facilities can be safely sited for the near term but future impacts are likely, require an adaptive management plan detailing steps for maintenance, retrofitting, and/or relocation.

B.3a **Require mitigation of any unavoidable impacts**: For unavoidable impacts to public access or recreation from shoreline armoring or other development, require mitigation of impacts through the addition of new public access, recreation opportunities, visitor-serving accommodations, or Coastal Trail segments, or payment of fees to fund such improvements. Importantly, mitigation measures should be planned in such a way that, if possible, sea level rise will not impair their efficacy over time.

B.4 **Plan ahead to replace loss of visitor-serving and recreational facilities**: Develop a plan to replace any visitor-serving facilities that are lost due to impacts from sea level rise, maximizing continued provision of affordable options and an appropriate mix of accommodations over time. For example, an LCP could include standards to re-site existing visitor-serving and recreational facilities when they become impacted by sea

level rise and/or could identify and zone for future areas to be reserved for these functions.

B.5 **Add requirements for retrofit/relocation of public access and recreation sites at risk**: The LCP can add policies that require all new public access and recreation areas, sections of the CCT, visitor- serving accommodations, or related recreation facilities to be retrofitted or relocated if they become threatened from erosion, flooding, or inundation. For new facilities and public access sites, the CDP conditions of approval can specify how maintenance, retrofit, or relocation will take place. Policies and plans should be designed to be adaptive so that retrofits and or/relocations are implemented as sea level rise impacts occur.

B.5a **Retrofit or relocate recreation and visitor-serving facilities**: Consider options to retrofit existing recreation and visitor-serving facilities to better accommodate sea level rise impacts. Such retrofits could include use of different building materials and/or relocating facilities.

B.5b **Retrofit or relocate vertical accessways**: Consider options to retrofit existing accessways to reduce impacts from sea level rise. Such retrofits could include using different materials that can better withstand impacts, or re-orienting the layout or other features of accessways to lessen damage and other impacts. Also begin to plan for and identify triggers and options for relocating accessways over time as conditions change.

B.5c **Retrofit or relocate sections of the Coastal Trail**: Use boardwalks, bridges, and/or other design features to ensure continuity of the CCT in sections that are vulnerable to SLR hazards. Some sections may need to be relocated over time. An LCP could identify vulnerable sections of the CCT and establish a phased approach to relocate sections of the trail in such a way that is consistent with provisions of the Coastal Act and ensures that the CCT remains within sight, sound, or smell of the sea.

Goal: Foster efforts to better understand impacts of sea level rise

B.6 **Support research on impacts to recreation and public access**: Changes in sea level will affect wave conditions and sediment transport, but additional research is needed to understand how these changes will affect specific conditions for surfing and other recreation activities. While such research programs may be outside the scope of individual local jurisdictions, statements of support for the local issues that need to be addressed can help guide research agendas at the regional state or federal level. Or, such needs can serve to guide grant applications to undertake the needed projects within a jurisdiction. To the extent possible, add policies to promote research on sea level rise impacts to recreational activities like surfing or other coastal recreational uses in the LCP jurisdiction.

C. Coastal Habitats, ESHA, and Wetlands

The Coastal Act provides for the protection of both land and marine habitats. It mandates that ESHA and marine resources shall be protected against significant disruption of habitat value and shall be maintained, enhanced, and restored as feasible (Sections 30230, 30233, 30240, 30240(a), 30240(b)). The main goals and Coastal Act policies that relate to coastal habitats are to:

- Protect, enhance, and restore sensitive habitats
- Avoid significant disruption to sensitive habitats
- Avoid significant impacts to habitats from adjacent development
- Manage sediment in ways that benefit habitats

Chapter 3 of the Guidance covers the impacts to coastal habitats and resources that might result from sea level rise or the interaction of sea level rise with development patterns. Certified LCPs should already have policies and standards to ensure that ESHA, wetlands, and other coastal habitats and resources are protected to the maximum extent feasible. However, LCP policies and standards may need to be updated to consider sea level rise hazards. Adaptation options have been developed to support the habitat protection goals of the Coastal Act through both LCP policies and CDP conditions, and the following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Protect, enhance, and restore sensitive habitats

C.1 **Open space preservation and conservation**: Preserve land for its ecological or recreational value. This may involve limiting or prohibiting development and any uses that conflict with ecological preservation goals. LCPs can establish transfer of development rights programs to offset reduced development potential and can develop open space management plans that evaluate and consider the impacts of sea level rise, extreme events, and other climate change impacts. LCPs can establish open space and conservation areas through land use designations and zoning, redevelopment restrictions, acquisition and easement programs, and setback and buffer requirements.

C.1a **Update policies to provide for new or restored coastal habitat**: Update policies to require new coastal habitat to be provided or for degraded areas to be restored to account for the expected loss of existing habitat that will occur when development blocks the necessary upland migration due to sea level rise. Use an adaptive management approach where applicable. Encourage policies that provide for conservation or restoration of multiple habitat types.

C.1b **Identify areas for public acquisition**: New or updated LCPs can establish a program to partner with state, federal, and non-profit organizations to acquire and protect natural resource areas for public use, including areas that could serve as

refugia for species impacted by sea level rise, or areas that could be appropriate sites for coastal habitat creation or restoration.

C.1c **Establish conservation easements or other development restrictions to protect habitat**: Establish a formalized program to identify, acquire, and manage areas appropriate for some form of conservation protection. Easements or other strategies may be used to limit or restrict development on portions of a lot parcel that are most vulnerable to SLR impacts. The program might develop standard agreements to be used for easements and identify the entities that could hold the easements. A conservation easement program could be established on a community wide basis through an LCP and implemented on a parcel by parcel basis through individual CDPs.

C.1d **Require open space protection as a component of new development located adjacent to coastal habitats**: The LCP can require permit conditions for new development in certain areas that buffers around natural resource areas be protected through a conservation easement, deed restrictions, or other comparable mechanism.

C.1e **Use Rolling Easements**: See Strategy A.15 above.

C.1f **Transfer of Development Rights programs (TDR)**: See Strategy A.5b above.

Goal: Avoid significant disruption to habitats

C.2 **Use ecological buffer zones and/or increase the size of buffers**: Buffer zones are intended to protect sensitive habitats from the adverse impacts of development and human disturbance. An important aspect of buffers is that they are distinct ecologically from the habitat they are designed to protect. LCPs can establish requirements for ecological buffers and provide guidance on how to establish or adjust these buffers to accommodate sea level rise. CDPs should require buffers to be designed, where applicable, to provide "habitat migration corridors" that allow sensitive habitats and species to migrate inland or upland as sea level rises.

C.2a **Consider sea level rise buffer zones**: Update buffer zone policies to allow room for coastal habitats to migrate with changes in sea level. The size of the buffer needed to allow for migration will vary depending on the individual wetland or habitat type, as well as site-specific features such as natural or artificial topography and existing development. For instance, in flat areas, a larger buffer may be needed, but in steep areas, a smaller buffer may be acceptable.

C.3 **Avoid impacts to Marine Protected Areas**: Recognize the importance of the State's network of marine protected areas (MPAs) in protecting the diversity and abundance of marine life. Understand that planning and permitting decisions made on land could have impacts on these areas, particularly as conditions change with sea level rise, and avoid disruptions to these habitats as feasible and applicable.

C.4 **Protect specific ESHA functions:** Environmentally Sensitive Habitat Areas (ESHA) are areas that are critically important for the survival of species or valuable for maintaining

biodiversity. These areas can include nursery grounds, spawning areas, or highly diverse areas. Where at risk from sea level rise, the LCP should establish measures to ensure the continued viability of the habitat areas, such as protection of migration zones, habitat corridors, and other applicable adaptation strategies, as listed below. ESHA that is not at risk from sea level rise should also be afforded special protection in the LCP to serve as refugia.

C.4a **Protect wildlife corridors, habitat linkages, and land upland of wetlands to allow habitat migration**: Preserve open areas that are adjacent to wetlands to allow for migration of these habitats as sea levels rise.

C.4b **Protect refugia areas**: Protect refugia, or areas that may be relatively unaltered by global climate change and thus can serve as a refuge for coastal species displaced from their native habitat due to sea level rise or other climate change impacts.

C.4c **Promote increased habitat connectivity to allow species movement**: Connectivity refers to the degree to which the landscape facilitates animal movement and other ecological flows. Roads, highways, median barriers, fences, walls, culverts, and other structures can inhibit movement of animals. Develop LCP policies that will enable identification of important animal movement corridors. Develop regulations to protect these corridors for present and future conditions, taking into account habitat shifts from climate change. In LCPs and through CDPs, require that new structures such as highways, medians, bridges, culverts, and other development are designed to facilitate movement of animals.

C.4d **Facilitate wetland and other habitat migration**: Reserve space for a "habitat migration corridor" or areas into which wetlands and other habitats could migrate as sea level rise induced inundation of existing wetland areas occurs. In the LCP, identify potential habitat migration corridors. These areas could be reserved for this purpose in an LCP through land acquisition, use designations, zoning buffers, setbacks, conservation easement requirements, and clustering development. LCPs should also consider developing a plan for acquisition of important habitat migration corridors.

Goal: Avoid significant impacts to habitats from adjacent development

C.5 Limit new development in areas adjacent to wetlands, ESHA, and other coastal habitats: Restrict the construction of new development in areas that are adjacent to wetlands, ESHA, and other coastal habitats in order to preserve buffers and open areas to allow for habitat migration.

C.5a **Cluster development away from coastal habitats**: Existing LCPs will likely have policies that already require clustering of development. To address sea level rise, these policies might need to be updated to include clustering development away from land where wetlands and other coastal habitats could migrate with sea level rise.

C.5b **Limit subdivisions**: Update subdivision requirements to require provision for inland migration of natural resource areas or to require lots to be configured in a way that allows such migration. Lot line adjustments may sometimes be appropriate if they facilitate locating physical development further away from hazards or sensitive resources.

Figure 23. Photo depicting the preservation and conservation of open space along an urban-rural boundary. North end of Pismo Beach from 1972 (*left*) to 2002 (*right*). (*Source:* California Coastal Records Project)

Goal: Manage sediment in ways that benefit habitats

C.6 **Identify opportunities for Regional Sediment Management**: Sediment supplies will be important for the long-term sustainability of many beaches and wetland areas. Strategies to maintain or restore natural sediment supplies and to coordinate sediment removal efforts with opportunities for reuse can provide multiple benefits to coastal ecosystems. See Strategy A.19c above for more detail on RSM programs.

C.6a **Restore natural sediment sources to wetlands**: Restoration of natural hydrodynamic systems will help to ensure the ability of wetlands to persist with sea level rise by ensuring that sediment is available for wetland accretion. Such actions may include restoring natural channels in streams and waterways that have been armored or channelized. Organizing and coordinating such efforts may be accomplished through a Regional Sediment Management Plan.

C.6b **Identify opportunities for beneficial reuse of sediment to support wetland restoration**: Consider facilitating the delivery of clean, dredged sediment to areas where former wetlands have subsided or to areas where existing wetlands are or may become sediment-limited as sea levels rise.

Goal: Incorporate sea level rise into habitat management actions

C.7 **Include sea level rise in site-specific evaluations**: Update policies to require site-specific biological evaluations and field observations of coastal habitat to include an evaluation of vulnerability to sea level rise where appropriate. Such an evaluation should consider both topographic features as well as habitat and species sensitivities (for example, sensitivity to inundation and saltwater intrusion).

C.8 **Incorporate sea level rise in restoration, creation, or enhancement of coastal habitats**: Update policies to require site-specific biological evaluations and field observations of coastal habitat to include an evaluation of vulnerability to sea level rise. Such an evaluation should consider both topographic features as well as habitat and species sensitivities (for example, sensitivity to inundation and saltwater intrusion). Habitat restoration, creation, or enhancement projects should be designed to withstand impacts of sea level rise and adapt to future conditions. As applicable, the LCP should contain policies to ensure restoration and management techniques account for future changes in conditions. CDPs for restoration projects should incorporate sea level rise and provisions to ensure habitats can adapt with changing future conditions.

C.9 **Update habitat management plans to address sea level rise**: Add policies stating that the effects of sea level rise should be addressed in management plans for coastal habitats. For example, plans should evaluate the full range of sea level rise impacts to coastal habitats, and develop a strategy for managing coastal habitats given changing sea level rise conditions. Existing management plans may need to be updated to add new monitoring and restoration requirements to address sea level rise. The strategies listed below are examples of strategies that could be included in habitat management plans.

C.9a **Use an adaptive management approach in ecosystem management, restoration, or design**: Habitat management plans and/or other habitat projects should establish an adaptive management approach, with clearly defined triggers for adaptive actions. Such an approach would allow for and ensure that coastal habitats are able to migrate and transition with changes in sea level.

Figure 24. Photo depicting habitat protection at Salinas River State Beach. Dunes are roped off to protect Snowy Plover nesting habitat. (*Source:* California Coastal Records Project)

C.10 Pursue strategies to protect ecosystem function under a range of future sea level rise or climate change scenarios: The LCP and/or habitat management plans can recommend coastal habitat management strategies that strive to protect ecosystem function in the future. Strategies include protecting a wide range of ecosystem types, protecting refugia, protecting wildlife and habitat corridors, and establishing methods to monitor ecosystem change over time.

C.10a **Update monitoring requirements for coastal habitats**: As part of the LCP and/or habitat management plans, consider establishing a monitoring protocol and requirements for evaluating sea level rise impacts to coastal habitats over time. Such a protocol would also help identify triggers at which additional adaptation options are necessary.

D. Agricultural Resources

Agriculture is a priority use within the Coastal Act, which mandates that the maximum amount of prime agricultural land shall be protected and maintained (Sections 30231, 30241, 30242). The main goals and Coastal Act policies that relate to agriculture are to:

- Protect the maximum amount of prime agricultural land
- Limit conversion of lands suitable for agriculture to non-agricultural uses
- Minimize impacts to water quality that could result from agricultural practices
- Promote water conservation efforts

Chapter 3 of the Guidance describes the impacts to agricultural resources that may result from sea level rise. Certified LCPs should already have policies and standards to ensure that agricultural resources are protected to the maximum extent feasible. However, LCP policies and standards may need to be updated to address sea level rise hazards. Adaptation options have been developed to support the agricultural protection goals of the Coastal Act through both LCP policies and CDP conditions, and the following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Protect the maximum amount of prime agricultural land

D.1 **Identify and designate areas suitable for agricultural production to replace agricultural production areas that could be lost to sea level rise:** Identify any non-sensitive open or developed areas, both within and outside of the Coastal Zone, which could potentially be used to replace agricultural land that is lost to sea level rise. Update LCP designations and/or policies to protect these identified areas for agricultural production and, as applicable, to provide for their conversion to agricultural use. Encourage and support regional coordination as feasible and applicable.

D.1a **Establish SLR-specific agricultural protection program:** Establish a formal program to identify, acquire, incentivize, and manage areas appropriate for new/renewed agricultural use and/or for protection of current and/or future agricultural uses. Such program should target key areas and properties where agricultural conversion threats are highest, and should dovetail with existing agricultural protection programs. Easements and other legal restrictions may be used as part of such program to help limit or restrict development in areas where agricultural land and production are most vulnerable to sea level rise impacts. The program might develop standard language and/or legal documents that can be used for easements or other property restrictions. The program should be flexible enough to be able to be implemented on both a large scale (*e.g.*, though LCP policies and programs) as well as on a smaller scale (*e.g.*, through the CDP process).

D.2 **Protection, maintenance, and adaptation of dikes and levees**: Repairing and maintaining existing flood barriers such as dikes and levees may be a cost-effective way to continue to protect agricultural areas. While some repair and maintenance activities are exempt from the need for a CDP, the repair and maintenance exemption does not apply to repair and maintenance work that is located within an ESHA, within any sand area, within 50 feet of the edge of a coastal bluff or ESHA, or within 20 feet of coastal waters. LCPs could identify opportunities for these kinds of actions and ensure that they are appropriately permitted, with consideration to the environmental protection and restoration goals of the Coastal Act. While landowners have the right to repair and maintain existing legal levees in their current configurations, the Commission and local governments administering LCPs have the authority to regulate, via the CDP process, the proposed methods of repair and maintenance. To raise, reconfigure, enlarge, or widen levees is not repair and maintenance and requires a Coastal Development Permit. Such activities may not be consistent with the Coastal Act or certified LCP, such as in cases involving wetland fill impacts. However, where there are opportunities to restore marine resources and the biological productivity of wetlands and estuaries, it may be possible to permit a dike/levee reconstruction project that provides for substantial restoration.

Goal: Limit conversion of lands suitable for agriculture to non-agricultural uses

D.3 **Limit conversion of agricultural land to other developed land uses**: Develop policies to assure maximum environmentally feasible protection of rural agricultural land, open space, and other coastal resources, including areas that may be considered non-prime agricultural land at this time. Anticipate areas that could become more difficult to farm and identify strategies to avoid or mitigate the potential impacts.

Goal: Minimize impacts to water quality that could result from agricultural practices

D.4 **Include sea level rise in water quality protection policies**: Where needed, coordinate with regional water quality control boards to add policies to reduce water pollution from runoff should agricultural lands become flooded or inundated due to sea level rise.

D.4a **Minimize water quality impacts from flooding of agricultural lands**: Agricultural practices that are designed to minimize water quality impacts, such as those designed to minimize runoff, may need to be updated or enhanced to ensure water quality protection if sea level rise results in more frequent flooding of agricultural lands.

D.4b **Add policies to address saltwater intrusion**: Add policies to protect water supply for priority coastal agriculture, including policies to address saltwater intrusion, such as limits on groundwater withdrawal or diversification of water supplies. Strategies to pump freshwater and/or highly treated wastewater into aquifers to reduce saltwater intrusion should be minimized in areas with limited freshwater resources.

Goal: Promote water conservation efforts

D.5 **Maximize water conservation to protect priority agricultural water supplies**: Saltwater intrusion and other climate change impacts may result in reduced water availability. LCP policies should be updated to establish or enhance standards related to water conservation and/or to identify opportunities for water recycling, dual plumbing systems, and the like. For more information on options such as relocating wells and reducing pumping in sensitive aquifers, see the following section on Water Quality and Water Control Management.

D.6 **Identify alternate water sources for agriculture**: Establish a program to identify alternate water sources for agriculture.

E. Water Quality and Supply

The main water quality protection policy of the Coastal Act requires minimizing the adverse effects of wastewater discharges, runoff, and groundwater depletion in order to protect the biological productivity and quality of coastal waters, as described in Section 30231. The main goals related to water quality include:

- Control runoff and stormwater pollution
- Minimize adverse effects of wastewater discharges and entrainment
- Prevent depletion of groundwater supplies from saltwater intrusion
- Improve long-term water quality through research

Chapter 3 of the Guidance covers the impacts to coastal waters from increased runoff, wastewater discharge and saltwater intrusion into groundwater sources from sea level rise. Adaptation options have been developed to limit the amount of pollutants that enter coastal waters through runoff or discharges.

Goal: Control runoff and stormwater pollution

E.1 **Update water quality Best Management Practices (BMPs)**: Evaluate and update BMPs to account for changes in water quality and supply issues due to sea level rise, as applicable. Updates could include practices to provide greater infiltration/inflow of rainwater, increased stormwater capture and/or water recycling programs, the use of low impact development, improved maintenance procedures for public sewer mains, policies to address impaired private sewer laterals, and other proactive measures.

E.2 **Include sea level rise in stormwater management plans and actions**: Control the amount of pollutants, sediments, and nutrients entering water bodies through precipitation-generated runoff. LCPs should include sea level rise and extreme storms in stormwater management plans and actions. CDPs for stormwater infrastructure should consider sea level rise.

E.2a **Increase capacity of stormwater infrastructure**: Actions to reduce impacts from higher water levels could include widening drainage ditches, improving carrying and storage capacity of tidally-influenced streams, installing larger pipes and culverts, adding pumps, converting culverts to bridges, creating retention and detention basins, and developing contingency plans for extreme events. Encouraging and supporting these types of efforts upstream may also be important.

E.2b **Use green stormwater infrastructure to the maximum extent feasible**: Employ natural, on-site drainage strategies to minimize the amount of stormwater that flows into pipes or conveyance systems. These strategies include low impact development, green roofs, permeable pavements, bioretention (*e.g.*, vegetated

swales, rain gardens) and cisterns. LCPs can include policies that require green infrastructure be used whenever possible *in lieu* of hard structures. Incorporate sea level rise and extreme storms into the design.

E.2c **Retrofit existing development with inadequate stormwater infrastructure**: Identify and prioritize development in low-lying or other at-risk areas with inadequate stormwater infrastructure and take steps to retrofit these systems to better accommodate sea level rise driven changes. Retrofits should incorporate the green infrastructure options detailed in strategy E.2c above as applicable.

Goal: Minimize adverse effects of wastewater discharges and entrainment

E.3 Add policies to address water quality risks from wastewater treatment plants, septic systems, and ocean outfalls: Consider establishing a program to retrofit, relocate, or eliminate ocean outfalls and other wastewater infrastructure deemed at risk. Alternatives include modifications to outfall lines, the use of green infrastructure, and redesign of waste and stormwater systems.

E.3a **Update siting and design policies**: Add policies to ensure that new ocean outfalls, wastewater treatment facilities, and other facilities that could negatively impact water quality if flooded or inundated, are sited and designed to minimize impacts from sea level rise. Avoid construction of new stormwater outfalls and direct stormwater to existing facilities with appropriate treatment and filtration where feasible. Where new outfalls cannot be avoided, plan, site, and design stormwater outfalls to minimize adverse impacts on coastal resources, including consolidation of existing and new outfalls where appropriate. Consolidate new and existing outfalls where appropriate.

E.3b **Retrofit, relocate, or eliminate outfalls deemed "at risk"**: An ocean outfall is a pipeline or tunnel that discharges municipal or industrial wastewater, stormwater, combined sewer overflows, cooling water, or brine effluents from desalination plants to the sea. LCPs should identify areas where sea level rise could affect flow of wastewater from outfalls and lead to backup and inland flooding, and plans should be made to retrofit, relocate, or eliminate these outfalls to prevent damage and impacts to water quality. Additionally, CDPs for new ocean outfalls should consider sea level rise in the design.

E.3c **Reduce or find alternatives for septic systems in hazardous areas**: Flooding, inundation, and changing groundwater dynamics may result in impacts to septic systems, which rely on leach fields for dispersal of wastewater, that could cause water quality impairments. Options to reduce the potential for these impacts by redesigning or eliminating septic systems in hazardous areas should be identified. New development that will rely on septic systems should be limited in hazardous areas.

Goal: Prevent depletion of groundwater supplies from saltwater intrusion

E.4 **Groundwater Management**: Plan and coordinate monitoring, operation, and administration of a groundwater basin or portion of a groundwater basin with the goal of fostering long-term sustainability of the resource. The LCP can add policies that specify limits or establish other standards for the use of groundwater and sensitive aquifers. These policies should be made in accordance with other regional water planning efforts, such as Integrated Regional Water Plans as well as relevant state water policies. CDPs involving the use of groundwater should address groundwater management issues.

E.4a **Add policies to address saltwater intrusion into aquifers**: Consider adding policies that establish a long-term strategy for addressing saltwater intrusion in aquifers, including limiting development that would use sensitive aquifers as applicable. For some areas of the state, additional information is needed on the site-specific impacts of sea level rise on aquifers. For these areas, the LCP could identify the local information needs and promote the establishment of a research program to increase understanding of the vulnerability of coastal aquifers.

E.4b **Limit groundwater extraction from shallow aquifers**: Groundwater extraction from shallow aquifers can increase susceptibility to saltwater intrusion. Regulating development to limit or prevent extraction and avoid overdraft from vulnerable aquifers can reduce the impacts of saltwater intrusion and preserve fresh groundwater supplies. LCPs or CDPs can add restrictions to the use of aquifers susceptible to saltwater intrusion and can encourage measures to recharge shallow aquifers that are depleted.

E.4c **Relocate wells and water intake facilities**: Identify opportunities to relocate wells and water intake facilities away from hazards and/or areas where saltwater intrusion may be a problem.

E.4d **Restrict development of new wells in sensitive areas**: Require new water wells to be sited away from areas where saltwater intrusion could occur.

E.4e **Limit development that relies on vulnerable water supplies**: Limit or restrict new development in areas that are dependent on water supplies that are or will become susceptible to saltwater intrusion.

E.4f **Ensure adequate long term water supplies:** When siting and designing new development, ensure that adequate and sustainable water sources are available for the lifetime of the development and suitable for the intended use of the development, considering potential impacts of sea level rise and saltwater intrusion upon groundwater supplies.

Goal: Improve long-term water quality through research

E.5 **Identify research and monitoring needs to more precisely understand local issues**: Research programs may be established to analyze the particular local challenges related to water quality and supply as a result of sea level rise. Opportunities for innovative solutions to these challenges should be identified.

E.5a **Clearly define areas at risk**: The LCP should include an updated inventory of potential pollutant sources due to sea level rise, including toxic waste sites, ocean outfalls and wastewater treatment facilities at risk of inundation, as well as aquifers and wells at risk of saltwater intrusion. Policies may also be added to prioritize low-lying contaminated sites for remediation and restoration.

F. Archaeological and Paleontological Resources

The Coastal Act provides for the protection of archaeological and paleontological resources, stating in Section 30244 that:

> "Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required."

Chapter 3 of the Guidance discusses the impacts to archaeological and paleontological resources that might result from sea level rise. Certified LCPs should already have policies and standards to ensure that these resources are protected to the maximum extent feasible, however, such policies and standards may need to be updated to consider sea level rise hazards. The following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Protect archaeological and paleontological resources

F.1 **Add policies to protect archeological and paleontological resources from sea level rise:** Add policies to require site-specific evaluation of potential sea level rise impacts to archeological and paleontological resources on a development site. The LCP can also add requirements that a monitoring program and plan be established as a condition of approval for development located on a site with artifacts vulnerable to sea level rise. Adaptation or protection strategies used may depend on the significance of the archaeological resources in question.

F.1a **Consult with relevant tribes for guidance:** If resources are at risk, the appropriate entity or Native American tribe(s) should be contacted to develop a coordinated management plan for artifacts. See, for example, the *California Natural Resources Agency Final Tribal Consultation Policy* for additional guidance.

F.1b **Coordinate with the State Historic Preservation Officer (SHPO):** In line with the provisions of the Coastal Act, work with the State Historic Preservation Officer to identify actions to protect archaeological and paleontological resources.

G. Scenic and Visual Resources

The scenic value of the coast is a resource of public importance. As noted in Section 30251 of the Coastal Act, development shall be sited and designed to:

> "Protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms…and to restore and enhance visual quality in visually degraded areas."

As stated in Chapter 3 of the Guidance, some options to address rising sea levels, such as elevating structures or utilizing seawalls or bluff retention devices, have the potential to alter or degrade the visual character of an area. Certified LCPs should already have policies and standards to ensure scenic and visual resources are protected to the maximum extent feasible, but these may need to be updated to consider sea level rise hazards. Coastal regions with scenic overlays or designated scenic corridors, or those areas designated as scenic in the California Coastal Preservation and Recreation Plan in particular should pay close attention to actions that could be used to minimize risks to development. The following adaptation options address some of the methods for protecting the scenic qualities of the coast.

Goal: Protect views to and along the ocean and scenic coastal areas

G.1 **Establish design standards to protect visual resources**: Update and/or add design standards to ensure that adaptation measures protect visual resources while minimizing hazards. Adaptation strategies such as shoreline armoring or elevation techniques should be designed such that the visuals are subordinate to, and in character with, the surrounding visual resources of an area.

G.1a **Establish standards for the use of caissons or other means of elevating structures:** Ensure that the use of caissons or other elevation techniques do not result in negative visual impacts. Develop policies regarding where elevation of structures may be allowable, and establish standards guiding the use of these techniques. Ensure that the appearance of caissons will not detract from the scenic character of an area if or when they become visible as a result of erosion or other processes.

G.1b **Maintain height limitations in scenic areas**: Avoid modifications to height limits in scenic areas and provide for options to modify roof-lines or elevate the lowest flood elevation for flood protection in a manner that is consistent with scenic character. In some cases it may be appropriate to update height limitations to allow for elevation in response to sea level rise hazards. However, such decisions will require trade-offs and will need to strike a balance in terms of adapting to sea level rise and protecting visual resources and community character in line with the requirements of the Coastal Act.

G.1c **Develop or redevelop property to be safe from hazards without impairing scenic resources**: Emphasize the use of adaptation strategies that will not impact visual resources. Such strategies may include short-term retrofits with plans for longer term relocation or removal.

G.1d **Establish new scenic communities**: Designate areas with significant visual resources that could be negatively impacted by adaptation responses (*e.g.*, due to seawalls or "spider" homes) as scenic communities with special protections. Establish standards in LCPs to specifically protect visual resources in these areas.

Figure 25. Photo depicting protection of visual resources and public access. A seawall visually blends in with the natural bluff while surfing access is also provided at Pleasure Point, Santa Cruz (2013). (*Source:* California Coastal Records Project)

SCAG
INNOVATING FOR A BETTER TOMORROW

THE **2020** REGIONAL TRANSPORTATION PLAN/
SUSTAINABLE COMMUNITIES STRATEGY

LOCAL INPUT & ENVISIONING PROCESS

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

DATA/MAP BOOK

for the City o

HUNTINGTON BEACH

November 201

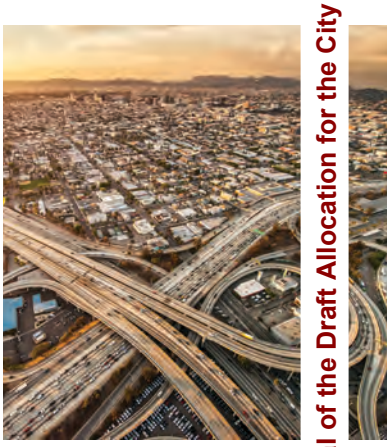
CONTENTS

INTRODUCTION

Founded in 1965, the Southern California Association of Governments (SCAG) holds a federal designation as a Metropolitan Planning Organization (MPO) and is a state-recognized Regional Transportation Planning Agency and Council of Governments. SCAG's primary role is developing long-range plans for a region encompassing six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura) and 191 cities, an area covering more than 38,000 square miles.

Beginning in late October 2017, SCAG will be seeking local input and data from member jurisdictions to prepare for two major initiatives: The Regional Housing Needs Assessment (RHNA) and the 2020 Regional Transportation Plan/Sustainable Communities Strategy (2020 RTP/SCS). Both initiatives rely on the most current data from local jurisdictions for determining future projections, such as household growth and greenhouse gas emissions.

SCAG will be soliciting input in the form of an online survey as well as GIS data maps (via an interactive mapping tool or this Data/Map Book). This bottom-up approach ensures that local jurisdictions are actively involved in the development of these plans and that the data is accurate.



WHAT IS THE REGIONAL HOUSING NEEDS ASSESSMENT?

Under California law, SCAG and other regional councils of government in the state are required to determine projected housing needs for persons at all income levels. This process allows communities to anticipate growth, so that collectively the region can grow in ways that enhance quality of life, improve access to jobs, promote transportation mobility and address social equity and fair share housing needs. SCAG utilizes the data/input provided by each local jurisdiction to assess future housing needs for the RHNA.

WHAT IS THE REGIONAL TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY?

The RTP/SCS is an important planning document for the region, allowing transportation project sponsors to qualify for federal funding. In addition, the plan promotes smarter growth, using integrated transportation and land use strategies that will help the region achieve state-mandated greenhouse gas emission reduction goals and federal Clean Air Act requirements. This integration of transportation, land use and housing planning is mandated as part of Senate Bill 375, California's Sustainable Communities Strategy and Climate Protection Act.

To meet the requirements under SB 375, SCAG prepares and provides a set of GIS maps to subregions and local jurisdictions for their review. Local data will assess how well the region is moving forward on implementing policies that reduce greenhouse gas emissions, as well as determine future mobility, environmental and economic challenges based on current development patterns.

PROVIDING SCAG INPUT ON LOCAL DATA SETS

This Data/Map Book contains information specific to your local jurisdiction and is designed to help local planners better understand the sources, methodologies, and contents of each dataset, which will be incorporated in SCAG's regional plans. The list of data/GIS maps included in this book include:

We ask that you please review the maps and data sets included in this Data/Map Book and compare to your jurisdiction's most current data. Upon request, the maps can be provided in larger sizes for detailed review. SCAG may not be authorized to release certain datasets depending on the access/release constraints applied to each dataset. If you have changes, you can submit them in one of two ways:

1. Mark changes directly onto the maps in this book and email changes to: RTPLocalInput@scag.ca.gov.
2. SCAG has also created the Scenario Planning Model (SPM) Data Management Tool, an interactive online mapping tool, which you can use to both review and edit your jurisdiction's map data directly. To access this tool, visit: http://sp.scag.ca.gov/Pages/HomePage.aspx.

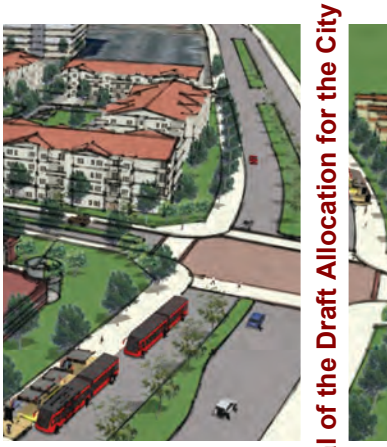
If you would like to request larger maps, receive help on how to use. the SPM Data Management Tool or have additional questions on the process, please email RTPLocalInput@scag.ca.gov.

LAND USE	General Plan, Zoning, Existing Land Use, Specific Plan
RESOURCE AREAS & FARMLAND	Open Space and Parks, Endangered Species and Plants, Flood areas, Natural Community & Habitat Conservation, Farmland, Sea Level Rise
TRANSPORTATION	Major Transit Stops, High Quality Transit Corridors, High Quality Transit Areas, Transit Priority Areas, Bikeways, Truck Routes
ADMIN BOUNDARY	City Boundary & Sphere of Influence, Census Tract, Transportation Analysis Zone (TAZ)
GROWTH	Estimates of Population, Households, and Employment for Base Year 2016 Projections of Population, Households, and Employment for 2020, 2030, 2035, 2045 Entitlements, Potential Infill Sites

SCAG staff prepared a set of land use maps at the parcel level as follows:

- Adopted General Plan land use with local jurisdiction's general plan designations and with 2016 SCAG Land Use Codes
- Adopted Zoning codes with local jurisdiction's zoning codes and with 2016 SCAG Land Use Codes
- 2016 Existing land use with 2016 SCAG Land Use Codes
- Adopted Specific Plan land use with 2016 SCAG Land Use Codes

The Anderson Land Use Classification was used as the standardized 2016 SCAG Land Use Code system. For more detailed information on the land use code system, please refer to Table 1: 2016 SCAG Land Use Codes Table. It should be noted that the land use datasets will be further reviewed and updated as SCAG continue to receive input and comments from subregions and local jurisdictions during the Local Input & Envisioning Process for the 2020 RTP/ SCS.



GENERAL PLAN LAND USE & ZONING

Beginning in March 2017, SCAG collected local general plan land use and zoning information. Through the process of collecting general plan and zoning documents, SCAG staff made every effort to ensure the data reflects the most current general plan land use and zoning data. The general plan land use and zoning documents, maps, and/or GIS files collected were coded into GIS format at the parcel level. Parcel boundary data were acquired from county assessor's offices. General plan land use and zoning data are shown at the parcel level and depict a local agency's adopted documents. However, the data shown in some areas may be generalized, because the parcel level database representing general plan land use and zoning data does not support multiple uses or designations on a single parcel (either splitting the parcel or representing overlays). Due to this limitation, if site specific data is necessary, users should always reference a local agency's adopted documents or field surveys to determine actual land use designations. At the jurisdiction level, both general plan land use and zoning maps are prepared with local land use or zoning codes, consistent with those used in each local jurisdiction, as well as with the SCAG's standardized 2016 Land Use Codes.

EXISTING LAND USE

The base year of the 2020 RTP/SCS is 2016. To develop the base year existing land use data, SCAG has used property land use information acquired from DMP and SCAG's 2016 existing land use data. Using a correspondence between DMP land use codes and SCAG's standardized 2016 Land Use Codes, DMP land use codes were converted to SCAG Land Use Code system. As noted for general plan land use and zoning data, existing land use data are shown at the parcel level and, in some areas, data may be generalized, because SCAG's parcel level database does not support multiple uses on a single parcel. Due to this limitation, if site specific data is necessary, users should always reference a local agency's adopted documents or field surveys to determine actual land use designations.

SPECIFIC PLAN LAND USE

Beginning in August 2016, SCAG collected local specific plan land use information. Through the process of collecting specific plan documents, SCAG staff made every effort to ensure the data reflects the most current specific plan land use data. The specific plan land use documents, maps, and/or GIS files collected were coded into GIS format at the parcel level. Parcel boundary data were acquired from county assessor's offices. Specific plan land use data are shown at the parcel level and depict a local agency's adopted documents. As noted for general plan land use and zoning data, specific plan land use data are shown at the parcel level and, in some areas, data may be generalized, because SCAG's parcel level database does not support multiple uses on a single parcel. Due to this limitation, if site specific data is necessary, users should always reference a local agency's adopted documents or field surveys to determine actual land use designations.

LAND USE

TABLE 1: 2016 SCAG Land Use Codes - Legend

LEGEND	LAND USE DESCRIPTION
Single Family Residential	1110 Single Family Residential 1111 High Density Single Family Residential (9 or more DUs/ac) 1112 Medium Density Single Family Residential (3-8 DUs/ac) 1113 Low Density Single Family Residential (2 or less DUs/ac)
Multi-Family Residential	1120 Multi-Family Residential 1121 Mixed Multi-Family Residential 1122 Duplexes, Triplexes and 2- or 3-Unit Condominiums and Townhouses 1123 Low-Rise Apartments, Condominiums, and Townhouses 1124 Medium-Rise Apartments and Condominiums 1125 High-Rise Apartments and Condominiums
Mobile Homes and Trailer Parks	1130 Mobile Homes and Trailer Parks 1131 Trailer Parks and Mobile Home Courts, High-Density 1132 Mobile Home Courts and Subdivisions, Low-Density
Mixed Residential	1140 Mixed Residential 1100 Residential
Rural Residential	1150 Rural Residential
General Office	1210 General Office Use 1211 Low- and Medium-Rise Major Office Use 1212 High-Rise Major Office Use 1213 Skyscrapers
Commercial and Services	1200 Commercial and Services 1220 Retail Stores and Commercial Services 1221 Regional Shopping Center 1222 Retail Centers (Non-Strip With Contiguous Interconnected Off-Street Parking) 1223 Retail Strip Development 1230 Other Commercial 1231 Commercial Storage 1232 Commercial Recreation 1233 Hotels and Motels
Facilities	1240 Public Facilities 1241 Government Offices 1242 Police and Sheriff Stations 1243 Fire Stations 1244 Major Medical Health Care Facilities 1245 Religious Facilities 1246 Other Public Facilities 1247 Public Parking Facilities 1250 Special Use Facilities 1251 Correctional Facilities 1252 Special Care Facilities 1253 Other Special Use Facilities
Education	1260 Educational Institutions 1261 Pre-Schools/Day Care Centers 1262 Elementary Schools 1263 Junior or Intermediate High Schools 1264 Senior High Schools 1265 Colleges and Universities 1266 Trade Schools and Professional Training Facilities

LEGEND	LAND USE DESCRIPTION
Military Installations	1270 Military Installations 1271 Base (Built-up Area) 1272 Vacant Area 1273 Air Field 1274 Former Base (Built-up Area) 1275 Former Base Vacant Area 1276 Former Base Air Field
Industrial	1300 Industrial 1310 Light Industrial 1311 Manufacturing, Assembly, and Industrial Services 1312 Motion Picture and Television Studio Lots 1313 Packing Houses and Grain Elevators 1314 Research and Development 1320 Heavy Industrial 1321 Manufacturing 1322 Petroleum Refining and Processing 1323 Open Storage 1324 Major Metal Processing 1325 Chemical Processing 1330 Extraction 1331 Mineral Extraction - Other Than Oil and Gas 1332 Mineral Extraction - Oil and Gas 1340 Wholesaling and Warehousing
Transportation, Communications, and Utilities	1400 Transportation, Communications, and Utilities 1410 Transportation 1411 Airports 1412 Railroads 1413 Freeways and Major Roads 1414 Park-and-Ride Lots 1415 Bus Terminals and Yards 1416 Truck Terminals 1417 Harbor Facilities 1418 Navigation Aids 1420 Communication Facilities 1430 Utility Facilities 1431 Electrical Power Facilities 1432 Solid Waste Disposal Facilities 1433 Liquid Waste Disposal Facilities 1434 Water Storage Facilities 1435 Natural Gas and Petroleum Facilities 1436 Water Transfer Facilities 1437 Improved Flood Waterways and Structures 1438 Mixed Utilities 1440 Maintenance Yards 1441 Bus Yards 1442 Rail Yards 1450 Mixed Transportation 1460 Mixed Transportation and Utility

TABLE 1: 2016 SCAG Land Use Codes - Legend *continued*

LEGEND	LAND USE DESCRIPTION
Mixed Commercial and Industrial	1500 Mixed Commercial and Industrial
Mixed Residential and Commercial	1600 Mixed Residential and Commercial 1610 Residential-Oriented Residential/Commercial Mixed Use 1620 Commercial-Oriented Residential/Commercial Mixed Use
Open Space and Recreation	1800 Open Space and Recreation 1810 Golf Courses 1820 Local Parks and Recreation 1830 Regional Parks and Recreation 1840 Cemeteries 1850 Wildlife Preserves and Sanctuaries 1860 Specimen Gardens and Arboreta 1870 Beach Parks 1880 Other Open Space and Recreation 1890 Off-Street Trails
Agriculture	2000 Agriculture 2100 Cropland and Improved Pasture Land 2110 Irrigated Cropland and Improved Pasture Land 2120 Non-Irrigated Cropland and Improved Pasture Land 2200 Orchards and Vineyards 2300 Nurseries 2400 Dairy, Intensive Livestock, and Associated Facilities 2500 Poultry Operations 2600 Other Agriculture 2700 Horse Ranches
Vacant	3000 Vacant 3100 Vacant Undifferentiated 3200 Abandoned Orchards and Vineyards 3300 Vacant With Limited Improvements 3400 Beaches (Vacant) 1900 Urban Vacant
Water	4000 Water 4100 Water, Undifferentiated 4200 Harbor Water Facilities 4300 Marina Water Facilities 4400 Water Within a Military Installation 4500 Area of Inundation (High Water)
Specific Plan	7777 Specific Plan
Under Construction	1700 Under Construction
Undevelopable or Protected Land	8888 Undevelopable or Protected Land
Unknown	9999 Unknown

SB 375 identifies as one of the guidelines on developing an SCS to "gather and consider the best practically available scientific information regarding resource areas and farmland in the region as defined in subdivision (a) and (b) of Section 65080.01." The definitions of Resource areas and Farmland specified in Section 65080.01 are as following:

(a) "Resource areas" include

(1) all publicly owned parks and open space;

(2) open space or habitat areas protected by natural community conservation plans, habitat conservation plans, and other adopted natural resource protection plans;

(3) habitat for species identified as candidate, fully protected, sensitive, or species of special status by local, state, or federal agencies or protected by the federal Endangered Species Act of 1973, the California Endangered Species Act, or the Native Plan Protection Act;

(4) lands subject to conservation or agricultural easements for conservation or agricultural purposes by local governments, special districts, or nonprofit 501(c)(3) organizations, areas of the state designated by the State Mining and Geology Board as areas of statewide or regional significance pursuant to Section 2790 of the Public Resources Code, and lands under Williamson Act contracts;

(5) areas designated for open-space or agricultural uses in adopted open-space elements or agricultural elements of the local general plan or by local ordinance;

(6) areas containing biological resources as described in Appendix G of the CEQA Guidelines that may be significantly affected by the sustainable communities strategy or the alternative planning strategy; and

(7) an area subject to flooding where a development project would not, at the time of development in the judgment of the agency, meet the requirements of the National Flood Insurance Program or where the area is subject to more protective provisions of state law or local ordinance.

(b) "Farmland" means farmland that is outside all existing city spheres of influence or city limits as of January 1, 2008, and is one of the following:

(1) Classified as prime or unique farmland or farmland of statewide importance.

(2) Farmland classified by a local agency in its general plan that meets or exceeds the standards for prime or unique farmland or farmland of statewide importance.

To comply with the guidelines, SCAG prepared the relevant datasets of open space and park, endangered species and plants, flood areas, natural habitat, and farmland from various sources. To provide input on these datasets, please notify SCAG as well as the agencies listed as the primary owner of the database, discussed in detail here.

OPEN SPACE & PARK

For the 2020 RTP/SCS, "all publicly owned" open spaces need to be considered as prescribed in SB 375. Data on publicly owned open space and parks comes from the California Protected Areas Database (CPAD), a GIS inventory of all publicly owned protected open space lands in the State of California through fee ownership. GreenInfo Network has prepared CPAD by aggregating and cross-checking various open space data from state, local and other agencies.

For a clear understanding of the database, it is important to understand two basic definitions of the database. First, the "protected" status in CPAD does not refer to a specific level of conservation

for biodiversity values, but a general commitment to maintain the property for open space uses. Second, by fee ownership mechanism, it means that 1) the lands in CPAD are defined based on the agencies that owns the fee title to the property, not the managing parties, and 2) CPAD is not the database of all public lands, but that of all "publicly owned" open space. The owning agencies include public and non-profits. Private owners are not currently included, except for parkland owned by some home owner associations. For more details on the inclusion criteria, see the CPAD manual from their website at http://www.calands.org/uploads/docs/CPAD2017a-Manual.pdf.

The database is prepared into three feature classes; Holdings, Units, and Super Units. Holdings are the parcel level open space information, which correspond to assessor or tax parcel boundaries. Units and Super Units are the aggregated features for the cartographic representation. (Units: the aggregation of Holdings into specific parks and reserves / Super Units: the aggregation of federal and state Holdings regardless county boundaries) All classes of data are downloadable through their website at http://www.calands.org. For user constraints, refer to the License Agreement. GreenInfo Network has released several versions of the CPAD since March, 2008. The most up-to-date version is CPAD v.2017a, which was released in August, 2017. For more information on CPAD update histories and changes, see their website at http://www.calands.org/data.

The map included in this book is presented by ownership. The lands in CPAD range from huge national forests to very small urban parks. Federal, state, county, city, special district and non-governmental agency holdings are included and have been mapped at the high levels of accuracy. The information included in this book reflects the latest version of the CPAD (v.2017a), plus local jurisdiction's input received during the 2016-2040 RTP/SCS Local Input Process.

ENDANGERED SPECIES & PLANTS

SCAG obtained the California Natural Diversity Database (CNDDB)[1] October 2017 version developed by the California Department of Fish and Wildlife's Biogeographic Data Branch (BDB). The CNDDB is a library of the location and condition of species of rare and sensitive plants, animals, and natural communities in California. It is updated on a continuous basis to be consistent and current, but cannot be an exhaustive and comprehensive inventory of rare species and natural communities. Field verification for the absence and presence of sensitive species is required by the end users.

The dataset is shown on the map is based on the combination of the three data fields; element type, accuracy and element occurrence count. Other fields in CNDDB describe the listing status, ranking, location, site description and source references, to name a few.

The types of elements (ELMTYPE) are specified as four categories of plant, animal, terrestrial community, and aquatic community.

VALUE	DEFINITION
1	Plant (ELMCODEs beginning with "P" or "N")
2	Animal (ELMCODEs beginning with "A" or "I")
3	Terrestrial community (ELMCODEs beginning with "CT")
4	Aquatic community (ELMCODEs beginning with "CA", "CE", "CL", "CM" or "CR")

[1] The CNDDB is a "natural heritage program" and is part of a nationwide network of similar programs overseen by **NatureServe** (formerly part of The Nature Conservancy). All natural heritage programs provide location and natural history information on special status plants, animals, and natural communities to the public, other agencies, and conservation organizations. The data help drive conservation decisions, aid in the environmental review of projects and land use changes, and provide baseline data helpful in recovering endangered species and for research projects.

The precision or accuracy level (ACC_CLASS) represents spatial uncertainty on a scale of one to ten, indicating both accuracy type and accuracy value.

VALUE	DEFINITION
80 meters	1: Specific bounded area with an 80 meter radius
Specific	2: Specific bounded area
Nonspecific	3: Non-specific bounded area
1/10 mile	4: Circular feature with a 150 meter radius (1/10 mile)
1/5 mile	5: Circular feature with a 300 meter radius (1/5 mile)
2/5 mile	6: Circular feature with a 600 meter radius (2/5 mile)
3/5 mile	7: Circular feature with a 1000 meter radius (3/5 mile)
4/5 mile	8: Circular feature with a 1,300 meter radius (4/5 mile)
1 mile	9: Circular feature with a 1,600 meter radius (1 mile)
5 miles	10: Circular feature with a 8,000 meter radius (5 miles)

The element occurrence count (EOCOUNT) represents how many occurrences share the same spatial feature. An EOCOUNT greater than one indicates the presence of a "multiple."

For more information on the CNDDB, please refer to their website (https://www.wildlife.ca.gov/Data/CNDDB). The CNDDB is offered on a yearly subscription basis, and is prohibited from being distributed to anyone outside the subscribing organizations. The data can be ordered online at https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data. Also, the web-based CNDDB QuickView Tool which provides users with a list of all tracked elements that have been documented by the CNDDB to occur in a selected USGS 7.5' topographic quad or in a selected county is available at https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data#43018410-cnddb-quickview-tool.

FLOOD AREAS

The flood area maps are based on the Digital Flood Insurance Rate Map (DFIRM), obtained from Federal Emergency Management Agency (FEMA) in August 2017. The DFIRM Database is a digital version of the FEMA Flood Insurance Rate Maps (FIRM)2 that is designed for use with digital mapping and analysis software. The FIRM is created by FEMA for the purpose of floodplain management, mitigation, and insurance activities for the National Flood Insurance Program (NFIP).

FEMA prepares the flood maps to show the extent of flood hazard in a flood prone community by conducting engineering studies called "Flood Insurance Studies (FISs). From the study, FEMA delineate Special Flood Hazard Areas (SFHAs), which are subject to inundation by a flood that has a 1 percent or greater chance of being equaled or exceeded during any given year. This type of flood is commonly referred to as 'the 100-year flood' or base flood. The 100-year flood has a 26 percent chance of occurring during a 30 year period, the length of many mortgages. The 100-year flood is a regulatory standard used by Federal and most State agencies to administer floodplain management programs.

[2] The FIRM is the official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community. Since 1970s, the FEMA has created and updated the flood hazard maps for National Flood Insurance Program (NFIP). NFIP was created by the US Congress in 1968 to reduce future damage and to provide protection for property owners from potential loss through an insurance mechanism.

The FIRM includes data on the 100-year (1% annual chance of occurring) and 500-year (0.2% annual chance of occurring) floodplains. The flood maps developed by FEMA are primary tools for state and local governments to mitigate the effects of flooding in their communities. The data are available to the public at FEMA's Map Service Center (https://msc.fema.gov/portal/). You may also request the related documents or other maps, such as FIS result report, or a Flood Boundary and Floodway Map (FBFM). For more information on the FIRM, refer to their website at https://www.fema.gov/flood-insurance-rate-map-firm.

NATURAL COMMUNITY & HABITAT CONSERVATION PLAN

The data on natural community and habitat conservation plan are from the Natural Community Conservation Planning (NCCP) program of California Department of Fish and Wildlife. With partnerships with public and private organizations, NCCP is an effort for the protection and perpetuation of biological diversity, while allowing compatible and appropriate economic activity. The NCCP program started in 1991 under the State's Natural Community Conservation Planning Act, which has broader orientation and objectives than the previous laws limited to the protection of species already declined in number significantly.

The primary objective is to conserve natural communities at the ecosystem level, while accommodating compatible land use. By considering the long-term stability of wildlife and plant communities, and including key interests in the planning process, it aims at anticipating and preventing the controversies in the surrounding areas of the species.

A local agency is in charge of monitoring the development of a conservation plan in cooperation with landowners, environmental organizations and other interest parties. The Department of Fish and Wildlife provides necessary support, direction, and guidance to NCCP participants.3 For more information on the NCCP phases and guidance, refer to their website at https://www.wildlife.ca.gov/Conservation/Planning/NCCP.

FARMLAND

Farmland information was obtained from the Farmland Mapping & Monitoring Program (FMMP) in the Division of Land Resource Protection in the California Department of Conservation. Established in 1982, the FMMP is to provide consistent and impartial data and analysis of agricultural land use and land use changes throughout the State of California.4

The FMMP updates and releases the Important Farmland Map by county every two years and SCAG obtained the most up-to-date version.5 The study area is in accordance to the soil survey developed by NRCS (National Resources Conservation Service) in the United States Department of Agriculture. Important Farmland Map is biennially updated based on a computer mapping system, aerial imagery, public review, and field interpretation.

The minimum land use mapping unit is 10 acres. The classification system of the map was developed by combining technical soil rating and current land use. For more information, refer to the website at http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx.

[3] Department of Fish and Game sponsors two grant programs for NCCP/HCPs; Local Assistance Grants (LAG) with the state funds for urgent tasks associated with implementing approved NCCPs or NCCPs anticipated to be approved within 12 months of grant application, and ESA SECTION 6 GRANTS program through the federal grant from the U.S. Fish and Wildlife Service (FWS).

[4] The FMMP was signed by the Legislature in 1982, and the first Important Farmland Maps were produced in 1984, covering 30.3 million acres. Through 12 biennial mapping cycles, data has expanded to 48.1 million acres as modern soil surveys were completed by USDA.

[5] The most up-to-date Important Farmland data is 2016 version, except Orange county (2014 version), as of October 2017.

PRIME FARMLAND (P)	Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
FARMLAND OF STATEWIDE IMPORTANCE (S)	Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
UNIQUE FARMLAND (U)	Farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.
FARMLAND OF LOCAL IMPORTANCE (L)	Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
GRAZING LAND (G)	Land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.
URBAN AND BUILT-UP LAND (D)	Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
OTHER LAND (X)	Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land. The Rural Land Mapping Project provides more detail on the distribution of various land uses within the Other Land category. The Rural Land categories include: Rural Residential Land (R), Semi-Agricultural and Rural Commercial Land (sAC), Vacant or Disturbed Land (V), Confined Animal Agriculture (Cl), and Nonagricultural or Natural Vegetation (nv).
WATER (W)	Perennial water bodies with an extent of at least 40 acres.
NOT SURVEYED (Z)	Large government land holdings, including National Parks, Forests, and Bureau of Land Management holdings are not included in FMMP's survey area.

The map included in this book is prepared based on the guidelines in (b) of Section 65080.01.

(c) "Farmland" means farmland that is outside all existing city spheres of influence or city limits as of January 1, 2008, and is one of the following:

(1) Classified as prime or unique farmland or farmland of statewide importance.

(2) Farmland classified by a local agency in its general plan that meets or exceeds the standards for prime or unique farmland or farmland of statewide importance.

COASTAL INUNDATION (SEA LEVEL RISE)

The Coastal Inundation data were obtained from the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center's online mapping viewer depicting potential sea level rise and its associated impacts on the nation's coastal areas. These data depict the potential inundation of coastal areas resulting from a projected 2 feet rise in sea level above current Mean Higher High Water (MHHW) conditions.

The process used to produce the data can be described as a modified bathtub approach that attempts to account for both local/regional tidal variability as well as hydrological connectivity. The process uses two source datasets to derive the final inundation rasters and polygons and accompanying low-lying polygons for each iteration of sea level rise: the Digital Elevation Model (DEM) of the area and a tidal surface model that represents spatial tidal variability. The tidal model is created using the NOAA National Geodetic Survey's VDATUM datum transformation software (http://vdatum.noaa.gov) in conjunction with spatial interpolation/extrapolation methods and represents the MHHW tidal datum in orthometric values (North American Vertical Datum of 1988). The model used to produce these data does not account for erosion, subsidence, or any future changes in an area's hydrodynamics. It is simply a method to derive data in order to visualize the potential scale, not exact location, of inundation from sea level rise.

MAJOR TRANSIT STOPS & HIGH QUALITY TRANSIT CORRIDORS

According to SB 375, 'a transit priority project' can be exempt from, or subject to a limited review of CEQA (the California Environmental Quality Act). The implementation of the SCS only includes 'a transit priority project' that is 'consistent with the general use designation, density, building intensity, and applicable policies specified for the project area in either a sustainable communities strategy or an alternative planning strategy, for which the State Air Resources Board, pursuant to subparagraph (H) of paragraph (2) of subdivision (b) of Section 65080 of the Government Code, has accepted a metropolitan planning organization's determination that the sustainable communities strategy or the alternative planning strategy would, if implemented, achieve the greenhouse gas emission reduction targets.' [Section 21155.(a)]

The bill specifically states that the transit priority project should:

(1) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 percent and 50 percent nonresidential uses, a floor area ratio of not less than 0.75;

(2) provide a minimum net density of at least 20 dwelling units per acre; and

(3) be within one-half mile of a major transit stop or high-quality transit corridor included in a regional transportation plan. A major transit stop is as defined in Section 1064.3, except that, for purposes of this section, it also includes major transit stops that are included in the applicable regional transportation plan. For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. A project shall be considered to be within one-half mile of a major transit stop or high-quality transit corridor if all parcels within the project have no more than 25 percent of their area farther than one-half mile from the stop or corridor and if not more than 10 percent of the residential units or 100 units, whichever is less, in the project are farther than one-half mile from the stop or corridor. [Section 21155.(b)]

A transit priority project, which meets all the requirements of subdivision (a) and (b), and one of the requirements of subdivision (c) in Section 21155.1, can be declared by the legislative body of the jurisdiction, after conducting a public hearing, to be a Sustainable Communities Project (SCP). Once the project is designated as SCP, it can benefit from CEQA streamlining. For detailed information on SCP, refer to Appendix 1: Sustainable Communities Project (SCP) Criteria.

To assist in identifying transit priority project areas, SCAG identifies major transit stops and high quality transit corridors, and their surrounding areas in one-half mile radius distance, as specified in Section 21155.(b)(3). Major transit stops and high quality transit corridors are extracted from 2040 plan year data of the 2016-2040 RTP/SCS Amendment #2 and modified by inputs from transit operators and local jurisdictions. This inventory is based on available information at the time regarding existing and planned transit service. However, transit agencies make adjustments to bus service on a regular basis. Local jurisdictions are encouraged to consult with their appropriate transit provider(s) to obtain the latest information on existing transit routes and frequencies.

SCAG's High Quality Transit Area (HQTA) is within one-half mile from major transit stops and high quality transit corridors and developed based on the language in SB375. The definitions of major transit stops and high quality transit corridors are as follows:

- **Major transit stop:** A site containing a rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods (CA Public Resource Code Section 21064.3). It also includes major transit stops that are included in the applicable regional transportation plan.

- **High quality transit corridor:** A corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

Please note that this map may undergo changes as SCAG continues to update its transportation network as part of the 2020 RTP/SCS development process and SCAG shall not be responsible for local jurisdiction's use of this map. Updates to this information will be forthcoming as information becomes available.

TRANSIT PRIORITY AREAS

Senate Bill (SB) 743, signed into law on 9/27/2013, provides opportunities for California Environmental Quality Act (CEQA) exemption and streamlining to facilitate transit-oriented development. Specifically, certain types of projects within the "transit priority areas" could benefit from a CEQA exemption if it is also consistent with an adopted specific plan and the regional Sustainable Communities Strategy. In addition, aesthetic and parking impacts of certain infill projects within a transit priority area shall not be considered significant impacts on the environment. The State Office of Planning and Research (OPR) is required to develop guidelines for streamlined CEQA analysis for transportation impacts of projects within transit priority areas (draft by July 1, 2014). Finally, SB 743 also provides congestion management plan relief for a larger infill opportunity zone. SB 743 focuses the CEQA exemption and other streamlining opportunities in areas with good transit access, i.e. "Transit Priority Areas (TPAs)."

As defined in SB 743, "Transit Priority Area" means an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program adopted pursuant to Section 450.216 or 450.322 of Title 23 of the Code of Federal Regulations.

To assist in identifying the transit priority areas, SCAG identifies the major transit stops and their surrounding areas in one-half mile radius distance. Major transit stops are extracted from 2040 plan year data of the 2016-2040 RTP/SCS Amendment #2 and modified by inputs from transit operators and local jurisdictions.This inventory is based on available information at the time regarding existing and planned transit service. However, transit agencies make adjustments to bus service on a regular basis. Local jurisdictions are encouraged to consult with their appropriate transit provider(s) to obtain the latest information on existing transit routes and frequencies.

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Please note that this map may undergo changes as SCAG continues to update its transportation network as part of the 2020 RTP/SCS development process and SCAG shall not be responsible for local jurisdiction's use of this map. Updates to this information will be forthcoming as information becomes available.

REGIONAL BIKEWAYS

The Southern California Regional Bikeway Shapefile (RBS) has been compiled in coordination with each of the six County Transportation Commissions (Imperial, Orange, Los Angeles, Riverside, San Bernardino, and Ventura). SCAG has developed standard data fields using existing fields from each county and others identified by stakeholders and consultants. Definitions of each field can be found in the data dictionary for the project which is currently under development.

The RBS includes both existing and planned facilities and was compiled from shapefiles provided by each county transportation commission. Commissions use different strategies for compiling their files so some counties may be more up to date and contain different amounts of data than others. Existing routes are facilities that currently are installed upon city streets or paths. Planned facilities are those contained in city or county level plans that have not yet been constructed. Each route is classified based on definitions for bicycle routes as outlined below. Class 1-4 are defined by the California Highway Design Manual. Class 5 is a SCAG defined route type.

Class Definitions:

- Class I Bikeway (Bike Path): Provides a completely separated facility for the exclusive use of bicycles and pedestrians with crossflow by vehicles minimized.
- Class II Bikeway (Bike Lane): Provides a striped lane for one-way bike travel on a street or highway.
- Class III Bikeway (Bike Route): Provides for shared use with pedestrian or motor vehicle traffic.
- Class IV Bikeway (Separated Bikeway): Provides for the exclusive use of bicycles and includes a separation (e.g., grade separation, flexible posts, inflexible physical barrier, or on-street parking) required between the separated bikeway and the through vehicular traffic.
- Class V Bikeway (Bicycle Friendly Boulevard): Bicycle Friendly Boulevard are facilities parallel to major corridors and that provide a calmer, safer alternative for bicyclists of all ages and skill levels. Bicycle Friendly Streets include traffic calming elements beyond traditional signage, such as roundabouts, diverters, curb extensions, etc.

REGIONAL TRUCK ROUTES

The Southern California Regional Truck Route Shapefile (RTRS) has been compiled using the general plans and municipal codes of the jurisdictions in areas of each of the six County Transportation Commissions (Imperial, Orange, Los Angeles, Riverside, San Bernardino, and Ventura). SCAG has developed standard data fields based on information found in local general plan and municipal codes to identify roadways and roadway segments that are designated as truck routes by the cities.

The RTRS includes truck routes on existing local facilities. Jurisdictions use different criteria (e.g., weight, axles, time of day, etc.) to designate a truck route for their city. For the purposes of the RTRS, weight was used as the factor to determine truck route locations as this was the most commonly used criterion. Existing truck routes are those that are specifically identified as facilities where trucks are generally permitted during all times, or the majority, of a day. It should be recognized that most jurisdictions permit truck to travel on any roadway segment with clear limitations to their movement (e.g., direct delivery to locations not on a designated route). Each route is at the discretion of its jurisdiction. Confirmation and updates to the RTRS will allow SCAG member cities to understand and develop policy regarding intra-city and intercity truck route connections and gaps, and connections to industrial uses within jurisdictional boundaries.

GEOGRAPHICAL BOUNDARIES

CITY BOUNDARY & SPHERE OF INFLUENCE

City boundary and sphere of influence information are originally from each County's Local Agency Formation Commissions (LAFCO). The city boundary information included here are as of August 2016, the base year for the 2020 RTP/SCS. For inaccuracy or changes in city boundaries or sphere of influences, local jurisdictions need to contact LAFCO to reflect the most accurate city and sphere boundaries.

CENSUS TRACT BOUNDARY (FOR INFORMATION ONLY)

The census tract boundaries are the 2010 TIGER/Line Shapefiles version, downloaded from U.S. Census, TIGER (Topologically Integrated Geographic Encoding and Referencing) Products website (https://www.census.gov/geo/maps-data/data/tiger.html).

TRANSPORTATION ANALYSIS ZONE (TAZ) BOUNDARY

SCAG developed the Transportation Analysis Zones (TAZ) for the SCAG Region. This is used to facilitate Travel Demand and Land Use Modeling needs at SCAG.

ENTITLEMENT

Based on feedback from stakeholders, SCAG convened the Entitlement Working Group comprised of professionals in the building industry and development services to help inform the update of local data for use in the 2020 RTP/SCS and Regional Housing Needs Assessment (RHNA). The objectives of the working group include:

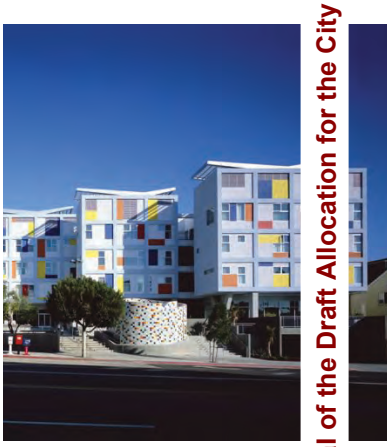
- Assessing and enhancing SCAG's current entitlement database, specifically with regard to the density, intensity, and phasing of future development projects,
- Providing feedback on how best to engage with stakeholders to ensure the accuracy of SCAG's local data, and
- Starting to build the foundation to develop the "Shared Vision" in growth forecast and land use for the 2020 RTP/SCS.

SCAG established its regional entitlement database based on inputs provided by this working group. Maps were made separately for better presentation of the entitlement projects and available for local jurisdiction's review at http://scagrtpscs.net/Pages/DataMapBooks.aspx. It should be noted that the entitlement data will be further reviewed and updated as SCAG continue to receive input and comments from subregions and local jurisdictions during the Local Input & Envisioning Process for the 2020 RTP/SCS.

POTENTIAL INFILL SITES

In 2005, the Institute of Urban and Regional Development (IURD) at University of California, Berkeley, conducted the statewide infill study, designed to provide an assessment of infill opportunities, a robust estimate of how many housing units might reasonably be built on available infill sites, and an evaluation of the critical market and policy gaps that remain to be filled. Amongst the objectives of the IURD's infill study is to develop a statewide, parcel-based inventory of potential infill sites. The study identified infill sites as vacant or potentially redevelopable parcels located in existing urban neighborhoods, based on an analysis of county assessors' parcel data. A vacant parcel is defined as one that has no inhabitable structure or building, or is currently not in use for extractive purposes. Sites with structures too small to be inhabited, or for which the structure value is too small, are also deemed to be vacant. To be counted as infill-ready, a vacant parcel must also be privately owned and available and feasible for potential urban development. Redevelopable parcels, or henceforth, refill parcels, are privately owned, previously-developed parcels, but for which the improvement-value-to-land value (I/L) ratio is less than 1.0 for commercial and multi-family properties, and less than 0.5 for single-family properties.

To conduct the infill analysis for the SCAG Region, the similar approach was applied to identify potential infill sites by using the most recent county assessor's property information obtained from the Digital Map Product (DMP) in October 2016. Additionally, SCAG utilized SCAG's regional land use datasets and publicly available reference information, including but not limited to: California Protected Areas Database (CPAD), California Conservation Easement Database (CCED), California School Campus Database (CSCD) and important farmlands from Farmland Mapping and Monitoring Program (FMMP). Please note the quality of assessors' parcel data varies by county, with land and structure assessments based on older transactions being particularly problematic, especially for properties that were last sold prior to 1990, or for properties that were renovated but not reassessed. It may seem fairly reasonable to believe that this study overestimates the number of potential infill parcels primarily due to inaccurate or outdated assessor's property information. It is quite possible that many of the parcels identified as possibly economically underutilized, and therefore ripe for infill development, may be neither physically deteriorated nor economically under-valued. Based on the approach used to identify the infill sites, it is not known which, if any, of the identified infill sites might be made available by their current owners for sale or development. Therefore, it should be noted that the analysis presented in this study is essentially a starting point for more detailed analyses to be undertaken in collaboration with local governments and will be further reviewed and updated as SCAG continue to receive input and comments from subregions and local jurisdictions during the Local Input & Envisioning Process for the 2020 RTP/SCS.



SOCIOECONOMIC DATA

Orange County will develop its local growth forecast through the 2018 Orange County Projections (OCP-2018) update process conducted by the Center for Demographic Research (CDR) at Cal State Fullerton. OCP-2018 is an update of the Modified 2014 Orange County Projections (OCP-2014 MOD), which is the existing policy projections dataset for Orange County. These projections are recognized by the agencies that sponsor CDR as the uniform data set for use in local and regional planning applications. OCP-2018 is the 13th iteration and is being developed initially for incorporation in the Orange County Transportation Authority's (OCTA) Long Range Transportation Plan and the SCAG's growth forecast for the 2020 RTP/SCS. As in past iterations, the OCP will be submitted to SCAG for inclusion in the RTP/SCS process by CDR after the OCP process is completed with final approval by the OCCOG Board; this iteration will also include the development of the 2021 RHNA cycle.

Timeline for the OCP-2018 development process:

- **Summer 2016-Spring 2017:** development of the 2016 base year population, housing and employment estimates
- **Spring/Summer 2017:** development of county-wide growth assumptions and county control totals
- **Summer 2017:** Orange County jurisdiction review of the 2016 base year data
- **Fall/Winter 2017:** county control total approval process
- **Fall/Winter 2017:** development of draft small area (traffic analysis zone-TAZ) dataset
- **March 2018:** distribution of draft OCP dataset to OC jurisdictions for review, comment and approval; Orange County jurisdiction meetings
- **April 27, 2018:** deadline for OCP-2018 jurisdiction submission of comments and corrections to CDR
- **Summer 2018:** OCP approval process (CDR Technical Advisory and Management Oversight Committees; OCCOG TAC and Board)
- **September 2018:** submission of approved OCP-2018 to SCAG for inclusion in the 2020 RTP/SCS

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APPENDIX 1

Sustainable Communities Project (SCP) Criteria
(Extracted from Senate Bill No. 375 Chapter 728)

Chapter 4.2. Implementation of the Sustainable Communities Strategy

21155.1. If the legislative body finds, after conducting a public hearing, that a transit priority project meets all of the requirements of subdivisions (a) and (b) and one of the requirements of subdivision (c), the transit priority project is declared to be a sustainable communities project and shall be exempt from this division.

(a) The transit priority project complies with all of the following environmental criteria:

(1) The transit priority project and other projects approved prior to the approval of the transit priority project but not yet built can be adequately served by existing utilities, and the transit priority project applicant has paid, or has committed to pay, all applicable in-lieu or development fees.

(2)

(A) The site of the transit priority project does not contain wetlands or riparian areas and does not have significant value as a wildlife habitat, and the transit priority project does not harm any species protected by the federal Endangered Species Act of 1973 (16 U.S.C. Sec. 1531 et seq.), the Native Plant Protection Act (Chapter 10 (commencing with Section 1900) of Division 2 of the Fish and Game Code), or the California Endangered Species Act (Chapter 1.5 (commencing with Section 2050) of Division 3 of the Fish and Game Code), and the project does not cause the destruction or removal of any species protected by a local ordinance in effect at the time the application for the project was deemed complete.

(B) For the purposes of this paragraph, "wetlands" has the same meaning as in the United States Fish and Wildlife Service Manual, Part 660 FW 2 (June 21, 1993).

(C) For the purposes of this paragraph:

(i) "Riparian areas" means those areas transitional between terrestrial and aquatic ecosystems and that are distinguished by gradients in biophysical conditions, ecological processes, and biota. A riparian area is an area through which surface and subsurface hydrology connect waterbodies with their adjacent uplands. A riparian area includes those portions of terrestrial ecosystems that significantly influence exchanges of energy and matter with aquatic ecosystems. A riparian area is adjacent to perennial, intermittent, and ephemeral streams, lakes, and estuarine-marine shorelines.

(ii) "Wildlife habitat" means the ecological communities upon which wild animals, birds, plants, fish, amphibians, and invertebrates depend for their conservation and protection.

(iii) Habitat of "significant value" includes wildlife habitat of national, statewide, regional, or local importance; habitat for species protected by the federal Endangered Species Act of 1973 (16 U.S.C. Sec. 1531, et seq.), the California Endangered Species Act (Chapter 1.5 (commencing with Section 2050) of Division 3 of the Fish and Game Code), or the Native Plant Protection Act (Chapter 10 (commencing with Section 1900) of Division 2 of the Fish and Game Code); habitat identified as candidate, fully protected, sensitive, or species of special status by local, state, or federal agencies; or habitat essential to the movement of resident or migratory wildlife.

(3) The site of the transit priority project is not included on any list of facilities and sites compiled pursuant to Section 65962.5 of the Government Code.

(4) The site of the transit priority project is subject to a preliminary endangerment assessment prepared by a registered environmental assessor to determine the existence of any release of a hazardous substance on the site and to determine the potential for exposure of future occupants to significant health hazards from any nearby property or activity.

(A) If a release of a hazardous substance is found to exist on the site, the release shall be removed or any significant effects of the release shall be mitigated to a level of insignificance in compliance with state and federal requirements.

(B) If a potential for exposure to significant hazards from surrounding properties or activities is found to exist, the effects of the potential exposure shall be mitigated to a level of insignificance in compliance with state and federal requirements.

(5) The transit priority project does not have a significant effect on historical resources pursuant to Section 21084.1.

(6) The transit priority project site is not subject to any of the following:

(A) A wildland fire hazard, as determined by the Department of Forestry and Fire Protection, unless the applicable general plan or zoning ordinance contains provisions to mitigate the risk of a wildland fire hazard.

(B) An unusually high risk of fire or explosion from materials stored or used on nearby properties.

(C) Risk of a public health exposure at a level that would exceed the standards established by any state or federal agency.

(D) Seismic risk as a result of being within a delineated earthquake fault zone, as determined pursuant to Section 2622, or a seismic hazard zone, as determined pursuant to Section 2696, unless the applicable general plan or zoning ordinance contains provisions to mitigate the risk of an earthquake fault or seismic hazard zone.

(E) Landslide hazard, flood plain, flood way, or restriction zone, unless the applicable general plan or zoning ordinance contains provisions to mitigate the risk of a landslide or flood.

(7) The transit priority project site is not located on developed open space.

(A) For the purposes of this paragraph, "developed open space" means land that meets all of the following criteria:

(i) Is publicly owned, or financed in whole or in part by public funds.

(ii) Is generally open to, and available for use by, the public.

(iii) Is predominantly lacking in structural development other than structures associated with open spaces, including, but not limited to, playgrounds, swimming pools, ballfields, enclosed child play areas, and picnic facilities.

(B) For the purposes of this paragraph, "developed open space" includes land that has been designated for acquisition by a public agency for developed open space, but does not include lands acquired with public funds dedicated to the acquisition of land for housing purposes.

(8) The buildings in the transit priority project are 15 percent more energy efficient than required by Chapter 6 of Title 24 of the California Code of Regulations and the buildings and landscaping are designed to achieve 25 percent less water usage than the average household use in the region.

(b) The transit priority project meets all of the following land use criteria:

(1) The site of the transit priority project is not more than eight acres in total area.

(2) The transit priority project does not contain more than 200 residential units.

(3) The transit priority project does not result in any net loss in the number of affordable housing units within the project area.

(4) The transit priority project does not include any single level building that exceeds 75,000 square feet.

(5) Any applicable mitigation measures or performance standards or criteria set forth in the prior environmental impact reports, and adopted in findings, have been or will be incorporated into the transit priority project.

(6) The transit priority project is determined not to conflict with nearby operating industrial uses.

(7) The transit priority project is located within one-half mile of a rail transit station or a ferry terminal included in a regional transportation plan or within one-quarter mile of a high-quality transit corridor included in a regional transportation plan.

(c) The transit priority project meets at least one of the following three criteria:

(1) The transit priority project meets both of the following:

(A) At least 20 percent of the housing will be sold to families of moderate income, or not less than 10 percent of the housing will be rented to families of low income, or not less than 5 percent of the housing is rented to families of very low income.

(B) The transit priority project developer provides sufficient legal commitments to the appropriate local agency to ensure the continued availability and use of the housing units for very low, low-, and moderate-income households at monthly housing costs with an affordable housing cost or affordable rent, as defined in Section 50052.5 or 50053 of the Health and Safety Code, respectively, for the period required by the applicable financing. Rental units shall be affordable for at least 55 years. Ownership units shall be subject to resale restrictions or equity sharing requirements for at least 30 years.

(2) The transit priority project developer has paid or will pay in-lieu fees pursuant to a local ordinance in an amount sufficient to result in the development of an equivalent number of units that would otherwise be required pursuant to paragraph (1).

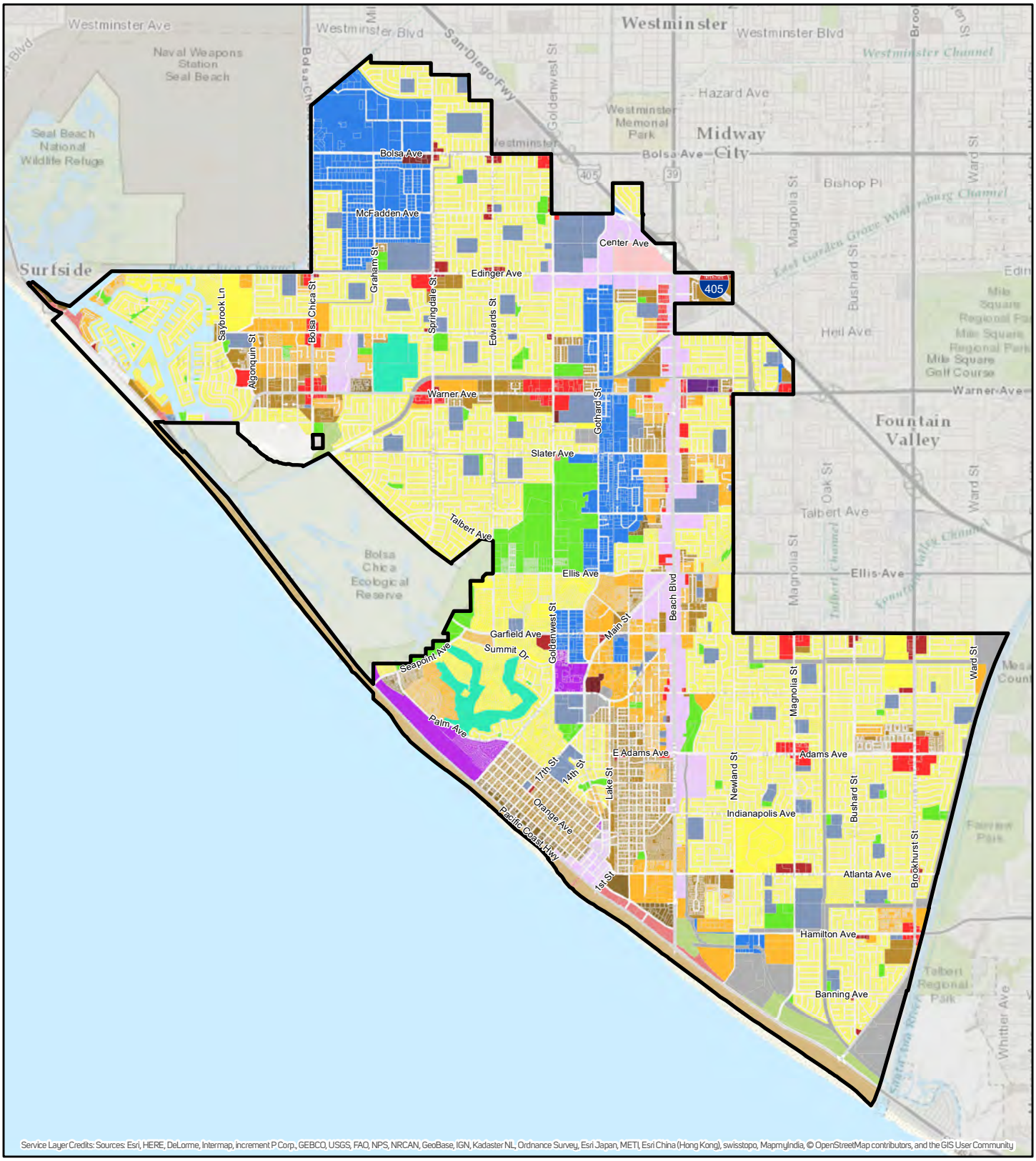
(3) The transit priority project provides public open space equal to or greater than five acres per 1,000 residents of the project.

THE LIST OF GIS MAPS INCLUDED:

- General Plan Land Use with Jurisdiction's General Plan Designations
- General Plan Land Use with 2016 SCAG Land Use Codes
- Zoning Codes with Jurisdiction's Zoning Codes
- Zoning Codes with 2016 SCAG Land Use Codes
- Existing Land Use with 2016 SCAG Land Use Codes
- Specific Plan Land Use with 2016 SCAG Land Use Codes
- Protected Open Space
- Endangered, Threatened, and Rare Plant and Animal Species
- Federally Designated Flood Hazard Zones
- Natural Community & Habitat Conservation Plans
- Farmland
- Coastal Inundation (Sea Level Rise)
- Major Transit Stops and High Quality Transit Corridors
- Transit Priority Areas
- Bikeways
- Truck Routes
- Jurisdiction Boundary and Sphere of Influence
- Census Tract boundary
- Transportation Analysis Zone (TAZ) boundary
- Potential Infill Site

General Plan Land Use in City of Huntington Beach

(Local Jurisdiction's General Plan Land Use Designations)



- Residential Low Density
- Residential Medium Density
- Residential Medium High Density
- Residential High Density
- Commercial Regional
- Commercial
- Commercial General
- Commercial Neighborhood
- Commercial Office
- Industrial
- Mixed Use
- Mixed Use Horizonal
- Mixed Use
- Conservation
- Commercial Recreation
- Park
- Shore
- Water Recreation
- Public
- School, Hospital, Church

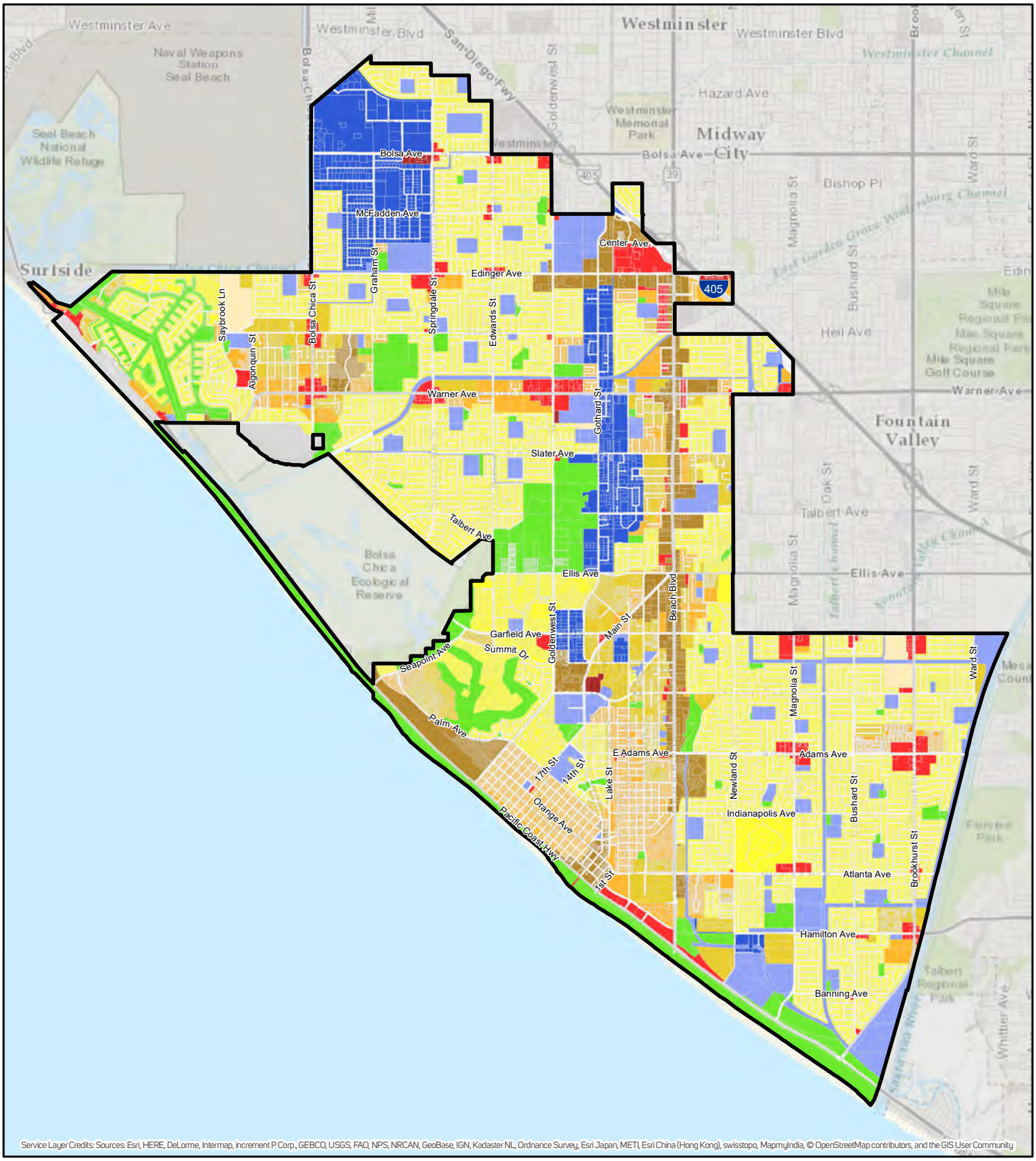
Source: City of Huntington Beach, SCAG, 2017

P:\DataMap_Guide\=RTP_2020\mxds\GeneralPlan\City\GP_City_Portrait.mxd | Date: 10/25/2017

0 0.325 0.65 Miles

General Plan Land Use in City of Huntington Beach

(2016 SCAG General Plan Land Use Codes)



- Single Family Residential
- Multi-Family Residential
- Mobile Homes and Trailer Parks
- Mixed Residential
- Rural Residential
- General Office
- Commercial and Services
- Facilities
- Education
- Military Installations
- Industrial
- Transportation, Communications, and Utilities
- Mixed Commercial and Industrial
- Mixed Residential and Commercial
- Open Space and Recreation
- Agriculture
- Vacant
- Water
- Specific Plan
- Undevelopable
- Unknown

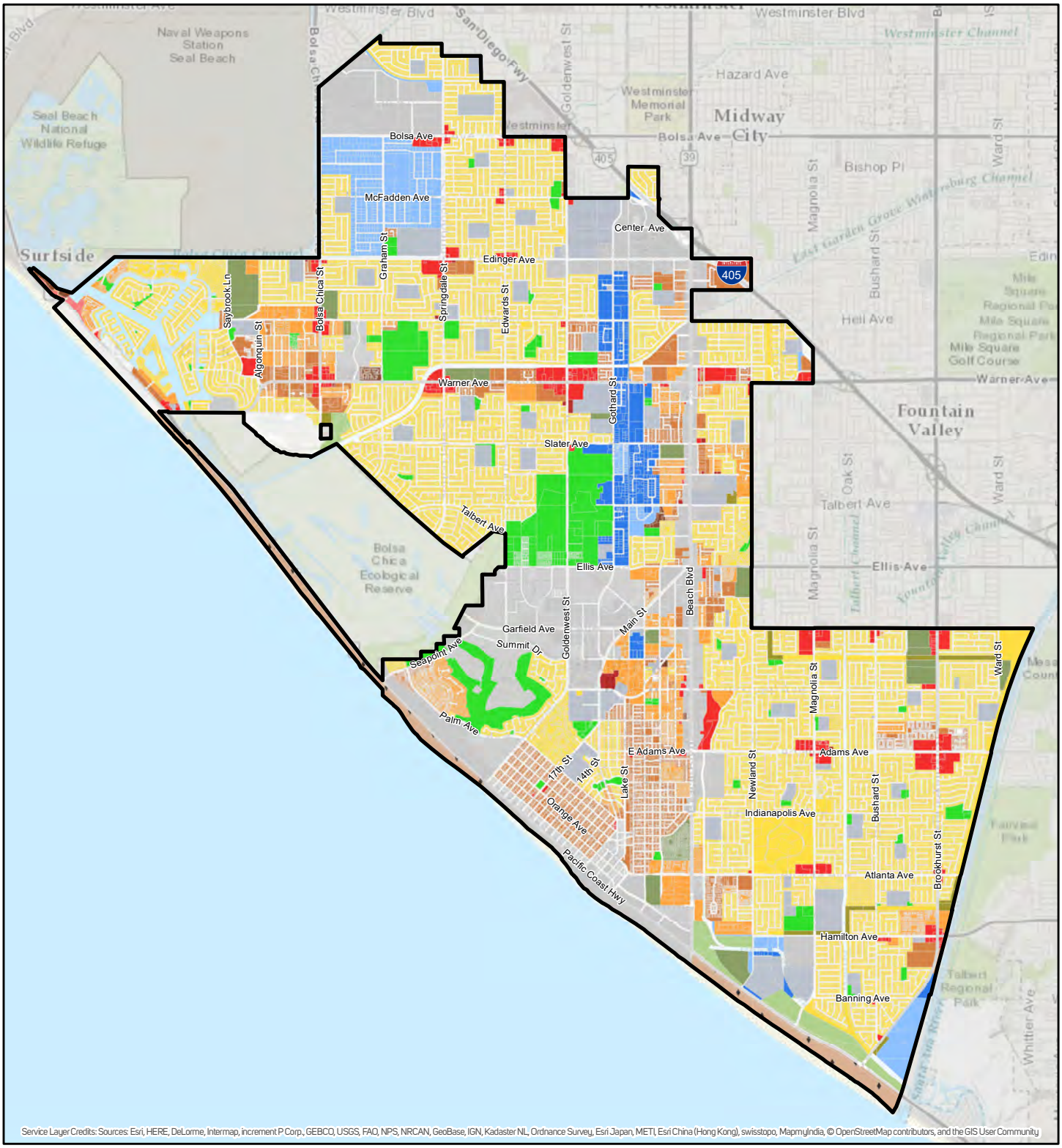
Source: City of Huntington Beach, SCAG, 2017

P:\DataMap_Guide\=RTP_2020\mxds\GeneralPlan\GP_Portrait.mxd | Date: 10/25/2017

0 0.325 0.65 Miles

Zoning Codes in City of Huntington Beach

(Local Jurisdiction's Zoning Codes)



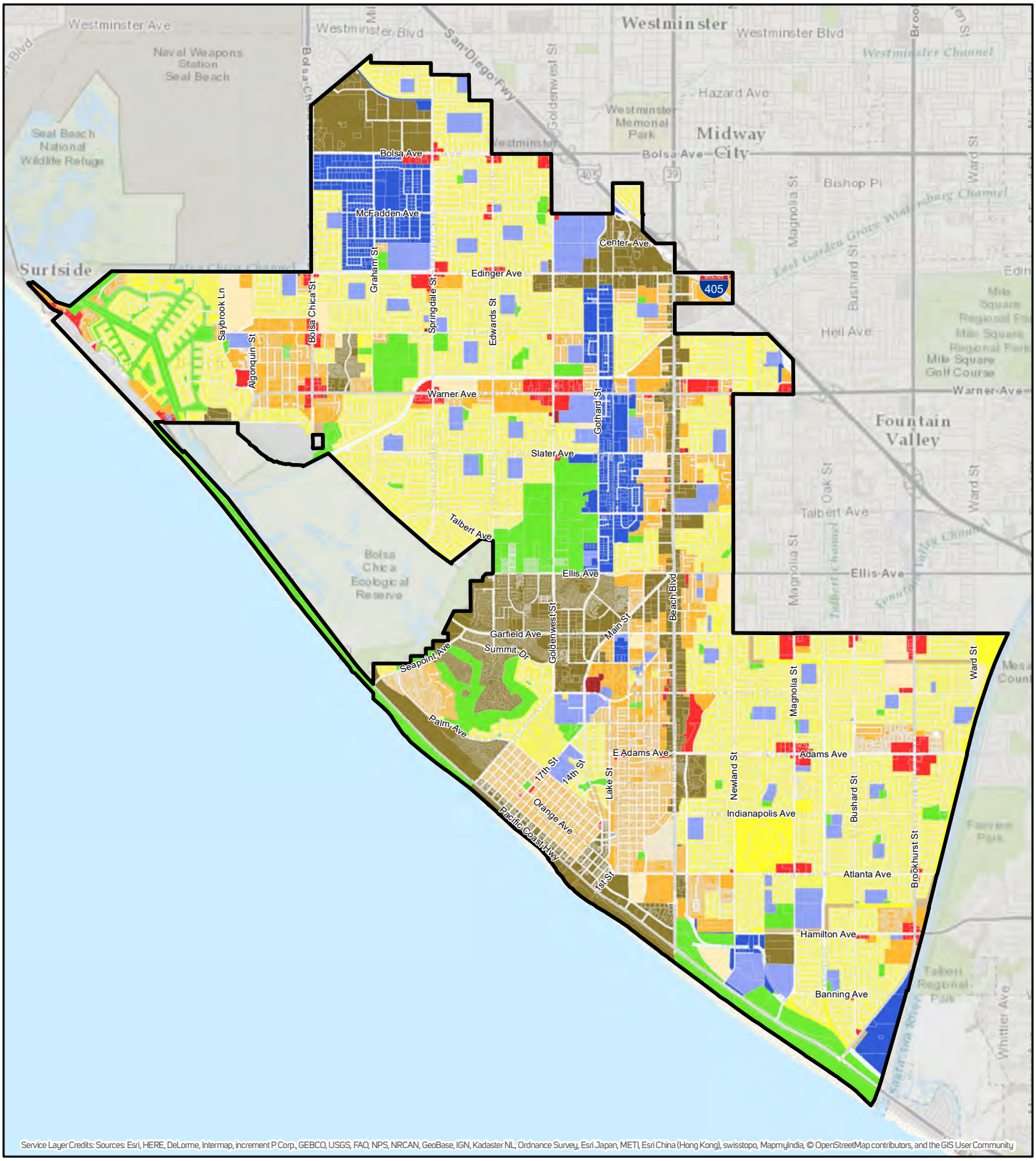
- RL Residential Low Density
- RM Residential Medium Density
- RMH Residential Medium High Density
- RMH-A Medium High Density Residential Subdistrict
- RH Residential High Density
- RA Residential Agricultural
- RMP Manufactured Home Park
- CV Commercial
- CG Commercial General
- CO Commercial Office
- IG Industrial General
- IL Industrial Limited
- MU-TC Mixed Use-Transit Center District
- CC Coastal Conservation
- PS Public-Semipublic
- OS-PR Open Space-Parks and Recreation Subdistrict
- OS-S Shoreline Subdistrict
- OS-WR Water Recreation Subdistrict
- SP Specific Plan Designations
- (Q)- Qualified Classification

Source: City of Huntington Beach, SCAG, 2017
P:\DataMap_Guide\=RTP_2020\mxds\Zoning\City\Updates\OR\Huntington Beach_ZN_City.mxd | Date: 10/30/2017

0 0.325 0.65 Miles

Zoning Codes in City of Huntington Beach

(2016 SCAG Zoning Land Use Codes)



- Single Family Residential
- Multi-Family Residential
- Mobile Homes and Trailer Parks
- Mixed Residential
- Rural Residential
- General Office
- Commercial and Services
- Facilities
- Education
- Military Installations
- Industrial
- Transportation, Communications, and Utilities
- Mixed Commercial and Industrial
- Mixed Residential and Commercial
- Open Space and Recreation
- Agriculture
- Vacant
- Water
- Specific Plan
- Undevelopable
- Unknown

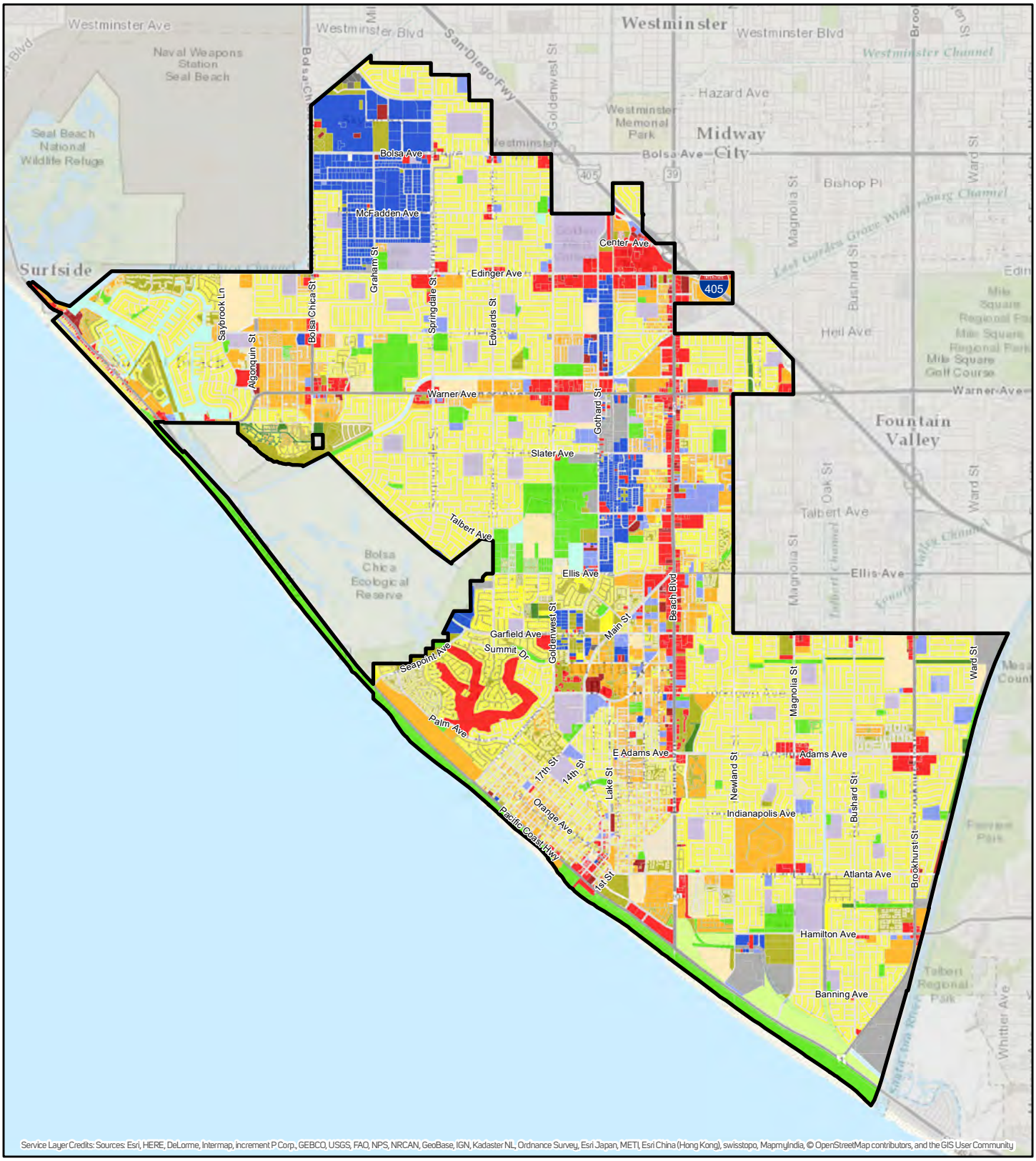
Source: City of Huntington Beach, SCAG, 2017

P:\DataMap_Guide\=RTP_2020\mxds\Zoning\ZN_Portrait.mxd | Date: 10/24/2017

0 0.325 0.65 Miles

Existing Land Use in City of Huntington Beach

(2016 SCAG Existing Land Use Codes)



- Single Family Residential
- Multi-Family Residential
- Mobile Homes and Trailer Parks
- Mixed Residential
- Rural Residential
- General Office
- Commercial and Services
- Facilities
- Education
- Military Installations
- Industrial
- Transportation, Communications, and Utilities
- Mixed Commercial and Industrial
- Mixed Residential and Commercial
- Open Space and Recreation
- Agriculture
- Vacant
- Water
- Specific Plan
- Under Construction
- Undevelopable

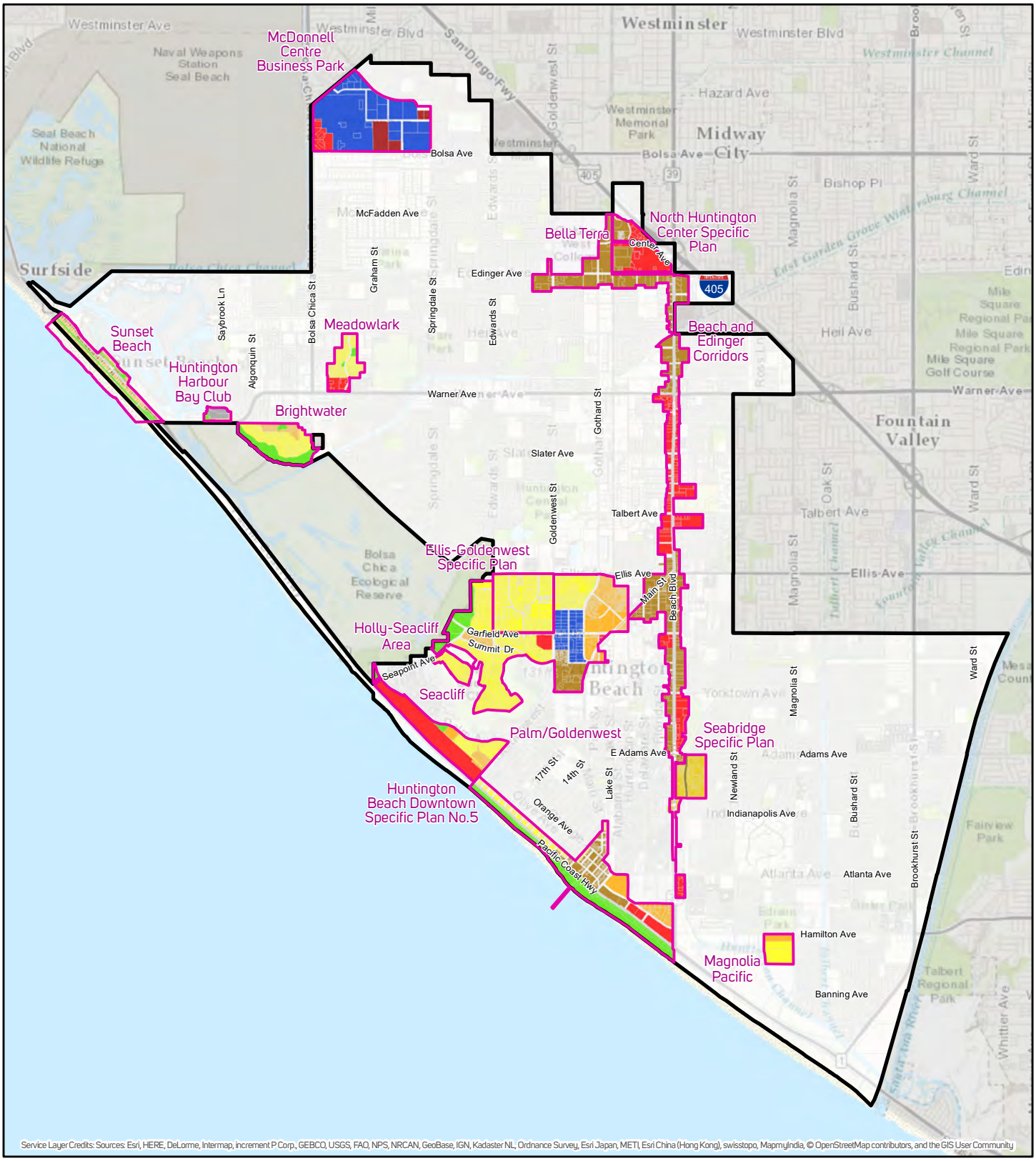
Source: SCAG, 2017

P:\DataMap_Guide\=RTP_2020\mxds\ExistingUse\LU_Portrait.mxd | Date: 10/5/2017

0 0.325 0.65 Miles

Specific Plan Land Use in City of Huntington Beach

(2016 SCAG Specific Plan Land Use Codes)



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

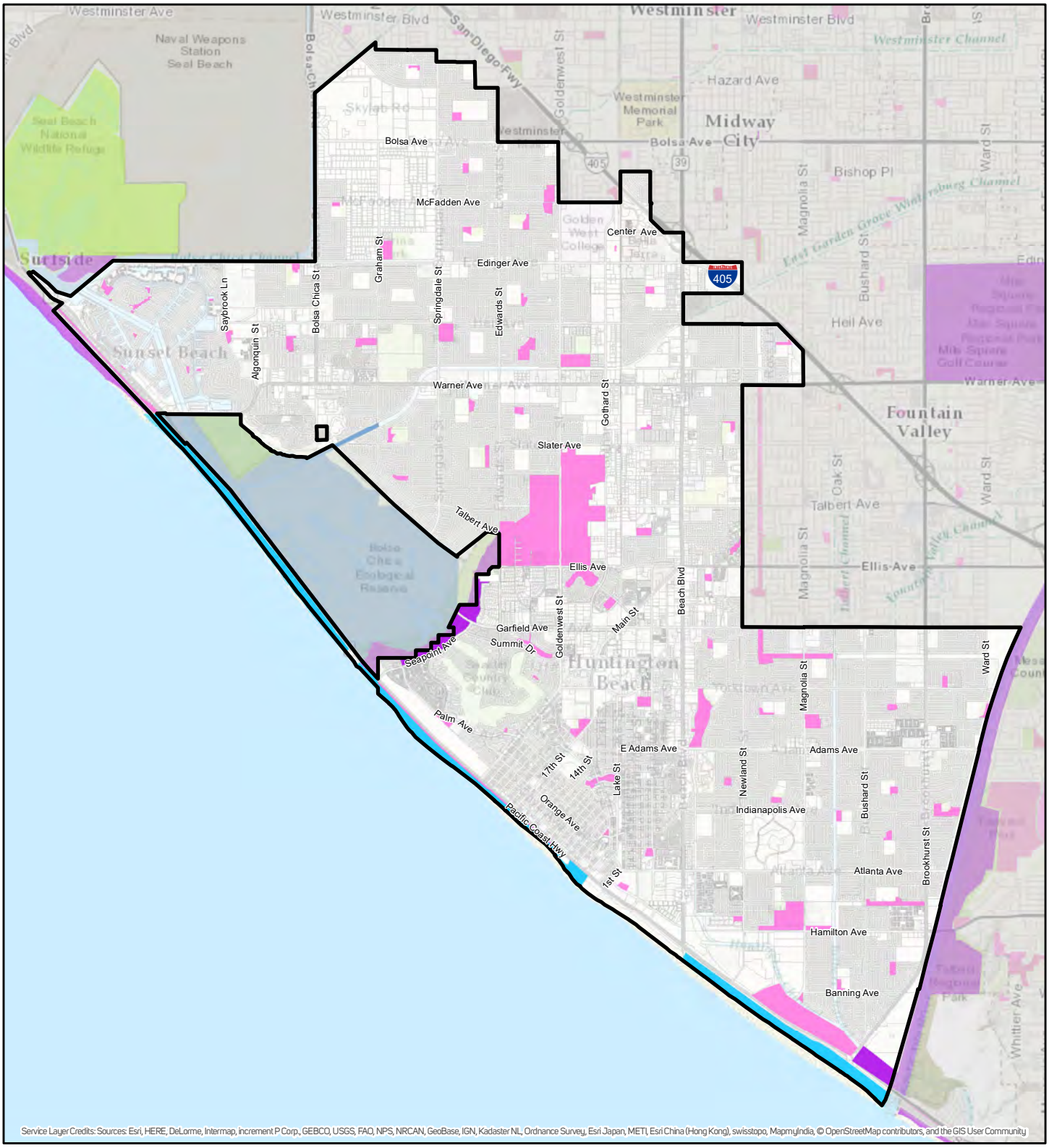
- Single Family Residential
- Multi-Family Residential
- Mobile Homes and Trailer Parks
- Mixed Residential
- Rural Residential
- General Office
- Commercial and Services
- Facilities
- Education
- Military Installations
- Industrial
- Transportation, Communications, and Utilities
- Mixed Commercial and Industrial
- Mixed Residential and Commercial
- Open Space and Recreation
- Agriculture
- Vacant
- Water
- Specific Plan
- Undevelopable
- Unknown

Source: City of Huntington Beach, SCAG, 2017

P:\DataMap_Guide\=RTP_2020\mxds\SpecificPlan\SP_Portrait.mxd | Date: 11/6/2017

0 0.325 0.65 Miles

Protected Open Space in City of Huntington Beach



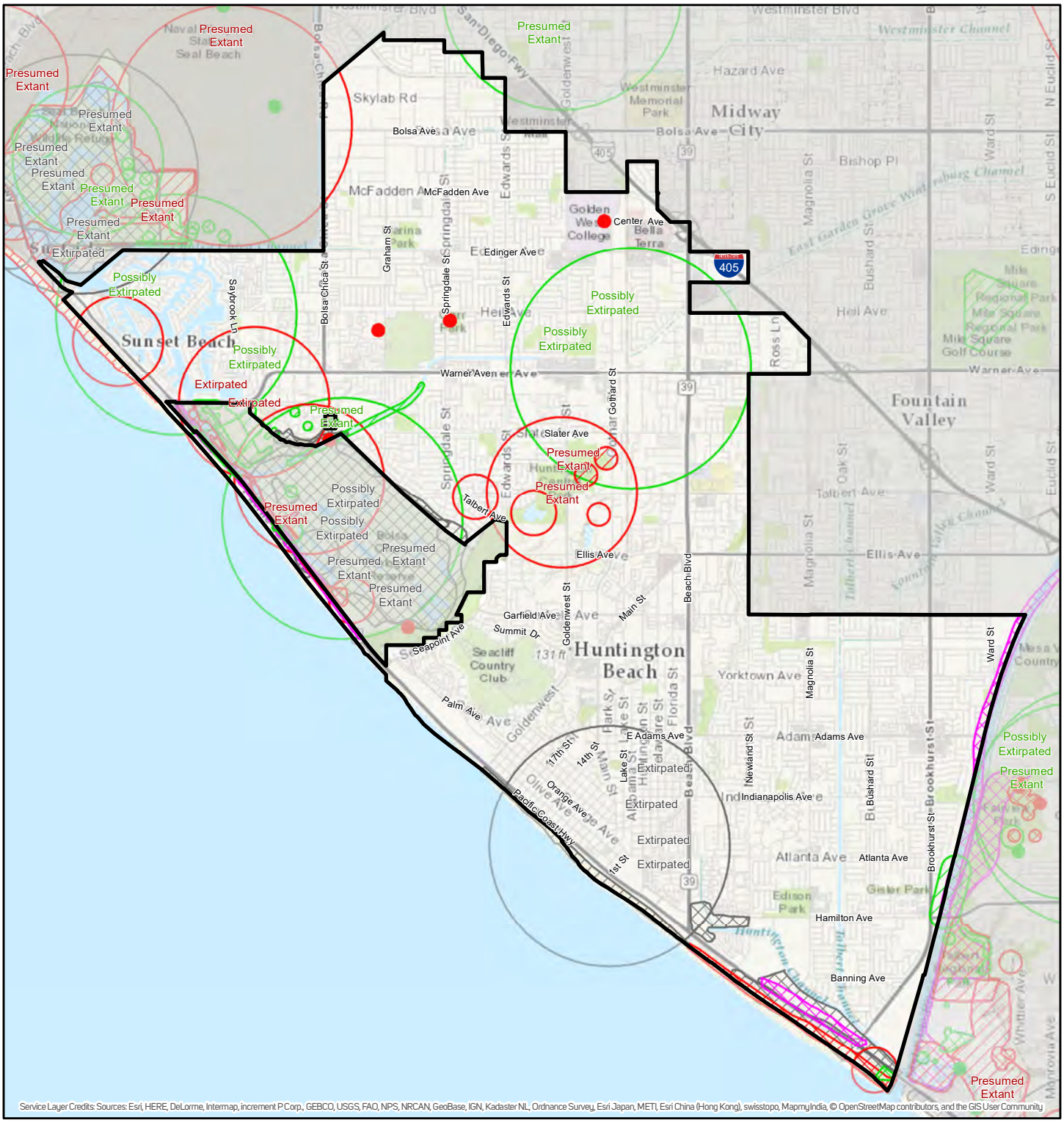
- US Forest Service
- US Bureau of Land Management
- National Park Service
- US Fish and Wildlife Service
- Other Federal
- California Department of Parks and Recreation
- California Department of Fish and Wildlife
- Other State
- County
- City
- Non Governmental Organization
- Special District
- US Military/Defense
- Private

The lands in CPAD range from huge national forests to very small urban parks. Federal, state, county, city, special district and non-governmental agency holdings are included in this map. Please note private owners are not currently included in CPAD, except only a few of California's HOA parks.

Source: California Protected Areas Database (CPAD) v.2017a, City of Huntington Beach, 2017
P:\DataMap_Guide\=RTP_2020\mxds\OpenSpace\OS_Portrait.mxd | Date: 10/10/2017

0 0.35 0.7 Miles

Known Sightings of Endangered, Threatened, and Rare Plant and Animal Species in City of Huntington Beach



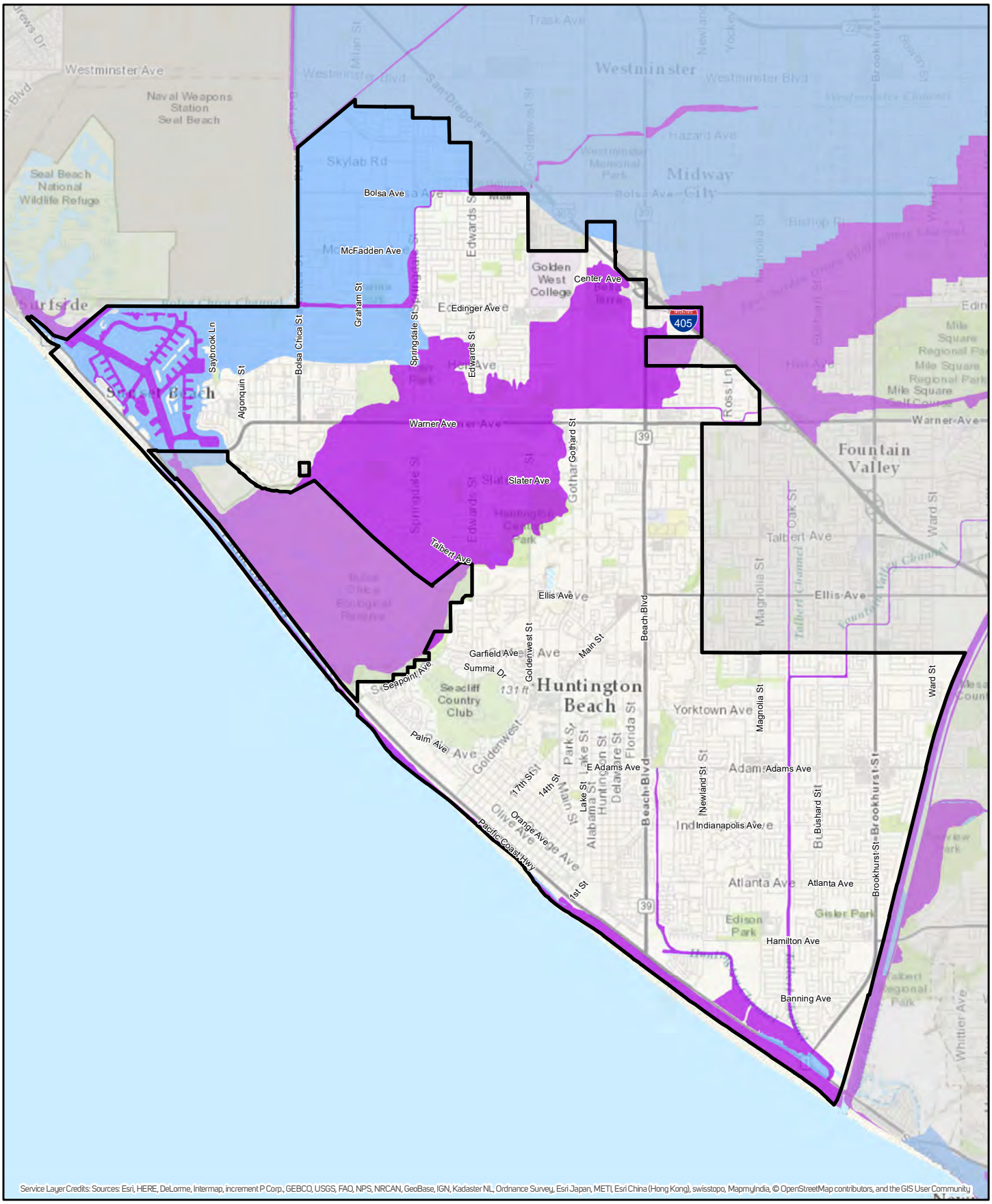
Plant (80m)
Plant (specific)
Plant (non-specific)
Plant (circular)
Animal (80m)
Animal (specific)
Animal (non-specific)
Animal (circular)
Terrestrial Comm. (80m)
Terrestrial Comm. (specific)
Terrestrial Comm. (non-specific)
Terrestrial Comm. (circular)
Aquatic Comm. (80m)
Aquatic Comm. (specific)
Aquatic Comm. (non-specific)
Aquatic Comm. (circular)
Multiple (80m)
Multiple (specific)
Multiple (non-specific)
Multiple (circular)

The California Natural Diversity Database (CNDDB) is a library of the location and condition of species of rare and sensitive plants, animals, and natural communities in California. The dataset shown on the map is based on the combination of the three data fields in CNDDB; element type, accuracy and element occurrence count.

Source: California Department of Fish and Wildlife's Biogeographic Data Branch, 2017
P:\DataMap_Guide\=RTP_2020\mxds\Endangered\Endangered_Portrait.mxd | Date: 10/19/2017

0 0.35 0.7 Miles

Federally Designated Flood Hazard Zones in City of Huntington Beach



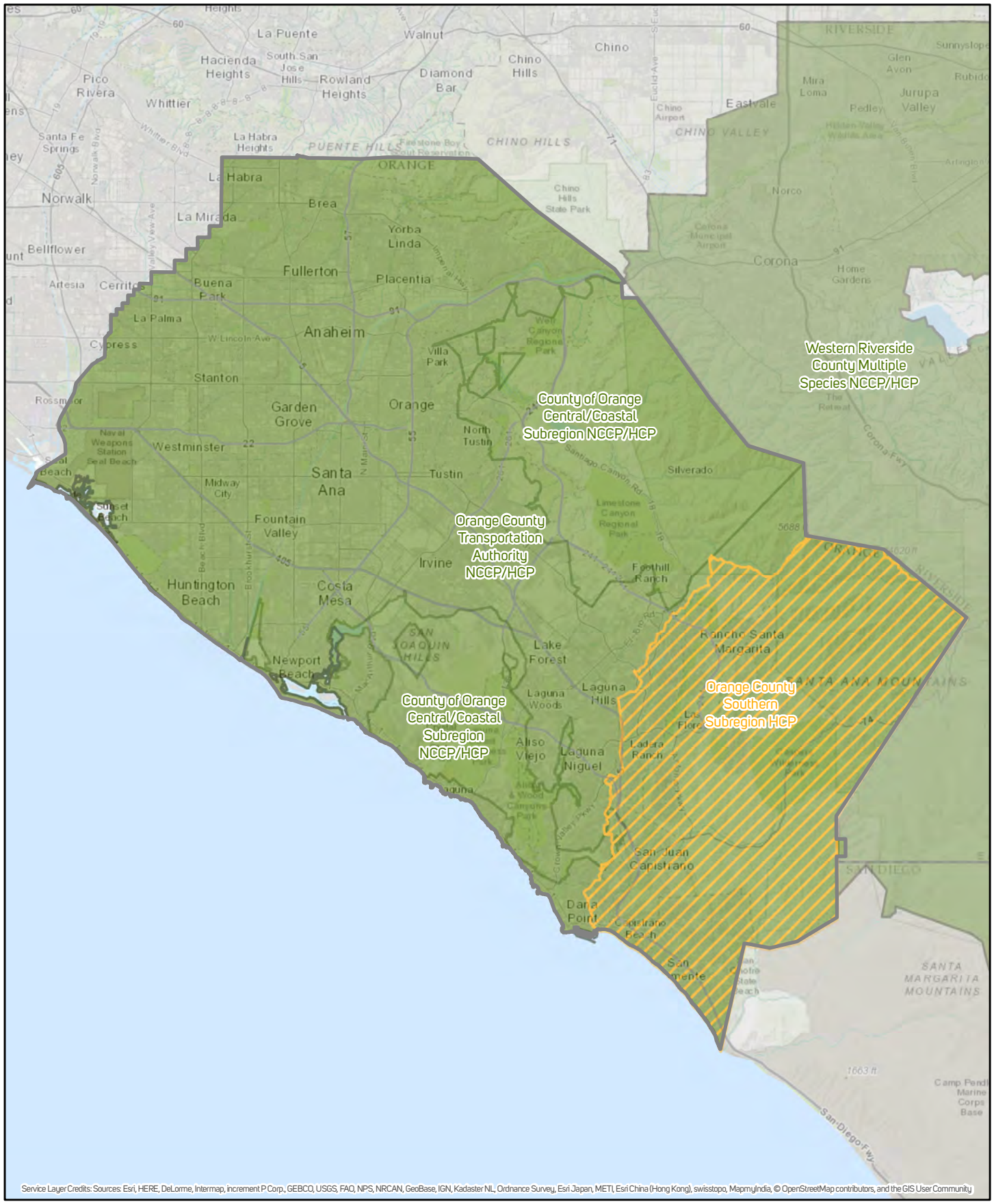
100-year Flood Hazard Zone

500-year Flood Hazard Zone

Source: Federal Emergency Management Agency, 2017
P:\DataMap_Guide\=RTP_2020\mxds\Flood\Flood_Portrait.mxd | Date: 10/28/2017

0 0.35 0.7 Miles

Natural Community & Habitat Conservation Plans (NCCP & HCP) in Orange County

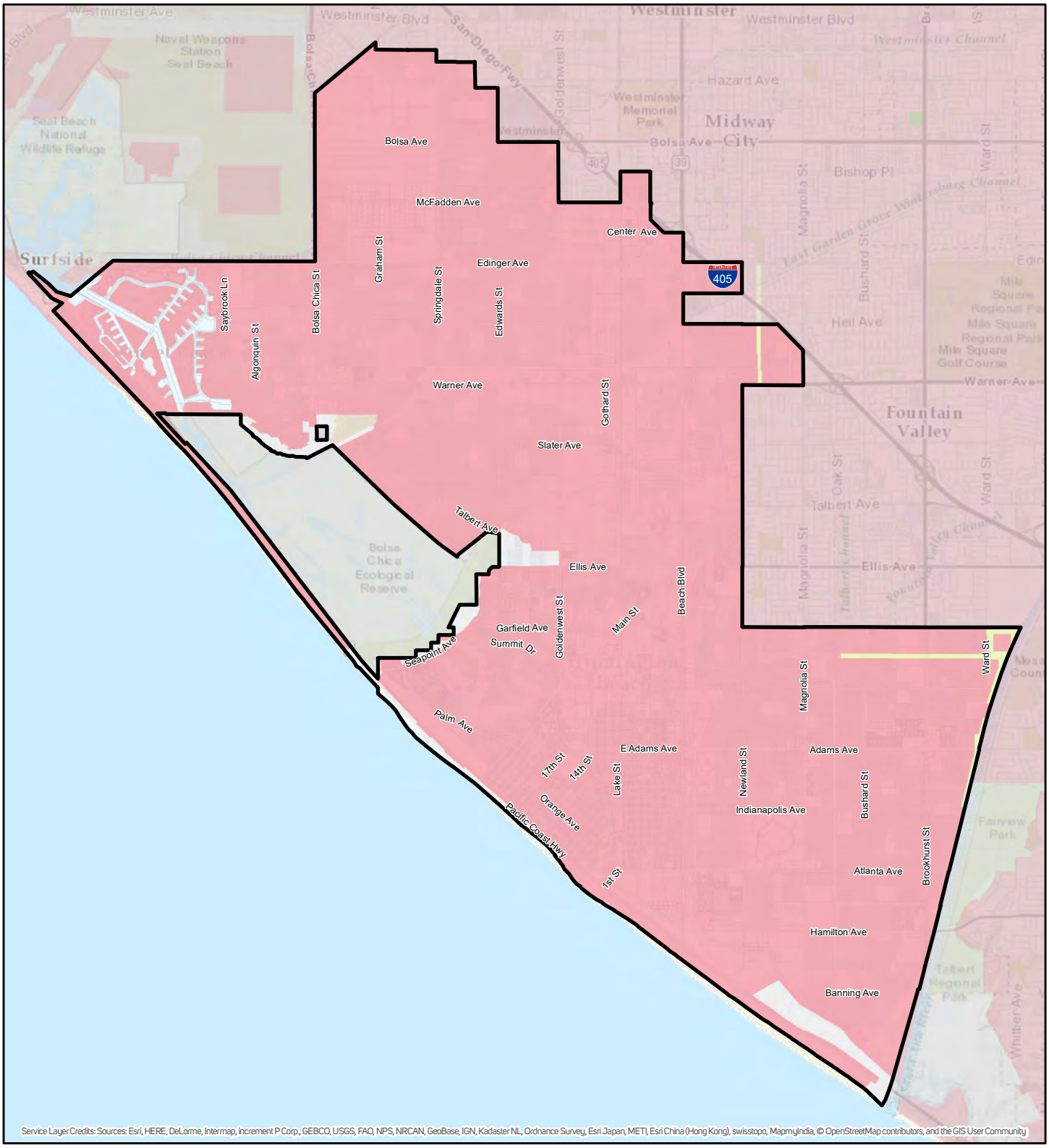


County Boundary | Natural Community & Habitat Conservation Plans | Habitat Conservation Plans

Source: California Department of Fish and Wildlife, 2017
P:\DataMap_Guide\=RTP_2020\mxds\NCCP\NCCP_Portrait_County.mxd | Date: 11/1/2017

0 1.75 3.5 Miles

Farmland in City of Huntington Beach

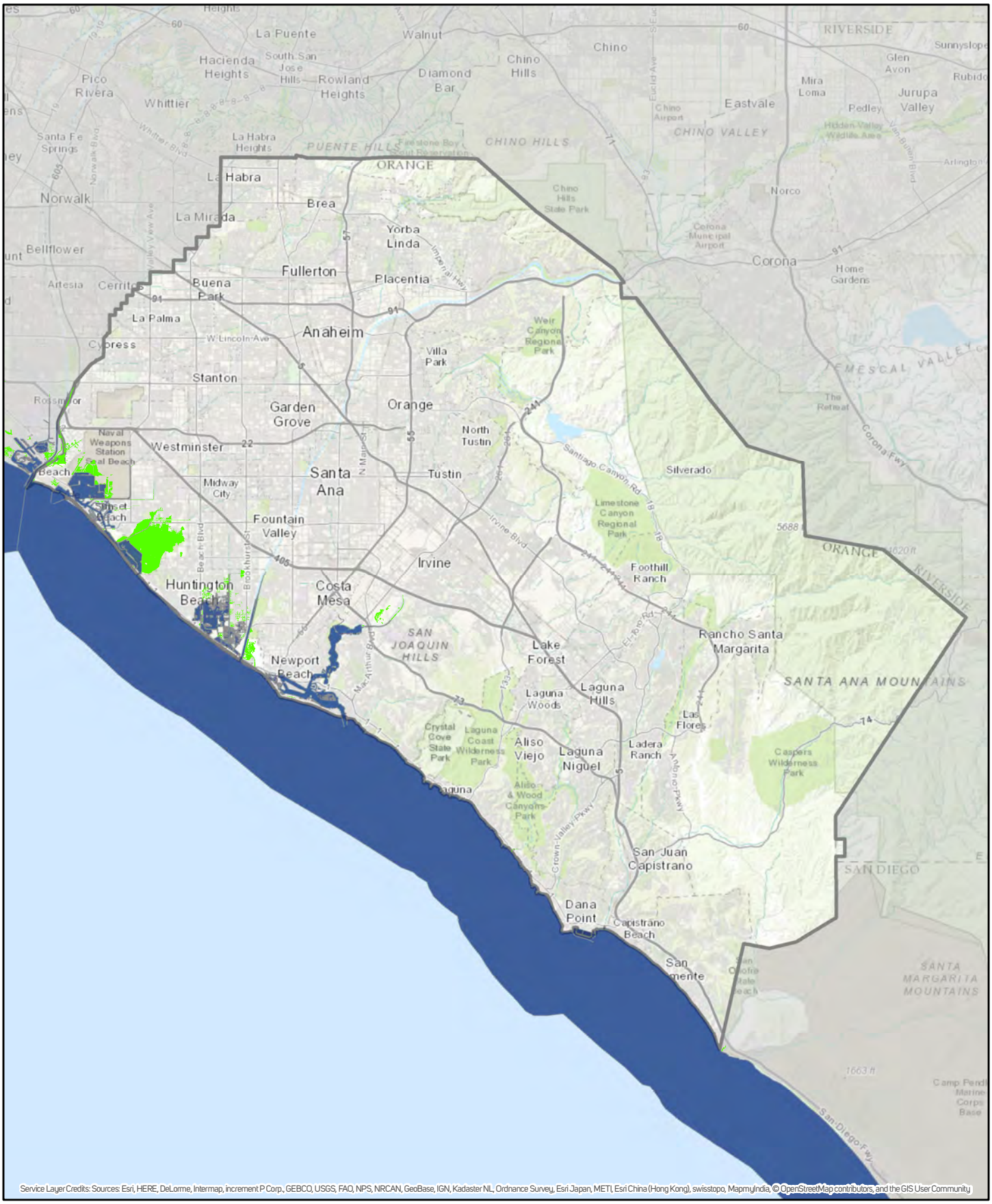


- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Grazing Land
- Farmland of Local Importance
- Farmland of Local Potential
- Other Land
- Confined Animal Agriculture
- Nonagricultural or Natural Vegetation
- Vacant or Disturbed Land
- Rural Residential Land
- Semi-agricultural and Rural Commercial Land
- Urban and Built-Up Land
- Water Area
- Irrigated Farmland
- Nonirrigated Farmland

Source: California Department of Conservation, City of Huntington Beach, 2017
P:\DataMap_Guide\=RTP_2020\mxds\Farmland\Farmland_Portrait.mxd | Date: 10/26/2017

0 0.35 0.7 Miles

Sea Level Rise Impacted Areas (2 feet) 2040 Scenario in Orange County



Low-Lying Impacted Areas (2 feet) 2040 Scenario

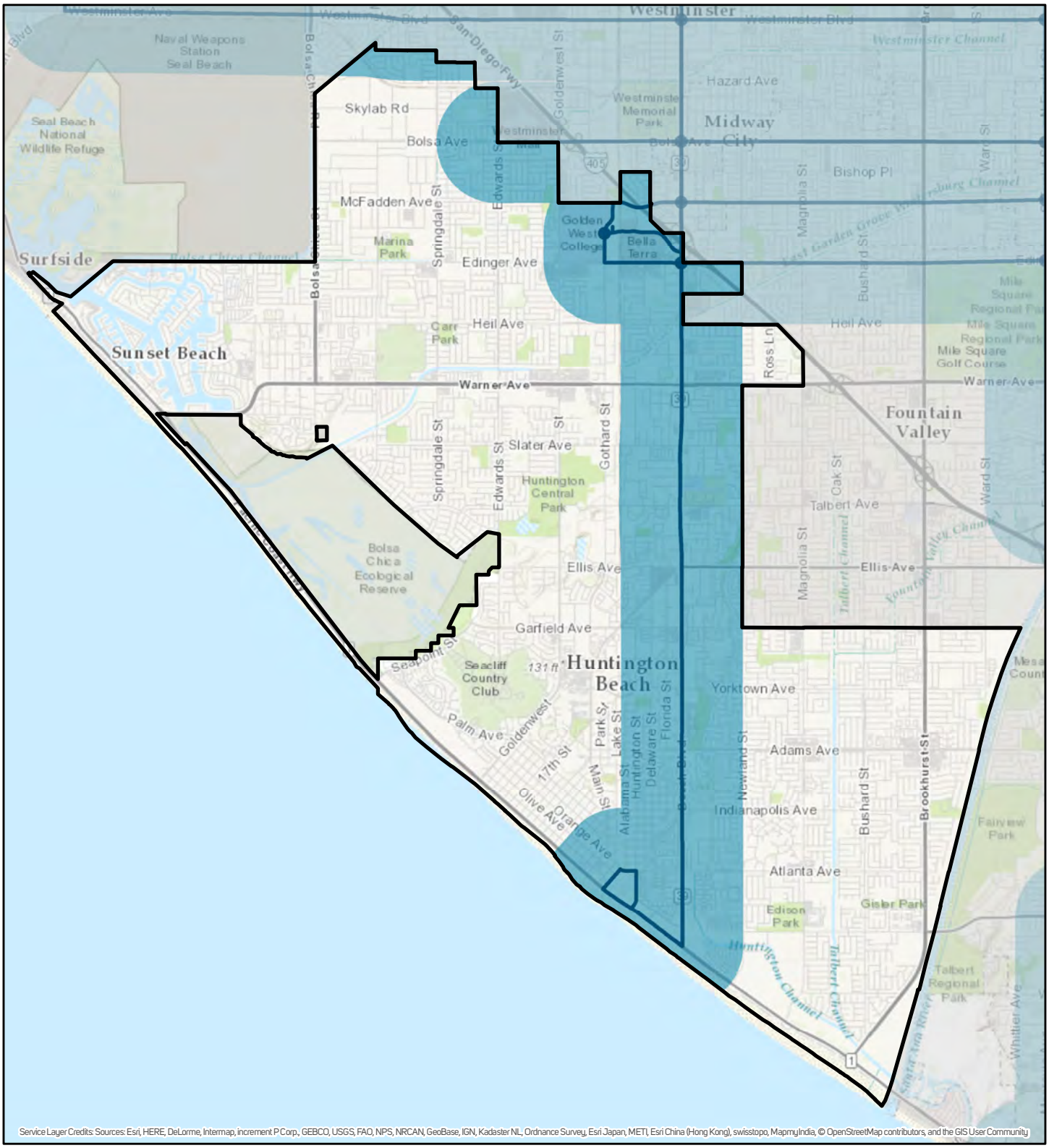
Sea level Rise Areas (2 feet) 2040 Scenario

Source: NOAA, SCAG, 2017

P:\DataMap_Guide\=RTP_2020\mxds\SeaLevel\SeaLevel_Portrait_County.mxd | Date: 10/28/2017

0 1.75 3.5 Miles

Major Transit Stops and High Quality Transit Corridors in City of Huntington Beach [Year 2040]



● Major Transit Stops

High Quality Transit Corridors (HQTCs)

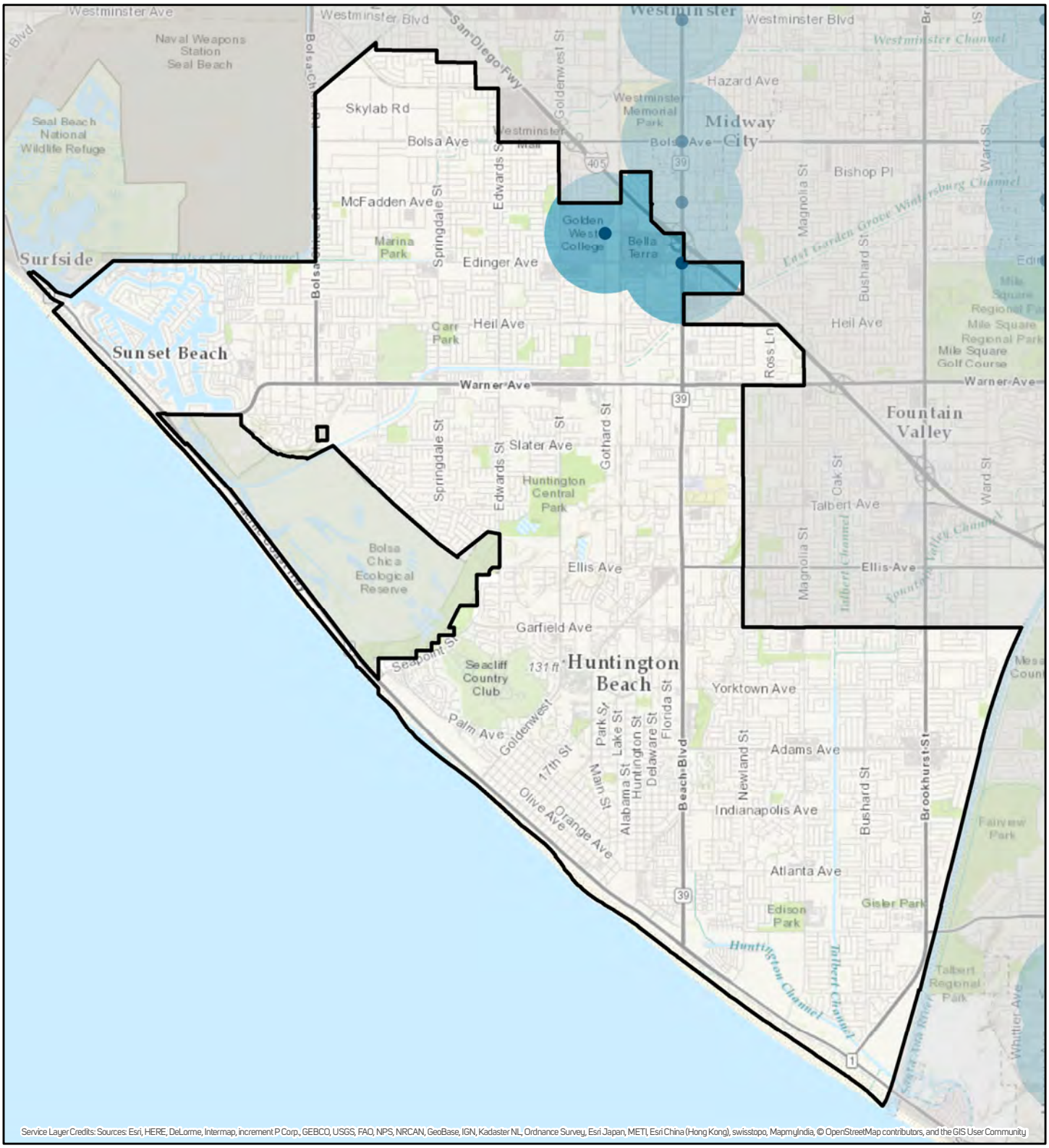
High Quality Transit Areas (HQTAs)

Note: To assist in identifying transit priority project areas, SCAG identifies Major Transit Stops and High Quality Transit Corridors (HQTCs), and their surrounding areas in one-half mile radius distance, as specified in Section 21155.(b)(3). Major transit stops and HQTCs are extracted from 2040 plan year data of the 2016-2040 RTP/SCS Amendment 2 and modified by inputs from transit operators and local jurisdictions. SCAG's High Quality Transit Area (HQTA) is within one-half mile from Major Transit Stops and HQTCs and developed based on the language in SB375. Please note that this map may undergo changes as SCAG continues to update its transportation network as part of the 2020 RTP/SCS development process and SCAG shall not be responsible for local jurisdiction's use of this map. Updates to this information will be forthcoming as information becomes available.

Source: SCAG, 2017
P:\DataMap_Guide\=RTP_2020\mxds\HQTA\HQTA_Portrait.mxd | Date: 10/25/2017

0 0.35 0.7 Miles

Major Transit Stops and Transit Priority Areas in City of Huntington Beach [Year 2040]



● Major Transit Stops

Transit Priority Areas (Areas within One-Half Mile from Major Transit Stops)

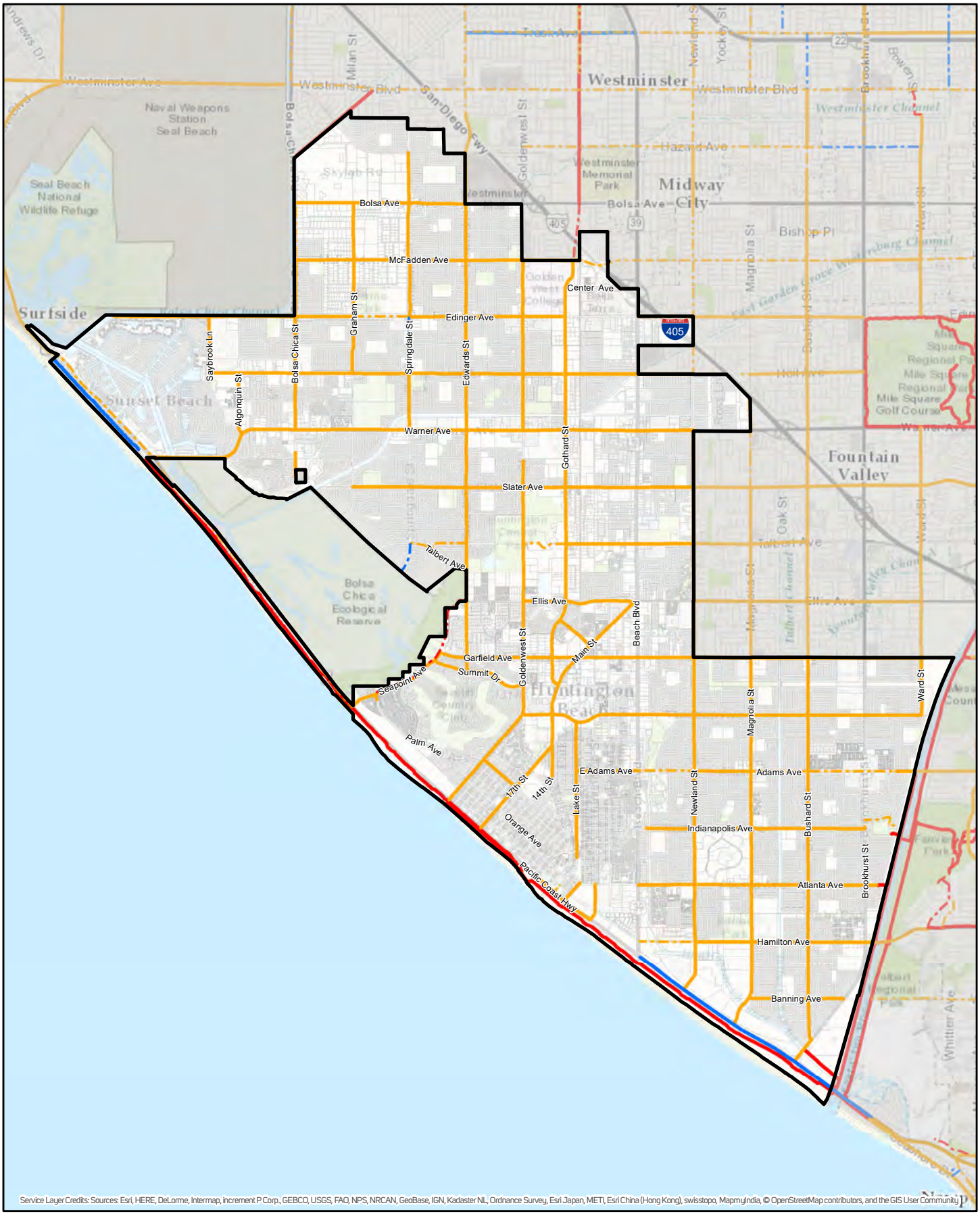
Note: As defined in SB 743, "Transit priority area" means an area within one-half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Transportation Improvement Program adopted pursuant to Section 450.216 or 450.322 of Title 23 of the Code of Federal Regulations. Major transit stops are extracted from 2040 plan year data of the 2016-2040 RTP/SCS Amendment 2 and modified by inputs from transit operators and local jurisdictions. Please note that this map may undergo changes as SCAG continues to update its transportation network as part of the 2020 RTP/SCS development process and SCAG shall not be responsible for local jurisdiction's use of this map. Updates to this information will be forthcoming as information becomes available.

Source: SCAG, 2017
P:\DataMap_Guide\=RTP_2020\mxds\TPA\TPA_Portrait.mxd | Date: 10/25/2017

0 0.35 0.7 Miles

Bikeways in City of Huntington Beach

(Existing and Proposed/Planned)



Existing Bikeways

Class I Class II Class III Class IV

Proposed/Planned Bikeways

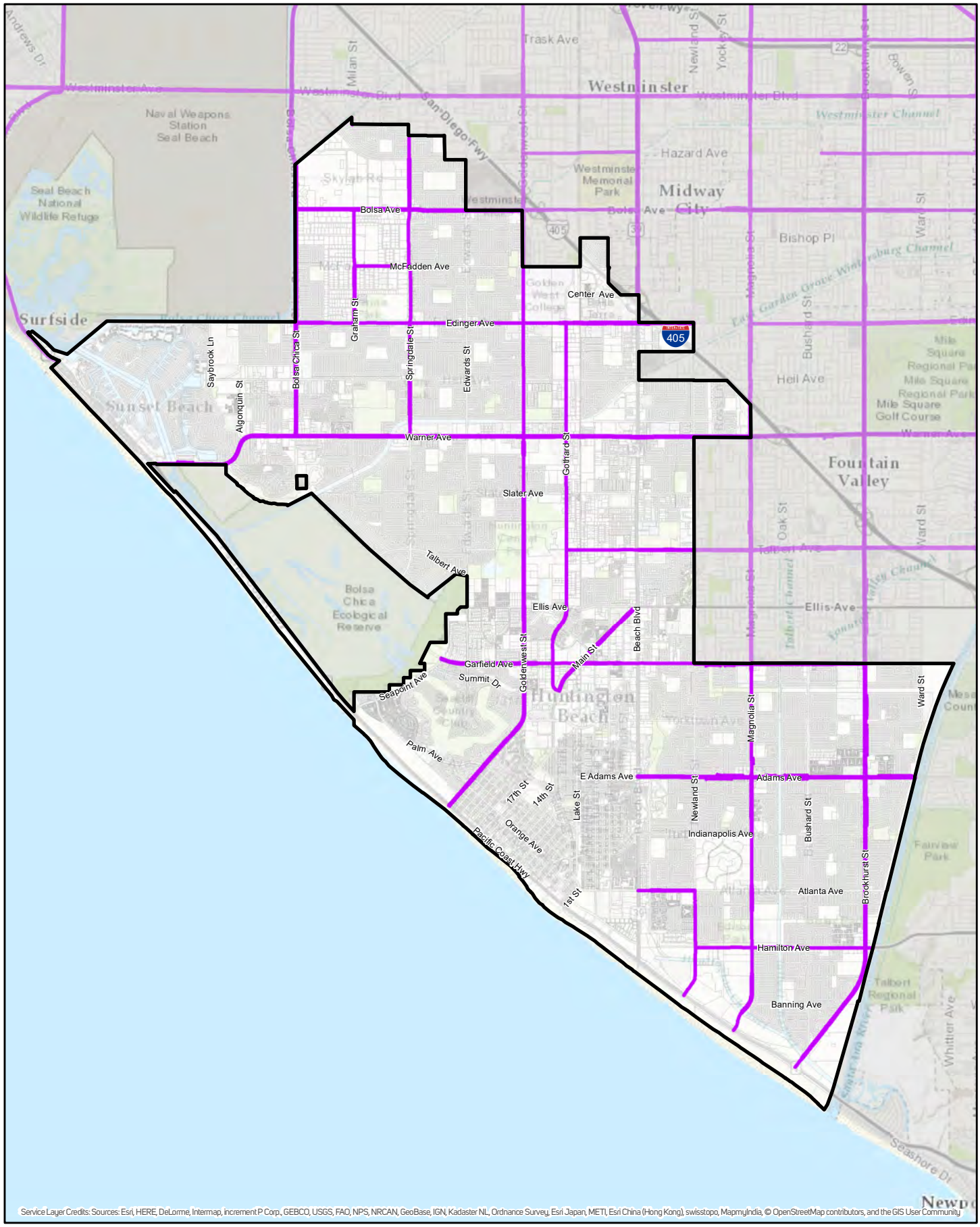
Class I Class II Class III Class IV

Source: SCAG, 2017

P:\DataMap_Guide\=RTP_2020\mxds\Bikeways\Bikeways_Portrait.mxd | Date: 10/23/2017

0 0.35 0.7 Miles

Truck Routes in City of Huntington Beach



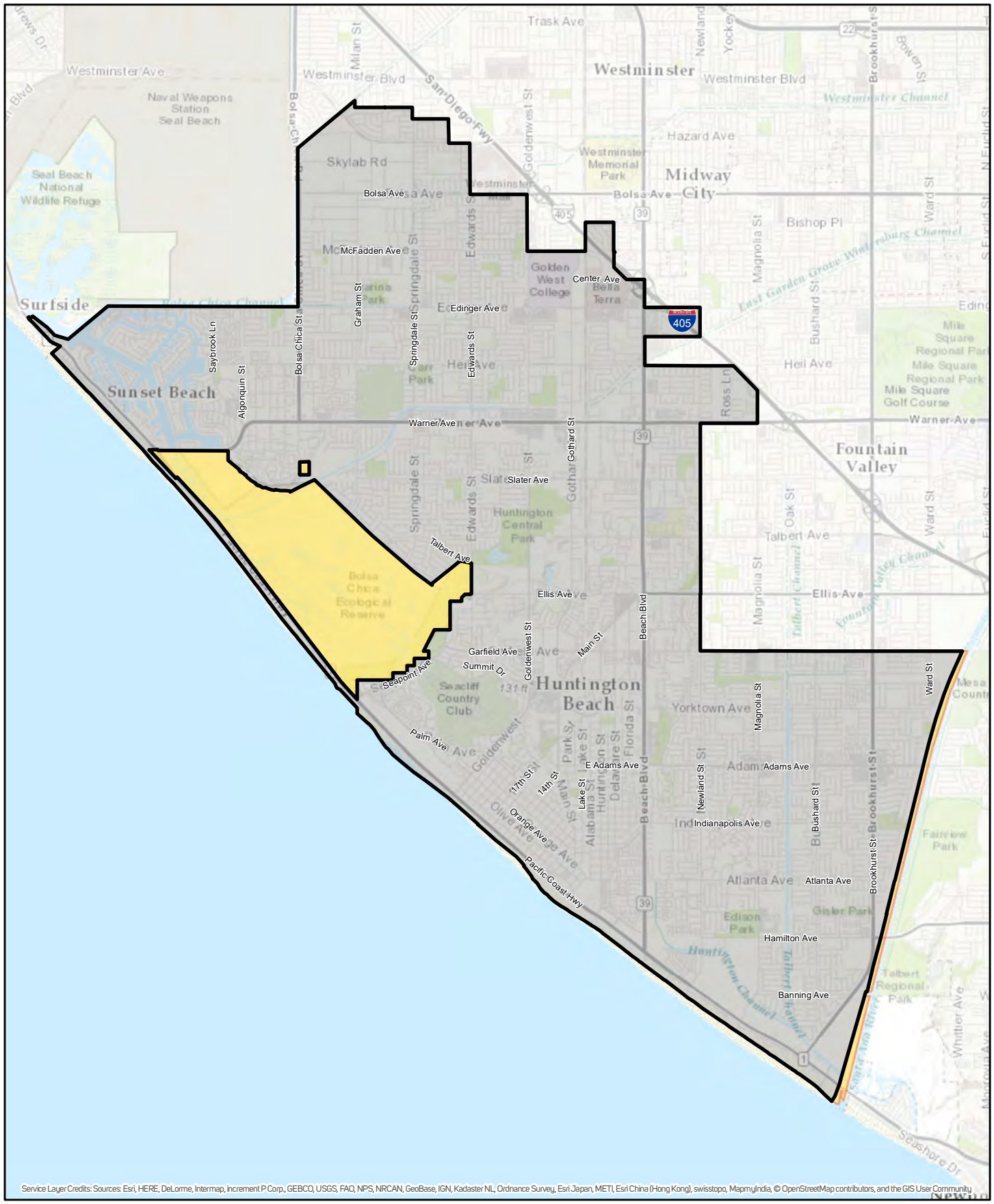
City Boundary

Truck Routes

Source: SCAG, 2017
P:\DataMap_Guide\=RTP_2020\mxds\TruckRoutes\TruckRoutes_Portrait.mxd | Date: 10/25/2017

0 0.35 0.7 Miles

2016 City Boundary and Sphere of Influence for City of Huntington Beach



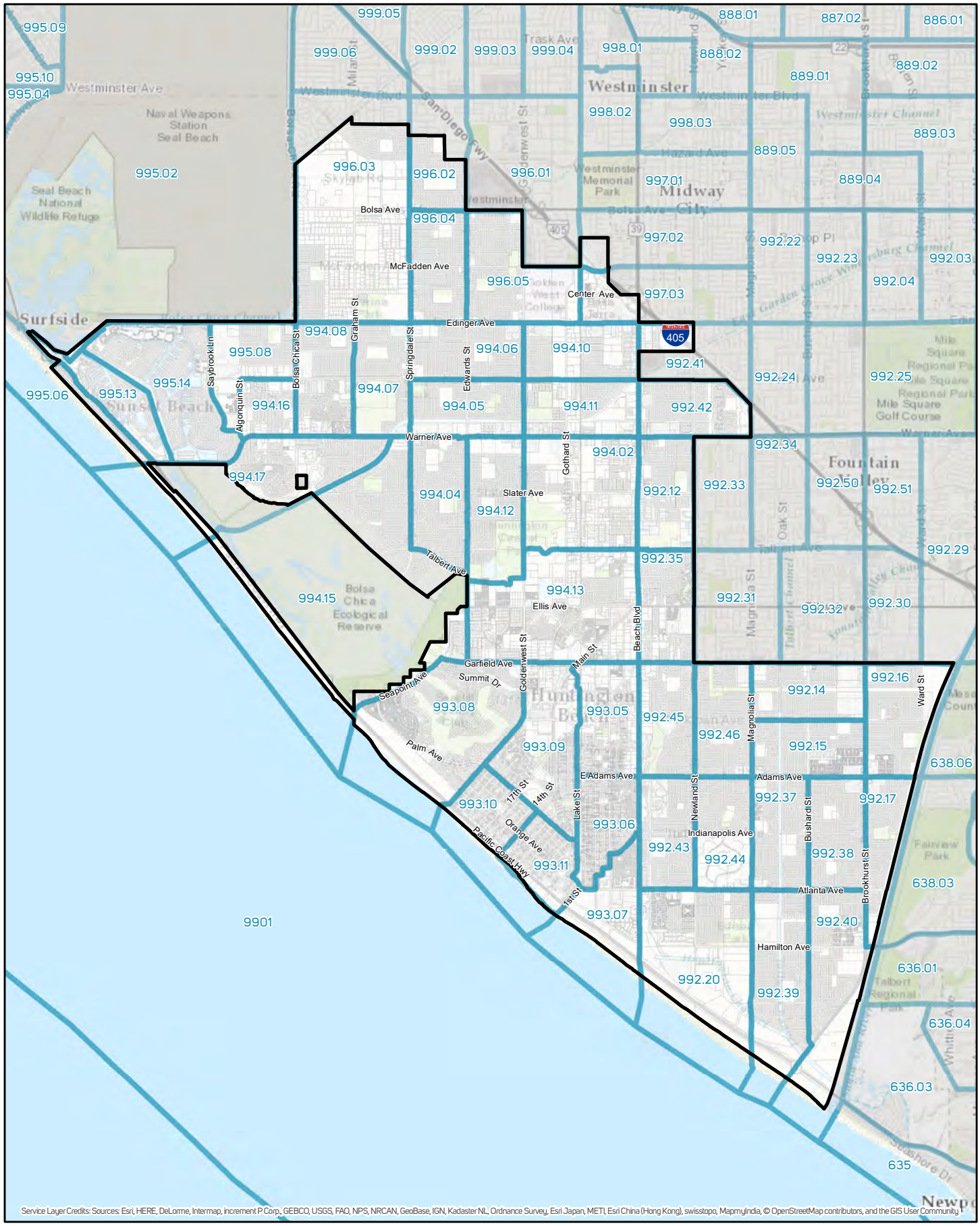
City Boundary

Sphere of Influence

Source: Orange County LAFCO, 2016
P:\DataMap_Guide\=RTP_2020\mxds\AdminBoundary\Admin_Portrait.mxd | Date: 10/23/2017

0 0.35 0.7 Miles

Census Tracts in City of Huntington Beach



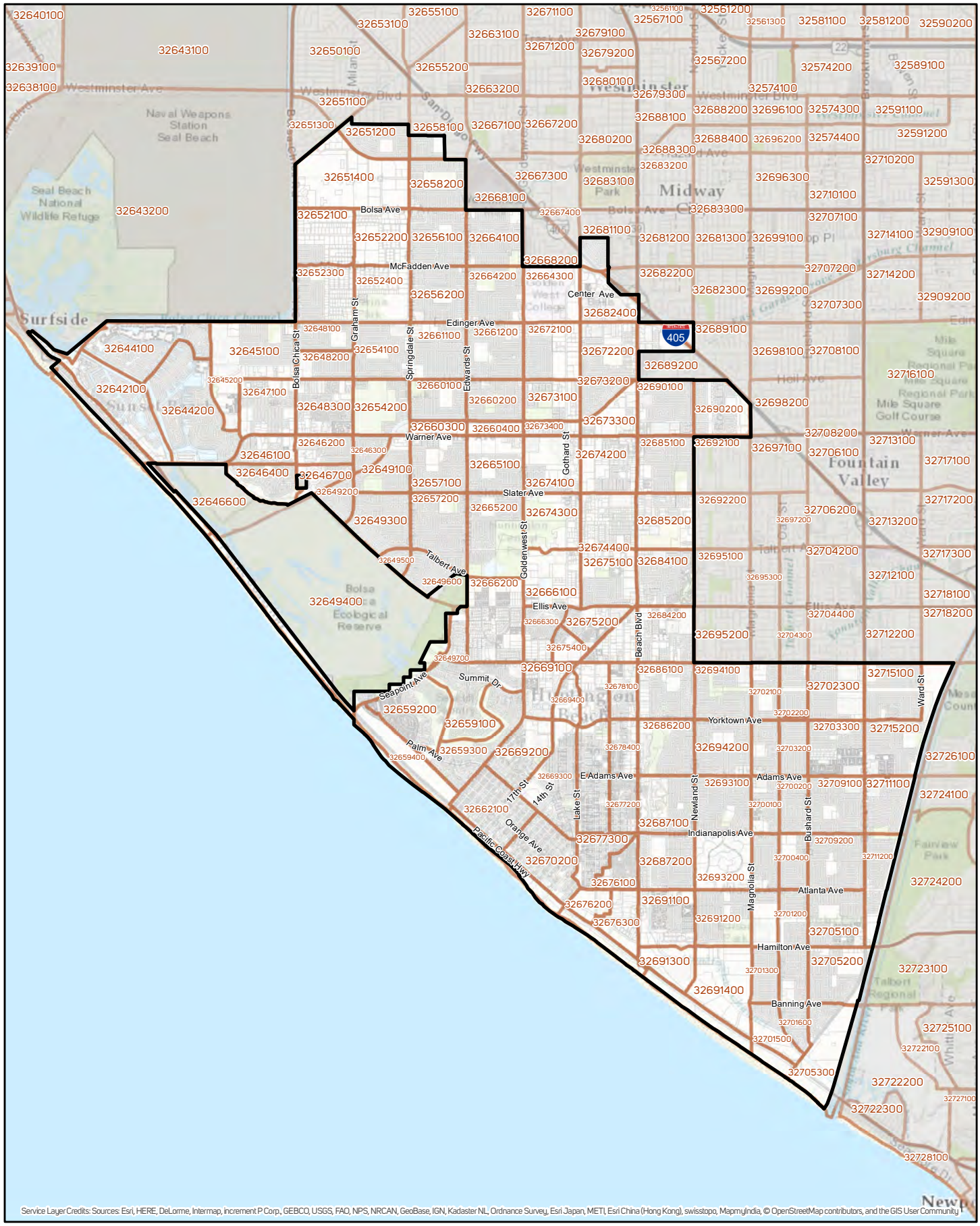
City Boundary

2010 Census Tracts

Source: US Census, TIGER/Line® Shapefiles, 2017
P:\DataMap_Guide\=RTP_2020\mxds\Census\Census_Portrait.mxd | Date: 10/24/2017

0 0.35 0.7 Miles

Transportation Analysis Zones in City of Huntington Beach



City Boundary

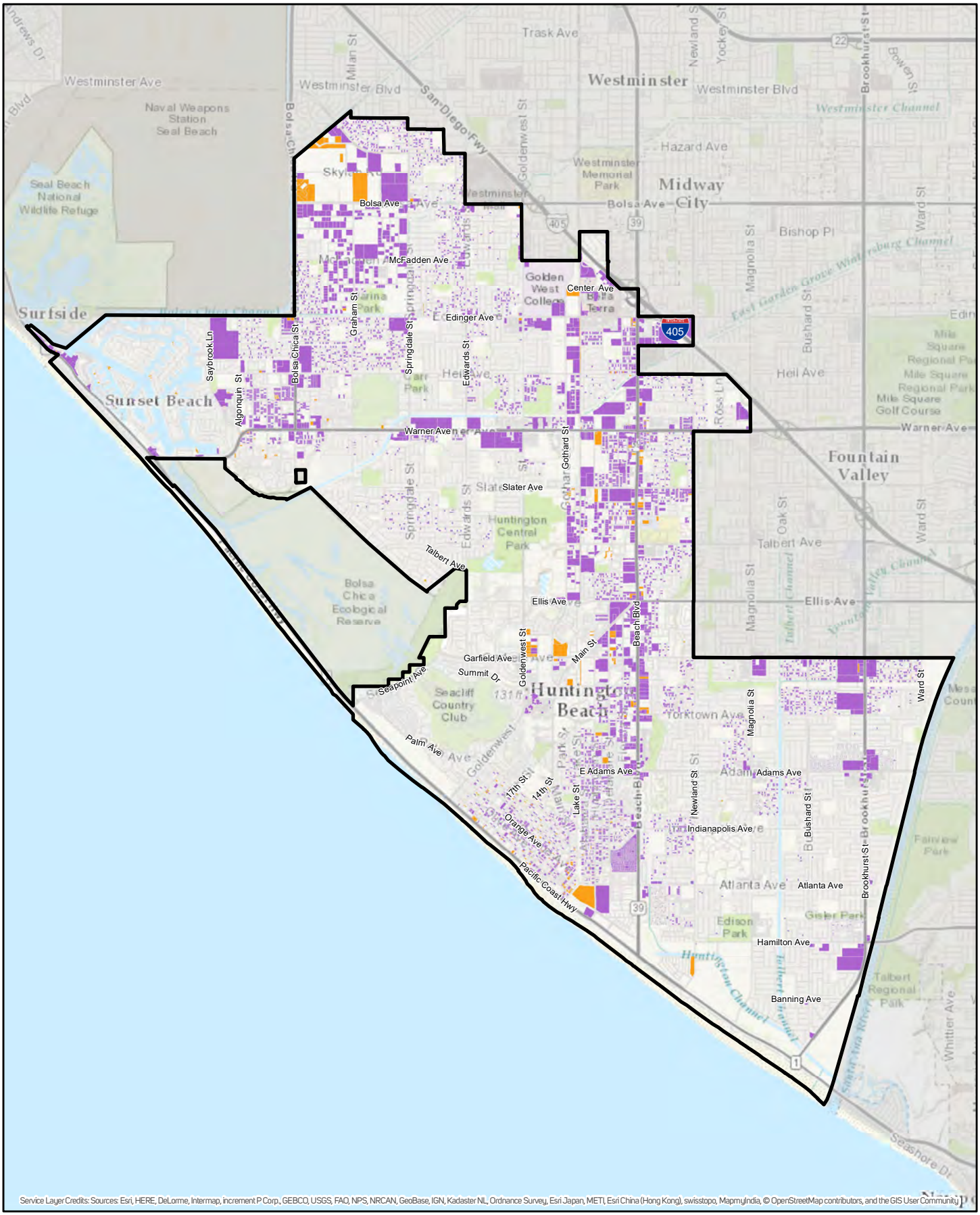
Transportation Analysis Zones (TAZ)

Source: SCAG, 2017

P:\DataMap_Guide\=RTP_2020\mxds\TAZ\TAZ_Portrait.mxd | Date: 10/24/2017

0 0.35 0.7 Miles

Potential Infill Parcels in City of Huntington Beach



Potential Infill Parcels

Vacant Parcels

Refill Parcels

Source: SCAG, 2017

P:\DataMap_Guide\=RTP_2020\mxds\Infill\Infill_Portrait.mxd | Date: 10/28/2017

0 0.325 0.65 Miles

ACKNOWLEDGMENTS

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Ying Zhou, Program Manager II

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THE **2020** REGIONAL TRANSPORTATION PLAN/
SUSTAINABLE COMMUNITIES STRATEGY

LOCAL INPUT & ENVISIONING PROCESS

DATA/MAP BOOK

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California Coastal Commission
Sea Level Rise Policy Guidance

Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits


Sunset Beach, Photo by Mario Fernandez

Chula Vista, Photo by Lisa Cox


San Francisco, Photo by Mike Baird


Arcata, Photo by Humboldt Baykeeper

Original Guidance unanimously adopted – August 12, 2015
Science Update unanimously adopted – November 7, 2018

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TDD (415) 597-5885

The **original** *California Coastal Commission Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits* was unanimously adopted by the California Coastal Commission on August 12, 2015.

Commissioners	Alternate Commissioners	Ex Officio Members
Steve Kinsey, *Chair*	Olga Diaz	John Laird/Janelle Beland
Dayna Bochco, *Vice Chair*	Belinda Faustinos	
Gregory Cox	Sarah Glade Gurney	Lt. Gov. Gavin Newsom/
Carole Groom	Steve Kram	Jennifer Lucchesi/
Erik Howell	Marciela Morales	Kevin Schmidt
Martha McClure	Randy Pestor	
Wendy Mitchell	Dr. Paul Song	Brian P. Kelly/Dale Jones
Mary K. Shallenberger		
Effie Turnbull-Sanders		
Roberto Uranga		
Mark Vargas		

A **Science Update** to the *California Coastal Commission Sea Level Rise Policy Guidance: Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits* was unanimously adopted by the California Coastal Commission on November 7, 2018.

Commissioners	Alternate Commissioners	Ex Officio Members
Dayna Bochco, *Chair*	Linda Escalante	John Laird/
Effie Turnbull-Sanders, *Vice Chair*	Belinda Faustinos	Thomas Gibson
Sara Aminzadeh	Zahirah Mann	
Donne Brownsey	Maricela Morales	Betty Yee/
Carole Groom	Brian Pendleton	Anne Baker/
Erik Howell	Bryan Urias	Nicole Jones
Mary Luéveno	Christopher Ward	
Steve Padilla		Brian Annis/
Aaron Peskin		Jeremiah Ketchum
Ryan Sundberg		
Roberto Uranga		
Mark Vargas		

This report was prepared with financial assistance from the National Oceanic and Atmospheric Administration under the Coastal Zone Management Act Section 309 Enhancement Grant Program

SUMMARY OF DOCUMENT REVISIONS

A first draft of this Guidance was released for public review on October 14, 2013. The public comment period was open for 120 days, until February 14, 2014. During that time, the Commission received over 100 comment letters that broke down into over 800 distinct comments. A revised draft was released on May 27, 2015 and presented at the June 2015 Coastal Commission hearing in Newport Beach. Written comments were requested by July 10, 2015, and 28 comment letters were submitted.

On August 12, 2015 the Commission adopted the Recommended Final Draft (dated July 31, 2015 and updated with addenda August 10, 2015) as interpretive guidelines pursuant to Public Resources Code section 30620. The final draft has been posted on the Commission's website and used by the Commission, local governments, project applicants, and other stakeholders since its adoption.

Science-focused updates have now been developed to address evolving science. Acting on direction from Governor Brown, the Ocean Protection Council has released two reports that update our understanding of sea level rise science and best practices for planning for and addressing anticipated impacts. The first of these reports, *Rising Seas in California: An Update on Sea-Level Rise Science*, synthesizes recent evolving research on sea level rise science, and forms the foundation for the second report, the *State of California Sea-Level Rise Guidance: 2018 Update.* The 2018 OPC SLR Guidance provides higher level recommendations for how to plan for and address sea level rise impacts, notably including a set of projections recommended for use in planning, permitting, investment, and other decisions.

In order to reflect the updated best available science, a set of focused updates for the Coastal Commission SLR Policy Guidance have been developed. These include:

- *References to best available science throughout the document, including SLR projection tables, which formerly referenced the 2012 NRC Report, have been updated to reference the 2018 OPC SLR Guidance.*
- *Sections of the Guidance that provided extensive details about the NRC report and/or how to use the information provided within the NRC report (mainly in Chapters 3, 5, and 6 and Appendices A and B) have been removed. In their place, summaries of the Rising Seas science report (2017) and the 2018 OPC SLR Guidance have been added (Chapters 3, 5, and 6, and Appendices A, B, and G).*
- *Some updates have been made to tables of resources meant to assist interested parties in addressing sea level rise (e.g., SLR mapping and modeling tools, grant funding sources, and agency and other stakeholder guidance). However, these tables have not been exhaustively updated, and additional resources may be available.*

On November 7, 2018, the Commission unanimously adopted the Draft Science Update to the Coastal Commission Sea Level Rise Policy Guidance.

How to Use this Document

This document is:	This document is NOT:
Guidance	**Regulations**
This Guidance is advisory and not a regulatory document or legal standard of review for the actions that the Commission or local governments may take under the Coastal Act. Such actions are subject to the applicable requirements of the Coastal Act, the federal Coastal Zone Management Act, certified Local Coastal Programs, and other applicable laws and regulations as applied in the context of the evidence in the record for that action.	
Dynamic	**Static**
This Guidance will be updated periodically to address new sea level rise science, information, and approaches regarding sea level rise adaptation, and new legal precedent. The Commission will also continue working on sea level rise through other projects and in a collaborative manner, as outlined in Chapter 9: Next Steps.	
Multi-purpose for multiple audiences	**Meant to be read cover-to-cover**
This Guidance is a comprehensive, multi-purpose resource and it is intended to be useful for many audiences. As such, it includes a high level of detail on many subjects. However, chapters were written as stand-alone documents to provide usable tools for readers.	
A menu of options	**A checklist**
Since this document is intended for use statewide, it is not specific to a particular geographic location or development intensity (e.g., urban or rural locations).Therefore, not all of the content will be applicable to all users, and readers should view the content as a menu of options to use only if relevant, rather than a checklist of required actions.	

Reading Tips

- Look carefully at the Table of Contents and identify sections of interest.
- Do not expect all of the content to apply to your particular situation. As a statewide document, a wide variety of information is included to address the concerns of various users.
- Navigate to your desired level of detail: The *Executive Summary* provides a basic summary of the content; the body of the document provides a detailed discussion; and the *Appendices* provide more scientific and technical detail and a variety of useful resources.

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Commonly Used Acronyms and Agency Names

Terms:

CCT – California Coastal Trail

CDP – Coastal Development Permit

CoSMoS – Coastal Storm Modeling System

ENSO – El Niño Southern Oscillation

ESHA – Environmentally Sensitive Habitat Area

GHG – Greenhouse gas

IPCC – Intergovernmental Panel on Climate Change

LCP – Local Coastal Program

LUP – Land Use Plan

NRC Report – National Research Council Report "*Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*"

PDO – Pacific Decadal Oscillation

SLR – Sea level rise

TNC – The Nature Conservancy

Agency Names:

BCDC – San Francisco Bay Conservation and Development Commission

BOEM – Bureau of Ocean Energy Management

BSEE – Bureau of Safety and Environmental Enforcement

Cal OES – California Governor's Office of Emergency Services

Caltrans – California Department of Transportation

CCC/Commission – California Coastal Commission

CDFW – California Department of Fish and Wildlife

CNRA – California Natural Resources Agency

CO-CAT – Coast and Oceans Climate Action Team

Conservancy – California State Coastal Conservancy

EPA – Environmental Protection Agency

FEMA – Federal Emergency Management Agency

NERR – National Estuarine Research Reserve

NMS – National Marine Sanctuary

NOAA – National Oceanic and Atmospheric Administration

NPS – National Park Service

OPC – California Ocean Protection Council

OPR – California Governor's Office of Planning and Research

State Lands – California State Lands Commission

State Parks – California Department of Parks and Recreation

SWRCB – State Water Resources Control Board

USACE – United States Army Corps of Engineers

USFWS – United States Fish and Wildlife Service

USGS – United States Geological Survey

Executive Summary

Climate change is upon us, affecting almost every facet of California's natural and built environment. Increasing global temperatures are causing significant effects at global, regional, and local scales. In the past century, average global temperature has increased by about 0.8°C (1.4°F), and average global sea level has increased by 7 to 8 in (17 to 21 cm) (IPCC 2013). Sea level at the San Francisco tide gauge has risen 8 in (20 cm) over the past century, and recent reports developed by the California Ocean Protection Council (OPC) (in conjunction with the OPC Science Advisory Team) project that by the year 2100, sea levels may rise by approximately 2.4 to 6.9 feet, with the potential for rapid ice loss to result in an extreme scenario of 10.2 feet of sea level rise (Griggs *et al.*, 2017; OPC 2018). While the California coast regularly experiences erosion, flooding, and significant storm events, sea level rise will exacerbate these natural forces, leading to significant social, environmental, and economic impacts. The third National Climate Assessment notes that there is strong evidence showing that the cost of doing nothing to prepare for the impacts of sea level rise exceeds the costs associated with adapting to them by about 4 to 10 times (Moser *et al*. 2014). Therefore, it is critically important that California plan and prepare for the impacts of sea level rise to ensure a resilient California coast for present and future generations.

The California Coastal Act is one of the state's primary coastal management laws for addressing land use, public access and recreation, and the protection of coast and ocean resources in the coastal zone. It is also the primary coastal hazards law governing development along the coast. Using the Coastal Act, the Coastal Commission and local governments have more than four decades of experience managing coastal development, including addressing the challenges presented by coastal hazards like storms, flooding, and erosion as well as responses to these hazards such as armoring. However, sea level rise and the changing climate present management challenges of a new magnitude, with the potential to significantly threaten many coastal resources, including shoreline development, coastal beach access and recreation, habitats, agricultural lands, cultural resources, and scenic resources, all of which are subject to specific protections and regulations in the Coastal Act. Therefore, effective implementation of the Coastal Act and the protection of California's coast must address global sea level rise and the greater management challenges it will bring.

This document focuses specifically on how to apply the Coastal Act to the challenges presented by sea level rise through Local Coastal Program (LCP) certifications and updates and Coastal Development Permit (CDP) decisions. It organizes current science, technical, and other information and practices into a single resource to facilitate implementation of the Coastal Act by coastal managers at the state and local level. While the document is intended to guide LCP planning and development decisions to ensure effective coastal management actions, it is advisory and does not alter or supersede existing legal requirements, such as the policies of the Coastal Act and certified LCPs. However, one of the Commission's priority goals is to coordinate with local governments to complete and update LCPs in a manner that adequately addresses sea level rise and reflects the recommendations in this Guidance.

This Guidance document is also part of a larger statewide strategy to respond to climate change that includes both emissions reductions and adaption planning to address the impacts of a changing climate. In 2008, Governor Schwarzenegger issued an Executive Order (S-13-08) directing state agencies to consider sea level rise as part of planning projects and to support the

preparation of the National Research Council report on sea level rise. Additionally, on April 29, 2015, Governor Brown issued an Executive Order (B-30-15) to establish a new greenhouse gas emission reduction target and called for further action on adaptation. This Guidance is also being coordinated with many statewide initiatives to address climate change and sea level rise, including the 2014 *Safeguarding California* plan (an update to the 2009 *California Adaptation Strategy*; CNRA 2009, 2014), the ongoing update to the *General Plan Guidelines* (Cal OPR 2015), the 2013 update to the California Governor's Office of Emergency Services' (Cal OES) *State Hazard Mitigation Plan*, and others.[1] Commission staff has also been and will continue to participate in multi-agency partnerships, including the Coast and Ocean Workgroup of the multi-state agency Climate Action Team and the *State Coastal Leadership Group on Sea-Level Rise*. For more detail on these efforts, see the Introduction.

PRINCIPLES FOR ADDRESSING SEA LEVEL RISE IN THE COASTAL ZONE

This Guidance is rooted in certain fundamental guiding principles, many of which derive directly from the requirements of the Coastal Act. These Principles broadly lay out the common ideas and a framework by which sea level rise planning and permitting actions can be assessed, and as such represent the goals to which actions should aspire. Individual actions and outcomes may vary based on a variety of factors, including applicable policies and location- or project-specific factors that may affect feasibility. The Guiding Principles are summarized below and discussed in greater detail in Chapter 2.

Use Science to Guide Decisions [Coastal Act Sections 30006.5; 30335.5]

1. Acknowledge and address sea level rise as necessary in planning and permitting decisions.
2. Use the best available science to determine locally relevant and context-specific sea level rise projections for all stages of planning, project design, and permitting reviews.
3. Recognize scientific uncertainty by using scenario planning and adaptive management techniques.
4. Use a precautionary approach by planning and providing adaptive capacity for the higher end of the range of possible sea level rise.
5. Design adaptation strategies according to local conditions and existing development patterns, in accordance with the Coastal Act.

Minimize Coastal Hazards through Planning and Development Standards [Coastal Act Sections 30253, 30235; 30001, 30001.5]

6. Avoid significant coastal hazard risks to new development where feasible.
7. Minimize hazard risks to new development over the life of authorized structures.

[1] See the Governor's Office of Planning and Research's webpage for the California Climate Change Document, which includes a matrix of additional efforts.

8. Minimize coastal hazard risks and resource impacts when making redevelopment decisions.
9. Account for the social and economic needs of the people of the state; assure priority for coastal-dependent and coastal-related development over other development.
10. Ensure that property owners understand and assume the risks, and mitigate the coastal resource impacts, of new development in hazardous areas.

Maximize Protection of Public Access, Recreation, and Sensitive Coastal Resources [Coastal Act Chapter 3 policies]

11. Provide for maximum protection of coastal resources in all coastal planning and regulatory decisions.
12. Maximize natural shoreline values and processes; avoid expansion and minimize the perpetuation of shoreline armoring.
13. Recognize that sea level rise will cause the public trust boundary to move inland. Protect public trust lands and resources, including as sea level rises. New shoreline protective devices should not result in the loss of public trust lands.
14. Address other potential coastal resource impacts (wetlands, habitat, agriculture, scenic, *etc.*) from hazard management decisions, consistent with the Coastal Act.
15. Address the cumulative impacts and regional contexts of planning and permitting decisions.
16. Require mitigation of unavoidable coastal resource impacts related to permitting and shoreline management decisions.
17. Consider best available information on resource valuation when mitigating coastal resource impacts.

Maximize Agency Coordination and Public Participation [Coastal Act Chapter 5 policies; Sections 30006; 30320; 30339; 30500; 30503; 30711]

18. Coordinate planning and regulatory decision making with other appropriate local, state, and federal agencies; support research and monitoring efforts.
19. Consider conducting vulnerability assessments and adaptation planning at the regional level.
20. Provide for maximum public participation in planning and regulatory processes.

BEST AVAILABLE SCIENCE AND CONSEQUENCES OF SEA LEVEL RISE

The Coastal Act directs the Coastal Commission and local governments to use the best available science in coastal land use planning and development. This Guidance recommends using the best available science on sea level rise projections to inform planning decisions and project design. The State of California has long supported the preparation and provision of scientific information on climate change and sea level rise to help guide appropriate and resilient planning, permitting, investment, and other decisions. For example, the State recently released California's Fourth Climate Change Assessment to advance actionable science that serves the needs of state and local-level decision-makers. Specific to sea level rise, the State also supported the preparation of the 2012 National Research Council's Report, *Sea-Level Rise for the Coasts of California, Oregon and Washington: Past, Present, and Future*, as well as the 2017 *Rising Seas in California: An Update on Sea-Level Rise Science* (OPC Science Report) and the *State of California Sea-Level Rise Guidance: 2018 Update* (2018 OPC SLR Guidance). The 2018 OPC SLR Guidance contains a set of projections for 12 tide gauges throughout California, and the Coastal Commission recommends using these projections and related information as best available science on sea level rise in California (see Table 1 for the projections at the San Francisco tide gauge, and Appendix G for projections for other tide gauges). The Coastal Commission will re-examine best available science periodically and as needed with the release of new information.

In addition to sea level rise projections, the 2012 NRC report, the 2017 OPC Science Report, and the 2018 OPC SLR Guidance provide information on the impacts of sea level rise in California[2]. According to these reports, sea level rise will cause flooding and inundation, increased coastal erosion, changes in sediment supply and movement, and saltwater intrusion to varying degrees along the California coast. These effects in turn could have a significant impact on the coastal economy and could put important coastal resources and coastal development at risk, including ports, marine terminals, commercial fishing infrastructure, public access, recreation, wetlands and other coastal habitats, water quality, biological productivity in coastal waters, coastal agriculture, and archaeological and paleontological resources.

[2] Note that while the Coastal Commission now recognizes the 2018 OPC SLR Guidance as best available science on sea level rise projections, the 2012 NRC Report and other related studies still contain valuable information, and references to these documents and studies throughout this guidance remain relevant and applicable.

Table 1. Sea Level Rise Projections for the San Francisco Tide Gauge[3] (OPC 2018)

Projected Sea Level Rise (in feet): *San Francisco*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2
2110*	3.5	7.3	11.9
2120	4.1	8.6	14.2
2130	4.6	10.0	16.6
2140	5.2	11.4	19.1
2150	5.8	13.0	21.9

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[3] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

ADDRESSING SEA LEVEL RISE IN LOCAL COASTAL PROGRAMS

This document provides a step-by-step process for addressing sea level rise and adaptation planning in new and updated Local Coastal Programs. These Steps, summarized below in text and in Figure 1, can be tailored to fit the needs of individual communities and to address the specific coastal resource and development issues of a community, such as dealing with bluff erosion or providing for effective redevelopment, urban infill, and concentration of development in already developed areas. Ideally, Commission and local government staff will establish regular coordination and work together in the early steps of any LCP planning process. For a detailed explanation of these LCP planning Steps, see Chapter 5. Communities in areas where sea level rise vulnerability assessment work is already underway can start later in the process, at Step 4, or other relevant Step(s).

Step 1. **Determine a range of sea level rise projections relevant to LCP planning area/segment** using best-available science, which is currently the 2018 OPC SLR Guidance.

Step 2. **Identify potential physical sea level rise impacts in the LCP planning area/segment**, including inundation, storm flooding, wave impacts, erosion, and/or saltwater intrusion into freshwater resources.

Step 3. **Assess potential risks from sea level rise to coastal resources and development in the LCP planning area/segment,** including those resources addressed in Chapter 3 of the Coastal Act.

Step 4. **Identify adaptation measures and LCP policy options** to include in the new or updated LCP, including both general policies and ordinances that apply to all development exposed to sea level rise, and more targeted policies and land use changes to address specific risks in particular portions of the planning area.

Step 5. **Draft updated or new LCP for certification with California Coastal Commission**, including the Land Use Plan and Implementing Ordinances.

Step 6. **Implement the LCP and monitor and re-evaluate strategies as needed** to address new circumstances relevant to the area.

Planning Process for Local Coastal Programs and Other Plans

Figure 1. Flowchart for addressing sea level rise in Local Coastal Programs and other plans

ADDRESSING SEA LEVEL RISE IN COASTAL DEVELOPMENT PERMITS

New development within the coastal zone generally requires a Coastal Development Permit (CDP). Many projects reviewed through the CDP application process already examine sea level rise impacts as part of the hazards analysis, though not every CDP application will need to consider sea level rise. In general, sea level rise is only likely to affect those projects that are on low-lying land, on eroding coastal bluffs, are in close proximity to water, or rely upon a shallow aquifer for water supply. This document offers a step-by-step outline, summarized below in text and in Figure 2, for how to conduct such an analysis as a standard part of the CDP application process. The goal of these Steps is to ensure careful attention to minimizing risk to development and avoiding impacts to coastal resources over the life of the project. Early coordination with the Coastal Commission staff is highly recommended, and staff will be available to consult with applicants during this process. Adopting or updating LCPs as recommended in this Guidance should facilitate subsequent review of CDPs. LCPs can identify areas where a closer review of sea level rise concerns is necessary. If kept up to date, they can also provide information for evaluation at the permit stage and specify appropriate mitigation measures for CDPs to incorporate. For a detailed explanation of these steps, see Chapter 6 of this Guidance.

Step 1. **Establish the projected sea level rise range for the proposed project**'s planning horizon using the best available science, which is currently the 2018 OPC SLR Guidance.

Step 2. **Determine how physical impacts from sea level rise may constrain the project site,** including erosion, structural and geologic stability, flooding, and inundation.

Step 3. **Determine how the project may impact coastal resources, considering the influence of future sea level rise upon the landscape** as well as potential impacts of sea level rise adaptation strategies that may be used over the lifetime of the project.

Step 4. **Identify alternatives to avoid resource impacts and minimize risks** throughout the expected life of the development.

Step 5. **Finalize project design and submit CDP application.**

Planning Process for Coastal Development Permits

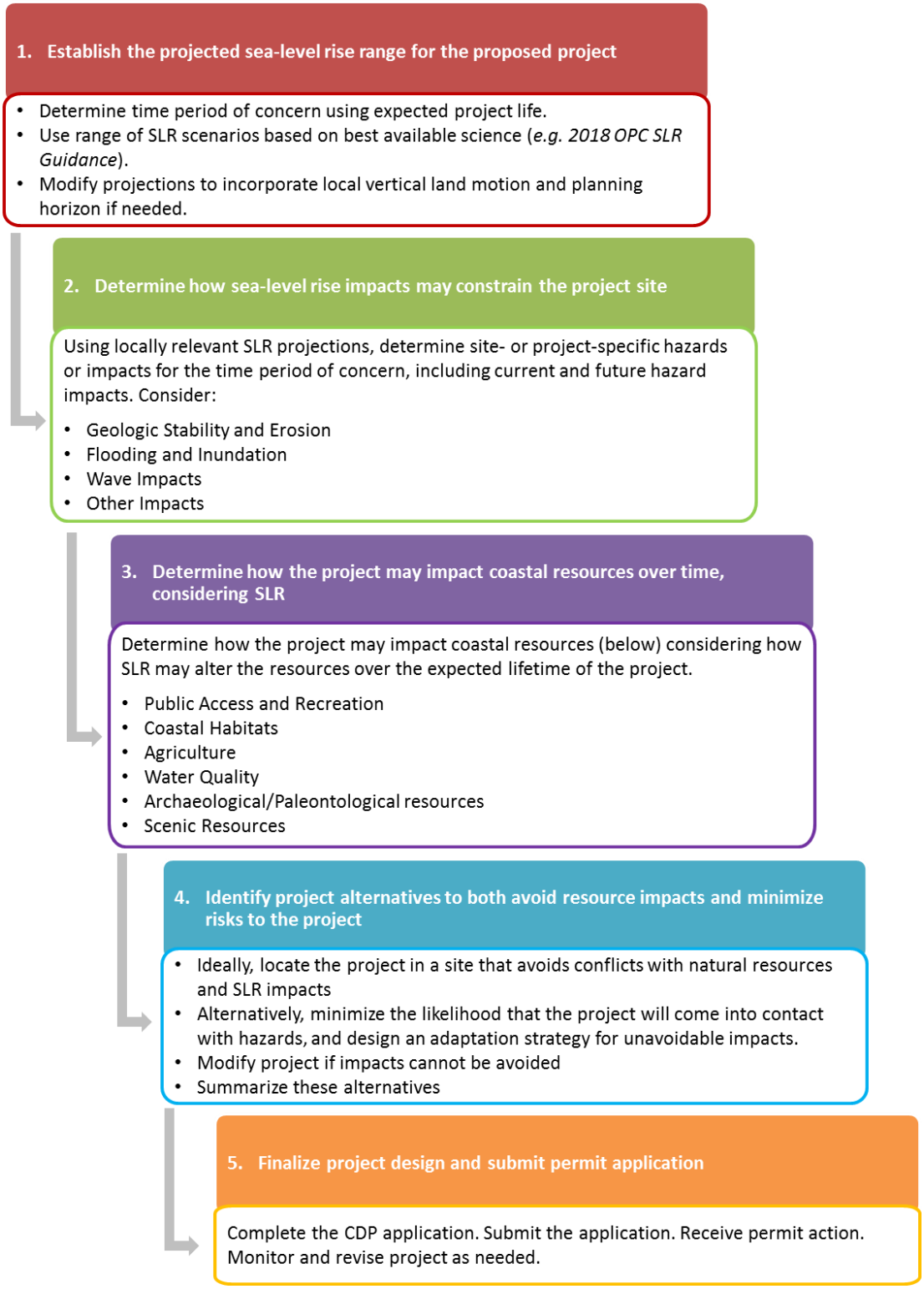

Figure 2. Flowchart for addressing sea level rise in Coastal Development Permits

ADAPTATION STRATEGIES

Steps 1 through 3 of the processes for addressing sea level rise in LCPs and CDPs will help planners and project applicants identify particular vulnerabilities to the planning region and specific project sites. Such vulnerabilities may include impacts to a number of resources identified in the Coastal Act, including development and infrastructure; public access and recreational opportunities; beaches, wetlands, environmentally sensitive habitat areas (ESHA), and other coastal habitats; agricultural resources; water quality; archaeological and paleontological resources; and scenic and visual resources. Planners and project applicants will need to identify, develop, and implement various adaptation strategies designed to protect coastal resources. These strategies should fulfill the hazard minimization and resource impact avoidance policies of the Coastal Act and should account for local conditions. In many cases, strategies will need to be implemented incrementally as conditions change, and planners, project applicants, and partners will need to think creatively and adaptively to ensure that coastal resources and development are protected over time. Chapter 7 of this Guidance summarizes a number of strategies to protect different coastal resources and meet the goals and requirements of the Coastal Act.

ADDITIONAL INFORMATION

In addition to providing a summary of best available science on sea level rise, step-by-step approaches for addressing sea level rise in LCPs and CDPs, and a discussion of numerous adaptation strategies, the Guidance includes the following supplemental information:

- A brief discussion of the legal context of adaptation
- Next steps for Commission staff in coordination with other relevant partners and research institutions, based on objectives and actions from the Commission adopted *California Coastal Commission Strategic Plan 2013-2018* (2013a)
- Additional research needs directed toward research institutions at academic, state, federal, and local levels to help communities understand and prepare for sea level rise
- Detailed information on the drivers of sea level rise and sea level rise projections
- A step-by-step methodology for assessing local hazard conditions based on regional sea level rise projections, which is applicable to both LCPs and CDPs
- Lists of useful resources and references, including examples of sea level rise adaptation documents from other state agencies
- Key Coastal Act policies relevant to sea level rise and coastal hazards

CONTEXT OF THIS DOCUMENT

This Guidance is part of a larger body of work on climate change by State agencies, regional collaborations, local leadership, academic research, and other organizations. Many of these efforts are included as resources in Appendix C. Users of the document should take advantage of these existing resources, collaborate with others, and share best practices as much as possible.

Finally, this document is intended to function as interpretive guidance for effective implementation of the Coastal Act and LCPs in light of sea level rise. It is not a regulatory document and does not contain any new regulations. Further, it does not amend or supersede existing legal authorities or the standard of review for Local Coastal Programs and coastal development permit decisions pursuant to the Coastal Act. Those actions are subject to the applicable requirements of the Coastal Act, the Coastal Zone Management Act, certified LCPs, and other applicable laws and regulations as applied in the context of the evidence in the records for those actions. The Commission is adopting this Guidance as interpretive guidelines pursuant to its authority under Public Resources Code Sections 30620.

Chapter 1

Introduction

Climate change is happening now. Rapidly melting ice caps, rising sea levels, floods, extreme heat waves, droughts, and fires are just a few of the effects of climate change. These effects are having profound impacts on our coast and are changing coastal management planning and decision making at global, national, state, regional, local, and individual scales.

Given current trends in greenhouse gas emissions, sea levels are expected to rise at an accelerating rate in the future, and scientists project an increase in California's sea level in coming decades. Until mid-century, the most damaging events for the California coast will likely be dominated by large El Niño-driven storm events in combination with high tides and large waves. Eventually, sea level will rise enough that even small storms will cause significant damage, and large events will have unprecedented consequences (Caldwell *et al*. 2013).

This Guidance provides a framework for addressing sea level rise in Local Coastal Programs (LCPs) and Coastal Development Permits (CDPs). The intended audience for this document includes the Commission and Commission staff, local governments, other public agencies, permit applicants, members of the public, and others who are interested in how to implement and comply with the California Coastal Act (Coastal Act) while taking steps to address sea level rise.

Environmental, Economic, and Social Impacts of Sea Level Rise

The potential environmental, economic, and social impacts of sea level rise in California underscore the importance of addressing the issue in land use planning and regulatory work. Just over 21 million people lived in California's coastal counties as of July 2014 (CDF 2014), and the state supports a $40 billion coastal and ocean economy (NOEP 2010).

Many aspects of the coastal economy, as well as California's broader economy, are at risk from sea level rise, including coastal-related tourism, beach and ocean recreational activities, transfer of goods and services through ports and transportation networks, coastal agriculture, and commercial fishing and aquaculture facilities.

In addition to potential losses in revenue, Heberger *et al.* (2009) estimate that $100 billion worth of property is at risk of flooding during a 100-year coastal flood with 4.6 ft (1.4 m) of sea level rise (the amount projected to occur by the year 2100 in their Pacific Institute study). This property includes seven wastewater treatment plants, commercial fishery facilities, marine terminals, Coastal Highway One, 14 power plants, residential homes, and other important development and infrastructure. More recently, the Fourth California Climate Assessment found that statewide damages could reach nearly $17.9 billion from inundation of development under ~20 inches of sea level rise, and those damages would double with the addition of a 100-year flood (Bedsworth *et al.* 2018).

Sea level rise also poses environmental and social justice challenges. This is particularly true for communities that may be dependent upon at-risk industries, are already suffering from economic hardship, or which have limited capacity to adapt, including lower-income, linguistically isolated, elderly, and other vulnerable populations.

Proactive steps are needed to prepare for sea level rise and to protect the coastal economy, California livelihoods, and coastal resources and the ecosystem services they provide. The magnitude of the challenge is clear – not only might the impacts of sea level rise be severe, the costs and time associated with planning for them can be daunting. The third National Climate Assessment, released in May 2014, notes that there is strong evidence to suggest that the costs of inaction are 4 to 10 times greater than the costs associated with proactive adaptation and hazard mitigation (Moser *et al*. 2014). It is critical for California to take proactive steps to address the impacts sea level rise may have on the state's economy, natural systems, built environment, human health, and ultimately, its way of life.

SEA LEVEL RISE AND THE CALIFORNIA COASTAL ACT

The potential impacts of sea level rise fall directly within the Coastal Commission's (and coastal zone local governments') planning and regulatory responsibilities under the Coastal Act. Sea level rise increases the risk of flooding, coastal erosion, and saltwater intrusion into freshwater supplies, which have the potential to threaten many of the resources[4] that are integral to the California coast, including coastal development, coastal access and recreation, habitats (*e.g.*, wetlands, coastal bluffs, dunes, and beaches), coastal agricultural lands, water quality and supply, cultural resources, community character, and scenic quality. In addition, many possible responses to sea level rise, such as construction of barriers or armoring, can have adverse impacts on coastal resources. For example, beaches, wetlands, and other habitat backed by fixed or permanent development will not be able to migrate inland as sea level rises, and will become permanently inundated over time, which in turn presents serious concerns for future public access and habitat protection.

The Coastal Act mandates the protection of public access and recreation along the coast, coastal habitats, and other sensitive resources, as well as providing priority visitor-serving and coastal-dependent or coastal-related development while simultaneously minimizing risks from coastal hazards. This Guidance document has been created to help planners, project applicants, and other interested parties continue to achieve these goals in the face of sea level rise by addressing its effects in Local Coastal Programs and Coastal Development Permits. Although the focus of the Guidance is on LCPs and CDPS, much of the information contained herein can be useful for other planning documents such as Port Master Plans[5], Long Range Development Plans, and Public Works Plans. For example, the science applies regardless of the planning documents, and the discussions of how to analyze sea level rise impacts as well as a number of adaptation options may be applicable. In all cases, specific analyses performed and actions implemented will vary based on relevant policies, local conditions, feasibility, and other factors as described throughout the rest of this document.

[4] The term "coastal resources" is used throughout this Guidance and is meant to be a general term for those resources addressed in Chapter 3 of the California Coastal Act including but not limited to beaches, wetlands, agricultural lands, and other coastal habitats; coastal development; public access and recreation opportunities; cultural, archaeological, and paleontological resources; and scenic and visual qualities.

[5] Ports are generally subject to Chapter 8 of the Coastal Act. The policies of Chapter 8 acknowledge the special role and needs of ports and differ in significant ways from the Chapter 3 policies of the Act. Significant categories of development in ports, however, remain subject to Chapter 3, including categories of development listed as appealable pursuant to Section 30715 and development located within specified wetlands, estuaries, and recreation areas.

Coastal Commission reports and briefings on sea level rise: Sea level rise is not a new concern for the Commission. The Coastal Act policies on hazard avoidance and coastal resource protection provide the basis for the Commission to consider the impacts of sea level rise (see *Appendix F: Coastal Act Policies Relevant to Sea Level Rise and Coastal Hazards*), and the Commission has long considered sea level rise, erosion rates, and other effects of a dynamic climate in its analysis of permits and LCPs, staff recommendations, and Commission decisions. In 1992, Section 30006.5 was added to the Coastal Act which, among other things, directs the Commission to both develop its own expertise and interact with the scientific community on various technical issues, including coastal erosion and sea level rise. The Commission's staff also coordinates its work on sea level rise with other state and federal agencies, local governments, academic institutions, non-profit organizations, citizen groups, permit applicants, property owners, and others.

The Commission has documented its sea level rise adaptation and climate change efforts in numerous papers and briefings, including:

- 1989 Report: *Planning for Accelerated Sea Level Rise along the California Coast*
- 2001 Report: *Overview of Sea Level Rise and Some Implications for Coastal California*
- 2006 Briefing: *Discussion Draft: Global Warming and the California Coastal Commission*
- 2008 Briefing: *A Summary of the Coastal Commission's Involvement in Climate Change and Global Warming Issues for a Briefing to the Coastal Commission*
- 2008 White paper: *Climate Change and Research Considerations*
- 2010 Briefing: *A Summary of the Coastal Commission's Involvement in Sea Level Rise Issues for a Briefing to the Coastal Commission*[6]
- 2015 Report: *CCC Sea Level Rise Policy Guidance (Adopted)*
- 2016 Report: *CCC Statewide Sea Level Rise Vulnerability Synthesis*
- 2016 Briefing: *Implementation of the Adopted Sea Level Rise Policy Guidance*

THE IMPORTANCE OF ADDRESSING SEA LEVEL RISE IN LOCAL COASTAL PROGRAMS

The impacts of sea level rise will be felt at the local level, and therefore local responses will necessarily be part of effective management of these impacts. Fortunately, the California Coastal Act lays out a legal and planning framework for community climate preparedness and resiliency planning. LCPs, in combination with Coastal Development Permits (CDPs), provide the implementing mechanisms for addressing many aspects of climate change within coastal communities at the local level.

The goal of updating or developing a new LCP to prepare for sea level rise is to ensure that adaptation occurs in a way that protects both coastal resources and public safety and allows for

[6] Verbal presentation to the Coastal Commission on December 17, 2010 by Susan Hansch (Item 4.5). This presentation can be viewed at the Cal-Span website (<http://www.cal-span.org/media.php?folder[]=CCC>) from approximately minute 22.00 to 24:30.

sustainable economic growth. This process includes identifying how and where to apply different adaptation mechanisms based on Coastal Act requirements, other relevant laws and policies, acceptable levels of risk, and community priorities. LCP and Coastal Act policies are also reflected in CDPs, which implement sea level rise management measures and adaptation strategies through individual development decisions. By planning ahead, communities can reduce the risk of costly damage from coastal hazards, can ensure the coastal economy continues to thrive, and can protect coastal habitats, public access and recreation, and other coastal resources for current and future generations.

The Coastal Commission has made it a priority to support the update of LCPs to address climate change, as demonstrated by Goal 3 of the Commission's *Strategic Plan* (CCC 2013a), which is to "address climate change through LCP planning, coastal permitting, inter-agency collaboration, and public education." Specifically, Objective 3.1.1 directs the Commission to "adopt general sea level rise (SLR) policy guidance for use in coastal permitting and LCP planning and amendment based on best available science…." This Guidance document fulfills Objective 3.1.1 and is one of multiple ongoing Commission efforts to support local governments in updating LCPs to address sea level rise.

Funding for LCP updates: Both the *California Climate Adaptation Strategy* (CNRA 2009) and the *Safeguarding California* plan (CNRA 2014) identified amendments to LCPs as a key strategy for addressing sea level rise in California. However, there are significant funding constraints at both the Commission and local government levels that limit the capacity to update LCPs. Fortunately, three grant programs have recently been funded to support California local governments in updating LCPs to address sea level rise. These grant programs have partially overlapping objectives, as described below. Grant-related information as of the publication of this Guidance is summarized below. For up-to-date information regarding grants, please visit the Local Assistance Grant Program page on the Coastal Commission website.

- **Coastal Commission LCP Local Assistance Grant Program:** This grant program provides funding to local governments to complete the certification of new and updated LCPs, with an emphasis on addressing impacts from sea level rise and climate change. For fiscal years (FY) 2013/14 and 2014/15, the Coastal Commission received $1 million per year ($2 million total) in local assistance funds for the LCP Grant Program. In January 2014, the Coastal Commission awarded $1 million in LCP Grant funds to 11 jurisdictions throughout the state. In November 2014, the Coastal Commission awarded $1 million to 12 jurisdictions. This second round of funding was coordinated through a joint application and review process with the OPC LCP Sea Level Rise Grant program (below) in order to maximize funding opportunities. Funding of $3 million was provided in Commission's FY 2015/16 Budget. This funding was awarded in two additional grant rounds to a total of 21 jurisdictions. Additional funding from the State's Greenhouse Gas Reduction Fund is provided in the Commission's FY 2017/18 and 2018/19 budgets for this grant program; however funding has not yet been awarded.

- **Ocean Protection Council LCP Sea Level Rise Grant Program:** The OPC grant program includes $2.5 million to support local governments in updating LCPs to address sea level rise, including support of sea level rise modeling, vulnerability assessments, and

adaptation planning and policy development. The OPC is administering the program in partnership with the Coastal Commission and the Coastal Conservancy. In November 2013, the OPC awarded $1,305,000 to seven jurisdictions based on recommendations from the three coordinating agencies. The remaining funds were awarded to seven jurisdictions in the second round of the grant program in December 2014. This second round of funding was coordinated through a joint application and review process with the Coastal Commission Grant Program, as described above.

- **State Coastal Conservancy Climate Ready Grant Program:** The Climate Ready Grant Program provides funding for climate change-related projects including projects to update LCPs to address sea level rise. Through three rounds of grants, the Conservancy has awarded $7.3 million for 42 projects. Additional funding is available for this program through the Greenhouse Gas Reduction Fund for projects that use nature-based solutions to adapt to the impacts of climate change.

Coastal Commission Staffing Increase to Support LCP planning: Governor Brown and the California Legislature also approved temporary augmentations to the Coastal Commission's FY 2013/2014, FY 2014/15 and FY 2015/16 budgets of $3 million for state operations and 25 additional authorized positions for Coastal Commission staff to work with local governments to prepare, update, amend, and review LCPs with an emphasis on including climate change issues. In FY 2016/17, the $3 million in funding was included in the Commission's baseline budget, effectively making the additional $3 million for state operations and 25 authorized positions a permanent part of the Commission's budget.

COASTAL RESILIENCY AND PREPARING FOR SEA LEVEL RISE: THE FEDERAL AND STATE CONTEXT

Sea level rise planning efforts are currently taking place at the local, regional, state, and national levels. Framing the efforts in California is a federal strategy to address climate change by both reducing greenhouse gas emissions and adapting to climate change impacts. Recent efforts promoted by the White House include President Obama's January 2015 Executive Order 13960, which modifies Executive Order 11988, Floodplain Management, by expanding the federal approach for establishing flood risk to include the consideration of climate change. Specifically, it recommends using a new flood standard that accounts for climate change in establishing flood elevation and hazard areas when federal funds are used to build, significantly retrofit, or repair structures.

Additionally, Governor Brown, Supervisor Carbajal (Santa Barbara County), Mayor Garcetti (Los Angeles), and Mayor Johnson (Sacramento) were on President Obama's State, Local, and Tribal Leaders Task Force on Climate Preparedness and Resilience, which recently released recommendations for how to modernize programs and policies to incorporate climate change.[7] The Coastal Commission's Guidance document implements many of the Task Force's recommendations by providing tools and assistance to support sea level rise decision making, by establishing a framework for state, local, and federal partnership and coordination on sea level

[7] https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/resilience/taskforce

rise, and by providing guidance on how to improve the resilience of California's coastal infrastructure, natural resources, human communities, and coastal industries.

The State of California has long been a leader in preparing for sea level rise, and in 2008, Governor Schwarzenegger issued an Executive Order (S-13-08) directing state agencies to prepare guidance on sea level rise and to address sea level rise in any state projects located in vulnerable areas. Since then, state agencies have worked collaboratively to accomplish a variety of different actions related to sea level rise adaptation, many of which are listed below. Ten state and federal agencies[8] also commissioned the National Research Council's report, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (2012), to improve understanding of sea level rise projections for California.

More recently, Governor Brown's April 2015 Executive Order B-30-15 addresses climate change and sea level rise adaptation, stating that state agencies shall take climate change into account in their planning and investment decisions. The order requires agencies to ensure that priority is given to actions that build climate preparedness and reduce greenhouse gas emissions, provide flexible and adaptive approaches, protect the state's most vulnerable populations, and promote natural infrastructure solutions. Additionally, AB2516, authored by Assemblymember Gordon and approved in September 2014, established a Planning for Sea Level Rise Database that is available online. The database provides the public with an educational tool from which to learn about the actions taken by cities, counties, regions, and various public and private entities to address sea level rise.

Much of the state's climate change adaptation work has been coordinated with the *Coast and Ocean Workgroup* of the *Climate Action Team* (CO-CAT), of which the Commission is a member. In addition, Commission staff has been involved in the *State Coastal Leadership Group on Sea-Level Rise*, which was established in early 2014 to develop and implement coordinated approaches to address sea level rise across state agencies. The partnership includes senior management from the Coastal Zone Management Agencies (Coastal Commission, San Francisco Bay Conservation and Development Commission, and State Coastal Conservancy) and land management agencies (State Lands Commission and State Parks) along with the Ocean Protection Council and Natural Resources Agency. This Guidance is being coordinated closely with this work[9] to ensure that various initiatives do not conflict and to assure an effective response to challenges such as sea level rise.

To that end, the content of this Guidance is aligned with several key concepts in the *Safeguarding California* plan, including hazard avoidance for new development, encouraging innovative designs and adaptation strategies for structures in areas vulnerable to sea level rise hazards, and addressing climate impacts in Local Coastal Programs and General Plan updates,

[8] The assessment of sea level rise was commissioned by California Department of Water Resources, California Energy Commission, California Department of Transportation, California State Water Resources Control Board, California Ocean Protection Council, Oregon Watershed Enhancement Board, Washington Department of Ecology, National Oceanic and Atmospheric Administration (NOAA), US Army Corps of Engineers (USACE), and US Geological Survey (USGS).

[9] See the Governor's Office of Planning and Research's webpage for the California Climate Change Document which includes a matrix of additional efforts. Available at: http://opr.ca.gov/s_publications.php

among many others. *Safeguarding California* also calls out the need for state agencies to produce guidance documents addressing climate adaptation, and this sea level rise Guidance is part of the statewide effort to fulfill that mandate. As *Safeguarding California* promotes, this Guidance will be a living document that will be updated and revised as sea level rise science advances and new insights are gained regarding adaptation.

State agency policies and guidance on climate change and sea level rise: As a result of the Executive Order S-13-08 and agency needs for guidance, many state agencies have developed climate change and sea level rise policies and guidance documents. For example:

- The California Natural Resources Agency (CNRA) developed the 2009 *California Climate Adaptation Strategy* and the 2014 and 2018 updates (*Safeguarding California)*
- CNRA and the Governor's Office of Emergency Services (Cal OES) collaboratively developed the *California Climate Adaptation Planning Guide* (2012)
- The Governor's Office of Planning and Research is updating its *General Plan Guidelines* to address climate change (a draft update is anticipated in 2015)
- The Ocean Protection Council established *State Sea-Level Rise Guidance* (interim, 2010, 2013, and update, 2018) and passed a *State Sea-Level Rise Resolution* (March 11, 2011)
- The San Francisco Bay Conservation and Development Commission (BCDC) amended the *San Francisco Bay Plan* (1968) to update its policies regarding sea level rise (2011) and has been working on actions to reduce vulnerability to sea level rise throughout the San Francisco Bay through the Adapting to Rising Tides (ART) project
- The California State Coastal Conservancy (Conservancy) established climate change policies, application guidelines for sea level rise, and climate ready principles (2011)
- Cal OES updated the State Multi-Hazard Mitigation Plan in 2013
- The California Department of Transportation (Caltrans) developed guidance on incorporating sea level rise into the planning and development of Project Initiation Documents (2011), and how to address adaptation in Regional Transportation Plans (2013), and has completed numerous other climate change related activities

Other agencies including the California Department of Parks and Recreation and the California State Lands Commission are in the process of developing guidance. The California Department of Fish and Wildlife, the Division of Boating and Waterways, and the Department of Water Resources are all actively addressing sea level rise and have taken steps to conduct research on sea level rise impacts, integrate sea level rise into planning documents, and educate staff on climate change impacts (see Appendix C for a description of these efforts).

Other efforts: Sea level rise planning efforts taking place at all levels of government and across numerous sectors helped inform this Guidance. Commission staff reviewed scientific publications on sea level rise and climate change, adaptation guidebooks, and existing adaptation principles and best practices described in documents such as *Indicators of Climate Change in California* (Cal EPA 2013), *Adapting to Sea Level Rise: A Guide for California's Coastal Communities* (Russell and Griggs 2012), *Climate Smart Conservation: Putting Adaptation Principles into Practice* (Stein *et al.* 2014), *Ecosystem Adaptation to Climate Change in*

California: Nine Guiding Principles (RLF 2012), and *Climate Smart Principles* (PRBO 2013), and applied relevant information to the Guidance where applicable and consistent with the Coastal Act.

LOOKING AHEAD: PLANNING AND PROJECT DESIGN WITH SEA LEVEL RISE

The coast has always been a place of change due to land modifications such as erosion and vertical land motion, and to water variability such as tides, waves, and storms. Despite this dynamic nature, many areas of the California coast have been developed with an expectation that there will be some permanence to the land area and site safety. Development efforts have used such techniques as setbacks, avoidance of existing floodplain areas, elevation above some base flood level, and compliance with design standards to reduce or minimize coastal risks and to ensure an acceptable level of safety.

However, hazards are rarely eliminated or avoided completely. Sea level rise will exacerbate existing hazards and reduce the period of time over which some existing development can remain relatively safe. As noted in *Governing California through Climate Change,* "The notion of stable, predictable geography in which to live, work and build permanent buildings will be off the table in decades ahead" (Little Hoover Commission 2014, p. 2). Locations that might have seemed relatively safe from erosion or flooding 20 or 30 years ago may now be shown to have greater vulnerability due to sea level rise. Sites that might have seemed safe for 80 or 100 years might now only be safe for 40 or 50 years.

As coastal change accelerates, it will become more apparent that development close to the coast cannot be treated in the same way as more inland development, where hazardous conditions may be less dynamic. Coastal dynamics have long been part of land use planning considerations and project design; however, the focus on this change will grow in importance with rising sea level. This may mean that as properties are evaluated for proposed development, the type and intensity of the proposed development may need to change to address the dynamic nature of the property and changing nature of the hazards. As coastal areas erode, the carrying capacity of the area may need to be revised. The trend of redeveloping with additions and larger structures may need to change to one of maintaining what is there or redeveloping with smaller structures that better suit site constraints. The changing expectations are an important aspect of sea level rise adaptation and are an important part of the following discussions on how to include sea level rise in Local Coastal Programs, applications for Coastal Development Permits, and adaptation planning.

Sea level rise is one of many climate change effects that will have impacts on coastal resources and development along the California coast. Accelerated coastal erosion, changing precipitation patterns, increasing temperatures, and more extreme storms will pose planning challenges in concert with sea level rise. There are other climate change impacts in the coastal zone, such as changes in water supply, terrestrial habitats, and fire hazards, that are also important to consider in decision making, and the Commission intends to provide guidance on a range of anticipated climate change impacts in the future.

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Chapter 2

Principles for Addressing Sea Level Rise in the Coastal Zone

This chapter summarizes the Coastal Commission's framing principles for addressing sea level rise, many of which derive directly from the requirements of the Coastal Act. These principles broadly lay out the common ideas and a framework by which sea level rise planning and permitting actions can be assessed, and as such, represent the goals to which actions should aspire. Individual actions and outcomes may vary based on a variety of factors, including applicable policies and location- or project-specific factors that may affect feasibility. There are four categories of principles: using science to guide decisions; minimizing coastal hazards through planning and development standards; maximizing protection of public access, recreation, and sensitive coastal resources; and maximizing agency coordination and public participation. Each category groups important and related concepts that are central to addressing the challenge of rising sea levels. Building on the cumulative knowledge and experience of the Commission, subsequent chapters of this Guidance use these principles to frame practical guidance for addressing sea level rise through planning and permitting decisions in the coastal zone, consistent with the statewide policies of the California Coastal Act as well as the statewide vision of climate resilience outlined in the 2014 *Safeguarding California* plan.

USE SCIENCE TO GUIDE DECISIONS [Coastal Act Sections 30006.5; 30335.5]

1. **Recognize and address sea level rise as necessary in planning and permitting decisions.** Address sea level rise science in all applicable coastal management and decision-making processes, including Local Coastal Programs (LCPs), Port Master Plans (PMPs), Public Works Plans (PWPs), Long Range Development Plans (LRDPs), Coastal Development Permits (CDPs), federal consistency reviews, and other Coastal Act decision processes. Sea level rise should be addressed in both hazard analyses and identification of adaptation strategies/alternative analyses, consistent with the policies of the Coastal Act and LCPs as applicable[10].

2. **Use the best available science to determine locally relevant (context-specific) sea level rise projections and potential impacts for all Coastal Act planning processes, project design, and permitting reviews.** Sea level rise science continues to evolve, and some processes that are not fully understood (*e.g.*, ice sheet dynamics) could potentially have large effects on future sea level rise. At the time of this 2018 update, the best available science on sea level rise in California is the 2018 OPC Guidance, *State of California Sea-Level Rise Guidance: 2018 Update* (See Table 2 and Appendix G). As discussed in greater detail in Chapter 3 of this Guidance, these projections should be used in a scenario-based analysis to

[10] This Guidance document is intended to help implement the Coastal Act and LCPs in the context of sea level rise concerns. However, the standard of review for Commission actions remains the California Coastal Act or applicable certified LCPs. In particular, the recommendations of this Guidance do not constitute "enforceable policies" for purposes of CZMA federal consistency reviews. The enforceable policies for conducting federal consistency reviews will remain the policies of Chapter 3 of the Coastal Act. Also, for federal agency activities, the standard is consistency "to the maximum extent practicable," with Chapter 3, *i.e.*, federal agency activities must be fully consistent unless existing law applicable to the federal agency prohibits full consistency. See 15 CFR. §§ 930.32 and 930.43(d). However, the Commission looks at sea level rise as one part of determining the coastal effects from an activity through CZMA federal consistency reviews and the use of this Guidance by all parties should help determine what those coastal effects may be or how effects from sea level rise may be mitigated. Pursuant to 15 CFR § 930.11(h), implementation of this guidance would not be grounds for an objection (because it is not an "enforceable policy") but it might be one means that "would allow the activity to be conducted consistent with the enforceable policies of the program" in order to avoid an objection.

identify potential local impacts from sea level rise, incorporating storms, extreme water levels, and shoreline change. Other authoritative sea level science and projections may also be used, in part or in full, provided they are peer-reviewed, widely accepted within the scientific community, and locally relevant.

The Commission will re-examine the best available science periodically and as needed with the release of new information on sea level rise.[11] In addition, Commission staff intends to submit a periodic status report to the Commission describing updates on the best available science and adaptation practices, and any potential recommended changes to the Guidance document.

3. **Recognize and address scientific uncertainty using scenario planning and adaptive management techniques.** Given the uncertainty in the magnitude and timing of future sea level rise, particularly over longer time periods, planners and project designers should use scenario-based analysis to examine a range of possible shoreline changes and sea level rise risks to shape LCPs and other plans and project development designs. As appropriate, development projects, resource management plans, and LCP and other planning updates should incorporate an adaptive management framework with regular monitoring, reassessments, and dynamic adjustment in order to account for uncertainty.

4. **Use a precautionary approach by planning and providing adaptive capacity for the higher end of the range of possible sea level rise.** LCPs and CDPs should analyze the medium-high and/or extreme risk aversion projections (from the 2018 OPC SLR Guidance) of sea level rise, as appropriate, in order to understand the implications of a worst case scenario. In some cases, it may be appropriate to *design* for the local hazard conditions that will result from more moderate sea level rise scenarios, as long as decision makers and project applicants *plan* for adaptation pathways that would allow for the implementation of alternative strategies if conditions change more than anticipated in the initial design. Similar to the recommendation in the Ocean Protection Council's 2011 *State Sea-Level Rise Resolution* as well as the 2018 OPC SLR Guidance, the Commission does not recommend using values solely from the lower end of the ranges as this does not give a full picture of the risks. Looking instead at both high and low projections allows users to build an understanding of the overall risk sea level rise poses to the region or site. Chapters 5 and 6 have additional detail regarding how to choose appropriate sea level rise projections.

5. **Design adaptation strategies according to local conditions and existing development patterns, in accordance with the Coastal Act.** Design adaptation strategies using best management practices for adaptation, and tailor the design to the specific conditions and development patterns of the area, in accordance with the Coastal Act and certified LCPs. LCPs should continue to serve as a key implementing mechanism for these adaptation strategies. Adaptation strategies should be evaluated for their ability to both minimize hazards and protect coastal resources.

[11] Major scientific reports include the release of National and State Climate Assessments, IPCC Assessment Reports, and/or State guidance.

Table 2. Sea Level Rise Projections for the San Francisco Tide Gauge[12] (OPC 2018)

Projected Sea Level Rise (in feet): *San Francisco*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2
2110*	3.5	7.3	11.9
2120	4.1	8.6	14.2
2130	4.6	10.0	16.6
2140	5.2	11.4	19.1
2150	5.8	13.0	21.9

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[12] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

MINIMIZE COASTAL HAZARDS THROUGH PLANNING AND DEVELOPMENT STANDARDS
[Coastal Act Sections 30253; 30235; 30001, 30001.5]

6. **Avoid significant coastal hazard risks to new development where feasible.** Section 30253 of the Coastal Act requires new development to minimize risks to life and property in areas of high geologic and flood hazard. The strongest approach for minimizing hazards is to avoid siting new development within areas vulnerable to flooding, inundation, and erosion, thus ensuring stable site conditions without the need for long-term financial and resource commitments for protective devices. Methods to direct new development away from hazardous locations are included in Chapter 7 of this Guidance.

7. **Minimize hazard risks to new development over the life of the authorized development.** Coastal Act Section 30253 requires that new development minimize coastal hazard risks without the use of bluff retaining or shoreline protection devices that would substantially alter natural landforms. When hazards from sea level rise cannot be avoided, new development should include provisions to ensure that hazard risks are minimized for the life of the development without shoreline protection, including through future modification, relocation, or removal when they become threatened by natural hazards, including sea level rise.

8. **Minimize coastal hazard risks and resource impacts when making redevelopment decisions.** LCPs should encourage and require, as applicable, existing at-risk structures to be brought into conformance with current standards when redeveloped. Improvements to existing at-risk structures should be limited to basic repair and maintenance activities and not extend the life of such structures or expand at-risk elements of the development, consistent with the Coastal Act.

9. **Account for the social and economic needs of the people of the state, including environmental justice; assure priority for coastal-dependent and coastal-related development over other development.** In planning and project development concerning sea level rise, assure that the social and economic needs of the people of the state are accounted for in accordance with Coastal Act Section 30001.5(b), with special consideration for working persons employed within the coastal zone (Coastal Act Section 30001(d)). Recognize that low-income communities are less equipped to prepare for and respond to the impacts of sea level rise and ensure that LCP and CDP decisions account for environmental justice concerns and include low-income persons and communities in planning efforts.

10. **Ensure that property owners understand and assume the risks, and mitigate the coastal resource impacts, of new development in hazardous areas.** Property owners should assume the risks of developing in a hazardous location (often referred to as internalizing risk). They should be responsible for modifying, relocating or removing new development if it is threatened in the future. Any actions to minimize risks to new development should not result in current and/or future encroachment onto public lands or in impacts to coastal resources inconsistent with the Coastal Act. LCPs and Coastal Development Permits should require recorded assumptions of risk, "no future seawall" conditions, and/or other appropriate mitigation measures to internalize risk decisions with the private land owner.

MAXIMIZE PROTECTION OF PUBLIC ACCESS, RECREATION, AND SENSITIVE COASTAL RESOURCES [Coastal Act Chapter 3 policies]

11. **Provide for maximum protection of coastal resources in all coastal planning and regulatory decisions.** New and existing development, redevelopment, and repair and maintenance activities as well as associated sea level rise adaptation strategies should avoid or minimize impacts to coastal resources, including public access, recreation, marine resources, agricultural areas, sensitive habitats, archaeological resources, and scenic and visual resources in conformity with Coastal Act requirements. Impacts from development and related activities should be avoided or minimized; unavoidable impacts should be mitigated as necessary.

12. **Maximize natural shoreline values and processes; avoid expansion and minimize the perpetuation of shoreline armoring.** If existing development (both private and public) is threatened by sea level rise hazards, it should employ the least environmentally damaging feasible alternatives and minimize hard shoreline protection. Priority should be given to options that enhance and maximize coastal resources and access, including innovative nature-based approaches such as living shoreline techniques or managed/planned retreat. If traditional hard shoreline protection is necessary and allowable under the Coastal Act, use the least-environmentally damaging feasible alternative, incorporate projections of sea level rise into the design of protection, and limit the time-period of approval, for example, to the life of the structure the device is protecting. Major renovations, redevelopment, or other new development should not rely upon existing shore protective devices for site stability or hazard protection. Where feasible, existing shoreline protection that is no longer being relied upon in this way, or no longer needed otherwise, should be phased out.

13. **Recognize that sea level rise will cause the public trust boundary to move inland. Protect public trust lands and resources, including as sea level rises. New shoreline protective devices should not result in the loss of public trust lands.** Where allowed under the Coastal Act or the relevant LCP, shoreline protective devices should be sited, designed, and conditioned to ensure that they do not result in the loss of public trust lands[13] or encroach onto public trust lands without the permission of the appropriate trustee agency. When sea level rise causes the public trust boundary to move inland such that a protective device that was located on uplands becomes subject to the public trust, the permittee should either obtain permission from the appropriate trustee agency for the encroachment or apply for a permit to remove any encroachments.

14. **Address potential secondary coastal resource impacts (to wetlands, habitat, agriculture, scenic and visual resources, *etc.*) from hazard management decisions, consistent with the Coastal Act.** Actions to address sea level rise in LCPs or permits should not exacerbate other climate-related vulnerabilities or undermine conservation/protection goals and broader ecosystem sustainability. For example, siting and design of new development should not only

[13] The State holds and manages all tidelands, submerged lands, and beds of navigable waterways for the benefit of all people of the State for statewide purposes consistent with the common law Public Trust Doctrine ("public trust"). In coastal areas, the landward location and extent of the State's trust lands are generally defined by reference to the ordinary high water mark, as measured by the mean high tide line. Public trust uses include such uses as maritime commerce, navigation, fishing, boating, water-oriented recreation, and environmental preservation and restoration.

avoid sea level rise hazards, but also ensure that the development does not have unintended adverse consequences that impact sensitive habitats or species in the area.

15. **Address the cumulative impacts and regional contexts of planning and permitting decisions.** Sea level rise will have impacts at both the site-specific and regional scales. In addition to the evaluation of site-specific sea level rise impacts, LCPs and projects should include an evaluation of the broader region-wide impacts, in two different contexts. First, the LCP or project should consider how sea level rise impacts throughout an entire littoral cell or watershed could affect the LCP jurisdiction or project. Second, the LCP or project should consider how options to adapt to sea level rise could result in cumulative impacts to other areas in the littoral cell or watershed. Actions should be taken to minimize any identified impacts.

16. **Require mitigation of unavoidable coastal resource impacts related to permitting and shoreline management decisions.** Require mitigation for unavoidable public resource impacts over the life of the structure as a condition of approval for the Coastal Development Permit. For example, for impacts to sand supply or public recreation due to armoring and the loss of sandy beach from erosion in front of shoreline protection devices, require commensurate in-kind mitigations, a sand mitigation fee, and other necessary mitigation fees (for example, public access and recreation mitigation). Because the longer term effects can be difficult to quantify, especially given uncertainty about the exact rate of future sea level rise, consider requiring periodic re-evaluation of the project authorization and mitigation for longer term impacts.

17. **Consider best available information on resource valuation when planning for, managing, and mitigating coastal resource impacts.** Planning, project development, and mitigation planning should evaluate the societal and ecosystem service benefits of coastal resources at risk from sea level rise or actions to prepare for sea level rise. These benefits can include flood protection, carbon sequestration, water purification, tourism and recreation opportunities, and community character. Resource values can be quantified through restoration costs or various economic valuation models.

MAXIMIZE AGENCY COORDINATION AND PUBLIC PARTICIPATION [Coastal Act Chapter 5; Sections 30006; 30320; 30339; 30500; 30503; 30711]

18. **Coordinate planning and regulatory decision making with other appropriate local, state, and federal agencies; support research and monitoring efforts.** Given the multitude of sea level rise planning, research, and guidance efforts occurring in California, it is critical for agencies and organizations to share information, coordinate efforts, and collaborate where feasible to leverage existing work efforts and improve consistency. Additionally, since many sea level rise hazards affect multiple jurisdictions, their management may also need to be coordinated through multi-agency reviews and coordinated decision making. The Commission will continue to meet this goal through coordination, engagement with stakeholders, and trainings. However, ongoing financial support for these Commission efforts is critical.

19. **Consider conducting vulnerability assessments and adaptation planning at the regional level**. Where feasible, local governments should coordinate vulnerability assessments and adaptation planning with other jurisdictions in the region that face common threats from sea level rise. A regional vulnerability assessment provides an opportunity to evaluate impacts that span multiple jurisdictions, assess and implement regional adaptation strategies, coordinate responses, and leverage research and planning funds.

20. **Provide for maximum public participation in planning and regulatory processes.** The Coastal Commission will continue to provide avenues for maximum public participation in planning and regulatory processes, and will continue to establish and/or expand non-traditional alliances (*e.g.*, between/among public and private resource managers, tribal groups, scientists, decision makers), share knowledge openly and actively, and regularly and clearly communicate to the public on the science as well as on a range of solutions to prepare for sea level rise.

This document and its guiding principles both reflect and complement the priorities outlined in the State of California's climate adaptation strategy, the 2014 *Safeguarding California* plan. While this Guidance specifically focuses on the California Coastal Act and the regulatory work of the Coastal Commission, it also echoes key concepts in *Safeguarding California* that apply statewide. For example, a central theme in *Safeguarding California* is to provide risk reduction measures for California's most vulnerable populations, something that is addressed here in Guiding Principle #9. Similarly, this Guidance and *Safeguarding California* both emphasize the use of best available science (Guiding Principle #2) and the need for communication, outreach, and public participation to increase understanding of climate risks and adaptation options (Guiding Principle #20).

Safeguarding California's Coast and Oceans chapter also states that "new development and communities must be planned and designed for long-term sustainability in the face of climate change," which captures a central purpose and focus of this Guidance. It goes on to specify that "California must ensure public access to coastal areas and protect beaches, natural shoreline, and park and recreational resources" and "the state should not build or plan to build, lease, fund, or permit any significant new structures or infrastructure that will require new protection from sea level rise, storm surges or coastal erosion during the expected life of the structure, beyond routine maintenance of existing levees or other protective measures, unless there is a compelling need." Again, these values are reflected here, as Guiding Principles #6 and #12. In these ways, and through the shared goal of ensuring planning for and resilience against climate change impacts, the two documents are readily consistent and complementary.

Chapter 3

Sea Level Rise Science

This chapter provides information on sea level rise science and covers the following subjects:

- The best available science on sea level rise
- Using scenario-based analysis in response to sea level rise projection ranges
- The physical impacts of sea level rise
- Storms, extreme events, and abrupt change

Sea level rise science continues to evolve, and the discussion below reflects the best available science at the time this document was published.

BEST AVAILABLE SCIENCE ON SEA LEVEL RISE

Scientists widely agree that the climate is changing and that it has led to global increases in temperature and sea level. In the past century, global mean sea level (MSL) has increased by 7 to 8 in (17 to 21 cm; IPCC 2013). It is extremely likely (>95% probability of occurrence) that human influence has been the dominant cause of the observed warming of the atmosphere and the ocean since the mid-20th century (IPCC 2013).

There are a number of methods for projecting future changes in global sea level, including using extrapolations from historical trends and observations, estimations from physical models, and combinations of observations and modeling, known as semi-empirical methods. For a detailed description of these techniques, see Appendix A.

Scientists also measure sea level change at a variety of scales, from the global down to the local level. For example, the sea level rise projections in Intergovernmental Panel on Climate Change (IPCC) reports are based on large scale models that give global projections. But sea level does not change uniformly around the globe, so modifications for local conditions are necessary for adaptation planning.

In particular, global average sea level rise is driven by the expansion of ocean waters as they warm, the addition of freshwater to the ocean from melting land-based ice sheets and glaciers, and from extractions in groundwater (Figure 3). However, regional and local factors such as tectonics and ocean and atmospheric circulation patterns result in relative sea level rise rates that may be higher or lower than the global average. As such, global-scale models are often "downscaled" through a variety of methods to provide locally relevant data.

For California, the 2018 OPC SLR Guidance, described below, provides sea level rise projections that have been refined for 12 tide gauges throughout California. More detailed refinement of sea level rise projections is not considered necessary at this time, as variations from the nearby tide gauges will often be quite small, and may be insignificant compared to other sources of uncertainty[14]. It is important to note, though, that while the sea level rise projections are fairly similar throughout the state, the physical impacts may be quite different,

[14] Although the Commission believes that the OPC Guidance projections can be used without modification, it recognizes that other studies exist with localized data, for example those completed in the Humboldt Bay region, which may also be appropriate for use.

and locally-specific analysis of impacts will be very important. Detail on physical impacts and how to assess them is provided in Section C of this chapter and in Appendix B.

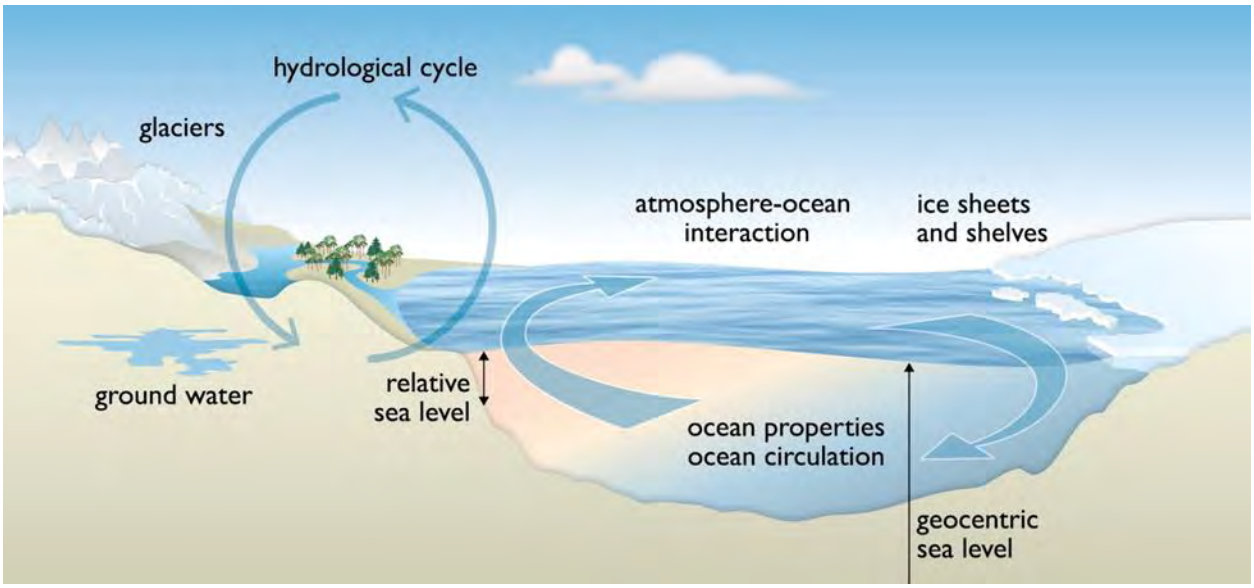

Figure 3. Climate-sensitive processes and components that can influence global and regional sea level. Changes in any one of the components or processes shown will result in a sea level change. The term "ocean properties" refers to aspects such as temperature, salinity, and density, which influence and are dependent on ocean circulation. (*Source*: IPCC 2013, Figure 13.1)

Global Sea Level Rise Projections

The IPCC 5th Assessment Report (AR5), which was released in September 2013, is the most recent global scale assessment of sea level rise. The report projects a rise in *global* average sea level by 10-39 in (26 to 98 cm) by the year 2100 (relative to mean sea level from 1985 to 2005) depending on the emissions scenario[15] (Figure 4). These projections are about 50% higher than the projections from the IPCC 4th Assessment Report (AR4, released in 2007). This is because the IPCC changed the climate model inputs between AR4 and AR5. In particular, much of the increase in the amount of sea level rise projected in the AR5 is due to the inclusion of sea level rise resulting from the loss of ice sheets. Ice sheet dynamics were not included in the AR4, but enhancements in physical models that account for such ice sheet dynamics have allowed for a better understanding and greater confidence in this input, and as such were included in the AR5[16]. The IPCC also released a special report in October 2018 that discusses the impacts associated with limiting global warming to 1.5°C as compared to 2°C. This report found that sea level rise would be about 10cm less with only 1.5°C, enabling greater opportunities for adaptation in both human and ecological systems (IPCC 2018).

[15] See Appendix A for more detail on emissions scenarios and the IPCC reports.

[16] Many of the other reports and studies cited in this Guidance used the AR4 as a reference (and for this reason detail on the AR4 is included in Appendix A). It is important to note, though, that while these other reports relied on the AR4 scenarios and model outputs for some climatic changes, many (*e.g.*, the *National Climate Assessment* (Melillo *et al*. 2014) and the NRC (2012) reports highlighted below) accounted for the loss of ice sheets through the use of semi-empirical models or other methods, further honing their results.

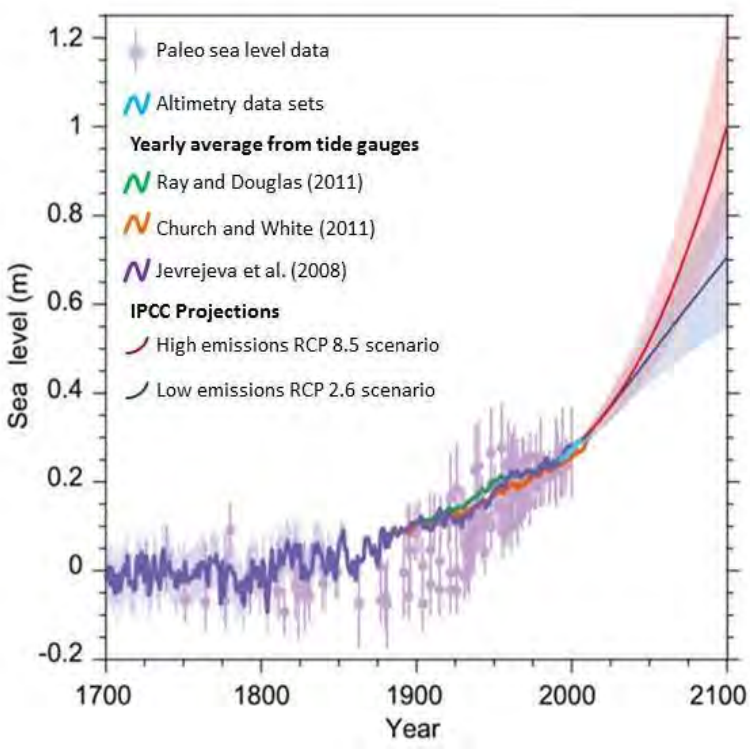

Figure 4. Past and projected future sea level trends (IPCC). Compilation of paleo sea level data, tide gauge data, altimeter data, and central estimates and likely ranges for projections of global mean sea level rise for low emissions RCP2.6 (blue) and high emissions RCP8.5 (red) scenarios, all relative to pre-industrial values. (*Source*: IPCC 2013, Figure 13.27)

National Sea Level Rise Projections

The third National Climate Assessment (NCA; Melillo *et al.*) was released in May 2014, and includes the current best-available science on climate change and sea level rise at the *national* scale[17]. The sea level rise projections in the NCA were informed by the 2012 NOAA report titled *Global Sea Level Rise Scenarios for the United States National Climate Assessment* (Parris *et al.* 2012). This report provides a set of four global sea level rise scenarios ranging from 8 in to 7 ft (0.2 to 2.0 m) by the year 2100 (using mean sea level in 1992 as a baseline) reflecting different amounts of future greenhouse gas emissions, ocean warming and ice sheet loss (Figure 5). The low and intermediate-low scenarios assume very significant reductions in greenhouse gas emissions, and limited changes in ocean warming and ice sheet loss. The intermediate-high scenario is based on the average of the high projections from semi-empirical models, which are based on the highest IPCC 4th Assessment Report (AR4; 2007) emissions scenario (A1FI).[18] The highest scenario (2.0 m) combines the IPCC AR4 projections with the maximum possible ice

[17] Note that the 4th National Climate Assessment is due to be released in late 2018. https://www.globalchange.gov/nca4

[18] The IPCC emissions scenarios make assumptions about future changes in population growth, future economic growth and the introduction of clean and efficient technology. The A1FI scenario assumes continued intensive use of fossil fuels, high economic growth, and low population growth that peaks mid-century. The B1 scenario assumes significant reduction in fossil fuel use, an increase in clean technologies, and the same low population growth that peaks mid-century. The A1F1 yields the highest CO_2 emissions by 2100 and the B1 scenario yields the lowest.

sheet melt that could occur by 2100. Given the recent studies that suggest that glacier and ice sheet loss could contribute significantly to rising sea levels (*e.g.*, Rahmstorf 2007; Vermeer and Rahmstorf 2009; IPCC 2013; McMillan *et al*. 2014; Morlighem *et al*. 2014) and evidence that current greenhouse gas emissions are tracking with intermediate IPCC AR4 scenarios (Rahmstorf *et al*. 2012), the low and intermediate-low scenarios likely underrepresent future sea level rise unless demonstrable reductions in global greenhouse gas emissions occur soon.

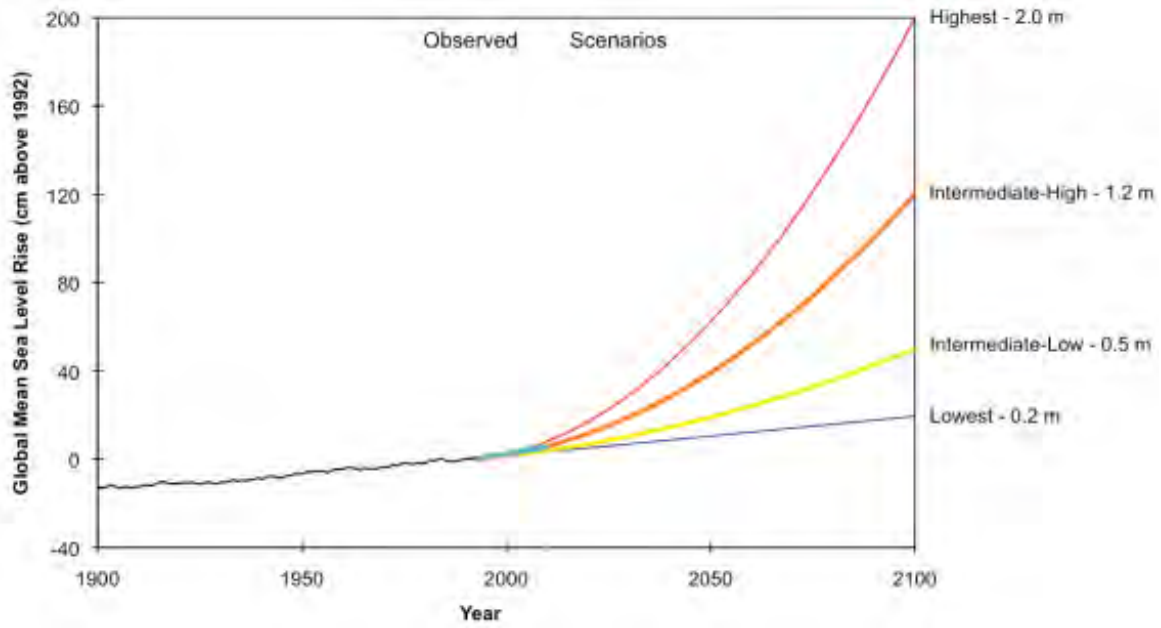

Figure 5. Observed and projected future sea level rise scenarios (Melillo *et al.* 2014). Global mean sea level rise scenarios used in the *US National Climate Assessment*. The Intermediate High Scenario is an average of the high end of ranges of global mean SLR reported by several studies using semi-empirical approaches. The Intermediate Low Scenario is the global mean SLR projection from the IPCC AR4 at 95% confidence interval. (*Source: Global Sea Level Rise Scenarios for the United States National Climate Assessment (*Parris *et al*. 2012))

Sea Level Rise Projections for California

Tide gauges and satellite observations show that in the past century, mean sea level in California has risen 8 in (20 cm), keeping pace with global rise. For the early portion of the 21st century (through approximately 2011), mean sea level in California remained relatively constant, and may have been suppressed due to factors such as offshore winds and other oceanographic complexities. Bromirski *et al*. (2011, 2012) postulated that persistent alongshore winds have caused an extended period of offshore upwelling that has both drawn coastal waters offshore and replaced warm surface waters with cooler deep ocean water. Both of these factors could offset the global sea level rise trend in this region. However, localized sea level suppression will not continue indefinitely. As the Pacific Decadal Oscillation, wind, and other conditions shift, California sea level will continue rising (NRC 2012; Bromirski *et al.* 2011, 2012). Indeed, satellite altimetry data shows that sea level along the west coast of the United Sates has increased over the past five years, and studies suggest that the shift in sea level in the Pacific Ocean will likely persist in the coming years, leading to substantially higher sea level off the west coast of the United States and lower sea level in the western tropical Pacific (Hamlington *et al.*, 2016).

The State of California has undertaken significant research to understand how much sea level rise to expect over the coming decades and the likely impacts of such sea level rise. In 2013, the Ocean Protection Council (OPC) recognized the National Research Council (NRC) report, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past Present and Future*, as best available science for the State of California, and recommended in its 2013 State Sea-Level Rise Guidance that state agencies and others use these projections in their planning processes. Likewise, when the Coastal Commission initially adopted this Sea Level Rise Policy Guidance in 2015, it recommended using the NRC report as best available science.

The NRC Report presents sea level rise projections in ranges due to several sources of uncertainty. One significant source of uncertainty is over future greenhouse gas emissions: researchers cannot know the amount or rate of greenhouse gas emissions that will be generated over the coming decades. Large-scale curtailment of greenhouse gas emissions would keep sea level rise towards the lower end of the projections, while business as usual emissions scenarios would result in the higher end of the projections. Because the rate of future greenhouse gas emissions is dependent on global policy decisions, researchers use various climate models that account for different emissions scenarios (business as usual, with little reduction in the current rate of greenhouse gas emissions; large-scale emissions reductions that begin in the near future; and various intermediate scenarios).

A second significant source of uncertainty is related to the dynamics of ice sheet loss. This topic has continued to be extensively researched since the NRC report was published, and recent studies have since informed updated statewide guidance. In April 2017, a Working Group of the Ocean Protection Council's Science Advisory Team released a report synthesizing current sea level rise science. The report, titled *Rising Seas in California: An Update on Sea-Level Rise Science*, presents advances in sea level rise modeling, notably including improved understanding of the processes that could drive extreme global sea level rise from ice loss from the Greenland and Antarctic ice sheets. A significant finding from this report is that Antarctic ice sheet loss could have an outsized impact on sea level rise in California compared to the global average due to ocean circulation dynamics. Further, the report states that rapid ice sheet loss could result in upwards of 10 feet of sea level rise along the California coast by 2100 (this scenario is referred as an "extreme scenario" or "H++ scenario" throughout the OPC Science Report and this Guidance).

The Science Report also includes new "probabilistic projections" which associate a likelihood of occurrence with the sea level rise amounts and rates. These probabilistic projections are based on the probabilities that the ensemble of climate models used to estimate contributions of sea level rise (from thermal expansion, ice sheet loss, oceanographic conditions, and other relevant factors) will predict a certain amount of sea level rise. A critical caveat is that these probabilistic projections did not account for the most recent science regarding the potential for rapid ice sheet loss, and therefore may underestimate the probability of higher sea level rise scenarios. It is understood that as inputs to climate models change (based on evolving science for example), so too will the probabilities associated with different projections.[19]

[19] The 4th California Climate Assessment developed projections that present a broader range of SLR estimates than the Rising Seas science report and the 2018 OPC SLR Guidance. Both programs' projections are based on estimates of contributions to SLR from primary sources using different methods, including model projections and expert input. However, the 4th Assessment

OPC incorporated these findings into updates to their 2013 State Sea-Level Rise Guidance. The new *State of California Sea-Level Rise Guidance: 2018 Update* (2018 OPC SLR Guidance) contains projections for 12 tide gauges throughout California (to account for localized variations in vertical land motion and other factors) for each decade from 2030 to 2150. The projection table for the San Francisco tide gauge is provided below in Table 3, and the projection tables for the other tide gauges can be found in Appendix G. The tables are adapted from the 2018 OPC SLR Guidance, and present the three scenarios that OPC recommends for use in planning, permitting, investment, and other decisions. These scenarios include:

1. *Low risk aversion scenario:* the upper value for the "likely range" (which has approximately a 17% chance of being exceeded); may be used for projects that would have limited consequences or a higher ability to adapt.
2. *Medium-high risk aversion scenario:* the 1-in-200 chance (or 0.5% probability of exceedance); should be used for projects with greater consequences and/or a lower ability to adapt.
3. *Extreme risk aversion (H++):* accounts for the extreme ice loss scenario (which does not have an associated probability at this time); should be used for projects with little to no adaptive capacity that would be irreversibly destroyed or significantly costly to repair, and/or would have considerable public health, public safety, or environmental impacts should that level of sea level rise occur.

In accordance with this statewide guidance, the Coastal Commission considers the 2018 OPC Sea-Level Rise Guidance (and the related 2017 Rising Seas science report) as the best available science on sea level rise in California, and recommends using the above scenarios in relevant Coastal Commission planning and permitting decisions.[20] More information on which scenarios to use in certain circumstances can be found in Chapters 5 and 6. The Commission will continue to periodically re-examine and update sea level rise projections as they evolve with the release of new scientific reports and information on local and regional sea level trends. Additionally, as sea level rise science continues to evolve, equivalent resources may be used by local governments and applicants provided the sources are peer-reviewed, widely accepted within the scientific community, and locally relevant.

The Coastal Commission will be using and recommends that local governments and applicants use best available science, currently identified as the projections provided in the 2018 OPC Sea-Level Rise Guidance (Table 3; Appendix G), in all relevant local coastal planning and coastal development permitting decisions.

incorporates the findings from the recent studies regarding the potential for rapid loss of Antarctic ice sheets (which results in the H++ scenario of about 10ft. of SLR by 2100) into its probabilistic projections whereas the OPC reports do NOT include this possibility in the probabilistic projections, as explained above.

[20] Note that while the Coastal Commission now recognizes the 2018 OPC SLR Guidance as best available science on sea level rise projections, the 2012 NRC Report and other related studies still contain valuable information, and references to these documents and studies throughout this guidance remain relevant and applicable.

Table 3. Sea Level Rise Projections for the San Francisco Tide Gauge[21] (OPC 2018)

Projected Sea Level Rise (in feet): *San Francisco*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2
2110*	3.5	7.3	11.9
2120	4.1	8.6	14.2
2130	4.6	10.0	16.6
2140	5.2	11.4	19.1
2150	5.8	13.0	21.9

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[21] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

USING SCENARIO-BASED ANALYSIS IN RESPONSE TO SEA LEVEL RISE PROJECTION RANGES

Despite the recent advances in sea level rise science, sea level rise projections, including those in the 2018 OPC SLR Guidance (Table 3; Appendix G) and other state, national, and global reports, are typically presented in ranges due to several sources of significant uncertainty.

The two primary sources of uncertainty in global sea level projections include:

1) Uncertainty about future greenhouse gas emissions and concentrations of sulfate aerosols, which will depend on future human behavior and decision making, and
2) Uncertainty about future rates of land ice loss (NRC 2012; McMillan *et al*. 2014; Morlighem *et al*. 2014; Griggs *et al.* 2017; OPC 2018).

Additionally, the further into the future sea level rise is projected, the greater the uncertainty (and therefore the range in projections) becomes. This occurs because the longer the projection period, the greater the likelihood that models will deviate from the actual impacts of climate change (NRC 2012) and the more dependent projections become on the trajectory of greenhouse gas emissions (OPC 2018). This is reflected in the projections included in the 2018 OPC SLR Guidance, which includes single values for the years 2030, 2040, and 2050, but projections for both low and high emissions scenarios in 2060 and beyond. According to the 2018 OPC SLR Guidance, near-term sea level rise has been locked in by past greenhouse gas emissions whereas sea-level rise over the longer-term will become increasingly dependent on efforts to curtail greenhouse gas emissions.

This Guidance recommends using scenario-based analysis to address the uncertainty in sea level projections. Scenario-based analysis (or planning) refers to the idea of developing multiple scenarios from which to analyze vulnerabilities, generate new ideas and adaptation options, and/or test strategies. In the context of this Guidance, scenario-based analysis includes choosing several possible sea level rise amounts as a starting point to evaluate impacts to coastal resources and potential risks to development over time. This type of scenario-based approach is useful because it reveals the full range of possible consequences of sea level rise that can be reasonably expected for particular regions or sites according to the best available science. Additionally, a scenario-based analysis helps to reveal the tipping points indicating if or when sea level rise will become a serious issue in a particular location. In many cases, using multiple sea level rise scenarios will help to hone in on the types of hazards for which to prepare.

In general, the Coastal Commission recommends using best available science (currently the 2018 OPC SLR Guidance) to identify a range of sea level rise scenarios, including the low, medium-high, and, as appropriate, extreme risk aversion scenario[22]. In practice, the process for choosing scenarios and performing scenario-based analysis will be slightly different for LCP planning and

[22] Similar to the recommendation in the OPC's 2011 *State Sea-Level Rise Resolution,* as well as the 2018 OPC SLR Guidance, the Commission does not recommend using projections solely from the lower end of the ranges, as this does not give a full picture of the risks. Looking instead at a range of projections allows users to build an understanding of the overall risk sea level rise poses to the region or site.

CDP applications due to the different planning goals and levels of technical detail required for each.

For a Local Coastal Program (LCP), the general goal is to assess the potential impacts from sea level rise over the entire planning area and over a range of time horizons so that both short and long term adaptation strategies can be identified and implemented. Another important facet of LCP planning is identifying locations that are particularly vulnerable so that additional, more detailed studies can be performed if necessary, and adaption options and actions can be prioritized. Scenario-based analysis in the context of LCP planning includes choosing a range of sea level rise projections to analyze so as to understand the best and worst case scenarios and to identify amounts of sea level rise and related conditions that would trigger severe impacts and the associated time period for when such impacts might occur. Choosing sea level rise scenarios in the context of LCP planning is described in greater detail in Chapter 5.

In the context of a Coastal Development Permit (CDP) application, the goal is to understand how sea level rise will impact a specific site and a specific project over its expected lifetime so as to ensure that the proposed development is safe from hazards and avoids impacts to coastal resources. Thus, in the context of a CDP, it is important to identify the amounts of sea level rise that could result in effects to a particular site as well as the time period(s) over which those effects could occur so that the proposed development can be safely sited and designed to avoid resource and development impacts. However, some sites will be completely safe from sea level rise under even the highest projection scenarios, while others will depend on the timing and magnitude of sea level rise to determine safety. Therefore, scenario-based planning analysis can be used as a screening process to identify if and when sea level rise might become a problem. Identifying sea level rise scenarios in the context of CDPs is described in greater detail in Chapter 6.

Overall, scenario-based planning should help planners make reasonable and informed decisions about whether their projects or plans are compatible with the local hazards influenced by sea level rise, and identify the types of adaptation measures that might be appropriate given the local circumstances and requirements of the Coastal Act. By exploring the range of future scenarios based on the best available science, users of this document can make decisions based on full understanding of possible future hazards, ultimately achieve outcomes that are safer for both development and coastal resources, and avoid costly damages to projects.

For more information on scenario-based planning in the context of LCPs and CDPs see Chapters 5 and 6, respectively. A number of additional resources related to scenario-based planning are available, including a handbook from the National Park Service (2013) and guidance from Point Blue Conservation Science and the California Coastal Conservancy (Moore *et al*. 2013). See Appendix C for these and other resources related to scenario-based analysis and adaptation planning.

PHYSICAL EFFECTS OF SEA LEVEL RISE

Continued and accelerated sea level rise will have widespread adverse consequences for California's coastal resources (See summary in Figure 8). The main physical effects of sea level

rise include increased flooding, inundation, wave impacts, coastal erosion, changes in sediment dynamics, and saltwater intrusion. These impacts are interrelated and often occur together. Absent any preparatory action, an increase in sea level may have serious implications for coastal resources and development, as described in Chapter 4. In addition, these physical effects could have disproportionate impacts on vulnerable communities that have lower capacity to adapt.

Physical effects from sea level rise to the coastal zone include the following:

- **Flooding and inundation:** Low lying coastal areas may experience more frequent flooding (temporary wetting) or inundation (permanent wetting), and the inland extents of 100-year floods may increase. Only a 10 cm rise in sea level could double the flooding potential along the west coast in locations such as San Francisco and Los Angeles (Vitousek *et al*. 2017). Riverine and coastal waters come together at river mouths, coastal lagoons, and estuaries, and higher water levels at the coast may cause water to back up and increase upstream flooding (Heberger *et al*. 2009). Drainage systems that discharge close to sea level could have similar problems, and inland areas may become flooded if outfall pipes back up with salt water. In addition, other climate change impacts such as increases in the amount of precipitation falling as rain rather than snow will add to river flooding in some areas.
- **Wave impacts:** Wave impacts can cause some of the more long-lasting consequences of coastal storms, resulting in high amounts of erosion and damage or destruction of structures. The increase in the extent and elevation of flood waters from sea level rise will also increase wave impacts and move the wave impacts farther inland. Erosion rates of coastal cliffs, beaches, and dunes will increase with rising sea level and are likely to further increase if waves become larger or more frequent (NRC 2012).
- **Erosion:** Large sections of the California coast consist of oceanfront bluffs that are often highly susceptible to erosion. With higher sea levels, the amount of time that bluffs are pounded by waves would increase, causing greater erosion (NRC 2012). This erosion could lead to landslides and loss of structural and geologic stability of bluff top development such as homes, infrastructure, the California Coastal Trail, Highway 1, and other roads and public utilities. The Pacific Institute (Heberger *et al*. 2009) estimated that 41 square miles (106 square km) of coastal land from the California-Oregon border through Santa Barbara County could be lost due to increased erosion with 4.6 ft (1.4 m) of sea level rise by the year 2100, and approximately 14,000 people now live in those vulnerable areas. Increased erosion will not occur uniformly throughout the state. Dunes in Humboldt County could erode a distance of approximately 2000 ft (nearly 600 m) by the year 2100 (Heberger *et al*. 2009; Revell *et al*. 2011). In southern California, higher sea level rise could result in a two-fold increase in bluff retreat rates over historic rates, causing a total land loss of 62 – 135 feet by 2100 (Limber *et al.* 2018 (in press). Man-made structures like dikes and levees may also be impacted by erosion, increasing flooding risk of the areas protected by those structures, such as low-lying agricultural land. Over the long term, rising sea levels will also cause landward migration of beaches due to the combined effects inundation and loss of sediment due to erosion (NRC 2012).

Figure 6. Photo of Esplanade Apartments threatened by cliff erosion in 2013 in Pacifica, CA. (*Source: California Coastal Records Project*)

- **Changes in beaches, sediment supply and movement:** Sediment is important to coastal systems in, for example, forming beaches and mudflats and as the substrate for wetlands. Sea level rise will result in changes to sediment availability. Higher water levels and changing precipitation patterns could change erosion and deposition patterns. Loss of sediment could worsen beach erosion and possibly increase the need for beach nourishment projects (adding sand to a beach or other coastal area), as well as decrease the effectiveness and long-term viability of beach nourishment if sand is quickly washed away after being placed on a beach (Griggs 2010). Shoreline change models predict that by 2100, without changes in coastal management, 30 to 67% of Southern California beaches may be completely lost due to rising sea level (Vitousek *et al.* 2017; Bedsworth *et al.* 2018). Sediment supplies in wetland areas will also be important for long-term marsh survival. Higher water levels due to sea level rise, however, may outpace the ability of wetlands to trap sediment and grow vertically (Titus 1988; Ranasinghe *et al*. 2012; Van Dyke 2012).
- **Saltwater intrusion and rising groundwater:** An increase in sea level could cause saltwater to enter into groundwater resources, or aquifers. Existing research suggests that rising sea level is likely to degrade fresh groundwater resources in certain areas, but the degree of impact will vary greatly due to local hydrogeological conditions. Generally, the most vulnerable hydrogeological systems are unconfined aquifers along low-lying coasts, or aquifers that have already experienced overdraft and saline intrusion. In California, saline intrusion into groundwater resources is a problem in multiple areas, including but not limited to the Pajaro Valley (Hanson 2003), Salinas Valley (Hanson *et al*. 2002a; MCWRA 2012), Oxnard Plain (Izbicki 1996; Hanson *et al*. 2002b), and the heavily urbanized coastal plains of Los Angeles and Orange Counties (Edwards and Evans 2002; Ponti *et al*. 2007; Nishikawa *et al*. 2009; Barlow and Reichard 2010). Groundwater sources for coastal agricultural lands may also be susceptible to saltwater intrusion. Sea level rise can also result in higher groundwater, presenting another source of flood rise (Hoover *et al.* 2016).

STORMS, EXTREME EVENTS, AND ABRUPT CHANGE

Much of the California coast is currently vulnerable to flooding and wave damage during large storm events, and even more of the coast is vulnerable to storm impacts when they occur during times of heightened water levels, such as high tides, El Niño events, a warm phase of the Pacific Decadal Oscillation, or a combination of these factors. Sea level rise will increase vulnerability to storms even more because rising water levels will result in more areas being impacted.

Climate change will likely modify or change much more than just sea level. One potential climate change-related impact that will interact most directly with sea level rise hazards is a change in frequency or intensity of coastal storms (storminess) and extreme events. The extremes associated with high-intensity events may be particularly devastating since they have the potential to cause broad-scale damage, as seen from recent events such as Hurricanes Katrina and Rita, Superstorm Sandy, and the Tohoku tsunami. Abrupt change in sea levels is another potential impact of climate change. Both potential impacts are described below.

Extreme Events and Storms

There are several ways to describe extreme events, and most definitions tend to frame these events in terms of consequences or past observations. Kruk *et al*. 2013 define extreme events as "the floods that displace us from our homes, the high waves that wash out coastal roads, or the toppling of trees and power poles from a passing storm." The IPCC defines climate extremes as "the occurrence of a value of a weather or climate variable above (or below) a threshold value near the upper (or lower) ends of the range of observed values of the variables" (IPCC 2012, p. 5). In general, extreme events, by their very nature, are those beyond the normal events that are considered in most shoreline studies. For example, for storm waves and flood conditions, an extreme event will normally be anything worse than the 100-year event.

Extreme events are of particular concern to the examination of coastal vulnerability and damage because they tend to cause the greatest community upheaval and can result in irreversible changes to the coastal landscape. In the El Niño winter of 1982-1983, for example, a series of storms, several of which coincided with high tide, caused more than $200 million in damage (in 2010 dollars) to coastal California (OPC 2013). Similarly, the 2015/16 El Niño was one of the strongest on record, resulting in significant changes to the shoreline. The 2012 NRC report notes that "waves riding on these higher water levels will cause increased coastal damage and erosion—more than that expected by sea level rise alone" (NRC 2012, p.107), and the 4th California Climate Assessment found that a 100-year coastal flood would almost double the damages associated with just 20 inches of sea level rise alone (Bedsworth *et al.* 2018). These impacts result because a rise in sea level will mean that flooding and damage will likely reach further inland. The IPCC *Fifth Assessment Report* (2013) states that it is very likely[23] that there will be a significant increase in the occurrence of future sea level extremes primarily as a result of an increase in mean sea level, with the frequency of a particular sea level extreme increasing by an order of magnitude or more in some regions by the end of the 21st century.

[23] The IPCC has assigned quantitative levels to various terms of confidence and likelihood. High confidence means there is about an 8 out of 10 chance of being correct. Very likely has a greater than 90% probability of occurrence. Other terms that will be used later in this discussion are likely (> 66% probability of occurrence), medium confidence (about a 5 out of 10 chance), low confidence (about a 2 out of 10 chance). *Source of terms*: http://www.ipcc.ch/pdf/supporting-material/uncertainty-guidance-note_ar4.pdf

According to the 2012 NRC report, if the frequency or intensity of storms changes, then so will the frequency and intensity of extreme sea level events. However, the evidence that storminess will change in the North Pacific Ocean is conflicting and inconclusive (Cayan *et al*. 2009; Lowe *et al*. 2010; Dettinger 2011). Still, even if storminess does not change, sea level rise will exacerbate storm surge and high waves, magnifying their impact on the coastline. For this reason, it is important to include these factors in the analysis of sea level rise hazards. Methodologies for these analyses are included in Appendix B.

Abrupt change

Currently, the best available science is inconclusive as to whether sea level could change abruptly. Thermal expansion and direct melting of land ice is expected to be gradual, leading to slow and steady sea level rise. However, rapid collapse of land-based ice sheets could lead to sudden acceleration of sea level rise, as discussed in the 2017 Rising Seas science report and the 2018 OPC SLR Guidance. Specifically, the science report explains that if greenhouse gas emissions are not curtailed, "glaciological processes could cross thresholds that lead to rapidly accelerating and effectively irreversible ice loss." Recent ice sheet observations and model simulations that consider positive feedback loops associated with ice sheet melting and related non-linear acceleration of sea level rise have attempted to estimate the maximum physically plausible amount of sea level rise. These studies informed the extreme/H++ scenario included in the OPC science report and 2018 SLR OPC Guidance (of approximately 10 feet by 2100). Importantly, it will be difficult to determine if the world is on track for extreme and irreversible ice loss for some time because the processes that drive extreme ice loss in the later part of the century or beyond are different than those that are driving ice loss now. Thus, the likelihood of extreme sea level rise is uncertain and remains an area in need of future research (NRC 2012; Griggs *et al.* 2017; OPC 2018).

Rapid change in land elevation during an earthquake is another potential cause of an abrupt sea level change in a localized area. A large earthquake in the Cascadia Subduction Zone could cause land in northern California, Oregon, and Washington to suddenly subside relative to sea level, causing a sudden rise in relative sea level by 3-6.5 ft (NRC 2012). Large earthquakes in this zone are expected to occur about every several hundred to one thousand years, and the most recent such earthquake occurred in 1700. The sudden rise or drop in land elevation would occur in a matter of minutes. If the land were to subside, the relative rise in sea level would be rapid and it would add to sea level rise already occurring from climate-related forcing.

There is also potential for oceanographic conditions to lead to a relatively rapid rate of sea level rise in California. Examination of the tidal gauge records indicate that there was no significant interannual rise in California's sea level from 1983 to 2011, despite a rise in global sea level over the same time period. One explanation, presented by Bromirski *et al*. (2011, 2012), links this suppression of sea level rise with persistent alongshore winds and an extended period of offshore upwelling that has both drawn coastal waters offshore and replaced warm surface waters with cooler deep ocean water. However, this suppression will not continue indefinitely and as the Pacific Decadal Oscillation, wind, and other conditions shift, California sea level will continue rising, likely at an accelerated rate (NRC 2012; Bromirski *et al.* 2011, 2012).

Chapter 4

Consequences of Sea Level Rise for Communities, Coastal Resources, and Development

The physical effects of sea level rise described in the previous chapter could have significant consequences for California's citizens, coastal communities and the resources protected by the Coastal Act. This chapter describes some of these consequences and notes the relevant Coastal Act policies for convenience. It is important to consider both the direct impacts of sea level rise on coastal resources and what these impacts mean for the people and communities who use and enjoy these coastal resources. It is also important to consider environmental justice when analyzing sea level rise impacts, as described in greater detail in the section below.

Sea Level Rise Adaptation Planning and Environmental Justice

Sea level rise and how we respond to it may result in significant changes in the distribution of environmental benefits, or environmental justice, in California. General planning law in California specifically recognizes and defines environmental justice as "the fair treatment of people of all races, culture and income with respect to the development, adoption, implementation and enforcement of environmental laws, regulations, and policies" (Government Code Section 65040.12; and see Public Resources Code Section 71110-71116). Environmental justice demands that all people, regardless of their race, ethnicity, or level of income, are able to enjoy the benefits of our environmental protection programs and our environment generally. *Safeguarding California* (CNRA 2018) identifies climate justice as an important cross-sector theme in the state's climate adaptation and resilience planning efforts. Additionally, the 2018 OPC SLR Guidance recommends prioritizing social equity, environmental justice, and the needs of vulnerable communities in adaptation planning.

The California Coastal Act also recognizes the fundamental importance of the fair distribution of environmental benefits in Section 30001:

> *The Legislature hereby finds and declares: (a) That the California coastal zone is a distinct and valuable natural resource of vital and enduring interest to all the people and exists as a delicately balanced ecosystem. (b) That the permanent protection of the state's natural and scenic resources is a paramount concern to present and future residents of the state and nation. (c) That to promote the public safety, health, and welfare, and to protect public and private property, wildlife, marine fisheries, and other ocean resources, and the natural environment, it is necessary to protect the ecological balance of the coastal zone and prevent its deterioration and destruction. (d) That existing developed uses, and future developments that are carefully planned and developed consistent with the policies of this division, are essential to the economic and social well-being of the people of this state and especially to working persons employed within the coastal zone.*

The Act thus declares that the protection of the coast is of vital interest to *all* the people, of paramount concern *to present and future residents* of the state and nation, and that careful planning and development is essential to *the economic and social well-being* of the people. This broad direction to protect the coast for everyone is underscored in Section 30006, which declares:

> *. . . the public has a right to fully participate in decisions affecting coastal planning, conservation and development; that achievement of sound coastal conservation and development is dependent upon public understanding and support; and that the*

> *continuing planning and implementation of programs for coastal conservation and development should include the widest opportunity for public participation.*

Hence, everyone is entitled to participate in the management decisions that determine how the benefits and burdens of managing California's coast will be distributed. Ensuring low-income and underserved communities are included in environmental decisions is a key tenet of environmental justice and will minimize disproportionate environmental and public health impacts. Furthermore, in 2016, the Governor signed AB 2616 (Burke), which amended the Coastal Act and gives the Commission new authority to specifically consider environmental justice when making permit decisions. This legislation also cross-references existing non-discrimination and civil rights law in the government code and requires the governor to appoint an environmental justice Commissioner to our board.

The Coastal Act's broad concern for all the people is best borne out in its public access policies, which require the maximum provision and protection of the public's rights of access to and along the shoreline (Sections 30210-214). These policies reflect the judgement of the people of California in passing Proposition 20 in 1972 that public access and recreation along our coast is a fundamental environmental benefit to be protected for and enjoyed by all, not just by those with the good fortune or means to live along the shoreline. Public access to the coast is important to the health and well-being of the public, and promoting public access for all citizens provides low-cost, outdoor recreation that can improve the overall quality of life of the public, including low-income and underserved communities.

Unfortunately, public access is also one of the coastal resources most at risk from accelerating sea level rise. As discussed elsewhere in this Guidance, beaches, accessways, recreational amenities, and even surfing resources may be dramatically impacted by rising seas. Where development already exists, and particularly where there is substantial shoreline armoring to protect this development, California stands to lose significant recreational beach areas. These places that are at increased risk provide environmental benefits for everyone, generally at very low cost, or even free. Thus, the potential loss of beach and shoreline recreation areas represents a significant potential impact to a resource that both is especially important to those with fewer economic resources and one that we endeavor to provide for everyone without discrimination, no matter their income levels, ethnicities or cultures; no matter if they are from coastal or inland areas or from outside the state.

The exacerbation of environmental injustices by anticipated sea level rise may be particularly concerning when the Commission and local governments need to make decisions about shoreline protection and hazard mitigation. As discussed elsewhere in this Guidance, the Coastal Act provides for the protection and mitigation of coastal hazards for existing and new development. But some hazard mitigation, such as seawall development or elevated development on beaches, may have significant impacts to public trust shoreline resources. Thus, we face a situation where widely available public beach resources may be diminished in order to protect private or public development along the shoreline – potentially a significant environmental justice concern. Because of this, it will be important for decision makers to proactively consider all aspects of this Guidance in an effort to avoid and mitigate the potential impacts to coastal resources from hazard response. This is particularly true for recommendations to consider alternatives to

shoreline structure development and, where shoreline structures must be approved, for recommendations to fully mitigate the impacts of such structures on public shoreline resources.

A May 2015 decision made by the Coastal Commission emphasizes the importance of analyzing low-cost recreational opportunities in addition to other coastal resource impacts when evaluating shoreline protection and other responses to sea level rise and coastal hazards. The Coastal Commission approved a revetment at the west end of the Goleta Beach County Park to provide protection against erosion. This park is an important public resource in Santa Barbara County and receives up to 1.5 million visitors each year, a large fraction of which are low-income visitors. Park facilities include picnic areas, open parkland, and access to the ocean and a recreational beach for no or low cost. The revetment was approved contingent upon specific conditions, including continued free public access and vehicle parking for the term of the permit. This decision highlights the importance of protecting wide accessibility to shoreline resources even as sea level rises.

The potential impacts of adaptation responses on public shoreline resources, and thus the potential environmental justice impacts of such actions, will need to be considered for all resources protected under the Coastal Act. It is also true that due to current development patterns along the coast, sea level rise hazards may affect various sections of the population differently, as could the implementation and effectiveness of various adaptation measures. The number of people living along the open coast in areas exposed to flooding from a 100-year flood would increase to 210,000 with a 4.6 ft (1.4 m) increase in sea level; approximately 27% or 56,000 of these are lower income people (those earning less than $30,000 annually); 45,000 are renters; and 4,700 are linguistically isolated and less likely to understand flood warnings (Heberger *et al*. 2009). According to Heberger *et al*. (2009), the greatest increases in the number of people vulnerable to flooding will occur in Los Angeles, San Diego, Ventura, Humboldt, and San Luis Obispo counties. Sea level rise will likely result in the loss of key infrastructure, intrusion of saltwater into water sources, and the creation of additional coastal hazards. Hazards in vulnerable areas will have disproportionate impacts on communities with the least capacity to adapt, which could deepen and expand existing environmental injustice if adaptation responses are not managed appropriately.

For example, lower-income communities and those who live in rental units are more likely to be displaced by flooding or related impacts as compared to property owners because they lack the funds and/or abilities to rebuild, have less control over their safety, and often have limited access to insurance. Relatedly, these same populations are less likely to be able to take proactive steps to adapt to sea level rise. Additionally, loss of local public beaches or a reduction in public access and recreation opportunities would disproportionately affect low-income communities that have few alternative lower cost recreational opportunities. Tribal communities are also vulnerable to sea level rise because they are often tied to specific locations, and therefore can't easily relocate.

Overall, it will be important for planners and decision makers to not only consider the direct impacts and consequences of sea level rise on coastal resources, but to also consider what those consequences mean for the distribution of environmental benefits and burdens along the coast, and the communities that use and rely on those resources, including those who do not live in the

coastal zone but are still impacted by coastal resource management, including workers and visitors. Low-income and underserved communities are less equipped to prepare for and respond to sea level rise, but community engagement and social cohesion can improve coastal resilience and lead to more equitable adaptation planning. Planners and decision makers should consider environmental justice concerns in the analysis of alternative project designs and adaptation measures and ensure low-income and underserved communities are involved in decision-making and planning efforts. This will better ensure that adaptation efforts benefit all Californians, fairly, and that they do not increase vulnerability to sea level rise among any particular group or demographic, and do not have any unintended consequences that lead to social or environmental injustices. In particular, it will be important to consider the potential impacts of hazard mitigation actions to protect development that may only benefit a few, on the public access and shoreline resources that are available for all Californians to enjoy.

CONSEQUENCES OF SEA LEVEL RISE FOR COASTAL ACT RESOURCES

- **Coastal development (Coastal Act Sections 30235, 30236, 30250, 30253):** Sea level rise will increase the likelihood of property damage from flooding, inundation, or extreme waves, and will increase the number of people living in areas exposed to significant flooding. Increased erosion and loss or movement of beach sand will lead to an increase in the spatial extent of eroding bluffs and shorelines, and could increase instability of coastal structures and recreation areas. Levee systems could also experience damage and overtopping from an increase in water levels, extreme wave conditions, or a loss of wetlands, which buffer impacts from high water. The replacement value of property at risk from sea level rise for the California coast is approximately $36.5 billion (in 2000 dollars, not including San Francisco Bay) (Heberger *et al*. 2009).

  Impacts to public infrastructure, ports, and industrial development include:

  - **Public infrastructure:** Low-lying roads, wastewater treatment facilities, energy facilities, stormwater infrastructure, and utility infrastructure such as potable water systems and electricity transfer systems are at risk of impaired function due to erosion, flooding, and inundation. Heberger *et al*. (2009) estimated that 7 wastewater treatment plants, 14 power plants, including one in Humboldt County and 13 in Southern California, and 250 miles (402 km) of highways, 1500 miles (2414 km) of roads, and 110 miles (177 km) of railways could be at risk from a 100-year flood with 1.4-m rise in sea level (Heberger *et al*. 2009). Facilities and highways located on coastal bluffs subject to erosion will become more susceptible in the future. Sections of Highway 1 have already had to be realigned due to erosion or are in the planning stages for realignment projects, including areas in San Luis Obispo County, Monterey Bay, Half Moon Bay, and Marin County and the sections at risk in the future will likely increase.

Figure 7. Photo of infrastructure at risk near Rincon Beach, Ventura, CA, during the King Tide in December 2012. (Photo courtesy of David Powdrell, California King Tides Initiative)

- **Ports (Coastal Act Sections 30703 – 30708):** Sea level rise could cause a variety of impacts to ports, including flooding and inundation of port infrastructure and damage to piers and marina facilities from wave action and higher water levels. A possible benefit could be a decreased need for dredging. But, unless facilities have already included accommodations for larger ships than they currently service, higher water levels could increase the difficulty for cargo handling facilities due to the higher vessel position (CCC 2001; CNRA 2014). Increased water heights could reduce bridge clearance, reducing the size of ships that can access ports or restricting movement of ships to low tides, and potentially increasing throughput times for cargo delivered to ports. Heberger *et al*. (2009) found that significant flooding from sea level rise is possible at the Ports of Los Angeles and Long Beach. Given that these two ports handle 45-50% of the containers shipped into the United States, and 77% of goods that leave the state, sea level rise could affect the efficiency of goods movement, and have serious economic implications for California and the nation (Heberger *et al*. 2009).
- **Industrial development, refineries, and petrochemical facilities (Coastal Act Sections 30260-30266.5):** Sea level rise could reduce areas available for siting or expansion of industrial development. Inundation of contaminated lands near industrial development could lead to problems with water quality and polluted runoff. Sea level rise could lead to an increase in flooding damage of refineries or petrochemical facilities, and impacts from sea level rise could be an issue when locating or expanding refineries or petrochemical facilities, or when mitigating any adverse environmental effects.
- **Construction altering natural shorelines (Coastal Act Section 30235):** Sea level rise may lead to an increase in demand for construction of shoreline protection for existing development, public access, and coastal-dependent uses in danger of erosion. Shoreline protection devices alter natural shorelines and also generally have negative impacts on beaches, near-shore marine habitat, and scenic and visual qualities of coastal areas.

- **Public access and recreation (Coastal Act Sections 30210, 30211, 30213, 30220, 30221):** One of the highest priorities in the Coastal Act is the mandate to protect and maximize public access to the coast. Sea level rise could lead to a loss of public access and recreational opportunities due to permanent inundation, episodic flooding, or erosion of beaches, recreational areas, or trails. In areas where beaches cannot migrate inland due to development or more resistant landforms, beaches will become narrower or will disappear completely. Access and functionality of water-oriented activities may also be affected. For instance, sea level rise, by increasing water levels and altering sediment patterns, could lead to a change in surfing conditions or affect the safety of harbors and marinas (Kornell 2012).
- **Coastal habitats (Coastal Act Sections 30230, 30231, 30233, 30240):** Coastal habitat areas likely to be affected by sea level rise include bluffs and cliffs, rocky intertidal areas, beaches, dunes, wetlands, estuaries, lagoons and tidal marshes, tidal flats, eelgrass beds, and tidally-influenced streams and rivers.

  Importantly, there are many endemic and endangered species in California that are dependent on these coastal environments. For example, grunion need a sandy beach environment in order to reproduce and survive, the California clapper rail is dependent on marshes and wetlands, and the black abalone requires rocky intertidal habitat. Nesting habitat, nursery areas, and haul-out sites important for birds, fish, marine mammals and other animals could also disappear as sea levels rise (Funayama *et al*. 2012).

  Impacts to wetlands, intertidal areas, beaches, and dunes include:

  - **Beaches, dunes, and intertidal areas:** Inundation and increased erosion from sea level rise could convert habitats from one type to another and generally reduce the amount of nearshore habitat, such as sandy beaches and rocky intertidal areas. Sea level rise will cause landward migration of beaches over the long term, and could lead to a rapid increase in the retreat rate of dunes. Beaches with seawalls or other barriers will not be able to migrate landward and the sandy beach areas will gradually become inundated (NRC 2012). A loss of beach and dune areas will have significant consequences for beach and adjacent inland ecosystems. Beaches and dunes provide critical habitat for species and act as buffers to interior agricultural lands and habitat during storms (CNRA 2009).
  - **Wetlands:** Sea level rise will lead to wetland habitat conversion and loss as the intertidal zone shifts inland. Of particular concern is the loss of saltwater marshes from sea level rise, which have already decreased by about 90% from their historical levels in California (CNRA 2010). California's 550 square miles (885 km) of critical coastal wetland habitat (Heberger *et al*. 2009, including wetlands in San Francisco Bay) could be converted to open water by 4.6 ft (1.4 m) rise of sea level if they are not able accrete upward or to migrate inland due to natural or anthropogenic barriers. Although barriers are plentiful, inland migration of these wetlands is possible for over 50% of the potentially inundated wetland area based on land use compatibility alone (Heberger *et al*. 2009). Consideration of adequate sediment supply and additional barriers to inland migration would further constrain wetland migration potential. A 4.6 ft (1.4 m) increase in sea level would flood 150 square miles (241 km) of land immediately adjacent to wetlands, which

could become future wetlands if that land remains undeveloped. Loss or reduction of wetland habitat would impact many plant and animal species, including migratory birds that depend on these habitats as part of the Pacific Flyway. Species that are salt-tolerant may have an advantage as sea level rise occurs and exposes new areas to salt water, while species that have narrow salinity and temperature tolerances may have difficulty adapting to changing conditions.

- **Biological productivity of coastal waters (Coastal Act Sections 30230, 30231):** Sea level rise could affect biological productivity of coastal waters by changing the types of habitats that are available. This change could alter species composition, and could potentially result in cascading effects through the coastal food chain. Changes in water quality can have differing impacts on biological productivity. For instance, decreased water quality due to increased nutrient pollution has been found to increase biological productivity at the base of the food chain to undesirable levels, and has been linked to harmful algal blooms which result in hypoxic conditions for other marine species (Kudela *et al*. 2010; Ryan *et al.* 2010; Caldwell *et al*. 2013).
- **Water quality (Coastal Act Section 30231):** Sea level rise could lead to declines in coastal water quality in several ways. First, coastal water quality could be degraded due to inundation of toxic soils and an increase in nonpoint source pollution from flooding. In particular, the presence of facilities or land containing hazardous materials in coastal areas susceptible to flooding or permanent inundation presents toxic exposure risks for human communities and ecosystems. Second, rising seas could impact wastewater facility infrastructure and other methods and structures designed to protect water quality near the coast. In addition to damaging equipment and blocking discharge from coastal outfall structures, floods could force facilities to release untreated wastewater, threatening nearby water quality (Heberger *et al*. 2009). Salt water draining into sewer lines as part of extreme weather flooding might also damage biological systems at wastewater facilities if the organisms present in these systems are not salt-tolerant. Third, sea level rise could lead to saltwater intrusion into valuable groundwater aquifers, potentially rendering some existing wells unusable and decreasing the total groundwater supply in coastal areas. The extent of saltwater intrusion will likely vary based upon local hydrological conditions, with the worst impacts occurring in unconfined aquifers along low-lying coasts that have already experienced overdraft and saline intrusion. This change could force affected communities to turn to more costly water sources such as surface water transfers or desalination. Finally, loss of wetlands could decrease water quality given that wetlands act to improve water quality by slowing and filtering water that flows through them.
- **Coastal agriculture (Coastal Act Sections 30241- 30243):** Sea level rise could lead to an increase in flooding and inundation of low-lying agricultural land, saltwater intrusion into agricultural water supplies, and a decrease in the amount of freshwater available for agricultural uses. Flooding of agricultural lands can cause major impacts on local businesses, national food supplies, and the state's economy.
- **Archaeological and paleontological resources (Coastal Act Section 30244):** Archaeological or paleontological resources could be put at risk by inundation, flooding, or by an increase in erosion due to sea level rise. Areas of traditional cultural significance to California Native American tribes, including villages, religious and ceremonial locations, middens, burial sites, and other areas, could be at risk from sea level rise. For

example, the Santa Barbara Channel area has thousands of archaeological sites dating over 13,000 years that are at risk of being destroyed or altered from small amounts of sea level rise (Reeder *et al*. 2010).

For a summary of some of the sea level rise impacts and potential consequences for the coast, see Figure 8. Many of these consequences are conditions that coastal managers already deal with on a regular basis, and strategies already exist for minimizing impacts from flooding, erosion, saltwater intrusion, and changing sediment patterns. Preparing for sea level rise involves integrating future projections of sea levels into existing hazard analyses, siting, design, and construction processes, ecosystem management, and community planning practices. Processes for integrating sea level rise in Local Coastal Programs and Coastal Development Permit applications are described in the following chapters.

Drivers of Global SLR

Expansion of ocean water as temperature increases

Addition of freshwater to the ocean from melting glaciers and ice sheets

Addition of freshwater to the ocean from groundwater extraction, use, and discharge

Drivers of Local/Regional SLR Variability

Vertical land movement

Oceanographic phenomena including El Niño Southern Oscillation (ENSO) and Pacific Decadal Oscillation (PDO)

Physical Impacts of SLR

Inundation (permanent wetting)

Flooding (temporary wetting)

Increased erosion and bluff collapse

Increased tidal prism

Increased wave heights and force

Increased saltwater intrusion

Change in sediment movement patterns

Summary of Consequences of SLR for Coastal Resources & Development

Coastal Development: Greater likelihood of tidal damage, flooding, inundation, and extreme waves, which could lead to loss of property or physical injury; instability from increased erosion and loss/movement of beach sand; increased areas exposed to a 100-year flood.

Public infrastructure: Low-lying roads, wastewater treatment facilities, energy facilities, stormwater infrastructure, potable water systems, and electricity transfer systems are at risk of inundation and flooding, and impaired function. Infrastructure located on eroding bluffs is also subject to increased geologic hazards.

Coastal Agriculture: Increase in flooding and inundation of low-lying agricultural lands; saltwater intrusion into agricultural water supplies; potential decrease in amount of freshwater available for agricultural uses.

Public Access & Recreation: Loss of beach areas where beaches cannot migrate inland due to development; inaccessibility of public accessways and recreation sites due to flooding and erosion.

Coastal Habitats: Transformation of habitats as intertidal zone shifts inland; loss of wetlands and other habitats where areas cannot migrate up or inland due to inland barriers such as coastal development.

Water Quality: Coastal water quality could decline due to inundation of toxic soils and an increase in nonpoint source pollution from flooding. Rising seas could also impact wastewater facilities and cause saltwater intrusion into groundwater supplies.

Biological productivity of coastal waters: Sea level rise could affect biological productivity of coastal waters by changing the types of habitats that are available. This change could alter species compositions, and could potentially result in cascading effects through the coastal food chain.

Cultural Resources: Archeological and paleontological sites, including many Native American villages, religious and ceremonial locations, burial sites, and other areas could be at risk from sea level rise.

Figure 8. Summary of sea level rise impacts and consequences

Chapter 5

Addressing Sea Level Rise in Local Coastal Programs

The Coastal Act requires that the 61 cities and 15 counties in coastal California prepare Local Coastal Programs (LCPs) to govern land use and development in the coastal zone inland of the mean high tide. LCPs become effective only after the Commission certifies their conformity with the policies of Chapter 3 of the Coastal Act.

LCPs contain the ground rules for future development and protection of resources in the coastal zone. Each LCP includes a Land Use Plan (LUP) and an Implementation Plan (IP). The LUP specifies the kinds, locations, and intensity of uses, and contains a required Public Access Component to ensure that maximum recreational opportunities and public access to the coast is provided. The IP includes measures to implement the LUP, such as zoning ordinances. LCPs are prepared by local governments and submitted to the Coastal Commission for review for consistency with Coastal Act requirements.[24]

Once an LCP's certification becomes effective, the local government becomes responsible for reviewing most Coastal Development Permit (CDP) applications. However, the Commission retains continuing permit authority over some lands (for example, over tidelands, submerged lands, and public trust lands) and authority to act on appeals for certain categories of local CDP decisions.

To be consistent with the Coastal Act hazard avoidance and resource protection policies, it is critical that local governments with coastal resources at risk from sea level rise certify or update Local Coastal Programs that provide a means to prepare for and mitigate these impacts. The overall LCP update and certification process has not changed. Now, however, the impacts of accelerated sea level rise should be addressed in the hazard and coastal resource analyses, alternatives analyses, community outreach, public involvement, and regional coordination. This Guidance is designed to complement and enhance the existing LCP certification and update steps. Although the existing LCP certification and update processes are still the same, sea level rise calls for new regional planning approaches, new strategies, and enhanced community participation.

LCPs are essential tools to fully implementing sea level rise adaptation efforts. Since many existing LCPs were certified in the 1980s and 1990s, it is important that future amendments of the LCPs consider sea level rise and adaptation planning at the project and community level, as appropriate. The *California Climate Adaptation Strategy* (CNRA 2009) and *Safeguarding California* (CNRA 2014) specifically identify LCPs as a mechanism for adaptation planning along the California coast. For general guidance on updating LCPs, see the LCP Update Guide, available here: https://www.coastal.ca.gov/rflg/.

[24] In addition there are other areas of the coast where other plans may be certified by the Commission, including Port Master Plans for ports governed by Chapter 8 of the Coastal Act, Long Range Development Plans for state universities or colleges, and Public Works Plans for public infrastructure and facilities. Following certification of these types of plans by the Commission, some permitting may be delegated pursuant to the Coastal Act provisions governing the specific type of plan.

Steps for Addressing Sea Level Rise in Local Coastal Programs and Other Plans

The Commission recommends the following six steps to address sea level rise as part of the development of an LCP, LCP Amendment, or other plan.[25] These steps can be modified and adapted to fit the needs of individual planning efforts and communities and to address the specific coastal resource and development issues of a community, such as addressing bluff erosion or providing for effective redevelopment, infill, and concentration of development in already developed areas. At the start of an LCP update to address sea level rise or a new LCP project, local government planners should contact their local Coastal Commission district office to discuss the LCP goals and to establish a plan for Coastal Commission staff coordination and public involvement throughout the entire process. A key element of any LCP project is public involvement. This can include establishing technical and community stakeholder advisory committees, establishing an interdepartmental sea level rise team of City and County staff representatives, and planning a series of public workshops to gather feedback, in addition to the required public hearings on the LCP.

The steps of this process are illustrated in Figure 9 and described below. They are similar to the standard steps of a long-range planning process and should be familiar to local planners. Steps 1-3 are often referred to as a "sea level rise vulnerability assessment" in other sea level rise planning contexts and therefore are similar to other sea level rise-related resources.

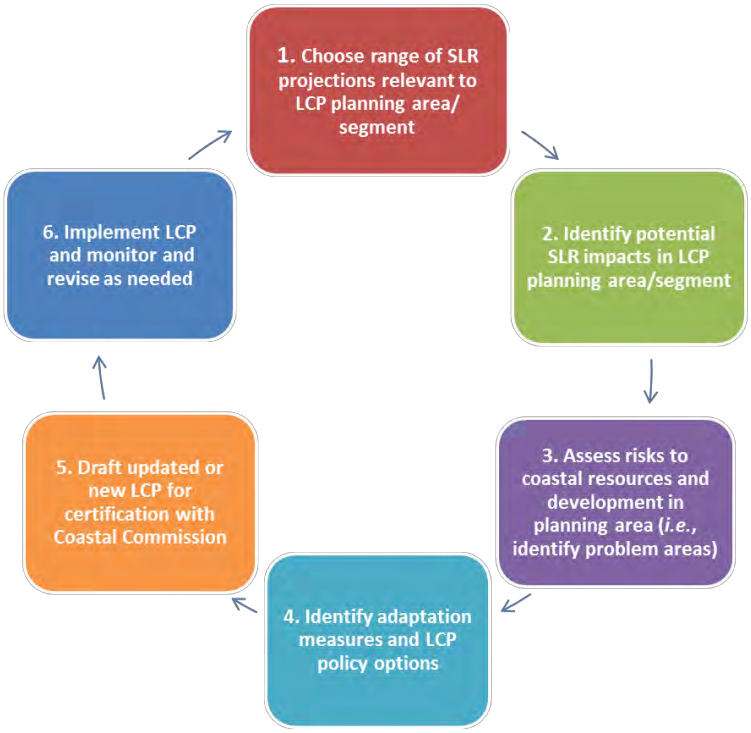

Figure 9. Sea level rise adaptation planning process for new and updated Local Coastal Programs

[25] This Guidance uses the term 'LCP process' to refer to the LCP process, but many of the concepts included here are applicable to other planning processes, including Long Range Development Plans, Public Works Plans, and Port Master Plans. For example, recommendations for how to analyze sea level rise impacts and perform a vulnerability assessment are broadly applicable. Many adaptation strategies may also be applicable, though in all cases, individual actions taken will vary based on relevant policies, local conditions, feasibility, and other factors.

The Coastal Commission also offers a *Local Coastal Program (LCP) Update Guide* (2013b) that outlines the broad process for amending or certifying an LCP, and there is naturally some overlap between the content of that document and this Sea Level Rise Policy Guidance document. The general LCP amendment steps are outlined below, in a flow chart (see Appendix D), and in the LCP Tips/Best Practices document (2013c), which is available in the *Resources for Local Governments* section of the Commission's website. Local governments should contact the Coastal Commission planner for their area when pursuing a new LCP or LCP amendment.

1. **Initial Amendment scoping and development:** Conduct issues assessment, identify need for amendment, prepare preliminary draft, coordinate with Commission staff, and share early drafts
2. **Local Amendment process:** Notify public, conduct local outreach and hearings, meet with Commission staff to discuss any issues, and adopt LCP at the local level
3. **Prepare Submittal:** assemble LCP materials, discuss with Commission staff prior to submittal, transmit to Coastal Commission, and make available to public
4. **Process Amendment at Coastal Commission:** Commission staff will review submittal within 10 working days for completeness; will address outstanding information needs; will prepare and write staff report; hold public hearing and vote; and transmit action to local government
5. **Effectuate Amendment:** Local acceptance of any modifications or resubmittal within 6 months, finalize local approval, and complete Coastal Commission Executive Director check-off
6. **Implement LCP Amendment, monitor and revise as necessary.**

The step-by-step process for incorporating sea level rise into LCPs outlined in the rest of this chapter fits into these broader LCP amendment steps. Local government planners should use the LCP Update Guide in conjunction with the Sea Level Rise Policy Guidance to inform the LCP.

Use scenario-based analysis

The Guidance recommends using a method called "scenario-based analysis" (described in Chapter 3 of this Guidance). Since sea level rise projections are not exact, but rather presented in ranges, scenario-based planning includes examining the consequences of multiple sea level rise amounts, plus extreme water levels from storms and El Niño events. The goal of scenario-based analysis for sea level rise is to understand where and at what point sea level rise, and the combination of sea level rise and storms, pose risks to coastal resources or threaten the health and safety of a developed area. This approach allows planners to understand the full range of possible impacts that can be reasonably expected based on the best available science, and build an understanding of the overall risk posed by potential future sea level rise. For example, if there are large changes in the hazard zones between two sea level rise amounts, additional analyses may help determine the tipping points when viable land uses will change. In general, scenario-based analyses can help determine the long-term compatibility of certain areas with certain land uses. For further description of this method, see Chapter 3.

Include other topics as applicable or desired

This Guidance recommends a number of analyses that will generate useful information related to sea level rise and other environmental vulnerabilities. Performing these analyses (and the overall planning process) may provide a useful opportunity to include other studies that will complement the goals of Local Coastal Programs and provide valuable insights for community concerns. For example, planners should expand the Coastal Act consideration of lower cost visitor serving facilities to include considerations of social equity and environmental justice in the analyses by determining how climate hazards or the adaptation measures might differentially impact various demographics. Additionally, planners may want to incorporate analysis of the economic implications of various options for adaptation. Important topics such as these should be incorporated into the analyses already underway for the sake of efficiency.

Leverage analyses and share information with other planning-related processes and documents

Sea level rise is addressed in many other planning-related documents and by many other agencies and organizations. Planners should be aware of these documents and the on-going work of state and federal agencies and make an effort to share information in cases where analyses required for some of these documents may overlap with the studies appropriate for sea level rise planning in LCPs. Additionally, these agencies, organizations, and planning efforts may be good resources from which to gather information when performing these analyses for LCP updates.

For example, there is overlap between the required elements of a Local Hazard Mitigation Plan (LHMP) and Local Coastal Programs, and the Commission recommends coordinating an LHMP update with an LCP update if possible. As part of an LHMP, local governments identify the natural hazards that impact their community, identify actions to reduce the losses from those hazards, and establish a coordinated process to implement the plan.[26] In order to be eligible for certain types of non-emergency disaster assistance, including funding for hazard mitigation projects, local governments are required by FEMA to complete an LHMP[27] and to update the plan every 5 years. Any sea level rise hazard avoidance strategies included in an LCP certification or update, such as relocation of critical facilities must be included in the LHMP narrative to be eligible for funding from FEMA to implement future projects. If a local government has recently updated their LHMP, the city or county can add narrative information on sea level rise strategies through an addendum to the plan, referred to by FEMA as an annex.[28]

In many cases, the analyses and adaptation options identified in this Guidance could be used for hazard mitigation plans or vice versa, as the goal of each of these planning processes is to

[26] http://www.fema.gov/media-library-data/20130726-1524-20490-5927/67fr8844.pdf

[27] Note that recent revisions to the State Mitigation Plan Review Guide, set to go into effect in March 2016, will require states to analyze the probability and possible impacts due to future hazard events in a way that includes the projected changes in natural hazards resulting from climate change. Failure to include such considerations may result in a state's ineligibility for certain non-emergency mitigation grants.

[28] For more information on how to complete or update an LHMP, visit http://hazardmitigation.calema.ca.gov/ or contact the Cal OES office and a hazard mitigation technical expert can assist local governments with the planning process. For contact information, visit http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/contacts.

minimize or avoid impacts from coastal hazards. As a result, there may be opportunities to leverage funding and share work efforts.

A number of other similar planning processes, projects, and documents are listed in Figure 10, and planners may be able to use these studies in the LCP planning process, or, alternatively, share analyses and information performed for LCP planning with the groups working on related projects. Additionally, the forthcoming State of California Planning for Sea Level Rise Database (established by Assembly Bill 2516 and pursuant to Public Resources Code Sections 30961-30968) may become an important tool for identifying past and/or ongoing actions that stakeholders have implemented to address sea level rise. In any case, information sharing is highly recommended to promote efficiency.

Coordinate regionally as appropriate

Many impacts of sea level rise will transcend jurisdictional boundaries. Similarly, the adaptation decisions made by coastal communities could themselves have consequences that affect areas outside the local jurisdiction. For these reasons, regional coordination will often enhance the effectiveness of local adaptation decisions. Indeed, many of the projects identified in Figure 10 have taken this regional approach. Planners should keep this concept in mind as they work through these steps and coordinate regionally where appropriate and possible.

Representative Adaptation Planning Stakeholders

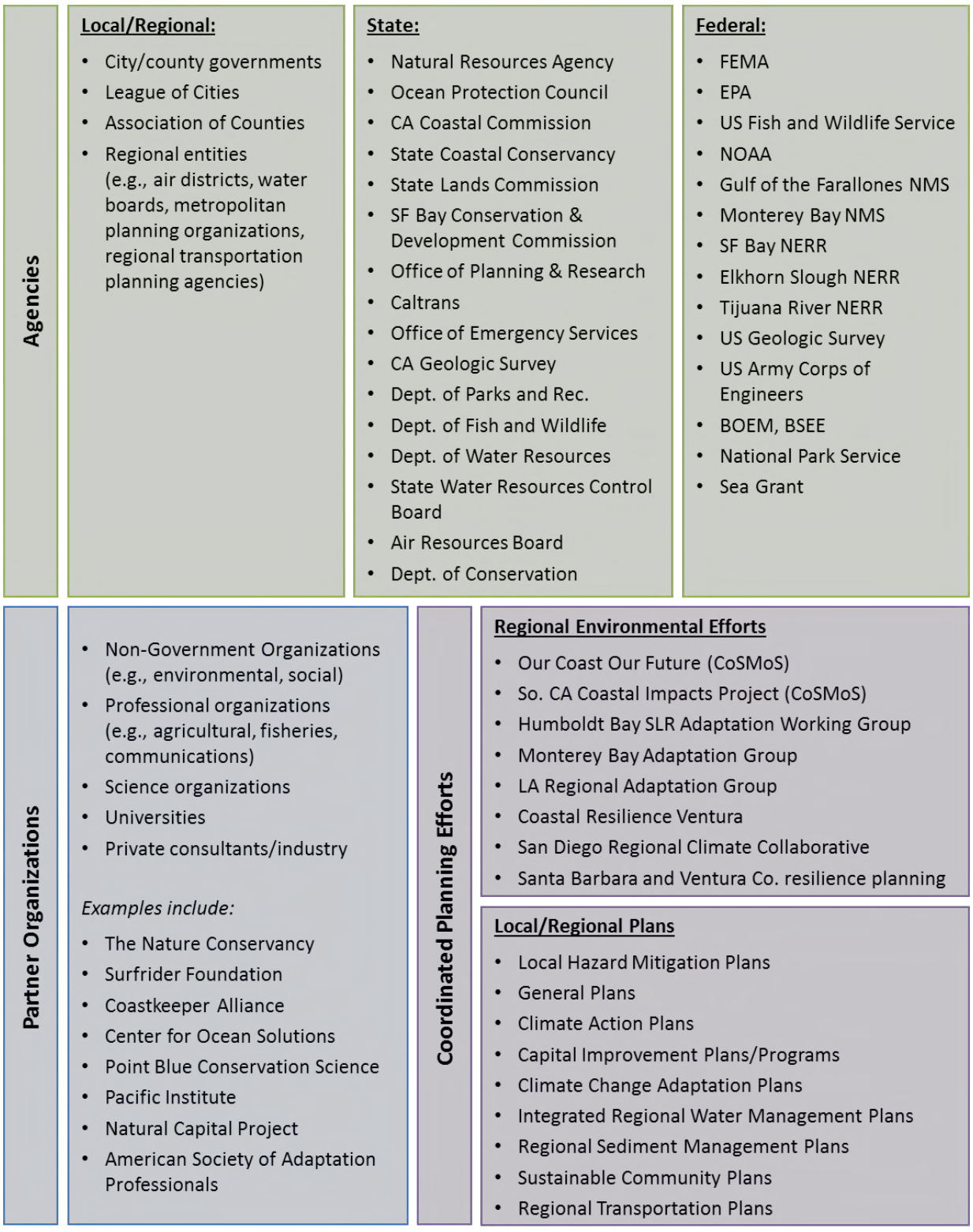

Figure 10. Agencies, organizations, and planning efforts related to sea level rise adaptation

Step 1 – Determine range of sea level rise projections relevant to LCP planning

The first step in incorporating sea level rise into the LCP planning process is to identify locally relevant sea level rise scenarios that may occur at given time steps into the future. These scenarios will be carried through the rest of the steps in the sea level rise LCP planning process. Follow these steps to determine the locally relevant sea level rise projections to use in the subsequent steps:

- **Determine planning horizons of concern:** The Coastal Commission recommends taking a long-term view when analyzing sea level rise impacts because the land use decisions made today will affect what happens over the long-term. For example, development constructed today is likely to remain in place over the next 75-100 years, or longer. In practice, many jurisdictions have completed assessments that look at sea level rise vulnerabilities through approximately 2100. Understanding short-term vulnerabilities is also important, and the Coastal Commission recommends assessing vulnerabilities in intermediate planning horizons. For example, many jurisdictions have assessed sea level rise scenarios that correspond to years 2030 and 2050, in line with information provided in the 2012 National Research Council (NRC) report. These time periods may be used, or local governments may identify other relevant planning horizons for their plans and development scenarios, as long as the projections for those time frames are based on the best available and relevant scientific projections.

- **Determine the full range of sea level rise projections from the best available science:** Using best available science, currently the 2018 OPC SLR Guidance (or other comparable study, provided that it is peer reviewed, widely accepted within the scientific community, and locally relevant), determine the range of sea level rise for the planning horizons of concern. The sea level rise projections for the San Francisco tide gauge from the 2018 OPC SLR Guidance are presented in Table 4 below (projection tables for all 12 California tide gauges are presented in Appendix G)[29]. See below for a discussion of scenario-based planning in the LCP context. The LCP should include a policy to use the best available science about sea level rise.

[29] More detailed refinement of sea level rise projections is not considered necessary at this time, as variations from the nearby tide gauges will often be quite small, and may be insignificant compared to other sources of uncertainty. However, the Coastal Commission recognizes that other studies exist with localized data, for example those completed in the Humboldt Bay region, which may also be appropriate for use.

Table 4. Sea Level Rise Projections for the San Francisco Tide Gauge[30] (OPC 2018)

Projected Sea Level Rise (in feet): *San Francisco*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2
2110*	3.5	7.3	11.9
2120	4.1	8.6	14.2
2130	4.6	10.0	16.6
2140	5.2	11.4	19.1
2150	5.8	13.0	21.9

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[30] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

- **Choose multiple sea level rise scenarios based on range of sea level rise projections.** The Coastal Commission recommends that all communities evaluate the impacts from the "medium-high risk aversion" scenario. Local governments should also include the "extreme risk aversion" scenario to evaluate the vulnerability of planned or existing assets that have little to no adaptive capacity, that would be irreversibly destroyed or significantly costly to repair, and/or would have considerable public health, public safety, or environmental impacts should that level of sea level rise occur. Planners may also consider evaluating the lower projections (those with a higher probability) to gain an understanding on what is likely to be vulnerable regardless of modeling uncertainty and future greenhouse gas emissions.

  In addition to evaluating the worst-case scenario, planners need to understand the minimum amount of sea level rise that will cause impacts for their community, and how these impacts will change over time, with different amounts of sea level rise. Planners should evaluate enough scenarios to be able to answer the following:

  - What are the impacts from the worst-case scenario of the highest possible sea level rise plus elevated water levels from high tide, El Niño and a 100-year storm?
  - What is the minimum amount of sea level rise that causes inundation, flooding, or erosion concerns?
  - How do inundation, flooding, and erosion concerns change with different amounts of sea level rise?
  - Are there any tipping points where sea level rise impacts become more severe? (For example, is there a point at which seawalls or levees are overtopped?)

  There are two main ways to choose scenarios from which to evaluate sea level rise: by sea level rise amount or by time-period. Tools that provide maps by sea level rise amount can then be linked to the relevant time period, as shown below in the *Our Coast Our Future* example. There is no single accepted sea level rise mapping methodology for the state of California. Local governments can choose whether to use existing sea level rise tools or to develop their own scenarios and maps. See below for information on scenarios and modeling outputs generated by existing sea level rise modeling tools.

Examples of Choosing Scenarios with Existing Sea Level Rise Modeling Tools

For California, there are two primary methods for identifying sea level rise scenarios, based on two of the currently available SLR mapping tools: CoSMoS (Our Coast Our Future) and Coastal Resilience Ventura (The Nature Conservancy). The type of tool available for sea level rise mapping in a planning area can be a deciding factor for which scenarios to use in the analysis. The Coastal Commission recommends using as many scenarios as necessary to fully analyze the potential impacts to coastal resources, human health, and safety rather than a specific tool or number of scenarios. Examples for choosing scenarios based on the tools available are described below.

Example 1: Identify SLR amounts, then relate to likely time period(s) of occurrence

This method involves first examining different amounts of sea level rise and storm events, and second, looking at the 2018 OPC SLR Guidance projections to determine the range of years during which those impacts could potentially occur. For example, the Our Coast Our Future CoSMoS-based tool provides sea level rise maps for 9 different amounts in 25 cm (0.8 ft) intervals, three different storm scenarios (annual, 20-year, and 100-year), and a king tide scenario. With this tool, users can first evaluate different amounts of sea level rise and storms, determine how different amounts of sea level rise and storm situations affect the planning area, and then determine when the increased water level is likely to occur based on the OPC Guidance projections. The CosMoS tool is currently available from Point Arena (in Mendocino County) through the Mexico border, and an expansion throughout the rest of the state is planned for 2018/2019. The NOAA Sea Level Rise and Coastal Flooding Impacts viewer similarly provides maps for different amounts of sea level rise (in this case, in 1-ft increments), but does not include impacts from storms, erosion or waves. A methodology for adding in these additional impacts is described in Appendix B.

Example 2: Choose applicable years, then identify high, intermediate, and low scenarios

For this method, planners pick specific years, determine the range of sea level rise amounts that could occur by that year, and examine the consequences of three or more sea level rise amounts within that range. For example, the Coastal Resilience Ventura Tool (The Nature Conservancy) provides maps showing inundation, flooding, wave impact zone, and erosion risk zones with low, medium, and high sea level rise scenarios for the years 2030, 2060, and 2100. For local governments within Ventura County, planners may choose to evaluate scenarios according to the 2030, 2060, and 2100 time periods. The model provides maps for both flooding and erosion.

Expected outcomes from Step 1: *Upon completing this step, a range of regionally- or locally-relevant sea level rise projections for the time periods of concern should be established. Based on the range of projections, planners will have identified a low, high, and one or more intermediate projections. These projections are the sea level rise scenarios that will be carried through the rest of the planning process.*

Step 2 – Identify potential physical sea level rise impacts in LCP planning

The next step is to identify the physical hazards and impacts (referred to comprehensively as sea level rise impacts) associated with current and future sea level. As described in Section C of Chapter 3 of this Guidance, broad categories of sea level rise impacts may include inundation, flooding, wave impacts, erosion, and saltwater intrusion. In this step, planners should analyze these physical impacts and their various sub-components in order to understand current and future local hazard conditions. The analysis should answer the following basic questions:

- What are the existing hazard conditions that threaten the planning area?
- What is the projected change in hazard conditions due to locally appropriate sea level rise projections and planning horizons of concern?

This analysis should include the following topics, as applicable:

- Local Water Conditions (See Appendix B for a detailed methodology)
  - Current tidal datum[31] and future inundation
  - Water level changes from storm surge, atmospheric pressure, the Pacific Decadal Oscillation (PDO), the El Niño Southern Oscillation (ENSO), and/or other basin-wide phenomena
  - Wave impacts and wave runup, including wave runup from a 100-year storm, and based on tides, other water level changes, and future beach and bluff erosion
  - Flooding from extreme events such as storms with intervals greater than 100 years, tsunamis, *etc.*
- Shoreline change (See Appendix B for more information)
  - Current shoreline erosion rates. For future cliff and dune erosion rates, modify historic erosion rates, to account for the influence of sea level rise (*e.g.*, work by the Pacific Institute – Heberger *et al*. 2009; Revell *et al*. 2011). If possible, modify long-term beach erosion rates to account for changes in El Niño frequency, storm intensity, sediment supply or changing transport conditions. Analyzing wetland responses to sea level rise may require site-specific analyses of various physical and biological factors as described in Heberger *et al.* 2009.
  - Sedimentation rates
- Water quality
  - Current and future saltwater intrusion areas

[31] Tidal datums are based on the latest National Tidal Datum Epoch (NTDE) published by NOAA and are the mean of the observed sea levels over a 19-year period. The latest published epoch is 1983-2001. This tidal epoch can be considered equivalent to the year 2000 baseline for the OPC projections.

- Current and potential future coastal water pollution issues due to inundation of toxic soils, rising water tables, and increases in nonpoint source pollution

Use existing models, tools, reports, historic records, and other materials (Table 5) to develop or double check the identified hazard areas. Document the current and future hazard areas in the Land Use Plan using maps, GIS products, graphics, tables, charts, figures, descriptions, or other means. This process should be repeated for each planning horizon and/or sea level rise scenario defined in Step 1.

Expected outcomes from Step 2: *Upon completing this step, the potential current and future impacts to the planning area from sea level rise hazards should be identified based on sea level rise projections. These should include impacts from the high, low, and intermediate sea level rise scenarios for the planning horizon(s) of concern. Maps, GIS layers, graphics, figures, charts, tables, descriptions, or another system should be developed to communicate the impacts of current and future hazards.*

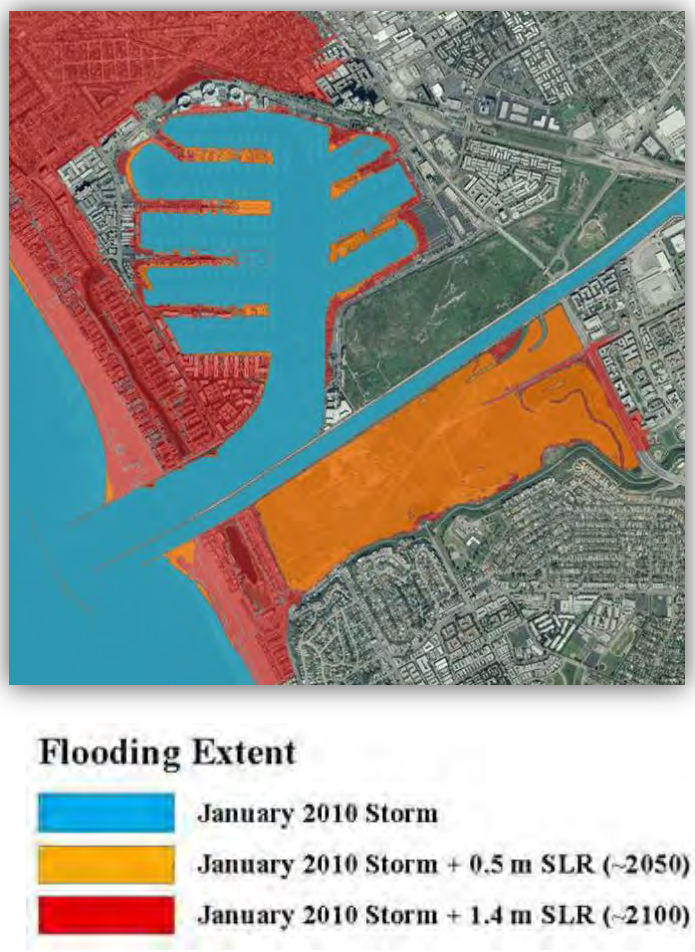

Figure 11. Example of analysis of SLR impacts. Flooding hazards predicted from the CoSMoS hindcast of the January 2010 storm, with and without sea level rise (SLR) scenarios, in the region of Venice and Marina del Rey, CA. (*Source*: Barnard *et al.* 2014).

Resources for Sea Level Rise Mapping

Table 5 includes a list of sea level rise mapping tools. The tools vary in their complexity: some are considered "bathtub models," because they show future inundation with simple rise in sea level (and no changes to the shoreline caused by other forces). Others include factors like erosion, storms, and fluvial inputs. These tools provide a useful first look at possible sea level rise impacts, but may need to be supplemented with additional, site- or topic-specific analyses, depending on the region. See Appendix B for additional information on determining hazard impacts and tools for mapping sea level rise.

Table 5. Sea Level Rise Mapping Tools

Tool	Description	Link
Statewide		
NOAA Sea Level Rise and Coastal Flooding Impacts Viewer	Displays potential future sea levels with a slider bar. Communicates spatial uncertainty of mapped sea level rise, overlays social and economic data onto sea level rise maps, and models potential marsh migration due to sea level rise. Maps do not include any influence of beach or dune erosion.	NOAA Office for Coastal Management, http://coast.noaa.gov/digitalcoast/tools/slr
Cal-Adapt – Exploring California's Climate	Represents inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting from different increments of sea level rise coupled with extreme storm events. Incorporates real, time series water level data from past (near 100 year) storm events to capture the dynamic effect of storm surges in modeling inundation using a three dimensional hydrodynamic model (per Radke, 2017).	http://cal-adapt.org/tools/slr-calflod-3d/
Pacific Institute Sea Level Rise Maps	Downloadable PDF maps showing the coastal flood and erosion hazard zones from the 2009 study. Data are overlaid on aerial photographs and show major roads. Also available are an interactive online map and downloadable maps showing sea level rise, population and property at risk, miles of vulnerable roads and railroads, vulnerable power plants and wastewater treatment plants, and wetland migration potential.	http://www.pacinst.org/reports/sea_level_rise/maps/ For the 2009 report *The Impacts of Sea-Level Rise on the California Coast* visit: http://pacinst.org/publication/the-impacts-of-sea-level-rise-on-the-california-coast/

Climate Central Surging Seas	Overlays sea level rise data with socio-economic information and ability to analyze property values, population, socio-economic status, ethnicity, and income or areas at risk. Can compare exposure across the state or a county.	http://sealevel.climatecentral.org/ssrf/california
Coastal Storm Modeling System (CoSMoS); tool hosted by Our Coast Our Future	Currently available for Point Arena to the Mexico border, with a statewide expansion anticipated in 2018/2019. The Coastal Storm Modeling System (CoSMoS) is a dynamic modeling approach that allows detailed predictions of coastal flooding due to both future sea level rise and storms, and integrated with long-term coastal evolution (i.e., beach changes and cliff/bluff retreat)	https://walrus.wr.usgs.gov/coastal_processes/cosmos/ http://data.pointblue.org/apps/ocof/cms/
TNC Coastal Resilience	An online mapping tool showing potential impacts from sea level rise and coastal hazards designed to help communities develop and implement solutions that incorporate ecosystem-based adaptation approaches. Available statewide with more detailed modelling for Monterey Bay, Santa Barbara, Ventura, and Santa Monica.	http://maps.coastalresilience.org/california/
Humboldt Bay Sea Level Rise Adaptation Project	This project is a multi-phased, regional collaboration. Phase I produced the *Humboldt Bay Shoreline Inventory, Mapping, and Sea Level Rise Vulnerability Assessment* which describes current shoreline conditions and vulnerabilities under the current tidal regime. Phase II included hydrodynamic modeling to develop vulnerability maps of areas surrounding Humboldt Bay vulnerable to inundation from existing and future sea levels. Phase II produced the *Humboldt Bay Sea Level Rise Modeling Inundation Mapping Report* and the *Humboldt Bay Sea Level Rise Conceptual Groundwater Model*.	All reports are available at: http://humboldtbay.org/humboldt-bay-sea-level-rise-adaptation-planning-project

Step 3 – Assess potential risks from sea level rise to coastal resources and

After sea level rise impacts are identified and mapped in Step 2, the next Step is to determine whether sea level rise poses any risks, or potential problems, for coastal resources and development in the LCP planning area (refer to Chapter 4 for a description of the potential consequences of sea level rise for coastal resources). Next, assess whether the LCP planning area's current and planned land uses are appropriate or consistent with Coastal Act or LCP policies given those impacts, or if those land uses should be revised. This step requires an understanding of several characteristics of the coastal resources and development typically found within various land use types. (Much of this information can be produced in a vulnerability assessment, an analysis that is commonly conducted in the planning and climate change adaptation field. See Appendix C for a list of recent sea level rise vulnerability assessments.) Account for potential impacts to vulnerable, low-income communities and consider coastal development and resources, including but not limited to:

- Existing and planned development
- Coastal-dependent development and uses such as harbors, wharfs, ports, marinas, and commercial and recreational fishing areas and facilities
- Critical infrastructure[32] such as wastewater treatment plants, transportation infrastructure, and some power plants and energy transmission infrastructure
- Public accessways, beaches and other recreation areas, and the California Coastal Trail
- State Highway 1, 101, and other state and local roads that provide access to the coast
- Wetlands, environmentally sensitive habitat area (ESHA), and other coastal habitats and sensitive species
- Agricultural areas
- Cultural sites and archaeological or paleontological resources
- Visitor-serving development and uses

Conduct the following tasks for each planning horizon (*e.g.*, the years 2030, 2050, and 2100, or other planning horizons):

1. For the planning horizon of interest, determine what development and coastal resources may be subjected to the sea level rise impacts expected for that time period. Map the coastal resources and development that lie within the sea level rise impact areas for the given time period. (Remember to address the wide range of resources listed above, including both natural resources and development.)

[32] Critical infrastructure can vary widely from community to community, and may also include fire stations, police stations, and hospitals. For planning purposes, a jurisdiction should determine criticality based on the relative importance of its various assets for the delivery of vital services, the protection of special populations, and other important functions, as well as the social, environmental, and economic risks associated with loss of or damage to such assets.

2. Determine if sea level rise impacts are a problem or benefit for each resource, and if so, when and to what degree the resource will be impacted. In some instances, sea level rise may result in the creation of new habitat areas that could help to alleviate impacts from the loss of similar habitat in other locations. However, it is more likely, especially in heavily urbanized areas, that sea level rise will result in a net loss of habitat unless steps are taken to preserve these systems.

   To accomplish this, consider a wide range of characteristics of each resource, including the following. The questions listed under each characteristic might help guide the consideration of each of these characteristics. These questions are meant to be suggestions rather than a standardized approach, and planners may use scientific literature, best professional judgment, or a variety of other resources to gain a conceptual understanding of the important resources and vulnerabilities in their jurisdictions.

   a. **Exposure.** Will sea level rise impacts affect the resource/development at all?
      i. Are coastal resources and community assets exposed to sea level rise impacts?
      ii. Is the resource already exposed to hazards such as waves, flooding, erosion, or saltwater intrusion? If it is, will sea level rise increase hazard exposure?

   b. **Sensitivity.** If resources are exposed, to what degree will coastal resources/development be affected by sea level rise impacts? A simple way to think about this concept is to consider *how easily affected* the resource or development is in regard to sea level rise impacts.
      i. How quickly will the resource respond to the impact from sea level rise?
      ii. Will the resource/development be harmed if environmental conditions change just a small amount? What are the physical characteristics of resource/asset (*e.g.*, geology, soil characteristics, hydrology, coastal geomorphology, topography, bathymetry, land cover, land use)? Do any of those characteristics make the resource especially sensitive?
      iii. Are there thresholds or tipping points beyond which sensitivity to sea level rise increases?

   c. **Adaptive Capacity.** How easily can the resource successfully adapt to sea level rise impacts?
      i. How well can the resource/development accommodate changes in sea level?
      ii. Is rate of change faster than the ability of the resource/development to adapt?
      iii. How easily can development be modified to cope with flooding, inundation, and/or erosion? Can structures be elevated or relocated?

iv. Are there adaptation efforts already underway? Are there any factors that limit the success of adaptation efforts?

v. Do beaches, wetlands and other coastal habitats have room to migrate inland? What is the overall health of existing wetlands and coastal habitats?

vi. Are there any other climate change-related impacts to consider? Are there any non-climate stressors that could impair ability to adapt to sea level rise?

vii. Is there potential for habitat creation as a result of sea level rise?

viii. What are the options to protect, redesign (*e.g.*, elevate), or relocate inland any existing public accessways, recreational beaches, and segments of the Coastal Trail to cope with rising sea levels? Is lateral access compromised with sea level rise?

d. **Consequences.** When sea level rise and/or sea level rise adaptation measures have impact(s) upon a resource, what are the economic, ecological, social, cultural, and legal consequences?

i. How severely could each resource be affected? At what scale?

ii. Are there cumulative consequences?

iii. Are there ripple effects, or secondary consequences to consider?

iv. Will human responses cause further adverse impacts?

e. **Land Use Constraints.** Given the location of sea level rise impacts and the resources currently located in those areas, should the types and intensities of land use be altered to minimize hazards and protect coastal resources?

i. What is the current pattern of development? Is the area largely developed or does it have significant areas of undeveloped land?

ii. Is the area served by infrastructure that is vulnerable to sea level rise impacts?

iii. Are large areas of land under common ownership or is land mostly subdivided into smaller lots in separate ownership?

iv. What conditions does the land use type, development, or resource require to either exist or fulfill its intended purpose?

v. Is it a coastal-dependent use? What is its ideal proximity to the coast?

vi. For new development, what is the expected lifespan? Is it economically feasible to locate it in a sea level rise impact area for a certain period of time before it is removed or relocated?

vii. For existing development, what are the options available to minimize hazards to the development and protect coastal resources? Note that in

certain situations, the Coastal Act allows existing structures to be protected (Coastal Act Section 30235). What are the coastal resource impacts of such protection, and are there feasible alternatives that avoid shoreline armoring, such as options to provide incentives to property owners to relocate or remove at-risk structures?

viii. For a natural resource or habitat, what conditions does it require to persist?

ix. Where would resources/development ideally be located after sea level rise causes environmental conditions to shift?

x. What changes to existing LCP requirements or other land use restrictions are necessary to maximize opportunities for avoiding hazards or relocating threatened existing development?

After going through the questions listed above, and others that may be relevant to the planning exercise, synthesize the information and determine where sea level rise impacts currently pose problems for coastal resources, what problems may develop over time as sea level rises, and how urgent the problems are. Create maps illustrating the location and extent of vulnerable land uses, such as critical facilities, wastewater infrastructure, and State Highway 1 and other coastal access roadways. This information can also be summarized in narrative form. The analysis should identify resources and development likely to be impacted by sea level rise at various periods in the future, and thus the issues that need to be resolved in the LCP planning process.

Remember that these assessments are not static; existing risks will change and new risks will arise with changes in a community, the emergence of new threats, new information, and the implementation of adaptation actions. For this reason, the analysis should be updated as needed to reflect changes in sea level rise projections, changes in land use patterns, or new threats.

Expected outcomes from Step 3*: Descriptions of the characteristics that influence risk, including exposure, sensitivity, and adaptive capacity of each coastal resource to sea level rise impacts under each sea level rise scenario identified in Step 1 at the selected planning horizons, along with the expected consequences of those impacts for the resource and broader community. Maps of resources and/or land uses at risk could be produced.*

Example for Step 3

To illustrate the process described in Step 3, consider a hypothetical planning area that includes multiple coastal resources and land use types, including a coastal wetland, bluff-top residential development with a fronting beach, and a wastewater treatment facility, that need to be addressed in the planning process. After Steps 1 and 2, portions of the planning area are found to be subject to current and future sea level rise impacts.

Step 3.1: Map the coastal resources (in this case the wetland, development, and wastewater treatment facility) for the range of time periods and sea level rise projections.

Step 3.2

a. **Exposure**

- *Wetland:* The wetland is highly exposed to flooding and inundation from sea level rise. By the year 2030, portions of the wetland will trap sediment at a rate such that the elevation keeps pace with sea level rise. By 2050, a portion of the wetland will become inundated and converted to open water, and by 2100 the entire area will be converted to open water. The wetland will be completely lost by this time period if it is not able to move inland.
- *Bluff-top Residential Development:* Houses in the residential development are not exposed to sea level rise impacts in 2030. However, a high rate of retreat along the fronting beach and bluff will put front-line houses in danger of being undermined by the year 2050, and the entire development may be lost by 2100.
- *Wastewater Treatment Facility:* Given that the wastewater treatment plant is set back somewhat from the water, it will not be exposed to impacts from sea level rise until 2050. By 2050, however, portions of the infrastructure will be exposed to impacts from elevated water levels due to 100-year storm events and El Niño occurrences. By 2100, significant portions of the facility will be exposed to flooding as the surrounding area is eroded and inundated.

b. **Sensitivity**

- *Wetland:* The wetland has high sensitivity to changes in sea level because its functioning is highly-dependent on local physical parameters such as water flow, tidal fluctuation, sediment supply, and water quality. Although it currently has good sediment supply, good water quality, and a number of other characteristics, small changes in sea level rise by 2050 may alter the function of the wetland. In addition, there are concerns that beyond 2050 the wetland will not be able to keep up with accelerated sea level rise, thus increasing sensitivity to further changes in sea level.
- *Bluff-top Residential Development:* The residential development has moderate to high sensitivity to longer-term sea level rise changes. By 2050, the front-line houses will no longer be safe enough for occupancy. Moreover, infrastructure such as roads, sewage systems, and power networks may be damaged as the bluff-face erodes.
- *Wastewater Treatment Facility:* The facility is moderately sensitive to sea level rise. Flooding and erosion from sea level rise could cause damage of the facility, pumps and

other equipment, but the facility was initially built to withstand a high degree of storm and related impacts.

c. **Adaptive Capacity**

- *Wetland:* Unlike many wetlands in the State of California, this particular wetland has a moderate-high adaptive capacity because it has the ability to both accumulate sediment and grow upwards, and, given that the land upland of the wetland is preserved as open space, it can migrate inland. However, by 2050, a part or all of the existing wetland area could be converted to open water if the wetland is not able to migrate inland or accumulate sediment at a rate that keeps pace with sea level rise. In this case, for example, a public trail will need to be relocated to allow inland migration of the new intertidal zone. Additionally, adaptive capacity may be reduced if pollution increases (*e.g.*, as a result of damage to adjacent development) and disrupts the normal functioning of the wetland.
- *Bluff-top Residential Development:* The residential development has a moderate adaptive capacity. As houses become threatened over time, a scenario of managed retreat would allow houses to be removed incrementally and eventually be relocated to safer areas. The feasibility of managed retreat can depend upon lot sizes, ownership patterns, land use restrictions in the safer areas, and the availability of public or private financing. In addition, a protective structure such as a seawall would minimize threats to the residence due to erosion, though if the development is protected by shoreline structures, the fronting beach will eventually be lost.
- *Wastewater Treatment Facility:* The wastewater treatment facility has a very low adaptive capacity. It is large and has expensive infrastructure so it cannot be elevated, and relocation is costly and difficult. In order to be protected in its current location, new structures will need to be built.

d. **Consequences**

- *Wetland:* In many situations, the loss of wetland area is a high risk since wetlands provide flood protection, water quality enhancement, and essential habitat for fish and bird species. However, in this case, wetland migration is not restricted by inland development, so the risks for this wetland are slight to moderate, depending upon the suitability of the inland area for establishment of wetland plants and potential changes in water temperature and water quality. In the short term, the wetland will likely continue to function at normal levels. However, if it eventually can't keep up with sea level rise or if there are barriers to migration, loss of the habitat will result in a loss of important ecosystem services.
- *Bluff-top Residential Development:* The housing development has medium to high risk through 2100. The option to either relocate houses or protect them with a seawall means that they could continue to exist. Importantly, a system of managed retreat will allow for the continued existence of the fronting beach and all of its social, economic, and environmental benefits, whereas the construction of a seawall will result in the loss of the beach and these benefits.

- *Wastewater Treatment Facility:* Given its low adaptive capacity and high sensitivity to higher levels of sea level rise, the wastewater treatment facility is at high risk. Loss or damage to the facility could result in serious social, economic, and environmental consequences. Flooding of the facility and surrounding areas will cause damage to infrastructure and loss of facility function. This could lead to discharge of untreated sewage, which would have adverse impacts to water quality and could impair the health of nearshore ecosystems. Sea level rise could also cause outflow pipes to back up with seawater, leading to inland flooding and additional water quality problems. However, efforts to protect the structure may have unintended consequences including loss of surrounding habitat areas.

e. **Land Use Constraints (discussed further in Step 4)**

- *Wetland:* The high adaptive capacity of the wetland means that minimizing risk to this resource may be accomplished by ensuring that there is space available for it to move into. Land use policies designed to protect areas inland of the current wetland area will be necessary.
- *Bluff-top Residential Development:* The area in question will eventually become incompatible with the current use. Development will not begin to be exposed to sea level rise impacts until 2050, but it is important to start planning now about how best to address the risks to the houses. Managed retreat would necessitate identifying feasible locations into which houses could be moved or a plan to abandon and remove houses. Such a plan might include a Transfer of Development Rights program in which homes are encouraged in less hazardous areas. If a managed retreat strategy is not in place, existing structures may qualify for shoreline protection. Shoreline protection would likely exacerbate beach erosion, degrade public access, impair shoreline habitat, and alter visual character.
- *Wastewater Treatment Facility:* The biggest risk in this scenario is to the wastewater treatment facility. It should be determined how likely it is that the facility will be able to be protected throughout the rest of its expected lifespan under even the highest sea level rise scenarios. It may be that the wastewater treatment facility becomes an incompatible use under future conditions. If so, plans should be made to relocate at-risk portions of the facility, as feasible, or to phase out the facility.

Note that this is a simplified example used to demonstrate the process described in Step 3. Decisions about how to address various challenges presented by sea level rise will be more complex than those illustrated above and may require prioritizing the different resources based on Coastal Act requirements taking into account the goals and circumstances of the community and the various characteristics of each resource. An understanding of the exposure, sensitivity, adaptive capacity, consequences, and land use constraints for the particular resources and scenarios will need to be kept in mind as planners move into Step 4 to identify possible adaptation strategies. Updated LCP policies and ordinances should be considered to support strategy implementation over the long term.

Step 4 – Identify LCP adaptation strategies to minimize risks

Whether as part of a new LCP or as part of an amendment to update an existing LCP, coastal planners should work with the Coastal Commission and relevant stakeholders at all steps, but particularly to evaluate potential options and adaptation strategies to address the sea level rise impacts identified in Step 2 and the risks to coastal resources identified in Step 3. Planners will then develop new or revised land use designations, policies, standards, or ordinances to implement the adaptation strategies in the LCP.

An LCP as certified by the Commission should already have land use policies, standards, and ordinances to implement Coastal Act Chapter 3 policies, including policies to avoid and mitigate hazards, and to protect coastal resources. However, in older LCPs, many of these policies may not address changing conditions adequately enough to protect coastal resources over time as sea level rises. Similarly, policies to protect resources and address coastal hazards may not reflect new techniques that can be utilized to adaptively manage coastal resources in a dynamic environment. As such, the LCP should be evaluated to identify the land use designations, policies, or ordinances that need to be amended. An LCP update may need to include a variety of adaptation measures depending on the nature and location of the vulnerability. In addition, local governments may need to add new "programmatic" changes to address sea level rise, such as transfer of development credit programs, regional sediment management programs, or a land acquisition program.

In Steps 1-3, planners will have analyzed several possible sea level rise scenarios, and this analysis will have revealed valuable information about areas and specific coastal resources that are especially vulnerable to sea level rise hazards under possible scenarios. The results should show areas that are particularly resilient to future change and trigger points at which sea level hazards will become particularly relevant to certain areas. Step 3d (identifying the *Consequences* of sea level rise impacts) and Step 3e (considering the *Land use constraints*) will be particularly useful in thinking through what resources are particularly vulnerable and what the local priorities may be.

In Step 4, planners should weigh information from the previous steps, keeping in mind the hazard avoidance and resource protection policies of the Coastal Act, and begin identifying, choosing, and/or developing adaptation strategies to be included in a new or updated LCP. The options available to minimize risks from sea level rise are dependent upon the specifics of the local community, and will vary widely depending on whether the area is an urban, fully-developed waterfront, or a rural, undeveloped coastline. In undeveloped areas, the options may be clear: strictly limit new development in sea level rise hazard zones.

However, in urban areas, sea level rise can present unprecedented challenges, and the options are less clear. The Coastal Act allows for protection of certain existing structures. However, armoring can pose significant impacts to coastal resources. To minimize impacts, innovative, cutting-edge solutions will be needed, such as the use of living shorelines to protect existing infrastructure, restrictions on redevelopment of properties in hazardous areas, managed retreat, partnerships with land trust organizations to convert at risk areas to open space, or transfer of development rights programs. Strategies will need to be tailored to the specific needs of each

community based on the resources at risk, should be evaluated for resulting impacts to coastal resources, and should be developed through a public process, in close consultation with the Coastal Commission and in line with the Coastal Act.

Adaptation strategies should be selected based upon the local conditions, the results of the scenario-based analysis, and Coastal Act requirements, taking into account the particular goals of the local community. If certain adaptation strategies should be implemented when conditions reach pre-identified trigger points, those caveats should be included in the LCP. Similarly, LCP adaptation policies should be developed and implemented in such a way as to be flexible and adaptive enough that they can be changed or updated as conditions change or if sea level rise impacts are significantly different than anticipated. Additionally, many adaptation strategies should be implemented in a coordinated way through both the LCP and individual CDPs. For example, current land uses that will conflict with future conditions may be amended through updated zoning designations in an LCP. In turn, zoning designations could carry out specific policies or requirements regarding new development or redevelopment that need to be addressed in a CDP to ensure that projects are resilient over time. Planners are encouraged to work with Coastal Commission staff to ensure compliance with the Coastal Act and to coordinate and share information with other local partners including those in charge of emergency management, law enforcement, and related services, and those identified in Figure 10 as applicable and feasible.

A key issue that should be addressed in the LCP is the evaluation of strategies to minimize hazards related to existing development. Under the Coastal Act, certain improvements and repairs to existing development are exempt from CDP requirements. Non-exempt improvements and any repairs that involve the replacement of 50% or more of a structure, however, generally require a CDP and must conform to the standards of the relevant Local Coastal Program or Coastal Act.[33] Redevelopment, therefore, should minimize hazards from sea level rise. For existing structures currently sited in at-risk locations, the process of redeveloping the structure may require the structure to be moved or modified to ensure that the structure and coastal resources are not at risk due to impacts from sea level rise. As described in Guiding Principle 6, sequential renovation or replacement of small portions of existing development should be considered in total. LCPs should include policies that specify that multiple smaller renovations that amount to alteration of 50% or more of the original structure should require a Coastal Development Permit, and require that the entire structure to be brought into conformance with the standards of the Local Coastal Program or Coastal Act.[34]

[33] Section § 13252(b) of the Commission's regulations states that "unless destroyed by natural disaster, the replacement of 50 percent or more of a single family residence, seawall, revetment, bluff retaining wall, breakwater, groin or any other structure is not repair and maintenance under Coastal Act Section 30610(d) but instead constitutes a replacement structure requiring a Coastal Development Permit."

[34] In addition, for existing structures located between the first public road and the sea or within 300 feet of the inland extent of a beach, improvements that increase the height or internal floor area by more than 10% normally require a CDP. (Cal. Code Regs., tit. 14, §§13250(b)(4), 13253(b)(4).) Depending upon the location of the structure, smaller improvements may also require a CDP. (Cal. Code Regs., tit. 14, §§ 13250(b), 13253(b).)

General Adaptation Strategies:

Chapter 7 describes a number of adaptation policies and strategies and is organized by resource type to allow users to easily identify the types of policies that may be relevant to local resource vulnerabilities. However, there are a number of adaption strategies or related actions that apply to a variety of resources or that may be generally useful when adopting or updating an LCP. Some of these adaptation strategies and actions are broadly described below.

- **Update resource inventory and maps**: An important first step for addressing sea level rise hazards and vulnerabilities in a new or updated LCP will be to compile a set of maps that clearly show the current locations of the range of coastal resources present in an LCP jurisdiction (*e.g.*, beaches and public accessways; agricultural land, wetlands, ESHA, and other coastal habitats; energy, wastewater, transportation, and other critical infrastructure; and archaeological and paleontological resources), as well as existing land use designations, and hazard areas. It may also be helpful to map possible future conditions based on the analysis done in Steps 1-3. Doing so will help planners begin to identify possible land use and zoning changes and other adaptation strategies that will be necessary to meet hazard avoidance and resource protection goals.
- **Update land use designations and zoning ordinances**: One of the most common methods of regulating land use is through zoning designations and ordinances, and updating these policies is one of the most fundamental ways of responding to sea level rise impacts. Planners may address particular vulnerabilities and local priorities by updating land use designations and zoning ordinances to protect specific areas and/or resources. For example, areas that are particularly vulnerable to sea level rise impacts can be designated as hazard zones and specific regulations can be used to limit new development and/or to encourage removal of existing development in such zones. Similarly, open areas can be designated as conservation zones in order to protect and provide upland areas for wetland and habitat migration or for additional agricultural land.
- **Update siting and design standards**: Updated siting and design standards may go hand in hand with updated land use designations and zoning ordinances in that specific standards may be required for development or projects in certain zones. For example, development in hazard zones may require additional setbacks, limits for first floor habitable space, innovative stormwater management systems, special flood protection measures, mitigation measures for unavoidable impacts, relocation and removal triggers and methodologies, and so on.
- **Establish methods to monitor local changes from sea level rise**: Add policies that establish actions to conduct long-term sea level rise monitoring and research on areas of key uncertainties, areas sensitive to small changes in sea level rise, or areas with high sea level rise risk.
- **Research and data collection**: Support research to address key data gaps and better utilize existing information. Local governments may find it useful to collaborate with local, regional, and state partners to pursue new research to better understand the factors controlling sea level rise, baseline shoreline conditions, ecosystem responses to sea level rise, potential impacts and vulnerabilities, and the efficacy of adaptation tools. Related efforts may include monitoring programs designed to track trends in local shoreline

change, flooding extent and frequency, or water quality. Monitoring of the results of various adaptation strategies and protective structures could be included as part of a Coastal Development Permit for projects in hazard zones.

- **Outreach and education**: Education and outreach efforts involve formal instruction and provision of information to stakeholders, and can help generate support for planning and action implementation. It is important to coordinate with partners and include all relevant stakeholders in these processes, particularly those that are typically isolated, such as low-income or underserved communities. For many people, sea level rise is a new issue. Information on sea level rise science and potential consequences may motivate stakeholders to take an active role in updating the LCP for sea level rise issues, or in the vulnerability and risk assessment efforts. Additionally, education efforts regarding the risks of sea level rise as well as possible adaptation strategies may encourage people to take proactive steps to retrofit their homes to be more resilient or to choose to build in less hazardous areas.

As stated above, a more extensive and detailed list of possible adaptation strategies can be found in Chapter 7. The list should neither be considered a checklist from which all options need to be added to an LCP, nor is it an exhaustive list of all possible adaptation strategies. Sea level rise adaptation is still an evolving field and decision makers will need to be innovative and flexible to respond to changing conditions, new science, and new adaptation opportunities. The important point is to analyze current and future risks from sea level rise, determine local priorities and goals for protection of coastal resources and development, and identify what land use designations, zoning ordinances, and other adaptation strategies can be used to meet those goals within the context of the Coastal Act.

Expected outcomes from Step 4*: Identified sections of the LCP that need to be updated, a list of adaptation measures applicable to the LCP, and new policies and ordinances to implement the adaptation measures.*

Step 5 – Draft updated or new LCP for certification with the Coastal Commission

Once potential adaptation strategies have been identified, LCP policies that address sea level rise should be incorporated into a new LCP or LCP amendment. For jurisdictions with a certified LCP, adaptation measures will be implemented through development of amendments to the certified LCPs. For jurisdictions that currently do not have a certified LCP, the sea level rise policies will be part of the development of a new LCP. In areas without a certified LCP, the Coastal Commission generally retains permitting authority, and the standard of review for development is generally Chapter 3 of the California Coastal Act.

As noted in Step 4, sea level rise has the potential to affect many types of coastal resources in an LCP planning area/segment, and it is likely that policies throughout the LCP will need to be revised or developed to address impacts from sea level rise. Two major types of updates to the LCP will likely be needed to address sea level rise:

1. New or revised policies/ordinances that apply to all development in the planning area. For example, policies such as "All new development shall be sited and designed to minimize risks from sea level rise over the life of the structure."
2. Updated land use and zoning designations, as well as programs to facilitate adaptive community responses, to reduce risks to specific coastal resources. For example, the LCP could modify the zoning of undeveloped land located upland of wetlands from residential to open space in order to provide the opportunity for wetlands to migrate inland, and protect wetlands for the future.

Local government staff should work closely with Coastal Commission staff and relevant stakeholders, including ensuring there is opportunity for public input, to develop the new LCP or LCP amendments. Once the updates and plans are complete, local governments will submit to the Commission for certification. The Commission may either certify or deny the LCP or LCP amendment as submitted, or it may suggest modifications. If the Commission adopts suggested modifications, the local government may adopt the modifications for certification or refuse the modifications and resubmit a revised LCP for additional Commission review. For more information on updating LCPs, see https://www.coastal.ca.gov/rflg/.

***Expected outcomes from Step 5**: Certified/updated LCP with policies and land use designations that address sea level rise and related hazards and ensure protection of coastal resources to the maximum extent feasible.*

Step 6 – Implement LCP and monitor and revise as needed

Upon certification of the updated LCP, sea level rise adaptation strategies will be implemented through the certified implementing ordinances and related processes and actions (*e.g.*, local review of CDPs, proactive action plans). Additionally, an important component of successful adaptation is to secure funds for implementation, regularly monitor progress and results, and update any policies and approaches as needed. Sea level rise projections should be re-evaluated and updated as necessary.

- **Secure resources for implementation:** There are a number of different sources of funds available to help local governments implement adaptation strategies. For example, the Coastal Commission, the Ocean Protection Council, and the Coastal Conservancy have grant programs designed to support local adaptation efforts (see Chapter 1 for additional details on each of these programs).

  As described previously there may also be overlap between LCP planning and Local Hazard Mitigation planning. FEMA's Hazard Mitigation Assistance (HMA) grant programs provide significant opportunities to reduce or eliminate potential losses to State, Indian Tribal government, and local assets through hazard mitigation planning and project grant funding. Currently, there are three programs: the Hazard Mitigation Grant Program (HMGP); Pre-Disaster Mitigation (PDM); and Flood Mitigation Assistance

(FMA)[35]. Cal OES administers the HMA and FMA programs. More information can be found at http://www.caloes.ca.gov/cal-oes-divisions/recovery/disaster-mitigation-technical-support/404-hazard-mitigation-grant-program or the FEMA HMA Web site at https://www.fema.gov/hazard-mitigation-assistance.

A list compiled by Cal OES of additional funding options for hazard mitigation can be found in Appendix E. The Commission recognizes that funding opportunities are constantly evolving, that demand for funding is increasing, and that there is a significant need for the development of additional funding opportunities.

- **Identify key resources to monitor:** Certain species can be indicators of whether sea level rise is affecting an ecosystem. For instance, the presence of certain plant species can indicate the salinity of soils. Also, monitoring plans should reflect the outcome of the scenario-based analysis of sea level rise. Some adaptation measures might be earmarked for implementation when a certain amount of sea level rise (or a particular sea level rise impact) occurs. Monitoring programs should ensure that these triggers are recognized and responded to at the appropriate time.

- **Periodically Update LCPs:** Local governments should try to review their vulnerability and risk assessments on a regular basis as significant new scientific information becomes available and propose amendments as appropriate. Given the evolving nature of sea level rise science, policies may need to be updated as major scientific advancements are made, changing what is considered the best available science. Modify the current and future hazard areas on a five to ten year basis or as necessary to allow for the incorporation of new sea level rise science, monitoring results, and information on coastal conditions. Regular evaluation of LCPs is important to make sure policies and adaptation strategies are effective in reducing impacts from sea level rise.

***Expected outcomes from Step 6**: Plan to monitor the LCP planning area for sea level rise and other impacts and for effectiveness of various adaptation strategies that are implemented; plan to revise the LCP when conditions change or science is updated.*

This six-step process discussed in this chapter is illustrated in the flowchart below (Figure 12). Notice that the process is circular. Because sea level rise science will be refined and updated in the future, planners should periodically repeat this six-step process to update and improve their LCPs.

For additional resources and examples of ways to incorporate sea level rise into the LCP, see Appendix C.

[35] Each HMA program was authorized by separate legislative action, and as such, each program differs slightly in scope and intent.

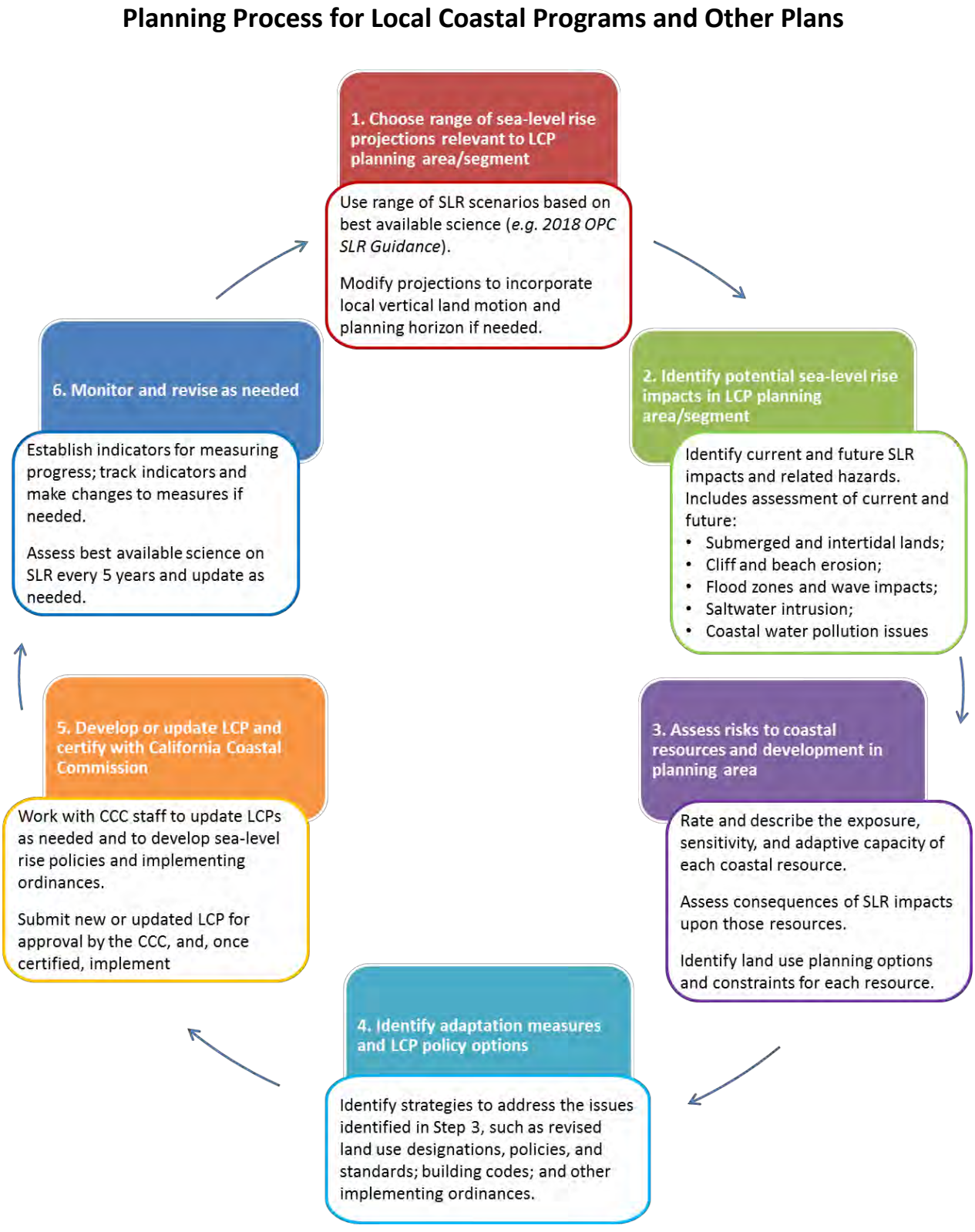

Figure 12. Flowchart for addressing sea level rise in Local Coastal Programs and other plans

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Chapter 6

Addressing Sea Level Rise in Coastal Development Permits

Development in the coastal zone generally requires a Coastal Development Permit (CDP).[36] In areas of retained jurisdiction and areas without a certified Local Coastal Program (LCP), the Commission is generally responsible for reviewing the consistency of CDP applications with the policies of Chapter 3 of the Coastal Act (Public Resources Code Sections 30200-30265.5).[37] In areas with a certified LCP, the local government is responsible for reviewing the compliance of CDP applications with the requirements of the certified LCP and, where applicable, the public access and recreation policies of the Coastal Act. Certain local government actions on CDP applications are appealable to the Commission. On appeal, the Commission also applies the policies of the certified LCP and applicable public access and recreation policies of the Coastal Act.[38] The Commission and local governments may require changes to the project or other mitigation measures in order to assure compliance with Coastal Act policies or LCP requirements by both minimizing risks to the development from coastal hazards and avoiding impacts to coastal resources.

The Coastal Act, the LCP, and the CDP Application cover the broad range of information and analyses that must be addressed in a CDP application. This CDP guidance focuses only on sea level rise and those conditions or circumstances that might change as a result of changing sea level. It does not address other Coastal Act or LCP requirements.

Adopting or updating LCPs as recommended in this Guidance should facilitate subsequent review of CDPs. LCPs can identify areas where close review of sea level rise concerns is necessary and where it is not. If kept up to date, they can also provide information for evaluation at the permit stage and specify appropriate mitigation measures for CDPs to incorporate.

Sea level rise will be important for some, but not all, of the projects reviewed through the CDP process. Locations currently subject to inundation, flooding, wave impacts, erosion, or saltwater intrusion will be exposed to increased risks from these coastal hazards with rising sea level and will require review for sea level rise effects. Locations close to or hydraulically connected to these at-risk locations, will themselves be at risk as sea level rises and increases the inland extent

[36] Coastal Act Section 30106 defines "Development" to be, "on land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto; construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg-Nejedly Forest Practice Act of 1973 (commencing with Section 4511)."

[37] The Commission retains CDP jurisdiction below mean high tide and on public trust lands.

[38] Local governments may assume permitting authority even without a fully certified LCP (*see* Public Resources Code, §§ 30600(b), 30600.5), but only the City of Los Angeles has done so. Any action on a CDP application by a local government without a fully certified LCP may be appealed to the Commission. (Public Resources Code, § 30602.)

of these hazards. The following box provides some of the general situations for which sea level rise will need to be included in the project analysis.

General Situations when sea level rise should be considered in the project analysis include when the project or planning site is:

- Currently in or adjacent to an identified floodplain
- Currently or has been exposed to flooding or erosion from waves or tides
- Currently in a location protected by constructed dikes, levees, bulkheads, or other flood-control or protective structures
- On or close to a beach, estuary, lagoon, or wetland
- On a coastal bluff with historic evidence of erosion
- Reliant upon shallow wells for water supply

Many of the projects reviewed through the CDP application process already examine sea level rise as part of the hazards analysis. Such examination will need to continue, and these guidelines offer direction and support for a thorough examination of sea level rise and its associated impacts based on current climate science, coastal responses to changing sea level, and consequences of future changes.

To comply with Coastal Act Section 30253 or the equivalent LCP section, projects will need to be planned, located, designed, and engineered for the changing water levels and associated impacts that might occur over the life of the development. In addition, project planning should anticipate the migration and natural adaptation of coastal resources (beaches, access, wetlands, *etc.*) due to future sea level rise conditions in order to avoid future impacts to those resources from the new development. As LCPs are updated to reflect changing conditions and to implement sea level rise adaptation strategies, it will be important that CDPs are also conditioned and approved in ways that similarly emphasize an adaptive approach to addressing sea level rise hazards. Such coordination between LCP and CDP adaptation policies and strategies will help ensure that coastal development and resources are resilient over time.

Steps for Addressing Sea Level Rise in Coastal Development Permits

The steps presented in Figure 13 and described in more detail below, provide general guidance for addressing sea level rise in the project design and permitting process for those projects where sea level rise may be contribute to or exacerbate hazards or impact coastal resources.

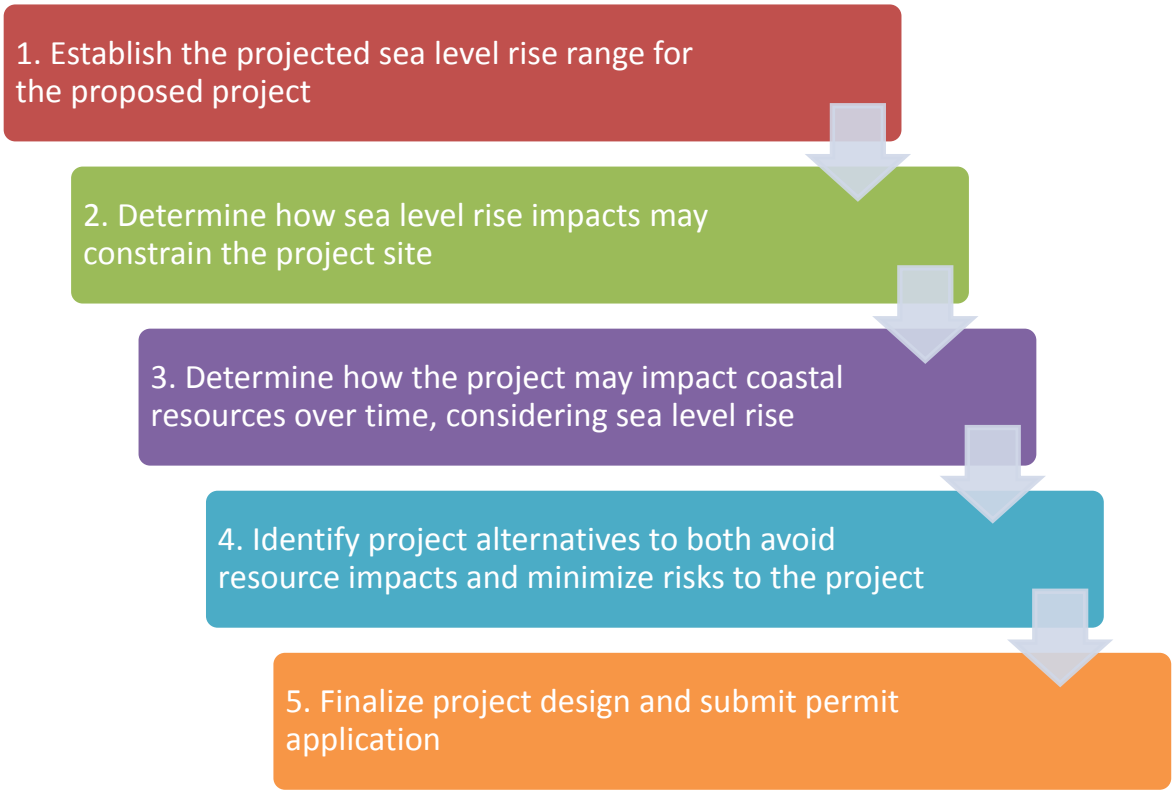

Figure 13. Process for addressing sea level rise in Coastal Development Permits

The goal of these steps is to ensure that projects are designed and built in a way that minimizes risks to the development and avoids impacts to coastal resources in light of current conditions and the changes that may arise over the life of the project. Many project sites and proposed projects may raise issues not specifically contemplated by the following guidance steps or the permit filing checklist at the end of this section. It remains the responsibility of the project applicant to adequately address these situations so that consistency with the Coastal Act and/or LCP may be fully evaluated. There are many ways to evaluate and minimize the risks associated with sea level rise, and the Commission understands that different types of analyses and actions will be appropriate depending on the type of project or planning effort.

Throughout the CDP analysis, applicants are advised to contact planning staff (either at the Commission or the local government, whichever is appropriate) to discuss the proposed project, project site, and possible resource or hazard concerns. The extent and frequency of staff coordination may vary with the scale of the proposed project and the constraints of the proposed project site. Larger projects and more constrained sites will likely necessitate greater coordination with local government and Commission staff.

Use scenario-based analysis

This process recommends using various sea level rise scenarios for the analysis of possible resource changes and site risks associated with sea level rise. Given the uncertainty about the magnitude and timing of future sea level rise, a scenario-based analysis will examine the consequences of a range of situations rather than basing project planning and design upon one sea level rise projection.

One approach for scenario-based analysis is to start with the highest possible sea level rise. If a developable area can be identified that has no long-term resource impacts, and is at no or low-risk from inundation, flooding, and erosion, then there may be no benefit to undertaking additional analysis for sea level rise and the project can continue with the rest of the analyses that are part of the Coastal Act or LCP (such as impacts to coastal habitats, public access, and scenic and visual qualities, and other issues unrelated to sea level rise).

If the site is constrained under a high sea level rise scenario, analysis of other, lower sea level rise amounts can help determine thresholds for varying impacts to coastal resources and types and extent of site constraints that need to be considered during project planning. The analysis of lower and intermediate sea level rise projections are used to better understand the timing and probability of the constraints. For further description of scenario-based analysis, see Chapter 3 of this Guidance.

Step 1 – Establish the projected sea level rise range for the proposed project

A projected sea level rise range should be obtained from the best available science, such as the 2018 OPC SLR Guidance or an equivalent resource. These projections should cover the expected life of the proposed project, as the ultimate objective will be to assure that the project is safe from coastal hazards, without the need for shoreline protection or other detrimental hazard mitigation measures, as long as it exists.

- **Define Expected Project Life**: The expected project life will help determine the amount of sea level rise to which the project site could be exposed while the development is in place. Importantly, the point of this step is not to specify exactly how long a project will exist (and be permitted for), but rather to identify a project life time frame that is typical for the type of development in question so that the hazard analyses performed in subsequent steps will adequately consider the impacts that may occur over the entire life of the development.

  Some LCPs include a specified design life for new development. If no specified time frame is provided, a more general range may be chosen based on the type of development. For example, temporary structures, ancillary development, amenity structures, or moveable or expendable construction may identify a relatively short expected life such as 25 years or less. Residential or commercial structures will likely be around for some time, so a time frame of 75 to 100 years may be appropriate. A longer time frame of 100 years or more should be considered for critical infrastructure like bridges or industrial facilities. Resource protection or enhancement projects such as

coastal habitat conservation or restoration projects should also consider longer time frames of 100 years or more, as these types of projects are typically meant to last in perpetuity.[39]

- **Determine Sea Level Rise Range:** Using the typical project life identified above, the project analysis should identify a range of sea level rise projections based on the best available science that may occur over the life of the project. At present, the 2018 OPC SLR Guidance is considered to be the best available science (Table 6; Appendix G), though an equivalent resource may be used provided that it is peer-reviewed, widely accepted within the scientific community, and locally relevant[40].

  As explained in Chapter 3, the 2018 OPC SLR Guidance recommends evaluating different scenarios depending on the type of project and the level of risk associated with the development type. These projections scenarios include:

  1. *Low risk aversion scenario:* may be used for projects that would have limited consequences or have a higher ability to adapt, such as sections of unpaved coastal trail, public accessways, and other small or temporary structures that are easily removable and would not have high costs if damaged.
  2. *Medium-high risk aversion scenario:* should be used for projects with greater consequences and/or a lower ability to adapt such as residential and commercial structures.
  3. *Extreme risk aversion (H++):* should be used for projects with little to no adaptive capacity that would be irreversibly destroyed or significantly costly to repair, and/or would have considerable public health, public safety, or environmental impacts should that level of sea level rise occur. In the Coastal Commission's jurisdiction, this could include new wastewater treatment plants, power stations, highways, or other critical infrastructure.

  In general, the Coastal Commission recommends taking a precautionary approach by evaluating the higher sea level rise projections, such as the medium-high risk aversion scenario, for most development. For critical infrastructure, development with a very long project life (*e.g.*, 100 years or greater), or assets that have little to no adaptive capacity, that would be irreversibly destroyed or significantly costly to repair, and/or would have considerable public health, public safety, or environmental impacts, the analysis should consider the "extreme risk aversion" scenario. If constraints are identified with the higher sea level rise scenario(s), a lower sea level rise scenario and/or one or more intermediate

[39] Determining an anticipated life for restoration activities or other related projects is somewhat more complex than for typical development projects because these activities are typically meant to exist in perpetuity. As such, assessing sea level rise impacts may necessitate analyzing multiple different time frames, including the present, near future, and very long term depending on the overall goals of the project. For restoration projects that are implemented as mitigation for development projects, an expected project life that is at least as long as the expected life of the corresponding development project should be considered.

[40] More detailed refinement of sea level rise projections is not considered necessary at this time, as variations from the nearby tide gauges will often be quite small, and may be insignificant compared to other sources of uncertainty. However, the Coastal Commission recognizes that other studies exist with localized data, for example those completed in the Humboldt Bay region, which may also be appropriate for use.

scenarios may also be used to develop a broader understanding of the overall risk sea level rise poses to the site or proposed development. These values should each be carried forward through the rest of the steps in this chapter.

Table 6. Sea Level Rise Projections for the San Francisco Tide Gauge[41] (OPC 2018)

Projected Sea Level Rise (in feet): *San Francisco*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2
2110*	3.5	7.3	11.9
2120	4.1	8.6	14.2
2130	4.6	10.0	16.6
2140	5.2	11.4	19.1
2150	5.8	13.0	21.9

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[41] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

***Expected outcomes from Step 1**: A proposed or expected project life and corresponding range of sea level projections—including the high, the low, and one or more intermediate sea level rise projections—that will be used in the following analytic steps.*

Step 2 – Determine how physical impacts from sea level rise may constrain the

The Coastal Act requires that development minimize risks from coastal hazards. Sea level rise can both present new hazards and exacerbate hazards that are typically analyzed in CDP applications. In this step, project applicants determine the types and extent of sea level rise impacts that may occur now and into the future.

As described in Chapter 3 of the Guidance, impacts associated with sea level rise generally include erosion, inundation, flooding, wave impacts, and saltwater intrusion. An assessment of these impacts is often required as part of a routine hazards assessment or the safety element of the LCP. Therefore, information in the local LCP can provide an initial determination of potential hazards for the project in question, if available. However, proposed development will often need a second, site-specific analysis of hazards to augment the more general LCP information.

Analyze relevant sea level rise impacts for each sea level rise scenario.

A CDP application for new development in a hazardous area should include reports analyzing the anticipated impacts to a project site associated with each sea level rise scenario identified in Step 1. Generally, the analyses pertinent to sea level rise include geologic stability, erosion, flooding/inundation, wave runup, and wave impacts, and these analyses are described in detail below. Depending on the site, however, different analyses may be required. Applicants should work with planning staff (Coastal Commission or local government staff) to perform a pre-application submittal consultation to determine what analyses are required for their particular project. Analysis of those hazards that will not be altered by sea level rise (such as the location of faults, fire zones, *etc.*) should be undertaken at the same time as the assessment of sea level rise affected hazards so a complete understanding of hazard constraints can be used for identification of safe or low-hazard building areas. After the submission of the CDP application, any additional analyses that are required will be listed in an application filing status review letter.

The professionals who are responsible for technical studies of geologic stability, erosion, flooding/inundation, wave runup, and wave impacts should be familiar with the methodologies for examining the respective impacts. However, the methodologies do not always adequately examine potential impacts under rising sea level conditions, as established by best available science. Appendix B goes through the various steps for incorporating the best available science on sea level rise into the more routine analyses, which are summarized below. The analyses should be undertaken for each of the sea level rise scenarios identified in Step 1.

- **Geologic Stability:** The CDP should analyze site-specific stability and structural integrity without reliance upon existing or new protective devices (including cliff-

retaining structures, seawalls, revetments, groins, buried retaining walls, and caisson foundations) that would substantially alter natural landforms along bluffs and cliffs. Geologic stability can include, among others, concerns such as landslides, slope failure, liquefiable soils, and seismic activity. In most situations, the analyses of these concerns will be combined with the erosion analysis (below) to fully establish the safe developable area.

- **Erosion:** Both bluff erosion and long-term shoreline change will increase as the time period increases. Thus, some estimate of project life is needed to determine expected bluff and shoreline change, and to fully assess the viability of a proposed site for long-term development. The CDP application should include an erosion analysis that establishes the extent of erosion that could occur from current processes, as well as future erosion hazards associated with the identified sea level rise scenarios over the life of the project. If possible, these erosion conditions should be shown on a site map, and the erosion zone, combined with the geologic stability concerns, can be used to help establish locations on the parcel or parcels that can be developed without reliance upon existing or new protective devices (including cliff-retaining structures, seawalls, revetments, groins, buried retaining walls, and caissons) that would substantially alter natural landforms along bluffs and cliffs.
- **Flooding and Inundation:** The CDP application should identify the current tidal datum and include analysis of the extent of flooding or inundation that potentially could occur from the identified sea level rise scenarios, and under a range of conditions that could include high tide, storm surge, water elevation due to El Niños, Pacific Decadal Oscillations, a 100-year storm event, and the combination of long-term erosion and seasonal beach erosion. If possible, this information and resulting flood zones should be shown on a site map.
    - **Flood Elevation Certificate**: If a site is within a FEMA-mapped 100-year flood zone, building regulations, in implementing the federal flood protection program, require new residences to have a finished floor elevation above Base Flood Elevation (BFE; generally 1 ft).[42] The CDP application should include a flood elevation certificate prepared by a registered land surveyor, engineer, or architect, demonstrating that the finished floor foundation of the new structure will comply with the minimum FEMA guidelines and building standards. However, at this time, the Flood Certificate does not address sea level rise related flooding. In addition, designing to meet FEMA requirements may be in conflict with other resource constraints, such as protection of visual resources, community character, and public access and recreation. Thus, in general, a certificate is not adequate to

[42] FEMA's proposed "Revised Guidelines for Implementing Executive Order 11988, Floodplain Management" (released for public review and comment on January 30, 2015) will modify the Federal Flood Risk Management Standard, in compliance with EO 13960, to address the need for federal agencies to include climate change considerations in floodplain management. It recommends that the elevation and flood hazard area be established by (i) using climate-informed science, (ii) adding 2 feet (for non-critical actions) or 3 feet (for critical actions) of freeboard to the Base Flood Elevation, or (iii) including the area subject to the 0.2% annual chance of flood. These Revised Guidelines could lead to future changes in the elevation required for Flood Elevation Certificates for new development.

address Coastal Act and LCP standards for demonstrating that future flood risk or other impacts to coastal resources have been minimized.

- **Wave Runup and Wave Impacts:** Building upon the analysis for flooding, the CDP application should include analysis of the wave runup and impacts that potentially could occur over the anticipated life of the project from a 100-year storm event, combined with the identified sea level rise scenarios, and under a range of conditions that could include high tide, storm surge, water elevation due to El Niño events, Pacific Decadal Oscillations, and the combination of long-term erosion and seasonal beach erosion. If possible, this information and resulting wave runup zones should be shown on a site map or site profile.
- **Other Impacts**: Any additional sea level rise related impacts that could be expected to occur over the life of the project, such as saltwater intrusion should be evaluated. This may be especially significant for areas with a high groundwater table such as wetlands or coastal resources that might rely upon groundwater, such as agricultural uses.

***Expected outcomes from Step 2**: Detailed information about the sea level rise related impacts that can occur on the site and changes that will occur over time under various sea level rise scenarios. High risk and low risk areas of the site should be identified. The scenario-based analyses should also provide information on the potential effects of sea level rise, such as coastal erosion, that could occur over the proposed development life, without relying upon existing or new protective devices.*

Step 3 – Determine how the project may impact coastal resources, considering

The Coastal Act requires that development avoid impacts to coastal resources. Sea level rise will likely cause some coastal resources to change over time, as described in Chapters 3 and 4. Therefore, in this step, applicants should analyze how sea level rise will affect coastal resources now and in the future so that alternatives can be developed in Step 4 to minimize the project's impacts to coastal resources throughout its lifetime.

This section discusses only those resources that might change due to rising sea level or possible responses to rising sea levels. As in Step 2, each sea level rise scenario (high, low, and intermediate values) should be carried through this step. A complete CDP application will need to assess possible impacts to all coastal resources – including public access and recreation, water quality, natural resources (such as ESHA and wetlands), agricultural resources, natural landforms, scenic resources, and archaeological and paleontological resources. Analysis of those resources that will not be affected by sea level rise should be undertaken at the same time as the assessment of the sea level rise affected resources so a complete map of resource constraints can be used for identification of a resource-protective building area.

3.1 Analyze coastal resource impacts and hazard risks for each sea level rise scenario

Analysis of resource impacts will require information about the type and location of the resources on or in proximity to the proposed project site and the way in which the proposed project will affect such resources initially and over time. The following discussion of each resource will help identify the key impacts to each that might result from either sea level rise or the proposed development. If coastal resources will be affected by sea level rise, such as changes to the area and extent of a wetland or riparian buffer, these changes must be considered in the analysis. Much of the following discussion recommends analysis of impacts from current and future inundation, flooding, erosion, and from the ways in which the project proposes to address such impacts. Appendix B provides guidance on how to undertake this analysis and includes lists of suggested resources that can provide data, tools, or other resources to help with these analyses. This analysis should be repeated for each sea level rise scenario identified in Step 1. Also, it may be important for local planners to coordinate and share information with other local partners – including those in charge of emergency management, law enforcement, and related services – in order to identify risks and vulnerabilities. Information on the following coastal resources is included. To skip to a section, click on the links below:

- New Development (addressed in Step 2, above)
- Public Access and Recreation
- Coastal Habitats
- Natural Landforms
- Agricultural Resources
- Water Quality and Groundwater
- Scenic Resources

Public Access and Recreation: Public access and recreation resources include lateral and vertical public accessways, public access easements, beaches, recreation areas, public trust lands,[43] and trails, including the California Coastal Trail. These areas may become hazardous or unusable during the project life due to sea level rise and/or due to the proposed project. Approaches to identify potential risks to public access and recreation include:

- Identify all public access locations on or near the proposed project site and, if possible, map these resources in relation to the location of the proposed project. The analysis should also identify existing public trust areas in relation to the proposed project
- Determine whether any access locations or public trust lands will be altered or impacted by sea level rise and/or the proposed project for the identified sea level rise scenarios. Such impacts could result from flooding, inundation, or shoreline erosion, or from proposed project elements. At a minimum, establish the extent of likely and/or possible changes to public access and recreation and to public trust lands.

[43] The State Lands Commission has oversight of all public trust lands and many local governments are trustees of granted tidelands. The State Lands Commission or other appropriate trustee should be contacted if there is any possibility that public trust lands might be involved in the proposed project. As a general guide, public trust lands include tide and submerged lands as well as artificially filled tide and submerged lands.

- If any access locations will be altered by sea level rise and/or the proposed project, map or otherwise identify the potential changes to the location of these access resources for the identified sea level rise scenarios.
- Identify whether there are locations on the proposed project site that can support development without encroachment onto the existing or future locations of these access locations, and without impacts otherwise to public access and recreation. Overlay with development constraints (fault zones, landslides, steep slopes, property line setbacks, *etc.*) and with other coastal resource constraints.

Coastal Habitats (ESHA, wetlands, *etc.*): Coastal habitats, especially those that have a connection to water, such as beaches, intertidal areas, and wetlands, can be highly sensitive to changes in sea level. Ways to identify potential resource impacts associated with the project include:

- Identify all coastal habitats and species of special biological or economic significance on or near the proposed project site and, if possible, map these resources in relation to the location of the proposed project.
- Determine whether any coastal habitats will be altered or affected by sea level rise and/or the proposed project over the proposed life of the project. Such impacts could result from flooding, inundation, shoreline erosion, or changes to surface or groundwater conditions (see discussion below on water quality). At a minimum, use the identified sea level rise scenarios to establish the extent of likely and/or possible changes to coastal habitats.
- If any coastal habitats will be altered by sea level rise and/or the proposed project, map or otherwise identify potential changes to the location of these coastal resources for the identified sea level rise scenarios.
- Identify locations of the proposed project site that can support development without encroachment onto the existing or future locations of these coastal habitats, and without other impacts to coastal habitats. Overlay with development constraints (fault zones, landslides, steep slopes, property line setbacks, *etc.*) and with other coastal resource constraints.

Natural Landforms: Natural landforms can include coastal caves, rock formations, bluffs, terraces, ridges, and cliffs. Steps to identify natural landforms at risk include:

- Identify all natural landforms on or near the proposed project site and, if possible map these resources in relation to the location of the proposed project.
- Determine whether any natural landforms will be altered or impacted by sea level rise and/or the proposed project for the identified sea level rise scenarios. Such impacts could result from flooding, inundation or shoreline erosion. At a minimum, use the identified sea level rise scenarios to establish the zone of likely and/or possible changes to natural landforms.
- If any natural landforms will be altered by sea level rise and/or the proposed project, map or otherwise identify the likely changes to location of these coastal resources for the identified sea level rise scenarios.

- Identify locations of the proposed project site that can support development without encroachment onto the existing or future locations of these natural landforms and without other impacts to such landforms. Bluffs and cliffs can often require additional analysis for slope stability to determine the setback from the eroded bluff face that can safely support development. Overlay with development constraints (fault zones, landslides, steep slopes, property line setbacks, *etc.*) and with other coastal resource constraints.

Agricultural Resources: Agricultural resources may be affected by sea level rise through changes to surface drainage and the groundwater table. Other changes can result from flooding, inundation or saltwater intrusion. If agricultural lands are protected by levees or dikes, they can be affected by changes to the stability or effectiveness of these structures. Steps to identify risks to agricultural resources include:

- Identify whether the proposed project site is used for or zoned for agricultural uses, contains agricultural soils, or is in the vicinity of or upstream of lands in agricultural use.
- Identify surface water drainage patterns across the site or from the site to the agricultural use site.
- If any drainage patterns are closely linked to and potentially influenced by the elevation of sea level, examine changes in drainage patterns with rising sea level on the proposed site or the agricultural use site.

Water Quality and Groundwater: Sea level rise may cause drainages with a low elevation discharge to have water back-ups. It may also cause a rise in the groundwater table. Both of these changes could alter on-site drainage and limit future drainage options. If the proposed site must support an on-site wastewater treatment system, or if drainage and on-site water retention will be a concern, consider the following, as appropriate:

- Identify surface water drainage patterns across the site.
- Examine changes with rising sea level of any drainage patterns that are closely linked to and likely influenced by the elevation of sea level. At a minimum, use the identified sea level rise scenarios to establish the zone of likely changes to drainage patterns.
- Identify the elevation of the groundwater table. Since groundwater can fluctuate during periods of rain and drought, attempt to identify the groundwater zone.
- Estimate the likely future elevation of the groundwater zone, due to sea level rise. At a minimum, use the identified sea level rise scenarios to establish the zone of likely changes to groundwater.
- Evaluate whether changes in groundwater will alter the proposed site conditions.

Scenic Resources: Visual and scenic resources include views to and along the ocean and scenic coastal areas. Development modifications to minimize risks from sea level rise could have negative consequences for scenic resources, including creating a structure that is out of character with the surrounding area, blocks a scenic view, or alters natural landforms. Steps to identify impacts to scenic resources, including any impacts from possible adaptation measures, include:

- Identify all scenic views to and through the proposed project site from public vantage points such as overlooks, access locations, beaches, trails, the Coastal Trail, public roads, parks, and if possible, map these views and view lines in relation to the location and maximum allowable elevation of the proposed project.
- Identify locations of the proposed project site that can support development and avoid or minimize impacts to scenic views from current and future vantage points. Overlay with development constraints (fault zones, landslides, steep slopes, property line setbacks, *etc.*) and with other coastal resource constraints.

3.2 Synthesize and assess development and resource constraints

After completing the detailed analysis of each coastal resource, the applicant should summarize the potential resource impacts under each sea level rise scenario identified in Step 1. This set of results, when combined with potential impacts to those coastal resources not affected by sea level rise, should give the applicant valuable information about the degree of risk posed to each coastal resource and to the development itself. If practical, for each sea level rise scenario, applicants should produce a constraints map illustrating the location and the extent of resource impacts that could occur over the life of the development. Based on the analysis of resource impacts and potential hazard risks over the life of the development, the applicant should develop an overlay identifying the development and resource constraints.

3.3 Identify areas suitable for development

The final part of this step is to identify the locations of the project site that could support some level of development without impacts to coastal resources and without putting the development at risk.

Expected outcomes from Step 3*: Upon completing this step, the applicant should have detailed information about the types of coastal resources on the project site and the level of risk that sea level rise poses to each resource under each sea level rise scenario, including resource locations and the extent of resource impacts that could occur over the life of the proposed project. This step should also provide an overlay of all development and resource constraints, and clearly identify the locations on the proposed project site that could support some level of development without impacts to coastal resources and without putting the development at risk.*

Step 4 – Identify project alternatives that avoid resource impacts and minimize

By this step, applicants should have developed a set of factors based on the sea level rise hazards identified in Step 2, potential resource impacts identified in Step 3, and other site conditions (such as archaeological resources or fault lines) to identify the buildable areas that avoid both risk from coastal hazards and impacts to coastal resources. Hazard and resource avoidance is usually the preferred option, and, in many cases, applicants may find that the site is safe from sea level rise hazards for all the identified sea level rise scenarios and no further identification of project alternatives would be necessary in order to address sea level rise concerns.

For some cases, the site constraints may require consideration of project alternatives that fit with the available buildable area, without the use of protective structures. In these cases, one of the alternatives may be to replace what was initially being considered for the site. In other cases, development that is safe from hazards and is resource protective may be possible if certain adaptation strategies are used to modify the project over time and as the potential hazard areas increase or move closer to the project. For these cases, the possible adaptation pathways would be included as part of the proposed project, along with necessary monitoring and triggers for implementing the adaptation options. In still other cases, hazard minimization may be the only feasible option for development on hazard constrained-sites. In all cases, projects must be sited and designed to address all applicable Coastal Act and LCP requirements, including any new requirements within LCPs that have been updated to adapt to sea level rise.

The results from the analysis of sea level rise scenarios should factor into the decisions made in this step. In particular, after looking at the results from Steps 2 and 3 as a whole, applicants can better decide the project changes, types of adaptation strategies, and design alternatives that would be most appropriate given the degree of risk posed by possible sea level rise and how long the development might be free from risk. The applicant also might identify triggers (*e.g.*, a certain amount of sea level rise) when certain adaptation measures should be implemented to reduce risk and/or impacts to coastal resources.

Importantly, land divisions and lot line adjustments in high hazard areas can change hazard exposure and should therefore be undertaken only when they can be shown to not worsen or create new vulnerability. In particular, no new lots or reconfigured lots with new development potential should be created if they cannot be developed without additional shoreline hazard risks.

Strategies to Avoid Resource Impacts and Minimize Risks

The best way to minimize risks to development and coastal resources is to avoid areas that are or will become hazardous as identified by the sea level rise scenarios analysis in the previous steps. Such avoidance often includes changes to the proposed project to bring the size and scale of the proposed development in line with the capacity of the project site. However, if it is not feasible to site or design a structure to completely avoid sea level rise impacts, the applicant may need to modify or relocate the development to prevent risks to the development or to coastal resources. Some changes, such as the use of setbacks, may be necessary at the outset of the project. Other changes, such as managed retreat or added floodproofing, may be useful as adaptive strategies that can be used after the initial project completion. Considerations involved in choosing and designing an appropriate adaptation strategy may include those listed below. See Chapter 7 for more information on specific adaptation measures. For a list of guidebooks, online clearinghouses, and other sea level rise adaptation resources, see Appendix C.

- **Assess Design Constraints:** Determine whether there are any significant site or design constraints that might prevent future implementation of possible sea level rise adaptation measures. Some project locations may be constrained due to lot size, sea level related hazards, steep slopes, fault lines, the presence of wetlands or other ESHA, or other constraints such that no safe development area exists on the parcel. Ideally, such parcels would be identified during the LCP vulnerability analysis, and the land use and zoning

designations would appropriately reflect the constraints of the site. However, in some cases development may need to be permitted even if it cannot avoid all potential hazards. As stated above, care should be taken in these cases to avoid resource impacts and minimize risks as much as possible by developing and implementing a sea level rise adaptation plan for the proposed development. In creating this plan, it is important to identify any design constraints that will limit the ability to implement adaptation strategies in the future, as described below.

- **Identify Adaptation Options:** Identify possible adaptation strategies (such as those found in Chapter 7) for the proposed project, and evaluate each adaptation option for efficacy in protecting the development. Also, evaluate the consequences from each proposed adaptation measure to ensure it will not have adverse impacts on coastal and sensitive environmental resources, including visual impacts and public access.

  For example, an option that is often considered for sea level rise is to elevate the development or the structures that are providing flood protection. However, elevated structures will change the scenic quality and visual character of the area. Also, elevation of the main development may be of little long-term utility to the property owner if the supporting infrastructure, such as the driveways, roads, utilities or septic systems are not also elevated or otherwise protected. Elevation of existing levees or dikes can provide flood protection for an area of land and all the development therein. However, the foundation of the levee or dike must have been designed to support the additional height or else it may have to be expanded and the increased footprint of the foundation could have impacts on intertidal area, wetlands, or other natural resources. Thus, the long-term options for adaptation should be considered as part of any permit action, to ensure that current development decisions are not predetermining resource impacts in the future.

- **Utilize Adaptation Pathways:** "Adaptation pathways" refers to a planning approach in which planners consider multiple possible futures and analyze the robustness and flexibility of various adaptation options across those multiple futures. In the context of sea level rise planning, if the likelihood of impacts is expected to increase with rising sea level, it may be necessary to design the initial project for some amount of sea level rise but to also include design flexibility that will allow future project changes or modifications to prevent impacts if the amount of sea level rise is more than anticipated in the initial design. Changes and modifications could include the use of foundation elements that will allow for building relocations or removal of portions of a building as it is threatened or reserving space to move on-site waste treatment systems away from eroding areas or areas that will be susceptible to a rising water table or increased flooding.

- **Develop Project Modifications**: Highly constrained sites may not be able to support the amount of development that an applicant initially plans for the site. Even a small building footprint may be at risk from flooding or erosion under high sea level rise scenarios. In such cases, it will be important to work closely with the appropriate planning staff to develop a project option that can minimize hazards from the identified sea level rise scenarios for as long as possible, and then incrementally retreat once certain triggers are met. Some examples of triggers could be that erosion is within some distance of the

foundation, or monthly high tides are within some distance of the finished floor elevation. The time period for relocation or removing the structure would be determined by changing site conditions but relocation would most likely occur prior to the time period used in Step 1 to determine long-term site constraints.

- **Plan for Monitoring:** Develop a monitoring program or links to other monitoring efforts to ensure that the proposed adaptation measures will be implemented in a timely manner. Following a monitoring protocol and requirements for evaluating sea level rise impacts to coastal habitats over time can help to identify the triggers that would lead to revising project life, other project modifications or additional adaptation efforts.

Expected outcomes from Step 4*: This step may involve an iterative process of project modifications and reexamination of impacts, leading to one or more alternatives for the project site. The alternative that will minimize risks from coastal hazards and avoid or minimize impacts to coastal resources should be identified. Possible adaptation options could be identified and analyzed, if appropriate. If the site is very constrained, modifications to the expected project life might be suggested.*

Step 5 – Finalize project design and submit CDP application

After Step 4, the applicant should have developed one or more project alternatives and identified a preferred alternative. The alternatives should include adaptation strategies to minimize impacts if hazards cannot be avoided entirely. The CDP application step involves the following:

1. **Work with the planning staff to complete the CDP application**. Depending upon the proposed project and extent of prior interactions with the planning staff, the initial submittal may be the first time the planner has been provided with information about the general project or the preferred alternative. Once a proposed project is submitted, the coastal planner will need to become familiar with the project location, area around the project site, the proposed actions and the studies and analyses that have been undertaken in support of the application. The planner will review the application for completeness to ensure that there is sufficient information to analyze the project for all appropriate LCP or Coastal Act Chapter 3 policies. If analysis for sea level rise concerns is needed, the planner will also check that analyses for sea level rise risks have been included in the submittal. Much of the information developed in Steps 1-4 will be useful for the application process. The Suggested Filing Checklist for CDP Applications (located at the end of this chapter) covers the typical information that might be included in a CDP application necessary for planning review of the sea level rise aspects of the proposed project. Applicants who are unfamiliar with the permit process should consult the local government website, Coastal Commission website, or contact the appropriate district office for instructions on how to complete a CDP application.

   The review of an application might involve an iterative process, wherein planning staff requests more information about the proposed project, project alternatives, analysis of the hazards or identification of potential resource impacts to help in the review for

compliance with the LCP or the Coastal Act. At the same time, planning staff may request that some of the technical staff review the submitted material to ensure that there is sufficient information in all technical information and analyses to support a decision on the proposed project. This process may be repeated until the application provides the studies, analysis and project review necessary for planning review.

2. **Submit a complete CDP application.** Once a complete application has been accepted, the planning staff will do a more thorough review and analysis of the potential hazards and resource impacts associated with the proposed project. Ideally, the planner will have requested all necessary project information at the filing stage. In some instances, additional information may be needed after the application has been accepted. This is normally limited to clarifications of some of the information or further details about some of the possible, but not preferred alternatives. During this stage in the CDP application process, the planner may identify necessary project modifications that were not part of the initial application, or identify various conditions that will be needed if the project is to be approved. Chapter 7 includes many of the possible project modifications and permit conditions that might be used to address sea level rise concerns and potential resource impacts.

   During the project analysis, the planning staff will review all submitted material, discussing the proposed project with other staff members, and obtaining further technical review. Working with their supervisors and managers, they will also develop a staff recommendation and prepare a staff report that supports the proposed recommendation. Please consult the Coastal Commission website (http://www.coastal.ca.gov/cdp/cdp-forms.html) or contact your district office for instructions on how to complete a CDP application.

3. **Permit action.** Once the proposed project has been through planning review and a staff recommendation has been prepared, the proposed project will be brought to hearing before either the local planning commission or the California Coastal Commission. The outcome of the hearing process will be project approval, approval with conditions, or denial. Based on the regulatory decision, the project may be constructed, or additional modifications and condition requirements may have to be met.

4. **Monitor and revise.** CDP approvals may include conditions that require monitoring. Applicants should monitor the physical impacts of sea level rise on the project site, provide reports and updates to planning staff and introduce adaptive changes to the project in accordance with the permit and permit conditions.

Expected outcomes from Step 5*: This step, combined with supporting documentation from the previous steps, should provide a basis for evaluating the proposed project's hazard risks and impacts that can result from sea level rise. Such an analysis will provide one of the bases for project evaluation and complements the other resource evaluations and analyses that are part of a complete CDP application.*

Planning Process for Coastal Development Permits

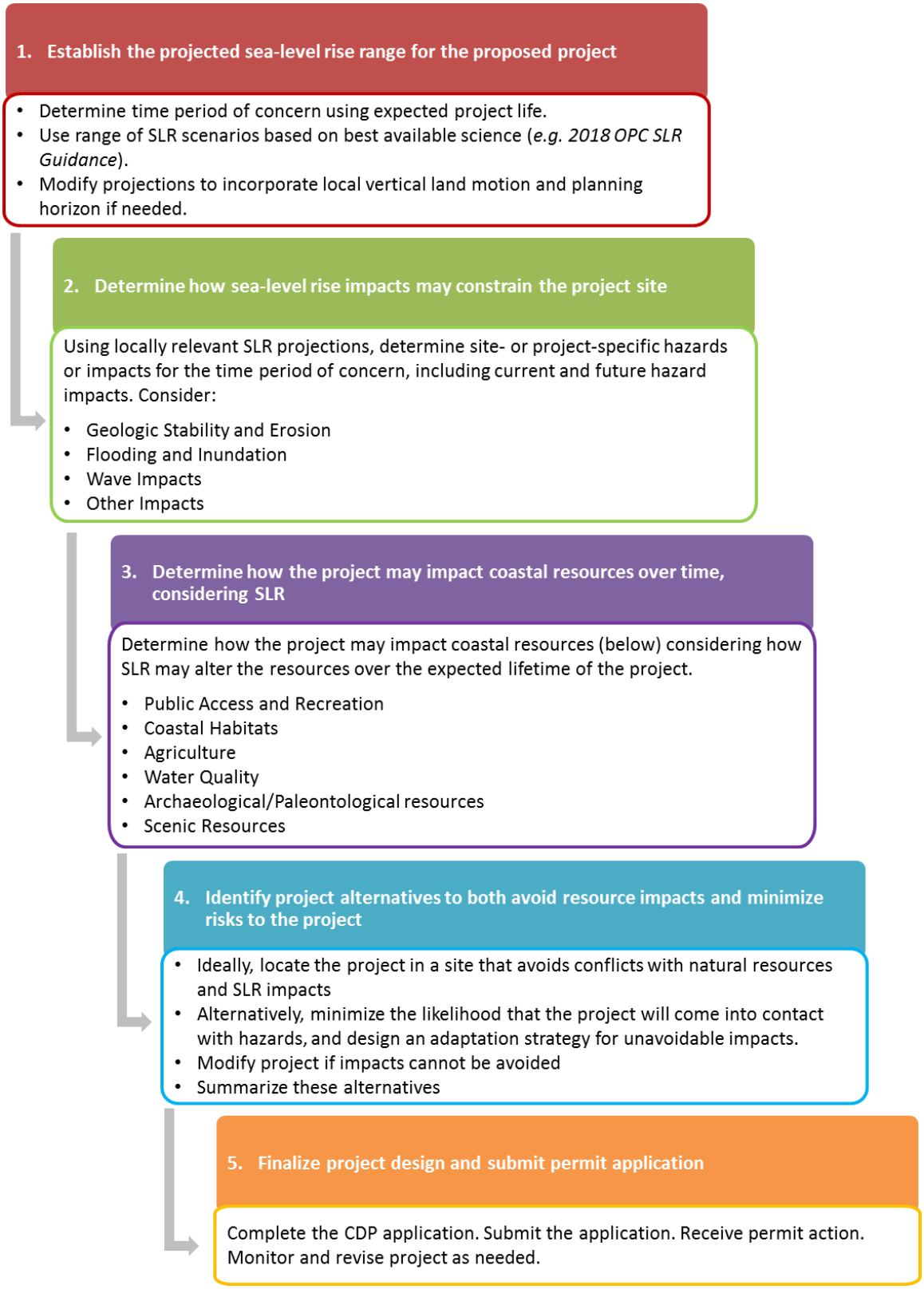

Figure 14. Flowchart for steps to address sea level rise in Coastal Development Permits

Suggested Filing Checklist for Sea Level Rise Analysis

- Proposed/Expected Project Life
- Sea Level Rise Projections used in Impacts Analyses
- Impacts Analyses (possibly from Vulnerability Assessment)
    - Structural and Geologic Stability
        - Identify current tidal datum
        - Perform Geotechnical Report and Erosion Analysis
        - Identify blufftop setback and safe building area
        - Show setback, safe building area and proposed project footprint (site maps)
    - Erosion Amount over Expected Project Life
        - Perform Coastal Processes Study and Erosion Analysis
        - Quantify total erosion amount for proposed project site
        - Show retreat along with proposed project footprint (site maps)
    - Flooding and Inundation Risks
        - Perform Coastal Processes Study and Wave Runup Analysis
        - Quantify flood elevation and flooding extent
        - Show flood extent with proposed project footprint (site map)
        - Show flood elevation on site profile, with proposed project elevation
        - Provide Flood Certificate if in FEMA designated 100-year Flood Zone
    - Tipping points for sea level rise impacts, specific to proposed project site
- Impacts to coastal resources (possibly from Environmental Assessment) for current conditions and changes due to sea level rise and related impacts
    - Public Access and Recreation
        - Show access resources and future changes (site maps)
    - Water Quality, surface and groundwater
        - Provide surface drainage patterns and runoff and future changes (site maps)
        - Provide zone of groundwater elevation
    - Coastal Habitats
        - Provide wetland delineation, ESHA determination, if appropriate
        - Provide boundary determinations or State Lands review, if appropriate
        - Show all coastal habitats and future changes (site maps)
    - Agricultural Resources
        - Show agricultural resources and future changes (site maps)
    - Natural Landforms
        - Show all natural landforms and future changes (site maps)
    - Scenic Resources
        - Show views from public access and future changes due to access changes
    - Overlay all coastal resources to establish areas suitable for development (site maps)
- Analysis of Proposed Project and Alternatives
    - Provide amount(s) of sea level rise used in project planning and design
    - Provide analysis of the proposed project and alternatives
    - Identify proposed current and future adaptation strategies
    - Show avoidance efforts (site map)
    - Identify hazard minimization efforts that avoid resource impacts (site maps)

Example for Addressing Sea Level Rise in Coastal Development Permits

To illustrate the process described in this chapter for how to address sea level rise in the CDP process, consider three example projects: a wetland restoration project, a new bluff-top residential development with a fronting beach, and a new wastewater treatment facility. These three examples will follow each of the recommended CDP steps, showing how the guidance could be applied in specific situations. Note that these are simplified examples used to demonstrate the process described in this chapter. Decisions about how to address various challenges presented by sea level rise will be more complex than those illustrated below, and the Coastal Commission encourages applicants to coordinate with staff as necessary and feasible throughout the process.

Step 1: Establish the projected sea level rise range for the proposed project

- *Wetland Restoration Project:* Sea level rise projection ranges should be chosen based on the goals of the project. For example, if wetland restoration efforts are intended as mitigation for a development project, the lifetime for the wetland restoration should be, at a minimum, the lifetime of the development project. For wetland restoration projects in which the desired outcome is the protection of the wetland in perpetuity, sea level rise ranges should be projected over a minimum of 100 years, with consideration of the intervening years as well as the even longer term for ongoing adaptive management.
- *Bluff-top Residential Development:* The lifetime of the project is assumed to be at least 75 years, unless the LCP specifies a different time period. High, low, and intermediate sea level rise projection ranges are established, appropriate for the proposed area over the assumed 75-year project life.
- *Wastewater Treatment Facility:* Wastewater treatment facilities are normally critical infrastructure. For this example, a minimum life of 100 years is assumed, unless the LCP specifies a different time period. High, low, and intermediate sea level rise projections ranges are established, appropriate for the proposed area over the assumed 100-year or longer project life.

Step 2: Determine how impacts from sea level rise may constrain the project site

- *Wetland Restoration Project:* Current topography of the wetland area is mapped, current barriers to inland migration are identified, and an analysis of erosion and flooding potential (and subsequent effects to wetland extent) is performed for various sea level rise scenarios. Potential changes to groundwater are evaluated. Potential changes in sediment flows or other physical properties as a result of changing conditions are examined. It is determined that in this case, open space exists behind the wetland to allow for inland migration over time.
- *Bluff-top Residential Development:* The average long-term beach and bluff retreat rate, erosion rate due to various sea level rise scenarios, and erosion potential from 100-year storms and other extreme events are determined. Beach and bluff erosion will vary with sea level rise rates. The geologic stability of the bluff over the life of the development is analyzed assuming that no protective structure (such as a seawall) either exists or will be built.

- *Wastewater Treatment Facility:* Erosion and flooding potential over the lifetime of the facility under both a low and a worst-case scenario sea level rise projection are analyzed, as are current and future wave runup and storm impacts for 100-year storms. The geologic stability of the site over the life of the facility is analyzed assuming that no protective structure either exists or will be built. Potential damage to infrastructure (for example corrosion due to saltwater intrusion) is examined.

Step 3: Determine how the project may impact coastal resources, considering the influence of sea level rise upon the landscape over time

- *Wetland Restoration Project:* Coastal resources present in the proposed project site are mapped and sea level rise impacts to these resources are analyzed over the lifetime of the project. It is unlikely that the project will have any adverse impacts on coastal resources. Barriers to wetland migration are examined and it is determined in this case that enough open space currently exists to allow for the wetland to migrate inland over time. The few barriers that exist can be modified in the future, if necessary. This will allow for continued maintenance of habitat area and ecosystem services.
- *Bluff-top Residential Development:* Maps are developed that identify scenic viewsheds, the bluff extent, and adjacent coastal habitats including the fronting beach, and descriptions of each are provided. Opportunities for public access are identified. Impacts to each of these resources as a result of sea level rise are analyzed, as are impacts that would result from the development project. It is determined that the development has the potential to result in the loss of a fronting beach if a protective structure is installed. However, development setbacks are designed to ensure that no such structure is planned over the lifetime of the development under any sea level rise scenario.
- *Wastewater Treatment Facility:* Maps are developed that identify coastal resources in the area and impacts to these resources resulting from sea level rise are analyzed. As with the bluff-top development, any protective structure would have detrimental effects to the fronting beach, but no such structure is determined to be necessary. Any potential impacts to adjacent habitat areas or to water quality as a result of damage to infrastructure (for example sewage outflow or backup of seawater into the system) are examined under the range of sea level rise projections for the life of the facility.

Step 4: Identify project design alternatives that avoid resource impacts and minimize risks to the project

- *Wetland Restoration Project:* In this example, there are no concerns related to detrimental impacts to coastal resources as a result of this project. Natural barriers will be removed through grading and contouring of the land to ensure that the wetland has the ability to migrate inland with sea level rise and that hydrologic function will be maintained. Inland areas are protected into the future to ensure the space will be open for migration. Additionally, a plan is included to monitor changes in sea level, sediment dynamics, and overall health of the wetland so that adaptive management options can be applied as needed.

- *Bluff-top Residential Development:* The optimal site for a bluff-top residential development is one that avoids the hazards identified in Step 2 and impacts to coastal resources identified in Step 3 over the life-time of the project. If the proposed site does not avoid risks, alternative locations on the project sites should be identified and examined. If no such location exists, efforts should be made to minimize hazards and impacts to resources, or the project should be denied. Minimization efforts may include: building with an extra setback from the bluff-face, developing a managed retreat plan, and designing buildings to be easily relocated. If the safe building envelope will not be sufficient for a reasonable-sized building, local governments could consider allowing reduced setbacks on portions of the site located away from the bluff face (*e.g.*, side or front yard setbacks), reduced off-street parking, additional height on safe portions of the site, or other development that doesn't require shore protection. No seawall is planned as such a device would result in the loss of the fronting beach. A plan to monitor rates of erosion at various places along the bluff as well as any impacts to adjacent resources is developed, and erosion rates/scenarios that would trigger the need for retreat are identified.
- *Wastewater Treatment Facility:* The optimal site for a wastewater treatment facility is one that avoids the hazards identified in Step 2 and impacts to coastal resources identified in Step 3 over the life-time of the project. If the proposed site does not avoid risks, alternative sites should be identified and examined. If no such site exists, efforts should be made to minimize hazards and impacts to resources. Minimization efforts may include: building the facility further back from the beach, elevating outflow pipes, and adding one-way valves to prevent backflow of sea-water into the system. A plan to monitor erosion rates along the beach as well as wave and storm impacts and any impacts to coastal resources caused by the facility is developed.

Step 5: Finalize project design and submit CDP application

- *Wetland Restoration Project:* The best site and design option is chosen and presented to the Commission or local government for the permit process. Application includes likely options for adaptive management to maintain wetlands and key monitoring needed to examine ongoing wetland function.
- *Bluff-top Residential Development:* The best site and design option is chosen and presented to the Commission or local government for the permit process. Application includes analyses of hazard and resource risks and any plans for adaptive project designs and proposed monitoring.
- *Wastewater Treatment Facility:* The best site and design option is chosen and presented to the Commission or local government for the permit process. Application includes analyses of hazards and resource risk and plans for site monitoring.

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Chapter 7

Adaptation Strategies

Chapters 5 and 6 provide guidance on the sequential processes for addressing sea level rise in Local Coastal Programs (LCPs) and Coastal Development Permits (CDPs). This chapter describes some of the specific adaptation strategies to consider in these planning and development review processes. Given the range of impacts that could occur as a result of sea level rise, and the uncertainties surrounding projections of sea level rise over the lifetimes of many coastal projects, communities, planners, coastal managers and project applicants will need to use adaptation strategies to effectively address coastal hazard risks, and protect coastal resources over time.

As described in Chapters 5 and 6, adaptation strategies should be chosen based on the specific risks and vulnerabilities of a region or project site and the applicable Coastal Act and LCP requirements, with due consideration of local priorities and goals. Adaptation strategies may involve modifications to land use plans, regulatory changes, project modifications, or permit conditions that focus on avoidance or minimization of risks and the protection of coastal resources.

Some adaptation strategies may require land use plans or proposed projects to anticipate longer-run impacts now, such as assuring that critical infrastructure is built to last a long time without being put in danger, or rezoning hazardous areas as open space. Other adaptation strategies may build adaptive capacity into the plan or project itself, so that future changes in hazard risks can be effectively addressed while ensuring long-term resource protection. In most cases, especially for LCP land use and implementation plans, multiple adaptation strategies will need to be employed. For projects, adaptation strategies may be addressed through initial siting and design and through conditions that provide for specific adaptation over time.

The next sections provide an overview of the general categories of adaptation options, followed by a description of various specific adaptation strategies organized by type of coastal resource, as outlined in Chapter 3 of the California Coastal Act.

The adaptation options described in this chapter are intended to provide guidance for potential LCP and permitting strategies. Not all strategies listed here will be appropriate for every jurisdiction, nor is this an exhaustive list of options. However, as described in Chapters 5 and 6, all local governments and all project applicants should analyze the possible effects of sea level rise and evaluate how the strategies in this chapter, or additional supplemental strategies, could be implemented in LCPs or CDPs to minimize the adverse effects of sea level rise.

General Adaptation Categories

There are a number of options for how to address the risks and impacts associated with sea level rise. Choosing to "do nothing" or following a policy of "non-intervention" may be considered an adaptive response, but in most cases, the strategies for addressing sea level rise hazards will require proactive planning to ensure protection of coastal resources and development. Such proactive adaptation strategies generally fall into three main categories: protect, accommodate, and retreat.

For purposes of implementing the Coastal Act, no single category or even specific strategy should be considered the "best" option as a rule. Different types of strategies will be appropriate in different locations and for different hazard management and resource protection goals. The effectiveness of different adaptation strategies will vary across both spatial and temporal scales. In many cases, a hybrid approach that uses strategies from multiple categories will be necessary,

and the suite of strategies chosen may need to change over time. As discussed later in the document, the legal context of various options will also need to be considered in each situation and ultimately, adaptive responses will need to be consistent with the Coastal Act. Nonetheless, it is useful to think about the general categories of adaptation strategies to help frame the consideration of land use planning and regulatory options in specific communities and places along the coast.

Protect: Protection strategies refer to those strategies that employ some sort of engineered structure or other measure to defend development (or other resources) in its current location without changes to the development itself. Protection strategies can be further divided into "hard" and "soft" defensive measures or armoring. "Hard" armoring refers to engineered structures such as seawalls, revetments, and bulkheads that defend against coastal hazards like wave impacts, erosion, and flooding. Such armoring is a fairly common response to coastal hazards, but it can result in serious negative impacts to coastal resources, particularly as sea level rises. Most significantly, hard structures form barriers that impede the ability of natural beaches and habitats to migrate inland over time. If they are unable to move inland, public recreational beaches, wetlands, and other habitats will be lost as sea level continues to rise. This process is commonly referred to as "passive erosion," which is the narrowing of beaches due to the fact that the back of the beach on an eroding shoreline has been fixed in place (Flick *et al*. 2012). Other detrimental impacts may include negative visual impacts or interference with other ecosystem services.

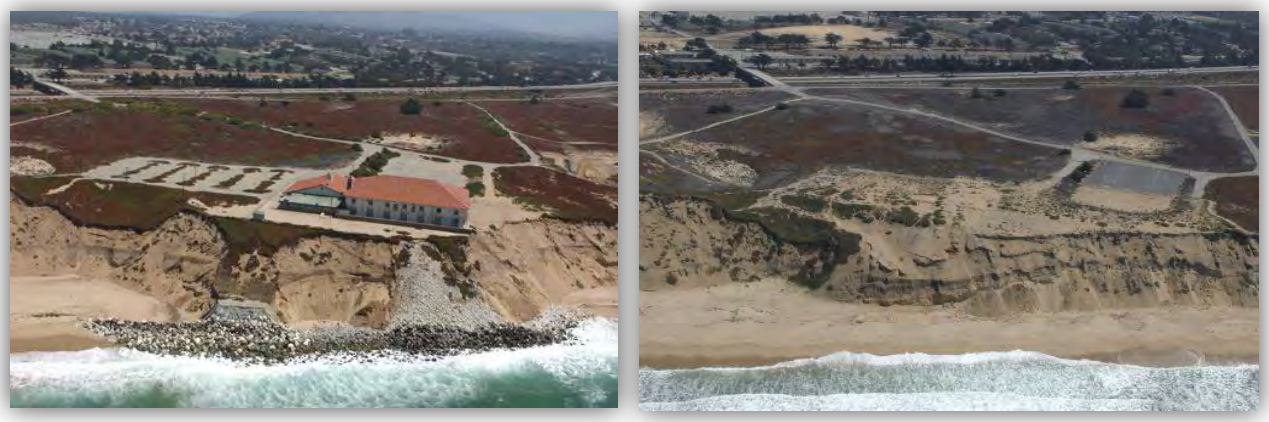

Figure 15. Photo depicting passive erosion. (*Left*) Passive erosion in front of a revetment at Fort Ord, illustrating the loss of beach where the development prevents the shoreline from migrating landward. The beach continues to migrate inland on either side of the revetment. (*Right*) Recovery of the beach following removal of the revetment and blufftop structure. (*Source:* California Coastal Records Project).

"Soft" armoring refers to the use of natural or "green" infrastructure like beaches, dune systems, wetlands, and other systems to buffer coastal areas. Strategies like beach nourishment, dune management, or the construction of "living shorelines" capitalize on the natural ability of these systems to protect coastlines from coastal hazards while also providing benefits such as habitat, recreation area, more pleasing visual impacts, and the continuation or enhancement of ecosystem services. The engineering of green infrastructure is a somewhat newer concept in some cases, and because of this, the effectiveness of different strategies in different types of environments is not necessarily well-known or tested. In cases in which natural infrastructure might not be

completely effective or may not be preferred, a hybrid approach using both hard and natural infrastructure could be considered. As described in Principle 10 of this Guidance and in the *Safeguarding California* plan (CNRA 2014), priority should be given to options that protect, enhance, and maximize coastal resources and access, including giving full consideration to innovative nature-based approaches such as living shoreline techniques or managed/planned retreat. Although the Coastal Act clearly provides for potential protection strategies for "existing development", it also directs that new development be sited and designed to not require future protection that may alter a natural shoreline.

Accommodate: Accommodation strategies refer to those strategies that employ methods that modify existing developments or design new developments to decrease hazard risks and thus increase the resiliency of development to the impacts of sea level rise. On an individual project scale, these accommodation strategies include actions such as elevating structures, retrofits and/or the use of materials meant to increase the strength of development, building structures that can easily be moved and relocated, or using extra setbacks. On a community-scale, accommodation strategies include any of the land use designations, zoning ordinances, or other measures that require the above types of actions, as well as strategies such as clustering development in less vulnerable areas or requiring mitigation actions to provide for protection of natural areas even as development is protected. As with protection strategies, some accommodation strategies could result in negative impacts to coastal resources. Elevated structures may block coastal views or detract from community character; pile-supported structures may, through erosion, develop into a form of shore protection that interferes with coastal processes, blocks access, and, at the extreme, results in structures looming over or directly on top of the beach.

Figure 16. Photo depicting "managed retreat" and restoration. Surfers' Point Managed Shoreline Retreat project in which the parking lot was moved back and beach area was restored. (*Aerial composite by Rick Wilborne (February 28, 2013); photo courtesy of Surfrider Foundation*)

Retreat: Retreat strategies are those strategies that relocate or remove existing development out of hazard areas and limit the construction of new development in vulnerable areas. These strategies include land use designations and zoning ordinances that encourage building in more resilient areas or gradually removing and relocating existing development. Acquisition and buy-out programs, transfer of development rights programs, and removal of structures where the right to protection was waived (*i.e.*, via permit condition) are examples of strategies designed to encourage managed retreat.

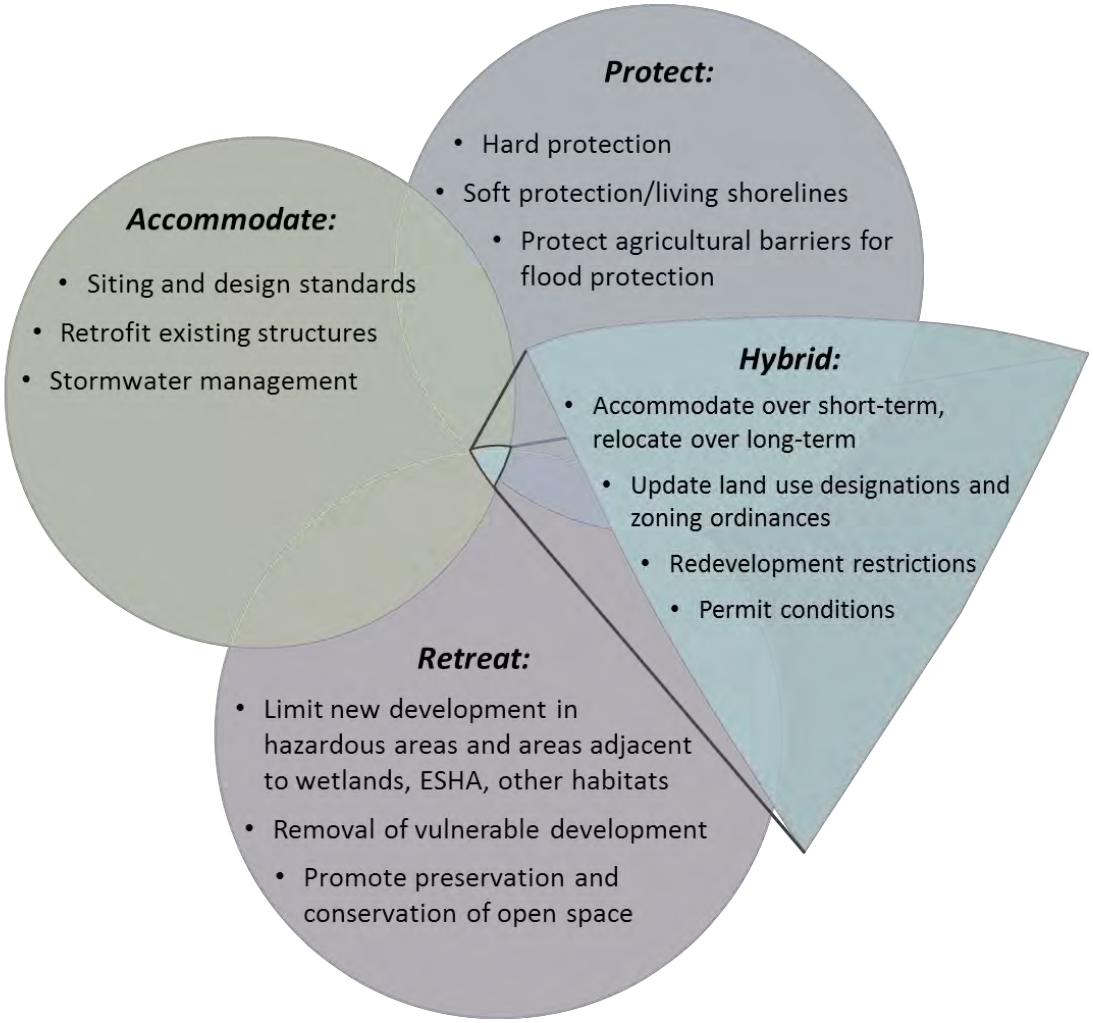

Figure 17. Examples of general adaptation strategies

SPECIFIC ADAPTATION STRATEGIES

The following sections, organized by category of coastal resource, present measures that local governments and coastal planners should consider including in their LCPs or individual CDPs. The purpose of this organization is to allow coastal managers and project applicants to easily find strategies that will help address the specific resource vulnerabilities identified in Steps 1-3 of the LCP and CDP processes laid out in Chapters 5 and 6. In the development of LCP policies, local governments should use adaptation measures that best implement the statewide resource protection and hazard policies of the Coastal Act at the local level given the diverse geography and conditions of different areas.

As part of identifying adaptation strategies, local governments should carefully examine the potential impacts to coastal resources that could occur from various adaptation strategies. Some adaptation strategies will need to be implemented incrementally over time as conditions change, and many strategies will need to be implemented through both the LCP and CDP to be effective. For each issue area, there is a description of potential impacts that could occur due to sea level rise and a list of adaptation tools or actions to minimize impacts. To skip to a topic, click on the links below.

The lists in these sections should be considered neither checklists from which all options need to be used, nor exhaustive lists of all possible adaptation strategies. Sea level rise adaptation is an evolving field, and policy language, cost considerations, effectiveness of various strategies, and other topics are continuing to be developed. Planners, applicants, and partners will need to think creatively and adaptively respond to changing conditions, new science, and new adaptation opportunities, and the Coastal Commission will continue to support and collaborate on these efforts.

Additionally, sea level rise planning may involve a number of trade-offs among various competing interests, and no single adaptation strategy will be able to accomplish all planning objectives. Economic and social implications of various adaptation options will likely play into the planning process at the local level. The important point is to analyze current and future risks from sea level rise, determine local priorities and goals for protection of coastal resources and development in light of Coastal Act requirements, and identify what land use designations, zoning ordinances, and other adaptation strategies can be used to meet those goals.

A. Coastal Development and Hazards

The Coastal Act requires that new development be sited and designed to be safe from hazards and to not adversely impact coastal resources (Coastal Act Sections 30235 and 30253). The main goals that relate to hazards and coastal development are:

- Update land use designations, zoning maps, and ordinances to account for changing hazard zones
- Include sea level rise in hazard analyses and policies
- Plan and locate new development to be safe from hazards, not require protection over its entire lifespan, and be protective of coastal resources
- Incorporate sea level rise adaptation into redevelopment policies
- Encourage the removal of development that is threatened by sea level rise
- Use "soft" or "natural" solutions as a preferred alternative for protection of existing endangered structures
- Limit bluff and shoreline protective devices to protect existing endangered structures
- Require special considerations for critical infrastructure and facilities
- Protect transportation infrastructure

Chapter 3 of the Guidance covers the impacts to coastal development that might result from sea level rise. Certified LCPs should already have policies and standards to assure that coastal development is safe over its anticipated lifetime and that it does not adversely impact other coastal resources. However, LCP policies and standards may need to be updated in light of new knowledge and to consider sea level rise hazards. Adaptation options have been developed to support the development goals of the Coastal Act through both LCP policies and CDP conditions, and the following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Update land use designations, zoning maps, and ordinances to account for changing hazard zones

A.1 **Establish mapped hazard zones or overlays:** Update land uses and zoning requirements to minimize risks from sea level rise in identified hazard zones or overlay areas. For example, limit new development in current and future sea level hazard zones and encourage removal of existing development when threatened.

A.1a **Identify zones that require a more rigorous sea level rise hazards analysis**: Specify areas where a closer analysis of sea level rise is necessary at the permit application stage to avoid or minimize coastal hazards and impacts to coastal

resources. Ensure that the most up-to-date information on sea level rise is incorporated in such analyses.

Goal: Include sea level rise in hazard analyses and policies

A.2 **Update policies to require sea level rise to be included in hazard analyses and management plans**: LCP policies should include requirements to analyze projected sea level rise. Consider specific projection scenarios to be analyzed. (See Chapter 3 of the Guidance for a description of scenario planning.) LCPs could also specify which analyses are required for various types of projects/development (see Step 2 of Chapters 5 and 6 or Appendix B for suggested analyses).

A.2a **Site-specific evaluation of sea level rise**: Update policies, ordinances, and permit application requirements to include a required site-specific evaluation of coastal hazards due to sea level rise over the full projected life of any proposed development. Analyses should be conducted by a certified Civil Engineer or Engineering Geologist with expertise in coastal processes.

A.2b **Incorporate wave runup zones and sea level rise in coastal flood hazard maps:** Develop coastal flood maps that include areas that will be subject to wave action and flooding due to sea level rise. These maps may be able to rely upon existing flood maps, such as the FEMA Flood Insurance Rate Maps, for current flood areas and base conditions, but should be augmented to include future conditions, including sea level rise, likely to occur through the life of proposed new development.

A.2c **Incorporate sea level rise into calculations of the Geologic Setback Line**: Update geotechnical report requirements for establishing the Geologic Setback Line (bluff setback) to include consideration of bluff retreat due to sea level rise in addition to historic bluff retreat data, future increase in storm or El Niño events, and any known site-specific conditions. The report should be completed by a licensed Geotechnical Engineer or an Engineering Geologist.

A.2d **Include sea level rise in wave runup, storm surge, and tsunami hazard assessments**[44]: Sea level rise should be included in wave runup analyses, including storm event and tsunami hazard assessments. This should include evaluating tsunami loads/currents on maritime facilities and coastal structures. Since tsunami wave runup can be quite large, sea level rise projections of only a few inches may not have a large impact on these assessments. However, for time periods or scenarios where sea level rise projections are large (perhaps 1 ft or more), it would be appropriate to include sea level rise because it could change the results to a significant degree.

[44] Tsunami evacuation maps are based upon current sea level conditions and they will need to be updated with changes in sea level.

A.3 **Establish shoreline management plans to address long-term shoreline change due to sea level rise**: Create policies that require a management plan for priority areas that are subject to sea level rise hazards, and incorporate the plan into the larger LCP if applicable. Similar to an LCP, shoreline management plans generally include the short and long term goals for the specified area, the management actions and policies necessary for reaching those goals, and any necessary monitoring to ensure effectiveness and success. Incorporate strategies necessary to manage and adapt to changes in wave, flooding, and erosion hazards due to sea level rise.

Goal: Plan and locate new development to be safe from hazards, not require protection over its entire lifespan, and be protective of coastal resources

A.4 **Limit new development in hazardous areas**: Restrict or limit construction of new development in zones or overlay areas that have been identified or designated as hazardous areas to avoid or minimize impacts to coastal resources and property from sea level rise impacts.

A.5 **Cluster development away from hazard areas**: Concentrate development away from hazardous areas. Update any existing policies that cluster development to reflect additional hazard zones due to sea level rise.

A.5a **Concentration of development/smart growth**: Require development to concentrate in areas that can accommodate it without significant adverse effects on coastal resources. This strategy is applicable for community wide planning through an LCP, but may also apply to CDPs for subdivisions or for larger developments involving large or multiple lots.

A.5b **Transfer of Development Rights programs (TDR)**: Restrict development in one area ("sending area") and allow for the transfer of development rights to another area more appropriate for intense use ("receiving area"). LCPs can establish policies to implement a TDR program to restrict development in areas vulnerable to sea level rise and allow for transfer of development rights to parcels with less vulnerability to hazards. A TDR program can encourage the relocation of development away from at-risk locations, and may be used in combination with a buy-out program.

A.6 **Develop adequate setbacks for new development**: Ensure structures are set back far enough inland from the beach or bluff edge such that they will not be endangered by erosion (including sea level rise induced erosion) over the life of the structure, *without the use of a shoreline protective device*. When used to address future risk, setbacks are normally defined by a measurable distance from an identifiable location such as a bluff edge, line of vegetation, dune crest, or roadway. Establish general guidance and criteria for setbacks in LCPs that consider changes in retreat due to sea level rise. Require detailed, site-specific analyses through LCPs and CDPs to determine the size of the setback, taking into consideration sea level rise and establish the expected life of the

structure (for example, the time period over which the setback should be effective).

Figure 18. Photo depicting a development setback in Pismo Beach. (*Source:* California Coastal Records Project)

A.7 **Limit subdivisions in areas vulnerable to sea level rise**: Prohibit any new land divisions, including subdivisions, lot splits, lot line adjustments, and/or certificates of compliance that create new beachfront or blufftop lots unless the lots can meet specific criteria that ensure that when the lots are developed, the development will not be exposed to hazards or pose any risks to protection of coastal resources.

A.8 **Update development siting, code, and design standards to avoid, minimize, or reduce risks from coastal hazards and extreme events**: Establish and implement building codes and standards for building siting and construction that avoid or minimize risks from flooding and erosion and increase resilience to extreme events within sea level rise hazard zones. Such standards and applicable building code provisions should be included in LCPs as additional development controls in areas that are identified in the LCP as hazard areas, and applied in specific projects through a CDP.

A.8a **Update flood protection measures to incorporate both FEMA and Coastal Act requirements:** Require new development located in areas subject to current or future flood/wave action to be sited and designed to be capable of withstanding such impacts in compliance with both FEMA and Coastal Act requirements. For example, ensure that implementation of adaptation measures such as elevation of habitable areas, break-away walls, *etc*. will be consistent with both LCP and FEMA provisions.

A.8b **Limit basements and first floor habitable space**: Where applicable, in areas likely to be subject to current or future flood/wave action, revise residential building standards to prohibit habitable space at elevations subject to wave/flood risk. Specifically address potential impacts of basements on long-range adaptation options such as landward relocation or removal.

A.8c **Evaluate impacts from flood protection measures:** Require new development that must be located in areas likely subject to current or future flood/wave action or elevated groundwater to evaluate potential impacts to adjacent or nearby properties from all proposed structural flood protection measures to ensure that these measures will not create adverse direct and/or cumulative impacts either on-site or off-site.

A.9 Analyze options for removal when planning and designing new development: Design options should not place an undue burden on future property owners or coastal resources. For new development in high hazard areas or resource-constrained areas where managed retreat might be an appropriate option at some time in the future, ensure that foundation designs or other aspects of the development will not preclude future incremental relocation or managed retreat. Foundation and building elements, such as deepened perimeter foundations, caissons or basements, may be difficult to remove in the future, or their removal may put adjacent properties at risk. Alternative design options should be considered, and employed if site conditions allow.

A.9a **Develop a plan to remove or relocate structures that become threatened:** Require new development authorized through a CDP that is subject to wave action, erosion, or other hazards to be removed or relocated if it becomes threatened in the future.

A.9b **Identify triggers for incremental removal of structures on constrained lots**: When a lot is not large enough to accommodate development that avoids coastal hazards for the expected life of the development, develop a project option that minimizes hazards from the identified sea level rise scenarios for as long as possible, and then requires incremental retreat once certain triggers are met.

Triggers for relocation or removal of the structure would be determined by changing site conditions such as when erosion is within a certain distance of the foundation; when monthly high tides are within a certain distance of the finished floor elevation; when building officials prohibit occupancy; or when the wetland buffer area decreases to a certain width.

A.9c **Avoid shoreline protection for new development:** Require CDPs for new development in hazardous locations to include as a condition of approval a waiver of rights to future shoreline protection that would substantially alter natural landforms or cause other adverse coastal resource impacts.

A.9d **Limit the use of foundations or basements that can interfere with coastal processes:** In locations where foundation or building elements, such as deepened perimeter foundations, caissons or basements may be exposed to wave action through rising sea level or erosion, require analysis of less extensive foundation or building options.

A.9e **Develop triggers for foundation and structure removal:** If no less damaging foundation alternatives are possible, ensure that the foundation design allows for incremental removal as the foundation elements become exposed, and develop pre-established triggers, for example when the bluff edge or shoreline comes within a certain distance of the foundation, for incremental or complete removal that will avoid future resource impacts.

Figure 19. Photo depicting eroding bluff and exposed caissons in Encinitas, CA. (*Photograph by Lesley Ewing*)

A.10 Ensure that current and future risks are assumed by the property owner: New development should be undertaken in such a way that the consequences from development in high hazard areas will not be passed on to public or coastal resources. Recognize that over time, sea level rise will cause the public trust boundary to move inland. Establish standards, permit conditions, and deed restrictions that ensure that current and future risks are assumed by the property owner. Consider policies that would encourage or require property owners to set aside money, such as in the form of a bond, as a contingency if it becomes necessary to modify, relocate, or remove development that becomes threatened in the future.

A.11 Real estate disclosure: Require sellers of real estate to disclose permit conditions related to coastal hazards, or property defects or vulnerabilities, including information about known current and potential future vulnerabilities to sea level rise, to prospective buyers prior to closing escrow.

Goal: Incorporate sea level rise adaptation into redevelopment policies

A.12 Avoid the expansion or perpetuation of existing structures in at-risk locations: On an eroding shoreline, the seaward portions of an existing structure may become threatened as the setback or buffer zone between the structure and the mean high tide line or bluff edge is reduced due to erosion of the beach or bluff. When the seaward portion of the structure no longer meets the standards or setback that would be required for new development, it becomes a "non-conforming" structure for purposes of redevelopment policies and regulations. The following should be considered, as consistent with the Coastal Act, FEMA policies, and other relevant standards, to address existing non-conforming development to avoid the need for shoreline or bluff protective devices and associated impacts to coastal resources.

A.12a **Update non-conforming structure policies and definitions**: Develop policies and regulations to define non-conforming development in the area between the sea and the first coastal roadway or other known hazard zones to avoid perpetuating development that may become at risk and require a new protective device or extend the need for an existing protective device.

A.12b **Limit redevelopment or upgrades to existing structures in at risk locations**: Use redevelopment policies or regulations to limit expansions, additions, or substantial renovations of existing structures in danger from erosion. Require removal of non-conforming portions of the existing structure, when possible, when a remodel or renovation is proposed.

A.12c **Limit foundation work within the geologic setback area:** To facilitate removal of non-conforming portions of an existing structure, use LCP regulations and CDPs to limit new or replacement foundations or substantial improvements, other than repair and maintenance, to the existing foundation when located seaward of the Geologic Setback line. Approve significant new foundation work only when it is located inland of the setback line for new development and when it will not interfere with coastal processes in the future.

A.12d **Limit increases to existing non-conformities:** Use LCP regulations and CDPs to allow non-exempt repair and maintenance and modifications only if they do not increase the size or degree of non-conformity of the existing structure. For shoreline or blufftop development, any decrease in the existing non-conforming setback would increase the degree of non-conformity.

A.12e **Limit additions to non-conforming structures:** Use LCP regulations and CDPs to acknowledge that additions to existing structures should be considered new development that must conform to the standards for new development including but not limited to avoiding future protective devices. Consider limitations on the size of additions unless non-conforming portions of the structure are removed.

A.12f **Address existing protection of non-conforming structures:** Use LCP regulations and CDP conditions to put current and future property owners on notice that if there is currently shoreline or bluff protection for an existing structure, the structure is likely at-risk and improvements to that structure in its current location may be limited. Also, consider acknowledging that any rights to

retain the existing protective device(s) apply only to the structure that existed at the time the protective device was constructed or permitted.

A.13 **Redevelopment of existing structures:** Define "redevelopment" as, at a minimum, replacement of 50% or more of an existing structure. Other options that may be used to define what constitutes redevelopment or a replacement structure could include 1) limits on the extent of replacement of major structural components such as the foundation or exterior walls, or 2) improvements costing more than 50% of the assessed or appraised value of the existing structure. The redevelopment definition should take into consideration existing conditions and pattern of development, potential impacts to coastal resources, and the need for bluff or shoreline protective devices if the structure remains in its current, non-conforming location.

A.13a **Require redevelopment to meet the standards for new development:** Use LCPs and CDPs to require that renovations meeting the threshold for redevelopment should not be approved unless the entire structure meets the standards for new development, including but not limited to a waiver of right to protection. Specify that if any existing non-conforming elements are permitted to remain, those non-conforming elements are not subject to rights to protection pursuant to Coastal Act Section 30235.

A.13b **Include cumulative improvement or additions to existing structures in the definition of redevelopment:** Use LCP regulations to acknowledge that demolition, renovation, or replacement of less than 50% (or less) of an existing structure constitutes redevelopment when the proposed improvements would result cumulatively in replacement of more than 50% of the existing structure from an established date, such as certification of the LUP.

A.14 **Remove existing shoreline protective devices**: On properties with existing shoreline protective devices, use regulations to require removal of the protective device when the structure requiring protection is redeveloped or removed. If removal is not possible, require a waiver of any rights to retain the protective device to protect any structure other than the one that existed at the time the protective device was constructed or permitted.

Goal: Encourage the removal of development that is threatened by sea level rise

A.15 **Use Rolling Easements**: The term "rolling easement" refers to the policy or policies intended to allow coastal lands and habitats including beaches and wetlands to migrate landward over time as the mean high tide line and public trust boundary moves inland with sea level rise. Such policies often restrict the use of shoreline protective structures (such as the "no future seawall" limitation sometimes used by the Commission), limit new development, and encourage the removal of structures that are seaward (or become seaward over time) of a designated boundary. This boundary may be designated based on such variables as the mean high tide line, dune vegetation line, or other dynamic line or legal requirement. Despite the term "rolling easements," not all of the strategies related to rolling easements actually involve the use of recorded easements.

A.16 **Develop an incentive program to relocate existing development at risk**: Provide incentives to relocate development out of hazardous areas and to acquire oceanfront properties damaged by storms, where relocation is not feasible. Consider creating a relocation fund through increased development fees, *in lieu* fees, or other funding mechanisms.

A.17 **Transfer of Development Rights programs (TDR)**: See Strategy A.5b above.

A.18 **Acquisition and buyout programs**: Acquisition includes the acquiring of land from the individual landowner(s). Structures are typically demolished or relocated, the property is restored, and future development on the land is restricted. Such a program is often used in combination with a TDR program that can provide incentives for relocation. Undeveloped lands are conserved as open space or public parks. LCPs can include policies to encourage the local government to establish an acquisition plan or buyout program to acquire property at risk from flooding or other hazards.

Goal: Use "soft" or "natural" solutions as a preferred alternative for protection of existing endangered structures

A.19 **Require the use of green infrastructure as a preferred alternative**: Under appropriate shoreline conditions, require or encourage development to use "soft" or "natural" solutions or "living shorelines" as an alternative to the placement of hard shoreline protection in order to protect development or other resources and to enhance natural resource areas. Examples of soft solutions include vegetative planting, dune restoration, and sand nourishment.

A.19a **Establish a beach nourishment program and protocols**: New policies may be needed to address increased demand or need for beach nourishment with sea level rise. Policies within an LCP may identify locations where nourishment may be appropriate; establish a beach nourishment program and protocols for conducting beach nourishment; establish criteria for the design, construction, and management of the nourishment area; and/or establish measures to minimize adverse biological resource impacts from deposition of material, such as sand compatibility specifications, timing or seasonal restrictions, and identification of environmentally preferred locations for deposits. Beach nourishment programs should also consider how nourishment options may need to change over time as sea level rises.

A.19b **Dune management**: Establish management actions to maintain and restore dunes and natural dune processes. Dunes provide buffers against erosion and flooding by trapping windblown sand, storing excess beach sand, and protecting inland areas, and they also provide habitat. This is likely most effective for areas with some existing dune habitat and where there is sufficient space to expand a foredune beach for sand exchange between the more active (beach) and stable (dune) parts of the ecosystem. LCPs can identify existing dune systems and develop or encourage management plans to enhance and restore these areas,

including consideration of ways that the system will change with rising sea level. CDPs for dune management plans may need to include periodic reviews so the permitted plans can be updated to address increased erosion from sea level rise, and the need for increased sand retention and replenishment.

Figure 20. Photo depicting dune restoration at Surfer's Point, Ventura. (*Photograph courtesy of Surfrider Foundation*)

A.19c **Regional Sediment Management (RSM) programs**: Develop a Regional Sediment Management (RSM) program including strategies designed to allow the use of natural processes to solve engineering problems. To be most effective, RSM programs include the entire watershed, account for effects of human activities on sediment, protect and enhance coastal ecosystems, and maintain safe access to beaches for recreational purposes. LCPs can support development of an RSM program and its implementation, and the program should be periodically updated to address on-going changes from sea level rise. Natural boundaries for RSM may overlap within several LCPs, so regional cooperation may be needed for best implementation. Individual actions such as a beach nourishment project would be accomplished through a CDP. Many coastal RSM programs have already been developed and can be used as a resource. See the *Coastal Sediment Management Workgroup* website (and Appendix C) for more information.

A.19d **Maintenance or restoration of natural sand supply**: Adjustment of the sediment supply has been one of the ways natural systems have accommodated

changes from sea level. Maintenance or restoration of sediment involves identifying natural sediment supplies and removing and/or modifying existing structures or actions that impair natural sand supply, such as dams or sand mining. LCPs could include policies and implementing standards that support nature-based responses to sea level rise by maintaining and restoring natural sand supply. Where applicable, develop policies and standards to prohibit sand mining, regulate sand replenishment, and promote removal of dams or the by-passing of sand around dams. Plans should take into consideration changes in sand supply due to sea level rise and may identify and designate high priority areas for restoring natural processes. These actions and policies can also be implemented through a Regional Sediment Management (RSM) program.

A.19e **Beneficial reuse of sediment through dredging management**: Dredging involves the removal of sediment from harbor areas to facilitate boat and ship traffic or from wetland areas for restoration. Dredging management actions and plans may need to be updated to account for elevated water levels. Policies can be developed with an LCP and/or carried out through a CDP to facilitate delivery of clean sediment extracted from dredging to nearby beaches or wetland areas where needed. Beneficial reuse of sediment in this way can be coordinated through a Regional Sediment Management (RSM) program and/or through coordination with other jurisdictions.

Goal: Allow bluff and shoreline protective devices only to protect existing endangered structures

A.20 Use hard protection only if allowable and if no feasible less damaging alternative exists: "Hard" coastal protection is a broad term for most engineered features such as seawalls, revetments, cave fills, and bulkheads that block the landward retreat of the shoreline. In some cases, caissons and pilings may also be considered hard shoreline protective devices. Due to adverse effects on shoreline sand supply and beach area available for public use, such protective devices should be avoided when feasible. Under current law, shoreline protection for existing structures in danger from erosion may be allowed if coastal resource impacts are avoided or minimized and fully mitigated where unavoidable.

A.20a **Retention of existing shoreline protection**: On intensely developed, urbanized shorelines, if the removal of armoring would put existing development at risk and not otherwise result in significant protection or enhancement of coastal resources, it may be appropriate to allow properly designed shoreline armoring to remain for the foreseeable future, subject to conditions that provide for potential future removal in coordination with surrounding development. However, the proper short term responses, longer term adaptation measures, and mitigation of on-going resource impacts should be determined through updated context-specific LCP planning and consideration of the existing rights and responsibilities of development in the area (see strategies A.21 – A.25).

A.21 **Require monitoring of the structure:** Require periodic monitoring of the shoreline protective device to examine for structural damage, excessive scour, or other impacts from coastal hazards and sea level rise. Ensure that the structures remain within the initial footprint and that they retain functional stability.

A.22 **Conditional approval of shoreline protective device**: Use LCP regulations and permit conditions to require monitoring of impacts to shoreline processes and beach width both at the project site and the broader area and/or littoral cell as feasible, and provide for such actions as removal or modification of armoring in the future if it is no longer needed for protection or if site conditions change.

A.22a **Limit the authorization of shoreline protective devices to the development being protected:** Use LCP regulations and CDP conditions to require permits for bluff and shoreline protective devices to expire when the currently existing structure requiring protection is redeveloped, is no longer present, or no longer requires a protective device, whichever occurs first. Prior to expiration of the permit, the property owner should apply for a Coastal Development Permit to remove the protective device, or to modify or retain it if removal is not feasible at that time.

A.22b **Require assessment of impacts from existing pre-Coastal Act or permitted shoreline armoring:** Use LCP regulations and permit conditions to specify that expansion and/or alteration of a pre-Coastal Act or legally permitted bluff or shoreline protective device requires a new CDP and the review should include an assessment of changes to geologic site and beach conditions including but not limited to, changes in beach width relative to sea level rise, implementation of any long-term, large scale sand replenishment or shoreline restoration programs, and any ongoing impacts to public access and recreation from the existing device.

A.22c **Reassess impacts and need for existing armoring over time:** Use LCP regulations and CDPs to provide for reassessment of the impacts from protective devices at specific trigger points, including when substantial improvement or redevelopment of the structure requiring protection is proposed, or when existing armoring is being modified or expanded. Reassessment should consider the effect any significant improvement to a structure requiring protection will have on the length of time the protective device will remain, and if the existing armoring is still required, acknowledge that it is authorized to protect the existing structure only. The CDP review should assess existing site conditions and evaluate options to modify, replace, or remove the existing device in a manner that would eliminate or mitigate any identified impacts that may be occurring on public access and recreation, scenic views, sand supply, and other coastal resources, if feasible.

A.23 **Require mitigation for impacts of shoreline protective devices**: For unavoidable public resource impacts from shoreline structures permitted under the Coastal Act, require mitigation of resource impacts over the life of the structure as a condition of approval for the development permit. For example, require landowners to pay mitigation fees and/or complete other mitigation actions for the loss of sandy beach and other

adverse impacts on public access and recreation due to shoreline protection devices. Importantly, mitigation measures should be planned in such a way that sea level rise will not impair their efficacy over time. Other mitigation measures could include acquisition of other shoreline property for public recreational purposes, construction of public access and recreational improvements along the shoreline, and/or easements to protect lateral access along the shoreline in areas where seawalls eliminate sandy beach.

A.23a **Reassess mitigation over time as necessary:** Impacts of shoreline structures, including to shoreline and sand supply, public access and recreation, ecosystem values, and other relevant coastal resources, should be fully mitigated. Where reassessment of an approved structure is authorized, phasing of necessary mitigation may be appropriate.

A.24 Limit retention of existing shore protection: On lots with existing pre-Coastal Act or permitted armoring, consider requiring a waiver of rights to retain such protection for any structures other than the structure that existed at the time the armoring was constructed or permitted.

A.25 Removal of shoreline protection structures: The removal of shoreline protection structures can open beach or wetland areas to natural processes and provide for natural responses to sea level rise. LCPs can specify priority areas where shoreline protection structures should be removed if they are no longer needed or in a state of great disrepair, including areas where structures threaten the survival of wetlands and other habitats, beaches, trails, and other recreational areas. Once these priority areas have been identified, assessment of potential re-siting of structures and removal of armoring could be required by a CDP as redevelopment occurs.

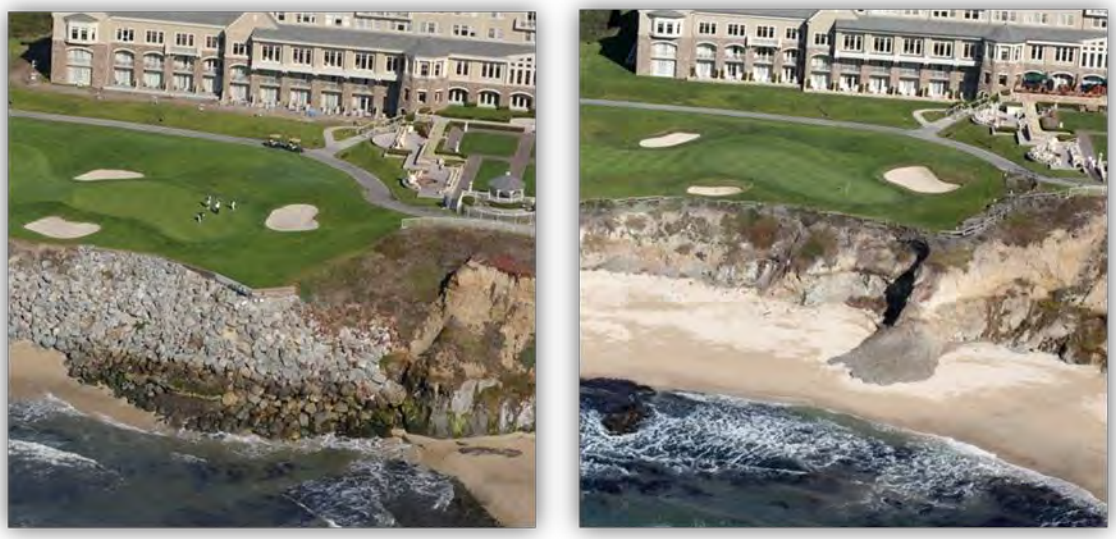

Figure 21. Photo depicting removal of shoreline protective structure. Removal of rock revetment restores access and allows natural bluff erosion at the Ritz Carlton in Half Moon Bay. (*Source:* California Coastal Records Project)

A.25a **Remove shoreline protective structures located on public lands:** Over time, sea level rise will cause the public trust boundary to move inland. If the structures

as originally approved were located on uplands but that land becomes subject to the public trust in the future, the State Lands Commission or any local government or other entity acting as trustee for public trust lands could require the structures to be removed. The Commission or local governments could approve permit conditions to ensure permittees obtain authorization to retain or remove structures if they ever become located on public trust lands. Removal might also be accomplished through non-regulatory means such as offering incentives for removal to property owners or by incorporating removal of public structures into Capital Improvement Plans.

Goal: Require special considerations for critical infrastructure and facilities

A.26 **Plan ahead to preserve function of critical facilities**: Addressing sea level rise impacts to critical facilities and infrastructure will likely be more complex than for other resources and may require greater amounts of planning time, impacts analyses, public input, and funding. To address these complexities, establish measures that ensure continued function of critical infrastructure, or the basic facilities, service, networks, and systems needed for the functioning of a community. Programs and measures within an LCP could include identification of critical infrastructure that is vulnerable to SLR hazards, establishment of a plan for managed relocation of at-risk facilities, and/or other measures to ensure functional continuity of the critical services provided by infrastructure at risk from sea level rise and extreme storms. Repair and maintenance, elevation or spot-repair of key components, or fortification of structures where consistent with the Coastal Act may be implemented through CDPs.

A.26a **Develop or update a long-term public works plan for critical facilities to address sea level rise**: Develop a long-term management plan to address the complexities of planning for sea level rise that incorporates any potential maintenance, relocation, or retrofits and structural changes to critical facilities to accommodate changes in sea level, and obtain Coastal Commission certification.

A.27 **Apply high sea level rise projections for siting and design of critical facilities:** Given the planning complexities, high costs, and potential impacts resulting from damage, there is reason to be particularly cautious when planning and designing new critical facilities and/or retrofitting existing facilities. Ensure that critical facilities are designed to function even if the highest projected amounts of sea level rise occur and that sites with hazardous materials are protected from worst-case scenario sea level rise impacts.

A.27a **Design coastal-dependent infrastructure to accommodate worst case scenario sea level rise**: Include policies that would require proposals and/or expansion plans to address sea level rise for coastal dependent infrastructure that must necessarily be sited in potentially hazardous areas, such as industrial, energy, and port facilities. Such facilities should be designed to withstand worst case future impacts while minimizing risks to other coastal resources through initial siting, design, and/or inclusion of features that will allow for future adaptation.

A.28 Site and design wastewater disposal systems to avoid risks from sea level rise: Wastewater treatment and disposal systems are particularly challenging in that they are often located in areas that will be impacted by sea level rise. Ensure that these systems are not adversely affected by the impacts of sea level rise over the full life of the structure and ensure that damage to these facilities would not result in impacts to water quality or other coastal resources. Avoid locating new facilities in hazardous areas if possible. If complete avoidance is not possible, minimize elements of the system that are in hazardous areas (for example, locate the main facility on higher ground and only place pump stations in potentially hazardous areas), and design any facilities in hazardous areas to withstand worst-case scenario sea level rise impacts.

Goal: Protect transportation infrastructure

A.29 Identify priorities for adaptation planning and response: Carry out vulnerability analyses to identify chronic problem areas that are highly subject to erosion, wave impacts, flooding, or other coastal hazards or that maybe become so in the near future. Coordinate with Caltrans and local public works/transportation agencies to address high priority areas and increase monitoring efforts of chronic problem areas.

A.30 Add policies to address impacts to transportation routes: If transportation facilities are at risk from sea level rise, coordinate with Caltrans and local public works/transportation agencies to establish new alternative transportation routes or a plan to ensure continued alternative transportation and parking is available that allows for continued access to beaches and other recreation areas.

A.30a **Integrate LCP/land use planning processes with transportation planning processes:** Updates and changes to LCPs and other land use planning efforts should be jointly planned, evaluated, and implemented with Coordinated System Management Plans, Regional Transportation Plans, and other transportation planning efforts to ensure that long-term land use and access goals and needs are aligned.

A.31 Allow for phased implementation of realignment and relocation projects: In some cases it may be necessary to make incremental changes in transportation networks so that access to and along the coast can be maintained while also addressing coastal hazards over the long-term. For example, a phased approach may allow for interim shoreline protection to maintain an existing road alignment while future realignment plans are evaluated and pursued. Such phased approaches should be coordinated with Caltrans and local public works/transportation agencies and aligned with long-term LCP planning and adaptation goals. Individual projects will be implemented through CDPs.

Figure 22. Photo depicting planned retreat for major public infrastructure. The Piedras Blancas Highway 1 Realignment will move nearly 3 miles (5km) of Highway 1 500 ft (152 m) inland. (*Source:* California Coastal Records Project)

A.32 Plan and design transportation systems to accommodate anticipated sea level rise impacts: Ensure that transportation networks are designed to function even if the highest projected sea level rise amounts occur. Efforts to realign, retrofit, and/or protect infrastructure should be coordinated with Caltrans, local public works/transportation agencies, and LCP planning efforts, and individual projects will be implemented through CDPs.

A.32a **Retrofit existing transportation infrastructure as necessary:** In instances where relocation is not an option, repair damage and/or retrofit existing structures to better withstand sea level rise impacts. For example, use stronger materials, elevate bridges or sections of roadways, and build larger or additional drainage systems to address flooding concerns.

A.32b **Build redundancy into the system:** Provide alternate routes, as possible, to allow for access to and along the coast in instances in which sections of roadways may become temporarily impassible as a result of coastal hazards. Ensure that alternate route information is provided to residents and visitors to coastal areas.

A.33 Incorporate sea level rise considerations into Port Master Plans and other port activities: Ensure that ports and related infrastructure are designed to function given anticipated sea level rise. In some cases, this may mean initially designing structures to accommodate projected sea level rise impacts. Other options may include planning for and ensuring capacity for future adaptive actions.

A.33a **Retrofit existing port infrastructure as necessary**: Given the coastal-dependent nature of many port structures, it may not be feasible to site or relocate development to avoid hazards. In these instances it may be more appropriate to include efforts to accommodate and withstand sea level rise during actions to

repair or retrofit existing structures. Options may include using more robust designs or materials or elevating structures.

A.33b **Minimize resource impacts that may result from future use of shoreline protective structures**: If existing, coastal-dependent port structures require shoreline protective structures, minimize resource impacts as feasible and consistent with Chapter 3 and/or Chapter 8 of the Coastal Act, as applicable, by encouraging inland expansion of protective devices rather than further fill of coastal waters.

A.33c **Ensure that linkages to overland transportation networks are able to adapt to sea level rise impacts**: Coordinate with relevant stakeholders to ensure that linkages between port infrastructure and overland transportation networks will be resilient to future sea level rise impacts.

A.33d **Ensure that lessees and other parties understand sea level rise risks and vulnerabilities**: Coordinate with lessees and other stakeholders to ensure that they understand the risks associated with development in hazard areas as well as the responsibilities that come with such development.

B. Public Access and Recreation

One of the highest priorities in the Coastal Act is the mandate to maximize public access and recreational opportunities to and along the coast. The main goals and Coastal Act policies (Sections 30210, 30220, 30221, 30213) that relate to public access and recreation are to:

- Maximize public access and recreational use by protecting beaches and other coastal areas suitable for such use
- Protect lower cost visitor and recreational facilities and accessways

Chapter 3 of the Guidance covers the impacts to public access and recreation that might result from sea level rise or the interaction of sea level rise with development patterns. Certified LCPs should already have policies and standards to assure that existing public access and visitor serving amenities are protected and that maximum public access is both planned for and provided with new development when warranted. However, LCP policies and standards may need to be updated to consider sea level rise hazards. Adaptation options have been developed to support the access goals of the Coastal Act through both LCP policies and CDP conditions, and the following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Maximize public access and recreational use by protecting beaches and other coastal areas

B.1 **Incorporate sea level rise into a comprehensive beach management strategy**: Update or develop a new comprehensive beach management strategy to address loss of beach areas, including loss of lateral access, or changes in beach management due to sea level rise. Establish a program to minimize loss of beach area through, as may be appropriate, a beach nourishment program; restoring sand and sediment supply to the littoral cell; removal, adjustments, or maintenance to shoreline protection structures; use of man-made structures such as terminal groins or artificial reefs to retain sediment; or other actions.

B.1a **Develop a sediment management and sand replenishment strategy**: Identify natural sediment supplies and remove and/or modify existing structures or actions that impair natural sand supply, such as dams or sand mining. LCPs could include policies and implementing standards that support nature-based responses to sea level rise by maintaining and restoring natural sand supply. Where applicable, develop policies and standards to prohibit sand mining, regulate sand replenishment, and promote removal of dams or the by-passing of sand around dams. Plans should take into consideration changes in sand supply due to sea level rise. These actions and policies can also be implemented through a Regional Sediment Management (RSM) program.

B.2 **Plan ahead to replace loss of access and recreation areas:** Identify replacement opportunities or otherwise plan ahead for how to replace recreation areas and accessways that will be lost due to inundation or damage associated with sea level rise. An LCP could designate and zone lands for this through, for example, a phased overlay or other regulatory measures that ensure that access and recreational areas are available in the future. Local governments may choose to provide additional incentives to encourage creation of new recreation areas or opportunities. Such incentives could include grant for protection new recreation areas or tax breaks for recreation related businesses.

B.2a **Protect existing open space adjacent to the coast**: Plan for future coastal recreational space and parkland by protecting open space adjacent to coastal habitats so that beaches and other habitats can migrate or so that there is open space available as parkland or other areas are lost.

B.2b **Plan for removal of structures that limit inland migration of beaches**: Seawalls and other development adjacent to beaches and other coastal habitats will impede the ability of these habitats to migrate inland and will therefore result in the inundation and eventual loss of these areas. Consideration should be given to removing and relocating these structures to ensure that beaches and other habitats are able to persist over time. Additional detail on removal of structures can be found above in the "Coastal Development and Hazards" section of this chapter.

Goal: Protect lower cost visitor and recreational facilities and accessways

B.3 **Site and design access sites and facilities to minimize impacts**: Add policies that require public access sites, segments of the CCT, and recreation and visitor-serving facilities to be sited and designed to avoid impacts from sea level rise, while maximizing public access and recreation opportunities. Examples of siting and design standards for development can be found in section A. Where facilities can be safely sited for the near term but future impacts are likely, require an adaptive management plan detailing steps for maintenance, retrofitting, and/or relocation.

B.3a **Require mitigation of any unavoidable impacts**: For unavoidable impacts to public access or recreation from shoreline armoring or other development, require mitigation of impacts through the addition of new public access, recreation opportunities, visitor-serving accommodations, or Coastal Trail segments, or payment of fees to fund such improvements. Importantly, mitigation measures should be planned in such a way that, if possible, sea level rise will not impair their efficacy over time.

B.4 **Plan ahead to replace loss of visitor-serving and recreational facilities**: Develop a plan to replace any visitor-serving facilities that are lost due to impacts from sea level rise, maximizing continued provision of affordable options and an appropriate mix of accommodations over time. For example, an LCP could include standards to re-site existing visitor-serving and recreational facilities when they become impacted by sea

level rise and/or could identify and zone for future areas to be reserved for these functions.

B.5 **Add requirements for retrofit/relocation of public access and recreation sites at risk**: The LCP can add policies that require all new public access and recreation areas, sections of the CCT, visitor- serving accommodations, or related recreation facilities to be retrofitted or relocated if they become threatened from erosion, flooding, or inundation. For new facilities and public access sites, the CDP conditions of approval can specify how maintenance, retrofit, or relocation will take place. Policies and plans should be designed to be adaptive so that retrofits and or/relocations are implemented as sea level rise impacts occur.

B.5a **Retrofit or relocate recreation and visitor-serving facilities**: Consider options to retrofit existing recreation and visitor-serving facilities to better accommodate sea level rise impacts. Such retrofits could include use of different building materials and/or relocating facilities.

B.5b **Retrofit or relocate vertical accessways**: Consider options to retrofit existing accessways to reduce impacts from sea level rise. Such retrofits could include using different materials that can better withstand impacts, or re-orienting the layout or other features of accessways to lessen damage and other impacts. Also begin to plan for and identify triggers and options for relocating accessways over time as conditions change.

B.5c **Retrofit or relocate sections of the Coastal Trail**: Use boardwalks, bridges, and/or other design features to ensure continuity of the CCT in sections that are vulnerable to SLR hazards. Some sections may need to be relocated over time. An LCP could identify vulnerable sections of the CCT and establish a phased approach to relocate sections of the trail in such a way that is consistent with provisions of the Coastal Act and ensures that the CCT remains within sight, sound, or smell of the sea.

Goal: Foster efforts to better understand impacts of sea level rise

B.6 **Support research on impacts to recreation and public access**: Changes in sea level will affect wave conditions and sediment transport, but additional research is needed to understand how these changes will affect specific conditions for surfing and other recreation activities. While such research programs may be outside the scope of individual local jurisdictions, statements of support for the local issues that need to be addressed can help guide research agendas at the regional state or federal level. Or, such needs can serve to guide grant applications to undertake the needed projects within a jurisdiction. To the extent possible, add policies to promote research on sea level rise impacts to recreational activities like surfing or other coastal recreational uses in the LCP jurisdiction.

C. Coastal Habitats, ESHA, and Wetlands

The Coastal Act provides for the protection of both land and marine habitats. It mandates that ESHA and marine resources shall be protected against significant disruption of habitat value and shall be maintained, enhanced, and restored as feasible (Sections 30230, 30233, 30240, 30240(a), 30240(b)). The main goals and Coastal Act policies that relate to coastal habitats are to:

- Protect, enhance, and restore sensitive habitats
- Avoid significant disruption to sensitive habitats
- Avoid significant impacts to habitats from adjacent development
- Manage sediment in ways that benefit habitats

Chapter 3 of the Guidance covers the impacts to coastal habitats and resources that might result from sea level rise or the interaction of sea level rise with development patterns. Certified LCPs should already have policies and standards to ensure that ESHA, wetlands, and other coastal habitats and resources are protected to the maximum extent feasible. However, LCP policies and standards may need to be updated to consider sea level rise hazards. Adaptation options have been developed to support the habitat protection goals of the Coastal Act through both LCP policies and CDP conditions, and the following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Protect, enhance, and restore sensitive habitats

C.1 **Open space preservation and conservation**: Preserve land for its ecological or recreational value. This may involve limiting or prohibiting development and any uses that conflict with ecological preservation goals. LCPs can establish transfer of development rights programs to offset reduced development potential and can develop open space management plans that evaluate and consider the impacts of sea level rise, extreme events, and other climate change impacts. LCPs can establish open space and conservation areas through land use designations and zoning, redevelopment restrictions, acquisition and easement programs, and setback and buffer requirements.

C.1a **Update policies to provide for new or restored coastal habitat**: Update policies to require new coastal habitat to be provided or for degraded areas to be restored to account for the expected loss of existing habitat that will occur when development blocks the necessary upland migration due to sea level rise. Use an adaptive management approach where applicable. Encourage policies that provide for conservation or restoration of multiple habitat types.

C.1b **Identify areas for public acquisition**: New or updated LCPs can establish a program to partner with state, federal, and non-profit organizations to acquire and protect natural resource areas for public use, including areas that could serve as

refugia for species impacted by sea level rise, or areas that could be appropriate sites for coastal habitat creation or restoration.

C.1c **Establish conservation easements or other development restrictions to protect habitat**: Establish a formalized program to identify, acquire, and manage areas appropriate for some form of conservation protection. Easements or other strategies may be used to limit or restrict development on portions of a lot parcel that are most vulnerable to SLR impacts. The program might develop standard agreements to be used for easements and identify the entities that could hold the easements. A conservation easement program could be established on a community wide basis through an LCP and implemented on a parcel by parcel basis through individual CDPs.

C.1d **Require open space protection as a component of new development located adjacent to coastal habitats**: The LCP can require permit conditions for new development in certain areas that buffers around natural resource areas be protected through a conservation easement, deed restrictions, or other comparable mechanism.

C.1e **Use Rolling Easements**: See Strategy A.15 above.

C.1f **Transfer of Development Rights programs (TDR)**: See Strategy A.5b above.

Goal: Avoid significant disruption to habitats

C.2 **Use ecological buffer zones and/or increase the size of buffers**: Buffer zones are intended to protect sensitive habitats from the adverse impacts of development and human disturbance. An important aspect of buffers is that they are distinct ecologically from the habitat they are designed to protect. LCPs can establish requirements for ecological buffers and provide guidance on how to establish or adjust these buffers to accommodate sea level rise. CDPs should require buffers to be designed, where applicable, to provide "habitat migration corridors" that allow sensitive habitats and species to migrate inland or upland as sea level rises.

C.2a **Consider sea level rise buffer zones**: Update buffer zone policies to allow room for coastal habitats to migrate with changes in sea level. The size of the buffer needed to allow for migration will vary depending on the individual wetland or habitat type, as well as site-specific features such as natural or artificial topography and existing development. For instance, in flat areas, a larger buffer may be needed, but in steep areas, a smaller buffer may be acceptable.

C.3 **Avoid impacts to Marine Protected Areas**: Recognize the importance of the State's network of marine protected areas (MPAs) in protecting the diversity and abundance of marine life. Understand that planning and permitting decisions made on land could have impacts on these areas, particularly as conditions change with sea level rise, and avoid disruptions to these habitats as feasible and applicable.

C.4 **Protect specific ESHA functions:** Environmentally Sensitive Habitat Areas (ESHA) are areas that are critically important for the survival of species or valuable for maintaining

biodiversity. These areas can include nursery grounds, spawning areas, or highly diverse areas. Where at risk from sea level rise, the LCP should establish measures to ensure the continued viability of the habitat areas, such as protection of migration zones, habitat corridors, and other applicable adaptation strategies, as listed below. ESHA that is not at risk from sea level rise should also be afforded special protection in the LCP to serve as refugia.

C.4a **Protect wildlife corridors, habitat linkages, and land upland of wetlands to allow habitat migration**: Preserve open areas that are adjacent to wetlands to allow for migration of these habitats as sea levels rise.

C.4b **Protect refugia areas**: Protect refugia, or areas that may be relatively unaltered by global climate change and thus can serve as a refuge for coastal species displaced from their native habitat due to sea level rise or other climate change impacts.

C.4c **Promote increased habitat connectivity to allow species movement**: Connectivity refers to the degree to which the landscape facilitates animal movement and other ecological flows. Roads, highways, median barriers, fences, walls, culverts, and other structures can inhibit movement of animals. Develop LCP policies that will enable identification of important animal movement corridors. Develop regulations to protect these corridors for present and future conditions, taking into account habitat shifts from climate change. In LCPs and through CDPs, require that new structures such as highways, medians, bridges, culverts, and other development are designed to facilitate movement of animals.

C.4d **Facilitate wetland and other habitat migration**: Reserve space for a "habitat migration corridor" or areas into which wetlands and other habitats could migrate as sea level rise induced inundation of existing wetland areas occurs. In the LCP, identify potential habitat migration corridors. These areas could be reserved for this purpose in an LCP through land acquisition, use designations, zoning buffers, setbacks, conservation easement requirements, and clustering development. LCPs should also consider developing a plan for acquisition of important habitat migration corridors.

Goal: Avoid significant impacts to habitats from adjacent development

C.5 Limit new development in areas adjacent to wetlands, ESHA, and other coastal habitats: Restrict the construction of new development in areas that are adjacent to wetlands, ESHA, and other coastal habitats in order to preserve buffers and open areas to allow for habitat migration.

C.5a **Cluster development away from coastal habitats**: Existing LCPs will likely have policies that already require clustering of development. To address sea level rise, these policies might need to be updated to include clustering development away from land where wetlands and other coastal habitats could migrate with sea level rise.

C.5b **Limit subdivisions**: Update subdivision requirements to require provision for inland migration of natural resource areas or to require lots to be configured in a way that allows such migration. Lot line adjustments may sometimes be appropriate if they facilitate locating physical development further away from hazards or sensitive resources.

Figure 23. Photo depicting the preservation and conservation of open space along an urban-rural boundary. North end of Pismo Beach from 1972 (*left*) to 2002 (*right*). (*Source:* California Coastal Records Project)

Goal: Manage sediment in ways that benefit habitats

C.6 **Identify opportunities for Regional Sediment Management**: Sediment supplies will be important for the long-term sustainability of many beaches and wetland areas. Strategies to maintain or restore natural sediment supplies and to coordinate sediment removal efforts with opportunities for reuse can provide multiple benefits to coastal ecosystems. See Strategy A.19c above for more detail on RSM programs.

C.6a **Restore natural sediment sources to wetlands**: Restoration of natural hydrodynamic systems will help to ensure the ability of wetlands to persist with sea level rise by ensuring that sediment is available for wetland accretion. Such actions may include restoring natural channels in streams and waterways that have been armored or channelized. Organizing and coordinating such efforts may be accomplished through a Regional Sediment Management Plan.

C.6b **Identify opportunities for beneficial reuse of sediment to support wetland restoration**: Consider facilitating the delivery of clean, dredged sediment to areas where former wetlands have subsided or to areas where existing wetlands are or may become sediment-limited as sea levels rise.

Goal: Incorporate sea level rise into habitat management actions

C.7 **Include sea level rise in site-specific evaluations**: Update policies to require site-specific biological evaluations and field observations of coastal habitat to include an evaluation of vulnerability to sea level rise where appropriate. Such an evaluation should consider both topographic features as well as habitat and species sensitivities (for example, sensitivity to inundation and saltwater intrusion).

C.8 **Incorporate sea level rise in restoration, creation, or enhancement of coastal habitats**: Update policies to require site-specific biological evaluations and field observations of coastal habitat to include an evaluation of vulnerability to sea level rise. Such an evaluation should consider both topographic features as well as habitat and species sensitivities (for example, sensitivity to inundation and saltwater intrusion). Habitat restoration, creation, or enhancement projects should be designed to withstand impacts of sea level rise and adapt to future conditions. As applicable, the LCP should contain policies to ensure restoration and management techniques account for future changes in conditions. CDPs for restoration projects should incorporate sea level rise and provisions to ensure habitats can adapt with changing future conditions.

C.9 **Update habitat management plans to address sea level rise**: Add policies stating that the effects of sea level rise should be addressed in management plans for coastal habitats. For example, plans should evaluate the full range of sea level rise impacts to coastal habitats, and develop a strategy for managing coastal habitats given changing sea level rise conditions. Existing management plans may need to be updated to add new monitoring and restoration requirements to address sea level rise. The strategies listed below are examples of strategies that could be included in habitat management plans.

C.9a **Use an adaptive management approach in ecosystem management, restoration, or design**: Habitat management plans and/or other habitat projects should establish an adaptive management approach, with clearly defined triggers for adaptive actions. Such an approach would allow for and ensure that coastal habitats are able to migrate and transition with changes in sea level.

Figure 24. Photo depicting habitat protection at Salinas River State Beach. Dunes are roped off to protect Snowy Plover nesting habitat. (*Source:* California Coastal Records Project)

C.10 Pursue strategies to protect ecosystem function under a range of future sea level rise or climate change scenarios: The LCP and/or habitat management plans can recommend coastal habitat management strategies that strive to protect ecosystem function in the future. Strategies include protecting a wide range of ecosystem types, protecting refugia, protecting wildlife and habitat corridors, and establishing methods to monitor ecosystem change over time.

C.10a **Update monitoring requirements for coastal habitats**: As part of the LCP and/or habitat management plans, consider establishing a monitoring protocol and requirements for evaluating sea level rise impacts to coastal habitats over time. Such a protocol would also help identify triggers at which additional adaptation options are necessary.

D. Agricultural Resources

Agriculture is a priority use within the Coastal Act, which mandates that the maximum amount of prime agricultural land shall be protected and maintained (Sections 30231, 30241, 30242). The main goals and Coastal Act policies that relate to agriculture are to:

- Protect the maximum amount of prime agricultural land
- Limit conversion of lands suitable for agriculture to non-agricultural uses
- Minimize impacts to water quality that could result from agricultural practices
- Promote water conservation efforts

Chapter 3 of the Guidance describes the impacts to agricultural resources that may result from sea level rise. Certified LCPs should already have policies and standards to ensure that agricultural resources are protected to the maximum extent feasible. However, LCP policies and standards may need to be updated to address sea level rise hazards. Adaptation options have been developed to support the agricultural protection goals of the Coastal Act through both LCP policies and CDP conditions, and the following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Protect the maximum amount of prime agricultural land

D.1 **Identify and designate areas suitable for agricultural production to replace agricultural production areas that could be lost to sea level rise:** Identify any non-sensitive open or developed areas, both within and outside of the Coastal Zone, which could potentially be used to replace agricultural land that is lost to sea level rise. Update LCP designations and/or policies to protect these identified areas for agricultural production and, as applicable, to provide for their conversion to agricultural use. Encourage and support regional coordination as feasible and applicable.

D.1a **Establish SLR-specific agricultural protection program:** Establish a formal program to identify, acquire, incentivize, and manage areas appropriate for new/renewed agricultural use and/or for protection of current and/or future agricultural uses. Such program should target key areas and properties where agricultural conversion threats are highest, and should dovetail with existing agricultural protection programs. Easements and other legal restrictions may be used as part of such program to help limit or restrict development in areas where agricultural land and production are most vulnerable to sea level rise impacts. The program might develop standard language and/or legal documents that can be used for easements or other property restrictions. The program should be flexible enough to be able to be implemented on both a large scale (*e.g.*, though LCP policies and programs) as well as on a smaller scale (*e.g.*, through the CDP process).

D.2 **Protection, maintenance, and adaptation of dikes and levees**: Repairing and maintaining existing flood barriers such as dikes and levees may be a cost-effective way to continue to protect agricultural areas. While some repair and maintenance activities are exempt from the need for a CDP, the repair and maintenance exemption does not apply to repair and maintenance work that is located within an ESHA, within any sand area, within 50 feet of the edge of a coastal bluff or ESHA, or within 20 feet of coastal waters. LCPs could identify opportunities for these kinds of actions and ensure that they are appropriately permitted, with consideration to the environmental protection and restoration goals of the Coastal Act. While landowners have the right to repair and maintain existing legal levees in their current configurations, the Commission and local governments administering LCPs have the authority to regulate, via the CDP process, the proposed methods of repair and maintenance. To raise, reconfigure, enlarge, or widen levees is not repair and maintenance and requires a Coastal Development Permit. Such activities may not be consistent with the Coastal Act or certified LCP, such as in cases involving wetland fill impacts. However, where there are opportunities to restore marine resources and the biological productivity of wetlands and estuaries, it may be possible to permit a dike/levee reconstruction project that provides for substantial restoration.

Goal: Limit conversion of lands suitable for agriculture to non-agricultural uses

D.3 **Limit conversion of agricultural land to other developed land uses**: Develop policies to assure maximum environmentally feasible protection of rural agricultural land, open space, and other coastal resources, including areas that may be considered non-prime agricultural land at this time. Anticipate areas that could become more difficult to farm and identify strategies to avoid or mitigate the potential impacts.

Goal: Minimize impacts to water quality that could result from agricultural practices

D.4 **Include sea level rise in water quality protection policies**: Where needed, coordinate with regional water quality control boards to add policies to reduce water pollution from runoff should agricultural lands become flooded or inundated due to sea level rise.

D.4a **Minimize water quality impacts from flooding of agricultural lands**: Agricultural practices that are designed to minimize water quality impacts, such as those designed to minimize runoff, may need to be updated or enhanced to ensure water quality protection if sea level rise results in more frequent flooding of agricultural lands.

D.4b **Add policies to address saltwater intrusion**: Add policies to protect water supply for priority coastal agriculture, including policies to address saltwater intrusion, such as limits on groundwater withdrawal or diversification of water supplies. Strategies to pump freshwater and/or highly treated wastewater into aquifers to reduce saltwater intrusion should be minimized in areas with limited freshwater resources.

Goal: Promote water conservation efforts

D.5 **Maximize water conservation to protect priority agricultural water supplies**: Saltwater intrusion and other climate change impacts may result in reduced water availability. LCP policies should be updated to establish or enhance standards related to water conservation and/or to identify opportunities for water recycling, dual plumbing systems, and the like. For more information on options such as relocating wells and reducing pumping in sensitive aquifers, see the following section on Water Quality and Water Control Management.

D.6 **Identify alternate water sources for agriculture**: Establish a program to identify alternate water sources for agriculture.

E. Water Quality and Supply

The main water quality protection policy of the Coastal Act requires minimizing the adverse effects of wastewater discharges, runoff, and groundwater depletion in order to protect the biological productivity and quality of coastal waters, as described in Section 30231. The main goals related to water quality include:

- Control runoff and stormwater pollution
- Minimize adverse effects of wastewater discharges and entrainment
- Prevent depletion of groundwater supplies from saltwater intrusion
- Improve long-term water quality through research

Chapter 3 of the Guidance covers the impacts to coastal waters from increased runoff, wastewater discharge and saltwater intrusion into groundwater sources from sea level rise. Adaptation options have been developed to limit the amount of pollutants that enter coastal waters through runoff or discharges.

Goal: Control runoff and stormwater pollution

E.1 **Update water quality Best Management Practices (BMPs)**: Evaluate and update BMPs to account for changes in water quality and supply issues due to sea level rise, as applicable. Updates could include practices to provide greater infiltration/inflow of rainwater, increased stormwater capture and/or water recycling programs, the use of low impact development, improved maintenance procedures for public sewer mains, policies to address impaired private sewer laterals, and other proactive measures.

E.2 **Include sea level rise in stormwater management plans and actions**: Control the amount of pollutants, sediments, and nutrients entering water bodies through precipitation-generated runoff. LCPs should include sea level rise and extreme storms in stormwater management plans and actions. CDPs for stormwater infrastructure should consider sea level rise.

E.2a **Increase capacity of stormwater infrastructure**: Actions to reduce impacts from higher water levels could include widening drainage ditches, improving carrying and storage capacity of tidally-influenced streams, installing larger pipes and culverts, adding pumps, converting culverts to bridges, creating retention and detention basins, and developing contingency plans for extreme events. Encouraging and supporting these types of efforts upstream may also be important.

E.2b **Use green stormwater infrastructure to the maximum extent feasible**: Employ natural, on-site drainage strategies to minimize the amount of stormwater that flows into pipes or conveyance systems. These strategies include low impact development, green roofs, permeable pavements, bioretention (*e.g.*, vegetated

swales, rain gardens) and cisterns. LCPs can include policies that require green infrastructure be used whenever possible *in lieu* of hard structures. Incorporate sea level rise and extreme storms into the design.

E.2c **Retrofit existing development with inadequate stormwater infrastructure**: Identify and prioritize development in low-lying or other at-risk areas with inadequate stormwater infrastructure and take steps to retrofit these systems to better accommodate sea level rise driven changes. Retrofits should incorporate the green infrastructure options detailed in strategy E.2c above as applicable.

Goal: Minimize adverse effects of wastewater discharges and entrainment

E.3 Add policies to address water quality risks from wastewater treatment plants, septic systems, and ocean outfalls: Consider establishing a program to retrofit, relocate, or eliminate ocean outfalls and other wastewater infrastructure deemed at risk. Alternatives include modifications to outfall lines, the use of green infrastructure, and redesign of waste and stormwater systems.

E.3a **Update siting and design policies**: Add policies to ensure that new ocean outfalls, wastewater treatment facilities, and other facilities that could negatively impact water quality if flooded or inundated, are sited and designed to minimize impacts from sea level rise. Avoid construction of new stormwater outfalls and direct stormwater to existing facilities with appropriate treatment and filtration where feasible. Where new outfalls cannot be avoided, plan, site, and design stormwater outfalls to minimize adverse impacts on coastal resources, including consolidation of existing and new outfalls where appropriate. Consolidate new and existing outfalls where appropriate.

E.3b **Retrofit, relocate, or eliminate outfalls deemed "at risk"**: An ocean outfall is a pipeline or tunnel that discharges municipal or industrial wastewater, stormwater, combined sewer overflows, cooling water, or brine effluents from desalination plants to the sea. LCPs should identify areas where sea level rise could affect flow of wastewater from outfalls and lead to backup and inland flooding, and plans should be made to retrofit, relocate, or eliminate these outfalls to prevent damage and impacts to water quality. Additionally, CDPs for new ocean outfalls should consider sea level rise in the design.

E.3c **Reduce or find alternatives for septic systems in hazardous areas**: Flooding, inundation, and changing groundwater dynamics may result in impacts to septic systems, which rely on leach fields for dispersal of wastewater, that could cause water quality impairments. Options to reduce the potential for these impacts by redesigning or eliminating septic systems in hazardous areas should be identified. New development that will rely on septic systems should be limited in hazardous areas.

Goal: Prevent depletion of groundwater supplies from saltwater intrusion

E.4 **Groundwater Management**: Plan and coordinate monitoring, operation, and administration of a groundwater basin or portion of a groundwater basin with the goal of fostering long-term sustainability of the resource. The LCP can add policies that specify limits or establish other standards for the use of groundwater and sensitive aquifers. These policies should be made in accordance with other regional water planning efforts, such as Integrated Regional Water Plans as well as relevant state water policies. CDPs involving the use of groundwater should address groundwater management issues.

E.4a **Add policies to address saltwater intrusion into aquifers**: Consider adding policies that establish a long-term strategy for addressing saltwater intrusion in aquifers, including limiting development that would use sensitive aquifers as applicable. For some areas of the state, additional information is needed on the site-specific impacts of sea level rise on aquifers. For these areas, the LCP could identify the local information needs and promote the establishment of a research program to increase understanding of the vulnerability of coastal aquifers.

E.4b **Limit groundwater extraction from shallow aquifers**: Groundwater extraction from shallow aquifers can increase susceptibility to saltwater intrusion. Regulating development to limit or prevent extraction and avoid overdraft from vulnerable aquifers can reduce the impacts of saltwater intrusion and preserve fresh groundwater supplies. LCPs or CDPs can add restrictions to the use of aquifers susceptible to saltwater intrusion and can encourage measures to recharge shallow aquifers that are depleted.

E.4c **Relocate wells and water intake facilities**: Identify opportunities to relocate wells and water intake facilities away from hazards and/or areas where saltwater intrusion may be a problem.

E.4d **Restrict development of new wells in sensitive areas**: Require new water wells to be sited away from areas where saltwater intrusion could occur.

E.4e **Limit development that relies on vulnerable water supplies**: Limit or restrict new development in areas that are dependent on water supplies that are or will become susceptible to saltwater intrusion.

E.4f **Ensure adequate long term water supplies:** When siting and designing new development, ensure that adequate and sustainable water sources are available for the lifetime of the development and suitable for the intended use of the development, considering potential impacts of sea level rise and saltwater intrusion upon groundwater supplies.

Goal: Improve long-term water quality through research

E.5 **Identify research and monitoring needs to more precisely understand local issues**: Research programs may be established to analyze the particular local challenges related to water quality and supply as a result of sea level rise. Opportunities for innovative solutions to these challenges should be identified.

E.5a **Clearly define areas at risk**: The LCP should include an updated inventory of potential pollutant sources due to sea level rise, including toxic waste sites, ocean outfalls and wastewater treatment facilities at risk of inundation, as well as aquifers and wells at risk of saltwater intrusion. Policies may also be added to prioritize low-lying contaminated sites for remediation and restoration.

F. Archaeological and Paleontological Resources

The Coastal Act provides for the protection of archaeological and paleontological resources, stating in Section 30244 that:

> "Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required."

Chapter 3 of the Guidance discusses the impacts to archaeological and paleontological resources that might result from sea level rise. Certified LCPs should already have policies and standards to ensure that these resources are protected to the maximum extent feasible, however, such policies and standards may need to be updated to consider sea level rise hazards. The following strategies cover a range of options for addressing the identified goals of the Coastal Act.

Goal: Protect archaeological and paleontological resources

F.1 **Add policies to protect archeological and paleontological resources from sea level rise:** Add policies to require site-specific evaluation of potential sea level rise impacts to archeological and paleontological resources on a development site. The LCP can also add requirements that a monitoring program and plan be established as a condition of approval for development located on a site with artifacts vulnerable to sea level rise. Adaptation or protection strategies used may depend on the significance of the archaeological resources in question.

F.1a **Consult with relevant tribes for guidance:** If resources are at risk, the appropriate entity or Native American tribe(s) should be contacted to develop a coordinated management plan for artifacts. See, for example, the *California Natural Resources Agency Final Tribal Consultation Policy* for additional guidance.

F.1b **Coordinate with the State Historic Preservation Officer (SHPO):** In line with the provisions of the Coastal Act, work with the State Historic Preservation Officer to identify actions to protect archaeological and paleontological resources.

G. Scenic and Visual Resources

The scenic value of the coast is a resource of public importance. As noted in Section 30251 of the Coastal Act, development shall be sited and designed to:

> "Protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms…and to restore and enhance visual quality in visually degraded areas."

As stated in Chapter 3 of the Guidance, some options to address rising sea levels, such as elevating structures or utilizing seawalls or bluff retention devices, have the potential to alter or degrade the visual character of an area. Certified LCPs should already have policies and standards to ensure scenic and visual resources are protected to the maximum extent feasible, but these may need to be updated to consider sea level rise hazards. Coastal regions with scenic overlays or designated scenic corridors, or those areas designated as scenic in the California Coastal Preservation and Recreation Plan in particular should pay close attention to actions that could be used to minimize risks to development. The following adaptation options address some of the methods for protecting the scenic qualities of the coast.

Goal: Protect views to and along the ocean and scenic coastal areas

G.1 **Establish design standards to protect visual resources**: Update and/or add design standards to ensure that adaptation measures protect visual resources while minimizing hazards. Adaptation strategies such as shoreline armoring or elevation techniques should be designed such that the visuals are subordinate to, and in character with, the surrounding visual resources of an area.

G.1a **Establish standards for the use of caissons or other means of elevating structures:** Ensure that the use of caissons or other elevation techniques do not result in negative visual impacts. Develop policies regarding where elevation of structures may be allowable, and establish standards guiding the use of these techniques. Ensure that the appearance of caissons will not detract from the scenic character of an area if or when they become visible as a result of erosion or other processes.

G.1b **Maintain height limitations in scenic areas**: Avoid modifications to height limits in scenic areas and provide for options to modify roof-lines or elevate the lowest flood elevation for flood protection in a manner that is consistent with scenic character. In some cases it may be appropriate to update height limitations to allow for elevation in response to sea level rise hazards. However, such decisions will require trade-offs and will need to strike a balance in terms of adapting to sea level rise and protecting visual resources and community character in line with the requirements of the Coastal Act.

G.1c **Develop or redevelop property to be safe from hazards without impairing scenic resources**: Emphasize the use of adaptation strategies that will not impact visual resources. Such strategies may include short-term retrofits with plans for longer term relocation or removal.

G.1d **Establish new scenic communities**: Designate areas with significant visual resources that could be negatively impacted by adaptation responses (*e.g.*, due to seawalls or "spider" homes) as scenic communities with special protections. Establish standards in LCPs to specifically protect visual resources in these areas.

Figure 25. Photo depicting protection of visual resources and public access. A seawall visually blends in with the natural bluff while surfing access is also provided at Pleasure Point, Santa Cruz (2013). (*Source:* California Coastal Records Project)

Chapter 8

Legal Context of Adaptation Planning

Land use law is dynamic and must be interpreted and applied based on case-specific factors at the time of decision. Nonetheless, sea level rise and adaptation planning raise a number of important legal issues that coastal managers should consider as they develop and apply adaptation strategies.

This section includes discussion of the legal contexts for addressing:

- Seawalls and other shoreline protective devices
- The public trust boundary
- Potential private property takings issues

SEAWALLS AND OTHER SHORELINE PROTECTIVE DEVICES

Section 30235 of the Coastal Act provides that seawalls and other forms of construction that alter natural shoreline processes "shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply." Despite other Coastal Act provisions that could often serve as the basis for denial of shoreline protective devices (for example, new development requiring shoreline protection can also conflict with Coastal Act policies requiring protection of public access and recreation, coastal waters and marine resources, natural landforms, and visual resources), the Coastal Commission has interpreted Section 30235 as a more specific overriding policy that requires the approval of Coastal Development Permits for construction intended to protect coastal-dependent uses[45] or existing structures if the other requirements of Section 30235 are also satisfied.[46] The Commission thus will generally permit a shoreline protective device if (1) there is an existing structure, public beach, or coastal-dependent use that is (2) in danger from erosion; and (3) the shoreline protection is both required to address the danger (the least environmentally-damaging, feasible alternative) and (4) designed to eliminate or mitigate impacts on sand supply.

In contrast to Section 30235, Coastal Act Section 30253 requires that "new development…assure stability and structural integrity, and neither create nor contribute significantly to erosion…or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs." The Commission has long applied this policy to implement appropriate bluff-top and shoreline setbacks for new development. Such setbacks are based on an assessment of projected erosion and related hazards at the site for the life of the proposed development and help ensure that seawalls and other protective devices that could lead to adverse impacts would not be necessary in the future.

[45] Coastal-dependent uses are those that require a site on, or adjacent to, the sea to be able to function at all. (Public Resources Code, § 30101.)

[46] Some commenters argue that because shoreline armoring often conflicts with Coastal Act policies other than Section 30235, the Commission should evaluate proposed armoring under the conflict resolution provisions of the Act. (See Public Resources Code, § 30007.5, 30200(b).) Because the conflict resolution provisions require the Commission to resolve the conflict in a manner which on balance is the most protective of significant coastal resources, this approach could result in the more frequent denial of shoreline armoring, especially when it is intended to protect residential development or other uses that the Coastal Act does not identify as priority uses.

Additionally, from its earliest days, the Commission has also required that landowners "assume the risks" of developing along shoreline and coastal bluffs where risks of coastal hazards are present. Since at least the late 1990s, the Commission has approved many new developments with required deed restrictions that specifically prohibit any future construction of shoreline protection for these developments. These deed restrictions require that property owners waive any rights that may exist for a shoreline structure under Section 30235 and thus internalize the risks of building in an inherently hazardous location. This, in turn, will protect shoreline areas with natural resources or other access, recreational, or scenic value, including as required by Section 30253. If and when the approved development is threatened by erosion and becomes uninhabitable, these deed restrictions prevent the construction of a shoreline protective device and require property owners to remove the development, as well as clean up any debris that may result from erosion undermining the development.[47]

Read together, the most reasonable and straight-forward interpretation of Coastal Act Sections 30235 and 30253 is that they evince a broad legislative intent to allow shoreline protection for development that was in existence when the Coastal Act was passed, but avoid such protective structures for new development now subject to the Act. In this way, the Coastal Act's broad purpose to protect natural shoreline resources and public access and recreation would be implemented to the maximum extent when new, yet-to-be-entitled development was being considered, while shoreline development that was already entitled in 1976 would be "grandfathered" and allowed to protect itself from shoreline hazards if it otherwise met Coastal Act tests even if this resulted in adverse resource impacts. Such grandfathering of existing conditions is common when new land use and resource protection policies are put in place, and the existing development becomes "non-conforming."

Even still, in the case of Coastal Act Section 30235, existing development is only entitled to shoreline protection if it is in fact in danger, and the proposed shoreline protection is the least environmentally-damaging alternative to abate such danger. It may be that in certain circumstances existing development can be modified or feasibly relocated, or that other non-structural alternatives such as reducing blufftop irrigation or pursuing beach replenishment, may effectively address the risk to the development without the need for a shoreline protective device.

In practice, implementing Sections 30235 and 30253 has been challenging because many urban areas are made up of both developed and undeveloped lots. In addition, many developments in existence in 1976 have since been "redeveloped" through renovations, remodeling, additions, and complete demolition and rebuild. The reality of effective shoreline management is that the Coastal Act and LCPs must address and be applied to a wide variety of physical and legal circumstances that may not be addressed by a simple application of the clean Coastal Act distinction between existing development that may be entitled to shoreline protection and new development that is not. In some urban areas, for example, one may find intermingled shoreline developments that pre-date the Coastal Act, both with and without shoreline protection, post-Coastal Act developments approved by the Coastal Commission or local governments pursuant to an LCP that theoretically won't need shoreline protection (though some may have it), and

[47] This legal instrument is not an easement but it does provide for "planned retreat" into the future as a site erodes. Once a development is removed, a site may have potential for new development if it is once again set back and restricted against future shoreline protection device construction.

developments that may have pre-dated the Coastal Act but that were redeveloped pursuant to a coastal development permit. Moreover, some of the post-Coastal Act developments may have conditions that prohibit shoreline protection while adjacent properties may be eligible for or have a protective device because they pre-date the Act.

For purposes of implementing this Guidance, it is important that local governments, property owners, development applicants, and others take full advantage of available legal tools to mitigate hazards and protect resources, but to do so in way that considers the specific legal context and circumstances of LCP updates and individual development decisions in context and on a case-by-case basis. For example, although the Coastal Act does not explicitly define what qualifies as an "existing structure" for the purposes of Section 30235, how this term is interpreted in specific cases and through LCPs may be critical to the success of an adaptation strategy over the long-run.

The Commission has relatively infrequently evaluated whether structures built after 1976 should be treated as "existing" and thus entitled to shoreline protection pursuant to Section 30235. When it has, the shoreline protection being proposed to protect the structure has often also been identified as necessary to protect adjacent pre-Coastal Act structures.[48] In a few instances, however, the Commission has treated structures built after 1976 as existing structures entitled to shoreline protection even if no adjacent pre-Coastal Act structure also needed protection. Nonetheless, going forward, the Commission recommends the rebuttable presumption that structures built after 1976 pursuant to a coastal development permit are not "existing" as that term was originally intended relative to applications for shoreline protective devices, and that the details of any prior coastal development approvals should be fully understood before concluding that a development is entitled to shoreline protection under Section 30235.

As mentioned, in order to find new development consistent with Section 30253 or related LCP requirements and to limit the potential proliferation of armoring to protect newly approved structures, the Commission has long used setbacks, assumption of risk conditions and, over the last 15-20 years, generally required that applicants proposing new development in hazardous shoreline locations waive any rights under Section 30235 (or related LCP policies) to build shoreline protection for the proposed new development. Notably, no appellate decision addresses whether the term "existing structures" in this context includes only structures built prior to the Coastal Act or instead includes structures in existence at the time the Commission acts on an application for shoreline protection, or otherwise addresses the interplay between 30235 and 30253.

LCP updates are an opportunity to clarify how the distinction between existing and new development will be applied in specific areas, and some LCP's have already done so. For example, local governments have sometimes specified a date by which a structure must have been constructed in order to qualify as an "existing structure" for the purpose of evaluating whether it may be eligible for shoreline protection. In Marin County, the Local Coastal Program

[48] For example, CDP A-3-CAP-99-023-A1, *Swan and Green Valley Corporation Seawall*. In this situation, repairs to maintain a seawall fronting the pre-coastal Swan Residence could only be undertaken by encroachment onto the adjacent property, Green Valley Corporation; however, the Green Valley Corporation development had been approved with a condition to prohibit any future shore protection.

policy that implements Section 30235 specifies that existing structures are those that existed on the date the LCP was originally adopted (May 13, 1982). LCPs can also codify the prohibition on shoreline protective devices for new development, such as the following provision from the San Luis Obispo County North Coast Area Plan standard:

> ***Seawall Prohibition***. *Shoreline and bluff protection structures shall not be permitted to protect new development. All permits for development on blufftop or shoreline lots that do not have a legally established shoreline protection structure shall be conditioned to require that prior to issuance of any grading or construction permits, the property owner record a deed restriction against the property that ensures that no shoreline protection structure shall be proposed or constructed to protect the development, and which expressly waives any future right to construct such devices that may exist pursuant to Public Resources Code Section 30235 and the San Luis Obispo County certified LCP.*[49]

The distinction between existing and new development inherent in the Coastal Act is often directly raised by proposals for redevelopment as well. This Guidance thus deals directly with potential approaches for managing shoreline hazards and protecting coastal resources as shorelines are redeveloped (see Chapter 7, Strategy A.13). Most recently, the Commission approved a Land Use Plan for the City of Solana Beach that includes many policies designed to address the existing residential development pattern along the high, eroding bluffs of the City. Although further elaboration is yet to come through the City's work on the Implementation Plan, the Solana Beach LUP is a good example of an effort to pragmatically address the need to mitigate the risks to residential development, provide for some redevelopment potential while moving the line of new development inland, avoid and minimize new bluff protection and seawalls, and perhaps remove protective devices in the future to minimize impacts to natural landforms and to protect the beach for long-term public use.

Local governments and other shoreline managers should also take into account that although a public agency may not deny a Coastal Development Permit for a shoreline protective device that meets all of the tests under Section 30235 and equivalent LCP policies, this does not limit the authority of public agencies to refuse to allow construction of shoreline protective devices pursuant to some authority other than the Coastal Act. For example, if a private property owner requests permission from a public agency to build a structure on that agency's property (such as a local or State park or public beach) to protect adjacent private property, the public agency would generally have the authority as the landowner not to agree to the encroachment. Similarly, agencies that are trustees of public trust lands (such as the State Lands Commission and Port Districts) have the authority to prohibit structures that are not consistent with public trust uses and prioritized public trust needs, values, and principles. Public trust uses include maritime commerce, navigation, fishing, boating, water-oriented recreation, and environmental preservation and restoration, but do not typically include non-water dependent uses such as residential or general commercial and office uses. Thus, trustee agencies have the authority to refuse to allow, or to require removal of, shoreline armoring located on public trust lands, including if that armoring unreasonably interferes with public trust uses.

[49] Community-wide standard 15C.

Approval of a Coastal Development Permit for shoreline armoring under Section 30235 may be unavoidable in certain circumstances. Nonetheless, the construction of shoreline armoring will often cause impacts inconsistent with other Coastal Act requirements, including Section 30235's requirement that a shoreline protective device be the least-environmentally damaging, feasible alternative for addressing shoreline hazards. For example, as discussed above, Section 30253(b) prohibits *new development* from in any way requiring the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. Shoreline protective devices can also adversely affect a wide range of other coastal resources and uses that the Coastal Act protects. They often impede or degrade public access and recreation along the shoreline by occupying beach area or tidelands, by reducing shoreline sand supply, and by fixing the back of the beach, ultimately leading to the loss of the beach. Shoreline protection structures thus raise serious concerns regarding consistency with the public access and recreation policies of the Coastal Act. Such structures can fill coastal waters or tidelands and harm marine resources and biological productivity in conflict with Sections 30230, 30231, and 30233. They often degrade the scenic qualities of coastal areas and alter natural landforms in conflict with Section 30251. Finally, by halting shoreline erosion, they can prevent the inland migration of intertidal habitat, salt marshes, beaches, and other low-lying habitats that rising sea levels will inundate.

Even when an agency approves a Coastal Development Permit for shoreline armoring, the agency has the authority to impose conditions to mitigate impacts on shoreline sand supply and to minimize adverse impacts on other coastal resources. (See *Ocean Harbor House Homeowners Assn. v. California Coastal Comm.* (2008) 163 Cal.App.4th 215, 242; Public Resources Code, §30607.)[50] Any approved shoreline structure, therefore, must avoid or mitigate impacts that are inconsistent with Coastal Act policies.

Because of the wide range of adverse effects that shoreline protective devices typically have on coastal resources, this Guidance recommends avoidance of hard shoreline armoring whenever possible. This can entail denying development in hazardous locations, allowing only development that is easily removable as the shoreline erodes, or requiring new development to be set back far enough from wave runup zones or eroding bluff edges so that the development will not need shoreline armoring during its anticipated lifetime. The Commission's practice when reviewing proposed development in shoreline locations that are potentially vulnerable to shoreline erosion, wave runup, or inundation has been to require applicants to waive rights to shoreline protective devices in the future, and, more recently, to require relocation and/or removal should such development become endangered in the future. See Chapter 7: Adaptation Strategies for further details regarding alternatives to the use of hard armoring structures.

PUBLIC TRUST BOUNDARY

The State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. The State holds and manages these lands for the benefit of all people of the State for statewide purposes consistent with the common law Public Trust Doctrine ("public trust"). The public trust ensures that title to sovereign land is held by the State in trust for the people of the State. Public trust

[50] Indeed, as noted above, 30235 itself clarifies that even when approvable, such structures should be designed to eliminate or mitigate any adverse impacts on local shoreline sand supply.

uses include maritime commerce, navigation, fishing, boating, water-oriented recreation, visitor-serving facilities and environmental preservation and restoration. Non-water dependent uses such as residential and general office or commercial uses are generally inconsistent with public trust protections and do not qualify as public trust uses.

In coastal areas, the landward location and extent of the State's sovereign fee ownership of these public trust lands are generally defined by reference to the ordinary high water mark (Civil Code §670), as measured by the mean high tide line (*Borax Consolidated v. City of Los Angeles* (1935) 210 U.S. 10); these boundaries remain ambulatory, except where there has been fill or artificial accretion. More specifically, in areas unaffected by fill or artificial accretion, the ordinary high water mark and the mean high tide line will generally be the same. In areas where there has been fill or artificial accretion, the ordinary high water mark (and the state's public trust ownership) is generally defined as the location of the mean high tide line just prior to the fill or artificial influence. It is important to note that such boundaries may not be readily apparent from present day site inspections (*Carpenter v. City of Santa Monica* (1944) 63 C. A. 2nd 772, 787).

The mean high tide line is the intersection of the shoreline with the elevation of the average of all high tides calculated over an 18.6-year tidal epoch. This property line is referred to as "ambulatory" for two reasons: first, gradual changes to the shoreline due to factors such as variations in the height and width of sandy beaches, shoreline erosion or accretion, and uplift or subsidence of land can change the location of where the mean high tide line meets the shoreline. Second, the elevation of the mean high tide line itself changes over time and is likely to increase at an accelerating rate in the future due to sea level rise. Over time, sea level rise will continue to gradually cause the public trust boundary to move inland. Boundaries between publicly-owned waterways and adjoining private properties (referred to as *littoral* along lakes and seas and *riparian* along rivers and streams) have always been subject to the forces of nature and property boundary law reflects these realities.

Accelerating sea level rise will likely lead to more disputes regarding the location of property boundaries along the shoreline, since lands that were previously landward of the mean high tide line have become subject to the State's ownership and protections of the public trust. These disputes, in turn, will affect determinations regarding what kinds of structures and uses may be allowed or maintained in areas that, because of sea level rise, either are already seaward of the mean high tide line, are likely to become seaward of the mean high tide line in the future, or would be seaward of the mean high tide line if it were not for artificial alterations to the shoreline.

California case law does not explicitly address how shoreline structures such as seawalls that artificially fix the shoreline temporarily and prevent inland movement of the mean high tide line affect property boundaries, if at all. The Ninth Circuit Court of Appeals, however, has interpreted federal common law as allowing the owner of tidelands to bring a trespass action against a neighboring upland property owner who built a revetment that prevented the natural inland movement of the mean high tide line. The court ruled that the actual property boundary was where the mean high tide line would have been if the revetment were not there and that the owner of the tidelands could require the upland owners to remove the portions of the revetment

that were no longer located on the upland owners' properties. (*United States v. Milner* (9th Cir. 2009) 583 F.3d 1174, 1189-1190.)

POTENTIAL PRIVATE PROPERTY TAKINGS ISSUES

The United States and California constitutions prohibit public agencies from taking private property for public use without just compensation. Section 30010 of the Coastal Act similarly prohibits public agencies implementing the Coastal Act from granting or denying a permit in a manner that takes or damages private property for public use without payment of just compensation. The classic "takings" scenario arises when a public agency acquires title to private property in order to build a public facility or otherwise devote the property to public use. In 1922, however, the United States Supreme Court ruled that regulation of private property can constitute a taking even if the regulation does not involve acquisition of title to the property. As Justice Oliver Wendell Holmes stated, "while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking," (*Pennsylvania Coal Co. v. Mahon* (1922) 260 U.S. 393, 415.)

Courts have struggled in the 90 years since then to give agencies and property owners a more definite sense of exactly when a regulation "goes too far." The Supreme Court has identified three basic categories of takings that can occur in the context of land use regulation. Different legal standards apply depending on what kind of taking is at issue. (See, generally, *Lingle v. Chevron USA, Inc.* (2005) 544 U.S. 528).

The most straightforward test applies to what is variously called a categorical, total, *per se,* or *"Lucas"* takings, which occurs when a regulation deprives an owner of all economically beneficial use of the property. (See *Lucas v. South Carolina Coastal Council* (1992) 505 U.S. 1003). An agency that completely deprives a property owner of all economically beneficial use of the property will likely be found liable for a taking unless background principles of nuisance or property law independently restrict the owner's intended use of the property. Courts have generally been very strict about when they apply this test. If any economically beneficial use remains after application of the regulation, even if the value of that use is a very small percentage of the value of the property absent the regulatory restriction, a *Lucas* taking has not occurred.

Where a regulation significantly reduces the value of private property but does not completely deprive the owner of all economically beneficial use, the multi-factor "*Penn-Central"* test applies (*Penn Central Transportation Co. v. City of New York* (1978) 438 U.S. 104). This test has no set formula, but the primary factors include the economic impact of the regulation, the extent to which the regulation interferes with distinct, reasonable investment-backed expectations, and the character of the governmental action. When evaluating the character of the governmental action, courts consider whether the regulation amounts to a physical invasion or instead more generally affects property interests through a program that adjusts the burdens and benefits of economic life for the common good. Whether a regulation was in effect at the time an owner acquired title is also a relevant factor, but is not by itself dispositive. (See *Palazzolo v. Rhode Island* (2001) 533 U.S. 606, 632-633 (O'Connor, J., concurring)). Because this test takes such a wide range of factors into account, caselaw does not provide clear guidance about the situations in which a regulation is likely to qualify as a "*Penn-Central"* taking. A *Penn-Central*

claim is unlikely to succeed, however, unless the plaintiff can establish that the regulation very substantially reduces the value of the property.

The third category of takings claims applies to "exactions," that is, government permitting decisions that require a property owner either to convey a property interest or to pay a mitigation fee as a condition of approval. (See *Nollan v. California Coastal Comm.* (1987) 483 U.S. 825; *Dolan v. City of Tigard* (1994) 512 U.S. 374; *Koontz v. St. Johns River Water Management Dist.* (2013) 133 S.Ct. 2586). Under the *Nollan/Dolan* line of cases, the agency must establish a "nexus" between the condition requiring a property interest or payment and the effects of the project that that property interest or payment is mitigating. That property interest or payment must also be roughly proportional to the impact that it is intended to mitigate. In California, the *Ocean Harbor House* case is a good example of a shoreline structure impact mitigation requirement that was found by the courts to meet the relevant standards of nexus and proportionality.

Various recommendations of this Guidance may potentially give rise to takings concerns. Because the determination of whether a particular regulation may in some circumstances be applied in a way that constitutes a taking is so fact-intensive and context-specific, this Guidance cannot provide a simple set of parameters for when agencies should either allow exceptions to a land use regulation or consider purchasing a property interest. That said, land use restrictions that prevent all economically beneficial use of the entirety of a property[51] are vulnerable to *Lucas* takings claims unless those uses would qualify as a nuisance or are prohibited by property law principles such as the public trust doctrine. Agencies can minimize the risk of these claims by allowing economically beneficial uses on some of the property and by exploring whether legal doctrines regarding nuisance, changing shoreline property lines, or the public trust independently allow for significant limitations on the use of the property. Establishing a transferrable development rights program for properties that are subject to significant development restrictions may also minimize potential exposure to takings claims.

Where a proposed development would be safe from hazards related to sea level rise in the near future, but cannot be sited so as to avoid those risks for the expected life of the structure, agencies may consider allowing the structure, but requiring removal once it is threatened. Property owners may argue that they have a right to protect threatened structures even if they have waived rights to shoreline protection under the Coastal Act, but a recent federal court of appeal ruling casts significant doubt on the existence of any common law right to attempt to fix an ambulatory shoreline boundary through artificial structures such as seawalls (see *United States v. Milner* (9th Cir. 2009) 583 F.3d 1174, 1189-1190).

If an agency is contemplating requiring property owners to dedicate open space easements or other property interests or requiring the payment of fees to mitigate project impacts, the agency should be careful to adopt findings explaining how requiring the property interest or payment is

[51] What qualifies as the entirety of a property can also be the subject of dispute. The property will normally include all legal lots on which the proposed development would be located, but can also include other lots that are in common ownership and adjacent to, or in close proximity with, the lots that would be developed. (See *Norman v. United States* (Fed. Cir. 2005) 429 F.3d 1081, 1091; *District Intown Properties Limited Partnership v. District of Columbia* (D.C. Cir. 1999) 198 F.3d 874, 880.).

both logically related to mitigating an adverse impact of the project and roughly proportional to that impact. Legislatively adopting rules that establish the exact criteria for determining when to require these exactions and, if so, their magnitude, may also reduce an agency's exposure to takings claims.[52] With respect to mitigation fees, California cities and counties should also comply with applicable requirements of the Mitigation Fee Act (Government Code, §66000 *et seq.*).

[52] The California Supreme Court has ruled that courts should be more deferential towards agencies when reviewing fees imposed pursuant to legislatively enacted rules of general applicability than when reviewing fees imposed on an ad hoc basis. (*Ehrlich v. City of Culver City* (1996) 12 Cal.4th 854, 881.) The rationale is that fees imposed pursuant to rules of general applicability that involve little discretion are less likely to impose disproportionate burdens on property owners than fees determined on an ad hoc basis.

Chapter 9

Next Steps

CURRENT AND FUTURE COASTAL COMMISSION EFFORTS:

The Commission has a Strategic Plan for 2013-2018 (2013a) that identifies many action items that the Commission or partner organizations plan to take to address the challenges of sea level rise and climate change. The first priority in the Strategic Plan is for the Commission to adopt Sea Level Rise Policy Guidance for use in Local Coastal Program (LCP) planning and project design (Action 3.1.1), and this Guidance reflects significant progress toward accomplishing this task. The objectives and action items from the Strategic Plan related to sea level rise and climate change are presented within the following pages.

The Commission is also involved in a number of other efforts that meet the climate change planning goals laid out in its Strategic Plan. These include efforts related to the Commission's normal operating business, such as ongoing coordination with local government partners and other agencies, as well as specially funded projects designed to meet specific needs. Several of these efforts that are currently underway or that staff identified as next steps during the completion of this Guidance document are listed below. The Commission anticipates that these items will be completed over the next two to five years, in coordination with other relevant partners and research institutions, as staff capacity and funding allows.

1. **Continue an active program of public outreach on sea level rise.** The Commission will strive to provide public information about sea level rise issues through public workshops, the Commission's website, meetings, outreach, and our public education program. The Commission will work to enhance efforts to coordinate with low-income and underserved populations and communities.

2. **Develop methods for quantifying impacts to coastal resources from shoreline armoring projects.** The Coastal Commission staff has initiated a Project of Special Merit (funded by NOAA) to build upon the Commission's existing efforts to mitigate for the adverse impacts of shoreline development projects to public access and recreation by working with beach ecologists and a valuation economist to develop a method to quantify impacts to biological resources and beach ecology. The final product is anticipated to be a set of guidelines to use in assessing the impacts of proposed shoreline armoring projects and a method(s) for calculating the full value of recreational and ecological loss resulting from installation of shoreline armoring projects (where they may be approved as consistent with the Coastal Act).

3. **Adopt policy guidance and model ordinance language for resilient shoreline residential development in hazardous areas affected by sea level rise.** Under another NOAA-funded Project of Special Merit, the Coastal Commission will conduct a statewide survey to characterize physical shoreline conditions for residential areas along the coast. Informed by this assessment, staff will identify and analyze policy and legal issues for development and redevelopment in hazardous areas, factoring in sea level rise projections that will change shoreline conditions over time. Working collaboratively with local governments, staff will use the policy and legal analysis to develop policy guidance and model ordinance language. The project will build upon this Guidance and is consistent with the Coastal Commission's Strategic Plan goals.

4. **Enhance coordination and planning efforts related to developing adaptation strategies for critical infrastructure.** Addressing sea level rise impacts to critical infrastructure is particularly complex and will require greater amounts of planning time, stakeholder input, and funding. The Commission will support planning efforts in a number of ways including, for example:
    a. Providing guidance or participating in working groups that examine managed retreat of critical infrastructure, including when to consider managed retreat rather than continue with repairs and maintenance in light of sea level rise.
    b. Coordinating closely with Caltrans to address transportation issues. Planning efforts may include integrating LCP planning and regional transportation planning processes; coordinating and supporting phased approaches for realignment projects; and identifying priorities for adaption response.
    c. Coordinating with port and harbor authorities and other relevant stakeholders to address vulnerabilities specific to ports, harbors, fisheries, and navigation, and to develop and enhance adaptation strategies that are particularly applicable for coastal-dependent infrastructure and other port needs.
    d. Coordinating with the State and Regional Water Quality Control Boards to consider vulnerability issues related to water supply and wastewater capacity infrastructure in California.

5. **Consider producing additional guidance documents, including**:
    a. Broader climate change guidance addressing other climate change impacts to the coastal zone.
    b. One-page fact sheets on some adaptation measures such as green infrastructure and conservation easements.
    c. Guidance on the use of 'living shorelines', dune management, beach nourishment, and so on for California, including an assessment of areas or coastal situations where these strategies could be effective, what they need to succeed, monitoring requirements, and maintenance.
    d. Guidance for how to address impacts to critical infrastructure, assets and resources that cross jurisdictional boundaries, and ports, harbors and other coastal-dependent resources.

6. **Implement the Coastal Commission's responsibilities under other state efforts and legislation.**
    a. Governor Brown's April 2015 Executive Order B-30-15 states that state agencies shall take climate change into account in their planning and investment decisions, and employ full life-cycle cost accounting to evaluate and compare infrastructure investments and alternatives. The order requires agencies to ensure that priority is given to actions that build climate preparedness and reduce greenhouse gas emissions, provide flexible and adaptive approaches, protect the state's most vulnerable

populations, and promote natural infrastructure solutions. The Coastal Commission will continue to integrate these principles into its planning and regulatory work.

b. AB2516, authored by Assemblymember Gordon and approved in September 2014, established a *Planning for Sea Level Rise Database* that is anticipated to be available online in early 2016. The database will provide the public with an educational tool from which to learn about the actions taken by cities, counties, regions, and various public and private entities to address sea level rise. The Coastal Commission will contribute data to this effort, including information about grant-funded LCP updates.

c. The Coastal Commission will also participate in the implementation of the 2014 *Safeguarding California* plan, along with the Ocean Protection Council's 2014 Resolution on the Implementation of the Safeguarding California Plan. Key principles are and will continue to be incorporated into Coastal Commission work, including protection of California's most vulnerable populations the integration of risk reduction with emissions reductions, and the development of metrics and indicators of progress on efforts to reduce climate risk.

Coastal Commission Strategic Plan 2013-2018 Excerpts
Actions Related to Sea Level Rise and Climate Change

GOAL 1: Maximize Public Access and Recreation

Objective 1.1 – Enhance Public Access through Updated Beach Access Assessment and Constraints Analysis

Actions:

1.1.5 Identify locations where access may be limited or eliminated in the future due to sea level rise and increased storm events and begin planning for other options such as new vertical accessways to maintain maximum beach access (see also Action 3.2.1).

Objective 1.4 – Expand the California Coastal Trail System through Enhanced Planning and Implementation

Actions:

1.4.4 Identify locations of the CCT that might be at risk from rising sea level and increased storm events and begin planning for trail relocations or other alternatives to insure continued functionality of the CCT (see also Action 3.2.1).

GOAL 3: Address Climate Change through LCP Planning, Coastal Permitting, Inter-Agency Collaboration, and Public Education

Objective 3.1 – Develop Planning and Permitting Policy Guidance for Addressing the Effects of Climate Change on Coastal Resources

Actions:

3.1.1 Adopt general sea level rise (SLR) policy guidance for use in coastal permitting and LCP planning, and amendments based on best available science, including the final report

from the National Research Council of the National Academy of Science entitled *Sea-Level Rise for the Coasts of California, Oregon, and Washington* (June 2012).

3.1.2 Based on the general SLR policy guidance, identify and develop specific regulatory guidance for addressing coastal hazards, including recommendations for analytic methods for accounting for SLR and increased storm events in project analysis, standards for redevelopment and development in hazard zones (*e.g.*, bluff top and flood zones), buffers for coastal wetlands, and policies for shoreline structure design and impact mitigation.

3.1.3 Develop a work program to produce policy guidance for coastal permitting and LCPs, to account for other climate change related impacts and adaptation planning including wetland, marine and terrestrial habitat protection, habitat migration, risk of wildfires, water supply and groundwater protection.

3.1.4 Provide public information and guidance through workshops, presentations to local government, *etc.* Assist local governments with interpretation of scientific or other technical information related to climate change and sea level rise that could be of use in adaptation planning.

3.1.5 Contribute to relevant state-wide efforts on climate change and adaptation as a member of the State's Climate Action Team – Coast and Ocean Working Group.

3.1.6 Coordinate with Natural Resources Agency, Office of Planning and Research, California Governor's Office of Emergency Services (Cal OES) and others to provide consistent guidance on climate change in updating general plans, hazard mitigation plans and other planning documents used by local governments.

3.1.7 Coordinate with the State Lands Commission to address sea level rise and shoreline change and implications for the management of public trust resources.

Objective 3.2 – Assess Coastal Resource Vulnerabilities to Guide Development of Priority Coastal Adaptation Planning Strategies

Actions:

3.2.1 Conduct a broad vulnerability assessment of urban and rural areas to identify priority areas for adaptation planning, such as community development, public infrastructure, public accessways, open space or public beaches at risk from sea level rise. Identify and participate in on-going vulnerability assessments and adaptation planning efforts as feasible.

3.2.2 Work with CalTrans and other public agency partners to assess and address roadway, rail, and other transportation infrastructure vulnerabilities, particularly along Highway One and other coastal roads and highways.

3.2.3 Work with the Department of Water Resources, State Water Resources Control Board, and local agencies to assess and address water and wastewater treatment plant vulnerabilities along the coast.

3.2.4 Work with the Conservancy, California Department of Fish and Game *[sic]*, US Fish and Wildlife, and other partners to assess the vulnerability of wetlands and other sensitive habitat areas. Identify habitats that are particularly vulnerable climate change and/or

habitats that may be important for future habitat migration (*e.g.*, wetland transitional areas).

3.2.5 Work with the Coastal Observing Systems, researchers, and others to identify and develop baseline monitoring elements to better understand and monitor changes in coastal conditions related to sea level rise and other climate change impacts.

3.2.6 With the Conservancy and OPC, develop and implement a competitive grant program to provide funding to selected local governments to conduct vulnerability assessments and/or technical studies that can be used to assess a community's risks from climate change and inform updates to LCPs.

ADDITIONAL RESEARCH NEEDS

Additional research is needed to more fully understand and prepare for sea level rise. The research needs are directed toward research institutions at academic, state, federal, and local levels. The Commission will strive to collaborate with and support research related to sea level rise science and adaptation, including with the efforts and ongoing work of the California Climate Change Research Plan.

1. **Modeling.** Sea level rise science is an evolving field, and new science is expected to change and refine our understanding of the dynamics of sea level rise and its associated impacts to both natural and built environments. As such, there is a continual need for models to be developed, updated, and refined to ensure that we continue to have the best understanding of sea level rise-related impacts as possible. In some cases, the modelling capabilities already exist, but there is a need for such modelling to be applied to local areas to understand specific localized impacts. Several topics in particular that are in need of better or more refined modeling include:
    a. Fluvial dynamics as they relate to and interact with rising sea levels
    b. Habitat evolution models (*e.g.*, SLAMM) that project future locations of wetlands and other coastal habitats
    c. The interaction of other climate change-related impacts with the impacts of sea level rise (*e.g.*, changing precipitation patterns, increased frequency and/or intensity of storms)

2. **Improved estimates of local vertical land motion.** Several independent processes – glacial isostatic rebound, groundwater withdrawals, plate movements and seismic activity – influence vertical land motion. Current guidance on sea level projections adjusts for large-scale vertical land motion north and south of Cape Mendocino. These adjustments do not properly address locations that are moving differently from the region, such as Humboldt Bay. A peer-reviewed methodology is needed to determine:
    a. Instances when it will be important to modify the regional sea level rise projections for local vertical land motion
    b. Types of existing information on land motion (*e.g.*, tide gauge records, satellite data, land-based GPS stations) that provide the best estimates of local land trends

c. A procedure for adjusting state or regional sea level rise projections for sub-regional or local conditions

d. Additional data that are needed to implement this procedure

3. **Baseline data and monitoring systems**. Baseline monitoring data are needed for coastal and nearshore waters, beaches, bluffs, dune systems, nearshore reefs, tide pools, wetlands, and other habitat areas to better understand these systems, monitor trends, and detect significant deviations from historic conditions that may be related to sea level rise and other aspects of climate change. Better storm event monitoring data are also needed to support refinements and calibration of models used to project and analyze impacts.

   A system for monitoring and tracking the cumulative impacts of projects in the coastal zone, including both new development and any adaptation strategies, is needed to better understand the impacts of development in the face of sea level rise and the efficacy of various adaptation methods. Monitoring systems may be needed at a variety of scales, including at the local, regional, and state level.

4. **Methods for estimating change in erosion rates and shoreline change due to future sea level rise.** There is a need for a peer-reviewed methodology for estimating change in erosion rates due to sea level rise for bluffs, beaches, and other shorelines exposed to erosion. An improved understanding of future erosion rates is necessary to better evaluate projects affected by such erosion, including in terms of calculating an appropriate setback distance.

5. **Analysis of sea level rise impacts to coastal access and recreation.** To improve public access planning efforts, more information is needed about how sea level rise could affect public access areas and recreation throughout the state, including changes to waves and surfing, and the potential economic costs of these impacts. Additional information about how these changes will affect lower-income populations and underserved communities is particularly important.

   Many currently accessible beach areas have the potential to become inaccessible due to impacts from sea level rise. Shoreline armoring and emerging headlands could isolate connected beaches with sea level rise, which will block lateral access. Rising sea level will also tend to constrict beaches that are prevented from migrating landward by shoreline armoring and development. Some blufftop trails will become inaccessible as segments of trail are lost to erosion. In addition, changes in beach conditions and sediment dynamics due to sea level rise could affect waves and surfing, as can the rise itself by potentially 'drowning out' surf spots combined with the lack of space available for these spots to move (*e.g.*, where new 'tripping' elements can be encountered in the right depth of water to create surfable waves). Research on the specifics of these impacts will help the Commission and others understand the details of the potential impacts to coastal access and recreation.

6. **Methods to evaluate impacts to coastal resources from shoreline protection.** Research is needed to develop and improve methods to evaluate and mitigate for the adverse impacts to recreation, public access and beach ecology from shoreline armoring projects. This information will be used to determine a set of mitigation options that may be considered for use when evaluating individual permit applications to offset anticipated losses to beach

ecology and resources caused by shoreline armoring projects. The Coastal Commission staff is currently working on developing resource valuation guidelines as part of a Project of Special Merit (see Coastal Commission Effort #2).

7. **Analysis of sea level rise impacts to wetlands and strategies for preserving wetlands throughout the state.** Additional research is needed to assess the vulnerability of wetlands and other sensitive habitat areas to climate change, and to identify adjacent areas that may be important for future habitat migration (*e.g.*, wetland transitional areas). Further work is also needed to develop management strategies that are adaptable to local wetland conditions and sea level rise impacts, such as the following:
    a. Methodologies for establishing natural resource area buffer widths in light of sea level rise
    b. Approaches for identifying and protecting migration corridors
    c. Guidance for increasing wetland sediment supply and retention
    d. Techniques for developing an adaptive wetland restoration plan
    e. Monitoring criteria

8. **Assessment of coastal habitat functions in light of sea level rise and other climate change impacts.** It is necessary to develop a better understanding of the value and benefits that intact natural habitats provide, especially as they relate to increasing coastal resiliency to sea level rise. In addition, further research is needed to identify the coastal habitats that are most likely to experience adverse impacts from sea level rise and extreme storms, and what the associated loss of ecosystem services will mean for coastal populations. Research is also needed to identify strategies to ameliorate the vulnerabilities.

9. **Potential effects of sea level rise on groundwater and coastal aquifers.** Additional research is needed to quantify the potential effect of sea level rise on freshwater aquifers located along the California coast, and the degree to which sea level rise could lead to new incidences of intrusion. Research should include: (a) an evaluation of the potential incidence and severity of saltwater intrusion at the scale of individual aquifers, under various sea level rise scenarios, (b) criteria to use when deciding if saltwater intrusion requires mitigation or response and (c) identification of strategies to address the impacts rising groundwater and saltwater intrusion have on agriculture.

10. **Analysis of non-environmental factors that influence sea level rise adaptation.** As suggested in a number of places throughout this Guidance, there are factors beyond just environmental concerns that will influence sea level rise planning. Such factors include environmental justice/social equity, economic, and legal considerations, among others. Understanding how these social concerns interact with environmental vulnerabilities will be important when assessing adaptation planning opportunities and challenges.

Glossary

The following terms were collected from the 2009 *California Climate Change Adaptation Strategy*[53], the Intergovernmental Panel on Climate Change Third Assessment Report[54], the Coastal Commission's Beach Erosion and Response (BEAR) document,[55] and the California Coastal Act, unless otherwise noted. Some of these definitions are not used in the text of the report, but are included as a resource on coastal-related adaptation issues.

Adaptation: Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which minimizes harm or takes advantage of beneficial opportunities.

Adaptation Pathway: A planning approach addressing the uncertainty and challenges of climate change decision-making. It enables consideration of multiple possible futures, and allows analysis/exploration of the robustness and flexibility of various options across those multiple futures.[56]

Adaptive capacity: The ability of a system to respond to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, and to cope with the consequences.[57]

Adaptive management: Involves monitoring the results of a management decision, and updating actions as needed and as based on new information and results from the monitoring.

Ambulatory (*as used in public trust boundaries*): Moveable, subject to change, or capable of alteration.[58]

Aquifer: An underground layer of porous rock, sand, or other earth material containing water, into which wells may be sunk.

Armor: To fortify a topographical feature to protect it from erosion (*e.g.*, constructing a wall to armor the base of a sea cliff), or to construct a feature (*e.g.*, a seawall, dike, or levee) to protect other resources (*e.g.*, development or agricultural land) from flooding, erosion, or other hazards.

Atmosphere-Ocean General Circulation Models (or Atmosphere-Ocean General Climate Models; ACGOM): Three-dimensional global models that dynamically link ocean density, circulation, and sea level using wind stress, heat transfer between air and sea, and freshwater fluxes as critical variables. (See also *General Circulation Models*)

Baseline (or Reference): Any datum against which change is measured. It might be a "current baseline," in which case it represents observable, present-day conditions. It might also be a

[53] CNRA 2009

[54] IPCC 2001

[55] Many of these definitions were extracted from: USACE 2002, Griggs and Savoy 1985 and Flick 1994.

[56] Ocean Protection Council 2018

[57] Willows and Connell 2003

[58] *West's Encyclopedia of American Law* 2008

"future baseline", which is a projected future set of conditions excluding the driving factor of interest (*e.g.*, how would a sector evolve without climate warming). It is critical to be aware of what change is measured against which baseline to ensure proper interpretation. Alternative interpretations of the reference conditions can give rise to multiple baselines.[59]

Beach: The expanse of sand, gravel, cobble or other loose material that extends landward from the low water line to the place where there is distinguishable change in physiographic form, or to the line of permanent vegetation. The seaward limit of a beach (unless specified otherwise) is the mean low water line.

Beach nourishment: Placement of sand and/or sediment (*e.g.,* beneficial re-use of dredged sediment) on a beach to provide protection from storms and erosion, to create or maintain a wide(r) beach, and/or to aid shoreline dynamics throughout the littoral cell. The project may include dunes and/or hard structures as part of the design.

Bluff (or Cliff): A scarp or steep face of rock, weathered rock, sediment and/or soil resulting from erosion, faulting, folding or excavation of the land mass. The cliff or bluff may be a simple planar or curved surface or it may be step-like in section. For purposes of (the Statewide Interpretive Guidelines), "cliff" or "bluff" is limited to those features having vertical relief of ten feet or more and "seacliff" is a cliff whose toe is or may be subject to marine erosion.

Bluff top retreat (or Cliff top retreat): The landward migration of the bluff or cliff edge, caused by marine erosion of the bluff or cliff toe and subaerial erosion of the bluff or cliff face.

Caisson: A supporting piling constructed by drilling a casing hole into a geologic formation and filling it with reinforcing bar and concrete; used for foundations. (See also *Piling*)

Climate change: Any long-term change in average climate conditions in a place or region, whether due to natural causes or as a result of human activity.

Climate variability: Variations in the mean state of the climate and other statistics (*e.g.*, standard deviations, the occurrence of extremes) on all temporal and spatial scales beyond that of individual weather events.

Coastal-dependent development or use: Any development or use which requires a site on, or adjacent to, the sea to be able to function at all.[60]

Coastal-related development: Any use that is dependent on a coastal-dependent development or use.[61]

Coastal resources: A general term used throughout the Guidance to refer to those resources addressed in Chapter 3 of the California Coastal Act, including beaches, wetlands, agricultural

[59] Moser 2008

[60] Public Resources Code § 30101

[61] Public Resources Code § 30101.3

lands, and other coastal habitats; coastal development; public access and recreation opportunities; cultural, archaeological, and paleontological resources; and scenic and visual qualities.

Development: On land, in or under water, the placement or erection of any solid material or structure; discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste; grading, removing, dredging, mining, or extraction of any materials; change in the density or intensity of use of land, including, but not limited to, subdivision pursuant to the Subdivision Map Act (commencing with Section 66410 of the Government Code), and any other division of land, including lot splits, except where the land division is brought about in connection with the purchase of such land by a public agency for public recreational use; change in the intensity of use of water, or of access thereto; construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal utility; and the removal or harvesting of major vegetation other than for agricultural purposes, kelp harvesting, and timber operations which are in accordance with a timber harvesting plan submitted pursuant to the provisions of the Z'berg-Nejedly Forest Practice of 1973 (commencing with Section 4511).[62]

Ecosystem-Based Management (EBM): An integrated approach to resource management that considers the entire ecosystem, including humans, and the elements that are integral to ecosystem functions.[63]

Ecosystem services: Benefits that nature provides to humans. For example, plants, animals, fungi and micro-organisms produce services or goods like food, wood and other raw materials, as well as provide essential regulating services such as pollination of crops, prevention of soil erosion and water purification, and a vast array of cultural services, like recreation and a sense of place.[64]

Emissions scenarios: Scenarios representing alternative rates of global greenhouse gas emissions growth, which are dependent on rates of economic growth, the success of emission reduction strategies, and rates of clean technology development and diffusion, among other factors.[65]

Environmentally Sensitive [Habitat] Area (ESHA): Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.[66]

Erosion: The wearing away of land by natural forces; on a beach, the carrying away of beach material by wave action, currents, or the wind. Development and other non-natural forces (*e.g.,*

[62] Public Resources Code § 30106

[63] NOC 2011

[64] Hassan *et al.* 2005

[65] Bedsworth and Hanak 2008

[66] Public Resources Code § 30107.5

water leaking from pipes or scour caused by wave action against a seawall) may create or worse erosion problems.

Eustatic: Refers to worldwide changes in sea level.

Feasible (*as used in "least environmentally damaging feasible alternative"*): Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.[67]

Flood (or Flooding): Refers to normally dry land becoming temporarily covered in water, either periodically (*e.g.*, tidal flooding) or episodically (*e.g.*, storm or tsunami flooding).[68]

General Circulation Models (or General Climate Models; GCM): A global, three-dimensional computer model of the climate system which can be used to simulate human-induced climate change. GCMs are highly complex and they represent the effects of such factors as reflective and absorptive properties of atmospheric water vapor, greenhouse gas concentrations, clouds, annual and daily solar heating, ocean temperatures and ice boundaries. The most recent GCMs include global representations of the atmosphere, oceans, and land surface.[69] (See also *Atmospheric-Ocean General Circulation Models*)

Green infrastructure: Refers to the use of vegetative planting, dune management, beach nourishment or other methods that mimic natural systems to capitalize on the ability of these systems to provide flood and erosion protection, stormwater management, and other ecosystem services while also contributing to the enhancement or creation of natural habitat areas.

Greenhouse gases (GHGs): Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydrochlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride.[70]

Hard protection: A broad term for most engineered features such as seawalls, revetments, cave fills, and bulkheads that block the landward retreat of the shoreline. (See also *Revetment, Seawall, Shoreline protective devices*)

Impact assessment: The practice of identifying and evaluating the detrimental and beneficial consequences of climate change on natural and human systems.

Inundation: The process of dry land becoming permanently drowned or submerged, such as from dam construction or from sea level rise.[71]

[67] California Coastal Act § 30108

[68] Flick *et al.* 2012

[69] NASA Earth Observatory Glossary

[70] UNFCCC 2004

[71] Flick *et al.* 2012

Local Coastal Program (LCP): A local government's (a) land use plans, (b) zoning ordinances, (c) zoning district maps, and (d) within sensitive coastal resources areas, other implementing actions, which, when taken together, meet the requirements of, and implement the provisions and policies of, this division at the local level.[72]

Mean sea level: The average relative sea level over a period, such as a month or a year, long enough to average out transients such as waves and tides. Relative sea level is sea level measured by a tide gauge with respect to the land upon which it is situated. (See also *Sea level change/sea level rise*)

Mitigation (*as used in climate science*): A set of policies and programs designed to reduce emissions of greenhouse gases.[73]

Mitigation (*as used in resource management*): Projects or programs intended to offset impacts to resources.

Monitoring: Systematic collection of physical, biological, chemical, or economic data, or a combination of these data on a project in order to make decisions regarding project operation or to evaluate project performance.

Passive erosion: The process whereby erosion causes the shoreline to retreat and migrate landward of any hardened structures that have fixed the location of the back beach therefore resulting in the gradual loss of beach in front of the hardened structure.

Permit: Any license, certificate, approval, or other entitlement for use granted or denied by any public agency which is subject to the provisions of this division.[74]

Piling (or Pile): A long, heavy timber or section of concrete or metal driven or drilled into the earth or seabed to serve as a support or protection. (See also *Caisson*)

Potential impacts: All impacts that may occur given a projected change in climate, including impacts that may result from adaptation measures.

Public Trust Lands: All lands subject to the Common Law Public Trust for commerce, navigation, fisheries, recreation, and other public purposes. Public Trust Lands include tidelands, submerged lands, the beds of navigable lakes and rivers, and historic tidelands and submerged lands that are presently filled or reclaimed and which were subject to the Public Trust at any time.[75] (See also *Tidelands, Submerged lands*)

[72] Public Resources Code § 30108.6

[73] Luers and Moser 2006

[74] Public Resources Code § 30110

[75] Public Resources Code § 13577

Radiative forcing: Radiative forcing is a measure of the influence a factor has in altering the balance of incoming and outgoing energy in the Earth-atmosphere system and is an index of the importance of the factor as a potential climate change mechanism. In [the IPCC] report radiative forcing values are for changes relative to pre-industrial conditions defined at 1750 and are expressed in Watts per square meter (W/m^2).[76]

Redevelopment: At a minimum, replacement of 50% or more of an existing structure. LCPs may also consider including limits on the extent of replacement of major structural components such as the foundation or exterior walls, or improvements costing more than 50% of the assessed or appraised value of the existing structure**.**

Revetment: A sloped retaining wall; a facing of stone, concrete, blocks, rip-rap, *etc.* built to protect an embankment, bluff, or development against erosion by wave action and currents. (See also *Hard protection, Seawall, Shoreline protective devices*)

Risk: Commonly considered to be the combination of the likelihood of an event and its consequences – *i.e.*, risk equals the probability of climate hazard occurring multiplied the consequences a given system may experience.[77]

Scenario-based analysis: A tool for developing a science-based decision-making framework to address environmental uncertainty. In general, a range of plausible impacts based on multiple time scales, emissions scenarios, or other factors is developed to inform further decision-making regarding the range of impacts and vulnerabilities.[78]

Sea level: The height of the ocean relative to land; tides, wind, atmospheric pressure changes, heating, cooling, and other factors cause sea level changes.

Sea level change/sea level rise: Sea level can change, both globally and locally, due to (a) changes in the shape of the ocean basins, (b) changes in the total mass of water and (c) changes in water density. Factors leading to sea level rise under global warming include both increases in the total mass of water from the melting of land-based snow and ice, and changes in water density from an increase in ocean water temperatures and salinity changes. Relative sea level rise occurs where there is a local increase in the level of the ocean relative to the land, which might be due to ocean rise and/or land level subsidence.[79] (See also *Mean sea level*, *Thermal expansion*)

Sea level rise impact: An effect of sea level rise on the structure or function of a system.[80]

[76] IPCC 2007

[77] Burton *et al.* 2004

[78] NOAA 2010

[79] IPCC 2007

[80] PCGCC 2007

Seawall: A structure separating land and water areas, primarily designed to prevent erosion and other damage due to wave action. It is usually a vertical wood or concrete wall as opposed to a sloped revetment. (See also *Hard protection, Revetment, Shoreline protective devices*)

Sediment: Grains of soil, sand, or rock that have been transported from one location and deposited at another.

Sediment management: The system-based approach to the management of coastal, nearshore and estuarine sediments through activities that affect the transport, removal and deposition of sediment to achieve balanced and sustainable solutions to sediment related needs.

Sensitivity: The degree to which a system is affected, either adversely or beneficially, by climate-related stimuli. The effect may be direct (*e.g.*, a change in crop yield in response to a change in the mean, range, or variability of temperature) or indirect (*e.g.*, climatic or non-climatic stressors may cause people to be more sensitive to additional extreme conditions from climate change than they would be in the absence of these stressors).

Shore protection: Structures or sand placed at or on the shore to reduce or eliminate upland damage from wave action or flooding during storms.

Shoreline protective devices: A broad term for constructed features such as seawalls, revetments, riprap, earthen berms, cave fills, and bulkheads that block the landward retreat of the shoreline and are used to protect structures or other features from erosion and other hazards. (See also *Hard protection, Revetment, Seawall*)

Still water level: The elevation that the surface of the water would assume if all wave action were absent.

Storm surge: A rise above normal water level on the open coast due to the action of wind stress on the water surface. Storm surge resulting from a hurricane also includes the rise in water level due to atmospheric pressure reduction as well as that due to wind stress.

Submerged lands: Lands which lie below the line of mean low tide.[81] (See also *Public Trust Lands*, *Tidelands*)

Subsidence: Sinking or down-warping of a part of the earth's surface; can result from seismic activity, changes in loadings on the earth's surface, fluid extraction, or soil settlement.

Tectonic: Of or relating to the structure of the earth's crust and the large-scale processes that take place within it.

Thermal expansion: An increase in water volume in response to an increase in temperature, through heat transfer.

[81] Public Resources Code § 13577

Tidal prism: The total amount of water that flows into a harbor or estuary and out again with movement of the tide, excluding any freshwater flow.

Tidal range: The vertical difference between consecutive high and low waters. The Great Diurnal Range is the difference between mean higher high water and mean lower low water; the Mean Range of tide is the difference in height between mean high water and mean low water.[82]
Tidelands: Lands which are located between the lines of mean high tide and mean low tide.[83] (See also *Public Trust Lands*, *Submerged lands*)

Transfer of Development Rights (TDR): A device by which the development potential of a site is severed from its title and made available for transfer to another location. The owner of a site within a transfer area may retain property ownership, but not approval to develop. The owner of a site within a receiving area may purchase transferable development rights, allowing a receptor site to be developed at a greater density.[84]

Tsunami: A long period wave, or seismic sea wave, caused by an underwater disturbance such as an earthquake, submarine landslide, or subaerial landslide (slope failure from land into a water body). Tsunamis can cause significant flooding in low-lying coastal areas and strong currents in harbors. (Commonly misnamed a *Tidal wave*)

Vulnerability: The extent to which a species, habitat, ecosystem, or human system is susceptible to harm from climate change impacts. More specifically, the degree to which a system is exposed to, susceptible to, and unable to cope with, the adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate variation to which a system is exposed, as well as of non-climatic characteristics of the system, including its sensitivity, and its coping and adaptive capacity.

Vulnerability assessment: A practice that identifies who and what is exposed and sensitive to change and how able a given system is to cope with extremes and change. It considers the factors that expose and make people or the environment susceptible to harm and access to natural and financial resources available to cope and adapt, including the ability to self-protect, external coping mechanisms, support networks, and so on.[85]

Wave: A ridge, deformation, or undulation of the surface of a liquid. On the ocean, most waves are generated by wind and are often referred to as wind waves.

Wave height: The vertical distance from a wave trough to crest.

Wave length (or Wavelength): The horizontal distance between successive wave crests or between successive troughs of waves.

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[82] NOAA 2013

[83] Public Resources Code § 13577

[84] Cal OPR 1987

[85] Tompkins *et al.* 2005

Wave period: The time for a wave crest to traverse a distance equal to one wavelength, which is the time for two successive wave crests to pass a fixed point.

Wave runup: The distance or extent that water from a breaking wave will extend up the shoreline, including up a beach, bluff, or structure.

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Appendices

Appendices: Table of Contents

Appendix A

Sea Level Rise Science and Projections for Future Change

DRIVERS OF SEA LEVEL RISE

The main mechanisms driving increases in *global* sea level are: 1) expansion of sea water as it gets warmer (thermal expansion) and, 2) increases in the amount of water in the ocean from melting of land-based glaciers and ice sheets as well as human-induced changes in water storage and groundwater pumping (Chao *et al.* 2008; Wada *et al.* 2010; Konikow 2011).[1] The reverse processes can cause global sea level to fall.

Sea level at the *regional and local levels* often differs from the average global sea level.[2] Regional variability in sea level results from large-scale tectonics and ocean and atmospheric circulation patterns. The primary factors influencing local sea level include tides, waves, atmospheric pressure, winds, vertical land motion and short duration changes from seismic events, storms, and tsunamis. Other determinants of local sea level include changes in the ocean floor (Smith and Sandwell 1997), confluence of fresh and saltwater, and proximity to major ice sheets (Clark *et al.* 1978; Perette *et al.* 2013).

Over the long-term, sea level trends in California have generally followed global trends (Cayan *et al.* 2009; Cayan *et al.* 2012). However, global projections do not account for California's regional water levels or land level changes. California's water levels are influenced by large-scale oceanographic phenomena such as the El Niño Southern Oscillation (ENSO) and the Pacific Decadal Oscillation (PDO), which can increase or decrease coastal water levels for extended periods of time. Figure A-1 shows how El Niño and La Niña events have corresponded to mean sea level in California in the past. California's land levels are also affected by plate tectonics and earthquakes. Changes to water as well as land levels are important factors in regionally down-scaled projections of future sea level. It follows that the sea level rise projections specific to California are more relevant to efforts in the coastal zone of California than projections of global mean sea level.

[1] Large movements of the tectonic plates have been a third major mechanism for changes in global sea level. The time periods for plate movements to significantly influence global sea level are beyond the time horizons used for even the most far-reaching land-use decisions. Plate dynamics will not be included in these discussions of changes to future sea level.

[2] For further discussion of regional sea level variations and regional sea level rise projections, see Yin *et al.* 2010, Slangen *et al.* 2012, and Levermann *et al.* 2013, as examples.

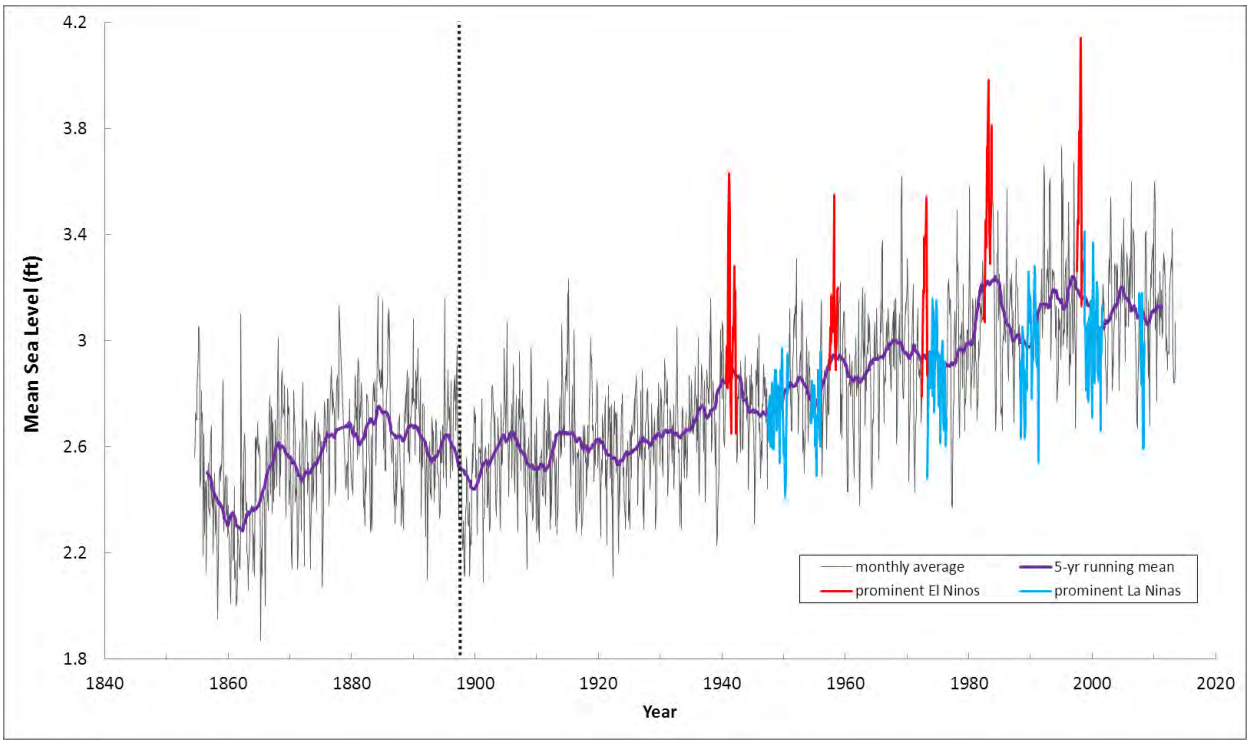

Figure A-1. Variations in monthly mean sea level at Fort Point, San Francisco, 1854 to 2013. Mean sea level heights (in ft) are relative to mean lower low water (MLLW). Purple line represents the 5-year running average. Note that the monthly mean sea level has varied greatly throughout the years and that several of the peaks occurred during strong El Niño events (red highlight). Periods of low sea level often occurred during strong La Niña events (blue highlight). The current "flat" sea level condition can also be seen in the 5-year running average. (*Sources: NOAA CO-OPS data, Station 9414290, http://tidesandcurrents.noaa.gov/ (sea level); NOAA Climate Prediction Center, http://www.elnino.noaa.gov/ (ENSO data)*)

Approaches for Projecting Future Global Sea Level Rise

This section provides an overview of some of the more well-known approaches that have been used to project sea level changes and their relevance to California. Appendix B will cover how these projections can be used to determine water conditions at the local scale.

There is no single, well-accepted technique for projecting future sea level rise. Understanding future sea level rise involves projecting future changes in glaciers, ice sheets, and ice caps, as well as future groundwater and reservoir storage. Two subjects in particular present challenges in sea level rise modeling. First, future changes to glaciers, ice sheets, and ice caps are not well understood and, due to the potential for non-linear responses from climate change, they present many difficulties for climate models (Overpeck 2006; Pfeffer *et al.* 2008; van den Broecke *et al.* 2011; Alley and Joughin 2012; Shepherd *et al.* 2012; Little *et al.* 2013). Second, the actual magnitudes of the two human-induced changes – pumping of groundwater and storage of water in reservoirs – are poorly quantified, but the effects of these activities are understood and can be modeled (Wada *et al.* 2010). Despite these challenges, sea level rise projections are needed for many coastal management efforts and scientists have employed a variety of techniques to model sea level rise, including:

1. Extrapolation of historical trends;
2. Modeling the physical conditions that cause changes in sea level;
3. Empirical or semi-empirical methods; and
4. Expert elicitations

There are strengths and weaknesses to each approach, and users of any sea level rise projections should recognize that there is no perfect approach for anticipating future conditions. This section provides users of the Guidance document with a general understanding of several of the most widely used sea level rise projection methodologies and their respective advantages and disadvantages. Figure A-2 provides a visual summary of several of the more commonly cited projections of future global and regional sea level rise.

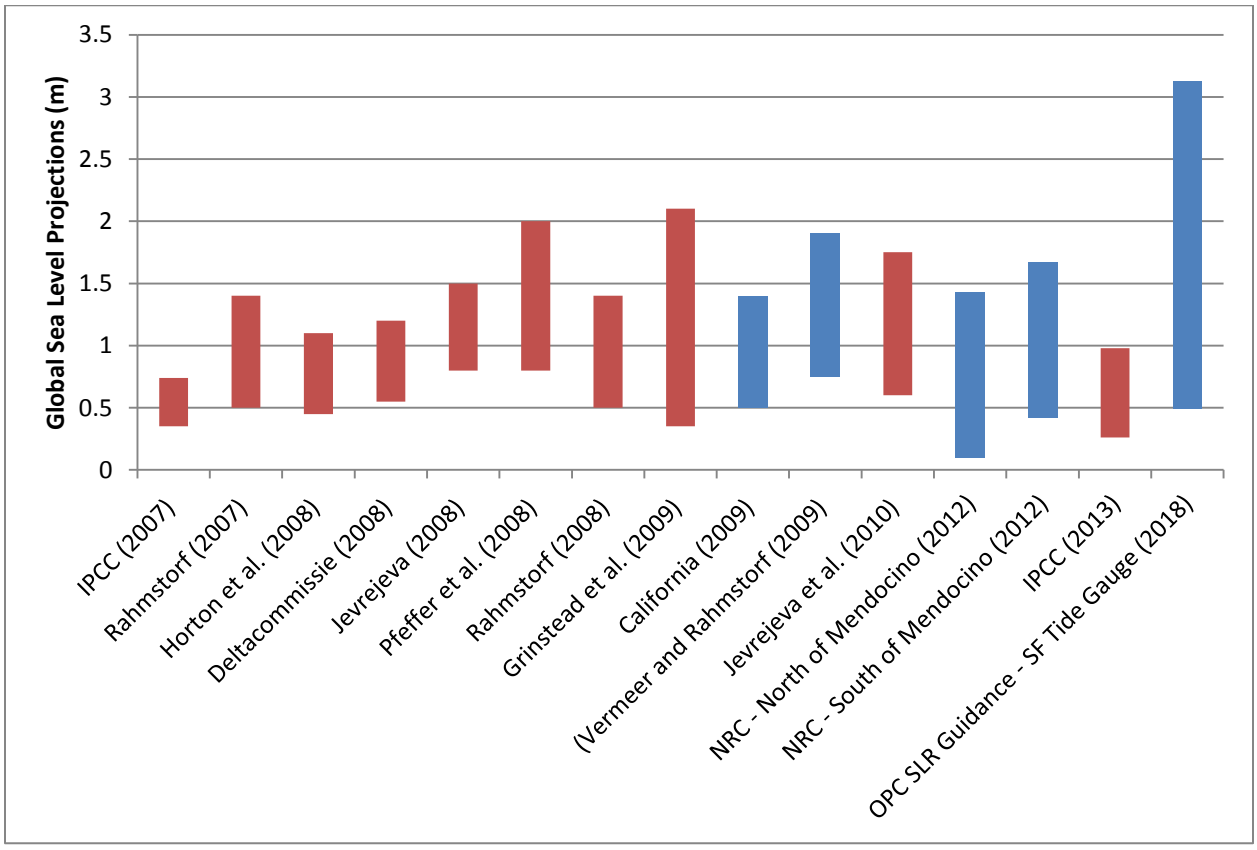

Figure A-2. Sea level rise projections for year 2100 from scientific literature. Graphic summary of the range of average sea level rise (SLR) projections by end of century (2090–2100) from the peer-reviewed literature as compared to the recent National Research Council report for California, Oregon and Washington. The light blue shaded boxes indicate projections for California. Ranges are based on the IPCC scenarios, with the low range represented by the B1 scenario (moderate growth and reliance in the future on technological innovation and low use of fossil fuels) and the high part of the range represented by the A1FI scenario (high growth and reliance in the future on fossil fuels). Details on the methods used and assumptions are provided in the original references.

Extrapolation of Historical Trends

Extrapolation of historical trends in sea level has been used for many years to project future changes in sea level. The approach assumes that there will be no abrupt changes in the processes that drive the long-term trend, and that the driving forces will not change. However, drivers of climate change and sea level rise, such as radiative forcing, are known to be changing, and this method is no longer considered appropriate or viable in climate science.

A recent modification to the historical trend method discussed above has been to estimate rates of sea level rise during the peak of the last interglacial (LIG) period (~125,000 years before present, when some drivers of sea level rise were similar to those today)[3] and use these as proxy records to project sea level rise rates to the 21st Century. For example, Katsman *et al.* (2011) and Vellinga *et al.* (2008) used the reconstructed LIG record of sea level change (from Rohling *et al.* 2008) to reconstruct sea level rise rates during rapid climate warming, and applied these rates to estimate sea level at years 2100 and 2200. Similarly, Kopp *et al.* (2009) used sea level rise rates inferred from the LIG to estimate a range of sea level rise for Year 2100 between 1-3 ft (0.3-1 m). Compared to traditional historical trend extrapolation, this modified approach has the advantage of including the dynamic responses of ice sheets and glaciers to past global climates that were significantly warmer than the present, but is limited by the large uncertainties associated with proxy reconstructions of past sea level.

Physical Models

Physical climate models use mathematical equations that integrate the basic laws of physics, thermodynamics, and fluid dynamics with chemical reactions to represent physical processes such as atmospheric circulation, transfers of heat (thermodynamics), development of precipitation patterns, ocean warming, and other aspects of climate. Some models represent only a few processes, such as the dynamics of ice sheets or cloud cover. Other models represent larger scale atmospheric or oceanic circulation, and some of the more complex General Climate Models (GCMs) include atmospheric and oceanic interactions.

Physical models of sea level changes account for the thermal expansion of the ocean and the transfer of water currently stored on land, particularly from glaciers and ice sheets (Church *et al.* 2011). Currently, coupled Atmosphere-Ocean General Circulation Models (AOGCMs) and ice sheet models are replacing energy-balance climate models as the primary techniques supporting sea level projections (IPCC 2013). Ocean density, circulation and sea level are dynamically connected in AOGCMs as critical components of the models include surface wind stress, heat transfer between air and sea, and freshwater fluxes. AOGCM climate simulations have recently been used as input for glacier models (Marzeion *et al.* 2012) which project land-water contributions to sea level.

The Intergovernmental Panel on Climate Change (IPCC) is one of the main sources of peer-reviewed, consensus-based modeling information on climate change. The IPCC does not undertake climate modeling, but uses the outputs from a group of climate models that project

[3] During the last interglacial, global mean temperature was 1-2ºC warmer than the pre-industrial era (Levermann *et al.* 2013), while global mean sea level was likely 16.4-29.5 ft (5-9 m) above present mean sea level (Kopp *et al.* 2009; Dutton and Lambeck 2012; Levermann *et al.* 2013).

future temperature, precipitation patterns, and sea level rise, based on specific emission scenarios. Early in the 1990s, the IPCC developed basic model input conditions to ensure comparable outputs from the various models. The IPCC initially developed scenarios of future emissions, based on energy development, population and economic growth, and technological innovation. Four families of scenarios (A1, A2, B1, and B2) and subgroups (A1B, A1FI, A1T) were developed and used for climate and sea level rise projections for early IPCC reports (1990, 1995, 2001, 2007). IPCC used 4 new scenarios for the *5th Assessment Report* (AR5) in 2013, based on Representative Concentration Pathways (RCPs) that are different greenhouse gas concentration trajectories. These trajectories bear similarities to, but are not directly comparable to the earlier emission scenarios. Projections in IPCC AR5 (2013) differ from the earlier IPCC projections due to improvements in climate science, changes due to the new scenarios, and changes in the models to accommodate the new inputs, with improvements in climate science and model capabilities driving the bulk of the changes.

One finding of the earlier 2007 IPCC report called for improved modeling of ice dynamics. Focused research on ice dynamics to improve the ability of climate models to address the scale and dynamics of change to glaciers, ice sheets, and ice caps was subsequently undertaken (*e.g.*, Price *et al.* 2011; Shepherd *et al.* 2012; Winkelman *et al.* 2012; Bassis and Jacobs 2013; Little *et al.* 2013). Recent modeling results presented in the AR5 (IPCC 2013) reflect the scientific community's increased understanding in, as well as advances in modeling of the impacts of glacier melting and ocean thermal expansion on sea level change. AR5 scenarios reflect a greater range of global sea level rise (28-98 cm) based on improved modelling of land-ice contributions.

Semi-Empirical Method

The semi-empirical method for projecting sea level rise is based on developing a relationship between sea level and some factor (a proxy) – often atmospheric temperature or radiative forcing – and using this relationship to project changes to sea level. An important aspect for the proxy is that there is fairly high confidence in models of its future changes; a key assumption that is made by this method is that the historical relationship between sea level and the proxy will continue into the future. One of the first projections of this kind was based on the historical relationship between global temperature changes and sea level changes (Rahmstorf 2007). This semi-empirical approach received widespread recognition for its inclusion of sea level rise projections. These projections looked at the temperature projections for two of the previous IPCC (2007) emission scenarios that span the likely future conditions within the report's framework – B1, an optimistic, low-greenhouse gas emission future, and A1FI, a more "business-as-usual" fossil fuel intensive future.[4] The Rahmstorf 2007 sea level rise projections were used in the California 2009 *Climate Change Scenarios Assessment* (Cayan 2009).

Since the initial semi-empirical projections for future sea level rise (Rahmstorf 2007), other researchers have published different projections based on the IPCC scenarios, using different

[4] When the IPCC began examining climate change, the available models used a broad range of inputs. In an attempt to evaluate the different model outputs based on the different model characteristics rather than the inputs, the IPCC developed a number of standard greenhouse gas emission scenarios. These scenarios are described in *Response Strategies Working Group III* (IPCC 1990). In general, the B1 scenario projects the lowest temperature and sea level increases and the A1FI projects the highest increases.

data sets or best-fit relationships.[5] Notably, Vermeer and Rahmstorf (2009) prepared a more detailed methodology that includes both short-term responses and longer-term responses between sea level rise and temperature. These 2009 projections of sea level rise were used in the *Interim Guidance on Sea Level Rise* (OPC 2010) and the California 2012 *Vulnerability and Assessment Report* (Cayan 2012).

There are also several new semi-empirical sea level rise projections based on scenarios other than those developed by the IPCC. For instance, Katsman *et al.* (2011) use a "hybrid" approach that is based on one of the newer radiative forcing scenarios and empirical relationships between temperature change and sea level. Future projections were then modified to include contributions from the melting of major ice sheets based on expert judgment[6]. This yields what they call "high end" SLR projections for Years 2100 and 2200 under several emissions scenarios.

Zecca and Chiari (2012) produced semi-empirical sea level rise projections based on their own scenarios of when fossil fuel resources would be economically exhausted. Though based on a different set of assumptions about human behavior/choices, in terms of global temperature and radiative forcing, the scenarios do not differ greatly from the IPCC scenarios. The results are identified as being "lower bound" sea level rise projections for high, medium, low fuel use scenarios, and "mitigation" (extreme and immediate action to replace fossil fuel use) scenarios. The report then provides projections for the 2000-2200 time period.

Expert Elicitation

Expert elicitation is one of the newer methods that have been used for projecting or narrowing ranges of future sea level rise. Using expert judgment has been an important aspect of scientific inquiry and the scientific method. The method of expert elicitation is a formalized use of experts in climate science and sea level change to help either narrow uncertainty for sea level projections, or to help with specifying extremes of a range. The elicitation method normally begins with experts refining model output information. One of the first attempts to use expert elicitation for sea level rise was a study by Titus and Narayanan (1996), when it was thought there was only 1% probability that sea level would exceed 3.3 ft (1 m) by Year 2100. In 2011, the Arctic Monitoring and Assessment Programme Report (AMAP 2011) surveyed the climate literature to construct a range of estimates of sea level rise by the year 2100, and then used a panel of experts to decide on a smaller, more plausible range. Not surprisingly, the projections supported by the AMAP experts fell right in the middle of the range shown in Figure A-2. Bamber and Aspinall (2013) used a statistical analysis of a large number of expert estimates to

[5] Semi-empirical projections of sea level rise using relationships between water level and radiative forcing such as those from Grinsted *et al.* (2009), Jevrejeva *et al.* (2010), Katsman *et al.* (2011), Meehl *et al.* (2012), Rahmstorf *et al.* (2012), Schaeffer *et al.* (2012), and Zecca and Chiari (2012) have shown general agreement with the projections by Vermeer and Rahmstorf (2009). The Grinsted *et al.* projections have a wider range than those of Vermeer and Rahmstorf, while the Jevrejeva *et al.* projections are slightly lower. All semi-empirical methods project that sea level in Year 2100 is likely to be much higher than linear projections of historical trends and the projections from the 2007 IPCC.

[6] Expert judgment has long been part of the scientific process. Expert elicitation, which is a formalized process for using expert judgment, has grown in importance and is discussed as a separate approach for projecting future sea level rise.

develop their projected range of future sea level, projecting sea level rise by 2100 ranging from 1–4.3 ft (0.33–1.32 m), under one of the intermediate AR5 scenarios (RCP 4.5).

Horton *et al.* (2014) surveyed experts in sea level science, based upon published papers, to develop a probabilistic assessment of long-term sea level rise (by the years 2100 and 2300), assuming two very different scenarios. Under one scenario, aggressive efforts would limit greenhouse gas concentrations that would cause global temperature to increase slightly until about 2050 when it would slowly drop (AR5's RCP 3 scenario). Under the other scenario, temperatures would continue to increase through to 2300 (AR5's RCP 8.5 scenario). Experts determined that it is likely that sea level rise could remain below 3.3 ft (1 m) for the low emission scenario (RCP 2.6), but that the likely range of future sea level rise for the high emission scenario (RCP 8.5) could be 6.6-9.8 ft (2-3 m).

Kopp *et al.* (2014) have combined detailed process modeling, community assessments and expert elicitation to assign probability distributions of local sea level rise through 2200 for identified communities around the world. Under the high concentration scenario, RCP 8.5, Kopp *et al*. estimate the "maximum physically possible rate of sea level rise" to be 8.2 ft (2.5 m) for the year 2100. This study also finds that sea level rise along the Pacific Coast of the US is close to the global average, and the likely range of sea level is 2-3.3 ft (0.6-1.0 m) by the year 2100 at San Francisco, under the high concentration scenario. In contrast, in areas of high subsidence such as Galveston, Texas, the likely range of sea level in by 2100 ranges from 3.3 to 5 ft (1.0-1.5 m). And, at many of the localities that were examined, including San Francisco, the current 1-in-10 year flooding event is likely to occur every other year by 2100 (five times more frequently) due to sea level rise; the frequency of the 1-in-100 year event is expected to double by the year 2100 with sea level rise.

Coastal communities cannot ignore sea level rise in long-term planning, permitting and project design. The four different approaches to projecting future sea level rise all have varying strengths and weaknesses. As noted earlier in this section, projections, like models, will not be completely accurate, but they are important tools for evaluation nonetheless[7]. The most commonly cited projections provide future sea level as a range, as a way to allow for many of the uncertainties that are part of future climate change. Often, projections of sea level rise rely upon multiple approaches. For example, the 2012 National Research Council (NRC) report was developed through expert judgment that combined information from both physical models and semi-empirical projections.

[7] George E.P. Box, mathematician and statistician is quoted as saying, "Essentially all models are wrong, but some are useful."

BEST AVAILABLE SCIENCE ON SEA LEVEL RISE

Global Projections of Sea Level Rise

The best available science on *global* sea level rise projections is currently the IPCC *Fifth Assessment Report: Climate Change 2013* (AR5) released in September 2013. The new report now projects a more rapid sea level rise than the *Fourth Assessment* (AR4) released in 2007. By Year 2100, the AR5 projects global sea level to be more than 50% higher (26-98 cm) than the old projections (18-59 cm) when comparing similar emission scenarios and time periods. The increase in AR5 sea level projections results from improved modelling of land-ice contributions. Substantial progress in the assessment of extreme weather and climate events has also been made since the AR4 as models now better reproduce phenomena like the El Niño-Southern Oscillation (ENSO; IPCC 2013).

National Projections of Sea Level Rise

The third National Climate Assessment (NCA) was released in May 2014 (Melillo *et al.*), and includes the current best-available science on climate change and sea level rise *at the national scale*.[8] The sea level rise projections in the NCA were informed by the 2012 NOAA report titled *Global Sea Level Rise Scenarios for the United States National Climate Assessment* (Parris *et al.*). This report provides a set of four scenarios of future global sea level rise, as well as a synthesis of the scientific literature on global sea level rise. The NOAA Climate Program Office produced the report in collaboration with twelve contributing authors.[9] The report includes the following description of the four scenarios of sea level rise by the year 2100:

- **Low scenario:** The lowest sea level change scenario (a rise of 8 in (20 cm)) is based on historical rates of observed sea level change.
- **Intermediate-low scenario:** The intermediate-low scenario (a rise of 1.6 ft (0.5 m) is based on projected ocean warming.
- **Intermediate- high scenario:** The intermediate-high scenario (a rise of 3.9 ft (1.2 m)) is based on projected ocean warming and recent ice sheet loss.
- **High scenario:** The highest sea level change scenario (a rise of 6.6 ft (2 m)) reflects ocean warming and the maximum plausible contribution of ice sheet loss and glacial melting.

The Parris *et al*. (2012) report recommends that the highest scenario be considered in situations where there is little tolerance for risk. It also provides steps for planners and local officials to modify these scenarios to account for local conditions. These steps are intended for areas where local sea level rise projections have not been developed. For California, the 2018 OPC SLR Guidance report (below) provides scenarios that have been refined for use at the local level, and the Coastal Commission recommends using the OPC projections rather than the global or national scenarios.

[8] Note that the 4th National Climate Assessment is due to be released in late 2018. https://www.globalchange.gov/nca4

[9] Authors include NOAA, NASA, the US Geologic Survey, the Scripps Institution of Oceanography, the US Department of Defense, the US Army Corps of Engineers, Columbia University, the University of Maryland, the University of Florida, and the South Florida Water Management District.

California-Specific Projections of Sea Level Rise and Best Available Science

The State of California has long-supported the development of scientific information on climate change and sea level rise to help guide planning and decision-making. For example, the State helped support the development of the 2012 National Research Council (NRC) report, *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*, which provided an examination of global and regional sea level rise trends and projections of future sea level. This report was then incorporated into the Ocean Protection Council's 2013 *State Sea-Level Rise Guidance*, and was considered the best available science on sea level rise for California.

More recently, and in response to the release of new scientific studies related to sea level rise, Governor Brown directed the OPC to synthesize recent science on sea level rise and incorporate findings into updates to the State Guidance. In April 2017, a working group of OPC's Science Advisory team (comprised mainly of climate researchers at various academic institutions in California and throughout the country) released a report titled *Rising Seas in California: An Update on Sea-Level Rise Science*. The report highlighted seven key findings:

1. *Scientific understanding of sea level rise is advancing at a rapid pace*. Sea level rise projections have increased substantially over the last few years, particularly for late in the 21st century and under high emissions scenarios, due to our evolving understanding of the dynamics of ice sheet loss. However, there is still significant uncertainty regarding these processes.

2. *The direction of sea level change is clear*. Coastal California is already experiencing the impacts of rising sea levels, and impacts will increase in the future.

3. *The rate of ice loss from the Greenland and Antarctic ice sheets is increasing*. Ice sheet loss will soon overtake thermal expansion of seawater as the primary driver of rising sea levels. Due to a variety of ocean circulation dynamics, ice loss from Antarctica, and particularly West Antarctica, has an outsized impact on California compared to the rest of the world (Figure A-3). Continued research on this dynamic is critical for accurately projecting future sea level rise along our coast.

4. *New scientific evidence has highlighted the potential for extreme sea level rise*. Recent research (e.g., DeConto and Pollard, 2016; Sweet et al., 2017) has found that, if greenhouse gas emissions are not curtailed, glaciological processes could cross thresholds that lead to rapidly accelerating and effectively irreversible ice loss. The probability of this extreme scenario is currently unknown, but its consideration is important. Significant reductions in greenhouse gas emissions may reduce the likelihood of this extreme scenario, but does not completely eliminate the risk. Importantly, it is difficult to determine if the world is on the track for extreme and irreversible ice loss for some time because the processes that drive extreme ice loss in the later part of the century or beyond are different than those that are driving ice loss now.

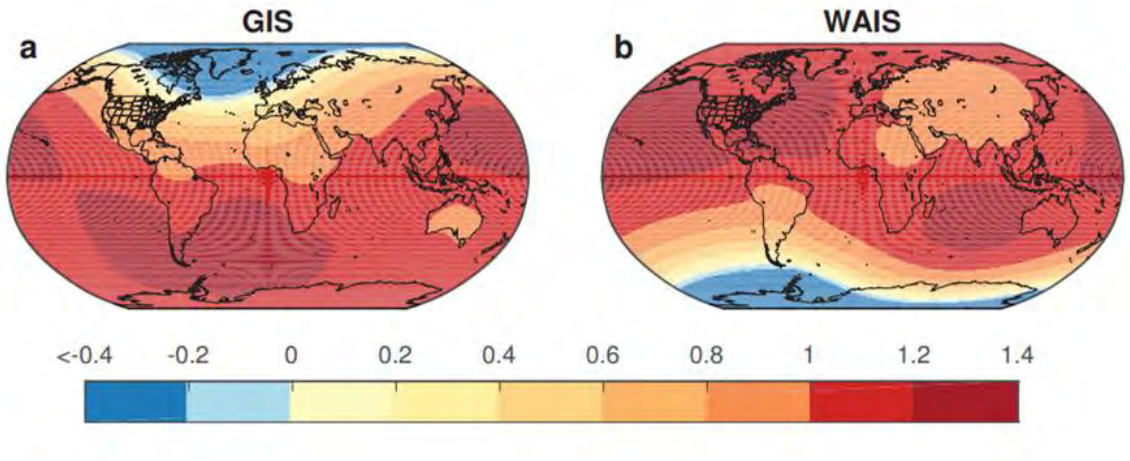

Figure A-3. Sea level 'fingerprints' resulting from the distribution of ice and water around the Earth and ensuing gravitational and rotational effects. The maps depict the relative response of sea-level to the loss of ice mass from (a) Greenland Ice Sheet (GIS) and (b) West Antarctic Ice Sheet (WAIS). The color bar represents the fractional departure of relative sea level rise from that expected given the ice contribution to global mean sea level. For example, when ice is lost from the Greenland Ice Sheet the relative effect on the US West Coast is 75% of the sea-level rise expected from the water volume added to the ocean. By comparison, when ice is lost from the West Antarctic Ice Sheet the US West Coast experiences 125% of sea-level rise from that expected from the water volume added (*from Griggs et al. 2017*).

5. *Probabilities of specific sea-level increases can inform decisions*. A probabilistic approach to sea level rise projections, combined with a clear articulation of the implications of uncertainty and the decision support needs of affected stakeholders, is the most appropriate approach for use in a policy setting.

   The OPC Scientific Working Group utilized a comprehensive probability approach based on Kopp et al. (2014) that estimates both a comprehensive probability distribution and the likelihood of extreme 'tail' outcomes. It is important to note that probabilistic projections do not provide probabilities of occurrence of sea level rise, but rather probabilities that the ensemble of climate models used to estimate contributions of sea level rise (from thermal expansion, ice sheet loss, oceanographic conditions etc.) will predict a certain amount of sea level rise.

   Note that the probabilistic projections do not consider the H++ extreme ice loss scenario. The extreme ice loss studies were not included in the inputs to the model ensemble, which means the probability distributions may be an underestimate.[10]

6. *Current greenhouse gas emissions policy decisions are shaping our coastal future*. Before 2050, differences in SLR projections under different emissions scenarios are minor. After 2050, SLR projections increasingly depend on the trajectory of greenhouse

[10] The 4th California Climate Assessment developed projections that present a broader range of SLR estimates than the Rising Seas science report and the 2018 OPC SLR Guidance. Both programs' projections are based on estimates of contributions to SLR from primary sources using different methods, including model projections and expert input. However, the 4th Assessment incorporates the findings from the recent studies regarding the potential for rapid loss of Antarctic ice sheets (which results in the H++ scenario of about 10ft. of SLR by 2100) into its probabilistic projections whereas the OPC reports do NOT include this possibility in the probabilistic projections, as explained above.

gas emissions. If greenhouse gas emissions are not curtailed worldwide, we will see significantly higher rates of sea level rise during the second half of the century.

7. *Waiting for scientific certainty is neither a safe nor prudent option*. Taking action today to assess vulnerabilities and identify and implement adaptation strategies will prevent much greater losses than will occur if action is not taken. Taking a precautionary approach that considers high and extreme scenarios is critical for safeguarding the people and resources of coastal California.

This scientific information was incorporated into OPC's *State Sea-Level Rise Guidance: 2018 Update*. The OPC Guidance includes projection tables for 12 tide gauges along the California coast for each decade from 2030 to 2150. OPC further recommends utilizing three different projection scenarios to guide planning, permitting, investment, and other decisions based on the type of project, its ability to cope with or adapt to sea level rise, and the consequences to the environment and the project associated with sea level rise. The projection table for the San Francisco tide gauge is provided below (Table A-1), and tables for other California tide gauges are presented in Appendix G. The 2018 OPC SLR Guidance (along with the foundational Rising Seas science report) is currently considered best available science on sea level rise for the State of California.

The Coastal Commission recommends that the low, medium-high, and extreme risk aversion scenarios from the OPC 2018 Sea-Level Rise Guidance be considered in all relevant local coastal planning and coastal development permitting decisions.

Table A-1. Sea Level Rise Projections for the San Francisco Tide Gauge[11] (OPC 2018)

Projected Sea Level Rise (in feet): *San Francisco*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2
2110*	3.5	7.3	11.9
2120	4.1	8.6	14.2
2130	4.6	10.0	16.6
2140	5.2	11.4	19.1
2150	5.8	13.0	21.9

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[11] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

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Appendix B

Developing Local Hazard Conditions Based on Regional or Local Sea Level Rise Using Best Available Science

This Appendix provides technical information regarding how to determine local hazard conditions for sea level rise planning efforts. This process is described more broadly as Steps 1-3 in Chapters 5 and 6 in this document, and includes determining a range of sea level rise projections and analyzing the physical effects and possible resource impacts of sea level rise hazards.

Water level varies locally, so this analysis must be performed on a regional or site specific basis, and applicants and planners should prioritize obtaining data or conducting research at the correct geographical scale. The 2018 OPC Sea-Level Rise Guidance is considered the best available science on California's regional sea level rise, and the Commission recommends using it when sea level rise projections are needed. Equivalent resources may be used by local governments and applicants provided that the resource is peer-reviewed, widely accepted within the scientific community, and locally relevant.[97]

Much of the research by the Intergovernmental Panel on Climate Change (IPCC) and others has focused on global and regional changes to mean sea level. However, the coast is formed and changed by local water and land conditions. Local tidal range influences where beaches, wetlands and estuaries will establish; waves and currents are major drivers of shoreline change; and storms and storm waves are often the major factors causing damage to coastal development. It is local conditions that influence beach accretion and erosion, storm damage, bluff retreat, and wetland function.

Local water levels along the coast are affected by local land uplift or subsidence, tides, waves, storm waves, atmospheric forcing, surge, basin-wide oscillations, and tsunamis. Some of these factors, such as tides and waves, are ever-present and result in ever-changing shifts in the local water level. Other drivers, such as storms, tsunamis, or co-seismic uplift or subsidence, are episodic but can have important influences on water level when they occur. The following section discusses these factors in the context of sea level rise and how to incorporate them into planning and project analysis.

In most situations, high water will be the main project or planning concern. For wetlands, the intertidal zone between low and high tides will be of concern, while in some special situations, such as for intake structures, low water might be the main concern. In situations where low water is the concern, current low water is likely to be the low water planning condition and there may be no need to factor future sea level rise into those project or planning situations. In most other situations, hazards analyses will need to account for sea level rise. The following box identifies some of the key situations in which it may be important for coastal managers and applicants to consider sea level rise during project review.

[97] This appendix is written in such a way that it complements the materials from the 2012 NRC Report and the 2018 OPC SLR Guidance, which is currently considered the best available science on sea level rise in California. As new reports are issued in the future, Commission staff will assess whether they should be considered the best available science and update the approaches or terminology in this Appendix accordingly.

General situations needing sea level rise analysis include when the project or planning site is:

- Currently in or adjacent to an identified floodplain
- Currently or has been exposed to flooding or erosion from waves or tides
- Currently in a location protected from flooding by constructed dikes, levees, bulkheads, or other flood-control or protective structures
- On or close to a beach, estuary, lagoon, or wetland
- On a coastal bluff with historic evidence of erosion
- Reliant upon shallow wells for water supply

For situations where future sea level conditions will be important for the analyses of hazards or resource impacts, the following sections are provided as guidance for determining local hazards. Figure B-1 shows the general progression for going from global sea level projections to the possible consequences or impacts that can result from local water levels.

The following information provides guidance on using temporally- and regionally-appropriate sea level rise projections to determine future tidal elevations and inundation, future still water, future shoreline change and erosion, potential flooding, wave impacts and wave runup, and flooding from extreme events[98].

Most of these analyses must occur sequentially. Sea level rise is used to determine changes in tidal conditions, and tidal conditions are combined with future surge, El Niño Southern Oscillation (ENSO) events, and Pacific Decadal Oscillations (PDOs) to estimate local still water. Changes in the frequencies of still water levels will in turn affect erosion rates, and the amount of erosion will affect future wave impacts, runup and flooding.

To be consistent with other sections, these different efforts are presented as Steps, with a discussion of how to accomplish each and the expected outcome. Depending upon the planning or project concerns and required analysis, it may not be necessary to proceed step-by-step and readers should use their judgment as to which items are relevant to their concerns. For example, if the concern is about runup on a non-erosive slope due to an increase in the still water level of 5.5 ft (1.7 m), the guidance on wave runup analysis may be all that is necessary.

[98] Importantly, the 2018 OPC SLR Guidance includes projections tables for 12 tide gauges throughout California, and for every 10 years from 2030 to 2150. As such, adjusting the projections to account for more localized conditions or specific years is likely unnecessary. This is a change from the 2012 NRC report, which included projections for north and south of Cape Mendocino and for only three time periods. Thus, sections within this Appendix that pertained to developing temporally- and spatially-adjusted projections (including mathematic interpolation methods) have largely been removed in the 2018 update.

Step 1 – Develop temporally- and spatially-appropriate sea level rise projections
Step 2 – Determine tidal range and future inundation
Step 3 – Determine still water level changes from surge, El Niño events and PDOs
Step 4 – Estimate beach, bluff, and dune change from erosion
Step 5 – Determine wave, storm wave, wave runup, and flooding conditions
Step 6 – Examine potential flooding from extreme events

A Note on Hydrodynamic Models versus "Bathtub Fill" Models

It is important to be aware of the differences between a so-called "bathtub fill" model and hydrodynamic models, and the related pros and cons of each for analysis of sea level rise impacts. In general, "bathtub fill" refers to those models that analyze flooding or inundation based solely on elevation. In other words, if sea level is projected to rise 3 ft (1 m), thereby increasing flooding/inundation from a current elevation of +10 ft (3 m) to +13 ft (4 m), these models will, in general, flood everything below the +13 ft (4m) elevation. The modeling does not take into consideration whether the new flood areas are connected to the ocean, nor does it consider how the changes to the water level will change wave propagation or overtopping of flood barriers. This is a significant oversimplification of the processes involved in flooding, but it provides value in allowing individuals to gain a broad view of the general areas that could be impacted by sea level rise without requiring a great deal of technical information.

Conversely, hydrodynamic modeling takes into account the details of local development patterns and the characteristics of waves and storms, and can therefore provide a much better understanding of local sea level rise impacts than is possible from "bathtub fill" models. In particular, hydrodynamic models take into account factors that alter flooding and inundation patterns and impacts. Such factors may include the extent and orientation of development – for example, roadways and linear features that tend to channelize water flows, and buildings or flood barriers that can block and divert flows – as well as the conditions that contribute to flooding and inundation, such as wave conditions, flow velocities, the extent of overtopping, and so on. Although the initial development of the modeling grid that is used to depict the community development patterns can be quite time-consuming to create and the model output will change with differing grid designs (Schubert and Sanders 2012), once the grid is developed, hydrodynamic modeling can be used to better characterize areas of flooding and to distinguish areas of concentrated flooding from those areas that may experience small amounts of flooding only during peak conditions (Gallien *et al.* 2011, 2012).

Significantly, many of the analyses described in this Appendix are the kinds of analyses that go beyond "bathtub fill" modeling to include the hydrodynamic factors that help to specify the more location-specific impacts for which planners should prepare.

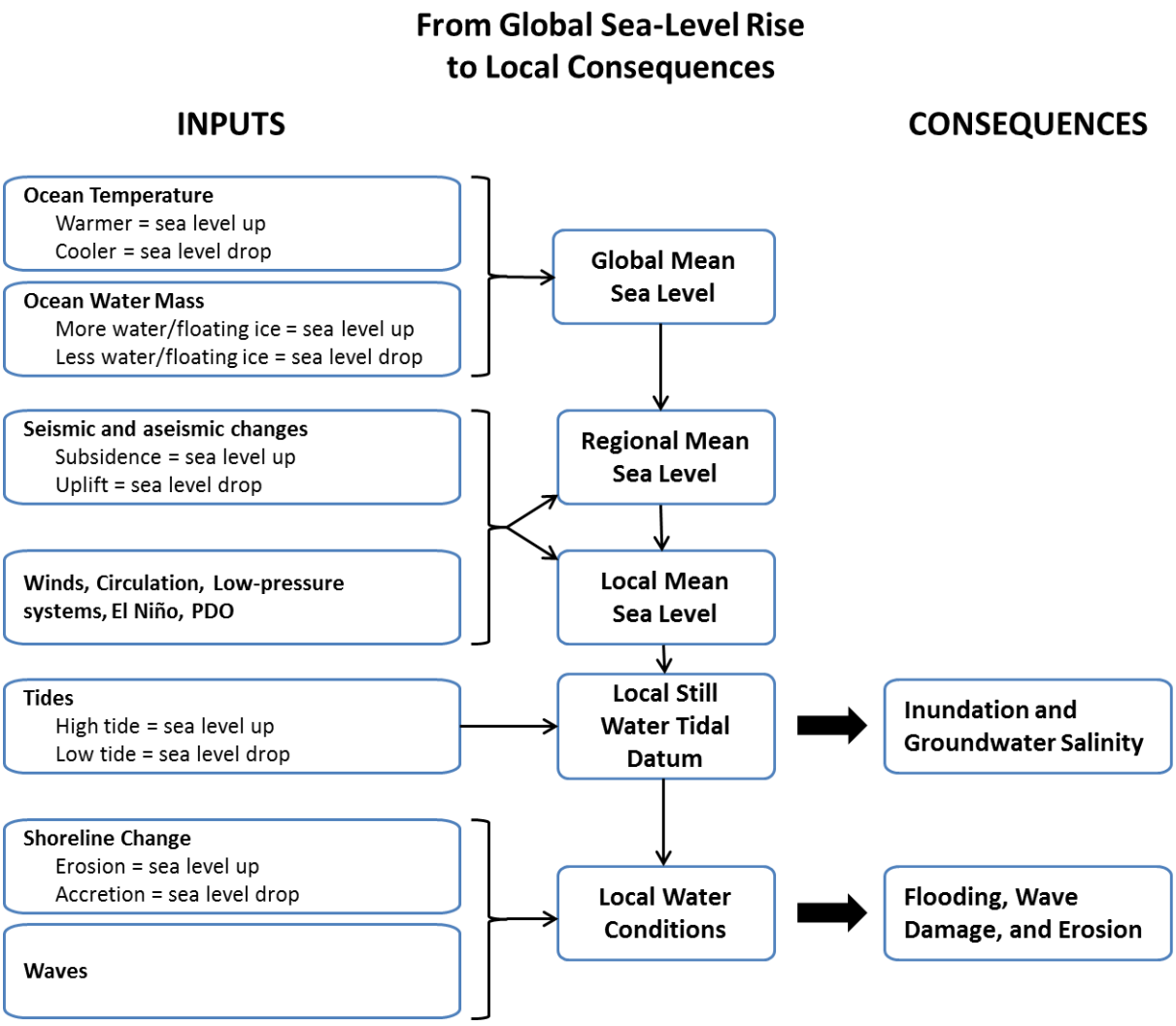

Figure B-1. General process for translating global sea level rise to local consequences

Step 1 – Develop temporally- and spatially-appropriate sea level rise projections

a. Identify the nearest tide gauge

The 2018 OPC Sea-Level Rise Guidance contains projection tables for 12 tide gauges along the California coast in order to account for localized trends in relative sea level rise, related mainly to different rates of vertical land motion. The 12 tide gauges are mapped in Appendix 2 of the OPC Guidance (and copied in Appendix G here). OPC directs users to identify the nearest tide gauge to the project or planning site and to use the associated projection table in planning and permitting. In some cases it may be appropriate to interpolate between two tide gauges (if the project site is equidistant between tide gauges) or to use more locally-specific scientific data, if available. In many cases, though, the differences among projections (either between two tide gauges or from more localized data) are likely to be small, and therefore may be insignificant compared to overall uncertainty in modeling and/or future greenhouse gas emissions scenarios.

b. Determine appropriate planning horizon or expected project life and identify relevant sea level rise projections

The first step in a sea level rise analysis is to determine the appropriate planning horizon based on the expected life of the project. The longer the life of a project or planning horizon, the greater the amount of sea level rise the project or planning area will experience.

Local governments should select their planning horizons to evaluate a broad range of planning concerns. Planning horizons could address the 20-year time period that is typical for *General Plan* updates as well as the long-range planning that is necessary for infrastructure and new development. The 20-year planning horizon may help identify areas within the coastal zone that are now or will soon be vulnerable to sea level rise related hazards as an aid for focusing adaptation planning on the areas of greatest need. Local Coastal Program (LCP) planning will likely use multiple planning horizons and undertake hazards analyses for multiple time periods, multiple sea level rise projections, or both.

At the project level, the LCP may provide insight into the time period that should be considered for the expected project life. At present, LCPs typically provide only a single standard (if any) for the expected life of a structure or development, such as 50, 75, or 100 years. Future LCPs and LCP Amendments (LCPAs) may find it useful to provide greater guidance on expected project life, with differentiations among major development or use classifications. For example, a general range may be chosen based on the type of development such that temporary structures, ancillary development, amenity structures, or moveable or expendable construction should identify a relatively short expected life of 25 years or less. Residential or commercial structures, which will be around longer, should choose a time frame of 75 to 100 years to consider. A longer time frame of 100 years or more should be considered for critical infrastructure like bridges or industrial facilities or for resource protection or enhancement projects that are typically meant to last in perpetuity.

For projects with long lead times, the analysis of impacts from sea level rise should use the projections for the time period when the development will be in use, rather than the current

period because the trajectory of future sea level rise is not expected to be linear. For example, a project built today will experience less sea level rise over a 50-year lifetime (about 1.9 feet under the "medium-high risk aversion" scenario at the San Francisco tide gauge) than the same project if it were built in the year 2050 (about 5 feet under the "medium-high risk aversion" scenario at the San Francisco tide gauge). Thus, it is important to understand the anticipated project life of a structure and the associated planning horizon before starting an analysis for sea level rise concerns.

As explained in Chapters 5 and 6, the point of this step is not to specify exactly how long a project will exist (and be permitted for), but rather to identify a project life timeframe that is typical for the type of development in question so that the hazard analyses performed in subsequent steps will adequately consider the impacts that may occur over the entire life of the development.

Once the appropriate planning/project horizon has been identified, the associated projection for that time period can be identified using the projection tables from the 2018 OPC SLR Guidance. These tables include projections for each decade from 2030 to 2150.

As explained elsewhere in this Guidance, project characteristics (including its ability to withstand or adapt to different sea level rise amounts and the consequences associated with underestimating the amount of sea level rise that occurs) should guide users in choosing which scenario to assess for a particular planning horizon. As general guidance, the Coastal Commission continues to recommend that planners or project applicants take a precautionary approach by evaluating higher sea level rise amounts (for example, the medium-high risk aversion scenario for most development, or the extreme risk aversion scenario for critical infrastructure).

Step 2 – Determine tidal range and future inundation

One of the most basic examinations of changing sea level conditions has been to determine the new intersection of mean sea level or other tidal datums[99] with the shoreline. This is a basic "bathtub" analysis since it looks only at the expansion of areas that will be inundated (*i.e.*, regularly submerged under water) or subject to tidal or wave action. For example, future subtidal levels would be the current subtidal limit plus projected regional mean sea level rise. Future intertidal zones would be bounded by the future higher high tide level (current higher high water plus projected regional sea level rise) and future lower low tide levels (current lower low water plus projected regional sea level rise).[100] For some projects, such as wetland restoration, the identification of future inundation zones may be the only sea level analysis needed for project evaluation. However, if the shoreline is eroding, the location of this elevation would need to also incorporate the rate of erosion. So, if the shoreline is expected to erode due to increased wave attack, not only will the intertidal zone move up in elevation, it will be both higher than and inland of the current zone.

Future Water *Elevation* = Current Tidal Datum + Projected Sea Level Rise

OR

Future Water *Location* = Intersection of Future Water Elevation with Future Shore Location

Future water location will extend to the new inundation elevation on the future shoreline. On beaches with a gradual slope, this can move the inundation location significantly inland, based on the geometric conditions of the beach. (This type of analysis is often called the Bruun Rule). On a stable beach with a slope of 1:X (Vertical:Horizontal), every foot of vertical sea level rise will move the inundation area horizontally X feet inland. For a typical 1:60 beach, every foot of sea level would move the inundation zone inland by 60 ft. If the beach is eroding, the loss due to erosion will add to the loss resulting from inundation.

Figure B-2 shows the influence of tides and sea level rise on low-wave energy beaches. Table B-1 provides some useful resources for inundation studies. Local Tidal Elevations are available from tide gauges maintained by NOAA. Where there are no nearby gauges, NOAA recommends the VDatum software.

[99] Tidal datums are based on the latest National Tidal Datum Epoch (NTDE) published by NOAA and are the mean of the observed sea levels over a 19-year period. The latest published epoch is 1983-2001. This tidal epoch can be considered equivalent to the year 2000 baseline for the **OPC** projections.

[100] Historical trends of high and low tide have changed differently than mean sea level (Flick *et al.* 2003). Based on historical trends, the changes to various tidal elements are likely to track closely with, but not identically with, changes to mean sea level. The future variability of changes to the tidal components, compared with changes to mean sea level will normally fall within the uncertainty for sea level rise projections and can be disregarded in almost all situations. As this phenomenon of tidal change is better understood and can be modeled, it may be appropriate in the future to include the changes in tidal components into the analysis of inundation and various water level projections.

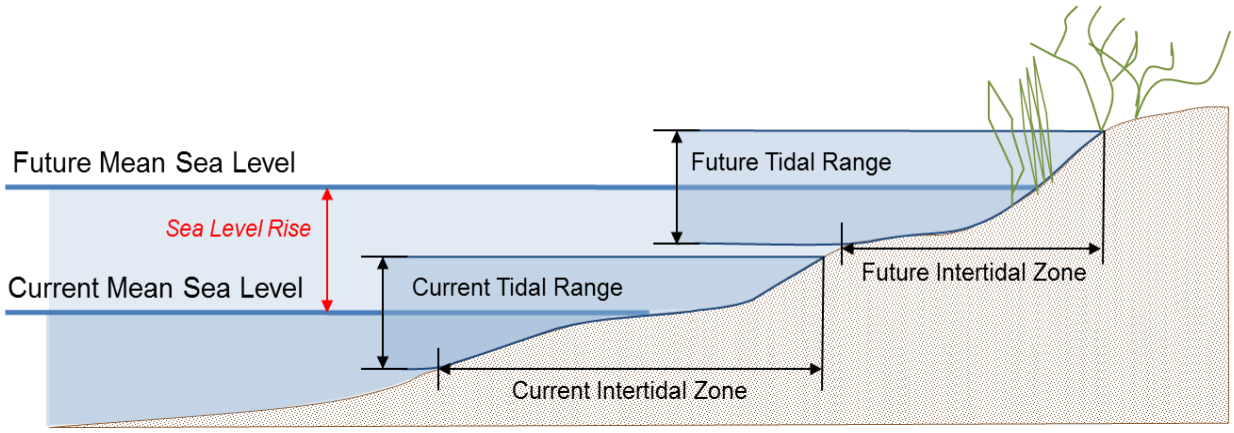

Figure B-2. Sea level rise and changes to tide range and intertidal zone. (*Source: L. Ewing, 2013*).

Table B-1. General Resources for Inundation Studies

Resource	Description	Link
Aerial Photographs	Useful for general information on shoreline trends; ortho-rectified photos can help quantify trends.	California Coastal Records Project, www.californiacoastline.org; Huntington Library; Local Libraries
LIDAR	Fairly detailed topography providing GIS layers for current conditions and comparable with LIDAR data sets for temporal changes.	NOAA Digital Coast, http://coast.noaa.gov/digitalcoast/data/coastallidar
Topographic Maps	Useful for basemaps to overlay site changes; often not at a scale to distinguish small changes in inundation or tidal action.	USGS Map Center, http://www.usgs.gov/pubprod/maps.html
NOAA Sea Level Rise and Coastal Flooding Impacts Viewer	Useful to show changes in water level location if there are no changes in the land due to erosion.	NOAA Digital Coast, https://coast.noaa.gov/digitalcoast/tools/slr.html
NOAA Tidal Data	Measured and predicted tidal components for locations along the open coast and in bays.	NOAA Center for Operational Oceanographic Products and Services, http://tidesandcurrents.noaa.gov/
NOAA Technical Report NOS 2010-01: *Technical Considerations for use of Geospatial Data in Sea Level Change Mapping and Assessment*	Provides technical guidance to agencies, practitioners, and decision makers seeking to use geospatial data to assist with sea level change assessments.	NOAA National Ocean Service http://www.tidesandcurrents.noaa.gov/publications/tech_rpt_57.pdf

VDatum Software	A Vertical Datum Transformation program that allows users to transform geospatial data among various geoidal, ellipsoidal and tidal vertical datums.	NOAA National Ocean Service, https://vdatum.noaa.gov/
Cal-Adapt – Exploring California's Climate	Represents inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting from different increments of sea level rise coupled with extreme storm events. Incorporates real, time series water level data from past (near 100 year) storm events to capture the dynamic effect of storm surges in modeling inundation using a three dimensional hydrodynamic model (per Radke et al., 2017).	http://cal-adapt.org/tools/slr-calflod-3d/
Estimating Sea Level for Project Initiation Documents	Provides guidance on converting tidal datums and predicting future sea levels.	Caltrans Office of Land Surveys, http://www.dot.ca.gov/hq/row/landsurveys/SurveysManual/Estimating_Sea_Level_v1.pdf

Outcome from Step 2: *Provide information on the projected changes to the tidal range and future zones of inundation. For locations without any influence from erosion, storm surge, or wave energy, the identification of new inundation areas may be sufficient for project analysis and planning efforts. This projected new inundation area may also be useful for anticipating the likely migration of wetlands and low-energy water areas or as input for analysis of changes to groundwater salinity. For most open coast situations, this information will be used to inform further project planning and analysis that examines erosion, surge and storm wave conditions.*

Step 3 – Determine still water changes from surge, El Niño events, and PDOs

Estimates of surge, El Niño, and PDO water elevation changes are developed primarily from historical records. There are no state-wide resources for this information, although it may be included in some Regional Sediment Management Plan studies. General guidance on water level changes that can be expected from surge, El Niño events, and PDOs is provided in Table B-2.

The remaining discussion provides general information on some of these phenomena. It is provided to acquaint readers to the main issues associated with each phenomenon. Readers with a strong background in ocean-atmospheric conditions may want to skim or skip the rest of this section.

The Pacific Ocean is a complex system. Sea level in the Pacific Ocean responds to multiple oceanic and atmospheric forcing phenomena, occurring with different intensities and at different temporal and spatial scales. Some phenomena may reinforce each other, while others may act in opposition, reducing the net effect. Scientists and researchers are attempting to identify the various signals from the multiple phenomena, but these are nascent sciences and there is still much we need to learn.

Regional water levels can be influenced by surge as well as by high and low pressure systems. Surge is a short-term change in water elevation due to high wind, low atmospheric pressure, or both. It is most often associated with East Coast and Gulf Coast hurricanes that can cause up to 15 or 20 ft (4-6 m) or more of short-term water level rise over many miles of the coast. Along the West Coast, storm surge tends to be much smaller, and is rarely a coastal hazard, except in enclosed bays. In southern California, it rarely exceeds 1 ft (0.3 m) and in central California, it rarely exceeds 2 ft (0.6 m). Surge becomes a concern as one of several cumulative factors that cause a temporary rise in sea level. Each rise may be small, but when surge occurs during high tides and/or in combination with storms, it increases the threat of coastal flooding, wave impacts, and erosion.

Two of the more recognized phenomena that affect water temperature in the Pacific are the El Niño-Southern Oscillation (ENSO) and the Pacific Decadal Oscillation (PDO). ENSO cycles, which occur on inter-annual timescales (approximately 2-7 years), not only involve ocean-basin-spanning changes in sea surface temperature (SST) and in the depth of the mixed layer in the Equatorial Pacific, but also drive changes in ocean conditions and atmospheric circulation at higher latitudes. El Niño events result in the transfer of warm surface waters into the normally cool eastern equatorial Pacific, resulting in elevated SST and water levels along much of the west coast of the Americas. El Niños also tend to increase the strength and frequency of winter low pressure systems in the North Pacific. These events can persist for months or years at a time, and strongly influence local and regional sea level. For example, the pulse of warm water from the large 1982-83 El Niño caused water levels along California to be elevated by approximately 0.4-0.7 ft (0.12-0.21 m) for many months, with short-term water elevation peaks up to approximately 1 ft (0.3 m; Flick 1998). The opposite phase of ENSO, characterized by unusually cool SSTs and lower water elevations along the eastern Pacific margin, are called La Niña events. Between El Niños and La Niñas are periods of neutral SST and water elevation changes.

The PDO is an ENSO-like pattern of SST and atmospheric variability occurring over multiple decades. In contrast to ENSO, the PDO is more strongly expressed in the North Pacific than in the tropics. The positive or warm phase of the PDO is associated with unusually warm surface water throughout the eastern North Pacific (along the western US coast), while the negative or cool phase PDO is associated with colder than normal waters. As with the ENSO effects, the warm phase PDO has tended to cause elevated sea levels in the eastern Pacific and along the California coast, while the cool phase of the PDO tends to lower sea level in this region.

The PDO has basin-wide influence. Elevated water levels in one part of the Pacific are often accompanied by lowered water levels elsewhere. The cool phase PDO can result in a drop of water level along the eastern Pacific (western US Coast) and a rise in water level along the western Pacific. Recently, sea level along the western Pacific has been rising about three times

faster than the global mean sea level rise rate, due in part to the PDO (Bromirski *et al.* 2011; Merrifield 2011). This does not mean the eastern Pacific will experience sea level rise that is three times faster than the global mean sea level rise when there is the next shift in the PDO, but does show that the PDO can have a major influence on basin-wide and regional sea level.
The above discussion of El Niño and the PDO may suggest that they are well-understood phenomena, with easily anticipated changes in sea level. However, it is important to note that El Niños have varying strengths and intensities, resulting in different sea changes from one event to the next. Also, changes in regional mean sea level along the eastern Pacific have not always shown a strong connection to the PDO cycles. An apparent jump in regional mean sea level occurred after the mid-1970s shift to the warm phase of the PDO, yet the expected continued rise in sea level along the West Coast seems to have been suppressed by other forces. Tide gauge records for the Washington, Oregon, and California coasts have shown no significant inter-annual rise in sea level from 1983 to 2011 (Cayan *et al.* 2008; Bromirski *et al.* 2011; NOAA 2013). Bromirski *et al.* (2011, 2012) postulate that persistent alongshore winds have caused an extended period of offshore upwelling that has both drawn coastal waters offshore and replaced warm surface waters with cooler deep ocean water. Both of these factors could have caused a drop in sea level, canceling out the sea rise that would otherwise be expected from a warm phase PDO signal.

Water level changes from surge, atmospheric forcing, El Niño events and the PDO can occur in combination. The water elevation changes from each factor may be only about 1 ft (0.3 m) or less, but each can cause changes in the water level over a time period of days, months, or a few years – far more rapidly than sea level rise. In combination, they can potentially cause a significant localized increase in water level.

When high water conditions occur in combination with high tides, and with coastal storms, the threat of coastal flooding, wave impacts and erosion also increases. These conditions can be additive, as shown in Figure B-3. Also, these changes in water level will continue to be important to the overall water level conditions along the California coast and they need to be examined in conjunction with possible changes due to regional sea level rise.

As stated earlier, estimates of surge, El Niño and PDO water elevation changes are developed primarily from historical records. There are no state-wide resources for this information, although it may be included in one of the Regional Sediment Management Plans, available for many coastal areas (see http://www.dbw.ca.gov/csmw/). General guidance on water level changes, surge, and El Niño events is provided in Table B-2.

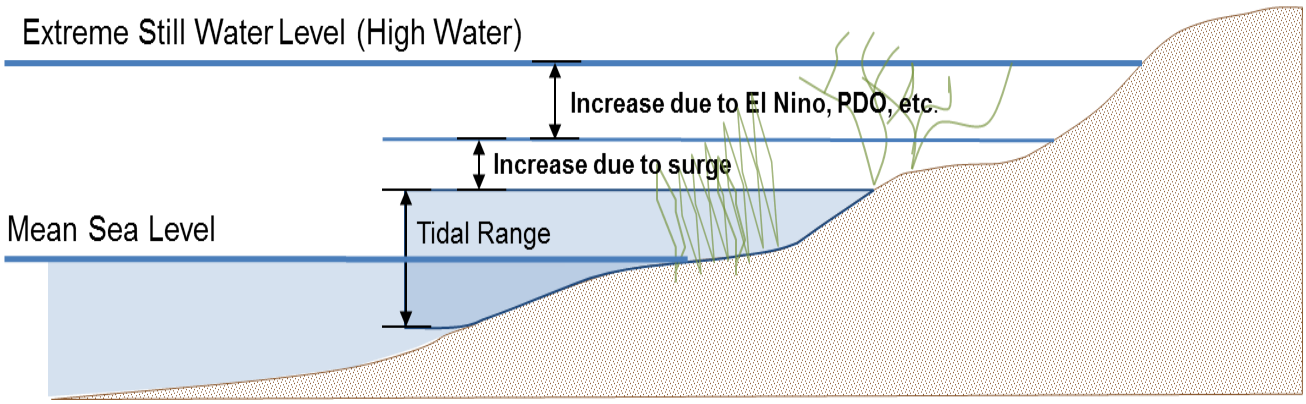

Figure B-3. Changes to extreme still water level due to surge, El Niño events, and PDOs. (*Source: L. Ewing, 2013*).

Table B-2. General Resources for Determining Still Water Elevation, Surge, El Niño events, and PDOs

Resource	Description	Link
NOAA Sea Level Rise and Coastal Flooding Impacts Viewer	Displays potential future sea levels within wetland areas, and provides visualizations for various amounts of sea level rise. For bays and estuaries, it also provides information on inland areas with the potential to flood if existing barriers to water connectivity are removed or overtopped. Communicates spatial uncertainty of mapped sea level rise, overlays social and economic data onto sea level rise maps, and models potential marsh migration due to sea level rise. Maps do not include any influence of beach or dune erosion.	NOAA Digital Coast, https://coast.noaa.gov/digitalcoast/tools/slr.html
Pacific Institute Sea Level Rise Maps	Downloadable PDF maps showing the coastal flood and erosion hazard zones from the 2009 study. Data are overlaid on aerial photographs and show major roads. Also available are an interactive online map and downloadable maps showing sea level rise and population and property at risk, miles of vulnerable roads and railroads, vulnerable power plants and wastewater treatment plants, and wetland migration potential.	http://www.pacinst.org/reports/sea_level_rise/maps/ For the 2009 report "The Impacts of Sea Level Rise on the California Coast" visit: http://pacinst.org/publication/the-impacts-of-sea-level-rise-on-the-california-coast/
Cal-Adapt – Exploring California's Climate	Represents inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting from different increments of sea level rise coupled with extreme storm events. Incorporates real, time series water level data from past (near 100 year) storm events to capture the dynamic effect of	http://cal-adapt.org/tools/slr-calflod-3d/

	storm surges in modeling inundation using a three dimensional hydrodynamic model (per Radke et al., 2017).	
Regional Sediment Management Plans	Plans for regions of the state to identify how governance, outreach and technical approaches can support beneficial reuse of sediment resources within that region without causing environmental degradation or public nuisance.	http://www.dbw.ca.gov/csmw/

***Outcome from Step 3**: Provide estimates of water elevations that can result from surge, El Niño events, and PDOs. When combined with the sea level changes to the tidal range, developed in Step 4, these can provide information on the extreme still water level. For most open coast situations, this information will be used to inform further project analysis and planning that examines erosion, surge and storm conditions.*

Step 4 – Estimate beach, bluff, and dune change from erosion

Predictions of future beach, bluff, and dune erosion are complicated by the uncertainty associated with future waves, storms and sediment supply. As a result, there is no single specific accepted method for predicting future beach erosion. At a minimum, projects should assume that there will be inundation of dry beach and that the beach will continue to experience seasonal and inter-annual changes comparable to historical amounts. When there is a range of erosion rates from historical trends, the high rate should be used to project future erosion with rising sea level conditions (unless future erosion will encounter more resistant materials, in which case lower erosion rates may be used). For beaches that have had a relatively stable long-term width, it would be prudent to also consider the potential for greater variability or even erosion as a future condition. For recent studies that provide some general guidance for including sea level rise in an evaluation of bluff and dune erosion, see, for example, Heberger *et al.* (2009) or Revell *et al.* (2011). Other approaches that recognize the influence of water levels in beach, bluff, or dune erosion can also be used. Table B-3, at the end of this section, provides some resources that can be used for projecting future erosion.

The following sections discuss specific concerns associated with beach, bluff and dune erosion and are provided to acquaint readers to the main issues associated with each system. Readers with a strong background in coastal systems may want to skim or skip the rest of this section.

Beach Erosion

Beach erosion and accretion occur on an on-going basis due to regular variability in waves, currents and sand supply. The movement of sand on and off of beaches is an ongoing process. Along the California coast, periods of gradual, on-going beach change will be punctuated by rapid and dramatic changes, often during times of large waves or high streamflow events.

The overall dynamics of beach change have been described many times.[101] Sand moves on and off shore as well as along the shore. Normal sources of sand to a beach are from rivers and streams, bluff erosion or gullies, and offshore sand sources. Sand leaves a beach by being carried downcoast by waves and currents, either into submarine canyons or to locations too far offshore for waves to move it back onto shore. Beaches are part of the larger-scale sediment dynamics of the littoral cell, and in very simple terms, beaches accrete if more sand comes onto the beach than leaves and beaches erode if more sand leaves than is added. Changes in sand supply are a major aspect of beach change.

Beach changes are often classified as being either seasonal or long-term/inter-annual changes. Seasonal changes are the shifts in beach width that tend to occur throughout the year and are usually reversible. During late fall and winter, beaches tend to become narrower as more high energy waves carry sand away from the beach and deposit it in offshore bars. This is later followed by beach widening as gentler waves again bring sand landward, building up a wider dry-sand summer beach. These changes are considered seasonal changes, and if the beach widths return to the same seasonal width each year, then the beach experiences seasonal changes but no long-term or inter-annual changes. If the seasonal beach widths become progressively wider or narrower, these changes become long-term or inter-annual change, and suggest a long-term beach change trend – accretion if the beach is widening and erosion if the beach is narrowing.

If development is at or near beach level, erosion of the beach can expose the development to damage from waves, flooding, and foundation scour. Additionally, waves that hit the coast bring with them vegetation, floating debris, sand, cobbles, and other material which can act like projectiles, adding to the wave forces and flood damage.

At present, approximately 66% of the California beaches have experienced erosion over the last few decades, with the main concentration of eroding beaches occurring in southern California (Hapke *et al.* 2006). This erosion has been due to a combination of diminished sand supplies and increased removal of sand by waves and currents. With rising sea level, beach erosion is likely to increase due to both increased wave energy[102] that can carry sand offshore or away from the beach, and to decreased supply of new sediments to the coast.[103]

There are several factors that will contribute to the effects of sea level rise on seasonal and inter-annual beach change. There will be the changes to the beach due to inundation by rising water levels, as shown in Figure B-4 (see the discussion on inundation earlier in this Appendix for more information on how to determine this change). If the beach cannot migrate inland to accommodate these changes, then the inundation will result in a direct loss or erosion of beach width. This will result in a narrower seasonal beach as well as inter-annual loss of beach.

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[101] See for example, Bascom 1980, Komar 1998, and Griggs *et al.* 2005.

[102] In shallow water, wave energy is proportional to the square of the water depth. As water depths increase with sea level rise, wave energy at the same location will likewise increase.

[103] Many parts of the developed coast are already experiencing drops in sand supplies due to upstream impoundments of water and sediment, more impervious surfaces, and sand mining.

Seasonal and inter-annual beach conditions will also be affected by changes to waves and sediment supply. Since waves are sensitive to bottom bathymetry, changes in sea level may change the diffraction and refraction of waves as they approach the coast, thereby changing the resulting mixture of beach-accreting and beach-eroding waves. However, the influence of climate change (not just rising sea level) on wave conditions, through changes in wave height, wave direction, storm frequency, and storm intensity, will likely be far more significant than the slight changes from bathymetric changes. In addition, changing precipitation patterns will modify the amount and timing of sediment delivery to the beach.

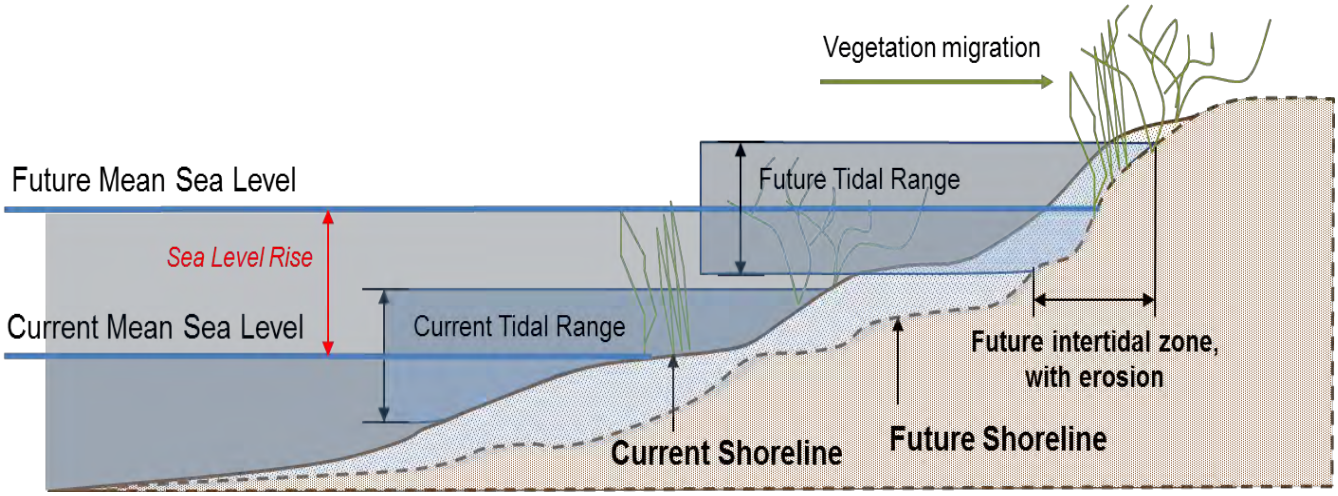

Figure B-4. Changes to the intertidal zone with sea level rise and erosion, without wave impacts. (*Source: L. Ewing, 2013*).

Bluff Erosion

A second type of erosion occurs on coastal bluffs.[104] There is no fully-accepted methodology for estimating future bluff erosion with sea level rise. Guidance for coastal analysts in Hawaii is to assume erosion will increase as a proportion of historical erosion (Hwang 2005). One approach used in the past by the Commission has been to apply one of the higher rates of historical erosion to represent average future trends. A more process-based methodology, used in the Pacific Institute study of erosion due to rising sea level, is to correlate future erosion rates of bluffs with a higher still water level that will allow waves to attack the bluff more frequently (Heberger *et al.* 2009; Revell *et al.* 2011). This approach assumes that all bluff erosion is due to wave impacts and that erosion rates will change over time as the beach or bluff experiences more frequent or more intense wave attack. Such an approach should be considered for examining bluff erosion with rising sea level. Other approaches that recognize the influence of water levels in beach, bluff, or dune erosion can also be used.

[104] Bluffs can be built or expanded during interglacial cycles or following seismic uplift. Many of the marine terraces that are visible along the California coast are remnants of past beach areas that have been uplifted to become bluffs and cliffs. However, natural bluff rebuilding is a millennial or multi-millennial process, and it will not occur during the time periods over which most development projects are evaluated.

Bluff retreat occurs via many different mechanisms. Landslides, slumps, block failures, gullies, and rilling are examples of bluff retreat. At the most basic level, bluff retreat or collapse occurs when the forces leading to collapse of the bluff face are stronger than the forces holding the bluff in place. Forces causing bluff retreat can include earthquakes, wind, burrowing animals, gravity, rain, surface runoff, groundwater, and sheet flow. Coastal bluffs have the added factor of wave attack. Resistance to collapse is mainly a characteristic of the bluff material. For example, granitic bluffs like those along the Big Sur coast retreat at a much slower rate than the soft sandstone and marine terrace bluffs of Pacifica.

Coastal bluff erosion can occur throughout the year, but it often occurs during or after storm periods, when the dry beach will be narrow or non-existent. When coastal bluffs are fronted by wide sand beaches, most waves break on the beach face and the beaches protect the bluffs from direct wave attack. When the beach is narrow, there is less buffering of the wave energy and waves can break directly against the bluffs. A general depiction of bluff retreat with rising sea level is provided in Figure B-5.

Bluff retreat is often episodic – the bluff may be stable for a number of years and then retreat by tens of feet in a few hours or a few days. If the changes to a bluff are examined through endpoint analysis (*i.e.*, looking first at the initial position of the bluff and then at the position of the bluff sometime in the future), researchers can determine the amount of retreat that has occurred during the time from the initial to final positions. This gives information on an average retreat rate that has occurred, but provides no insight about the conditions leading to the retreat, the size of retreat, frequency of retreat events, or the progression of retreat and no retreat. The average retreat rates can give some indication of likely future changes, but they provide little information about when the next retreat episode might occur or how large it might be.

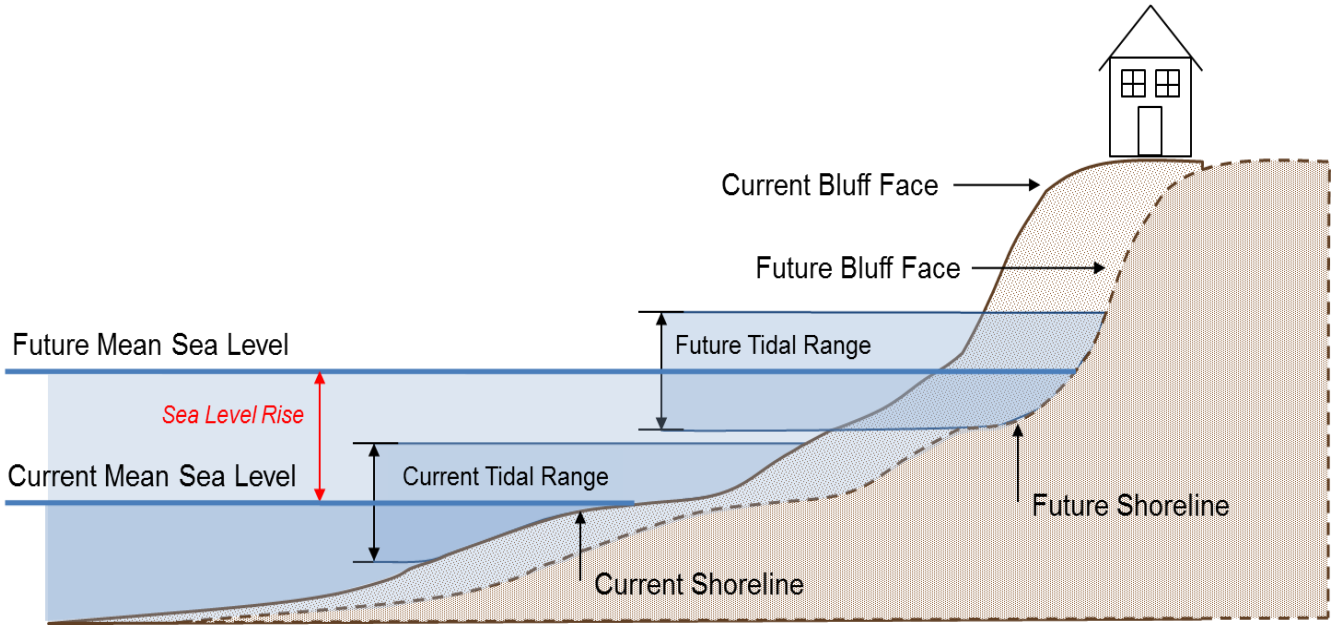

Figure B-5. Bluff erosion with changes in sea level. (*Source: L. Ewing, 2013*).

Dune Erosion

Just as there is no fully-accepted methodology for estimating changes to beach or bluff erosion with sea level rise, there is no fully-accepted methodology for dune erosion. A methodology somewhat similar to that for bluff erosion has been developed for dunes (Heberger *et al.* 2009; Revell *et al.* 2011), and such an approach should be considered for examining dune erosion with rising sea level. Other approaches that recognize the influence of water levels in beach, bluff, or dune erosion may also be used.

Dune erosion occurs when the waves break at or near the dunes, pulling sediment out of the dune. This process deposits sand onto the beach or in the nearshore area, but can result in short-term dune retreat. If sand is not returned to the dunes following these periods of short-term retreat, the sand losses will contribute to long-term dune erosion. Damage will occur to development located on dunes when the dune retreats back to the location of development, either through reversible, short-term retreat or long-term erosion.

For individual cases, determinations of future retreat risk are based on the site-specific conditions and professional analysis and judgment. However, the lack of information about the contributions of all the erosive forces to dunes and the beach-dune interactions makes it challenging to anticipate future changes to coastal dune retreat due to rising sea level and increased wave forces. As with beaches and bluffs for most situations, historical conditions provide a lower limit for future dune *retreat*, or the upper limit of dune *advance* for those sites that are now experiencing accretion or quasi-stability. Projections of future erosion should either: 1) use the high range of historical erosion; 2) develop a sea level rise influenced erosion rate, as done by Heberger *et al.* (2009) or Revell *et al.* (2011); or, 3) develop another approach that considers shoreline changes that are likely to occur under rising sea level conditions.

Table B-3. General Resources for Information on Beach, Bluff and Dune Erosion

Resource	Description	Link
Aerial Photographs	Useful for general information on shoreline trends; ortho-rectified photos can help quantify trends.	California Coastal Records Project, www.californiacoastline.org; Huntington Library; Local Libraries
LIDAR	Fairly detailed topography that can provide GIS layers for current conditions and is comparable with LIDAR data sets for temporal changes.	NOAA's Digital Coast, http://coast.noaa.gov/digitalcoast/data/coastallidar
USGS National Assessment of Shoreline Change with GIS Compilation of Vector Shorelines	Statewide inter-annual beach and bluff erosion; GIS shorelines available for sandy shorelines & cliff edge, showing historical changes for long-term (70 to 100 years) and short-term (25 to 50 years). No projections of future erosion rates available.	Sandy Shorelines – Open File Report 2006-1219, http://pubs.usgs.gov/of/2006/1219, and GIS Data in Open File 2006-1251, http://pubs.usgs.gov/of/2006/1251; Bluff Shorelines – Open File Report 2007-1133, http://pubs.usgs.gov/of/2007/1133, and GIS Data in Open File 2007-1251, http://pubs.usgs.gov/of/2007/1112

Regional Sediment Management Studies	Summaries of seasonal and long-term erosion studies	CSMW Website, http://dbw.ca.gov/csmw/default.aspx; California Beach Erosion Assessment Survey, http://dbw.ca.gov/csmw/library.aspx
US Army Corps of Engineers, Coast of California Studies	Summaries of seasonal and long-term erosion studies	Studies for many regions are available through an internet search (addresses are too numerous to list here)
Beach Profiles and Surveys	Detailed beach or bluff changes with time	NOAA's Digital Coast, https://coast.noaa.gov/digitalcoast/tools/ US Army Corps of Engineers; Regional Beach Studies; University Studies
The Impacts of Sea Level Rise on the California Coast (Pacific Institute Report)	Expected changes to bluff position over time for sea level rise of 4.6 ft (1.4 m) from 2000 to 2100 for California coast from Oregon border through Santa Barbara County.	Pacific Institute Website, http://www.pacinst.org/reports/sea_level_rise/maps/
CoSMoS	Currently available for Point Arena to the Mexico border, with a statewide expansion anticipated in 2018/2019. The Coastal Storm Modeling System (CoSMoS) is a dynamic modeling approach that allows detailed predictions of coastal flooding due to both future sea level rise and storms, and integrated with long-term coastal evolution (i.e., beach changes and cliff/bluff retreat)	https://walrus.wr.usgs.gov/coastal_processes/cosmos/ http://data.pointblue.org/apps/ocof/cms/
TNC Coastal Resilience	An online mapping tool showing potential impacts from sea level rise and coastal hazards designed to help communities develop and implement solutions that incorporate ecosystem-based adaptation approaches. Available statewide with more detailed modelling for Monterey Bay, Santa Barbara, Ventura, and Santa Monica.	http://maps.coastalresilience.org/california/

Outcome from Step 4: *Provide projections of future long-term beach, bluff or dune erosion that takes into account sea level rise. For locations without any influence from storm surge, or wave energy, the identification of the extent of beach, bluff or dune erosion may be sufficient for project analysis and planning efforts. This projected new erosion area may also be useful for anticipating the appropriate setback distance for otherwise stable land forms (If slope stability is a concern, refer to Commission guidance on setbacks (http://www.coastal.ca.gov/W-11.5-2mm3.pdf)). For most open coast situations, this information will be used to inform further project analysis and planning that examines erosion, surge and storm conditions.*

Step 5 – Determine wave, storm wave, wave runup, and flooding conditions

The main concerns with waves, storm waves, and runup are flooding and damage from wave impacts. Flooding is the temporary wetting of an area by waves, wave runup, surge, atmospheric forcing (such as water elevation during El Niño events) and, at river mouths, the combination of waves and river flows. Wave impacts occur when high-energy waves, often associated with storms, reach backshore areas or development. Coastal flooding and wave impacts are worst when they coincide with high water level events (high tide plus high inundation). As sea level rises, inundation will move inland, and so will flooding and wave impacts. Beach erosion will aggravate these conditions and add to the inland extent of impacts.

Flooding

In most situations, factors that result in high water conditions, such as tides, surge, El Niño events, and PDOs, should be used to determine flood levels and flood areas, as shown below. If the area is exposed to storm waves, these forces should be examined as well.

Future Flooding Level = Higher High Tide + Sea Level Rise + Surge + Forcing + Wave Runup

Flooding Areas = Flooding + Seasonal Eroded Beach + Long-Term Beach Erosion

Waves

Waves, like tides, cause constant changes to the water levels that are observed at the coast. The rhythmic lapping of waves on the beach during summer can be one of the joys of a beach visit. At other times of the year, waves can increase in size and energy and damage or destroy buildings, and cause erosion of bluffs and cliffs. Routine ocean waves are generated by wind blowing across the surface of the water and can travel far from their source, combining with waves generated from other locations to produce the rather erratic and choppy water levels that are seen in most of the ocean. As waves move into shallow water and approach land, they are strongly modified by the offshore bathymetry. They take on a more uniform appearance, aligning somewhat parallel to the shoreline through processes of refraction and diffraction. During most of the year, moderate short-period waves break once they are in water depths of approximately 1.3 times the wave height.

Wave impacts depend greatly upon storm activity – both the intensity and the duration of the storm. Normally projects have used design wave conditions comparable to the 100-year event. For critical infrastructure or development with a long life expectancy, it may be advisable to use a greater design standard, such as a 200-year or 500-year event. It may be suitable for some proposed projects to adjust design waves or the frequency of high energy waves to analyze the consequences of worsening wave impacts.

Waves also vary greatly with bathymetry; offshore reefs and sand bars can cause waves to break far from the coast and greatly reduce the energy of the waves that come onshore. Therefore, changes in offshore water depths can alter the nature of nearshore wave propagation and

resultant onshore waves. For areas with complex offshore bathymetry, wave impact changes due to rising sea level may need to be examined in the context of both offshore and nearshore conditions.

Wave impacts to the coast, to coastal bluff erosion and inland development, should be analyzed under the conditions most likely to cause harm. Those conditions normally occur in winter when most of the sand has moved offshore leaving only a reduced dry sand beach to dissipate wave energy (this seasonal change in beach width is often referred to as short-term or seasonal erosion). On beaches that will experience long-term erosion, trends expected to occur over the entire expected life of the development should also be considered. Just as the beach conditions to analyze should be those least likely to protect from damage over the life of the development, the water level conditions considered should also be those most likely to contribute to damage over the life of the development. Waves that cause significant damage during high tide will be less damaging during low tide; all other things being equal, waves will cause more inland flooding and impact damage when water levels are higher. Since water levels will increase over the life of the development due to rising sea level, the development should be examined for the amount of sea level rise (or a scenario of sea level rise conditions) that is likely to occur throughout the expected life of the development. Then, the wave impact analysis should examine the consequences of a 100-year design storm event using the combined water levels that are likely to occur with high water conditions and sea level rise, as well as a long-term and seasonally eroded beach.

Eroded Beach Conditions = Seasonal Erosion + Long-Term Erosion*

High Water Conditions = High Tide + Relative Sea Level Rise* + Atmospheric Forcing

Wave Conditions = 100-year Design Storm + High Water + Eroded Beach

* The time period for both long-term erosion and relative sea level rise will be at least as long as the expected life of the development.

The remaining discussion provides general information about waves, the California wave climate, and coastal flooding. It is provided to acquaint readers to the main issues associated with waves and coastal flooding. Readers with a strong background in waves or coastal processes may want to skim or skip the rest of this section.

Storm Waves

During storm conditions, winds can transfer large amounts of energy into waves, increasing wave height, length, and period. Energy transfer to waves depends upon three conditions: the wind energy that is available to be transferred to the water (intensity); the length of time over which the wind blows (duration); and the area over which the wind blows (the fetch). As any of these conditions increases, the energy in the waves will increase, as will the energy that these waves bring to the coastline. Coastal scientists separate waves that are generated far from the coast (swell) from waves that are locally generated (seas). Storms in the mid-Pacific can cause

storm-like wave conditions along the coast, even when there are no storms in the area. Likewise, a local storm can cause storm waves along one part of the coast while waves in other sections of the coast may be fairly mild.

Some of the worst storm wave conditions occur when there are intense storms along a large portion of the coast and when this large, distantly generated swell combines with local seas. The 1982/83 El Niño has been cited often as one of the more damaging storm seasons in recent times. In late January 1983, waves from a distant storm combined with locally generated waves and the highest tides of the year. This one storm caused substantial damage along much of the California Coast. The coast was not able to recover before a series of storms in February and March caused additional damage. The full 1982/83 El Niño storm season resulted in damage to approximately 3,000 homes and 900 businesses and destruction of 33 buildings. Damages exceeded $100 million to structures and $35 million to public recreational infrastructure (in 1982 dollars; Flick 1998).

Wave Runup

Wave runup, as depicted in Figure B-6, is the distance or extent to which water from a breaking wave will spread up the shoreline. Much of the wave energy will dissipate during breaking, but wave runup can also be damaging. The runup water moves quickly and can scour or erode the shoreline areas (including the beach), damage structures, and flood inland areas.

Damage from waves and wave runup may increase in the future, due both to rising sea level and to changes in storm intensity and frequency. Waves will break farther landward when water levels are higher. Therefore, increased water levels due to tides, surge, ENSO or PDO variability, or sea level rise will enable more wave energy to reach the beach, back shore, or inland development. The higher water levels do not change the waves. Rather, higher water levels change the point of impact, the extent of runup, and the frequency of wave impact. In locations where high waves now hit the coast, that frequency will increase; in locations where high waves rarely hit the coast, exposure to wave impacts will increase. Increased exposure to wave impacts or wave runup can cause a greater risk of flooding, erosion, bluff failure, and/or damage to development. But, since the focusing of wave energy is strongly influenced by offshore bathymetry, locations of wave exposure may also change with rising sea level and modifications in wave propagation might result from future differences in water depths.

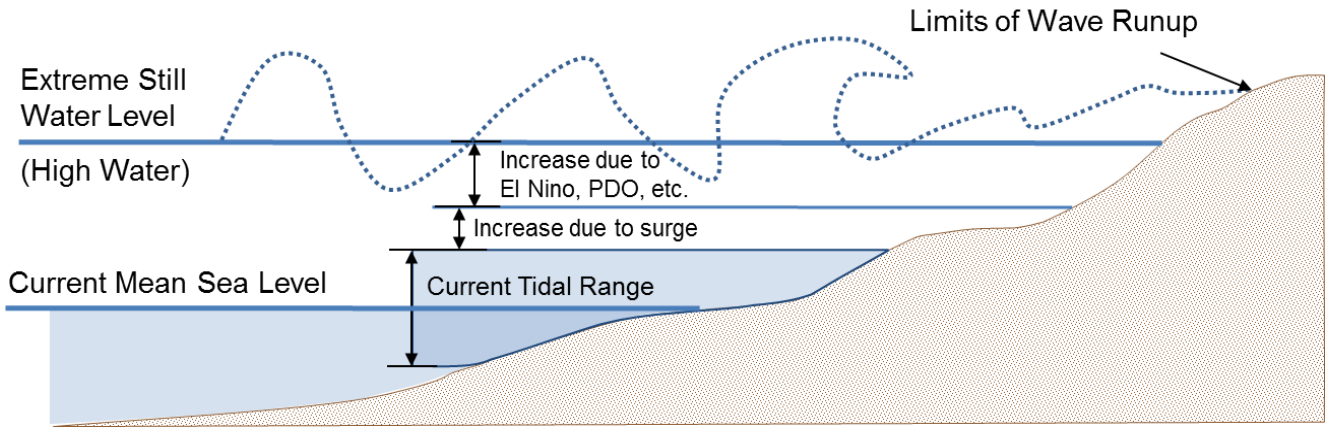

Figure B-6. Wave runup combined with extreme still water (High Water). (*Source: L. Ewing, 2013*).

Summary

Coastal flooding is a significant problem now and it will increase with rising sea level. At present, about 210,000 people in California are living in areas at risk from a 100-year flood event (Heberger *et al.* 2009). A rise in sea level of 55 in (1.4 m) with no change in development patterns or growth along the coast could put 418,000 to 480,000 people at risk from a 100-year flood (Cooley *et al.* 2012). An additional fraction of the California population that relies on critical infrastructure located in potentially hazardous areas is also vulnerable and increases in storm intensity or in the density of development in flood-prone areas will increase the number of people at risk from flooding.

The frequency and intensity of high wave events depends upon the storm conditions that generate the waves. There is less consistency in the output of climate models related to projections of future storm conditions than there has been for temperature projections. A recent report on coastal flooding from years 2000 to 2100 for the California coast has found that "storm activity is not projected to intensify or appreciably change the characteristics of winter nearshore wave activity of the twenty-first century" (Bromirski *et al.* 2012, p. 33). This continuation of current storm conditions is not, however, an indication that storms will not be a problem in the future. Storm damage is expected to continue, and, if sea level rise by the end of the twenty-first century reaches the high projections of about 55 in (1.4 m), "coastal managers can anticipate that coastal flooding events of much greater magnitude than those during the 1982-83 El Niño will occur annually." (Bromirski *et al.* 2012, p. 36)

For most situations, the 100-year storm event should be used as the design storm. This is equivalent to a storm with a 1% annual probability of occurrence. However, most development does outlast one year and this probability of occurrence grows over time such that there is a 22% probability of occurrence during a 25-year period and over 53% probability that this storm will occur at least once during a 75-year period. Even so, the 100-year storm event, like the 100-year flood event, is often used as a design standard for development. However, for structures with a very long projected life or for which storm protection is very critical, a larger, 200-year or 500-year event might be appropriate.

Table B-4 lists many of the resources that are available for finding regional or state-wide information on waves and flooding. Local communities may have records of major erosion episodes or flood events as well.

Table B-4. General Resources for Flooding and Wave Impacts

Resource	Description	Link
CDIP (Coastal Data Information Program)	Current and historical information on wind, waves, and water temperature, wave and swell models and forecasting. As of 2013, there are 19 active stations along the California coast.	http://cdip.ucsd.edu/
Flood Insurance Rate Maps (FIRMs)	FEMA is updating coastal flood maps. Existing FIRMs are based on 1980s topography; flooding includes seasonal beach change but not long-term erosion. Maps do not include sea level rise. Inclusion of a site shows a flood hazard; but exclusion does not necessarily indicate a lack of flood hazard.	FEMA Flood Map Service Center, https://msc.fema.gov/portal
FEMA Flood Hazard Mapping Guidance	*Subsection D.2.8* provides guidance for calculating wave runup and overtopping on barriers. There are special cases for steep slopes and where runup exceeds the barrier or bluff crest.	https://www.fema.gov/media-library/assets/documents/13948
Regional Sediment Management Studies	Some studies show elements of beach flooding and wave impacts.	http://dbw.ca.gov/csmw/default.aspx
Cal-Adapt – Exploring California's Climate	Represents inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting from different increments of sea level rise coupled with extreme storm events. Incorporates real, time series water level data from past (near 100 year) storm events to capture the dynamic effect of storm surges in modeling inundation using a three dimensional hydrodynamic model (per Radke et al., 2017).	http://cal-adapt.org/tools/slr-calflod-3d/
US Army Corps of Engineers, Coastal Engineering Manual	Detailed information on all aspects of deep-water wave transformation, shoaling, runup, and overtopping.	https://www.publications.usace.army.mil/USACE-Publications/Engineer-Manuals/
European Overtopping Manual	Descriptions of available methods for assessing overtopping and its consequences. Provides techniques to predict wave overtopping at seawalls, flood embankments, breakwaters and other shoreline structures facing waves. Supported by web-based programs for the calculation of overtopping discharge and design details.	http://www.overtopping-manual.com/

CoSMoS	Currently available for Point Arena to the Mexico border, with a statewide expansion anticipated in 2018/2019. The Coastal Storm Modeling System (CoSMoS) is a dynamic modeling approach that allows detailed predictions of coastal flooding due to both future sea level rise and storms, and integrated with long-term coastal evolution (i.e., beach changes and cliff/bluff retreat)	https://walrus.wr.usgs.gov/coastal_processes/cosmos/ http://data.pointblue.org/apps/ocof/cms/
TNC Coastal Resilience	An online mapping tool showing potential impacts from sea level rise and coastal hazards designed to help communities develop and implement solutions that incorporate ecosystem-based adaptation approaches. Available statewide with more detailed modelling for Monterey Bay, Santa Barbara, Ventura, and Santa Monica.	http://maps.coastalresilience.org/california/

Outcome from Step 5: *Provide projections of future flooding and wave impacts resulting from waves, storm waves and runup, taking into account sea level rise.*

Step 6 – Examine potential flooding from extreme events

Extreme events[105], by their very nature, are those beyond the normal events that are considered in most shoreline studies. Examples of extreme events that might occur along the California coast include:

- An individual storm with an intensity at or above the 100-year event
- A series of large, long-duration storms during high tides
- A local storm that coincides with the arrival of distant swell and high tides
- Rapid subsidence, as might happen along the Northern California coast during a Cascadia Subduction Zone earthquake
- Global sea level rise greater than that projected to occur by 2100, when combined with a large storm during normal tides

Planning and project analysis need to consider and anticipate the consequences of these outlier events. In many situations, this assessment might be a qualitative consideration of consequences that could happen if an extreme event does occur. Analysis of the consequences of extreme events presents opportunities to address some of those potential impacts through design and adaptation.

[105] In its report on *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, the IPCC defines extreme events as "a facet of climate variability under stable or changing climate conditions. They are defined as the occurrence of a value or weather or climate variable above (or below) a threshold value near the upper (or lower) ends ("tails") of the range of observed values of the variable" (IPCC 2012).

In California, there may be some worsening of extreme precipitation and inland flooding from projected changes to atmospheric rivers, narrow bands of concentrated moisture in the atmosphere. In general, however, future extremes are likely to be comparable to the extremes of today, but with the added influence of sea level rise. Extreme storm waves or floods can be addressed with the guidance provided earlier, except that the extreme storm conditions would be used. For tsunamis it is recommended that, for most situations, the appropriate projection of sea level rise be added to the currently projected inundation level from tsunamis. This will provide a close approximation for future inundation from extreme tsunamis. If a detailed analysis of future tsunami impacts is needed, the analysis should be conducted by someone experienced in modeling tsunami waves.

Tsunamis

Tsunamis are large, long-period waves that can be generated by submarine landslides, subaerial landslides (slope failures from land into a water body), large submarine earthquakes, meteors, or volcanic eruptions. They are rare events, but can be extremely destructive when they occur. The extent of tsunami damage will increase as rising water levels allow tsunami waves to extend farther inland. Thus the tsunami inundation zone will expand inland with rising sea level. There has been no research that suggests that climate change will increase the intensity or frequency of seismically-generated tsunamis. However, the number and size of coastal subaerial landslides may increase because of increased coastal erosion due to sea level rise, which in turn may increase the potential for tsunamigenic landslides along the California coast (Highland 2004; Walder *et al.* 2003).

The detailed changes to the inundation zone with rising sea level need to be determined by modeling; however, modeling of long-waves, such as tsunamis, is a specialized area of coastal engineering, and will not be covered in this general Guidance. For most situations, it will be sufficient to get information on possible inundation from the most recent tsunami inundation maps (currently on the Department of Conservation website, http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/Pages/Statewide_Maps.aspx). The California Geological Survey and California Governor's Office of Emergency Services are creating new tsunami inundation maps based on probabilistic tsunami hazard analysis (CPTHAWG 2015). As a rough approximation, the change to the tsunami inundation level can be estimated as equal to the change in water elevation due to sea level; a 1-ft rise in sea level could be assumed to result in a 1-ft rise in the inundation elevation. However, in many places, particularly shallow bays, harbors, and estuaries, the change in tsunami inundation zone is likely to scale non-linearly with sea level rise and require careful modeling. California Geological Survey is also working to evaluate the impact of sea level rise with numerical tsunami modeling to verify that an additive approach (tsunami height + SLR) is the appropriate method for integrating SLR and tsunami inundation together. In areas with high tsunami hazards, or where critical resources are at risk, a site-specific analysis of sea level rise impacts on tsunami hazards is crucial, and someone experienced in modeling tsunami waves should be consulted.

Summary

Many different factors affect the actual water levels that occur along the coast and resulting hazards. In California, waves and tides have the largest routine effect on water levels. Tsunamis

may have a very large, but infrequent effect on water levels. Sea level rise will affect water levels all along the coast. Until the mid-century, tides and storms are expected to have the biggest effects on local water levels, with sea level rise being a growing concern. After Year 2050, sea level rise is expected to become increasingly influential on water levels and in contributing to damages to inland areas from flooding, erosion and wave impacts. Table B-5 provides a general characterization of all the factors that can affect local water levels, with general estimates of their range and frequency of occurrence.

Outcome from Step 6: *Projections of potential flooding from extreme events including rapid subsidence, extreme precipitation, and tsunamis.*

Table B-5. Factors that Influence Local Water Level Conditions

Factors Affecting Water Level	Typical Range for CA Coast (ft)	Typical Range for CA Coast (m)	Period of Influence	Frequency
Tides	3 – 10	1 – 3	Hours	Twice daily
Low pressure	1.5	0.5	Days	Many times a year
Storm Surge	2 – 3	0.6 – 1.0	Days	Several times a year
Storm Waves	3 – 15	1 – 5	Hours	Several times a year
El Niño events (within the ENSO cycle)	<1.5	< 0.5	Months - Years	2 – 7 years
Tsunami waves	20 – 50 (max) 3 – 10 (typical)	6 – 15 (max) 1 – 3 (typical)	Minutes, Hours, Days	Infrequent but unpredictable
Historical Sea Level, over 100 years	0.7	0.2	Ongoing	Persistent
OPC Sea Level Projections 2000 – 2050 (SF tide gauge; see also App. G)	1.1 – 2.7	0.3 – 0.8	Ongoing	Persistent
OPC Sea Level Projections 2000 – 2100 (SF tide gauge; see also App. G)	3.4 – 10.2	1.0 – 3.1	Ongoing	Persistent

Note that all values are approximations. The conversions between feet and meters have been rounded to maintain the general ranges and they are not exact conversions. *Sources*: Flick 1998; OPC 2018; Personal communications from Dr. Robert Guza (Scripps Institution of Oceanography), Dr. William O'Reilly (Scripps Institution of Oceanography and University of California, Berkeley), and Rick Wilson, California Geological Survey; and professional judgment of staff.

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Appendix C

Resources for Addressing Sea Level Rise

This section contains lists of sea level rise viewers, guidebooks, guidance documents, and state agency-produced resources, and data clearing houses related to sea level rise. These resources will be particularly relevant for informing Steps 1-6 of the LCP planning process (Chapter 5). Tables include:

- Table C-1 – Sea Level Rise Mapping Tools.
  This may be particularly relevant for Steps 1-3.
- Table C-2 – Sea Level Rise Data and Resource Clearinghouses.
  This may be particularly relevant for Steps 1-4.
- Table C-3 – Adaptation Planning Guidebooks.
  This may be particularly relevant for Steps 1-3.
- Table C-4 – Resources for Assessing Adaptation Measures.
  This may be particularly relevant for Step 4.
- Table C-5 – Examples of Sea Level Rise Vulnerability Assessments in California.
  This may be particularly relevant for Steps 1-3.
- Table C-6 – California Climate Adaptation Plans that Address Sea Level Rise.
  This may be particularly relevant for Steps 1-4.
- Table C-7 – California State Agency Resources

Table C-1. Sea Level Rise Mapping Tools

Tool	Description	Link
Statewide		
NOAA Digital Coast Sea Level Rise and Coastal Flooding Impacts Viewer	Displays potential future sea levels with a slider bar. Communicates spatial uncertainty of mapped sea level rise, overlays social and economic data onto sea level rise maps, and models potential marsh migration due to sea level rise. Maps do not include any influence of beach or dune erosion.	https://coast.noaa.gov/digitalcoast/tools/slr.html
Cal-Adapt – Exploring California's Climate	Represents inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting from different increments of sea level rise coupled with extreme storm events. Incorporates real, time series water level data from past (near 100 year) storm events to capture the dynamic effect of storm surges in modeling inundation using a three dimensional hydrodynamic model (per Radke et al., 2017).	http://cal-adapt.org/tools/slr-calflod-3d/
Climate Central Surging Seas	Overlays sea level rise data with socio-economic information and ability to analyze property values, population, socio-economic status, ethnicity, and income or areas at risk. Can compare exposure across the whole state or selected county.	http://sealevel.climatecentral.org/ssrf/california
Pacific Institute Sea Level Rise Maps (Heberger *et al*. 2009)	Downloadable PDF maps showing the coastal flood and erosion hazard zones from the 2009 study. Data are overlaid on aerial photographs and show major roads. Also available are an interactive online map and downloadable maps showing sea level rise and population and property at risk, miles of vulnerable roads and railroads, vulnerable power plants and wastewater treatment plants, and wetland migration potential.	http://www.pacinst.org/reports/sea_level_rise/maps/ For the 2009 report *The Impacts of Sea-Level Rise on the California Coast*, see: http://pacinst.org/publication/the-impacts-of-sea-level-rise-on-the-california-coast/

Sea Level Affecting Marshes Model (SLAMM)	Simulates the dominant processes involved in wetland conversions and shoreline modifications during long-term sea level rise. Map distributions of wetlands are predicted under conditions of accelerated sea level rise, and results are summarized in tabular and graphical form.	http://www.warrenpinnacle.com/prof/SLAMM
Coastal Storm Modeling System (CoSMoS); tool hosted by Our Coast Our Future	Currently available for Point Arena to the Mexico border, with a statewide expansion anticipated in 2018/2019. The Coastal Storm Modeling System (CoSMoS) is a dynamic modeling approach that allows detailed predictions of coastal flooding due to both future sea level rise and storms, and integrated with long-term coastal evolution (i.e., beach changes and cliff/bluff retreat)	https://walrus.wr.usgs.gov/coastal_processes/cosmos/ http://data.pointblue.org/apps/ocof/cms/
TNC Coastal Resilience	An online mapping tool showing potential impacts from sea level rise and coastal hazards designed to help communities develop and implement solutions that incorporate ecosystem-based adaptation approaches. Available statewide with more detailed modelling for Monterey Bay, Santa Barbara, Ventura, and Santa Monica.	http://maps.coastalresilience.org/california/
Humboldt Bay Sea Level Rise Adaptation Project	This project is a multi-phased, regional collaboration. Phase I produced the *Humboldt Bay Shoreline Inventory, Mapping, and Sea Level Rise Vulnerability Assessment* which describes current shoreline conditions and vulnerabilities under the current tidal regime. Phase II included hydrodynamic modeling to develop vulnerability maps of areas surrounding Humboldt Bay vulnerable to inundation from existing and future sea levels. Phase II produced the *Humboldt Bay Sea Level Rise Modeling Inundation Mapping Report* and the *Humboldt Bay Sea Level Rise Conceptual Groundwater Model*.	All reports are available at: http://humboldtbay.org/humboldt-bay-sea-level-rise-adaptation-planning-project

Table C-2. Sea Level Rise Data and Resource Clearinghouses

Resource	Description	Link
California State Adaptation Clearinghouse	Hosted by the OPR Integrated Climate Adaptation and Resiliency Program (ICARP), a centralized source of information that provides the resources necessary to guide decision makers at the state, regional, and local levels when planning for and implementing climate adaptation projects to promote resiliency to climate change in California.	http://opr.ca.gov/clearinghouse/adaptation/ or https://resilientca.org/
California Climate Commons	Offers a point of access to climate change data and related resources, information about the science that produced it, and the opportunity to communicate with others about applying climate change science to conservation in California.	http://climate.calcommons.org/
Climate Adaptation Knowledge Exchange (CAKE)	Provides an online library of climate adaptation case studies and resources, plus ways to connect with an online climate adaptation community/ network.	http://www.cakex.org/
Ecosystem Based Management Tools Network Database	Provides a searchable database of tools available for climate adaptation, conservation planning, sea level rise impact assessment, *etc.*	http://www.ebmtools.org/about_ebm_tools.html
Climate.Data.gov	Recently launched federal government data portal that includes a number of data sets on climate change, including sea level rise impacts.	http://www.data.gov/climate/
NOAA Digital Coast	This NOAA-sponsored website is focused on helping communities address coastal issues. The Digital Coast provides coastal data, tools, training, and information from reputable sources.	http://coast.noaa.gov/digitalcoast/

Table C-3. Adaptation Planning Guidebooks

Title	Description	Link
Scanning the Conservation Horizon (National Wildlife Federation 2011)	Designed to assist conservation and resource professionals to better plan, execute, and interpret climate change vulnerability assessments.	https://www.nwf.org/~/media/pdfs/global-warming/climate-smart-conservation/nwfscanningtheconservationhorizonfinal92311.ashx
Adapting to Sea Level Rise: A Guide for California's Coastal Communities (Russell and Griggs 2012)	Intended to assist California's coastal managers and community planners in developing adaptation plans for sea level rise that are suited to their local conditions and communities.	http://seymourcenter.ucsc.edu/OOB/Adapting%20to%20Sea%20Level%20Rise.pdf
California Adaptation Planning Guide (APG) (Cal EMA/CNRA 2012)	Provides guidance to support regional and local communities in proactively addressing the unavoidable consequences of climate change. Includes a step-by-step process for local and regional climate vulnerability assessment and adaptation strategy development.	http://resources.ca.gov/climate/safeguarding/local-action/
Preparing for Climate Change: A Guidebook for Regional and State Governments (Snover *et al.* 2007)	Assists decision makers in a local, regional, or state government prepare for climate change by recommending a detailed, easy-to-understand process for climate change preparedness based on familiar resources and tools.	http://cses.washington.edu/db/pdf/snoveretalgb574.pdf
Adapting to Climate Change: a Planning Guide for State Coastal Managers (NOAA 2010)	Guide offers a framework for state coastal managers to follow as they develop and implement climate change adaptation plans in their own states.	https://coast.noaa.gov/czm/media/adaptationguide.pdf

Using Scenarios to Explore Climate Change: A Handbook for Practitioners (NPS 2013)	Describes the five-step process for developing multivariate climate change scenarios taught by the Global Business Network (GBN). Detailed instructions are provided on how to accomplish each step. Appendices include a hypothetical scenario exercise that demonstrates how to implement the process and some early examples of how national parks are using climate change scenarios to inform planning and decision making.	http://www.nps.gov/subjects/climatechange/upload/CCScenariosHandbookJuly2013.pdf
Scenario Planning for Climate Change Adaptation: A Guidance for Resource Managers (Moore *et al.* 2013)	Step-by-step guide to using scenarios to plan for climate change adaptation for natural resource managers, planners, scientists, and other stakeholders working at a local or regional scale to develop resource management approaches that take future climate change impacts and other important uncertainties into account.	http://scc.ca.gov/files/2013/07/Scen-planning_17july2013_FINAL-3.pdf

Table C-4. Resources for Assessing Adaptation Measures

Resource	Description	Link
General		
Georgetown Climate Center's Climate Adaptation Toolkit – Sea Level Rise and Coastal Land Use	Explores 18 different land-use tools that can be used to preemptively respond to the threats posed by sea level rise to both public and private coastal development and infrastructure, and strives to assist governments in determining which tools to employ to meet their unique socio-economic and political contexts.	http://www.georgetownclimate.org/resources/adaptation-tool-kit-sea-level-rise-and-coastal-land-use
What Will Adaptation Cost? (ERGI 2013)	"This report provides a framework that community leaders and planners can use to make more economically informed decisions about adapting to sea level rise and storm flooding. The four-step framework can be used to perform a holistic assessment of costs and benefits of different adaptation approaches across a community, or to focus in on select infrastructure. The report also discusses the expertise needed at each step in the process."	https://coast.noaa.gov/data/digitalcoast/pdf/adaptation-report.pdf
Center for Ocean Solutions: Adaptation in Action: Examples from the Field	Provides case studies of various adaptation strategies including overlay zones, non-conformities, setbacks, buffers, development conditions, shoreline protection devices, managed retreat, capital improvement programs, acquisition programs, conservation easements, rolling easements, tax incentives, transfer development rights, and real estate disclosures.	http://www.centerforoceansolutions.org/sites/default/files/Application%20of%20Land%20Use%20Practices%20and%20Tools%20to%20Prepare.pdf

Combatting Sea Level Rise in Southern California: How Local Government Can Seize Adaptation Opportunities While Minimizing Legal Risk (Herzog and Hecht 2013)	Identifies how local governments can harness legal doctrines to support aggressive, innovative strategies to achieve successful sea level rise adaptation outcomes for Southern California while minimizing legal risk. Broadly outlines likely sea level rise impacts in Southern California, and evaluates the risks and opportunities of potential protection, accommodation, and retreat adaptation strategies that local governments could deploy.	http://www.law.ucla.edu/~/media/Files/UCLA/Law/Pages/Publications/CEN_EMM_PUB%20Combatting%20Sea-Level%20Rise.ashx
Strategies for Erosion-Related Impacts		
Evaluation of Erosion Mitigation Alternatives for Southern Monterey Bay	Provides a technical evaluation of various erosion mitigation measures, conducts a cost benefit analysis of some of the more promising measures, and includes recommendations for addressing coastal erosion in Southern Monterey Bay. The report is intended to be relevant for other areas of California as well.	https://montereybay.noaa.gov/research/techreports/tresapwa2012.html
Rolling Easements		
Rolling Easements- A Primer (Titus 2011)	Examines more than a dozen different legal approaches to rolling easements. It differentiates opportunities for legislatures, regulators, land trusts, developers, and individual landowners. Considers different shoreline environments (*e.g.*, wetlands, barrier islands) and different objectives (*e.g.*, public access, wetland migration)	http://papers.risingsea.net/rolling-easements.html
No Day at the Beach: Sea Level Rise, Ecosystem Loss, and Public Access Along the California Coast (Caldwell and Segall 2007)	Provides a description of sea level rise impacts to ecosystems and public access, strategies to address these impacts, and case study examples of rolling easement strategies for the California coast.	http://scholarship.law.berkeley.edu/cgi/viewcontent.cgi?article=1833&context=elq

Natural Resources		
PRBO Climate Smart Conservation	Lists science-based, climate-smart conservation planning and management tools and methods, including restoration projects designed for climate change and extremes.	http://www.pointblue.org/priorities/climate-smart-conservation/
US Forest Service System for Assessing Vulnerability of Species- Climate Change Tool	Quantifies the relative impact of expected climate change effects for terrestrial vertebrate species.	http://www.fs.fed.us/rm/grassland-shrubland-desert/products/species-vulnerability/savs-climate-change-tool/
The Nature Conservancy: Reducing Climate Risk with Natural Infrastructure report	Presents a series of nine case studies in which natural, "green" infrastructure was successfully used to mitigate climate impacts. The economic costs and benefits of the green infrastructure are compared with traditional "gray" approaches.	http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/california/ca-green-vs-gray-report-2.pdf
CDFW Essential Habitat Connectivity Project	"The California Department of Fish and Wildlife and the California Department of Transportation (Caltrans) commissioned a team of consultants to produce a statewide assessment of essential habitat connectivity by February of 2010, using the best available science, datasets, spatial analyses, and modeling techniques. The goal was to identify large remaining blocks of intact habitat or natural landscape and model linkages between them that need to be maintained, particularly as corridors for wildlife."	https://www.wildlife.ca.gov/Conservation/Planning/Connectivity
CDFW Areas of Conservation Emphasis tool	Provides a mapping tool and reports on the best available statewide, spatial information on California's biological richness, including species diversity, rarity, and sensitive habitats, as well as recreational needs and opportunities throughout the state, including fishing, hunting and wildlife-viewing.	http://www.dfg.ca.gov/biogeodata/ace/

Table C-5. Examples of Sea Level Rise Vulnerability Assessments in California

Title	Description	Link
Humboldt Bay Sea Level Rise Adaptation Planning Project	Multiphase project to assess vulnerability of Humboldt Bay shoreline and adjacent areas to sea level rise and coastal hazards.	http://humboldtbay.org/humboldt-bay-sea-level-rise-adaptation-planning-project
Marin Ocean Coast Sea Level Rise Vulnerability Assessment (2018)	Assesses vulnerability of Marin County's ocean coastal areas to sea level rise, specifically evaluating 5 SLR and storm scenarios through approximately 2100. Findings are organized both by asset type and community.	https://www.marincounty.org/depts/cd/divisions/planning/csmart-sea-level-rise/csmart-publications-csmart-infospot
San Francisco Sea Level Rise Existing Data and Analyses Technical Memorandum (2016)	Summarizes existing data and analyses of SLR vulnerability within the Coastal Zone and lays the foundation for San Francisco's proposed LCP amendment.	http://default.sfplanning.org/plans-and-programs/local_coastal_prgm/20160506.SFLCP_SLR_Tech_Memo.FINAL.pdf
Plan Half Moon Bay Sea Level Rise Vulnerability Assessment (2016)	Identifies the primary vulnerabilities within Half Moon Bay and sets forth next steps that the City and other involved agencies may take to further assess and address these vulnerabilities.	http://nebula.wsimg.com/0849a308eececc2c58ce202e2851bade?AccessKeyId=06ACEAA5216D33A5C3B0&disposition=0&alloworigin=1
City of Monterey Final Sea Level Rise and Vulnerability Analyses, Existing Conditions and Issues Report (2016)	Provides a science-based assessment of climate change vulnerabilities that includes extensive field data gathering, and compilation of existing data and information.	https://www.monterey.org/Portals/0/Policies-Procedures/Planning/WorkProgram/LCP/16_0316_FINAL_Monterey_ExistingConditions_wAppendixA_WEB.pdf
City of Pacific Grove Climate Change Vulnerability Assessment (2015)	Provides an evaluation of potential significant impacts of climate change for the city's coastal zone with an emphasis on how anticipated climate change may affect people, resources, and infrastructure along the coast.	http://www.cityofpacificgrove.org/sites/default/files/general-documents/local-coastal-program/pg-lcp-final-vulnerability-assessment-011515.pdf
City of Morro Bay Community Vulnerability and Resilience Assessment (2017)	Provides a best estimate of likely future conditions, based on local demographic projections and the most recently available scientific projections of future climate conditions, given current trends.	http://www.morrobayca.gov/DocumentCenter/View/10676/Final-Draft--Revised-Community-Vulnerability-and-Resilience-Assessment-3-6-17?bidId=

City of Goleta Coastal Hazards Vulnerability Assessment and Fiscal Impact Report (2015)	Provides a science-based assessment that includes extensive field data gathering, compilation of existing data and information, and the participation of stakeholders such as citizens, business owners, local organizations, and community leaders. Enhances community planning by identifying coastal hazards and associated vulnerabilities that are in balance with fiscal resources.	https://www.conservationgateway.org/ConservationPractices/Marine/crr/library/Documents/GoletaCoastalVulnerability.pdf
City of Oxnard Sea Level Rise Atlas (2016)	Maps and identifies areas and assets at risk to existing and future conditions, including sea level rise.	http://nebula.wsimg.com/64b81b1805381307f1e6492bf187b6d9?AccessKeyId=D91312DA8FC16C8BCDB9&disposition=0&alloworigin=1
County of San Diego Climate Change Vulnerability Assessment (2017)	Identifies the primary threats from a changing climate facing the unincorporated areas of San Diego county, and its vulnerability to these threats.	https://www.sandiegocounty.gov/content/dam/sdc/pds/advance/cap/publicreviewdocuments/PostBOSDocs/CAP%20Appendix%20D%20-%20Climate%20Change%20Vulnerability%20Assessment.pdf
City of Imperial Beach Sea Level Rise Assessment (2016)	Identifies vulnerabilities from sea level rise and coastal hazards; a range of adaptation strategies including tradeoffs and economics; and recommends strategies over time that are politically digestible and economically feasible.	http://www.imperialbeachca.gov/vertical/sites/%7B6283CA4C-E2BD-4DFA-A7F7-8D4ECD543E0F%7D/uploads/100516_IB_Sea_Level_Rise_Assessment_FINAL.pdf
Santa Barbara Sea Level Rise Vulnerability Study (Russell and Griggs 2012)	Assesses the vulnerability of the City of Santa Barbara to future sea level rise and related coastal hazards (by Years 2050 and 2100) based upon past events, shoreline topography, and exposure to sea level rise and wave attack. It also evaluates the likely impacts of coastal hazards to specific areas of the City, analyzes their risks and the City's ability to respond, and recommends potential adaptation responses.	http://www.energy.ca.gov/2012publications/CEC-500-2012-039/CEC-500-2012-039.pdf

City of Santa Cruz Climate Change Vulnerability Assessment (Griggs and Haddad 2011)	Delineates and evaluates the likely impacts of future climate change on the city of Santa Cruz, analyzes the risks that these hazards pose for the city, and then recommends potential adaptation responses to reduce the risk and exposure from these hazards in the future.	http://seymourcenter.ucsc.edu/OOB/SCClimateChangeVulnerabilityAssessment.pdf
Developing Climate Adaptation Strategies for San Luis Obispo County: Preliminary Vulnerability Assessment for Social Systems (Moser 2012)	Describes the likely impacts of climate change on the resources and social systems of San Luis Obispo County, and assesses key areas of vulnerability. Sea level rise is identified as a major source of risk to fishing, coastal tourism, coastal development, and infrastructure.	http://www.energy.ca.gov/2012publications/CEC-500-2012-054/CEC-500-2012-054.pdf
Monterey Bay Sea Level Rise Vulnerability Study (Monterey Bay National Marine Sanctuary and PWA ESA; In progress)	Will assess potential future impacts from sea level rise for the Monterey Bay region. The project will estimate the extent of future coastal erosion in Monterey Bay due to accelerated sea level rise and evaluate areas subjected to coastal flooding by inundation from wave action and/or storm surges. The project will update and refine existing Monterey Bay coastal hazard zones maps (erosion and flooding).	Project scope and grant details: http://scc.ca.gov/webmaster/ftp/pdf/sccbb/2012/1201/20120119Board03D_Monterey_Bay_Sea_Level_Rise.pdf
Sea Level Rise Vulnerability Study for the City of LA (Adapt LA) (USC Sea Grant 2013)	This report provides a summary of the initial research on the potential impacts of sea level rise and associated flooding from storms for coastal communities in the City of L.A. The study concentrates on the City's three coastal regions: Pacific Palisades from Malibu to Santa Monica; Venice and Playa del Rey; and San Pedro, Wilmington and the Port of Los Angeles.	http://dornsife.usc.edu/uscseagrant/la-slr/

** See also the Coastal Commission's LCP Grant website for a status chart of sea level rise work completed by grantees (updated on an approximately quarterly basis).*

Table C-6. California Climate Adaptation Plans that Address Sea Level Rise

Title	Description	Link
Marin Ocean Coast Sea Level Rise Adaptation Report (2018)	Presents near-, medium-, and long-term options to accommodate, protect against, or retreat from the threats of SLR and extreme events and is intended to inform Marin County's Local Coastal Program (LCP), coastal permitting, and other county goals related to SLR preparation.	https://www.marincounty.org/depts/cd/divisions/planning/csmart-sea-level-rise/csmart-publications-csmart-infospot
Morro Bay Sea Level Rise Adaptation Strategy Report (2018)	Presents adaptation strategies for three sites within the City, selected to represent the general exposure of a type of hazard or asset.	http://www.morro-bay.ca.us/DocumentCenter/View/11753/Sea-Level-Rise-Adaptation-Report-January-2018
Adapting to Rising Tides (ART) Project	The ART project is a collaborative planning effort led by the San Francisco Bay Conservation and Development Commission to help SF Bay Area communities adapt to rising sea levels. The project has started with a vulnerability assessment for a portion of the Alameda County shoreline.	http://www.adaptingtorisingtides.org/
Santa Cruz Climate Adaptation Plan	An update to the 2007 Hazard Mitigation Plan, the adaptation plan includes strategies and best available science for integrating climate change impacts into City of Santa Cruz operations.	Complete plan is available: http://www.cityofsantacruz.com/home/showdocument?id=23644
San Diego Bay Sea Level Rise Adaptation Strategy	The strategy provides measures to evaluate and manage risks from sea level rise and other climate change impacts, and includes a vulnerability assessment of community assets at risk, and broad recommendations to increase resilience of these assets.	http://icleiusa.org/wp-content/uploads/2015/08/San-Diego-Sea-Level-Rise.pdf

** See also the Coastal Commission's LCP Grant website for a status chart of sea level rise work completed by grantees (updated on an approximately quarterly basis).*

Table C-7. California State Agency Resources

Agency	Document	Description and Link
California Natural Resources Agency	*Safeguarding California Plan: 2018 Update (2018)*	An update to the 2014 Safeguarding document: http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf
	Safeguarding California from Climate Change (2014)	An update to the 2009 *California Climate Adaptation Strategy*: http://resources.ca.gov/docs/climate/Final_Safeguarding_CA_Plan_July_31_2014.pdf
	California Climate Adaptation Strategy (2009)	Summarizes climate change impacts and recommends adaptation strategies across seven sectors: Public Health, Biodiversity and Habitat, Oceans and Coastal Resources, Water, Agriculture, Forestry, and Transportation and Energy: http://resources.ca.gov/docs/climate/Statewide_Adaptation_Strategy.pdf
Office of the Governor	*Executive Order S-13-08* (2008)	This 2008 Executive Order required the CA Natural Resources Agency to develop a statewide climate adaptation strategy, and requested that the National Academy of Sciences convene an independent scientific panel to assess sea level rise in California. http://www.climatechange.ca.gov/state/executive_orders.html
	Executive Order B-30-15 (2015)	This 2015 Executive Order established an interim greenhouse gas reduction target of 40 percent below 1990 levels by 2030 to expand upon the targets already included in AB32 and emphasized the need for adaptation in line with the actions identified in the *Safeguarding California* document. http://gov.ca.gov/news.php?id=18938
Governor's Office of Planning and Research	*Defining Vulnerable Communities in the Context of Climate Adaptation*	Resource guide developed by the Integrated Climate Adaptation and Resiliency Program (ICARP) as a starting point for practitioners to use when first considering how to define vulnerable communities in an adaptation context. http://opr.ca.gov/planning/icarp/vulnerable-communities.html
California Ocean Protection Council (and the Coasts &	*State of California Sea-Level Rise Guidance: 2018 Update (2018)*	Provides guidance for incorporating sea level rise projections into planning and decision making. Updated to include *Rising Seas* science, 2018: http://www.opc.ca.gov/updating-californias-sea-level-rise-guidance/

Oceans Climate Action Team, or CO-CAT)	*Rising Seas in California: An Update on Sea-Level Rise Science*	Provides a synthesis of the state of the science on sea-level rise and forms the scientific foundation for the updated OPC SLR Guidance. http://www.opc.ca.gov/webmaster/ftp/pdf/docs/rising-seas-in-california-an-update-on-sea-level-rise-science.pdf
	Resolution on Implementation of the Safeguarding California Plan for Reducing Climate Risks (2014)	Resolves that OPC staff and the State Coastal Leadership Group on SLR will develop an action plan to implement the *Safeguarding California* plan. http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20140827/Item5_OPC_Aug2014_Exhibit_1_Safeguarding_Resolution_ADOPTED.pdf
	Resolution on Sea Level Rise (2011)	Recognizes that state agencies should address SLR through various actions such as the consideration of SLR risks in decision making, investment of public funds, stakeholder engagement, state SLR guidance updates, *etc*. http://www.opc.ca.gov/webmaster/ftp/pdf/docs/OPC_SeaLevelRise_Resolution_Adopted031111.pdf
	California State Sea-Level Rise Guidance Document (2013)	Provides guidance for incorporating sea level rise projections into planning and decision making for projects in California. Updated to include NRC projections March 2013: http://www.opc.ca.gov/webmaster/ftp/pdf/docs/2013_SLR_Guidance_Update_FINAL1.pdf
California Coastal Conservancy	*Climate Change Policy* (2010)	Includes policies on 1) consideration of climate change in project evaluation, 2) consideration of sea level rise impacts in vulnerability assessments, 3) collaboration to support adaptation strategies, and 4) encouragement of adaptation strategies in project applications mitigation and adaptation: http://scc.ca.gov/2009/01/21/coastal-conservancy-climate-change-policy-and-project-selection-criteria/
	Project Selection Criteria (2011)	Adds sea level rise vulnerability to project selection criteria: http://scc.ca.gov/2009/01/21/coastal-conservancy-climate-change-policy-and-project-selection-criteria/

	Guidance for addressing climate change in CA Coastal Conservancy projects (2012)	Includes the following steps: 1) conduct initial vulnerability assessment, 2) conduct more comprehensive vulnerability assessment, 3) reduce risks and increase adaptive capacity, and 4) identify adaptation options: http://scc.ca.gov/2013/04/24/guidance-for-grantees
San Francisco Bay Conservation and Development Commission (BCDC)	*Climate Change Bay Plan Amendment* (2011)	Amends *Bay Plan* to include policies on climate change and sea level rise. Policies require: 1) a sea level rise risk assessment for shoreline planning and larger shoreline projects, and 2) if risks exist, the project must be designed to cope with flood levels by mid-century, and include a plan to address flood risks at end of century. Assessments are required to "identify all types of potential flooding, degrees of uncertainty, consequences of defense failure, and risks to existing habitat from proposed flood protection devices": http://www.bcdc.ca.gov/proposed_bay_plan/bp_amend_1-08.shtml
	Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline (2011)	Provides the background staff report identifying vulnerabilities in the Bay Area's economic and environmental systems, as well as the potential impacts of climate change on public health and safety. The report provides the basis for all versions of the proposed findings and policies concerning climate change: http://www.bcdc.ca.gov/BPA/LivingWithRisingBay.pdf
California Department of Transportation (Caltrans)	*Estimating Sea Level for Project Initiation Documents* (2012)	Provides guidance on converting tidal datums and predicting future sea levels. http://www.dot.ca.gov/hq/row/landsurveys/SurveysManual/Estimating_Sea_Level_v1.pdf

	Guidance on Incorporating Sea Level Rise (2011)	Provides guidance on how to incorporate sea level rise concerns into programming and design of Caltrans projects. Includes screening criteria for determining whether to include SLR and steps for evaluating degree of potential impacts, developing adaptation alternatives, and implementing the adaptation strategies: http://www.dot.ca.gov/ser/downloads/sealevel/guide_incorp_slr.pdf
	Addressing Climate Change in Adaptation Regional Transportation Plans: A Guide for MPOs and RTPAs (2013)	Provides a clear methodology for regional agencies to address climate change impacts through adaptation of transportation infrastructure: http://www.dot.ca.gov/hq/tpp/offices/orip/climate_change/documents/FR3_CA_Climate_Change_Adaptation_Guide_2013-02-26_.pdf
	District-wide Vulnerability Assessments (2018, ongoing)	Caltrans is currently in the process of completing climate change and sea level rise vulnerability assessments for each of its Districts. http://www.dot.ca.gov/transplanning/ocp/vulnerability-assessment.html
Cal OES	*California Multi-Hazard Mitigation Plan* (Draft SHMP 2018)	The California (CA) State Hazard Mitigation Plan (SHMP) represents the state's primary hazard mitigation guidance document - providing an updated analysis of the state's historical and current hazards, hazard mitigation goals and objectives, and hazard mitigation strategies and actions. The plan represents the state's overall commitment to supporting a comprehensive mitigation strategy to reduce or eliminate potential risks and impacts of disasters in order to promote faster recovery after disasters and, overall, a more resilient state: http://www.caloes.ca.gov/for-individuals-families/hazard-mitigation-planning/state-hazard-mitigation-plan
State Lands Commission	Application for Lease of State Lands	Requires assessment of climate change risks, and preference is given to projects that reduce climate change risks: http://www.slc.ca.gov/Forms/LMDApplication/LeaseApp.pdf

California State Parks	Sea level rise guidance (*in development*)	Will provide guidance to Park staff on how to assess impacts to parklands.
Groups of state agencies	California Climate Change Center's 3rd Assessment	Explores local and statewide vulnerabilities to climate change, highlighting opportunities for taking concrete actions to reduce climate-change impacts: http://climatechange.ca.gov/climate_action_team/reports/third_assessment/
	California Climate Adaptation Planning Guide (APG)	Provides a decision-making framework intended for use by local and regional stakeholders to aid in the interpretation of climate science and to develop a systematic rationale for reducing risks caused, or exacerbated, by climate change (2012): http://resources.ca.gov/climate/safeguarding/local-action/

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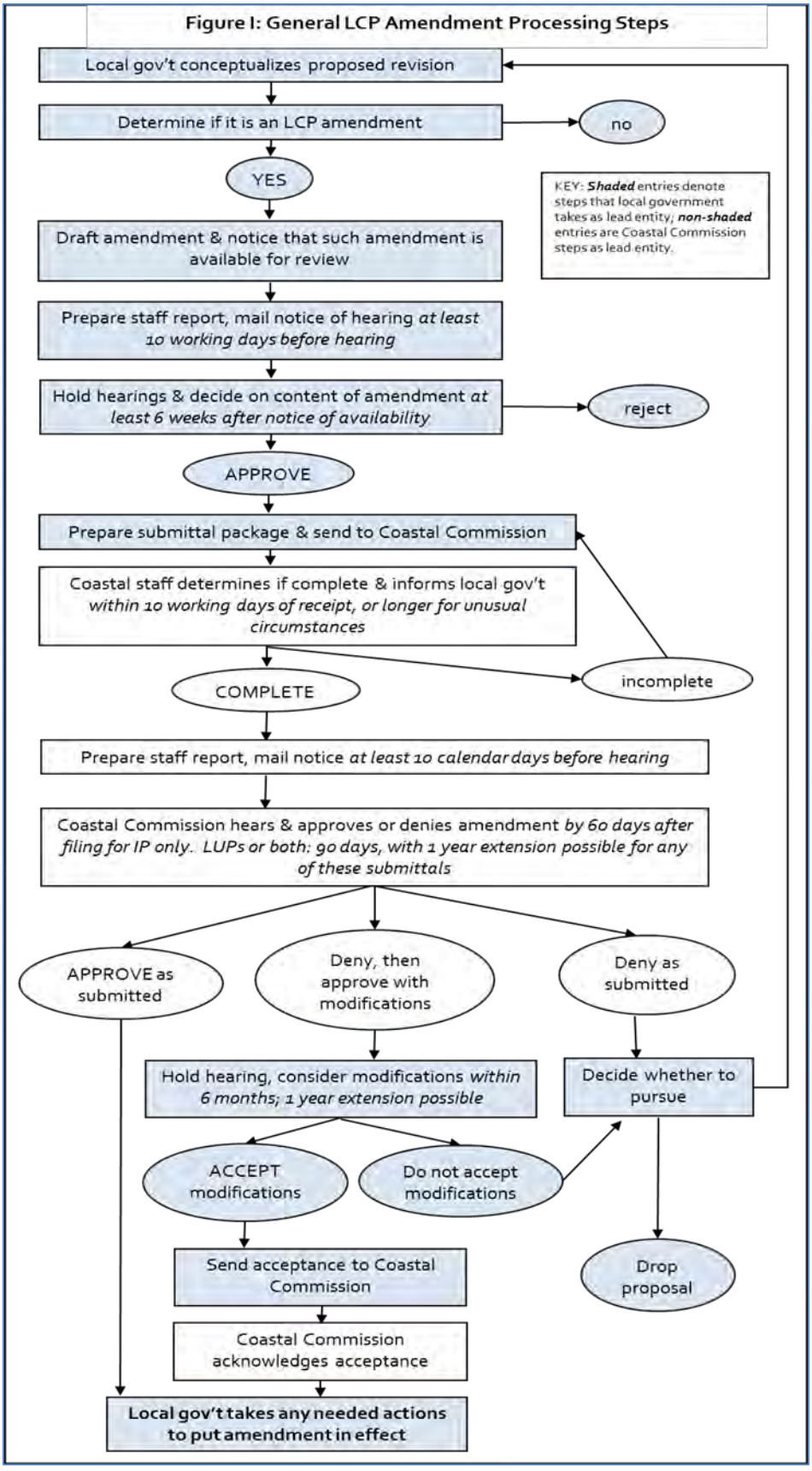
Appendix D

General LCP Amendment Processing Steps and Best Practices

Sea level rise is one of many topics that should be addressed in a Local Coastal Program (LCP) or LCP amendment. The Coastal Commission offers a *Local Coastal Program (LCP) Update Guide* that outlines the broad process for amending or certifying an LCP, including guidance for both Land Use Plans and Implementation Plans. It addresses major Coastal Act concerns, including public access, recreation and visitor serving facilities, water quality protection, ESHA and natural resources, agricultural resources, new development, archaeological and cultural resources, scenic and visual resources, coastal hazards, shoreline erosion and protective devices, energy and industrial development, and timberlands. Therefore, this *Sea Level Rise Policy Guidance* should be used in conjunction with the LCP Update Guide to perform complete LCP amendments or certifications. The following figure depicts the general LCP amendment process.



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Appendix E

Funding Opportunities for LCP Planning and Implementation

Project Implementation Funds

The following table includes a list of grant funding available for implementation of sea level rise adaptation projects and programs. Much of this information was compiled by the Governor's Office of Emergency Services (Cal OES).

Grant Name	Agency	Purpose	Contact
Proposition 1 & Proposition 84 Competitive Grant Programs	Ocean Protection Council	Funding from Prop 1 is intended to fund projects that provide more reliable water supplies, restore important species and habitat, and develop a more resilient and sustainably managed water system (water supply, water quality, flood protection, and environment) that can better withstand inevitable and unforeseen pressures in the coming decades. Proposition 84 funds may be used for a wide range of purposes including scientific research, adaptive management, and conservation of marine resources.	OPC http://www.opc.ca.gov/category/funding-opportunities/
Proposition 68 Funds **Proposition 1 Grants** **Climate Ready Grants**	California Coastal Conservancy	Proposition 68 grants for a variety of purposes including creating parks, protecting coastal forests and wetlands, and climate adaptation Proposition 1 Grants for multi-benefit ecosystem and watershed protection and restoration projects. Climate Ready Grants are focused on supporting planning, project implementation and multi-agency coordination to advance actions that will increase the resilience of coastal communities and ecosystems	Coastal Conservancy http://scc.ca.gov/2018/10/10/proposition-68-draft-guidelines/ http://scc.ca.gov/grants/proposition-1-grants/ http://scc.ca.gov/climate-change/climate-ready-program/
SB 1 Adaptation Planning Grants	Caltrans	Support actions at the local and regional level to advance climate change adaptation efforts on the state transportation system	Caltrans http://www.dot.ca.gov/hq/tpp/grants.html

Proposition 68	Ocean Protection Council	Provide funding for projects that plan, develop, and implement climate adaptation and resiliency projects, including projects that assist coastal communities with adaptation to sea level rise. These funds can also support technical assistance and community access projects.	Ocean Protection Council (*website to come*)
Hazard Mitigation Grant (HMG) Program	Administered by: Cal OES Funded by: US Department of Homeland Security, Federal Emergency Management Agency (FEMA)	Provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster.	Cal OES http://www.caloes.ca.gov/cal-oes-divisions/recovery/disaster-mitigation-technical-support/404-hazard-mitigation-grant-program FEMA https://www.fema.gov/hazard-mitigation-grant-program
Flood Mitigation Assistance (FMA) Program	Administered by: Cal OES Funded by: US Department of Homeland Security, Federal Emergency Management Agency (FEMA)	Provides grants to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP.	Cal OES http://www.caloes.ca.gov/cal-oes-divisions/hazard-mitigation/pre-disaster-flood-mitigation FEMA https://www.fema.gov/flood-mitigation-assistance-program
Public Assistance (PA) Program	US Department of Homeland Security, Federal Emergency Management Agency (FEMA)	To provide supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The PA Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.	FEMA https://www.fema.gov/public-assistance-local-state-tribal-and-non-profit
Community Development Block Grant (CDBG) Program	US Department of Housing and Urban Development	Program works to ensure decent affordable housing, to provide services to the most vulnerable in our communities, and to create jobs through the expansion and retention of businesses.	HUD http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs

Watershed Surveys and Planning	US Department of Agriculture, Natural Resource Conservation Service	To provide planning assistance to Federal, state and local agencies for the development or coordination of water and related land resources and programs in watersheds and river basins.	NRCS http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wsp/
Watershed Protection and Flood Prevention	US Department of Agriculture, Natural Resource Conservation Service	To provide technical and financial assistance in planning and executing works of improvement to protect, develop, and use of land and water resources in small watersheds.	NRCS http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/wfpo/
Land and Water Conservation Fund Grants	US Department of the Interior, National Park Service	To acquire and develop outdoor recreation areas and facilities for the general public, to meet current and future needs.	NPS http://www.nps.gov/lwcf/index.htm
SBA Disaster Loan Program	US Small Business Administration	SBA provides low-interest disaster loans to businesses of all sizes, private non-profit organizations, homeowners, and renters. SBA disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.	SBA https://www.sba.gov/content/disaster-loan-program
Clean Water Act Section 319 Grants	US Environmental Protection Agency	To implement state and tribal non-point source pollution management programs, including support for non-structural watershed resource restoration activities.	EPA https://www.epa.gov/nps/319-grant-program-states-and-territories
Flood Control Works/ Emergency Rehabilitation	US Department of Defense, Army Corps of Engineers	To assist in the repairs and restoration of public works damaged by flood, extraordinary wind, wave or water action.	USACE http://www.usace.army.mil/Missions/EmergencyOperations/NationalResponseFramework/FloodControl.aspx
Emergency Streambank and Shoreline Protection	US Department of Defense, Army Corps of Engineers	To prevent erosion damages to public facilities by the emergency construction or repair of streambank and shoreline protection works (33 CFR 263.25)	USACE http://www.mvr.usace.army.mil/BusinessWithUs/OutreachCustomerService/FloodRiskManagement/Section14.aspx
Small Flood Control Projects	US Department of Defense, Army Corps of Engineers	To reduce flood damages through small flood control projects not specifically authorized by Congress.	USACE www.usace.army.mil See also: https://www.cfda.gov/index?s=program&mode=form&tab=core&id=2216ee03c69db437c431036a5585ede6

Appendix F

Primary Coastal Act Policies Related to Sea Level Rise and Coastal Hazards

Legislative Findings Relating to Sea Level Rise

Section 30006.5 of the Coastal Act states (Legislative findings and declarations; technical advice and recommendations) states (emphasis added):

> *The Legislature further finds and declares that sound and timely scientific recommendations are necessary for many coastal planning, conservation, and development decisions and that the commission should, in addition to developing its own expertise in significant applicable fields of science, interact with members of the scientific and academic communities in the social, physical, and natural sciences so that the commission may receive technical advice and recommendations with regard to its decisionmaking, especially with regard to issues such as coastal erosion and geology, marine biodiversity, wetland restoration, the question of sea level rise, desalination plants, and the cumulative impact of coastal zone developments.*

Public Access and Recreation

Section 30210 of the Coastal Act (Access; recreational opportunities; posting) states:

> *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Section 30211 of the Coastal Act (Development not to interfere with access) states:

> *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

Section 30212 of the Coastal Act (New development projects) states:

> *(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, (2) adequate access exists nearby, or (3) agriculture would be adversely affected. Dedicated accessway shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway.*

Section 30214 of the Coastal Act (Implementation of public access policies; legislative intent) states:

> (*a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following:*
>
> *(1) Topographic and geologic site characteristics.*
>
> *(2) The capacity of the site to sustain use and at what level of intensity.*

(3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area and the proximity of the access area to adjacent residential uses.

(4) The need to provide for the management of access areas so as to protect the privacy of adjacent property owners and to protect the aesthetic values of the area by providing for the collection of litter.

(b) It is the intent of the Legislature that the public access policies of this article be carried out in a reasonable manner that considers the equities and that balances the rights of the individual property owner with the public's constitutional right of access pursuant to Section 4 of Article X of the California Constitution. Nothing in this section or any amendment thereto shall be construed as a limitation on the rights guaranteed to the public under Section 4 of Article X of the California Constitution.

(c) In carrying out the public access policies of this article, the commission and any other responsible public agency shall consider and encourage the utilization of innovative access management techniques, including, but not limited to, agreements with private organizations which would minimize management costs and encourage the use of volunteer programs.

Section 30220 of the Coastal Act (Protection of certain water-oriented activities) states:

Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

Section 30221 of the Coastal Act (Oceanfront land; protection for recreational use and development**)** states:

Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

Section 30223 of the Coastal Act (Upland areas) states:

Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.

Wetlands and Environmentally Sensitive Resources

Section 30231 of the Coastal Act (Biological productivity; water quality) states in part:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored…

Section 30233 of the Coastal Act (Diking, filling or dredging; continued movement of sediment and nutrients) states:

> *(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:*

Section 30240 of the Coastal Act (Environmentally sensitive habitat areas; adjacent developments) states:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
>
> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Coastal Act Section 30121 defines "Wetland" as follows:

> *"Wetland" means lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.*

The California Code of Regulations Section 13577(b) of Title 14, Division 5.5, Article 18 defines "Wetland" as follows:

> *(1) Measure 100 feet landward from the upland limit of the wetland. Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. For purposes of this section, the upland limit of a wetland shall be defined as:*
>
> > *(A) the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;*
> >
> > *(B) the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or*
> >
> > *(C) in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.*
>
> *(2) For the purposes of this section, the term "wetland" shall not include wetland habitat created by the presence of and associated with agricultural ponds and reservoirs where:*

(A) the pond or reservoir was in fact constructed by a farmer or rancher for agricultural purposes; and

(B) there is no evidence (e.g., aerial photographs, historical survey, etc.) showing that wetland habitat pre-dated the existence of the pond or reservoir. Areas with drained hydric soils that are no longer capable of supporting hydrophytes shall not be considered wetlands.

In addition, Coastal Act Section 30107.5 defines "Environmentally sensitive area" as follows:

"Environmentally sensitive area" means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

Agricultural and Timber Lands

Section 30241 of the Coastal Act (Prime agricultural land; maintenance in agricultural production) states:

The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas' agricultural economy, and conflicts shall be minimized between agricultural and urban land uses…

Section 30242 of the Coastal Act (Lands suitable for agricultural use; conversion) states:

All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (1) continued or renewed agriculture use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continue agricultural use on surrounding lands.

Section 30243 of the Coastal Act (Productivity of soils and timberlands; conversions) states:

The long-term productivity of soils and timberlands shall be protected, and conversions of coastal commercial timberlands in units of commercial size to other uses or their division into units of noncommercial size shall be limited to providing for necessary timber processing and related facilities.

Archaeological and Paleontological Resources

Section 30244 of the Coastal Act (Archaeological or paleontological resources) states:

Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.

Marine Resources

Section 30230 of the Coastal Act (Marine resources; maintenance) states:

> *Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Section 30231 of the Coastal Act (Biological productivity; water quality) states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Section 30233 of the Coastal Act (Diking, filling or dredging; continued movement of sediment and nutrients) states:

> *(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects…*
>
> *(d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients that would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a Coastal Development Permit for these purposes are the method of placement, time of year of placement, and sensitivity of the placement area.*

Section 30234 of the Coastal Act (Commercial fishing and recreational boating facilities**)** states:

> *Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.*

Section 30234.5 of the Coastal Act (Economic, commercial, and recreational importance of fishing) states:

> *The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.*

Coastal Development

Section 30250 of the Coastal Act (Location; existing developed area) states:

> *(a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.*
>
> *(b) Where feasible, new hazardous industrial development shall be located away from existing developed areas.*
>
> *(c) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors.*

Section 30251 of the Coastal Act (Scenic and visual qualities) states:

> *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas...*

Section 30253 the Coastal Act (Minimization of adverse impacts) states in part:

> *New development shall do all of the following:*
>
> *(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
>
> *(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs...*

Section 30235 of the Coastal Act (Construction altering natural shoreline) states:

> *Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public*

beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fishkills should be phased out or upgraded where feasible.

Section 30236 of the Coastal Act (Water supply and flood control) states:

Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (l) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

Ports

Section 30705 of the Coastal Act (Diking, filling or dredging water areas) states:

(a) Water areas may be diked, filled, or dredged when consistent with a certified port master plan only for the following: ...

(b) The design and location of new or expanded facilities shall, to the extent practicable, take advantage of existing water depths, water circulation, siltation patterns, and means available to reduce controllable sedimentation so as to diminish the need for future dredging.

(c) Dredging shall be planned, scheduled, and carried out to minimize disruption to fish and bird breeding and migrations, marine habitats, and water circulation. Bottom sediments or sediment elutriate shall be analyzed for toxicants prior to dredging or mining, and where water quality standards are met, dredge spoils may be deposited in open coastal water sites designated to minimize potential adverse impacts on marine organisms, or in confined coastal waters designated as fill sites by the master plan where such spoil can be isolated and contained, or in fill basins on upland sites. Dredge material shall not be transported from coastal waters into estuarine or fresh water areas for disposal.

Section 30706 of the Coastal Act (Fill) states:

In addition to the other provisions of this chapter, the policies contained in this section shall govern filling seaward of the mean high tide line within the jurisdiction of ports:

(a) The water area to be filled shall be the minimum necessary to achieve the purpose of the fill.

(b) The nature, location, and extent of any fill, including the disposal of dredge spoils within an area designated for fill, shall minimize harmful effects to coastal resources, such as water quality, fish or wildlife resources, recreational resources, or sand transport systems, and shall minimize reductions of the volume, surface area, or circulation of water.

(c) The fill is constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters.

(d) The fill is consistent with navigational safety.

Section 30708 of the Coastal Act (Location, design and construction of port related developments) states:

All port-related developments shall be located, designed, and constructed so as to:

(a) Minimize substantial adverse environmental impacts.

(b) Minimize potential traffic conflicts between vessels.

(c) Give highest priority to the use of existing land space within harbors for port purposes, including, but not limited to, navigational facilities, shipping industries, and necessary support and access facilities.

(d) Provide for other beneficial uses consistent with the public trust, including, but not limited to, recreation and wildlife habitat uses, to the extent feasible.

(e) Encourage rail service to port areas and multicompany use of facilities.

Public Works Facilities

According to Coastal Act Section 30114, public works facilities include:

(a) All production, storage, transmission, and recovery facilities for water, sewerage, telephone, and other similar utilities owned or operated by any public agency or by any utility subject to the jurisdiction of the Public Utilities Commission, except for energy facilities.

(b) All public transportation facilities, including streets, roads, highways, public parking lots and structures, ports, harbors, airports, railroads, and mass transit facilities and stations, bridges, trolley wires, and other related facilities. For purposes of this division, neither the Ports of Hueneme, Long Beach, Los Angeles, nor San Diego Unified Port District nor any of the developments within these ports shall be considered public works.

(c) All publicly financed recreational facilities, all projects of the State Coastal Conservancy, and any development by a special district.

(d) All community college facilities.

Greenhouse Gas Emissions Reduction

Section 30250(a) of the Coastal Act (Location, existing developed areas states) in part:

(a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have

significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.

Section 30252 of the Coastal Act (Maintenance and enhancement of public access) states:

The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing nonautomobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high intensity uses such as high-rise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of onsite recreational facilities to serve the new development.

Section 30253(d) of the Coastal Act (Minimization of adverse impacts) states in part:

New Development shall:

(d) Minimize energy consumption and vehicle miles traveled….

Appendix G

Sea Level Rise Projections for 12 California Tide Gauges

Map of Tide Gauge Locations

Figure G-1. Map of tide gauge locations (from OPC 2018)

Table G-1. Sea Level Rise Projections for the Crescent City Tide Gauge[106] (OPC 2018)

Projected Sea Level Rise (in feet): *Crescent City*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.3	0.5	0.8
2040	0.4	0.9	1.4
2050	0.7	1.5	2.3
2060	0.9	2.1	3.3
2070	1.2	2.8	4.5
2080	1.6	3.7	5.9
2090	2.0	4.7	7.4
2100	2.5	5.9	9.3
2110*	2.5	6.2	11.0
2120	3.0	7.4	13.1
2130	3.4	8.7	15.3
2140	3.9	10.1	17.8
2150	4.4	11.6	20.6

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[106] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-2. Sea Level Rise Projections for the North Spit Tide Gauge[107] (OPC 2018)

Projected Sea Level Rise (in feet): *North Spit*			
	Probabilistic Projections (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.7	1.0	1.2
2040	1.1	1.6	2.0
2050	1.5	2.3	3.1
2060	1.9	3.1	4.3
2070	2.4	4.0	5.6
2080	2.9	5.1	7.2
2090	3.5	6.2	8.9
2100	4.1	7.6	10.9
2110*	4.3	8.0	12.7
2120	4.9	9.4	15.0
2130	5.5	10.9	17.4
2140	6.2	12.5	20.1
2150	6.8	14.1	23.0

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[107] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-3. Sea Level Rise Projections for the Arena Cove Tide Gauge[108] (OPC 2018)

Projected Sea Level Rise (in feet): *Arena Cove*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.7	1.0
2040	0.7	1.2	1.6
2050	1.0	1.8	2.6
2060	1.3	2.5	3.7
2070	1.7	3.3	5.0
2080	2.2	4.3	6.4
2090	2.6	5.4	8.0
2100	3.1	6.7	9.9
2110*	3.2	7.0	11.6
2120	3.8	8.2	13.9
2130	4.3	9.7	16.2
2140	4.8	11.1	18.7
2150	5.4	12.6	21.5

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[108] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-4. Sea Level Rise Projections for the Point Reyes Tide Gauge[109] (OPC 2018)

Projected Sea Level Rise (in feet): *Point Reyes*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.6	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	2.0	2.8
2060	1.5	2.7	3.9
2070	1.9	3.5	5.2
2080	2.4	4.6	6.7
2090	2.9	5.6	8.3
2100	3.5	7.0	10.3
2110*	3.6	7.3	12.0
2120	4.2	8.6	14.3
2130	4.7	10.1	16.6
2140	5.3	11.5	19.2
2150	5.9	13.1	22.0

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[109] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-5. Sea Level Rise Projections for the San Francisco Tide Gauge[110] (OPC 2018)

Projected Sea Level Rise (in feet): *San Francisco*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.3	1.8
2050	1.1	1.9	2.7
2060	1.5	2.6	3.9
2070	1.9	3.5	5.2
2080	2.4	4.5	6.6
2090	2.9	5.6	8.3
2100	3.4	6.9	10.2
2110*	3.5	7.3	11.9
2120	4.1	8.6	14.2
2130	4.6	10.0	16.6
2140	5.2	11.4	19.1
2150	5.8	13.0	21.9

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[110] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-6. Sea Level Rise Projections for the Monterey Tide Gauge[111] (OPC 2018)

Projected Sea Level Rise (in feet): *Monterey*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.2	1.7
2050	1.1	1.9	2.7
2060	1.4	2.6	3.8
2070	1.8	3.4	5.1
2080	2.3	4.4	6.6
2090	2.8	5.5	8.2
2100	3.3	6.9	10.1
2110*	3.4	7.2	11.8
2120	4.0	8.5	14.0
2130	4.5	9.9	16.4
2140	5.1	11.3	18.9
2150	5.7	12.9	21.8

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[111] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-7. Sea Level Rise Projections for the Port San Luis Tide Gauge[112] (OPC 2018)

Projected Sea Level Rise (in feet): *Port San Luis*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.7	1.0
2040	0.7	1.2	1.6
2050	1.0	1.8	2.6
2060	1.3	2.5	3.7
2070	1.7	3.3	5.0
2080	2.1	4.3	6.4
2090	2.6	5.3	8.0
2100	3.1	6.7	9.9
2110*	3.2	7.0	11.6
2120	3.7	8.2	13.8
2130	4.3	9.6	16.2
2140	4.8	11.1	18.7
2150	5.4	12.6	21.5

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[112] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-8. Sea Level Rise Projections for the Santa Barbara Tide Gauge[113] (OPC 2018)

Projected Sea Level Rise (in feet): *Santa Barbara*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.4	0.7	1.0
2040	0.7	1.1	1.6
2050	1.0	1.8	2.5
2060	1.3	2.5	3.6
2070	1.7	3.3	4.9
2080	2.1	4.3	6.3
2090	2.6	5.3	7.9
2100	3.1	6.6	9.8
2110*	3.2	6.9	11.5
2120	3.7	8.2	13.7
2130	4.2	9.5	16.0
2140	4.8	11.0	18.6
2150	5.3	12.6	21.4

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[113] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-9. Sea Level Rise Projections for the Santa Monica Tide Gauge[114] (OPC 2018)

Projected Sea Level Rise (in feet): *Santa Monica*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.8	1.0
2040	0.8	1.2	1.7
2050	1.1	1.9	2.6
2060	1.4	2.6	3.8
2070	1.8	3.4	5.1
2080	2.3	4.4	6.5
2090	2.8	5.5	8.1
2100	3.3	6.8	10.0
2110*	3.5	7.2	11.7
2120	4.0	8.5	14.0
2130	4.5	9.8	16.3
2140	5.1	11.3	18.9
2150	5.7	12.9	21.7

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[114] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-10. Sea Level Rise Projections for the Los Angeles Tide Gauge[115] (OPC 2018)

Projected Sea Level Rise (in feet): *Los Angeles*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.5	0.7	1.0
2040	0.7	1.2	1.7
2050	1.0	1.8	2.6
2060	1.3	2.5	3.7
2070	1.7	3.3	5.0
2080	2.2	4.3	6.4
2090	2.7	5.3	8.0
2100	3.2	6.7	9.9
2110*	3.3	7.1	11.5
2120	3.8	8.3	13.8
2130	4.3	9.7	16.1
2140	4.9	11.1	18.7
2150	5.4	12.7	21.5

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[115] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-11. Sea Level Rise Projections for the La Jolla Tide Gauge[116] (OPC 2018)

Projected Sea Level Rise (in feet): *La Jolla*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.6	0.9	1.1
2040	0.9	1.3	1.8
2050	1.2	2.0	2.8
2060	1.6	2.7	3.9
2070	2.0	3.6	5.2
2080	2.5	4.6	6.7
2090	3.0	5.7	8.3
2100	3.6	7.1	10.2
2110*	3.7	7.5	12.0
2120	4.3	8.8	14.3
2130	4.9	10.2	16.6
2140	5.4	11.7	19.2
2150	6.1	13.3	22.0

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[116] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Table G-12. Sea Level Rise Projections for the San Diego Tide Gauge[117] (OPC 2018)

Projected Sea Level Rise (in feet): *San Diego*			
	Probabilistic Projections (in feet) (based on Kopp et al. 2014)		H++ Scenario (Sweet et al. 2017)
	Low Risk Aversion	**Medium-High Risk Aversion**	**Extreme Risk Aversion**
	Upper limit of "likely range" (~17% probability SLR exceeds...)	*1-in-200 chance (0.5% probability SLR exceeds...)*	*Single scenario (no associated probability)*
2030	0.6	0.9	1.1
2040	0.9	1.3	1.8
2050	1.2	2.0	2.8
2060	1.6	2.7	3.9
2070	2.0	3.6	5.2
2080	2.5	4.6	6.7
2090	3.0	5.7	8.3
2100	3.6	7.0	10.2
2110*	3.7	7.5	12.0
2120	4.3	8.8	14.3
2130	4.9	10.2	16.6
2140	5.4	11.7	19.2
2150	6.1	13.3	22.0

**Most of the available climate model experiments do not extend beyond 2100. The resulting reduction in model availability causes a small dip in projections between 2100 and 2110, as well as a shift in uncertainty estimates (see Kopp et al., 2014). Use of 2110 projections should be done with caution and acknowledgement of increased uncertainty around these projections.*

[117] Probabilistic projections for the height of sea level rise and the H++ scenario are presented. The H++ projection is a single scenario and does not have an associated likelihood of occurrence. Projections are with respect to a baseline year of 2000 (or more specifically, the average relative sea level over 1991-2009). Table is adapted from the 2018 OPC SLR Guidance to present only the three scenarios OPC recommends evaluating. Additionally, while the OPC tables include low emissions scenarios, only high emissions scenarios, which represent RCP 8.5, are included here because global greenhouse gas emissions are currently tracking along this trajectory. The Coastal Commission will continue to update best available science as necessary, including if emissions trajectories change.

Appendix H

Coastal Commission Contact Information

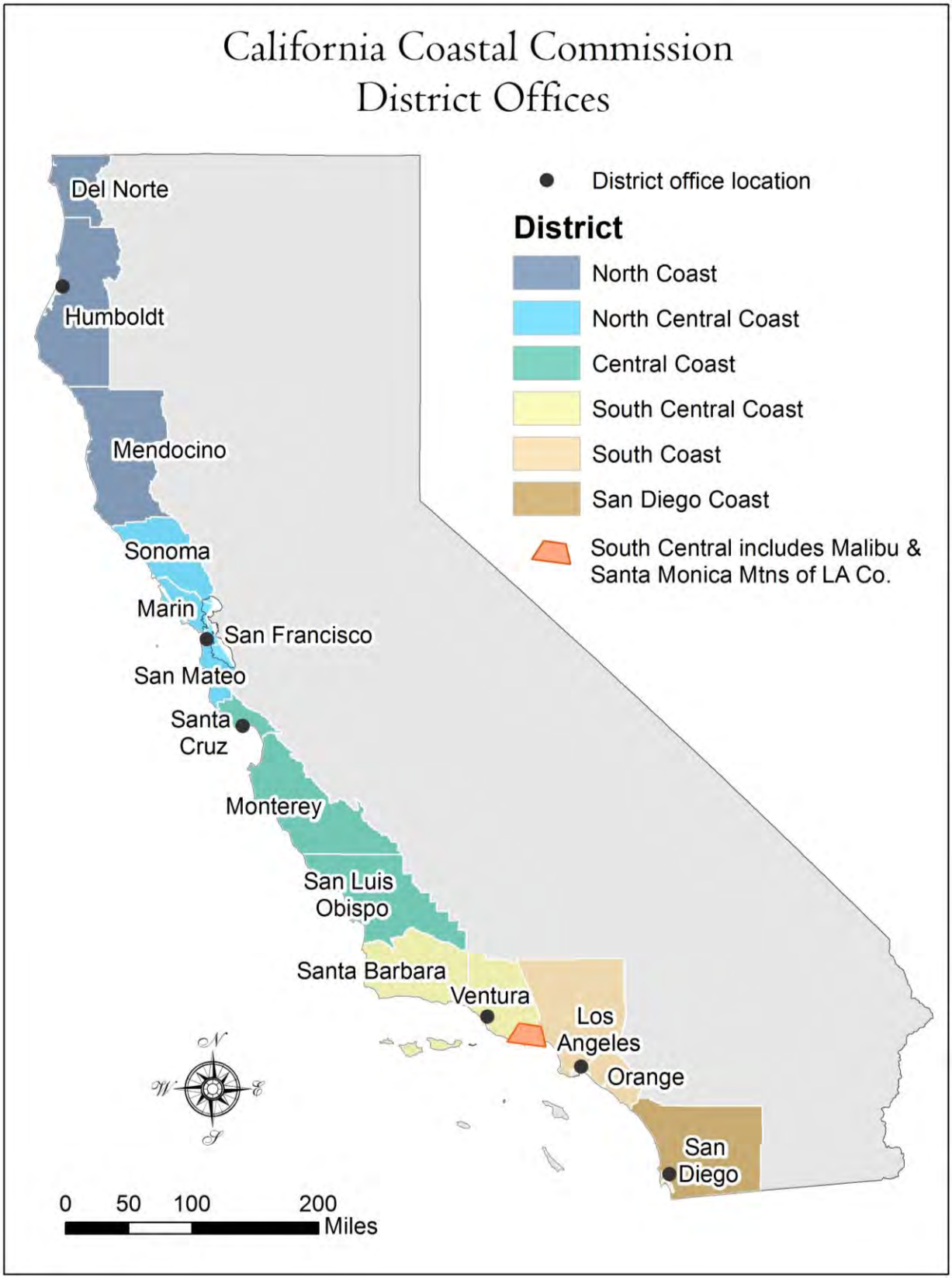

Figure H-1. Location of Coastal Commission Offices

COASTAL COMMISSION DISTRICT OFFICE CONTACT INFORMATION

North Coast (Del Norte, Humboldt, Mendocino Counties)
(707) 826-8950

Headquarters and North Central Coast (Sonoma, Marin, San Francisco, San Mateo Counties)
(415)-904-5200

Central Coast (Santa Cruz, Monterey, San Luis Obispo Counties)
(831) 427-4863

South Central Coast (Santa Barbara and Ventura Counties, and the Malibu portion of Los Angeles County)
(805) 585-1800

South Coast (Los Angeles (except Malibu) and Orange Counties)
(562) 590-5071

San Diego (San Diego County)
(619) 767-2370

COASTAL COMMISSION STAFF SEA LEVEL RISE TEAM

Principal Contributors to this Document

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Questions? Please call Kelsey Ducklow at 415-904-2335 or Carey Batha at 415-904-5268, or email SLRGuidanceDocument@coastal.ca.gov.

Attachment No. 22 - Declaration of Wendell Cox in Support of Petitioner CHB's Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal

Due to errors in the original document, it cannot be uploaded into the agenda. The file can be accessed online at:

https://scag.ca.gov/sites/main/files/file-attachments/huntingtonbeach-attachment22.pdf?1604955654

CALIFORNIA COASTAL COMMISSION
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W6g

Sea Level Rise Principles

May 1, 2020

EXHIBITS

Table of Contents

Making California's Coast Resilient to Sea Level Rise: Principles for Aligned State Action

Background

- California's coast, bays, estuaries, and ocean are critical to the state's environmental and economic security, integral to our quality of life, and an iconic part of the state's legacy. Each generation of Californians has an obligation to be strong stewards of the coast and ocean for future generations.

- However, Californians' safety, local and state economies, critical infrastructure, and natural resources face increasing threats from sea level rise (SLR). Every scientific assessment since California's 2009 Climate Adaptation Strategy has revealed that coastal impacts from climate change-caused SLR will occur more quickly and be more severe than previously projected. California's coast faces a significant risk of experiencing SLR of up to 1.0 feet by 2030 and 7.6 feet by 2100.

- Warming temperatures and a higher frequency of extreme weather, in conjunction with high tide events, have already resulted in SLR impacts at Imperial Beach, Seal Beach, Del Mar, Pacifica, Arcata, areas along San Francisco Bay, and elsewhere.

- Projections of future SLR point to significant impacts to California communities, with considerable environmental justice implications, upwards of hundreds of billions of dollars in impacts to property and development, impacts to statewide and regional water supplies, as well as significant damage to and loss of many miles of beaches, tidepools, coastal rivers, estuaries, and wetlands.

- To improve effectiveness in addressing this immediate challenge, state and regional agencies co-developed and endorsed the following Principles for Aligned State Action.

Photo: Embarcadero, San Francisco, "King Tides," Mike Filippoff

Goal

- As California has repeatedly demonstrated, a bold, statewide climate agenda benefits our natural resources, health and safety, economy, critical infrastructure, and communities. Our state has led global efforts on climate change mitigation and is poised to do so on climate change adaptation.

- These Principles will enable California to scale up its coastal resiliency efforts through aligned strategies that create consistent, efficient decision-making processes and actions coastwide and improve collaboration across state, local, tribal, and federal partners.

- Action now saves up to six times the cost of action later, allows time for the state and communities to test and leverage needed solutions, and prevents untold impacts.

- By enhancing alignment and partnerships now, we will significantly improve the climate resiliency of our coast, bays, shorelines, and communities, particularly frontline communities most vulnerable to the impacts of SLR.

California state agencies with coastal, bay, and shoreline climate resilience responsibilities, including for coastal infrastructure and Californians' safety, endorse the following Principles around Best Available Science, Partnerships, Alignment, Communications, Local Support, and Coastal Resilience Projects. These Principles will guide unified, effective action toward SLR resilience for California's coastal communities, ecosystems, and economies.

Photo: Coastal Commission King Tides Project 2019

Principles

1. Develop and Utilize Best Available Science

- Apply best available science to planning, decision-making, project design, and implementation. Prioritize frequent engagement with stakeholders to ensure the science is actionable.
- Utilize SLR targets based on the best available science and a minimum of 3.5 feet of SLR by 2050. Develop and utilize more protective baseline 2050 and 2100 targets for road, rail, port, power plants, water and waste systems, and other critical infrastructure.

2. Build Coastal Resilience Partnerships

- Partner and coordinate regularly on SLR resilience issues, policies, planning, processes, mandates, permitting, information, funding, and projects, including with federal and local government bodies and tribes, and across issue areas and mandates.
- Regularly and collaboratively collect, share, and publicize the latest information on SLR and how agencies are using SLR projections to reduce risks to safety, property, infrastructure, natural ecosystems, and native species.
- Build strong relationships with all partners at all levels of government, and with the public, nonprofits, businesses, and other stakeholders.
- Consult, learn from, and coordinate and partner with tribes to ensure inclusive and multicultural stewardship of lands and waters subject to SLR.

Photo: Coyote Creek Flood, San Jose, Santa Clara Valley Water District

3. Improve Coastal Resilience Communications

- Enhance SLR and coastal resilience communications and engagement, including alignment on SLR messaging and implementation of a coordinated public awareness and education campaign.
- Increase transparency, efficiency, and alignment of state and local coastal resilience processes, policymaking, and decision-making.

4. Support Local Leadership and Address Local Conditions

- Support local planning and adaptation policies and projects that address local and regional conditions, meet baseline standards for climate impacts, and consider acute increases in SLR caused by storm surges, El Niños, and other events.
- Evaluate and learn from local conditions, including community priorities, health and safety, critical infrastructure, housing, culture, economies, patterns of development, local environment, and other characteristics, to inform risk tolerance and adaptation.
- Particularly in light of the fact that the environmental burdens of development and industry are often borne by under-resourced communities, prioritize early protection of and capacity building for the most under-resourced and vulnerable frontline communities in developing and implementing adaptation plans, projects, and strategies, toward greater social equity and environmental justice.

Photo: Rockaway Beach, Pacifica, "King Tides," Alan Grinberg

5. Strengthen Alignment around Coastal Resilience

- Develop and apply baseline, Administration-wide SLR assumptions, projections, targets, terms, and standards into coastal projects, retrofits, planning, funding, regulatory, and permitting initiatives. Consider statewide decision-making guidelines to help identify the strongest solutions, establish priorities, and ensure baseline success. Prioritize avoidance of initiatives that shift hazards and impacts elsewhere along the coast or shoreline.
- Ensure that up-to-date SLR resilience planning is in place coastwide and includes alignment on: consistent, minimum baseline targets; vulnerability assessments for communities (particularly frontline communities), infrastructure, property, and natural ecosystems and native species; SLR economic impact assessments, including the cost of resiliency projects and the potential cost of no action; and identification of multi-benefit SLR resiliency strategies.
- Plan for SLR impacts to regional and statewide water supplies and water management.
- Collaboratively work to pursue and develop specific funding sources for state, regional, and local coastal resilience planning, projects, and public outreach.
- Where possible, avoid creating unnecessary duplication of existing state agency authority.

6. Implement and Learn from Coastal Resilience Projects

- Protect and enhance public trust natural and cultural resources, such as beaches, wetlands, other habitats, biodiversity, and culturally important areas.
- Protect critical public water-dependent infrastructure, ports, harbor districts, and other evolving public trust needs and uses, given the unique characteristics, significance, constraints, and values of these public trust uses.
- Prioritize the use of nature-based adaptation measures where appropriate.
- Build coastal resilience by increasing the number of restoration and adaptation projects, such as wetland restoration; ensure that adaptation projects do not shift hazards and impacts elsewhere along the coast or shoreline.
- Streamline permitting for high-need coastal restoration projects.
- Realize multiple benefits from coastal resilience projects where feasible.
- Take action to prevent impacts from SLR to public access as feasible, toward the continued protection and enhancement of public coastal access for all.

Photo: Dune Restoration, Cardiff State Beach. NOAA

Endorsing and Participating Entities

In early 2020 Secretary Crowfoot, California Natural Resources Agency (CNRA) and Secretary Blumenfeld, California Environmental Protection Agency (CalEPA) convened two high-level meetings of 17 state agencies (listed below under Participating Entities) to develop and approve Sea Level Rise Principles for use in planning, policy setting, project development, and decision making. The Principles have been endorsed by both CNRA and CalEPA secretaries and all departments within these agencies. The Principles are a living document, and formal endorsement of the Principles from other agencies will be added as received.

Endorsing Entities

Wade Crowfoot, Secretary, CNRA, and CNRA Agencies
Jared Blumenfeld, Secretary, CalEPA, and CalEPA Agencies
Betty Yee, State Controller

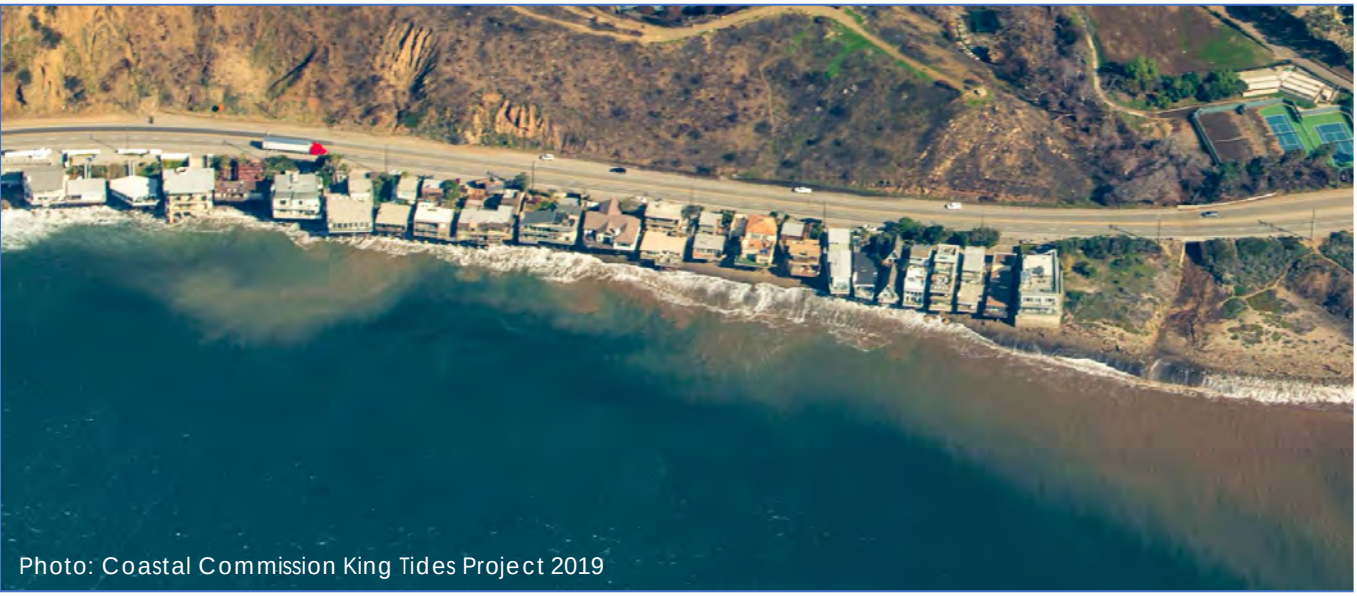


Photo: Coastal Commission King Tides Project 2019

Participating Entities

CNRA
CalEPA
SF Bay Conservation and Development Commission
California Coastal Commission
California Energy Commission
California Department of Fish and Wildlife
Caltrans
Delta Stewardship Council
Department of Water Resources
Ocean Protection Council
Governor's Office of Planning and Resear
Office of Emergency Services
State Coastal Conservancy
State Lands Commission
State Parks
State Water Resources Control Board
Strategic Growth Council

Southern California Association of Governments
Remote Participation Only
January 25, 2021

To: Regional Housing Needs Assessment Subcommittee (RHNA)

EXECUTIVE DIRECTOR'S APPROVAL

From: Kevin Kane, Senior Regional Planner,
(213) 236-1828, kane@scag.ca.gov

Kome Ajise

Subject: Appeal of the Draft RHNA Allocation for the City of Irvine

RECOMMENDED ACTION:
Deny the appeal filed by the City of Irvine to reduce the draft RHNA allocation for the City of Irvine by 8,259 units.

STRATEGIC PLAN:
This item supports the following Strategic Plan Goal 2: Advance Southern California's policy interests and planning priorities through regional, statewide, and national engagement and advocacy.

SUMMARY OF APPEAL(S):
The City of Irvine requests a reduction of its RHNA allocation by 8,259 units (from 23,554 units to 15,295 units) on twelve issues:

1) Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021 – 2029)
   a. Location of and population within HQTAs
   b. Residual reallocation pursuant to the AFFH factor*
2) Existing or projected jobs-housing balance
3) Sewer or water infrastructure constraints for additional development
4) Availability of land suitable for urban development or for conversion to residential use
5) Lands protected from urban development under existing federal or state programs
6) County policies to preserve prime agricultural land
7) Distribution of household growth assumed for purposes of comparable Regional Transportation Plans
8) The rate of overcrowding
9) Housing needs generated by the presence of a university campus within a jurisdiction
10) Loss of units during a state of emergency,
11) The region's greenhouse gas (GHG) emissions targets
12) Changed circumstances
13) Affirmatively furthering fair housing*

* The AFFH factor is not checked on the appeal request form but is addressed in the appeal.

Other: The City contests the regional determination of 1.34 million units, consistency with the RTP/SCS as well as the achievability of the RHNA allocation.

The City of Irvine organized its appeal into the following five categories, but SCAG's response to the issues raised follows the appeal request form (Issues 1 through 13 identified above as well as other issues not considered bases for appeal):

1. "Appeal one" relates to application of the adopted Final RHNA Methodology, specifically:

(A) contestation of the population within a high-quality transit area (HQTA) and the reallocation of the so-called "residual" need.
(B) Affirmatively Furthering Fair Housing (AFFH) which was not included in Irvine's appeal request form but centers on the reallocation of residual housing need based on AFFH.

2. "Appeal two" is based on the local planning factors (Issues 2 through 11 above) which Irvine contends were not sufficiently considered.
3. "Appeal three" cites changed circumstances (Issue 12), primarily related to job losses and other observed changes stemming from the COVID-19 pandemic.
4. "Appeal four" contests the regional determination of 1.34 million housing units, which is not a basis for appeal.
5. "Appeal five" relates to the issue of consistency between the RHNA and SCAG's Sustainable Communities Strategy (SCS)—which along with the Regional Transportation Plan (RTP) form Connect SoCal. While this is not a basis of appeal, it is substantively similar to arguments raised in Irvine's "Appeal Two" related to the local planning factors of RTP consistency and regional GHG emissions (Issues 7 and 11).

RATIONALE FOR STAFF RECOMMENDATION:

Staff have reviewed the appeal(s) and recommend no change to the City of Irvine's RHNA allocation. In Issue 1a, the location and population of HQTAs were correctly identified pursuant to the adopted, Final RHNA Methodology. In Issue 1b, the residual reallocation at issue is part of the adopted, Final RHNA Methodology and cannot be changed through an appeal. With respect to Issues 2 through 11, Irvine has not demonstrated that SCAG failed to consider any of the local planning factors listed and has not demonstrated that additional residential development is precluded in other areas of the city not subject to the variety of constraints identified. With respect to Issue 12, given the long-range nature of our planning process and Irvine's failure to demonstrate how changed circumstances uniquely impact the city such that its housing need is reduced, a reduction is not recommended.

With respect to other issues including the regional determination of 1.34 million units, consistency with the RTP/SCS as well as the achievability of the RHNA allocation, these are not bases for appeal

and Irvine does not demonstrate the existence of any policy inconsistency which would impact the local planning factors cited.

BACKGROUND:

Draft RHNA Allocation

Following the adoption of the Final RHNA Methodology on March 5, 2020 and the adoption of Connect SoCal on September 3, 2020, all local jurisdictions received draft RHNA allocations on September 11, 2020. A summary is below.

Total RHNA for the City of Irvine: 23,554 units
Very Low Income: 6,379 units
Low Income: 4,225 units
Moderate Income: 4,299 units
Above Moderate Income: 8,651 units

Additional background related to the Draft RHNA Allocation is included in Attachment 1.

Summary of Comments Received during 45-day Comment Period

No comments were received from local jurisdictions or HCD during the 45-day public comment period described in Government Code section 65584.05(c) which specifically regard the appeal filed for the City of Irvine. Three comments were received which relate to appeals filed generally:

- HCD submitted a comment on December 10, 2020 delineating the statutory basis for RHNA appeals and the requirement that any appeals granted must include written findings regarding how revisions are necessary to further RHNA's statutory objectives.
- The City of Whittier submitted a comment on December 10, 2020 supporting surrounding cities in their appeals, but expressing concern that additional units may be applied to Whittier if reallocated from cities which are successful in their appeals.
- The City of Long Beach submitted a comment on December 3, 2020 indicating their view that the RHNA allocation process was fair and transparent, their support for evaluating appeals on their merits (specifically those from the Gateway Council of Governments), and their opposition to any action which would result in a transfer of additional units to Long Beach.

ANALYSIS:

Issue 1a: *Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029) [Government Code section 65584.05 (b)(2)] – HQTA location and population.*

The City of Irvine contends that SCAG's assessment of 2045 HQTAs and population in 2045 HQTAs were inaccurate. The basis for this issue is that the methodology was not properly applied, pursuant to Government Code section 65584.05(a)(2):

> *"The council of governments or delegate subregion, as applicable, failed to determine the share of the regional housing need in accordance with the information described in, and the methodology established pursuant to, Section 65584.04, and in a manner that furthers, and does not undermine, the intent of the objectives listed in subdivision (d) of Section 65584."*

Irvine claims that three of the four stops which associated with 2045 HQTAs, which are relied upon in the RHNA methodology's assessment of existing housing need are not in the Connect SoCal project list and therefore should not be considered HQTAs. Furthermore, Irvine contests SCAG's measurement of 2045 forecasted population within its HQTA areas, contending that it should be lower.

SCAG Staff Response: SCAG's final regional determination of approximately 1.34 million units was issued by HCD on October 15, 2019 per state housing law. The regional determination is not a basis for appeal per adopted RHNA Appeals Procedures as it is not within the authority of the Appeals Board to make any changes to HCD's regional housing needs assessment. Only improper application of the methodology is grounds for an appeal. An example of an improper application of the adopted methodology might be a data error which was identified by a local jurisdiction.

With respect to the statutory objectives[1], SCAG used objective measures to advance certain principles, but since local and regional conditions vary tremendously across the state and over time, there are few consistent quantitative standards which can be used to evaluate all aspects of the methodology. Ultimately, however, the RHNA statute vests HCD with the authority to decide whether statutory objectives have been met.

[1] The objectives are: 1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low-income households. (2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080. (3) Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction. (4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey. (5) Affirmatively furthering fair housing (Govt. Code § 65584(d)).

As described in Attachment 1: Local Input and Development of Draft RHNA Allocation, the Final RHNA Methodology was adopted by the Regional Council on March 5, 2020 and describes the various policy factors whereby housing unit need is to be allocated across the region—for example, anticipated growth, access to jobs and transit, and vacancy. The methodology makes extensive use of locally reviewed input data and describes data sources and how they are calculated in detail. On January 13, 2020, the Final RHNA Methodology was found by HCD to further the five statutory objectives in large part due to its use of objective factors and as such cannot consider factors differently in one jurisdiction versus another.

HQTA Location

SCAG appreciates the City of Irvine's input into SCAG's HQTA definition which was provided through SCAG's Technical Working Group (TWG) in October 2019. This input resulted in the removal of freeway-running transit corridors with no bus stops on the freeway alignment from consideration as high-quality transit corridors (HQTC). This modification to the definition explicitly retained the areas surrounding the station-stop areas as those are proximate to high-quality transit service consistent with the HQTC definition in CA Pub. Res. Code § 21155(b). Ultimately, this led to a sharper regional definition for areas which are serviced by high quality transit and coincidentally led to a substantially lower HQTA population within the City of Irvine.

Irvine's appeal now argues that the three freeway-running BRT station areas within its boundaries (Alton Parkway, Jeffrey Road, and Spectrum Center) should be excluded from the SCAG definition because they are not included in the Connect SoCal project list, because OCTA did not first consult with the City of Irvine before providing information regarding these transit service improvements to SCAG, and due to various land-use constraints in the 0.5-mile radius areas surrounding these stops.

First, SCAG's definition of high-quality transit corridors is found in Appendix A of Connect SoCal's Transit Technical Report (attached) and indicates that:

> *Planned HQTCs and major transit stops are future improvements that are expected to be implemented by transit agencies by the RTP/SCS horizon year of 2045. These are assumed by definition to meet the statutory requirements of an HQTC or major transit stop. SCAG updates its inventory of planned major transit stops and HQTCs with the adoption of a new RTP/SCS, once every four years.*

The nature of bus services is that routes and service frequency can change periodically, thus a CTC's estimate of future transit service frequency is the best estimate available at a given point in time—in this instance, the point in time required to complete Connect SoCal. Future year HQTCs and HQTAs are an important component of regional planning and facilitate the achievement of

statutory goals including RHNA objectives to promote infill, encourage efficient development patterns, achieve the region's GHG emissions targets, and improve the balance between jobs and housing.

OCTA's 2018 and most recent Long Range Transportation Plan (LRTP) includes both the I-5 and SR-55 BRT projects, and their LRTP was developed with stakeholder engagement. In reviewing public comment records, Irvine did not appear to submit any written comments to OCTA on the Draft 2018 LRTP. OCTA staff were clear in stating that the LRTP is intended to be an input to SCAG's RTP update. OCTA I-5 BRT has 15-min AM and PM peak headways beginning in 2027 per the OCTA LRTP and is coded in the 2045 Plan. Both I-5 and SR-55 BRT projects are included in RTP Project ID 2160008. Both routes are in the HQTC maps of the Connect SoCal Transit Technical Report (attached).

Irvine states that the I-5 and SR-55 BRT station stops are conceptual and not yet been studied or deemed feasible. For the RTP purposes this is not an issue – it is understood that further project-level planning and environmental studies would be performed in accordance with state and federal law and SCAG relies on CTCs to provide these assumptions. SCAG is required to make assumptions about RTP projects' scope and timeline to support modeling and emissions analysis needed for the conformity determination. SCAG's Final RHNA Methodology explicitly made use of Final Connect SoCal data points such as HQTAs which are a vetted, well-established, well-understood mechanism for linking areas of current and potential future growth with transit access with the objective of reducing GHG emissions among other outcomes. SCAG's definition of an HQTA is described above and has been subject to extensive discussion and public review.

Irvine also identifies constraints to residential development in the areas surrounding these station-stops. However, the RHNA methodology in no way specifies where, within a jurisdiction's boundaries housing should be promoted. The methodology uses objective, region-wide factors to determine one jurisdiction's housing need versus another. It is the role of the local jurisdictions' housing element to decide where units allocated to the jurisdiction through the RHNA process are accommodated. Even still, the RHNA methodology uses TAZ-level growth forecast information provided by the City of Irvine to assess future population in HQTAs so as to assess future HQTA population as equitably as possible region-wide. Per Attachment 1, following additional review opportunities, SCAG directly used the local input TAZ growth distribution for the City of Irvine as the basis for this measure and any constraints to development in these station areas would have been amply considered during that process.

The Regional Council decided to include planned HQTAs following this definition as a component of the RHNA methodology. The evidence submitted by the City of Irvine does not suggest that these three stations should be excluded from consideration as HQTCs and therefore an HQTA. As such,

the inclusion of these stations does not indicate a misapplication of the adopted final RHNA methodology.

HQTA Population

Irvine also contends that the HQTA population should be lower, suggesting that SCAG may not have "prorated" TAZ populations based on which portions of TAZs are inside of HQTAs versus outside of HQTAs. Irvine totals all the TAZs which lie completely or partially with HQTA boundaries and indicates a total population of 43,719 which is slightly lower than the HQTA population of 43,855 used by SCAG (note that Irvine's appeal incorrectly states that this figure is 43,892).

In order to estimate the population of each city which lies within each HQTA boundary, SCAG uses small area forecast data provided through the Bottom-Up Local Input and Envisioning Process. While the transportation analysis zone (TAZ) geography is more commonly used, SCAG's forecast contains a higher degree of accuracy and is associated with local general plans down to the parcel level. In addition, TAZs contain an average of 2,000 residents across the region and as such are not sufficiently accurate for measuring anticipated population within a precisely defined HQTA. Thus, SCAG relies on forecasted population from Connect SoCal in Scenario Planning Zones (SPZs) to associate with HQTA boundaries using area-weighted interpolation. As SPZs are approximately $1/10^{th}$ the size of TAZs, this is the most accurate method that could be devised to estimate future populations in bespoke areas across a large region using locally reviewed input data.

The attached map of Irvine's HQTA areas by population and overlays this information with the HQTAs within the city. 150 SPZs lie fully within HQTA boundaries. An additional 127 SPZs lie partially within HQTA boundaries—this population is proportionally allocated to HQTAs based on how much of each SPZ's land area is within HQTA boundaries. The sum results in 43,855 people being assessed as within HQTA boundaries in Irvine. These data are equivalent to the small-area population forecast data in Connect SoCal's Growth Vision (discussed further in Attachment 1), which for Irvine matches the data provided by the City during the Bottom-Up Local Input and Envisioning Process. These data have been continuously available to local jurisdictions for review through the Scenario Planning Model (SPM).

It is important to have regionally standardized approaches in all parts of the RHNA methodology in order to ensure that housing units are allocated fairly and consistently, and this approach is part of the adopted Final RHNA Methodology. Irvine has not provided evidence to suggest that the process underlying the adopted Final RHNA Methodology for arriving at HQTA population is in any way flawed or incorrectly applied. As such, SCAG staff does not recommend a reduction in the City's draft RHNA allocation based on this issue.

Issues 1b and 13: *Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029) [Government Code section 65584.05 (b)(2)] --* residual reallocation pursuant to the AFFH factor.

Irvine contends that the residual reallocation distribution component of the RHNA methodology, which relates to Disadvantaged Communities (DACs) and requirements to affirmatively further fair housing (AFFH), was based on a failure to adequately consider information for the methodology pursuant to Government Code section 65584.05(b)(2):

> *"The council of governments or delegate subregion, as applicable, failed to determine the share of the regional housing need in accordance with the information described in, and the methodology established pursuant to, Section 65584.04, and in a manner that furthers, and does not undermine, the intent of the objectives listed in subdivision (d) of Section 65584."*

Note that Irvine does not base its appeal on Affirmatively Furthering Fair Housing, which is an allowable appeal basis. Specifically, Irvine contends that:

- *TCAC/HCD data relied upon for this part of the RHNA methodology were not intended for this purpose and their accuracy in capturing local conditions is questionable,*
- *The manner in which "Residual need" is redistributed within a county was not adequately vetted prior to its adoption by the Regional Council,*
- *The City of Santa Ana's draft RHNA allocation is based on projected growth figures which are outdated which impacts Irvine's RHNA allocation (these issues have also been raised in Irvine's separate appeal of Santa Ana's draft RHNA allocation), and*
- *The redistribution of residual need portion of the RHNA methodology is contrary to Sustainable Communities Strategy goals, e.g. promoting job and transit access.*

SCAG Staff Response: First, the SCAG Regional Council took action on both the Draft and Final RHNA methodology pursuant to properly noticed agendas and every member of the Regional Council, in addition to a significant number of members of the public, had ample opportunity to place on the record, both in writing and in person, their relevant input for the Regional Council's consideration. For example, no less than fourteen (14) letters were acknowledged on the record and these were made available for public and SCAG review prior to the Regional Council's action on the draft methodology, all in compliance with applicable law. It should also be noted that the draft methodology was reviewed by HCD and was found to further statutory objectives of RHNA on January 13, 2020. On March 5, 2020, SCAG Regional Council adopted the draft methodology as the final methodology.

Further, for the draft methodology, many members of the public offered oral testimony on the issue both in support of the original staff recommendation and in support of the alternative draft

RHNA methodology that was ultimately approved after a robust discussion among the Regional Council, with staff offering input and answering questions as requested. Both methodologies had been presented in the staff report that was published in the November 7th, 2019 Regional Council meeting agenda in advance of the meeting in accordance with applicable law. Finally, members of the Regional Council were given wide opportunity to offer input and comments during the course of the discussion and consideration of the item.

The November 7th Regional Council action was preceded by more than nine months of preparatory work and the regional planning process is necessarily complex and multi-faceted. That there are competing interests and priorities is not new. Since the start of the RHNA process in October 2018, SCAG staff has been committed to a fair and transparent process from the very beginning.

The RHNA methodology is a complex balance of several regional objectives ranging from jobs-housing balance to affirmatively furthering fair housing. Ultimately, AFFH is a RHNA objective and the residual reallocation is part of the adopted final RHNA methodology—it is not an addition afterward, nor is it an optional element. Government code 65584.04(i) vests authority to assess whether a methodology furthers the statutory objectives in HCD. In HCD's 1/13/2020 letter (attached), HCD finds that SCAG's RHNA methodology furthers all five statutory objectives, stating,

> *"HCD applauds the inclusion of the affirmatively furthering fair housing adjustment factor in the methodology. This factor directs more lower income RHNA to higher opportunity areas and reduces allocations in segregated concentrated areas of poverty, as defined in the HCD/TCAC Opportunity Maps, which evaluate access to opportunity, racial segregation, and concentrated poverty on 11 dimensions, which are all evidence-based indicators related to long term life outcomes."*

This quotation makes clear that this adjustment was critical in securing HCD's finding that the RHNA methodology furthers the AFFH objective of RHNA. While Irvine notes "limitations" to this data source, such an argument is not unique to this, or any other data source. Not only had the 2019 opportunity mapping data been part of previous proposed variations of the methodology, but these data went through an extensive development and public review process during their development by the California Fair Housing Task Force (see https://www.treasurer.ca.gov/ctcac/opportunity.asp). and vetting through TCAC and HCD. The RHNA methodology uses several robust, vetted data sources which are agreed upon in advance and are able to equitably assess conditions between one jurisdiction and another. The City does not provide evidence regarding any error in how Irvine's local conditions were reflected in this dataset, and changes cannot be made to the adopted RHNA methodology through the appeals process.

Irvine also contends that Santa Ana's growth forecast is outdated, which results in a higher draft RHNA allocation for the City of Irvine, and that there was insufficient time to identify this issue in

advance of the adoption of the RHNA methodology. The Bottom-Up Local Input and Envisioning Process, described in Attachment 1, afforded equal opportunity for Santa Ana, Irvine, and 195 other local jurisdictions to provide growth forecast information in the same manner between 2017 and 2018. Specific issues related to Santa Ana will be discussed in more detail during the time allotted to discuss the appeals on Santa Ana's draft RHNA allocation.

The City contends that it is bearing the burden of other jurisdictions; however, the residual reallocation is part of the adopted Final RHNA Methodology—not a step which is "added" afterward but is a plan to allocate need based on regional considerations. Irvine further contends that Orange County is singled out regarding the residual reallocation; however, the methodology is consistent in its application across counties and does not include any specific exemptions or treatments for Orange County.

Irvine's contention that the residual need component of the Final RHNA Methodology is inconsistent with the Sustainable Communities Strategy (SCS) portion of Connect SoCal is flawed. The RHNA methodology is a complex balance of several regional objectives ranging from jobs-housing balance to AFFH. Ultimately, AFFH is one of the RHNA objectives described in Government Code 65584(d) and the residual reallocation is part of the adopted Final RHNA Methodology. It furthers the AFFH objectives by ensuring that RHNA allocations are not concentrated in jurisdictions with lower opportunity scores, reallocating them to jurisdictions with higher opportunity scores. Irvine asserts that this is to the detriment of SCS goals and thus injures the SCS consistency described in Government Code 65584.04(m)(1), which is a finding which SCAG must make following the adoption of the final RHNA allocation. The reason for this assertion is that DAC jurisdictions may not receive allocation on those bases, compromising other statutory objectives and the SCS consistency described in. However, the residual reallocation at issue is made to non-DAC jurisdictions *on the basis* of their job and transit access levels.

Since the residual reallocation is part of the adopted RHNA methodology which was found by HCD to further AFFH, and since Irvine has not identified an error in how the methodology was applied, SCAG staff does not recommend a reduction based on this issue.

Issue 2: Existing or projected jobs-housing balance [Government Code section 65584.04(e)(1)].

Government Code section 65584.04(e)(1) provides that to the extent that sufficient data is available, the following factor shall be included in developing the methodology that allocates regional housing needs:

> *"Each member jurisdiction's existing and projected jobs and housing relationship. This shall include an estimate based on readily available data on the number of low-wage jobs within the jurisdiction and how many housing units within the jurisdiction are affordable to low-wage workers as well as an estimate based on readily available data, of projected job growth and projected household growth by income level within each member jurisdiction during the planning period."*

The City contends that its job centers are regional in nature and that employees may live in adjacent jurisdictions. Requiring the City to find adequate sites for both the aggregate total of the RHNA allocation and the various income levels may require employment centers to be rezoned, and these job losses would negatively impact Irvine's jobs and housing relationship.

SCAG Staff Response: Irvine does not provide evidence to indicate that SCAG failed to consider the jurisdiction's jobs and housing relationships to merit a reduction in its Draft RHNA Allocation. In recognition of the fact that in the SCAG region only 20% of workers live and work in the same jurisdiction, the RHNA methodology is based on *access* to jobs. This is consistent with Irvine's contention that living in an adjacent jurisdiction to one's workplace may in fact be beneficial. Despite having a very large employment base, Irvine ranks only 28th amongst larger cities in the region based on the job access measure used in the methodology (17.45% of 2045 regional employment accessible—see Attachment 1 for details). Irvine's 2020 projected employment-to-households ratio in Connect SoCal is 2.73, which is far higher than the 1.37 ratio for the SCAG region and is the 2nd highest amongst the region's larger cities[2].

In its appeal the City notes that job losses from rezoning employment centers for housing would negatively impact the city's jobs-housing relationships; however, since the city's employment base exceeds its households by a wide margin, it is unclear from the appeal how additional housing stock would negatively impact this relationship. Therefore, SCAG staff does not recommend a reduction based on this issue.

Issues 3 and 4: *Sewer or water infrastructure constraints for additional development [Section 65584.04(e)(2)(A)] and availability of land suitable for urban development or conversion to residential use [Section 65584.04(e)(2)(B)].*

[2] Above 50,000 population, per 2019 DOF estimates

Government Code section 65584.04(e)(2) provides that to the extent that sufficient data is available, the following constraints shall be included in developing the methodology that allocates regional housing needs:

> *"(A) Lack of capacity for sewer or water service due to federal or state laws, regulations or regulatory actions, or supply and distribution decisions made by a sewer or water service provider other than the local jurisdiction that preclude the jurisdiction from providing necessary infrastructure for additional development during the planning period.*
>
> *(B) The availability of land suitable for urban development or for conversion to residential use, the availability of underutilized land, and opportunities for infill development and increased residential densities. The council of governments may not limit its consideration of suitable housing sites or land suitable for urban development to existing zoning ordinances and land use restrictions of a locality, but shall consider the potential for increased residential development under alternative zoning ordinances and land use restrictions. The determination of available land suitable for urban development may exclude lands where the Federal Emergency Management Agency (FEMA) or the Department of Water Resources has determined that the flood management infrastructure designed to protect that land is not adequate to avoid the risk of flooding."*

The City contends that the majority of land suitable for urban development in the City is entitled through development agreements that allow units to be constructed in phases and that nearly all planning areas have met the maximum number of units and there is no vacant land available. Also, the City has areas identified as Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP), which limit development.

SCAG Staff Response: For Government Code Section 65584.04(e)(2)(A) to apply in this case, the jurisdiction must be precluded from providing necessary infrastructure for additional development due to supply and distribution decisions made by a sewer or water provider other than the local jurisdiction. It is not evident from Irvine's appeal that a water provider has rendered a decision that would prevent the city from providing necessary infrastructure.

With respect to Government Code Section 65584.04(e)(2)(B), SCAG "may not limit its consideration of suitable housing sites or land suitable for urban development to existing zoning ordinances and land use restrictions of a locality" (which includes the land use policies in its General Plan). "Available land suitable for urban development or conversion to residential use," as expressed in 65584.04(e)(2)(B), is not restricted to vacant sites; rather, it specifically indicates that underutilized

land, opportunities for infill development, and increased residential densities are a component of "available" land. As indicated by HCD in its December 10, 2020 comment letter (HCD Letter):

> "In simple terms, this means housing planning cannot be limited to vacant land, and even communities that view themselves as built out must plan for housing through means such as rezoning commercial areas as mixed-use areas and upzoning non-vacant land." (HCD Letter at p. 2).

As such, the City can and must consider other opportunities for development besides vacant land. This includes the availability of underutilized land, opportunities for infill development and increased residential densities, or alternative zoning and density. Alternative development opportunities should be explored further and could possibly provide the land needed to zone for the City's projected growth. Note that while zoning and capacity analysis is used to meet RHNA need, they should not be used to determine RHNA need at the jurisdictional level. Per the adopted RHNA methodology, RHNA need at the jurisdictional level is determined by projected household growth, transit access, and job access. Housing need, both existing and projected need, is independent of zoning and other related land use restrictions, and in some cases is exacerbated by these very same restrictions. Thus, land use capacity that is restricted by factors unrelated to existing or projected housing need cannot determine existing or projected housing need.

While Irvine notes that development agreements typically take place in phases and cannot be modified by the City and that other areas are protected natural areas, these factors do not constitute evidence that additional residential development in any of the myriad forms permitted for inclusion in housing elements is not possible in all other areas of the city.

SCAG recognizes there are many environmental (e.g., NCCP/HCP protections) and other constraints to development on portions of the land in the City of Irvine. However, this does not preclude additional residential development (i.e. infill) outside of such constrained areas. This includes the availability of underutilized land, opportunities for infill development and increased residential densities, alternative zoning and density, and accessory dwelling units. On June 10, 2020, HCD released extensive guidelines for housing element site inventories.[3] A wide range of adequate sites are detailed including accessory dwelling units (ADUs) and junior accessory dwelling units (JADUs). Specifically, page 32 of the guidelines indicates that "In consultation with HCD, other alternatives may be considered such as motel conversions, adaptive reuse of existing buildings, or legalization of units not previously reported to the Department of Finance."

Market conditions and the cost to develop and construct the allocated new housing units within a jurisdiction should not be considered by SCAG as a justification for a RHNA reduction since the RHNA Allocation does not provide a building quota or mandate. The City is not responsible for

[3] See https://www.hcd.ca.gov/community-development/housing-element/docs/sites_inventory_memo_final06102020.pdf

obtaining land or developing housing, it is only required to plan and zone for its determined housing need. Based on the above, SCAG staff does not recommend a reduction based on this issue.

Issue 5: *Lands protected from urban development under existing federal or state programs [Section 65584.04(e)(2)(C)].*

Government Code section 65584.04(e)(2)(C) provides that to the extent that sufficient data is available, the following constraint shall be included in developing the methodology that allocates regional housing needs:

> *"Lands preserved or protected from urban development under existing federal or state programs, or both, designed to protect open space, farmland, environmental habitats, and natural resources on a long-term basis, including land zoned or designated for agricultural protection or preservation that is subject to a local ballot measure that was approved by the voters of that jurisdiction that prohibits or restricts conversion to nonagricultural uses."*

The City contends that certain areas of Irvine are protected from development by the regional NCCP and the City of Irvine Open Space Initiative (City Resolution 88-1).

SCAG Staff Response: See also response to Issues 3 and 4 above. It is presumed that planning factors such as lands protected by federal and state programs have already been accounted for prior to the local input submitted to SCAG since such factors are required to be considered at the local level. No evidence was submitted that these areas have changed since the most current input provided prior to October 2018.

In addition, while the City of Irvine has indicated it cannot accommodate units in these specific areas, no evidence has been provided that the jurisdiction cannot accommodate its RHNA allocation in other areas. The presence of protected open space alone does not reduce housing need nor does it preclude a jurisdiction from accommodating its housing need elsewhere.

Furthermore, while SCAG commends the City's commitment to conservation and habitat protection, the City's decision to join the regional NCCP and to implement City Resolution 88-1, does not constitute evidence that additional residential development in any of the myriad of forms permitted for inclusion in housing elements (as discussed above in Response to Issues 3 and 4) is not possible in all other areas of the city. For these reasons, SCAG staff does not recommend a reduction to the jurisdiction's RHNA allocation based on this factor.

Issue 6: *County policies to preserve prime agricultural land [Section 65584.04(e)(2)(D)].*

Government Code section 65584.04(e)(2) provides that to the extent that sufficient data is available, the following factor shall be included in developing the methodology that allocates regional housing needs:

> *"(D) County policies to preserve prime agricultural land, as defined pursuant to Section 56064, within an unincorporated area and land within an unincorporated area zoned or designated for agricultural protection or preservation that is subject to a local ballot measure that was approved by the voters of that jurisdiction that prohibits or restricts its conversion to nonagricultural uses."*

The City contends that its General Plan Conservation and Open Space Element includes Objective L-10 that encourages the maintenance of agriculture in undeveloped areas of the City until the time of development and in areas no available for development.

SCAG Staff Response: See also response to Issues 3, 4 and 5 above. The City cites an objective in its general plan which encourages maintenance of agricultural areas until the time of development and in areas not available for development. However, a city's general plan objective would not fit the statutory criteria of a county policy to preserve prime agricultural land within an unincorporated area, nor does Irvine's appeal indicate why the City's housing need would in any way be impacted by county policies governing unincorporated areas. Also, no local ballot measure is presented. Therefore, SCAG staff does not recommend a reduction based on this issue.

Issues 7 and 11: *Distribution of household growth assumed for purposes of comparable Regional Transportation Plans [Government Code section 65584.04(e)(3)] and the region's greenhouse gas (GHG) emission targets [Government Code section 65584.04(e)(12)].*

Irvine contends there to be an inconsistency between the Regional Housing Needs Assessment and Sustainable Communities Strategy. This is not a basis for an appeal; however, issues raised are common to two factors that are bases for appeal. Government Code section 65584.04(e) provides that to the extent that sufficient data is available the following factors shall be included in developing the methodology that allocates regional housing needs:

> *"(3) The distribution of household growth assumed for purposes of a comparable period of regional transportation plans and opportunities to maximize the use of public transportation and existing transportation infrastructure.*
> *…*
>
> *(12) The region's greenhouse gas emissions targets provided by the State Air Resources Board pursuant to Section 65080."*

Irvine argues that the RHNA methodology is inconsistent with the growth patterns of Connect SoCal largely due to its inclusion of an "existing need" of 836,857 units—a housing unit total which is not reflected in the household forecast of Connect SoCal and cites vehicle miles traveled (VMT) per capita statistics to illustrate longer commutes for City of Irvine residents.

SCAG Staff Response: While Connect SoCal is required under state planning law to identify areas sufficient to house the 8-year RHNA need pursuant to Government Code Section 65080(b)(2)(B)(iii), the RHNA allocation of housing need is a distinct process set forth under state housing law, Government Code Section 65584 *et seq*. The RHNA requirements address the mandate to plan for housing units to further statutory objectives. The RHNA establishes "minimum housing development capacity that cities and counties are to make available via their land use powers to accommodate growth within a planning period."[4]

The RHNA identifies anticipated housing need over a specified eight-year period and requires that local jurisdictions make available sufficient zoned capacity to accommodate this need. Actual housing production depends on a variety of factors external to the identification of need through RHNA—local jurisdictions frequently have sufficient zoned capacity but actual housing construction depends on market and other external forces. For example, per HCD's Annual Progress Reports covering new unit permits through 2018, the region's low and very-low income permits totaled 19,328 units (2,494/year) compared to the RHNA allocation of 165,579 units (21,365/year).

In contrast, the Connect SoCal Growth Forecast is an assessment of the reasonably foreseeable future pattern of growth given regional factors such as births, deaths, migration, and employment growth as well as local factors, which includes the availability of zoned capacity.[5]

Legislative changes in 2018 modified the nature of the regional housing need determination for the 6th cycle of RHNA by adding measures of household overcrowding and housing cost burden to the list of factors to be considered by HCD for the determination of housing need. These new measures are not included in the Connect SoCal Growth Forecast because they are not direct inputs to the growth forecasting process and are independent of employment and population projections. They reflect additional latent housing needs in the current population (i.e., "existing need") and do not result in a change in regional population.

[4] Concurrence in Senate Amendments, AB 1771 (Bloom), as amended August 24, 2018 Comments at p.4 (Original Committee Reference: H. & C.D.).
[5] For details, see Connect SoCal's Demographics and Growth Forecast Technical Report at https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_demographics-and-growth-forecast.pdf

Ultimately it is this difference between these processes which accounts for the difference between the reasonably foreseeable household growth rate included in Connect SoCal and the development capacity target which RHNA envisions for the City of Irvine.

Following adoption of SCAG's Final RHNA allocation, local jurisdictions must update their housing elements (as needed) to provide sufficient zoned capacity for the total 6th Cycle allocation pursuant to state guidelines. Updated housing elements are due in October 2021. Pursuant to Government Code Section 65583(c)(1)(A), local jurisdictions will have until January 2025 to complete any necessary rezoning to accommodate their RHNA allocation. Until this planning work is done at the local level, it would be speculative for Connect SoCal to make assumptions about potential development levels and patterns that includes the 6th Cycle "existing need." Once this process is complete, in future RTP/SCS development processes SCAG will re-evaluate the reasonably foreseeable future growth pattern, including the potential impact of any policy changes made in response to the 6th cycle RHNA allocations.

An additional key difference is that the RHNA process only permits SCAG to allocate jurisdiction-level totals (by income category), whereas the RTP/SCS requires SCAG to model future transportation patterns and Greenhouse Gas (GHG) impacts, which requires an estimate of *where* within the jurisdiction future growth may occur. As such, the RHNA process requires adapting Connect SoCal's key policy direction in order to ensure that *development patterns* are generally consistent across the two processes. For example, Connect SoCal achieves its jobs-housing balance objectives in part by envisioning a set of 72 individual job centers across the region; however, this relies on within-jurisdiction prediction of the location of development. The final RHNA process adapts this concept by developing a measure of job accessibility at the jurisdiction-level—using Connect SoCal data—to ensure consistent strategic and policy direction. Similarly, half of existing need is allocated on the basis of the jurisdiction's share of the region's population in a HQTA in 2045 as defined in Connect SoCal and discussed above. This consistent strategic and policy direction results in the Final RHNA Methodology and Draft RHNA Allocation's consistency with the development patterns in the SCS, pursuant to Government Code section 65584.04(m)(1):

> "It is the intent of the Legislature that housing planning be coordinated and integrated with the regional transportation plan. To achieve this goal, the allocation plan shall allocate housing units within the region consistent with the development pattern included in the sustainable communities strategy."

For further discussion see Attachment 1 as well as Connect SoCal Master Response 1 at https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_public-participation-appendix-2.pdf

Relatedly, the California Air Resources Board (CARB) GHG emissions reduction target of 19% by 2035 was achieved by Connect SoCal which, per the above, has sufficient policy alignment and consistency in development patterns with the RHNA methodology—in part due to the existing need measures of job and transit access which assign housing units on the basis of key drivers of regional GHG reduction potential. While Irvine cites VMT per capita statistics based on standards within the city, this analysis does not address regional GHG emissions which are the appeal basis in Government Code section 65584.04(e)(12) and are achieved through the RHNA methodology's aforementioned policy alignment with Connect SoCal.

Since the City of Irvine has not provided evidence to suggest that its Draft RHNA Allocation was based on a failure to consider these local planning factors, SCAG staff does not recommend a reduction on these bases.

Issue 8: *The rate of overcrowding [Section 65584.04(e)(7)].*

Government Code section 65584.04(e)(7) provides that to the extent that sufficient data is available, "the rate of overcrowding" shall be included as a factor in developing the methodology that allocates regional housing needs.

The City contends that the definition of "overcrowding" has not been clearly established and recommends that SCAG determine a definition rather than use the US Census Bureau's definition of one person per room.

SCAG Staff Response: Irvine argues that there is lack of clarity in the Census Bureau's definition of overcrowding. However, no explicit measure of overcrowding at the jurisdictional-level is used, nor is required to be used, in SCAG's adopted final RHNA methodology. Irvine does not provide any evidence to suggest a reduction in the City's housing need is merited on the basis of any measure of overcrowding. Therefore, SCAG staff does not recommend a reduction based on this issue.

Issue 9: *Housing needs generated by the presence of a university campus within a jurisdiction [Section 65584.04(e)(9)].*

Government Code section 65584.04(e)(9) provides that to the extent that sufficient data is available, the following factor shall be included in developing the methodology that allocates regional housing needs:

> *"The housing needs generated by the presence of a private university or a campus of the California State University or the University of California within any member jurisdiction."*

The City contends that that there are three colleges or universities within its boundaries and that the COVID-19 pandemic has disrupted in-person instruction in many instances. The City suggests that fewer students and faculty may need housing on or near campus.

SCAG Staff Response: While the City argues that fewer students and faculty may need housing on or near campus, it does not provide evidence from these colleges/universities or other sources which would indicate how and to what extent this change will reduce housing need within the household population of the City of Irvine (i.e. outside of dormitories or school-provided housing and thus under the purview of Connect SoCal's household growth forecast and RHNA), particularly over the 8-year planning horizon of RHNA. The City simple speculates that "it is a very realistic possibility that restrictions on the percentage of students permitted to attend in person classes may not be lifted for years to come, dramatically impacting the number of students and faculty needing on campus or near campus housing." Therefore, SCAG staff does not recommend a reduction based on this issue. See also the Response to Issue 12, regarding changed circumstances and COVID-19 below.

Issue 10: *Loss of units during a state of emergency [Government Code section 65584.04(e)(11)].*

Government Code section 65584.04(e)(11) indicates that to the extent that sufficient data is available the following factor shall be included in developing the methodology that allocates regional housing needs:

> *"The loss of units during a state of emergency that was declared by the Governor pursuant to the California Emergency Services Act (Chapter 7 (commencing with Section 8550) of Division 1 of Title 2), during the planning period immediately preceding the relevant revision pursuant to Section 65588 that have yet to be rebuilt or replaced at the time of the analysis."*

The City contends that there has been a major wildfire in or near Irvine every decade since the 1980s.

SCAG Staff Response: Irvine does not provide any evidence to suggest that wildfire risk either was not sufficiently considered in SCAG's development of the RHNA methodology or otherwise may merit a reduction of housing needs in the City of Irvine. Therefore, SCAG staff does not recommend a reduction based on this issue.

Issue 13: *Changed circumstances [Government Code section 65584.05(b)(3)].*

Government Code section 65584.05(b)(3) provides that to the extent that sufficient data is available, the following factor shall be included in developing the methodology that allocates regional housing needs:

> *"A significant and unforeseen change in circumstances has occurred in the local jurisdiction or jurisdictions that merits a revision of the information submitted pursuant to subdivision (b) of Section 65584.04."*

Irvine primarily contends that job losses stemming from COVID-19 merit a reconsideration of long-range employment forecasts. Irvine also notes that the rise in telecommuting and a purposed shift in desire for more open space and less dense living are also changed circumstances resulting from COVID-19 which will continue following the pandemic. The city contends that reliance on existing 2045 employment projections in the current RHNA methodology is thus flawed.

Irvine cites a City resolution encouraging long-term telecommuting, high regional unemployment rates currently experienced, instances of corporate campuses being eliminated, decreases in passenger air travel, and potential reduction in in-person education at colleges and universities in Irvine. In addition to providing statewide unemployment statistics, the City indicates that 2,490 jobs have been lost in Irvine since July 2020.

SCAG Staff Response: While SCAG staff recognizes that COVID-19 presents unforeseen circumstances and that local governments have been affected by significant unemployment, these facts, as presented by the City, "do not "merit a revision of the information submitted pursuant to subdivision (b) of Section 65584.04" (Government Code section 65584.05(b)(3)). Furthermore, section 65584.05(b) requires that,

> "Appeals shall be based upon comparable data available for all affected jurisdictions and accepted planning methodology, and supported by adequate documentation, and shall include a statement as to why the revision is necessary to further the intent of the objectives listed in subdivision (d) of Section 65584."

While the City or Irvine provides several anecdotes related to COVID-19's economic and social impacts, comparable data following this standard is not provided by the City of Irvine.

SCAG's Regional Council delayed the adoption of the 2020 RTP/SCS by 120 days in order to assess the impact of COVID-19; however, the document's long-range (2045) forecast of population, employment, and household growth remained unchanged. The Demographics and Growth Forecast Technical Report outlines the process for forecasting long-range employment growth

which involves understanding national growth trends and regional competitiveness, i.e., the SCAG's region share of national jobs. Short-term economic forecasts commenting on COVID-19 impacts generally do not provide a basis for changes in the region's long-term competitiveness or the region's employment outlook for 2023-2045. As such, SCAG's assessment is that comparable data would not suggest long-range regional employment declines.

The COVID-19 pandemic has had various impacts throughout Southern California; however it has not resulted in a slowdown in major construction nor has it resulted in a decrease in a demand for housing or housing need. Southern California home prices continue to increase (+2.6 percent from August to September 2020) led by Los Angeles (+10.4 percent) and Ventura (+6.2 percent) counties. Demand for housing as quantified by the RHNA allocation is a need that covers an 8-year period, not simply for impacts that are in the immediate near-term. Irvine does not provide evidence suggesting that any of the other potential COVID impacts listed (e.g. job losses, telecommuting increases, a desire for open space, lower in-person college enrollment, etc.) reduce housing need in any way.

Moreover, impacts from COVID-19 are not unique to any single SCAG jurisdiction and no evidence has been provided in Irvine's appeal that indicates that housing need within the City is disproportionately impacted in comparison to the rest of the SCAG region by these potential changes. For these reasons, SCAG staff does not recommend a reduction to the jurisdiction's draft RHNA allocation.

Other: *HCD's regional determination of 1.34 million housing units, achievability and RTP/SCS consistency.*

Irvine contends that HCD's regional determination of 1.34 million housing units violates state law.

Irvine also argues that "achievability" is a standard.

Irvine argues there to be an inconsistency between the Regional Housing Needs Assessment and Sustainable Communities Strategy.

SCAG Staff Response:

Regional Determination

SCAG's final regional determination of approximately 1.34 million units was issued by HCD on October 15, 2019 per state housing law. The regional determination is not a basis for appeal per adopted RHNA Appeals Procedures as it is not within the authority of the Appeals Board to make any changes to HCD's regional housing needs determination.

SCAG's development of a consultation package to HCD regarding the regional housing needs determination took place during the first half of 2019. During this time SCAG extensively reviewed a wide range of reports which commented on housing needs in the state and region, including studies from USC, UCLA, UC-Berkeley, the California Legislative Analyst's Office, Beacon Economics, McKinsey, the Center for the Continuing Study of the California Economy, and others. These studies covered a wide range of approaches and methodologies for understanding housing need in the region and state. On March 27, 2019 SCAG convened a panel of fifteen experts in demographics, economics, and housing planning to assess and review the region's housing needs in the context of SCAG's regional determination.

Notwithstanding the merits of the various approaches toward estimating regional housing need, state statute outlines a very specific process for arriving at a regional housing needs determination for RHNA. It also prescribes a specific timeline which necessitated the completion of the regional determination step by fall 2019 in order to allow sufficient time for the development of a methodology, appeals, and local housing element updates.

The defined timeframes are guided by the deadline for the housing element revisions for HCD's RHNA determination and SCAG's Final RHNA Allocation Plan. HCD, in consultation with each council of governments (COG), shall determine each region's existing and projected housing need pursuant to Section 65584.01 at least two years prior to the scheduled revision required pursuant to Section 65588. Govt. Code § 65584(b). This "determination shall be based upon population projections produced by the Department of Finance and regional population forecasts used in preparing regional transportation plans, in consultation with each council of governments." Govt. Code § 65584.01(b). HCD begins the process 26 months prior to the scheduled revision so the data HCD relies on is the available provided by the COGs at that time. Similarly, the COG issues its survey for information to develop the RHNA allocation methodology up to 30 months prior to the scheduled revision. By necessity, the data used for these processes is data available at that time.

During both the consultation process and the filing of SCAG's formal objection to HCD's regional determination, SCAG extensively reviewed the issues brought up in these recent reports including a variety of indicators of housing backlog such as cost burden, overcrowding, demolition, and vacancy. In addition, SCAG has a well-developed program for forecasting population and household growth in the region which is conducted with the advice and collaboration of the state Department of Finance's forecasting staff. SCAG assessed the relationship between the measures used and not used in its analyses in order to avoid overlap ("double counting").

While the RHNA statute prescribes specific requirements for HCD in determining the regional housing need (e.g., the determination shall be based on population projects produced by the Department of Finance and regional population forecasts used in preparing regional transportation

plans), it allows HCD to accept or reject information provided by SCAG with respect to the data assumptions from SCAG's growth forecast or to modify its own assumptions or methodology based on this information. Following SCAG's formal objection filed on September 18, 2019, HCD did not materially change the regional determination following SCAG's formal objection filed on September 18, 2019, and there are no further mechanisms provided for in statute to contest their decision. Nevertheless, SCAG has a statutory obligation to complete the remaining steps required in the RHNA process—namely the adoption of a Final RHNA Methodology, conducting an appeals process, and issuing final RHNA allocations.

A report by Freddie Mac's Economic & Housing Research Group titled "The housing supply shortage: State of the states" was released in February 2020, and a slide deck titled "Double counting in the latest housing needs assessment" was placed on the Embarcadero Institute's website during 2020 (last update September 2020). Notwithstanding the merits (or lack thereof) of these studies, in order for such materials to have been considered by HCD, they would have had to have been submitted by June of 2019 as discussed above. Furthermore, as discussed above, SCAG's consultation package to HCD regarding the regional determination contained an extensive quantitative assessment of overcrowding, vacancy, and cost burden factors and a discussion of the issue of double-counting.

Additionally, these studies are regional in nature and do not provide information on individual jurisdictions. For an appeal to be granted on the incorrect application of RHNA methodology, arguments and evidence must be provided that demonstrate the methodology was incorrectly applied to determine the jurisdiction's share of regional housing need. Because a regional study does not meet this criterion, these studies cannot be used to justify a particular jurisdiction's appeal. Moreover, any reduction would have to be redistributed to the region when in theory, all jurisdictions would be impacted by the regional study.

In sum, it would be untenable to reopen the process anytime new data or materials become available, particularly when there is a codified process. If so, there would be no finality to the process and local government could not meet the deadlines for their housing element updates. Procedurally, SCAG cannot consider a regional study outside of the regional determination process nor should it apply a regional study to reduce an individual jurisdiction's draft RHNA allocation. For these reasons, SCAG staff does not recommend a reduction to the jurisdiction's draft RHNA allocation.

Achievability

While an objective of the RHNA statute is to facilitate the eventual construction of new housing units to meet housing needs, achievability of this objective is not a basis for appeal. Citing its inclusionary housing program, Irvine estimates that 127,580 sites would be needed to accommodate the very low income RHNA allocation. However, the ability to count lower income RHNA sites in the housing element is set forth by HCD, not Irvine's estimate. As described above, HCD's site inventory guidelines describe a wide range of alternative options for accommodating housing need identified in the RHNA. Therefore, SCAG staff does not recommend a reduction based on this issue.

Consistency between RHNA and the SCS

While the consistency between the RHNA and the SCS is not a basis for appeal, the issues raised by the City are addressed in the responses to Issues 7 and 11 above. Staff does not recommend a reduction based on this issue.

FISCAL IMPACT:
Work associated with this item is included in the current FY20-21 Overall Work Program (300-4872Y0.02: Regional Housing Needs Assessment).

ATTACHMENT(S):
1. Local Input and Development of Draft RHNA Methodology (City of Irvine)
2. Irvine Appeal and Supporting Documentation
3. Connect SoCal - Map of HQTCs
4. Irvine - SPZs in HQTAs (SCAG Map)
5. Connect SoCal Transit Technical Report Appendix (including HQTC/HQTA definitions)
6. HCD Review of SCAG Draft RHNA Methodology (Jan 13, 2020)
7. Map of HQTAs in the City of Irvine (2045)
8. Comments Received during the Comment Period

Southern California Association of Governments
Remote Participation Only
City of Irvine RHNA Appeal
January 25, 2021

Attachment 1: Local Input and Development of the Draft RHNA Allocation

This attachment sets forth the nature and timing of the opportunities which the City of Irvine had to provide information and local input on SCAG's growth forecast, the RHNA methodology, and the Growth Vision of the 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or Connect SoCal). It also describes how the RHNA Methodology development process integrates this information in order to develop the City of Irvine's Draft RHNA Allocation.

1. Local input

a. Bottom-Up Local Input and Envisioning Process

On October 31, 2017, SCAG took the first step toward developing draft RHNA allocations by initiating the Bottom-Up Local Input and Envisioning Process. At the direction of the Regional Council, the objective of this process was to seek local input and data to prepare for Connect SoCal and the 6th cycle of RHNA.[1] Each jurisdiction was provided with a package of land use, transportation, environmental, and growth forecast data for review and revision which was due on October 1, 2018.[2] While the local input process materials focus principally on jurisdiction-level and Transportation Analysis Zone (TAZ) level growth, input on specific parcels, sites, and project areas were welcomed and integrated into SCAG's growth forecast as well as data on other elements. SCAG met one-on-one with all 197 local jurisdictions between November 2017 and July 2018 and provided training opportunities and staff support. Following input from SCAG's Technical Working Group (TWG), the Connect SoCal growth forecast reflected precisely the jurisdiction-level growth totals provided during this process.

Forecasts for jurisdictions in Orange County were developed through the 2018 Orange County Projections (OCP-2018) update process conducted by the Center for Demographic Research (CDR) at Cal State Fullerton. Jurisdictions were informed of this arrangement by SCAG at the kickoff of the Process. For the City of Irvine, the anticipated number of households in 2020 was 103,382 and in 2030 was 112,404 (growth of 9,022 households). In March 2018, SCAG staff and CDR staff met with staff from the City of Irvine to discuss the Bottom-Up Local Input and Envisioning Process and answer questions.

[1] While the RTP/SCS and RHNA share data elements, they are distinct processes. The RTP/SCS growth forecast provides an assessment of reasonably foreseeable future patterns of employment, population, and household growth in the region given demographic and economic trends, and existing local and regional policy priorities. The RHNA identifies anticipated housing need over a specified eight-year period and requires that local jurisdictions make available sufficient zoned capacity to accommodate this need. A further discussion of the relationship between these processes can be found in Connect SoCal Master Response 1 at https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Public-Participation-Appendix-2.pdf.

[2] A detailed list of data during this process reviewed can be found in each jurisdiction's Draft Data/Map Book at https://scag.ca.gov/local-input-process-towns-cities-and-counties.

b. RHNA Methodology Surveys

On March 19, 2019, SCAG distributed a packet of methodology surveys, which included the local planning factor survey (formerly known as the AB2158 factor survey), Affirmatively Furthering Fair Housing (AFFH) survey, and replacement need survey, to SCAG jurisdictions' Community Development Directors. Surveys were due on April 30, 2019. SCAG reviewed all submitted responses as part of the development of the draft RHNA methodology. The City of Irvine submitted the following surveys prior to the adoption of the draft RHNA methodology:

☒ Local planning factor survey
☒ Affirmatively Furthering Fair Housing (AFFH) survey
☒ Replacement need survey
☐ No survey was submitted to SCAG

c. Connect SoCal Growth Vision and Additional Refinements

Beginning in May 2018, SCAG's Sustainable Communities Working Group began the process of developing growth scenarios for the SCAG region. The culmination of this work was the development of the Connect SoCal Growth Vision, which directly uses jurisdictional-level growth projections from the Bottom-Up Local Input and Envisioning process, and also features strategies for growth at the TAZ-level that help to reduce greenhouse gas emissions (GHG) from automobiles and light trucks to achieve Southern California's GHG reduction target, approved by the California Air Resources Board (CARB) in accordance with state planning law. Additional detail regarding the Connect SoCal Growth Vision, specifically the Transportation Analysis Zone (TAZ, or neighborhood) level projections is found at https://www.connectsocal.org/Documents/DataMapBooks/Growth-Vision-Methodology.pdf.

As a result of these strategies, in some jurisdictions growth at the TAZ-level differed from locally anticipated growth conveyed during the Bottom-Up Local Input and Envisioning Process.

As such, SCAG provided two additional opportunities for all local jurisdictions to make TAZ-level technical refinements on the topics of general plan capacities and entitlements. During the release of the draft Connect SoCal Plan, jurisdictions were notified on October 31, 2019 that SCAG would accept additional refinements until December 11, 2019. Following the Regional Council's decision to delay full adoption of Connect SoCal for 120 days due to the COVID-19 pandemic, all jurisdictions were again notified on May 26, 2020 that SCAG would accept additional refinements until June 9, 2020.

Connect SoCal Growth Vision data have been available to local jurisdiction staff during the entirety of this process through SCAG's Scenario Planning Model Data Management Site (SPM-DM) at http://spmdm.scag.ca.gov and updates were shared with local jurisdictions on technical refinements to the data in February 2020 and August 2020 to share the results of both review opportunities. SCAG

received additional technical corrections from the City of Irvine and incorporated them into the Growth Vision in December 2019. Based on these corrections, the City of Irvine's TAZ-level data utilized in the Connect SoCal Growth Vision matches input provided during the Bottom-Up Local Input and Envisioning Process.

2. Development of the Final RHNA Methodology

SCAG convened the first meeting of the RHNA Subcommittee in October 2018. In their subsequent monthly meetings, this body reviewed and advised on the development of SCAG's 6th cycle RHNA process, including the development of the RHNA methodology. Per Government Code 65584.04(a), SCAG must develop a RHNA methodology which furthers the five statutory objectives of RHNA:

> *(1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households.*
>
> *(2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.*
>
> *(3) Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.*
>
> *(4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.*
>
> *(5) Affirmatively furthering fair housing. (Govt. Code § 65584(d).)*

As explained in more detail below, the Draft RHNA Methodology (which was adopted as the Final RHNA Methodology) set forth the policy factors, data sources, and calculations which would be used to generate draft RHNA allocations for all local jurisdictions. Following extensive debate and public comment, SCAG's Regional Council voted to approve the Draft RHNA Methodology on November 7, 2019 and provide it to HCD for review. Per Government Code 65584.04(i), HCD is vested with the authority to determine whether a methodology furthers the objectives set forth in Government Code section 65584(d). On January 13, 2020, HCD found that the Draft RHNA Methodology furthers these five statutory objectives of RHNA. Specifically, HCD noted that:

"This methodology generally distributes more RHNA, particularly lower income RHNA, near jobs, transit, and resources linked to long term improvements of life outcomes. In particular, HCD applauds the use of the objective factors specifically linked the statutory objectives in the existing need methodology." (Letter from HCD to SCAG dated January 13, 2020 at https://scag.ca.gov/sites/main/files/file-attachments/hcd-review-rc-approved-draft-rhna-methodology.pdf?1602190239).

On March 5, 2020, again following extensive debate and public comment, the Regional Council voted to approve the Draft RHNA Methodology as the Final RHNA Methodology. Unlike SCAG's 5th cycle RHNA methodology which relies almost entirely on the household growth component of the RTP/SCS, SCAG's 6th cycle RHNA methodology consists of two primary elements: "projected need" which includes the number of housing units required to accommodate anticipated population growth over the 8-year RHNA planning period and "existing need," which refers to the number of housing units required to accommodate excess or unsatisfied housing demand experienced by the region's current population.[3] Furthermore, the Final RHNA methodology utilizes measures of 2045 job accessibility and High Quality Transit Area (HQTA) population measures based on TAZ-level projections in the Connect SoCal Growth Vision.

More specifically, the Final RHNA Methodology considers three primary factors in determining a local jurisdiction's total housing need which are primarily based on data from Connect SoCal's aforementioned Bottom-Up Local Input and Envisioning Process:

- Forecasted growth over 2020-2030 (projected need)
- Transit accessibility in 2045 (existing need)
- Job accessibility in 2045 (existing need)

The methodology is described in further detail at http://scag.ca.gov/programs/Documents/RHNA/SCAG-Final-RHNA-Methodology-030520.pdf.

3. Draft RHNA Allocation for the City of Irvine

Following the adoption of the Final RHNA Methodology on March 5, 2020 and the 120 day delay due to the COVID-19 pandemic, SCAG adopted Connect SoCal on September 3, 2020, and the City of Irvine received its draft RHNA allocation on September 11, 2020. Application of the RHNA methodology yields the draft RHNA allocation for the City of Irvine as summarized in the data and calculations in the tables below.

[3] Legislative changes in 2018 modified the nature of the regional housing need determination for the 6th cycle of RHNA by adding measures of household overcrowding and housing cost burden to the list of factors to be considered by HCD for the determination of housing need. These new measures are not included in the Connect SoCal Growth Forecast because they are not direct inputs to the growth forecasting process and are independent of employment and population projections. In contrast, they reflect additional latent housing needs in the current population (i.e. "existing need") and would not result in a change in regional population. For further discussion see Connect SoCal Master Response 1 at https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Public-Participation-Appendix-2.pdf.

Irvine city statistics and inputs:	
Forecasted household (HH) growth, RHNA period: *(2020-2030 Household Growth * 0.825)*	7443
Percent of households who are renting:	52%
Housing unit loss from demolition (2009-18):	-
Adjusted forecasted household growth, 2020-2045: *(Local input growth forecast total adjusted by the difference between the RHNA determination and SCAG's regional 2020-2045 forecast, +4%)*	19,055
Percent of regional jobs accessible in 30 mins (2045): *(For the jurisdiction's median TAZ)*	17.45%
Jobs accessible from the jurisdiction's median TAZ (2045): *(Based on Connect SoCal's 2045 regional forecast of 10.049M jobs)*	1,754,000
Share of region's job accessibility (population weighted):	2.10%
Jurisdiction's HQTA population (2045):	43,855
Share of region's HQTA population (2045):	0.43%
Share of population in low/very low-resource tracts:	5.76%
Share of population in very high-resource tracts:	40.34%
Social equity adjustment:	150%

Calculation of Draft RHNA Allocation for Irvine city	
Forecasted household (HH) growth, RHNA period:	7443
Vacancy Adjustment *(5% for renter households and 1.5% for owner households)*	247
Replacement Need	-
TOTAL PROJECTED NEED:	7690
Existing need due to job accessibility (50%)	8776
Existing need due to HQTA pop. share (50%)	1794
Net residual factor for existing need *(Negative values reflect a cap on lower-resourced community with good job and/or transit access. Positive values represent this amount being redistributed to higher-resourced communities based on their job and/or transit access.)*	5294
TOTAL EXISTING NEED	15864
TOTAL RHNA FOR IRVINE CITY	**23554**
Very-low income (<50% of AMI)	6379
Low income (50-80% of AMI)	4225
Moderate income (80-120% of AMI)	4299
Above moderate income (>120% of AMI)	8651

The transit accessibility measure is based on the population anticipated to live in High-Quality Transit Areas (HQTAs) in 2045 based on Connect SoCal's designation of high-quality transit areas and population forecasts. With a forecasted 2045 population of 43,855 living within HQTAs, the City of Irvine represents 0.43% of the SCAG region's HQTA population, which is the basis for allocating housing units based on transit accessibility.

Job accessibility is defined as the jurisdiction's share of regional jobs accessible within a 30-minute drive commute. Since over 80 percent of the region's workers live and work in different jurisdictions, the RHNA methodology uses a measure based on Connect SoCal's travel demand model output for the year 2045 rather than assigning housing units based on the number of jobs with a specific

jurisdiction. Specifically, the share of future (2045) regional jobs which can be reached in a 30-minute automobile commute from the local jurisdiction's median TAZ is used as to allocate housing units based on transit accessibility. From the City of Irvine's median TAZ, it will be possible to reach 17.45% of the region's jobs in 2045 within a 30-minute automobile commute (1,754,000 jobs, based on Connect SoCal's 2045 regional job forecast of 10,049,000 jobs).

An additional factor is included in the methodology to account for RHNA Objective #5 to Affirmatively Further Fair Housing (AFFH). Several jurisdictions in the region which are considered disadvantaged communities (DACs) on the basis of access to opportunity measures (described further in the RHNA methodology document), but which also score highly in job and transit access, may have their total RHNA allocations capped based on their long-range (2045) household forecast. This additional housing need, referred to as residual, is then reallocated to non-DAC jurisdictions in order to ensure housing units are placed in higher-resourced communities consistent with AFFH principles. This reallocation is based on the job and transit access measures described above, and results in an additional 5,294 units assigned to the City of Irvine.

Please note that the above represents only a partial description of key data and calculations which result in the draft RHNA allocation.

Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal Request Form

All appeal requests and supporting documentation must be received by SCAG October 26, 2020, 5 p.m.
Appeals and supporting documentation should be submitted to housing@scag.ca.gov.
Late submissions will not be accepted.

Date: 10/26/20

Jurisdiction Subject to This Appeal Filing:
(to file another appeal, please use another form)
City of Irvine

Filing Party (Jurisdiction or HCD)

Jurisdiction

Filing Party Contact Name

Marika Poynter

Filing Party Email:

mpoynter@cityofirvine.org

APPEAL AUTHORIZED BY:

Name: Christina Shea

PLEASE SELECT BELOW:

- [x] Mayor
- [ ] Chief Administrative Office
- [ ] City Manager
- [ ] Chair of County Board of Supervisors
- [ ] Planning Director
- [ ] Other: _____

BASES FOR APPEAL

- [x] Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029)
- [x] Local Planning Factors and/or Information Related to Affirmatively Furthering Fair Housing (See Government Code Section 65584.04 (b)(2) and (e))
  - [x] Existing or projected jobs-housing balance
  - [x] Sewer or water infrastructure constraints for additional development
  - [x] Availability of land suitable for urban development or for conversion to residential use
  - [x] Lands protected from urban development under existing federal or state programs
  - [x] County policies to preserve prime agricultural land
  - [x] Distribution of household growth assumed for purposes of comparable Regional Transportation Plans
  - [ ] County-city agreements to direct growth toward incorporated areas of County
  - [ ] Loss of units contained in assisted housing developments
  - [ ] High housing cost burdens
  - [x] The rate of overcrowding
  - [ ] Housing needs of farmworkers
  - [x] Housing needs generated by the presence of a university campus within a jurisdiction
  - [x] Loss of units during a state of emergency
  - [x] The region's greenhouse gas emissions targets
  - [ ] Affirmatively furthering fair housing
- [x] Changed Circumstances (Per Government Code Section 65584.05(b), appeals based on change of circumstance can only be made by the jurisdiction or jurisdictions where the change in circumstance occurred)

FOR STAFF USE ONLY:
Date_____ Hearing Date: _____ Planner: _____

Attachment: Irvine Appeal and Supporting Documentation (Appeal of the Draft RHNA Allocation for the City of Irvine)

Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal Request Form

All appeal requests and supporting documentation must be received by SCAG October 26, 2020, 5 p.m.

Appeals and supporting documentation should be submitted to housing@scag.ca.gov.

Late submissions will not be accepted.

Brief statement on why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584 (please refer to Exhibit C of the Appeals Guidelines):

Please include supporting documentation for evidence as needed, and attach additional pages if you need more room.

The City of Irvine requests the total RHNA be reduced by 8,259 total units from the draft RHNA allocation or 23,554 on the grounds outlined below. The revision is necessary to further the objectives in Section 65584(d) for the following reasons:
1. The draft allocation does not increase the housing supply and mix of housing types in an equitable manner;
2. The draft allocation does not promote infill development and socioeconomic equity, encourage efficient development patterns, and will result in the inability to achieve the region's greenhouse gas reduction targets;
3. The draft allocation does not promote an improved intraregional relationship between jobs and housing.

Reference the attached City of Irvine RHNA Appeal Request letter signed by Mayor Christina Shea and Vice Mayor Michael C. Carroll and Attachments 1-19 for additional detail.

Brief Description of Appeal Request and Desired Outcome:

The City of Irvine respectfully requests the total RHNA be reduced by 8,259 units and that SCAG modify the allocations to address the following outstanding issues:
1. Grounds for Appeal #1: Methodology (HQTA Errors and Residual Allocation Redistribution)
2. Grounds for Appeal #2:Local Planning Factors and Information Furthering Fair Housing (AFFH)
3. Grounds for Appeal #3: Changed Circumstances
4. Grounds for Appeal #4: Regional Determination of 1.34 Million Housing Units Violates State Law
5. Grounds for Appeal #5: Inconsistency between Regional Housing Needs Assessment and Sustainable Communities Strategy

Number of units requested to be reduced or added to the jurisdiction's draft RHNA allocation (circle one):

Reduced 8,259 **Added** _____

List of Supporting Documentation, by Title and Number of Pages

(Numbers may be continued to accommodate additional supporting documentation):

1. Letter to Mr. Kome Ajise regarding City of Irvine Appeal Request
2. Attachment A
3. Attachments 1-18

FOR STAFF USE ONLY:

Date_____ Hearing Date: _____ Planner: _____

cityofirvine.org

City of Irvine, 1 Civic Center Plaza, P.O. Box 19575, Irvine, California 92623-9575 949-724-6000

October 26, 2020

Mr. Kome Ajise, Executive Director
Southern California Association of Governments (SCAG)
900 Wilshire Boulevard, Suite 1700
Los Angeles, California 90017

Subject: City of Irvine Regional Housing Needs Assessment Appeal Letter

Dear Director Ajise:

In accordance with Government Code Section 65504.05, subdivisions (b)(1), (b)(2) and (b)(3), the City of Irvine submits this appeal for a revision of the share of the regional housing need proposed to be allocated to the City of Irvine under the Regional Housing Needs Assessment (RHNA) methodology adopted for the 6th Cycle. The City of Irvine appreciates and encourages the Southern California Association of Governments Regional Housing Needs Assessment Appeal Board to review the appeal outlined below because a revision of the draft allocation is necessary to further—and not undermine—the intent of the statutorily mandated objectives listed in Government Code Section 65584, subdivision (d) ("Section 65584(d)" and "Section" refers to the Government Code unless otherwise noted).

With the issuance of the draft allocation, there were failures not only (1) to adequately consider the information submitted as part of the methodology, but also (2) to determine the share according to information and the methodology established, pursuant to Section 65584.04, subdivision (b). These failures ultimately undermine—instead of further—the intent of the objectives in Section 65584(d). As required by Section 65504.05, subdivision (b), this appeal is consistent with—and not to the detriment of—the development pattern in the applicable sustainable communities strategy developed pursuant to paragraph (2) of subdivision (b) of Government Code Section 65080.

SUMMARY OF THE APPEAL

The City of Irvine is requesting a reduction of **8,259 total units** from the draft RHNA allocation or 23,554 on the grounds outlined below. This revision is necessary to further the objectives in Section 65584(d) for the following reasons, which will be explained in greater detail throughout the attached body of this appeal (Attachment A):

- The draft allocation does not increase the housing supply and mix of housing types in an equitable manner;
- The draft allocation does not promote infill development and socioeconomic equity, encourage efficient development patterns, and will result in the inability to achieve the region's greenhouse gas reduction targets;

- The draft allocation does not promote an improved intraregional relationship between jobs and housing.

CONCLUSION

The City of Irvine respectfully requests the total RHNA be reduced by 8,259 units and that SCAG modify the allocations to address the following outstanding issues:

1. Grounds for Appeal #1: Methodology
    a. HQTA Errors: reduction of 1,500 units
    b. Residual Allocation Redistribution due to Disadvantaged Community component of the RHNA Methodology, specifically outdated growth forecast information: reduction of 2,759 units
2. Grounds for Appeal #2: Local Planning Factors and Information Furthering Fair Housing (AFFH): reduction of 1,500 units
3. Grounds for Appeal #3: Changed Circumstances: reduction of 2,500 units
4. Grounds for Appeal #4: Regional Determination of 1.34 Million Housing Units Violates State Law
5. Grounds for Appeal #5: Inconsistency Between Regional Housing Needs Assessment and Sustainable Communities Strategy

Finally, the City of Irvine is requesting errors in the underlying data included in the RHNA methodology and the change in circumstances associated by the global COVID-19 pandemic be addressed to ensure there is an equitable distribution of affordable units throughout the SCAG region. The City of Irvine is a model in providing affordable housing in the region and even with the requested revision will still be responsible for accommodating one of Orange County's highest RHNA allocation.

Respectfully Submitted,

Honorable Christina L. Shea
Mayor

Honorable Michael C. Carroll
Vice Mayor and SCAG District 14 Regional Council Member

Attachment A: City of Irvine Regional Housing Needs Assessment Appeal Documentation

cc (via email):

City Council
Marianna Marysheva, Interim City Manager
Jeff Melching, City Attorney
Pete Carmichael, Director of Community Development Department
Timothy Gehrich, Deputy Director of Community Development Department
Kerwin Lau, Manager of Planning Services
Mark Steuer, Director of Public Works and Transportation
Jaimee Bourgeois, Deputy Director of Transportation
SCAG RHNA Subcommittee/RHNA Appeals Board
Honorable Peggy Huang, Chair RHNA Subcommittee
Honorable Wendy Bucknum, Orange County Representative RHNA Subcommittee

Attachment A: City of Irvine Regional Housing Needs Assessment Appeal Documentation

In accordance with Government Code Section 65504.05, subdivisions (b)(1), (b)(2) and (b)(3), the City of Irvine submits this appeal for a revision of the share of the regional housing need proposed to be allocated to the City of Irvine under the Regional Housing Needs Assessment (RHNA) methodology adopted for the 6th Cycle. The City of Irvine appreciates and encourages the Southern California Association of Governments Regional Housing Needs Assessment Appeal Board to review the appeal outlined below because a revision of the draft allocation is necessary to further—and not undermine—the intent of the statutorily mandated objectives listed in Government Code Section 65584, subdivision (d) ("Section 65584(d)" and "Section" refers to the Government Code unless otherwise noted).

With the issuance of the draft allocation, there were failures not only (1) to adequately consider the information submitted as part of the methodology, but also (2) to determine the share according to information and the methodology established, pursuant to Section 65584.04, subdivision (b). These failures ultimately undermine—instead of further—the intent of the objectives in Section 65584(d). As required by Section 65504.05, subdivision (b), this appeal is consistent with—and not to the detriment of—the development pattern in the applicable sustainable communities strategy developed pursuant to paragraph (2) of subdivision (b) of Government Code Section 65080.

SUMMARY OF THE APPEAL:

The City of Irvine is requesting a reduction of **8,259 total units** from the draft RHNA allocation or 23,554 on the grounds outlined below. This revision is necessary to further the objectives in Section 65584(d) for the following reasons, which will be explained in greater detail throughout the body of this appeal:

- The draft allocation does not increase the housing supply and mix of housing types in an equitable manner;
- The draft allocation does not promote infill development and socioeconomic equity, encourage efficient development patterns, and will result in the inability to achieve the region's greenhouse gas reduction targets;
- The draft allocation does not promote an improved intraregional relationship between jobs and housing.

City of Irvine Grounds for Appeal #1: Failure to Adequately Consider Information for the Methodology (Government Code Section 65584.05, subd. (b)(1)).

1. A. Three of the four stops associated with 2045 High Quality Transit Area (HQTA) are contingent on two transportation projects NOT included in the adopted Connect SoCal Project List. The State Route 55 Bus Rapid Transit (BRT) and Interstate 5 Bus Rapid Transit (BRT) are NOT projects in either the financially constrained project list or the strategic project list. Therefore, these three station stops should NOT be included in any calculations for 2045 population within a half mile of the HQTA since they are NOT projects and inclusion of the stations stops would be inconsistent and in conflict with the adopted Connect SoCal plan. (Attachment 1: Final Project List for Connect SoCal)

   B. 2045 High Quality Transit Area (HQTA) population factor for existing need is based on conceptual stops, not fully vetted by the City of Irvine.

   C. HQTA population for 2045 was not prorated to accurately reflect the population within the half mile radius of a HQTA stop. The 2045 population for Irvine's one HQTA (Irvine Transportation Center) should be prorated to reflect the percentage of the geographic unit (Traffic Analysis Zone or Scenario Planning Zone) within the half mile radius ONLY. (Attachments 2-10)

HQTA Population for Existing Need Allocation: 1,794 units
City of Irvine requests reduction of: 1,500 units (combination of 1.A. - 1.C.)

1. A.
   - For several years, SCAG has developed a measure called High Quality Transit Areas (HQTAs) which are areas within a half-mile of transit stations and corridors with at least a fifteen (15) minute headway during peak hours for bus service. HQTAs are based on state statutory definitions of high-quality transit corridors (HQTCs) and major transit stops. For the development of Connect SoCal (2020 Regional Transportation Plan/Sustainable Communities Strategy), freeway-running HQTCs have been excluded from HQTAs to better reflect the level of service they provide to nearby areas. However, SCAG, in coordination with the Orange County Transportation Authority (OCTA), made the decision to include the conceptual station stops associated with these freeway-running HQTCs, even though they have not yet been studied or deemed feasible.

     SCAG identified four HQTAs in the City of Irvine.

     1. The Irvine Transportation Center: The Irvine Station, located in the Spectrum area of the City, is a growing transportation hub in South Orange County. As the busiest station in Orange County serving over a million commuters annually, the Irvine Transportation Center is currently served by Amtrak and Metrolink passenger rail services, as well as being a hub for express, local and rail-feeder bus services operated by the Orange County Transportation Authority (OCTA).
     2. Alton Parkway BRT stop: According to information provided to City of Irvine staff in September 2019, this stop was identified by the OCTA without consultation with the City of Irvine and would be established to support the non-existent, but possible

future bus rapid transit on State Route 55. There is currently no off-ramp from SR 55 at Alton Parkway to support a station stop. The SR 55 BRT project is **NOT** included in the adopted Connect SoCal project list, either as a financially supported project or unfunded, strategic project. **As such, this HQTA should be removed from the RHNA methodology.**

3. Jeffrey Road Park and Ride BRT stop: According to information provided to City of Irvine staff in September 2019, this stop was identified by OCTA without consultation with the City of Irvine and would be established to support the non-existent, but possible future bus rapid transit on Interstate 5. The Interstate 5 BRT project is **NOT** included in the adopted Connect SoCal project list, either as a financially supported project or as an unfunded, strategic project. **As such, this HQTA should be removed from the RHNA methodology.**
4. Spectrum Center BRT stop: According to information provided to City of Irvine staff in September 2019, this stop was identified by OCTA without consultation with the City of Irvine and would be established to support the non-existent, but possible future bus rapid transit on Interstate 5. The Interstate 5 BRT is **NOT** included in the adopted Connect SoCal project list, either as a financially supported project or as an unfunded, strategic project. **As such, this HQTA should be removed from the RHNA methodology.**

- On numerous occasions throughout the development of the RHNA methodology, the City of Irvine expressed verbal and written disagreement with the inclusion of HQTA stops associated with Bus Rapid Transit (BRT) routes that are hypothetical and in the earliest of planning stages. At the time the methodology was developed, the Orange County Transportation Authority (OCTA) had not vetted the proposed BRT station stops along the Interstate 5 corridor with the City of Irvine and the BRT station stop along State Route 55 had been introduced with concern expressed by City of Irvine staff. The HQTA stops at Alton Parkway, the Jeffrey Road Park and Ride, and Spectrum Center were provided to SCAG staff by OCTA without consultation with the City of Irvine.

  The City disagrees with and disputes the use of a BRT route and proposed station stops that are not only conceptual at this time, but may also be infeasible, in the methodology for the RHNA. As stated above, neither the SR 55 BRT project nor the Interstate 5 BRT project are listed as a project for Orange County in the Connect SoCal project list adopted by the Regional Council on September 3, 2020. Inclusion of the three station stops associated with these two projects is inconsistent and in conflict with the Connect SoCal plan.

1. B.
   - Even if the SR 55 BRT and Interstate 5 BRT routes were included in the adopted Connect SoCal plan, the stops were never vetted or discussed with the City of Irvine prior to their incorporation into the RHNA methodology. Constraints associated with the three BRT related station stops are outlined below:

a. State Route 55 BRT: OCTA has conceptually proposed the incorporation of Direct Access Ramps (DAR) as part of the future Alton Parkway Overcrossing project to accommodate a BRT stop in the Irvine Business Complex (IBC). The Alton Parkway Overcrossing project is led by the City of Santa Ana, with 50 percent of construction funding to come from City of Irvine. The Alton Parkway Overcrossing has been designed but does not have adequate funding for construction, and may not for quite some time. This funding shortfall is exacerbated particularly in light of the change of circumstances associated with the COVID-19 pandemic. In addition, the inclusion of this DAR is inaccurate because it is not a part of the project, has not been demonstrated to be geometrically feasible, and has no identified funding. Furthermore, the BRT and proposed station stop in the vicinity of Alton Parkway would primarily support non-residential uses in the IBC, such as Edwards Lifesciences, one of the City's largest employers. The half mile radius around the Alton Parkway station stop is not zoned and will not be zoned to support a residential population given that it is within the flight path of John Wayne Airport (JWA). In general, residential development is not considered an acceptable use within the 65 CNEL noise contour, within certain safety zones for approaching/departing flight paths, and similar limits to residential use tied to federal restrictions under an active (here, very active) flight path and airport. Additional height restrictions also vary depending on project location. Any future residential project within a half mile radius of the proposed stop would be found inconsistent with the Airport Environs Land Use Plan for JWA and would result in safety and noise concerns for the future residents. According to the Final OC Transit Vision Report (January 2018), the proposed BRT stop at Alton Parkway is considered to have a relatively low BRT stop score.
b. Interstate 5 BRT Stop - Existing Jeffrey Park and Ride: OCTA has proposed a BRT stop at the existing Caltrans park and ride adjacent to the I-5 at Jeffrey Road on/off-ramps. The park and ride would not support future residential development as it is surrounded by the under construction Innovation Office Park, Interstate 5, and an existing utility corridor that will feature the extension of the Jeffrey Open Space Trail (JOST). Two neighborhood commercial centers are located on the north side of Jeffrey Road, but these commercial centers are part of *no* plan to be converted to residential use. According to the Final OC Transit Vision Report, the proposed BRT stop at the Jeffrey Park and Ride is considered to have a relatively low BRT stop score.
c. Interstate 5 BRT Stop - Spectrum Center: The Irvine Spectrum Center BRT stop is highly conceptual and an exact location is not known and has not been provided to the City of Irvine at any time during the development of the RHNA methodology. Existing residential population is limited in this area and no new residential growth is expected. According to the Final OC Transit Vision Report, the proposed BRT stop at the Spectrum Center is considered to have a relatively low BRT stop score. As noted below in detail, there was a failure to have the 2045 population prorated to reflect what percentage of a TAZ or SPZ was included in the half mile radius of the conceptual HQTA stop.

1. C.
   - After researching the 2045 population growth forecast utilized for the existing need calculation, it appears that SCAG did not prorate the population of the land that is actually located within a half mile of the HQTA stops. The City of Irvine has conducted a review of the Traffic Analysis Zones (TAZ) located within a half mile of the HQTA stops included by SCAG staff in the methodology, and, without prorating, the population is equal to the one used in the RHNA methodology. In many cases, only a very small percentage of the land within a TAZ or even a Scenario Planning Zone (SPZ), if that was the level of geography utilized, is within that half mile radius of the HQTA. Yet, the *entire* 2045 estimated population for that geographic unit is included in the calculation, and this is most notable in the areas around the Irvine Transportation Center (ITC) and the conceptual Spectrum HQTA. Regrettably, there was a lack of transparency in the methodology, as jurisdictions are not able to access ALL the input data because it is not clearly traceable in models, and there are multiple formulas and models that need to be run to determine all of this.
     - Irvine Transportation Center: As noted above, the Irvine Transportation Center is the only HQTA stop that exists in the City of Irvine today and is the ONLY HQTA stop projected for the year 2045 (according to the adopted Connect SoCal Project List). It is currently served by Amtrak and Metrolink passenger rail services, as well as being a hub for express, local and rail-feeder bus services operated by OCTA. Based on review of the 2045 population data included in the RHNA methodology background information, the 2045 population was NOT prorated to reflect the actual percentage of the TAZ or SPZ located within the a half mile of the ITC. SCAG must prorate the 2045 population to accurately reflect the percentage of population that will be located within a half mile of the ITC.
     - The City of Irvine estimates approximately 15% of TAZ 1223, the only TAZ projected to have residential population, is within ½ mile radius of the ITC. Therefore, only 15% of the projected 7,456 population should be included in the calculation for Irvine's HQTA share of existing need.
   - In conclusion, the City of Irvine has identified three areas of inconsistency and concern with the HQTA component of the existing need calculation. Due to the complexity of the RHNA estimator tool, and because it is impossible for a jurisdiction to determine whether the impact of the requested corrections to the HQTA component is accurate, the City of Irvine is estimating the HQTA component of the existing need should be reduced by approximately 1,500 units. At a minimum, SCAG should recalculate the 2045 population within an HQTA for the City of Irvine to exclude any 2045 population associated with the Alton Parkway HQTA, the Jeffery Road Park and Ride HQTA, and the Spectrum Center HQTA; and
   - Prorate the 2045 population associated with the Irvine Transportation Center HQTA to accurately reflect the percentage of the population located within a half mile of the HQTA stop.

2. Residual Allocation Redistribution due to Disadvantaged Community component of the RHNA Methodology

Net residual factor for existing need: 5,294
City of Irvine requests reduction by 2,759

According to the approved RHNA methodology, two factors were included in the determination of a jurisdiction's existing need. For extremely disadvantaged communities (hereafter "DACs") the residual need was identified. The residual need is defined as total housing need in excess of household growth between 2020 and 2045. DACs are jurisdictions with more than half of the population living in high segregation and poverty or low resource areas as defined by the California Tax Credit Allocation Committee (TCAC)/ HCD Opportunity Index Scores. According to the methodology for the 2020 TCAC/HCD Opportunity Index Scores and Map (June 2020), "the opportunity mapping is a way to measure and visualize place-based characteristics linked to critical life outcomes. Opportunity maps can be used to inform how to target investments and policies in a way that is conscious of the independent and inter-related effects that research has shown places on economic, educational, and health outcomes." However, "Opportunity mapping also has limitations. For example, maps' accuracy is dependent on the accuracy of the data behind them. Data may be derived from self-reported surveys of subsets of the area's population and sometimes may not be recorded or reliable in some areas. Further, even the most recent publicly available datasets typically lag by two years, meaning they may not adequately capture conditions in areas undergoing rapid change." The TCAC/HCD Opportunity Maps and corresponding Opportunity Index Scores are designed to identify high-opportunity areas for the investment of private capital into the development of affordable rental housing for low income Californians. It is not the purpose of the TCAC/HCD Opportunity Index Scores to identify disadvantaged communities (DACs) for the purposes of calculating the RHNA.

- The residual existing need was then reallocated by Orange County to non-DAC jurisdictions within the same county based on the formula (50% transit accessibility and 50% job accessibility). The redistribution of the DAC residual at the county level was not vetted at the RHNA Subcommittee or the CEHD and was introduced days before the vote at the Regional Council. Had the DAC residual been redistributed at the SCAG regional level, the impact would not have been as significant to non-DAC jurisdictions within the county. There are five jurisdictions in Orange County that qualify for the DAC protection of the 2020-2045 household growth (Anaheim, La Habra, Orange, Santa Ana, and Stanton), resulting in 44,452 units that are redistributed to non-DAC Orange County jurisdictions. Over 23,000 of these units are redistributed from a single jurisdiction, the City of Santa Ana. The City of Irvine receives a total of 5,294 units from the five Orange County DACs. The City of Irvine receives 52 percent of its net residual factor for existing need from the City of Santa Ana (2,759 units). The City of Irvine requests the net residual factor for existing need be reduced by 2,759 units based on the information outlined below.

- Utilizing the RHNA methodology approved by the SCAG Regional Council, the City of Santa Ana would have received an allocation of 26,255 units. However, SCAG added an exception for jurisdictions that are considered a disadvantaged community (DAC) utilizing information from the TCAC.
- The City of Santa Ana's RHNA allocation of 3,087 housing units is being capped to the household growth between 2020 and 2045 per the adopted RHNA methodology.
- The remaining 23,168 units (the residual) are being redistributed to other non-DAC Orange County jurisdictions. The DAC redistribution to the county of origin was added to the methodology days before the adoption by the Regional Council. The impact of the DAC redistribution on jurisdictions within the county of origin was not adequately vetted by jurisdictions and the true impact of the methodology were not realized until after the plan was adopted by the Regional Council. According to the November 7, 2019 Regional Council report for the RHNA methodology (page 56), SCAG staff states: "Staff was also asked by several members of the Regional Council to analyze for Board consideration the merits of the staff recommendation versus a substitute motion that was defeated in a 4-3 vote during the October 7, 2019, RHNA Subcommittee." It should be noted that the substitute motion that was proposed by Subcommittee Member Rusty Bailey on October 7, 2019 did NOT contain any component even remotely close to the DAC residual; it simply asked for the elimination of the household growth component (local input) between 2030 and 2045.
- This alternative methodology from Member Bailey was not considered at the October 17, 2019 Community, Economic and Human Development (CEHD) meeting where the CEHD unanimously approved the original methodology recommended by the RHNA Subcommittee. If this component of the final November 7, 2019 methodology had been known, the City of Irvine would have raised the concern with the outdated growth forecast for the City of Santa Ana at that time.
- SCAG staff received a copy of the letter from Member Bailey proposing an alternative methodology on November 1, 2019 and ultimately, this became the proposed SCAG staff RHNA methodology. The City of Irvine still expresses concern with the quick turn around and analysis of Member Bailey's methodology, which was outlined in the Regional Council staff report released for public review on the day SCAG received the letter from Member Bailey. From the November 7, 2019 Regional Council agenda: "the RHNA methodology considers many factors across the complex regional geography of Southern California, and as such, **changes to a single factor may have unintended consequences that should be considered and addressed.** However to be responsive to the request **and for discussion purposes**, staff conducted preliminary analysis of the defeated motion (Bailey substitute motion from RHNA Subcommittee). In conducting the analysis, staff modified the Recommended Draft Methodology as follows to reflect the desire to eliminate the use of Household Growth between 2030 and 2045:
    - The Existing Needs allocation factors were changed to only rely on "transit accessibility" and "jobs accessibility" factors (for the year 2045) with 50% of existing need assigned to each. The share of existing need allocated based Household Growth between 2030 and 2045 was eliminated.

    - The cap on RHNA allocation to a jurisdiction's 2045 Household Growth was eliminated for all jurisdictions except those in Disadvantaged Communities (DACs). Caps were retained in DACs and assigned within county as a measure to guard against gentrification in job and transit-accessible disadvantaged areas per HCD requirements. Removing caps reduces the impact of the "residual" redistribution to approximately 7 percent of total regional housing need, compared to 12 percent in the Recommended Draft Methodology."
- Had this component been introduced at ANY of the previous RHNA Subcommittee meetings related to the development of the methodology or the CEHD meeting of October 17, 2019, the City of Irvine and other impacted jurisdictions would have raised their concern with the outdated growth forecast for the City of Santa Ana and would have insisted that updated information be provided based on the information Santa Ana had provided adjacent jurisdictions through interagency review.
- Furthermore, the RHNA estimator calculator was not posted until November 19, 2019, well after the adoption of the RHNA methodology. With no Regional Council meetings scheduled for the remainder of the 2019 calendar year, the first opportunity for jurisdictions to express their concerns with the DAC residual redistribution or discuss an issue with the outdated growth forecast information utilized to cap the RHNA allocation for the DACs was February 6, 2020. Again, the City of Irvine vehemently emphasizes that, *IF* the City of Irvine (and other cities) had been made aware of the DAC residual redistribution component added to the RHNA methodology at the last moment and immediately prior to the November 7, 2019 Regional Council meeting, public comments on this matter would have been made verbally and in writing to all decision making committees.
- The projected household growth for the City of Santa Ana is outdated and does not reflect the reality of projects under construction, approved, or currently under review. According to the City of Santa Ana project website, there are over 10,000 units under construction, approved, or currently under review that will be completed during the 6th Cycle RHNA timeframe. (Attachments 11-12)
- This does not include the additional units that would be permitted when the City's General Plan is adopted. According to the City of Santa Ana General Plan Environmental Impact Report, the "No Project/Existing General Plan" results in the potential for more than 18,000 units than the growth projections in the adopted Connect SoCal (2020 RTP/SCS. The proposed General Plan Update would result in the potential for 31,515 more units than the "2020 RTP/SCS Consistency Alternative". The General Plan Update is tentatively scheduled for review by the Santa Ana Planning Commission in October 2020 and the City Council in November 2020.
- The City of Irvine recommends the City of Santa Ana's RHNA should be updated to reflect the total number of units identified on the City's website. A comprehensive list of projects that should be included in the revised growth forecast is attached. The residual should be readjusted to reflect the revised RHNA.
- Within Orange County, the City of Santa Ana has the second highest share of the region's job accessibility in Orange County and the highest share of the region's HQTA population in Orange County.

- Failing to update Santa Ana's RHNA allocation to reflect the units that are being constructed, approved or nearing approval within Santa Ana, prior to redistributing the residual units to other jurisdictions that have significantly lower shares of the region's HQTA and job accessibility population, is contrary to many of the preferred policies of the state, the California Air Resources Board, HCD, and the recently approved Connect SoCal (2020 RTP/SCS). Specifically, the redistribution in in conflict with the following:
    - As it relates to the adopted Connect SoCal plan, this includes focusing growth near destinations and existing transit options, promoting diverse housing choices, reducing vehicle miles travelled, and reducing greenhouse gas emission reductions. SCAG's Growth Vision: "aims to increase mobility options and reduce the need for residents to drive by locating housing, jobs and transit closer together. To help the region achieve sustainable outcomes, Connect SoCal's Forecasted Development Pattern focuses within jurisdictions near destinations and mobility options, in line with the policies and strategies of the Growth Vision."[1] SCAG's forecasted development pattern for the SCS relies on new housing development to be focused in "priority growth areas" and to avoid housing developments in areas with "growth constraints."[2] The redistribution of growth from the City of Santa Ana to other jurisdictions within Orange County that may not have a "priority growth area", transit, or be near jobs is in conflict with and contradicts the SCAG Growth Vision.
    - Senate Bill 375 (Chapter 728, Statutes of 2008): Requires SCAG to prepare and adopt a sustainable communities strategy that sets forth a forecasted regional development pattern which, when integrated with the transportation network, measures and polices, will reduce greenhouse gas emissions from automobiles and light-duty trucks.

City of Irvine Grounds for Appeal #2: <u>Failure to Determine the City of Irvine's Share of the Regional Need in Accordance with Information Described in, and Methodology Established, in a Manner that Furthers and Does Not Undermine the Intent of the Objectives in Section 65584(d) (Government Code Section 65584.05, subd. (b)(2)).</u>

SCAG failed to consider information submitted by the local jurisdiction relating to certain local factors outlined in Government Code Section 65584.04, subdivision (e), and information submitted by the local jurisdiction relating to affirmatively furthering fair housing (AFFH) pursuant to Government Code Section 65584.04, subdivision (b)(2) and 65584, subdivision (d)(5), as described below.

City of Irvine requests reduction of 1,500 units

The information submitted by the local jurisdictions relating to certain local factors outlined in Government Code Section 65584.04, subdivision (e), and information submitted by the local jurisdictions relating to affirmatively furthering fair housing pursuant to Government Code Sections 65584.04, subdivision (b)(2) and 65584, subdivision (d)(5), were utilized on the projected need portion of the methodology, but were NOT applied to the existing need. It is important to note that SCAG only

[1] Connect SoCal, Sustainable Communities Strategy Technical Report, Page 28
[2] Connect SoCal, Sustainable Communities Strategy Technical Report, Page 17-19

applied these absolute and variable growth constraints to the projected need portion of the RHNA (approximately 1/3 of the total RHNA). SCAG has attempted to focus the remaining approximately 2/3 of the total RHNA into priority growth areas, but completely ignored the sustainable community strategy (SCS) growth constraints for approximately 836,000 RHNA housing units. This is in direct conflict with Government Code Section 65080, subdivision (b)(2)(B) and Government Code Section 65584.04, subdivision (m), which require that Connect SoCal and RHNA be consistent with one another.

a. *Each jurisdiction's existing and projected jobs and housing relationship.*
The City of Irvine has always strived to be a complete community that offers the opportunity to live, work, and play in the same jurisdiction. The City of Irvine has two major job centers, the Irvine Business Complex (IBC) and the Irvine Spectrum, which are regional in nature and are situated on the city border with other Orange County jurisdictions. An employee working in the IBC may decide to live in Newport Beach, Costa Mesa, or Santa Ana because it is closer to the employment center than living in Portola Springs or Orchard Hills in more distant areas that are nonetheless still within the City of Irvine, thus reducing vehicle miles travelled and greenhouse gas emissions. Employees working in Irvine are encouraged to live within the city they work in, but it is not requirement and it shouldn't be dictated by the State or SCAG. In fact, living in an adjacent jurisdiction to the employment center may result in a shorter commute, possibly providing the employee an opportunity to walk or bike to work. Additionally, if the City is required to find adequate sites for both the aggregate total of the RHNA allocation and the various income levels, the employment centers may need to be rezoned. These job losses would negatively impact Irvine's jobs and housing relationship.

b. *The opportunities and constraints to development of additional housing in each jurisdiction, including the following:*

Legal Criteria: *Lack of capacity for sewer or water service due to federal or state laws, regulations or regulatory actions, or supply distribution decision made by a sewer or water service provider other than the local jurisdiction that preclude the jurisdiction from providing necessary infrastructure for additional development during the planning period*; and *The availability of land suitable for urban development or for conversion to residential use, the availability of underutilized land, and opportunities for infill development and increased residential densities*.

- City's Reasons for Failing to Meet this Legal Criteria: The majority of land suitable for urban development in the City of Irvine is entitled through development agreements that allow units to be constructed in phases. In addition, nearly all planning areas have met the maximum number of units and there is no vacant land available. Nearly all the residential units in Irvine are less than 50 years old, with the majority of these units constructed since the mid-1990s. Out of the 114,093 units, 59,031 units have been built from 2000-present. The housing stock is new and would not be available for redevelopment or repurposing. The neighborhoods are primarily single family neighborhoods that will not be redeveloped. Furthermore, the City of Irvine has areas identified as Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP), which areas are protected and not suitable or permitted for urban development.
- The City does not have the ability to modify development agreements that are legal documents without the participation of the land owner;

- Legal Criteria*: Lands preserved or protected from urban development under existing federal or state programs, or both, designed to protect open space, farmland, environmental habitats, and natural resources on a long-term basis, including land zoned or designated for agricultural protection or preservation that is subject to a local ballot measure that was approved by the voters that a jurisdiction that prohibits or restricts conversion of non-agricultural uses.*
- City's Reasons for Failing to Meet this Legal Criteria: In the mid-1990s, the City of Irvine joined the regional Natural Community Conservation Plan (NCCP). The NCCP created a regional network of land reserves to protect entire communities of native plants and animals, while allowing development to move forward in other areas. The majority of the NCCP lands are also identified in the Habitat Conservation Plan (HCP) that is the mechanism by which the Federal government permitted the City of Irvine land use and conservation program. In addition, the City of Irvine has identified additional areas of locally preserved open space under the City of Irvine Open Space Initiative that permanently protects specific areas from development.

  Specifically, on June 7, 1988, in the General Municipal Election, Irvine voters overwhelming approved Initiative Resolution 88-1, titled "An Initiative Resolution of the City of Irvine Directing the Amendment of the Conservation and Open Space Element and the Land Use Element of the Irvine General Plan." The Open Space Initiative reflected the following principal objectives:
  - To consolidate important conservation and open space areas into large contiguous areas that may be integrated into local and regional open space areas;
  - To establish a network of open space spines, linking the consolidated conservation and open space areas; and
  - To assure the preservation of conservation and open space areas through a phased dedicating and compensating development opportunities program, acceptable to the City and owner of the land involved, which transfers development opportunities from conservation and open space areas and consolidates them in appropriate development areas.

  It was further outlined in the Memorandum of Understanding Implementing Initiative Resolution 88-1 between the City of Irvine and the Irvine Company, whereby the Irvine Company agreed to convey to the City open space lands – in the form of Preservation Areas – in exchange for development rights in other areas of Irvine. These Preservation Areas that comprise the Irvine Open Space Preserve are dedicated to the City in perpetuity as protected open space. The deeds include language that restricts the use of the land solely for infrastructure, resource conservation, habitat enhancement and passive recreation purposes such as hiking. In other words, these lands cannot ever be sold, leased or used for any commercial, office, industrial, or residential purposes.

- Legal Criteria*: County policies to preserve prime agricultural land, as defined pursuant to Government Code Section 56064, within an unincorporated area, and land within an unincorporated area zoned or designated for agricultural protection or preservation that*

is subject to a local ballot measure that was approved by the voters of that jurisdiction that prohibits or restricts its conversion to non-agricultural uses.

- City's Reasons for Failing to Meet this Legal Criteria: The City of Irvine General Plan Conservation and Open Space Element includes Objective L-10 that encourages the maintenance of agriculture in undeveloped areas of the City until the time of development and in areas not available for development.

c. *The distribution of household growth assumed for purposes of a comparable period of regional transportation plans and opportunities to maximize the use of public transportation and existing transportation infrastructure.*

The growth forecast for the City of Irvine included in the adopted 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), known as Connect SoCal, is inconsistent with the City's existing General Plan and Zoning Code. However, the RHNA allocation deviates from local input and greatly exceeds the existing General Plan and Zoning Code. Accommodating the RHNA allocation for all income levels will create a significant impact on the jurisdiction. This will place a tremendous strain on the existing transportation infrastructure. There is limited existing or future plans for public transportation in the City of Irvine as the County transportation committee (OCTA) has reduced or eliminated public transit throughout much of Irvine and south Orange County.

d. *The rate of overcrowding.*

Although the 2018 Department of Finance figures show an average of 3.1 persons per household in Irvine, the City does not track the number of occupants per dwelling unit. The City is concerned that the definition of "overcrowding" has not been clearly established. Therefore any jurisdictional responses to this question would not be an accurate comparison. The City recommends that SCAG determine a consistent and perhaps more appropriate definition of overcrowding rather than using the US Census definition of one person per room. The current Census definition would determine that a married couple in a studio apartment would be overcrowded or that a family of six would be overcrowded if living in a three-bedroom home. Census does not take into consideration multi-generational housing, which is a growing trend in the City. None of these extreme examples would constitute overcrowding except under the current Census definition.

e. *The housing needs generated by the presence of a private university or a campus of the California State University or the University of California within any member jurisdiction.*

The City of Irvine is home to Irvine Valley College, Concordia University, and the University of California, Irvine. Irvine Valley College is a two-year public community college and is part of the South Orange County Community College District. Prior to March 2020, the majority of the students attending Irvine Valley College lived locally and commuted to class. Concordia University is a private four year university with a total student population of 4,123 (1,334 undergraduate). Concordia currently has 256 dormitory units with 1,024 beds and another 74 dormitory units with 296 beds have been entitled through discretionary approval. The University of California, Irvine (UCI) has an approved long range development plan (LRDP) that has a maximum of 22,000 beds and over 2,000 dwelling units for faculty and staff. With all colleges and universities, the COVID-19 pandemic has required instruction to be held remotely for the remainder of the 2020 calendar year and it is unknown how long digital learning will continue into the future. It is a very realistic possibility that restrictions on the percentage of students

permitted to attend in person classes may not be lifted for years to come, dramatically impacting the number of students and faculty needing on campus or near campus housing.

f. The loss of units during a state of emergency that was declared by the Governor pursuant to the California Emergency Services Act (Chapter 7 (commencing with Section 8550) of Division 1 of Title 2), during the planning period immediately preceding the relevant revision pursuant to Section 65588 that have yet to be rebuilt or replaced at the time of the analysis. For purposes of these guidelines, this applies to loss of units during a state of emergency occurring since October 2013 and have not yet been rebuilt or replaced by the time of the development of the draft RHNA methodology, or November 7, 2019.

Historically, there have been a significant number of wildfires in and surrounding the City of Irvine. The City has seen a major wildfire within or near its borders every decade since the 1980s. Fortunately, the City of Irvine has not experienced any devastation from these fires, but it serves as a constant reminder that the hillside terrain and open space that surrounds the City of Irvine makes it a constant threat to potential wildfires. (Attachment 13)

g. The region's greenhouse gas emissions targets provide by the State Air Resources Board pursuant to Section 65080, to be met by SCAG's Connect SoCal Plan.

The City of Irvine has limited public transit opportunities and the conversion of office to additional residential as a way to meet the RHNA would likely increase the number of vehicle miles traveled (VMT) within the region, which could potentially conflict with AB 32 and SB 375 goals.

The City of Irvine initiated a review of the proposed RHNA allocation (required site inventory to address all income levels) and the impact to the vehicle miles travelled for the City. Based on this preliminary review, the impact of the RHNA as a "project" and it would result in 19.78 VMT/capita vs. 14.88 VMT/capita (threshold) with potential need to mitigate a VMT impact amount 24.8% through mitigation strategies. The majority of the units were hypothetically located near the Irvine Transportation Center (ITC) or within the Irvine Business Complex (IBC) that is serviced by the iShuttle, Irvine's locally serving transit. Both of these areas are near the City's two large job centers, the Spectrum and the IBC and it does not take into consideration the possible reduction in nonresidential uses to accommodate the dwelling units. The detailed report is included as Attachment 14.

Furthermore, the California Air Resources Board (CARB) has established goals of reducing GHGs in the SCAG region by 19% by 2035 beginning October 1, 2018. Previously, the targets were to reduce GHGs by 13% by 2035. This 6% target reduction increase could potentially limit housing production within the City as these target adjustments result in increased housing production costs. Specifically, according to the local Building Industry Association (BIA), the cost to construct high density, multifamily residential on developed land in Orange County and Los Angeles County is extremely costly and may result in limited to no housing production. The principle is supported by several sections of the state's RHNA methodology process (such as Government Code Sections 65584, subd. (a)(3), 65584, subd. (d)(2), and 65584, subd. (d)(3).)

h. Information based upon the issues, strategies, and actions that are included, as available in an Analysis of Impediments to Fair Housing Choice or an Assessment of Fair Housing completed by

any city or county or the California Department of Housing and Community Development, and in housing elements.

The City of Irvine identified several other factors in the RHNA Local Planning Factor Survey submitted in April 2019 that limit residential development. Areas of the Great Park Neighborhoods will be developed, but are limited to non-residential development due to soil contamination that has not been cleaned to residential standards. For residential to be possible, extensive remediation would be required. Remediation plans can be cost-prohibitive in worst case scenarios, but often add significant cost to housing development in most cases. Additionally, there are other areas within the City such as Rancho San Joaquin that have limitations on what portions of the site could be converted to residential due to active methane gas emissions from a previous landfill site.

The City of Irvine recommends that SCAG consider other planning factors such as potential impacts from natural disasters (i.e., earthquakes, fires, floods, liquefaction, landslides, dam inundation, etc.) History of natural disasters or recent fire events should also be taken into consideration.

i. *Information not considered: Achievability*

Per California State Law, the City of Irvine must prepare a housing element update that identifies adequate sites for both the aggregate RHNA allocation AND each of the income level categories (Assembly Bill 1397; Chapter 375, Statutes 2017). In addition, the City must also allocate additional units to ensure that there is no net loss per Senate Bill 166; Chapter 367, Statutes 2017). The City of Irvine received the following draft allocation:

Draft RHNA Allocation	23,554
Very Low	6,379
Low	4,225
Moderate	4,299
Above Moderate	8651

The City of Irvine has one of the most progressive inclusionary housing programs in Orange County and as a result, the City has constructed 4,608 affordable housing units, the most in Orange County. Eighty percent of the affordable units are extremely low, very low, and low. The City's inclusionary housing program requires 15% of all units be set aside as affordable utilizing a 5%/5%/5% split for very low, low, and moderate income levels. Therefore, to meet the very low income levels using Irvine's existing inclusionary housing program would need to identify sites for at least 127,580 units:

Total Allocation to Meet All Income Levels	127,580
Very Low	6,379
Low	6,379
Moderate	6,379
Above Moderate	108,443

As previously noted, the majority of land suitable for urban development in the City of Irvine is entitled through development agreements that allow units to be constructed in phases. In addition, nearly all planning areas have met the maximum number of units and there is no vacant land available that is not permanently protected open space. Nearly all the residential units in Irvine are less than 50 years old, with the majority of these units constructed since the mid-1990s. Out of the 114,093 units, 59,031 units have been built from 2000-present. The housing stock is new and would not be available for redevelopment or repurposing. The City incorporated in 1971 and while a number of units were constructed prior to incorporation, it has taken nearly fifty years to construct 114,093 units. The City is now being asked to more than double the existing housing inventory and find adequate sites for 127,580 new, additional units to be able to accommodate the very low income RHNA allocation. For the City to actually construct enough units to meet the RHNA allocation, Irvine would need to construct almost 16,000 units each year. Any allocation that is disproportional AND is not attainable, does not further the statutory requirements and is patently flawed.

While some argue the RHNA is a hypothetical planning exercise, it should be noted that jurisdictions are evaluated through HCD's RHNA Annual Progress Report (APR). Jurisdictions that are not meeting their RHNA goal for construction of affordable housing are subject to streamlined housing approvals for certain housing projects under Senate Bill 35 (Chapter 366, Statutes 2017).

Additionally, if the City of Irvine is unable to identify adequate sites to meet both the total need and the need by each income category, the City will not be able to have a certified Housing Element. If the City is unable to have a certified Housing Element, we will be ineligible to receive Senate Bill 2 Permanent Local Housing Allocation funding in the amount of approximately $4.5 million over a five year period.

City of Irvine Appeal Grounds for Appeal #3: A Significant and Unforeseen Change in Circumstances Has Occurred that Merits a Revision of the Information Submitted for the Methodology (Government Code Section 65584.05, subd. (b)(3)).

A significant and unforeseen change in circumstances has occurred in the City after April 30, 2019 that merits a revision of the information previously submitted by the local jurisdiction.

- **The City of Irvine is requesting a reduction of 2,500 units.** In March 2020, the Southern California region came to a halt due to the COVID-19 pandemic. Seven months later, the majority of the counties in the SCAG region are in the purple tier or widespread category where many of the non-essential indoor business operations are closed. Orange County recently moved into the red tier or substantial category where some non-essential indoor business operations are closed. The California Department of Public Health (CDPH) requires working remotely in the red tier and continues to encourage teleworking in the orange tier (moderate) and yellow tier (minimal). What these unprecedented times have demonstrated is that telecommuting can be a viable, flexible work option. The interest in working remotely is not going to end once the pandemic is behind us, and while the long term impacts of the COVID-19 pandemic will not be known immediately, there are indications that the pandemic will have long term

impacts on how work will be reimagined. On October 13, 2020, the City of Irvine unanimously approved a Resolution encouraging long-term telecommuting, where possible, for the City and its businesses. This is an opportunity to proactively make adjustments that benefit the City's residents (less traffic, improved air quality), employees (increased productivity, higher employee satisfaction), businesses (reduced operational costs, improved recruitment and retention) and our environment (reduced greenhouse gas emissions, reduced fuel usage).

- According to an article published in the Orange County Register on September 16, 2020, Los Angeles-Orange County's joblessness rate of 16.8% is the highest in the United States. Major corporations are rethinking how they will do business and there have been articles written about Google and REI. Both corporations have recently completed new campuses, but are looking to sell the campuses due to changes resulting from COVID-19. (see articles for Google and REI). The Orange County Business Council recently released the 2020-21 Orange County Community Indicators Report that included a special section on COVID-19 and the potential long term impacts. According to the report "the COVID-19 pandemic has dramatically impacted economies and workplaces at all levels, both regionally and globally. While many believed the economy would rebound into a quick recovery, continued levels of unemployment and financial distress suggest the recovery will likely take years."
- Reliance on the 2045 employment to determine the existing need in the RHNA methodology is flawed. It will be argued that the impacts of COVID-19 can be addressed in future iterations of Connect SoCal (2024 and 2028) and the 7th Cycle RHNA (2028), but the damage to a jurisdiction will be done by that point in time. Jurisdictions will have been forced into modifying their General Plans and Zoning to accommodate the unrealistic and unachievable RHNA allocations for the 6th Cycle.
- On September 28, 2020, John Wayne Airport (JWA) posted the statistics for August 2020. This is only one month of data reflecting the impact of COVID-19 on a local economy that relies on commercial aircraft operations. In August 2020, JWA served 266,986 passengers, a decrease of 71.7% when compared with the August 2019 passenger traffic count of 942,385. The loss of revenue associated with airline travel has had a tremendous impact on the operating budgets of the jurisdictions surrounding JWA. Based on information provided by the California Employment Development Department (EDD) in the Worker Adjustment Retraining Notification (WARN report), the City of Irvine has suffered a loss of 2,490 jobs from July 2020 to present. According to the WARN report, statewide job losses since March have been catastrophic:
    - July 2019: 2,720 jobs
    - August 2019: 3,927 jobs
    - September 2019: 6,825 jobs
    - October 2019: 5,119 jobs
    - November 2019: 4,483
    - December 2019: 2,343
    - January 2020: 5,949 jobs
    - February 2020: 6,016 jobs
    - March 2020: 44,922 jobs

- April 2020: 240,362 jobs
- May 2020: 130,152 jobs
- June 2020: 56,596 jobs
- July 2020: 33,088 jobs
- August 2020: 32,875 jobs
- September 2020: 49,021 jobs
- October 2020: 12,701 jobs

- There will be long term impacts to the local colleges and universities if complete distance learning is continued into the near future or even modified to allow a percentage of students learning on campus. The University of California, Irvine and Concordia University both offer on-site student housing for undergraduates and graduate students that might be enough to house the existing on campus student population and faculty.
- Additionally, numerous articles have documented a shift in the desire for there to be more housing that allows residents to have open space and is less dense. Below are the links to ongoing news articles regarding the long term impacts of COVID-19.
    - http://www.freddiemac.com/research/insight/20200227-the-housing-supply-shortage.page
    - https://calmatters.org/commentary/dan-walters/2020/07/california-local-housing-shortage-crisis/
    - https://padailypost.com/2020/04/16/economic-slowdown-is-a-new-factor-in-determining-housing-quotas/
    - https://www.citywatchla.com/index.php/cw/los-angeles/20136-a-powerful-lesson-from-the-pandemic-trickle-down-city-planning-does-not-work
    - https://www.ocregister.com/2019/12/10/can-southern-california-build-1-34-million-homes-in-a-decade/
    - https://uccs.ucdavis.edu/events/2020-July-15-Blumenberg
    - https://calmatters.org/commentary/rethinking-work-and-life-in-lessons-learned-from-covid-19/?utm_campaign=CHL%3A%20Daily%20Edition&utm_medium=email&_hsmi=88358094&_hsenc=p2ANqtz--mmjM_srt2o0plbA-HD570CcmAgf2UTTAX-K0guxe8Rb5OTBIGQ1YXa0xrCkoOF6xBlkRcm0iMwr79tNV2MXByD8JD7w&utm_content=88358094&utm_source=hs_email
    - https://www.hostcompliance.com/sharing-econ-post-covid-planners?mkt_tok=eyJpIjoiTlRka09UQTVOVFEyTW1RdyIsInQiOiJvMXgrVGVieXQ4SjFcL2UrRTZ4Mms4aXFQTXNCQVh0clNSNUpnd3F5VW1iRjVTRll4Q0VlNWpoREVVQ1ROVEwwTUtEekFUbFlWWTUrUUUzdndYcFNoUFFPUmRxNyt0bmR4ZTRyVjlSNjNKQ1h2ZU1UcmtWYW1JbW9Qdzdj aHhyTzAifQ%3D%3D
    - https://www.cp-dr.com/articles/cpdr-news-briefs-may-12-2020
    - http://www.newgeography.com/files/Policy_Delusion.pdf
    - https://ternercenter.berkeley.edu/news/affirmatively-furthering-fair-housing-in-california
    - http://www.scag.ca.gov/Documents/scag-COVID-19-Transportation_Impacts.pdf?utm_medium=email&utm_campaign=SCAG%20Update%20August%2012&utm_content=SCAG%20Update%20August%2012+CID_58f8861a62362ccce09f7628b1bbb022&utm_source=SCAG%20Campaign%20Monitor&utm_term=new%20study
    - https://www.forbes.com/sites/retailwire/2020/08/18/rei-sells-its-headquarters-others-should-take-notice/#70f53e273166
    - https://www.wsj.com/articles/rei-built-an-iconic-hq-because-of-covid-19-the-outdoor-retailer-wants-to-sell-it-11597263188https://www.msn.com/en-us/money/companies/google-abandons-plan-to-rent-dublin-office-for-2000-workers/ar-BB18NsOQ

- https://www.barrons.com/news/google-abandons-dublin-office-plan-for-up-to-2-000-staff-01599562531

<u>City of Irvine Grounds for Appeal 4</u>: Regional Determination of 1.34 Million Housing Units Violates State Law (Government Code Section 65584.01, subd. (a)).

- State housing law is very clear on how to calculate the regional determination. "If the total regional population forecast for the projection year, developed by the council of governments and used for the preparation of the regional transportation plan, is within a range of 1.5 percent of the total regional population forecast for the projection year by the Department of Finance, then the population forecast, then the population forecast developed by the council of governments shall be the basis from which the department determines the existing and projected need for housing in the region…"
- SCAG regional population forecast for its Regional Transportation Plan (RTP) differs from the Department of Finance (DOF) projection by **1.32%** which falls within the statutory range of 1.5% outlined in state law. Therefore, by statute, the regional determination should be based on SCAG's population projections.
- However, HCD cites two reasons for not using SCAG's total regional population forecast:
    1. The total household projection from SCAG is 1.96% lower than DOF's household projection.
    2. The age cohort of under 15-year old persons from SCAG's population projections differ from DOF's projections by 15.8%
- The City of Irvine responds, however, that HCD's interpretation is incorrect for the following two reasons:
    1. The law clearly states that the 1.5% range is based on the total regional **<u>population</u>** forecast not the regional **<u>household</u>** projection forecast.
    2. The law clearly states that the 1.5% range is based on the **total** regional population forecast and not on **age-cohort** population forecasts.
- While state housing law provides a significant level of discretion to HCD over many of the factors used for the regional determination (*e.g.*, vacancy adjustments, overcrowding rates, replacement adjustments, cost-burdened adjustments), there is no discretion granted HCD on this numeric issue. Therefore, while the City of Irvine supported the arguments SCAG outlined in its September 18, 2019 objections letter, the City also recognizes that state law grants HCD the final determination for those factors. Notwithstanding, had HCD adhered to Section 65584.01, subdivision (a) as clearly stated, the City estimates that the regional determination should have been approximately 133,000 housing units lower, or no more than approximately 1.2 million housing units.
- Among the other factors used by HCD to establish the regional determination, the City contends that HCD incorrectly applied the vacancy rate for the SCAG region and double-counted a significant number of units needed to accommodate overcrowded and cost burdened households. This is the result of "Double Counting," as described by a recent study from the Embarcadero Institute, "*Double Counting in the Latest Housing Needs Assessment" (September 2020)*. The report demonstrates that the total regional housing need for the SCAG region should actually be approximately 651,000 housing units and not 1.34 million housing units. Other reputable sources, including the Freddie Mac report, *"The Housing Supply Shortage: State of the*

States" (February 2020), also demonstrate that HCD's calculation of 1.34 million housing units is significantly overinflated. This new and credible data should at a minimum be explored if not incorporated into the final allocation.

- . On October 1, 2020, SCAG President Rex Richardson verbally confirmed his intent to reconvene the SCAG RHNA Litigation Study Team. To date, the SCAG RHNA Litigation Study Team has not been reconvened, but it is our hope that the President's RHNA Litigation Study Team could deliberate on options to require State HCD to:
    1. Consider this and other new information from credible agencies;
    2. Justify how its 1.34 million housing unit determination is defensible in light of the new information and should be fittingly revised; and
    3. Justify how its 1.34 million housing unit determination is consistent with State Statute provisions.

City of Irvine Grounds for Appeal #5: Inconsistency Between Regional Housing Needs Assessment and Sustainable Communities Strategy (Government Code Sections 65080, subd. (b)(2) and 65584, subs. (a) & (d)).

- State law requires that SCAG, "prepare a sustainable communities strategy", which shall, among many other things, "identify areas within the region sufficient to house an eight-year projection of the regional housing need for the region pursuant to Section 65584." Government Code 65584 clearly establishes that the eight-year projection of regional housing need includes both "existing **and** projected" housing need.
- Additionally, California housing law states that, "it is the intent of the Legislature that housing planning shall be coordinated and integrated with the regional transportation plan. To achieve this goal, the allocation plan (RHNA) shall be consistent with the development pattern included in the sustainable communities strategy." This point is further emphasized in the law regarding RHNA appeals: "An appeal pursuant to this subdivision shall be consistent with, and not to the detriment of, the development pattern in an applicable sustainable communities strategy…"
- Previous iterations of the RTP/SCS (2008 and 2012) were amended after the adoption of the final RHNA to ensure the consistency between the RHNA and SCS.
- Beginning in October 2018, SCAG began an in-depth public review process for the 6th Cycle RHNA. In August 2019, SCAG released three RHNA methodology options for public review based on various factors discussed at the RHNA Subcommittee meetings between February and June 2019.
- Between August 1 and September 13, 2019, SCAG conducted four public hearings and received over 250 written comments. Based on the comments received, SCAG prepared a recommended RHNA methodology that met all five RHNA objectives and was consistent with the development pattern in the draft SCS.
- This RHNA methodology was recommended by the RHNA Subcommittee and unanimously supported by the CEHD Committee in October 2019.
- However, on November 7, 2019, a new RHNA methodology, which was inconsistent with the development pattern in the SCS, was introduced by Riverside Mayor Rusty Bailey and endorsed by Los Angeles Mayor Eric Garcetti and approved by a split vote of the Regional Council without any adequate public review or in depth analysis of the new methodology.

- SCAG is now attempting to fit a square peg into a round hole by claiming that the eight-year projection of the regional housing need[3] only applies to RHNA's "projected need" and does not apply to RHNA's "existing need"[4] despite the fact that state housing law clearly defines RHNA as "existing and projected need"[5]. SCAG states that "HCD identifies the 'existing need' as 836,857 units…"[6] This response is completely misleading and patently false. In fact, HCD has never differentiated between existing and projected need. A careful read of HCD's letter[7] demonstrates that it was actually SCAG (not HCD) that established an "existing need" of 836,857 and that HCD was simply acknowledging that this was SCAG's approach to the RHNA methodology. Moreover, HCD has never differentiated between existing need and projected need in any region in the state; HCD has only provided a total housing need.
- In their calculations, HCD projected a total of 6,801,760 households in the SCAG region by October 2029 (see Figure 1).[8] HCD added in several adjustment factors (vacancy, overcrowding, replacement, and cost burden) and subtracted the current occupied households. However, even if one were to try and differentiate projected and existing need based on this data, it is clear that at least 551,499 housing units (projected households less occupied housing units) would need to be attributed to "projected need". The only two new factors to be considered with RHNA this cycle are overcrowding and cost burden. Therefore, if one were to differentiate existing need and projected need, the existing need would more likely be 577,422 housing units and a projected need of 764,405 housing units. In other words, SCAG's "eight-year projection of the regional housing need" in Connect SoCal is underestimated by 259,435 housing units.

[3] Government Code 65080(b)(2)(B)
[4] Connect SoCal, Public Participation and Consultation, Appendix 2 (Comments and Responses), Master Response No 1: Regional Housing Needs Assessment
[5] Government Code 65584 et al.
[6] Connect SoCal, Public Participation and Consultation, Appendix 2 (Comments and Responses), Master Response No. 1: Regional Housing Needs Assessment, Page iv
[7] January 15, 2020 letter from HCD to SCAG regarding RHNA methodology
[8] October 15, 2019 letter from HCD to SCAG establishing the final regional determination of 1.34 million housing units

Figure 1: October 15, 2019 Regional Determination from HCD

SCAG: June 30, 2021-October 15, 2029 (8.3 Years) HCD Determined Population, Households, & Housing Need					
1.	**Population: DOF 6/30/2029 projection adjusted +3.5 months to 10/15/2029**				20,455,355
2.	*- Group Quarters Population: DOF 6/30/2029 projection adjusted +3.5 months to 10/15/2029*				-363,635
3.	**Household (HH) Population: October 15, 2029**				20,079,930
	Household Formation Groups	**HCD Adjusted DOF Projected HH Population**	***DOF HH Formation Rates***	**HCD Adjusted DOF Projected Households**	
		20,079,930		6,801,760	
	under 15 years	3,292,955	n/a	n/a	
	15 – 24 years	2,735,490	6.45%	176,500	
	25 – 34 years	2,526,620	32.54%	822,045	
	35 – 44 years	2,460,805	44.23%	1,088,305	
	45 – 54 years	2,502,190	47.16%	1,180,075	
	55 – 64 years	2,399,180	50.82%	1,219,180	
	65 – 74 years	2,238,605	52.54%	1,176,130	
	75 – 84 years	1,379,335	57.96%	799,455	
	85+	544,750	62.43%	340,070	
4.	**Projected Households (Occupied Unit Stock)**				6,801,760
5.	+ Vacancy Adjustment (2.63%)				178,896
6.	+ Overcrowding Adjustment (6.76%)				459,917
7.	+ Replacement Adjustment (.50%)				34,010
8.	*- Occupied Units (HHs) estimated (June 30, 2021)*				-6,250,261
9.	+ Cost Burden Adjustment (Lower Income: 10.63%, Moderate and Above Moderate Income: 9.28%)				117,505
6th Cycle Regional Housing Need Assessment (RHNA)					**1,341,827**

- As a result, 81 jurisdictions in the SCAG region have been assigned a RHNA allocation that exceeds SCAG's 2045 growth totals. In fact, among those jurisdictions the average percentage increase of RHNA above SCAG's 2045 jurisdictional growth totals is 233% with some jurisdictions being assigned a RHNA over 1000% higher than SCAG's 2045 jurisdictional growth totals.[9] In contrast, the other 116 jurisdictions are receiving a RHNA on average that is 42% lower than their 2045 jurisdictional growth totals. This result is not supportable under Sections 65080, subdivision (b)(2)(B) and 65584, subdivision (a) and (d).

CONCLUSION

The City of Irvine respectfully requests the total RHNA be reduced by 8,259 units and that SCAG modify the allocations to address the following outstanding issues:

1. Grounds for Appeal #1: Methodology
    a. HQTA Errors: reduction of 1,500 units
    b. Residual Allocation Redistribution due to Disadvantaged Community component of the RHNA Methodology, specifically outdated growth forecast information: reduction of 2,759 units
2. Grounds for Appeal #2: Local Planning Factors and Information Furthering Fair Housing (AFFH): reduction of 1,500 units
3. Grounds for Appeal #3: Changed Circumstances: reduction of 2,500 units

[9] Nine jurisdictions were projected to have no growth by 2045 and were not included in this average percentage increase

4. Grounds for Appeal #4: Regional Determination of 1.34 Million Housing Units Violates State Law
5. Grounds for Appeal #5: Inconsistency Between Regional Housing Needs Assessment and Sustainable Communities Strategy

Finally, the City of Irvine is requesting errors in the underlying data included in the RHNA methodology and the change in circumstances associated by the global COVID-19 pandemic be addressed to ensure there is an equitable distribution of affordable units throughout the SCAG region. The City of Irvine is a model of providing affordable housing in the region and even with the requested revision will still be responsible for accommodating one the Orange County's highest RHNA allocation.

Attachments:

1. Final Project List for Connect SoCal
2. City of Irvine High Quality Transit Area (HQTA) Traffic Analysis Zone (TAZ) 2045 Population Data
3. Irvine Transportation Center HQTA ½ mile radius map
4. Irvine Transportation Center HQTA Extended TAZ map
5. Future Alton Parkway HQTA ½ mile radius map
6. Future Alton Parkway HQTA Extended TAZ map
7. Jeffrey Park and Ride HQTA ½ mile radius map
8. Jeffrey Park and Ride HQTA Extended TAZ map
9. Spectrum Center HQTA ½ mile radius map
10. Spectrum Center HQTA Extended TAZ map
11. City of Santa Ana Major Development Project Map/HQTA
12. City of Irvine Major Development Project List
13. City of Irvine Major Fire History Map
14. Preliminary VMT Analysis of Proposed RHNA Allocation
15. City of Irvine Comment on RHNA – May 6, 2019
16. City of Irvine Comment Letter on RHNA – October 4, 2019
17. City of Irvine Comment Letter on RHNA – February 20, 2020
18. Orange County Mayors' Letter on RHNA - September 18, 2020

Cc: City Council
Marianna Marysheva, Interim City Manager
Jeff Melching, City Attorney
Pete Carmichael, Director of Community Development Department
Timothy Gehrich, Deputy Director of Community Development Department
Kerwin Lau, Manager of Planning Services
Mark Steuer, Director of Public Works and Transportation
Jaimee Bourgeois, Deputy Director of Transportation
SCAG RHNA Subcommittee/RHNA Appeals Board
Honorable Peggy Huang, Chair RHNA Subcommittee
Honorable Wendy Bucknum, Orange County Representative RHNA Subcommittee

2045 City of Irvine Population for SCAG Identified High Quality Transit Areas (HQTAs) – Half Mile Radius of SCAG Identified HQTA

Irvine Transportation Center (Existing HQTA):

Irvine (ITAM) Traffic Analysis Zone (TAZ)	Orange County (OCTAM) Traffic Analysis Zone (TAZ)	Relationship to ½ mile radius of High Quality Transit Area	2045 Population[1] Not Prorated
971	1229	Population would need to be prorated	0
956	1229		0
936	1229		0
609	1229		0
975	1223	Population would need to be prorated	7,456
610	1223		-
926	1223		-
611	1223		-
947	1223		-
949	1223		-
386	1244	Population would need to be prorated	0
337	1249	Population would need to be prorated	0
339	1249		0
860	1249		0
338	1249		0
965	1261	Population would need to be prorated	0
925	1261		0
612	1261		0
613	1261		0
340	1261		0
322	1261		0
321	1261		0
343	1261		0
863	1261		0
864	1261		0
341	1264	Population would need to be prorated	0
859	1264		0
342	1264		0
920	1281	Population would need to be prorated	0

[1] Orange County Projections 2018

Future Alton Parkway Exit (State Route 55) (HQTA does NOT exist, SR 55 Bus Rapid Transit NOT a project in the adopted Connect SoCal Plan)

Irvine (ITAM) Traffic Analysis Zone (TAZ)	Orange County (OCTAM) Traffic Analysis Zone (TAZ)	Relationship to ½ mile radius of High Quality Transit Area	2045 Population[2]
396	1161	Population would need to be prorated	0
400	1161		0
408	1161		0
413	1161		0
404	1161		0
399	1161		0
395	1160	Population would need to be prorated	0
398	1160		0
402	1160		0
407	1169	Population would need to be prorated	0
412	1169		0
418	1169		0
415	1169		0
424	1169		0
423	1169		0
691	807	City of Santa Ana	
692	807		
690	807		
689	800	City of Santa Ana	

[2] Orange County Projections 2018

Jeffrey Park and Ride (Interstate 5): (HQTA does NOT exist, Interstate 5 Bus Rapid Transit NOT a project in the adopted Connect SoCal Plan)

Irvine (ITAM) Traffic Analysis Zone (TAZ)	Orange County (OCTAM) Traffic Analysis Zone (TAZ)	Relationship to ½ mile radius of High Quality Transit Area	2045 Population[3]
155	1200	Population would need to be prorated	0
156	1206	Population would need to be prorated	0
154	1190	Population would need to be prorated	0
824	1186	Population would need to be prorated	4,005
827	1186		-
826	1177	Population would need to be prorated	7,428
110	1177		-
109	1177		-
97	1165	Population would need to be prorated	3,544
96	1165		-
95	1165		-
98	1165		-
148	1174	Population would need to be prorated	1,991
142	1174		-
146	1174		-
149	1174		-
143	1170	Population would need to be prorated	2,808
152	1185	Population would need to be prorated	2,510
151	1185		-
150	1185		-

[3] Orange County Projections 2018

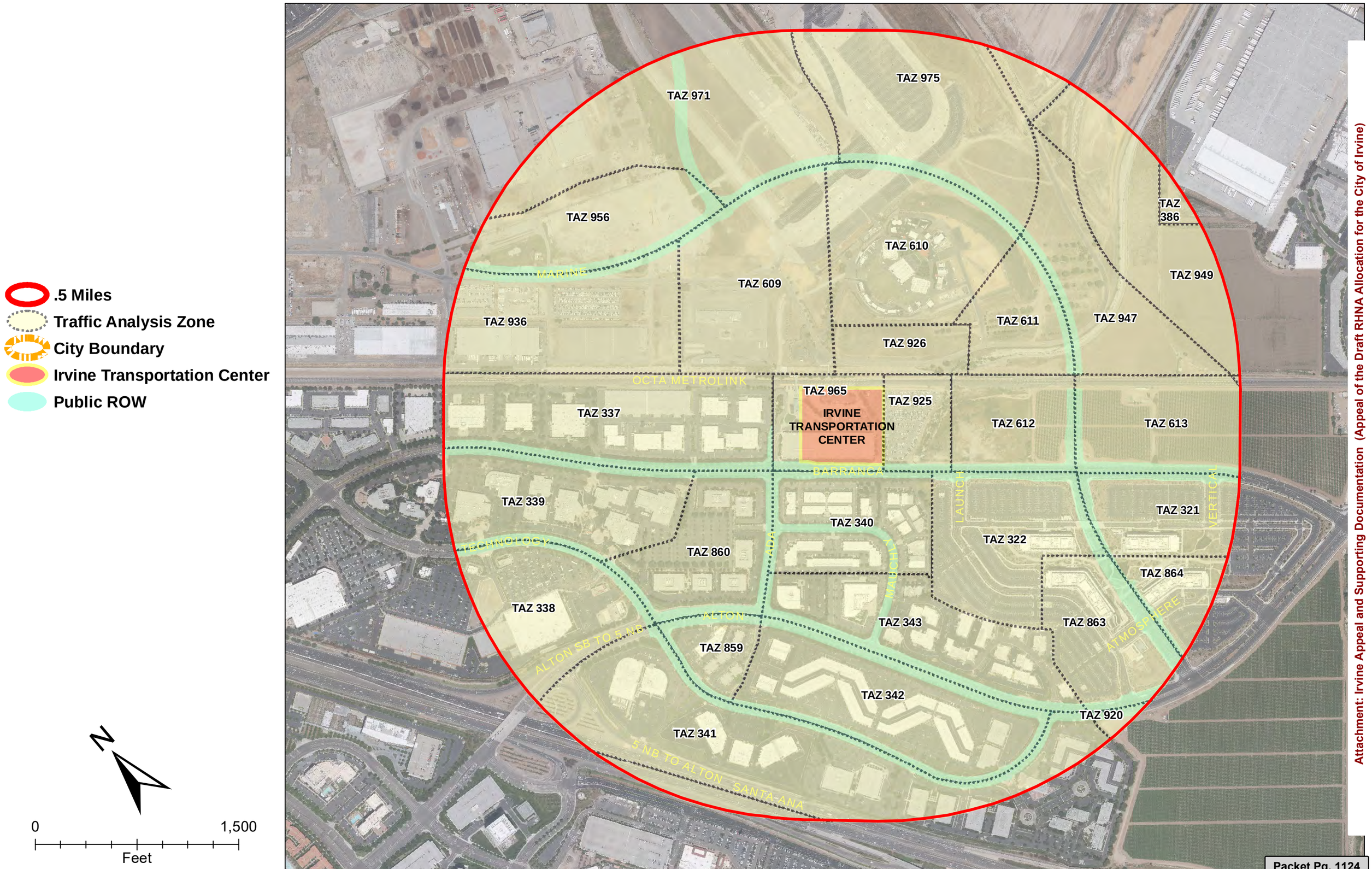
Spectrum Center (Interstate 5): (HQTA does NOT exist, Interstate 5 Bus Rapid Transit NOT a project in the adopted Connect SoCal Plan)

Irvine (ITAM) Traffic Analysis Zone (TAZ)	Orange County (OCTAM) Traffic Analysis Zone (TAZ)	Relationship to ½ mile radius of High Quality Transit Area	2045 Population[4]
342	1264	Population would need to be prorated	0
341	1264		0
363	1282	Population would need to be prorated	0
364	1282		0
856	1282		0
855	1282		0
358	1265	Population would need to be prorated	0
362	1265		0
359	1265		0
355	1265		0
558	1276	Population would need to be prorated	8,156
557	1276		-
349	1253	Population would need to be prorated	0
346	1253		0
338	1249	Population would need to be prorated	0
356	1262	Population would need to be prorated	5,821
354	1262		-

Total 2045 Population – HQTA ½ mile radius: Orange County Projections 2018 (Not Prorated to reflect population located within the HQTA)[5]	**43,719**
Total 2045 Population – HQTA ½ mile radius: SCAG RHNA Methodology Appendix Page 18[6]	**43,892**

OCP-2018 and SCAG RHNA Methodology are consistent with TOTAL 2045 population of 327,664

[4] Orange County Projections 2018
[5] Orange County Projections 2018
[6] SCAG Adopted RHNA Methodology Data Appendix



Attachment: Irvine Appeal and Supporting Documentation (Appeal of the Draft RHNA Allocation for the City of Irvine)

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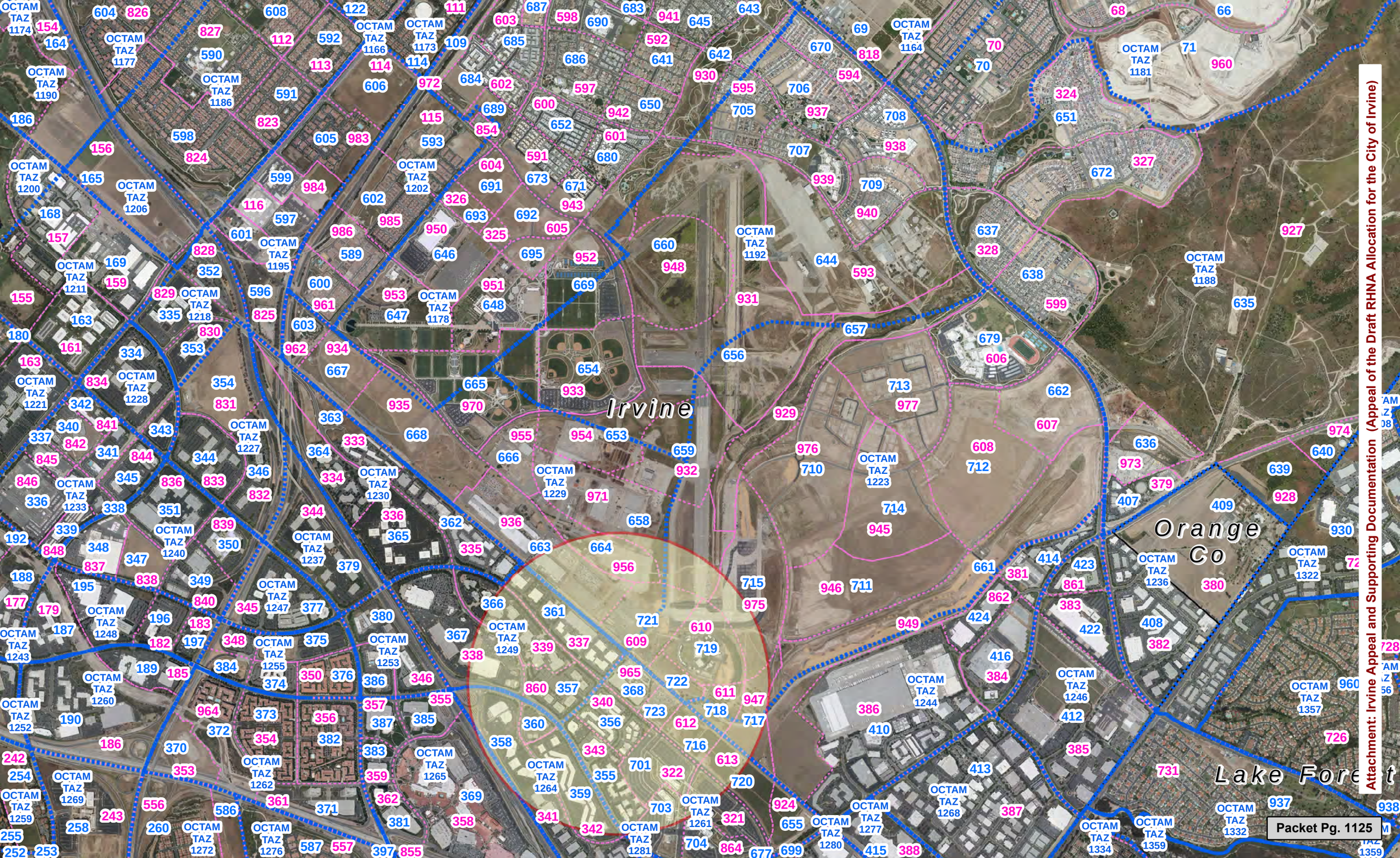
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OCTAM TAZ 1264
OCTAM TAZ 1261
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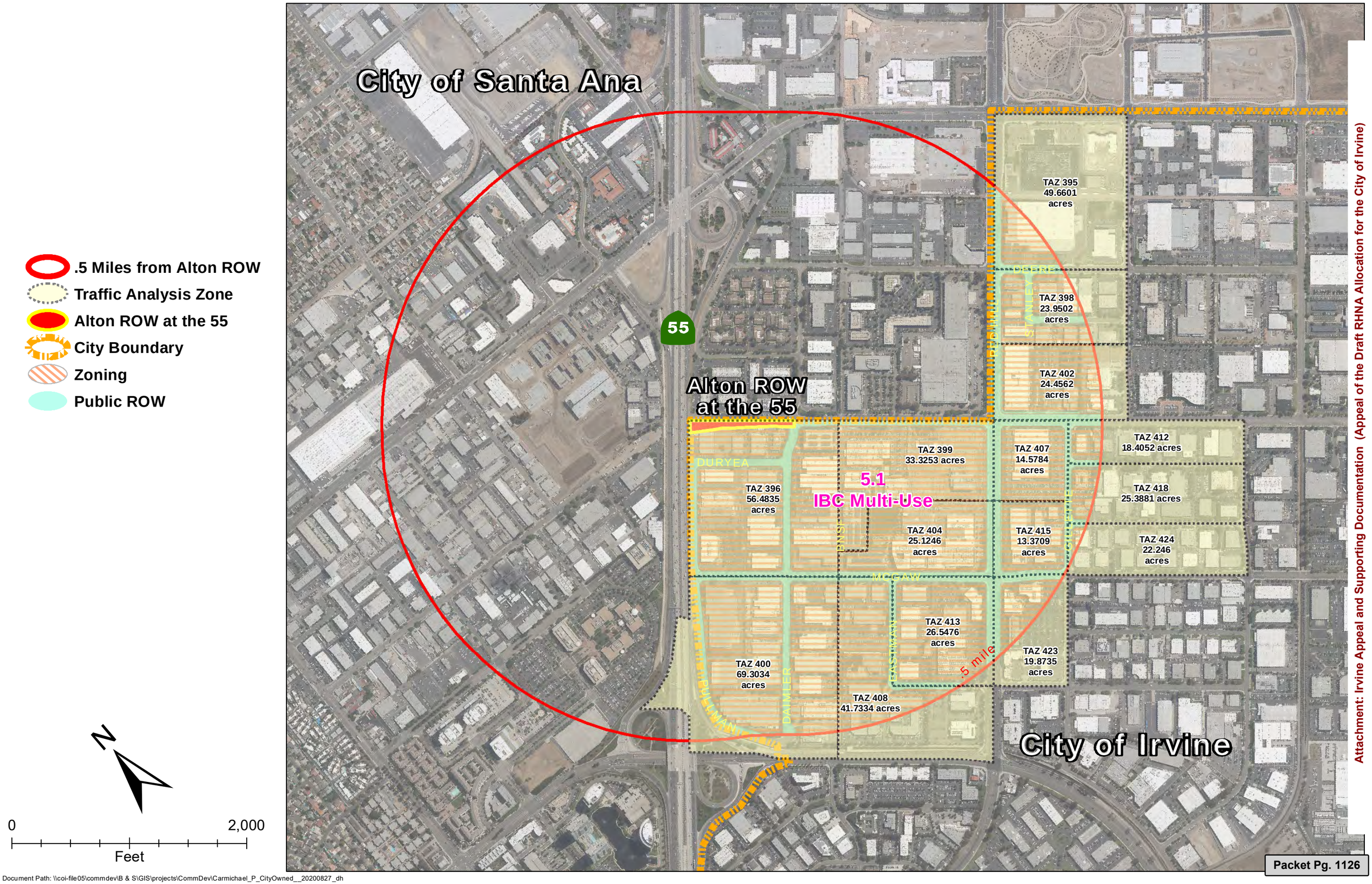

Attachment: Irvine Appeal and Supporting Documentation (Appeal of the Draft RHNA Allocation for the City of Irvine)

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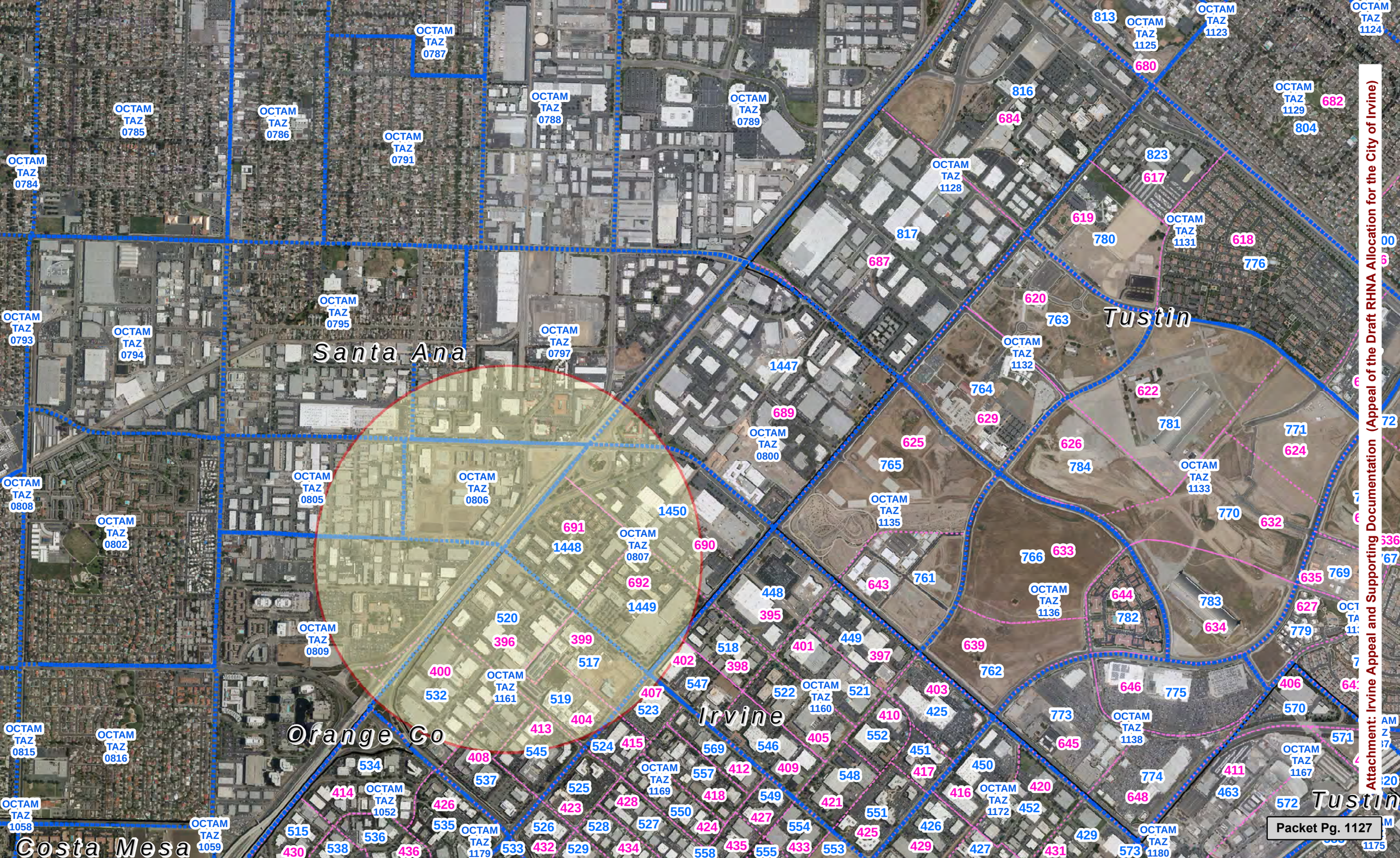
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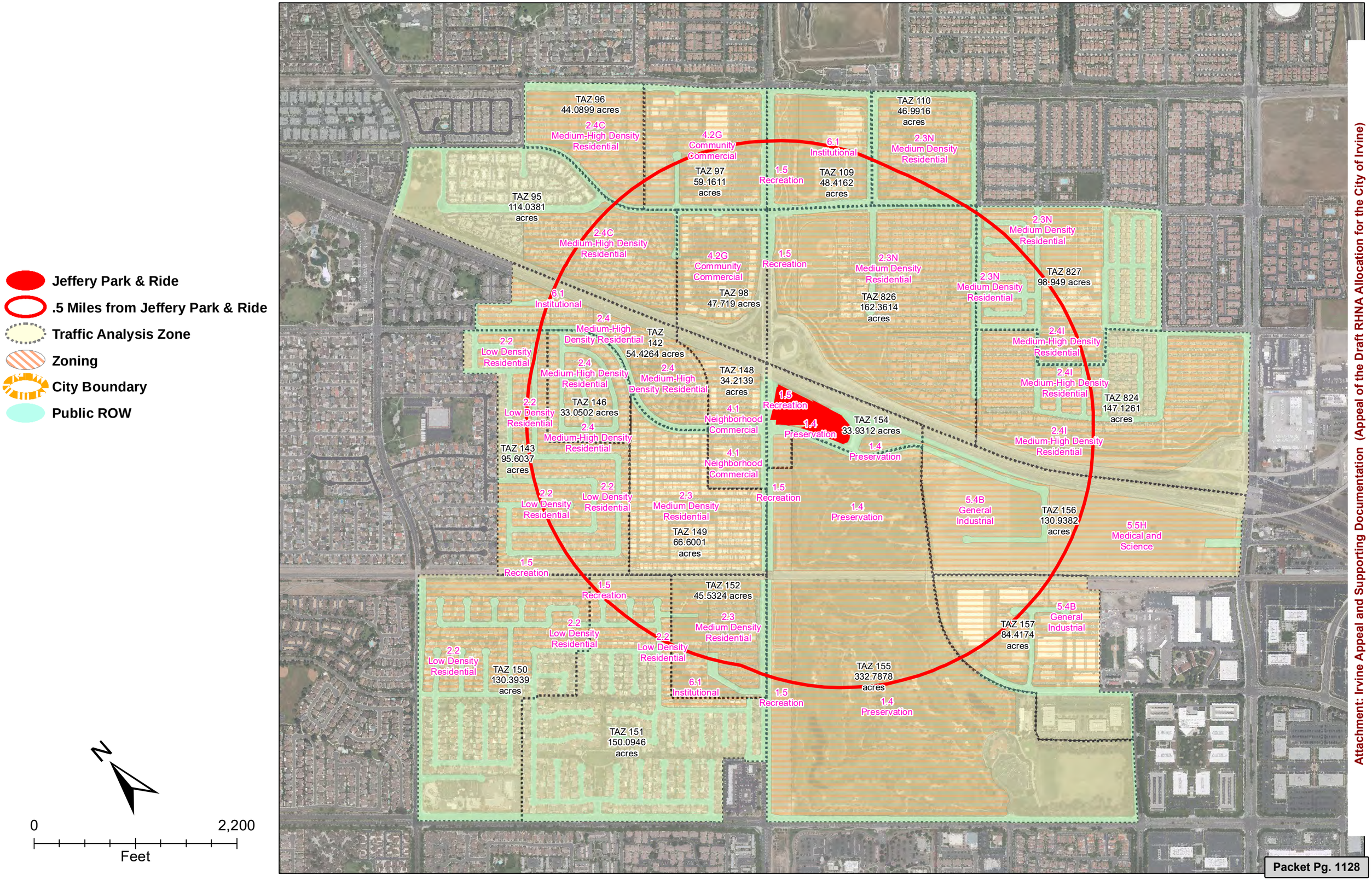

Attachment: Irvine Appeal and Supporting Documentation (Appeal of the Draft RHNA Allocation for the City of Irvine)

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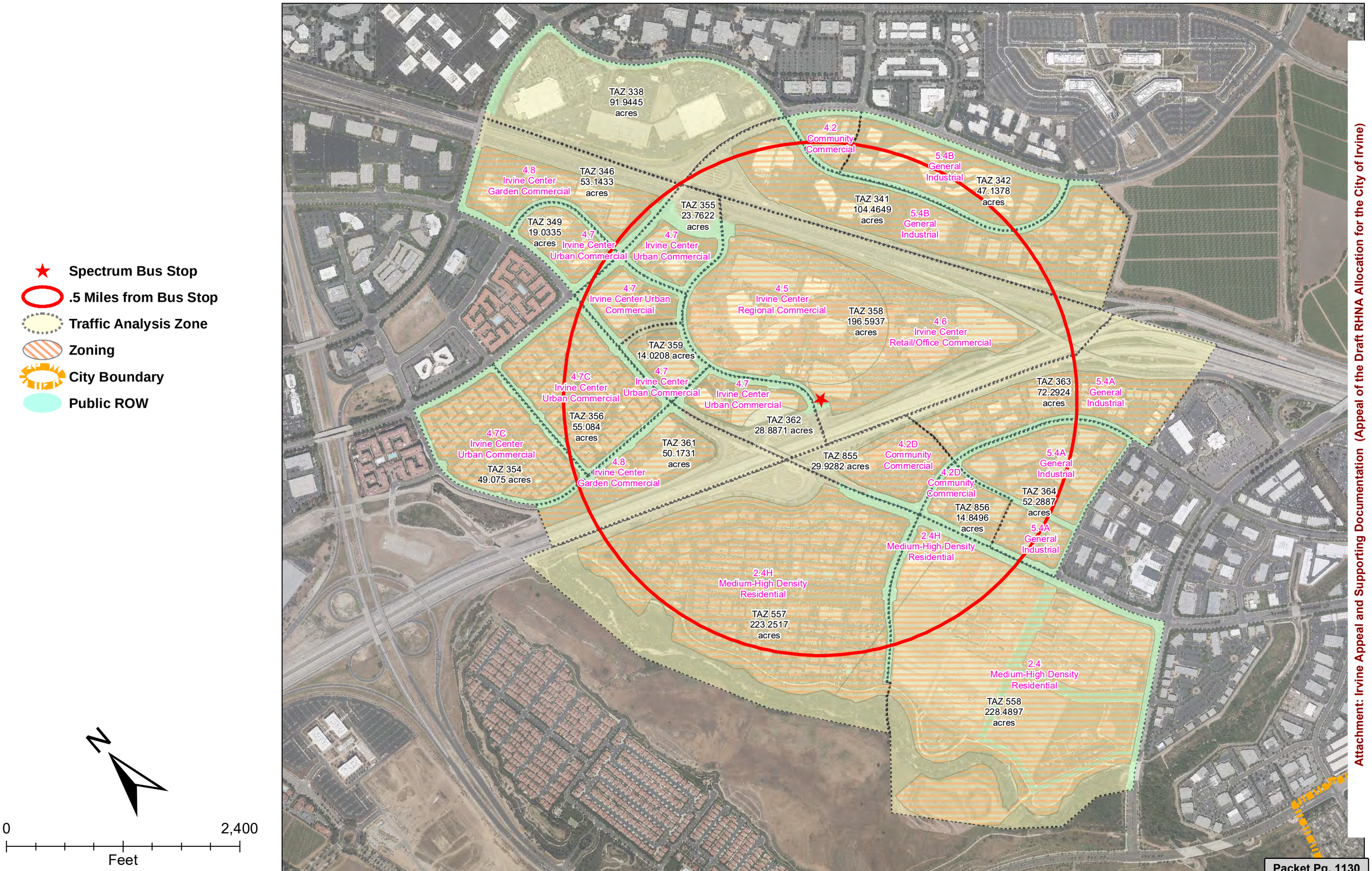

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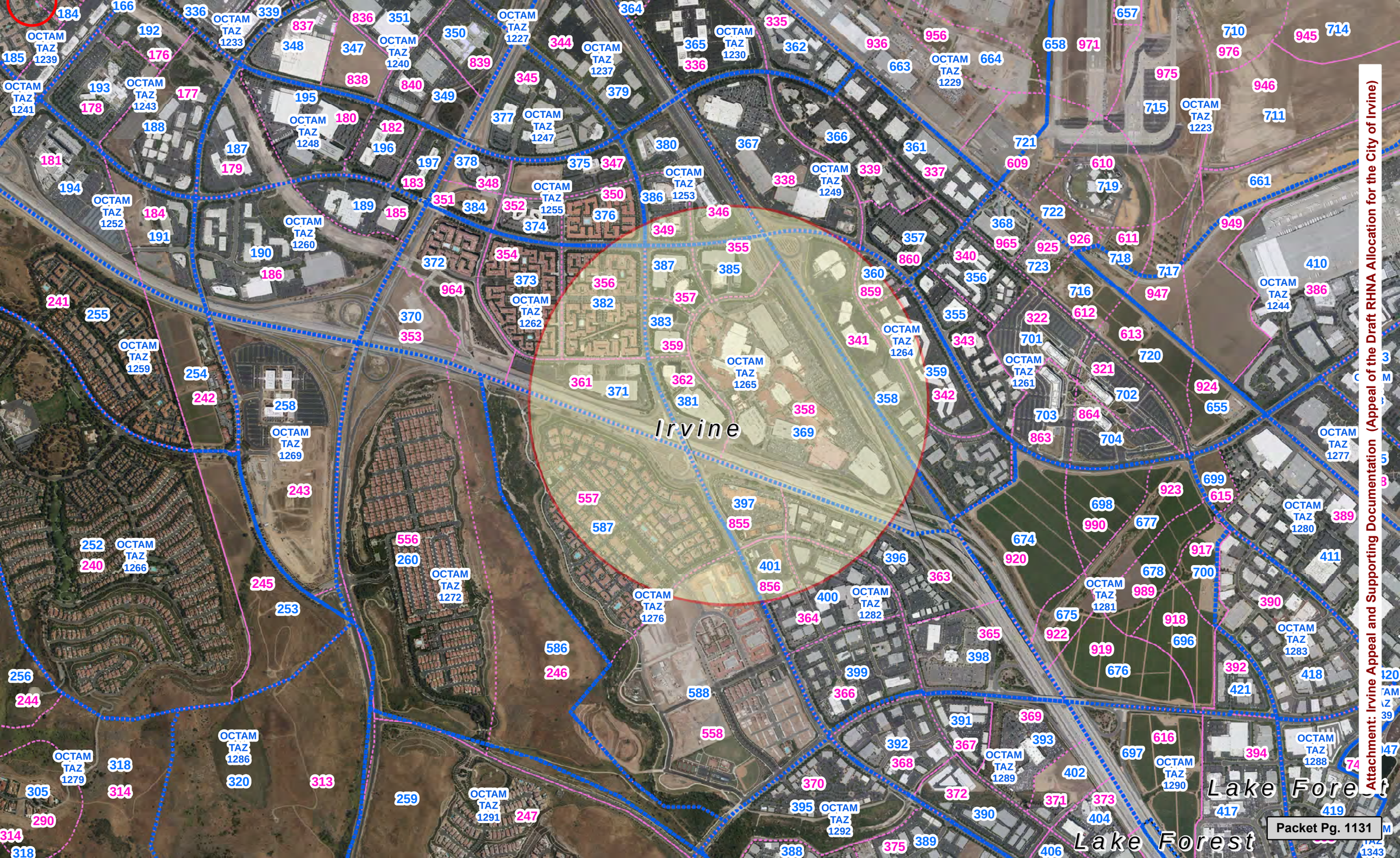
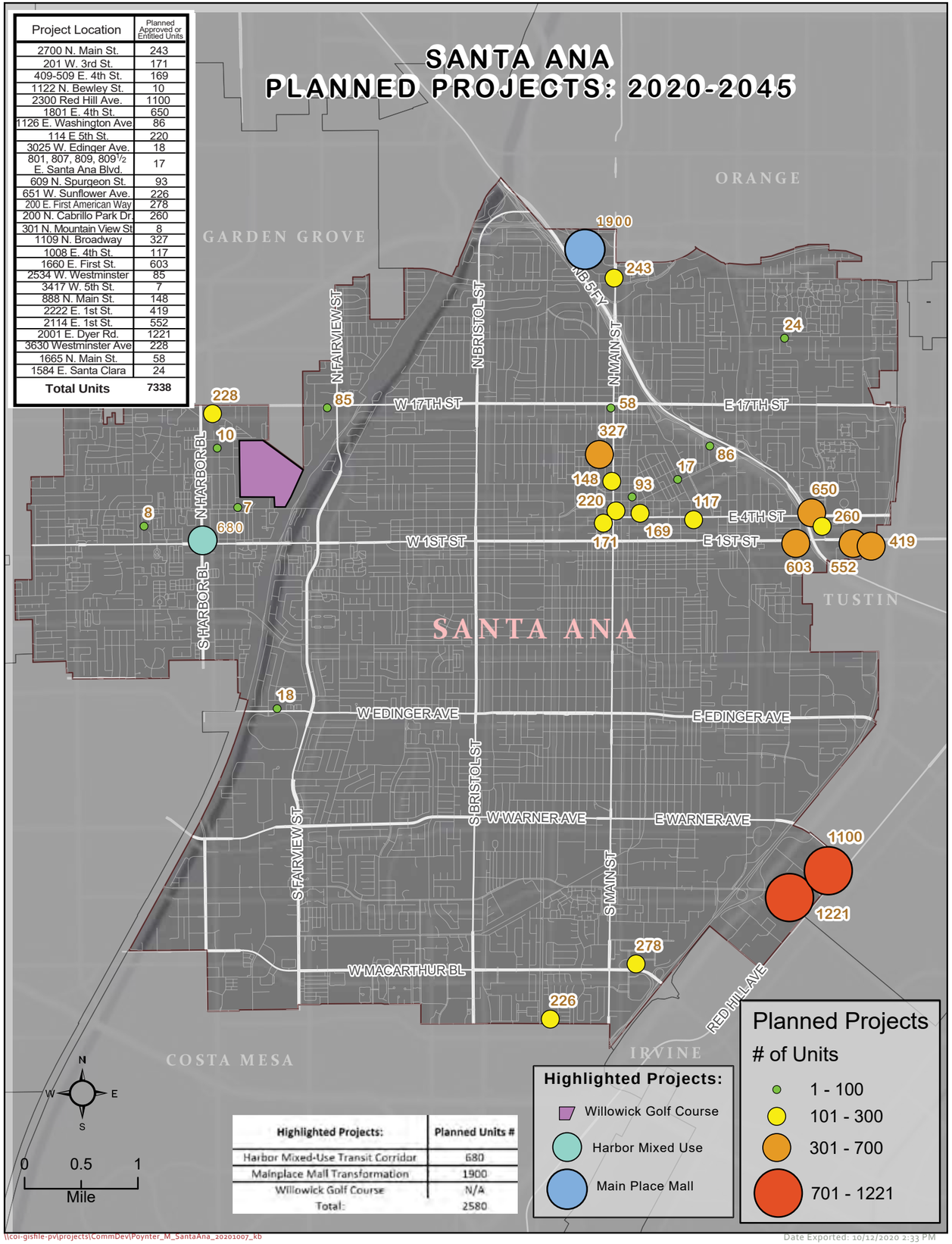


SANTA ANA PLANNED PROJECTS: 2020-2045

Project Location	Planned Approved or Entitled Units
2700 N. Main St.	243
201 W. 3rd St.	171
409-509 E. 4th St.	169
1122 N. Bewley St.	10
2300 Red Hill Ave.	1100
1801 E. 4th St.	650
1126 E. Washington Ave	86
114 E 5th St.	220
3025 W. Edinger Ave.	18
801, 807, 809, 809½ E. Santa Ana Blvd.	17
609 N. Spurgeon St.	93
651 W. Sunflower Ave.	226
200 E. First American Way	278
200 N. Cabrillo Park Dr.	260
301 N. Mountain View St	8
1109 N. Broadway	327
1008 E. 4th St.	117
1660 E. First St.	603
2534 W. Westminster	85
3417 W. 5th St.	7
888 N. Main St.	148
2222 E. 1st St.	419
2114 E. 1st St.	552
2001 E. Dyer Rd.	1221
3630 Westminster Ave	228
1665 N. Main St.	58
1584 E. Santa Clara	24
Total Units	**7338**



Highlighted Projects:	Planned Units #
Harbor Mixed-Use Transit Corridor	680
Mainplace Mall Transformation	1900
Willowick Golf Course	N/A
Total:	2580

Highlighted Projects:
- Willowick Golf Course
- Harbor Mixed Use
- Main Place Mall

Planned Projects
# of Units
- 1 - 100
- 101 - 300
- 301 - 700
- 701 - 1221

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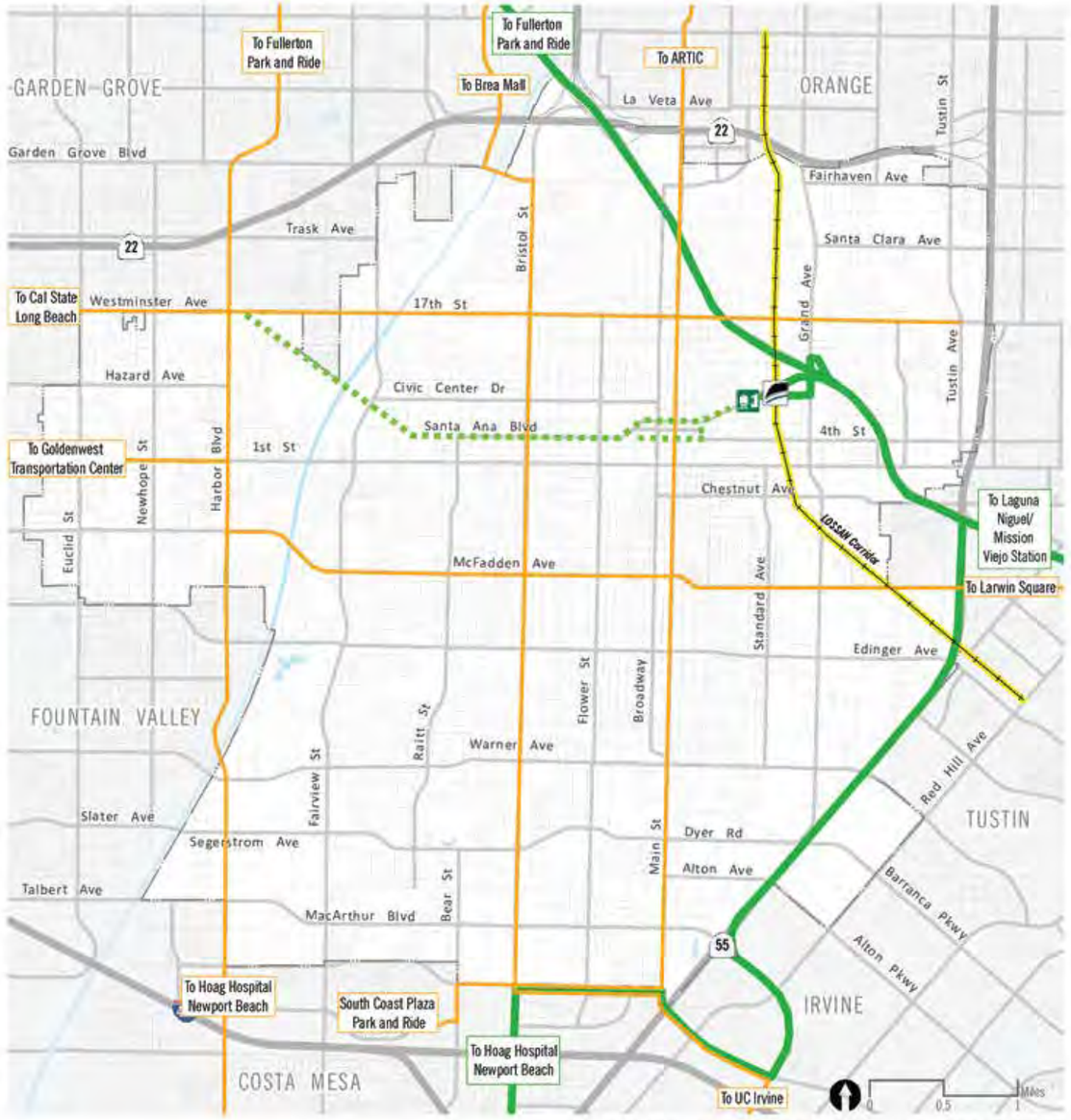
ABOUT THE MAP. This map shows the long-term plans of the City and regional transit operators to expand and enhance ways for people to travel within, to, and from Santa Ana by rail, streetcar, and bus. OCTA Transit and Freeway Transit Opportunity Corridors represent bus rapid transit lines; other OCTA bus lines (not shown) run along most major streets in the city.



Source: OCTA OCstreetcar Overview, OCTA Transit Vision Plan (June 2020) Date Published: 9/20/2020

- OCTA Transit Opportunity Corridor
- OCTA Freeway Transit Opportunity Corridor
- Future Alignment of OC Street Car
- Santa Ana Regional Transportation Center
- Metrolink and Amtrack Commuter Rail
- Metrolink Station

Attachment: Irvine Appeal and Supporting Documentation (Appeal of the Draft RHNA Allocation for the City of Irvine)

Project	DU	Unit type	Status	Application Date	Approval Date	Link
520 South Harbor	35	SFD	Entitlements Approved		Jun-15	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
888 N Main Street	148	Multi-Family Residential	Plan Check Review		Historic Resources	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1440 E First Street	64	Mutlti-Family Residential	Under Construction		CC - 5/3/2016	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
2222 E First Street	419	Senior housing project	Under Construction		PC - 9/11/17	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
2114 E First Street	552	affordable multi-family	Entitlements Approved		PC - 6/4/18	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1112 N Bewley Street	10	Condos (Single Family	Public Hearings		PC - 7/13/2020; CC -	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
2300 S Red Hill Avenue (The Bowery)	1,150	Multi-Family Residential	Public Hearings	NOP -8/5/2019	CC - 8/18/2020	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
317 E 17th Street	56	permanent supportive housing	Under Construction		PC - 4/6/17; CC - 5/22/17	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1406 North Harbor Boulevard	38	for-sale townhomes (6 for mod	Completed		2015?	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
3025 West Edinger Ave	18	multi-family residential	Entitlements Approved		PC - 5/13/19; CC 6/4/19	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
609 North Spurgeon Street	93	affordable residential units	Entitlements Approved		CC-2/19/19	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
651 W. Sunflower Ave.	226	Apartments	Entitlements Approved		CC- 1/18/19	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
200 E. First American Way	278	Multi-Family Residential	Tentative Parcel Map was		PC - 1/16/19	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
3630 Westminster Ave.	228	apartment	Under Construction		PC - 1/25/16	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
200 N. Cabrillo Park Dr.	260	6-story mixed use	Tolling Agreement		CC - 6/5/18	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
2525 N. Main St.	256	Multi-Family Residential	Litigation			https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
2800 North Main Street	1,900	Multi-Family Residential	Entitlements Approved		CC - 6/4/19	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1666 N. Main St.	58	Multi-Family Residential	Under Construction		PC - 5/9/16	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
301 N. Mountain View St.	8	Condos	N/A		Tentatively Scheduled	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
2700 N. Main St.	243	Multi-Family Residential	TDB		TBD	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
2223 W Fifth Street	51	Multi-Family Residential	Under Construction		CC - 1/16/2018	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1008 E 4th Street	117	single family residential	Entitlements Approved		CC - 2/20/18	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
Tribella Homes	110	15 live/work and 95 SFD	Under Construction			https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1660 E. First St.	603	Multi-Family (Mixed-Use)	Entitled		10/22/2018	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
2534 West Westminster Avenue	85	Multi-Family Residential	N/A		TBD	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
201 W. 3rd St.	171	Multi-Family Residential	N/A		PC - 9/24/2020; CC- TBD	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
409-509 E. 4th St.	169	Mutli-Family Residential	N/A		PC - 10/12/2020; CC	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1801 E. 4th St.	650	Mutli-Family Residential	N/A		TDB	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1126 E. Washington Ave.	86	Mutli-Family Residential	Development Projet			https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
114 E. 5th St.	220	Multi-Family Residential	Plan Check Review		PC - 10/28/19; CC-	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
801, 807, 809, 809	17	Multi-Family Residential	Development Project			https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1109 N. Broadway	327	Multi-Family Residential	Development Project			https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
2001 E. Dyer Rd.	1221	Multi-Family Residential	Under Construction		CC- 2/2/16	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
1584 E. Santa Clara	24	SFD	Under Construction		CC - 9/2/14	https://www.santa-ana.org/pb/planning-division/major-planning-projects-and-
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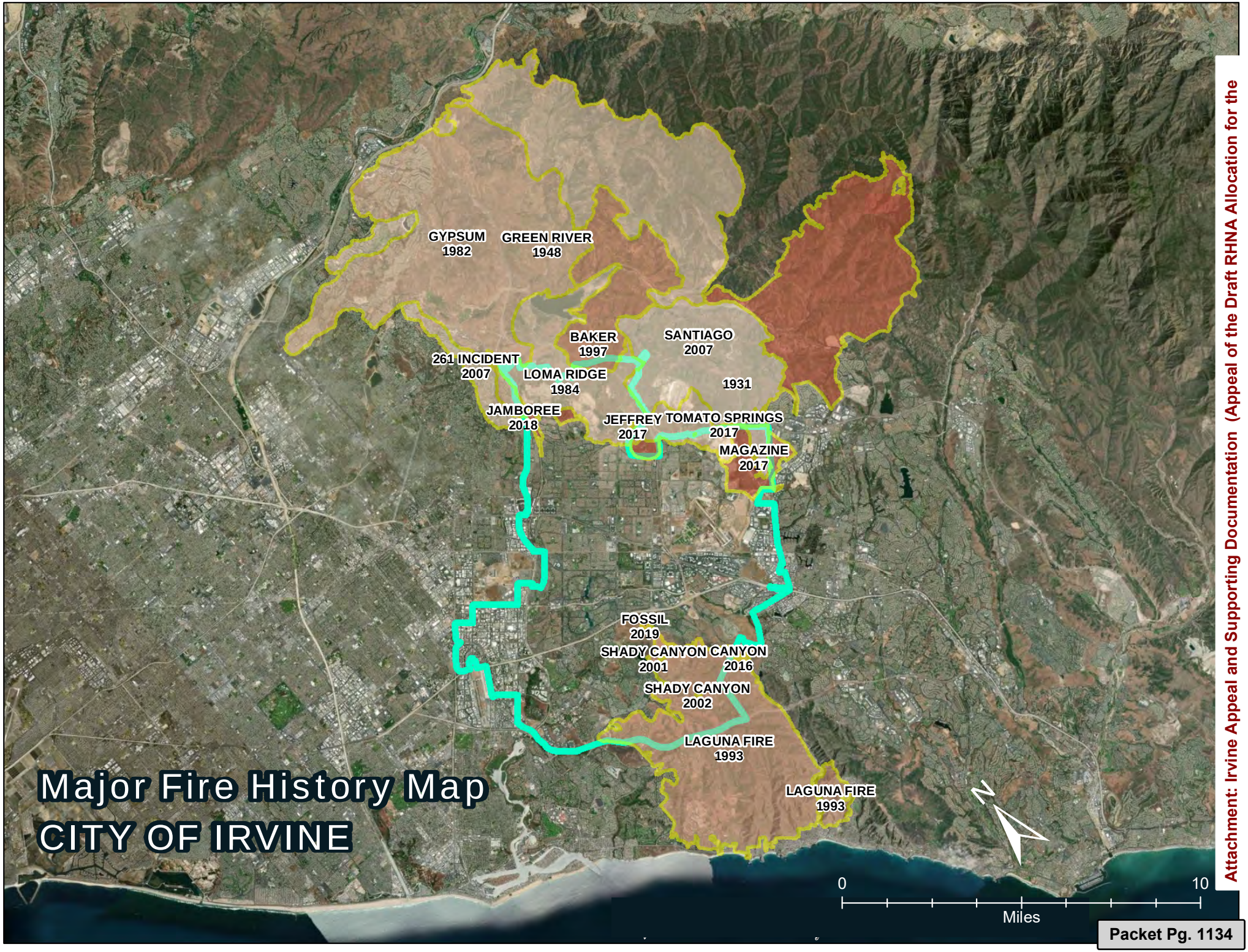


ITAM PROJECT VMT SUMMARY REPORT

V 1.1-071820

PROJECT INFORMATION		
Project #:	1	
Name:		-
Description:	127k DU	
Type:	Residential	

			Baseline	Project
Vehicle Miles Travelled (VMT)	ORANGE COUNTY	Total	139,318,384	146,584,560
		Population	56,348,927	63,218,666
		Employment	82,969,450	83,365,898
Population and Employment		Population	3,219,593	3,566,896
		Employment	1,706,388	1,706,388
Δ VMT (With Project - No Project)		Total		7,266,176
		Population		6,869,739
		Employment		396,448
Δ Population & Employment Caused by Project		Population		347,303
		Employment		-
VMT Rate Threshold Goal[1]		Residential	**14.88**	
		Non-Residential	**41.33**	
Project Δ VMT Rate[1]		Residential		19.78
		Non-Residential		
			Applicable Measure(s)	**19.78**
			Threshold Goal	**14.88**
			Net VMT Rate Percentage Increase[2]	**24.77%**
			Mitigation required?	**Yes**

MITIGATION MEASURES		
On-Site	☐	2.5%
Off-Site	☐	5.0%
Additional Mitigation[3]	☐	
Significant VMT Impact?	**24.8%**	**YES**

Notes:

1- Both Residential and Non-Residential VMT Rates are calculated based on the County VMT and SED.

2- For Mixed-Use projects, the "Net VMT Rate Percentage Increase" is based on the higher of Residential or Non-Residential VMT rate.

3- Sufficient justification must be provided to support additional mitigation.

read at beginning public comment

Marika A Poynter, AICP, Senior Planner
City of Irvine, Community Development Department
May 6, 2019

The City of Irvine requests the RHNA Subcommittee consider the following recommendations:

For Item 6: SCAG should propose a regional determination of 430,000 for the 6th RHNA Cycle. This eight-year regional projection incorporates input from local jurisdictions that already incorporates existing need and future projected need. The proposed original determination of approximately 430,000 is consistent with the local input utilized in the draft SCS. All numbers, tables, and discussion regarding existing need as a separate calculation should be removed from the HCD consultation package.

For Item 7: No action should be taken on the social equity adjustment until after HCD provides SCAG with the regional housing allocation. As a jurisdiction, we are unable to analyze the true impact of the social equity adjustment until the regional allocation is confirmed. If a decision on a social equity adjustment factor is required prior to HCD's regional distribution, the City of Irvine supports a social equity adjustment of 110%, consistent with the 4th and 5th RHNA Cycles.

The City of Irvine formally requests SCAG provide an Excel table that identifies the following variables by all the jurisdictions in the SCAG region:

a. Cost burden
b. Healthy vacancy rate
c. Overcrowding
d. Share of the region's population
e. Share of the region's population within the high quality transit areas (HQTAs)

Christina L. Shea, Mayor
cityofirvine.org
1 Civic Center Plaza, Irvine, CA 92606-5208
949-724-6233

October 4, 2019

Honorable Peggy Huang, Chair
Regional Housing Needs Assessment Subcommittee
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, California 90017

Subject: Regional Housing Needs Assessment (RHNA) Methodology

Honorable Chair Huang and Honorable Members of the Regional Housing Needs Assessment (RHNA) Subcommittee:

The City of Irvine expresses its appreciation to the RHNA Subcommittee; Community, Economic and Human Development (CEHD) Policy Committee; Regional Council; and the Southern California Association of Governments (SCAG) staff for their efforts in attempting to establish an equitable RHNA that complies with new state housing law and addresses the state's housing crisis. In particular, the City of Irvine appreciates the use of local input for several factors in the new SCAG staff recommended RHNA methodology.

The late release of the SCAG staff-recommended RHNA allocation is a departure from the spirit of transparency and collaboration that has marked the process to date. The sixth RHNA cycle has been years in the making, yet the recommended methodology is only being shared with the public and the affected jurisdictions a couple of weeks before it is to be voted on. Further, the calculation tool that allows City's to see their estimated allocation was released three working days prior to vote of the subcommittee. Beyond the general concerns about lack of transparency, the City of Irvine has several specific concerns due to significant late changes to the methodology and lack of sufficient vetting of newly included data, as outlined below.

1. **Data accuracy is critical to any selected RHNA methodology. With the staff-recommended option, new elements have been added to the methodology that have not had the opportunity for technical vetting, especially by affected jurisdictions and agencies. As such, the City of Irvine cannot currently support the use of any data not previously reviewed, verified, and corrected by the jurisdictions. Specifically, new data elements associated with 2045 transit accessibility and jobs accessibility were introduced with the release of the new RHNA methodology for the staff-recommended option, as part of the RHNA Subcommittee staff report on October 2, 2019. This is not adequate time to review the data and methodology assumptions and the City of Irvine recommends that no decision on the methodology**

should be made until after jurisdictions have the opportunity to verify all new data and assumptions.

2. **The City of Irvine has concern that the job accessibility factor has not been adequately reviewed and verified.**

   As noted in Comment 1 above, the jobs accessibility factor dataset has not been reviewed or verified by local jurisdictions. Specifically, there is not a definition nor an explanation of what a jurisdiction's "median" traffic analysis zone is, and how it was determined for each jurisdiction. The City of Irvine would appreciate a discussion on the approach that has been used. Also, the job accessibility factor is solely based on the region's jobs within a 30-minute auto commute. The City of Irvine recommends the jobs accessibility factor should be recalculated to include jobs located within a 30 minute commute of all transportation modes.

3. **The City of Irvine does not agree with the methodology utilized to determine the transit accessibility factor.**

   In reviewing the data provided on page 19 of 210 in the Draft RHNA Methodology Data Appendix, the total acreage in the City of Irvine located within a half mile of a High Quality Transit Area (HQTA) increases from 781 acres or 1.9 percent of Irvine's total acreage in 2016 to 8,081 acres or 19.20 percent of Irvine's total acreage in 2045. This significant increase appears to be related to the inclusion of the Interstate 5 Corridor – Freeway Bus Rapid Transit (BRT) between the Fullerton Park-and-Ride and the Mission Viejo/Laguna Niguel Metrolink station. The City of Irvine finds this increase in acres included in a 2045 HQTA to be inappropriately overestimated, for the reasons noted below:

   - This specific Bus Rapid Transit Line is located within the Interstate 5 freeway, not along an arterial. The City of Irvine objects to the entire Interstate 5 corridor being identified as a viable HQTA, since stops have not been identified by the Orange County Transportation Authority (OCTA), and there has been no assessment or determination on how users would access the freeway service, until applicable studies have commenced. OCTA has identified the Interstate 5 BRT will begin at the Fullerton park-and-ride and will terminate at the Mission Viejo/Laguna Niguel Metrolink station; therefore, these should be the only two known Transit Priority Areas associated with this route. Intermediate stops along the Interstate 5 corridor BRT route have not been determined and will not be determined in the near future. Inclusion of all the areas within a half of mile of the proposed BRT corridor line itself, as currently assumed, is not appropriate. It assumes that all the population along that one-half mile zone has access to the BRT line within the one-half mile zone. With no determination of the access points to the freeway BRT line, that conclusion cannot be supported. Additionally, there is no information on where the one-half mile HQTA is measured from (center line or edge of

the freeway right-of-way) and how the population was calculated. It is unclear whether the entire acreage and population within the impacted traffic analysis zone (TAZ) was included or only the percentage of the acreage and the population within the one-half mile HQTA corridor..

As an alternative, the City of Irvine supports the inclusion of a transit accessibility factor, but it should be based on the 2045 Transit Priority Area (TPA) and not the BRT planned for the Interstate 5 corridor

4. **Redistribution of Housing Units**

With regard to successful appeals and resulting redistribution of housing units, has SCAG given full consideration as to the methodology for redistributing housing units that are successfully appealed? There are a myriad of scenarios that could unfold. For example, will jurisdictions that successfully file an appeal to their RHNA be exempt from receiving additional housing units successfully appealed by other jurisdictions in the region? Will the appeals process be based on the methodology utilized to distribute the "residual" units? This is an issue that needs to be discussed as part of the RHNA planning process.

In conclusion, the City of Irvine implores SCAG to preserve the integrity of the local input process in establishing any RHNA methodology. Additionally, all jurisdictions within the SCAG region should be given adequate time to review and verify all datasets utilized in determining the RHNA allocation.

The City recognizes and appreciates the time and effort provided by all those involved in this important and complex issue and for your consideration of those items. Please work to ensure the integrity of the process by providing adequate transparency and vetting of key data. Let us know if you need any additional clarification or have any questions by contacting Principal Planner Marika Poynter at mpoynter@cityofirvine.org or 949-724-6456.

Sincerely,

Christina Shea
Mayor

cc: City Council
John Russo, City Manager
Marianna Marysheva, Assistant City Manager
Pete Carmichael, Director of Community Development
Tim Gehrich, Deputy Director of Community Development

Steve Holtz, Manager of Neighborhood Services
Kerwin Lau, Manager of Planning Services
Marika Poynter, Principal Planner
Kome Ajise, Executive Director, Southern California Association of Governments
Sarah Jepson, Director of Planning, Southern California Association of Governments
Marnie Primmer, Executive Director, Orange County Council of Governments
housing@scag.ca.gov

Community Development
1 Civic Center Plaza, Irvine, CA 92606-5208
cityofirvine.org
949-724-6000

February 20, 2020

Mr. Kome Ajise, Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, California 90017
housing@scag.ca.gov

Subject: **Request to the Southern California Association of Governments (SCAG) to Amend the Regional Housing Needs Assessment (RHNA) Methodology for the 6th Cycle**

Dear Mr. Ajise:

The City of Irvine requests that SCAG amend the RHNA methodology to reinstate local input as a factor in the existing need portion of the calculation. The City of Cerritos recently submitted a proposal dated February 4, 2020, which recommends that household growth forecasts be reintroduced back into the calculations for the existing needs calculation as follows: household growth (33.3 percent), job accessibility (33.3 percent), and population within high quality transit areas (33.3 percent). These household growth projections are an important factor in that they take into consideration the unique characteristics of each jurisdiction. Moreover, these growth projections more closely align the RHNA with the development pattern established within Connect SoCal as required by state statute. Finally, as stated in the staff-recommended RHNA methodology within the staff report for the November 7, 2019 Regional Council meeting, the reintroduction of household growth into the existing need would further the five objectives of state housing law. The objectives include: increasing the housing supply and mix of housing types; promoting infill development; promoting an improved intraregional relationship between jobs and housing; ensuring social equity; and, affirmatively furthering fair housing (AFFH).

The City also requests also request that SCAG object again to the Department of Housing and Community Development's (HCD) regional determination based on the fact that it did not follow state law in its development of this number and did not utilize the growth forecast based on local input [see Government Code Section 65584.01(a)]. Furthermore, The Department of Finance recently updated its population projections and shows a significant decrease relative to its previous forecast. Governor Newsom has also stated that his commitment to building 3.5

million homes by 2025 was a "stretch goal" and that the state would soon be releasing a more pragmatic estimate of the housing needs by region. The regional determination of 1.34 million housing units combined with the inequitable RHNA methodology, which does not include local input, are setting up local jurisdictions for failure to comply with state housing law.

We request that the RHNA Subcommittee, CEHD Policy Committee, and Regional Council consider these two recommendations prior to the adoption of the RHNA. We recognize that there are time constraints established by state law; however, the RHNA will have significant impacts on jurisdictions over the next decade. Therefore, it is imperative that the RHNA be finalized in a way that is equitable and attainable in responding to the housing crisis.

Sincerely,

Pete Carmichael
Director of Community Development

cc: Irvine City Council
John Russo, City Manager

ORANGE COUNTY MAYORS

September 18, 2020

The Honorable Rex Richardson,
President
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

RE: Request to Reconvene the SCAG President's RHNA Litigation Study Team to Re-Assess State HCD's RHNA Allocation of 1.34 Million Housing Units to the SCAG Region

Dear President Richardson:

On behalf of thirty-two cities in Orange County, we, the mayors respectfully support the request of our colleague – City of Yorba Linda Council Member Peggy Huang – that the SCAG President promptly reconvene the SCAG President's RHNA Litigation Study Team.

We have a deep respect for Council Member Huang and her stewardship of the SCAG RHNA Subcommittee these past two years. We all agree with Council Member Huang that the starting point – the 1.34 million RHNA housing units that the State Department of Housing and Community Development (State HCD) issued for the 6-county SCAG region – must be re-examined.

At the September 3, 2020 SCAG Regional Council meeting, Council Member Huang explained that new and recent housing shortage information has been issued by Freddie Mac, which states that the housing shortage for the entire State of California, not just the SCAG region, is 820,000 units (Attachment 1: Page 6, February 2020 Freddie Mac Insights Report: "The Housing Supply Shortage: State of the States."). Further, the Embarcadero Institute, a non-profit policy analysis organization, just released a September 2020 Report – "Double Counting in the Latest Housing Needs Assessment" – that questions whether State HCD's use of an incorrect vacancy rate and double counting has exaggerated the RHNA for the SCAG region, San Diego, the Bay Area and Sacramento area by more than 900,000 units (Attachment 3).

Clearly, this new and credible data should be explored with the members of the President's RHNA Litigation Study Team. It is our hope that upon examination of the new data, that the President's RHNA Litigation Study Team could deliberate on options to require State HCD to:

1) consider this and other new information from credible agencies;
2) justify how its 1.34 million housing unit determination is defensible in light of the new information and should be fittingly revised; and,
3) justify how its 1.34 million housing unit determination is consistent with State Statute provisions.

A prompt assessment of this information, and options to pursue resolution with State HCD, would be invaluable and timely to SCAG's member agencies, many of which are currently exploring appeals of their individual RHNA allocations.

Moreover, if the SCAG President's RHNA Litigation Study Team is reconvened, we would strongly urge SCAG to revisit the critical issue that State HCD did not follow housing statute, when it determined SCAG's 1.34 million housing units need. We appreciate that SCAG raised this concern to State HCD. We object, however, that State HCD has chosen to not adhere to the provisions of our Government Code, and we have provided a detailed, technical assessment of such noncompliance in Attachment 2.

We thus respectfully seek your support and follow-through of your verbal commitment to Council Member Huang, that the President's RHNA Litigation Study Team be reconvened to undertake this important discussion. We look forward to your response, with the desire that the RHNA Litigation Study Team be reconvened prior to the next SCAG Regional Council meeting, October 1, 2020.

With sincere respect and appreciation,

Mike Munzing
Mayor
City of Aliso Viejo

Harry Sidhu
Mayor
City of Anaheim

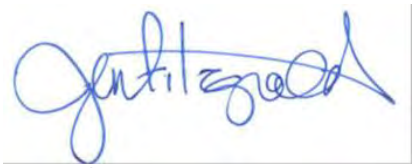
Marty Simonoff
Mayor
City of Brea

Fred Smith
Mayor
City of Buena Park

Katrina Foley
Mayor
City of Costa Mesa

Rob Johnson
Mayor
City of Cypress

Cheryl Brothers
Mayor
City of Fountain Valley



Jennifer Fitzgerald
Mayor
City of Fullerton

Steven R. Jones
Mayor
City of Garden Grove

Lyn Semeta
Mayor
City of Huntington Beach

Christina Shea
Mayor
City of Irvine

Tom Beamish
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City of La Habra

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Bob Whalen
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City of Laguna Beach

Janine Heft
Mayor
City of Laguna Hills

Laurie Davies
Mayor
City of Laguna Niguel

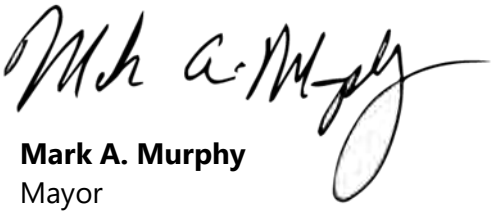
Noel Hatch
Mayor
City of Laguna Woods

Neeki Moatazedi
Mayor
City of Lake Forest

Richard D. Murphy
Mayor
City of Los Alamitos

Brian Goodell
Mayor
City of Mission Viejo

Will O'Neill
Mayor
City of Newport Beach



Mark A. Murphy
Mayor
City of Orange

Ward Smith
Mayor
City of Placentia

Bradley J. McGirr
Mayor
City of Rancho Santa Margarita

Troy Bourne
Mayor
City of San Juan Capistrano

Miguel A. Pulido
Mayor
City of Santa Ana

Schelly Sustarsic
Mayor
City of Seal Beach

David J. Shawver
Mayor
City of Stanton

Allan Bernstein
Mayor
City of Tustin

Robbie Pitts
Mayor
City of Villa Park

Tri Ta
Mayor
City of Westminster

Beth Haney
Mayor
City of Yorba Linda

Attachments:

1. Freddie Mac Economic and Housing Research Insight: February 2020
2. Orange County Technical Analysis: State Government Code Requirements to Calculate Regional Housing Need
3. Embarcadero Institute Report: Updated September 2020

cc: Council Member Peggy Huang, City of Yorba Linda and SCAG RHNA Subcommittee Chair
Council Member Trevor O'Neil, Chair, OCCOG Board of Directors
Council Member Wendy Bucknum, Vice-Chair, OCCOG Board of Directors
Mayor Pro Tem Michael Carroll, OC Representative SCAG's RHNA Litigation Study Team
Orange County Representatives on SCAG Policy Committees and Regional Council
Kome Ajise, SCAG Executive Director
Orange County City Managers Association
Orange County Mayors
Marnie O'Brien Primmer, OCCOG Executive Director
Nate Farnsworth, OCCOG TAC Chair

Freddie Mac

Economic & Housing Research **Insight**

FEBRUARY 2020

The Housing Supply Shortage: State of the States

The United States suffers from a severe housing shortage. In a recent study, The Major Challenge of Inadequate U.S. Housing Supply, we estimated that 2.5 million additional housing units will be needed to make up this shortage. Our earlier study used national statistics, treating the United States as a single market. What happens when we look closer, basing the analysis at the state level?

When we account for state-level variations, the estimated housing deficit is even greater in some states because housing is a fixed asset. A surplus of housing in one area can do little to help faraway places. For example, vacant homes in Ohio make little difference to the housing markets in Texas. We estimate that there are currently 29 states that have a housing deficit, and when we consider only these states, the housing shortage grows from 2.5 million units to 3.3 million units.

We estimate that there are currently 29 states that have a housing deficit, and when we consider only these states, the housing shortage grows from 2.5 million units to 3.3 million units.

Unsurprisingly, the states with the most severe housing shortage are the states that have recently attempted to loosen zoning policy regulations. States like California, Oregon, and others have undertaken policy action to address this issue. California, for example, has been working on chipping away at single-use zoning while Texas has passed a density bonus program, an ordinance which amends the city code by loosening site restrictions and promoting construction of more units in affordable and mixed-income housing developments. Oregon was one of the first states to pass legislation to eliminate exclusive single-family zoning in much of the state. The Minneapolis City Council voted to get rid of single-family zoning and started allowing residential structures with up to three dwelling units in every neighborhood. We took a deep dive into the supply/demand dynamics to analyze state-level variations.

Accounting for housing supply/demand conditions

To estimate housing supply, we rely on U.S. Census Bureau estimates of the total number of housing units in each state. These estimates include single-family homes, apartments, and manufactured housing. We compare supply to our estimates of housing demand. We first focus on static estimates of housing demand, and then we consider the impact of interstate migration.

Our estimate of housing demand relies on two components. First, we need an estimate of long-term vacancy rates (v^*). Second, we need an estimate of the target number of households (h^*).[1] The estimates of v^* and h^* give an estimate of housing demand (k^*) using the formula:

$$k^* = \frac{h^*}{1 - v^*} \quad Eq(1)$$

Vacancy rates

As we discussed in our earlier study, for the housing market to function smoothly, year-round vacant units are needed. Vacancy rates are often used to track the vitality of the housing market. Too high of a vacancy rate reflects a moribund market, while too low of a rate means demand is outstripping supply. Our previous research estimated the average U.S. vacancy rate to be around 13%.

For long-term vacancy rates (v^*), we use historical estimates of vacancy rates in each state as well as the share of the state in the housing stock to obtain the state weight. We compute the weighted average national vacancy rate for the U.S. and then estimate the deviation of the state vacancy rate from the average national vacancy rate (see **Appendix 1.1** for a detailed methodology). We use each state's average from 1970 to 2000 as the estimate for v^* because this was the period before the boom and the bust in the housing market began. Historical vacancy rates vary dramatically by state. States like Vermont and Maine tend to have high vacancy rates because a large fraction of the housing stock serves as vacation/second homes. On the other hand, states like California tend to have very low vacancy rates.

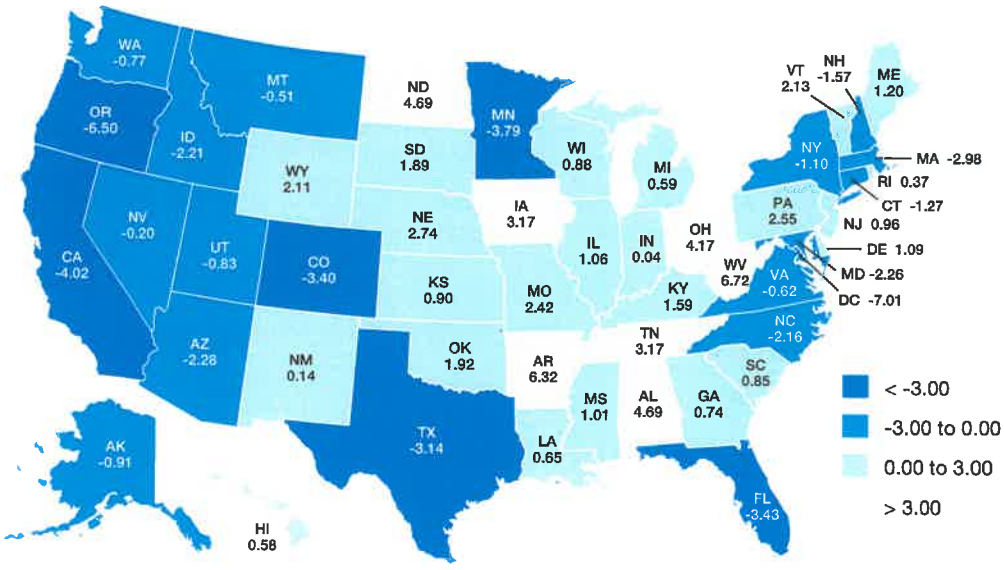
1 The target number of households is the number of unconstrained households that would have formed if households did not face any constraints related to housing costs.

It is interesting to compare each state's long-term vacancy rate (V^*) to recent estimates (V). This measure estimates the number of housing units needed to close the gap between the current vacancy rate and long-term average rates. **Exhibit 1** shows the difference between the estimated vacancy rate in 2018 and the long-term vacancy rate for each state. States like Oregon, California, and Minnesota have much lower current vacancy rates compared to their historical averages, while states like West Virginia, Alabama, North Dakota, and Ohio have witnessed an increase in the vacancy rates as the populations of these states have decreased.

Exhibit 1

Difference between 2018 vacancy rate and historical vacancy rate

States that are losing (gaining) population have high (low) vacancy rates.



Source: Author's calculations based on CPS, HVS, and Moody's Analytics estimated data.

Target households

Our previous research has shown that high housing costs have constrained household formation. These high housing costs have hit the Millennial generation particularly hard. To overcome these cost barriers, some young adults have turned to shared living arrangements. Others have moved back home with parents. As a result, there are more than 400,000 missing households headed by 25- to 34-year-olds (households that would have formed except for higher housing costs).

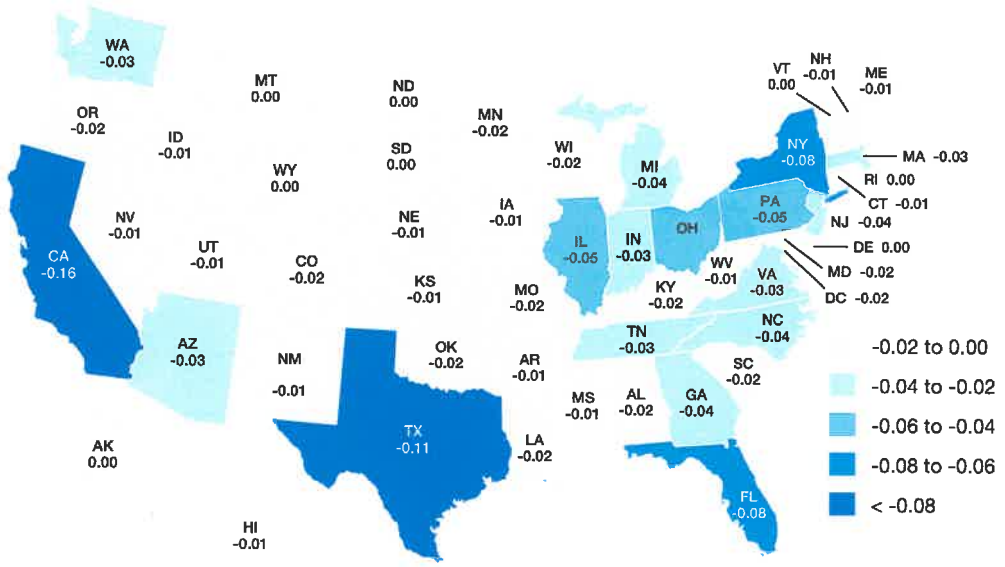
While high housing costs have hit young adults hardest, they have affected all age groups. If housing costs were lower, more households would form. We use our model estimates of the number of households reduced due to unusually high housing costs and add them back. We do this for each age group (see **Appendix 1.2** for more details.)

Due to different age profiles, the share of missing households varies by state. **Exhibit 2** plots the share of missing households due to housing costs for each state. In general, states with relatively lower vacancy rates have proportionally more missing households.

Exhibit 2

Missing households due to high housing costs (millions)

States with relatively lower (higher) vacancy rates have proportionally more (fewer) missing households.



Source: Author's calculations based on American Community Survey data.

Static estimate of housing deficit

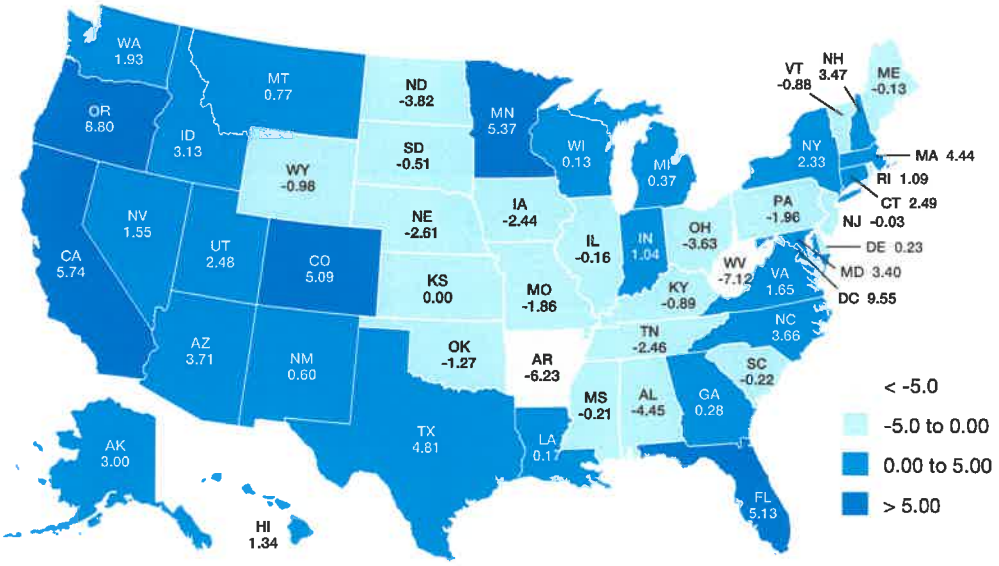
We combine our target vacancy rate and target households to estimate housing demand. Subtracting our estimated housing demand from the Census estimate of housing supply gives us the estimated housing deficit. **Exhibit 3** shows our results by state.

As a percent of the housing stock, the state housing supply deficit varies from -7 to 10%. Excluding the District of Columbia, Oregon has the largest deficit (nearly 9%) followed by California (nearly 6%).[2] Some states have a negative deficit, meaning they are oversupplied. According to our estimate, 21 states are oversupplied, the largest being West Virginia, at more than 7%.

Exhibit 3

Housing stock deficit as proportion of a state's housing stock (static estimate not considering interstate migration flows)

A static view suggests that 29 states have a housing undersupply.



Source: Author's calculations.

2 The District of Columbia had the highest deficit as a share of the existing housing stock at 9.7%.

Impact of migration on the housing deficit of the states

While houses stay in place, people do not. Job growth attracts in-migrants, while a dearth of opportunity drives out-migration. High housing costs also contribute to migration patterns. When the rents get too high, people move away. This dynamic can impact our estimates.

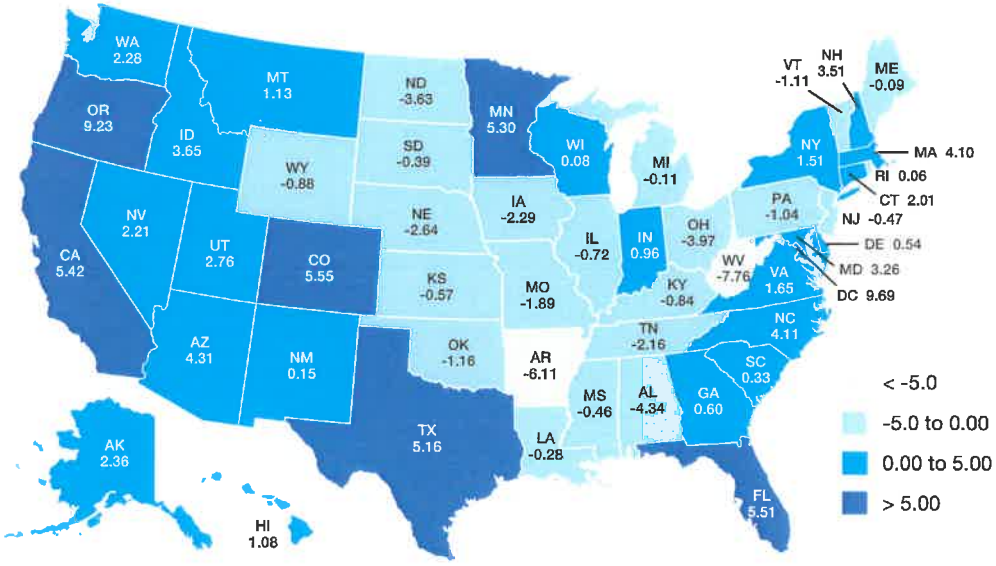
It's helpful to consider the case of California. Our estimates indicate that California has a shortage of 820,000 housing units. But history suggests that California's shortage may be overestimated if interstate migration is considered. For more than four decades, California's state population has grown, but this increase has been driven primarily by international migration. High housing costs have driven many U.S. citizens and households out of California, driving housing demand higher in their destination states.

A robust model of domestic migration flows between states is beyond the scope of this study. But we can approximate how migration may affect our estimates. We can use the historical average of state-to-state migration flows as a forecast of future flows. If the future interstate migration exactly matches past flows since 2001, we can create a rough, but useful approximation (**Exhibit 4**).[3]

Exhibit 4

Housing stock deficit as proportion of state's housing stock (dynamic estimate considering interstate migration flows)

A dynamic view indicates that some states' deficit is overestimated, like California, while others' is underestimated, like Texas. Some states, like Michigan, move from a deficit to a surplus.



Source: Author's calculations.

3 We used the average net migration flows between states from 2001 to 2017 for the past flows.

For example, when considering migration flows, the estimated housing demand in Michigan changes from deficit to surplus; Ohio's surplus increases; and Florida's deficit increases (see **Appendix 1.3** for details on our estimation method).

Given the severity of the problem, states have started addressing the issue of supply shortages by taking legislative action. Some of these states such as California, Oregon, Minnesota, and North Carolina have passed legislation to eliminate exclusive single-family zoning. Removing these zoning restrictions will provide builders with the flexibility to build a range of housing options which could help alleviate some of the shortage.

Conclusion

A shortage of housing remains a major issue for the United States. Years of underbuilding has created a large deficit, particularly for states with strong economies that have attracted a lot of people from other states. The issue of undersupply will be further exacerbated as Millennials and younger generations enter the housing markets, especially as housing costs become more favorable.

Dynamic estimates suggest that contrary to expectations, it isn't only the larger states that have a higher housing supply shortage. Some of the smaller states, which have been attracting a lot of migrants from other states, also need to build more housing units to accommodate the needs of their growing population.

Appendix

1.1 Vacancy rate calculations

We calculate the vacancy rate based on the historical vacancy rate. For this purpose, we obtain the historical vacancy rates by state from Moody's analytics for the period from 1970 to 2000[4] and estimate the average vacancy rate for this period for each state.

$VR_i = average(VR_i)$ for 1970–2000,

where i is the state.

We then obtain the housing stock information by state from the Housing Stock (HVS) ('000s) U.S. Census Bureau (BOC): Housing Vacancies and Homeownership–Table 8–Quarterly Estimates of the Housing Inventory. From these data, the share of the state in the total housing stock is calculated to get the state weights.

$$w_i = \frac{K_i}{\Sigma_i K_i}.$$

The sum product of the vacancy rate of the state and the state's weight in the housing stock gives us the U.S. average vacancy rate.

U.S. average vacancy rate: $VR = \Sigma_i VR_i * w_i$.

We then compute the difference between the state vacancy rate and the average U.S. vacancy rate to see how far away the state is from the U.S. average.

$$D_i = VR_i - VR.$$

This deviation for the states is then applied to the long-run vacancy rate for the United States (which we estimated earlier to be 13%) to get the state-wise vacancy rate.

State-wise Vacancy Rate = 13% + Di for each state.

1.2 Estimating target households

We obtain the headship rates[5] for the year 2018 by state and by age for all the 50 states and District of Columbia.[6] We then estimate target households using this headship rate and adding back housing

4 Data is available from 1970:Q2 onward. We estimate the average for the period up to 2000:Q4. This corresponds to the period before the boom and bust in the housing market began.
5 Headship Rate = Number of Head of Households/Total Households.
6 Data source: Current Population Survey–Annual Social and Economic Supplement (CPS-ASEC) using the Integrated Public Use Microdata Series (IPUMS) (Steven Ruggles, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas and Matthew Sobek. IPUMS USA: Version 9.0 [dataset]. Minneapolis, MN: IPUMS, 2019.)

costs assuming that housing costs become more favorable for household formation. The target headship rate would be

$$hr^*_{i,j} = hr_{(i,2018)} + \alpha_{(\text{housing costs},i)}.$$

We then use this target headship rate and the population by five-year age buckets to compute the households in each state.

$$hh^*_i = \Sigma_j hr^*_{i,j} * pop_{i,j},$$

where i is the state and j is the five-year age buckets.

The product of headship rate and population by age gives the households by age group. Summing it up over all the ages gives the total households in the state.[7]

1.3 Domestic migration flows between states

For the estimate of the states' share of the deficit, we need to obtain the share of the migration flows between states by age. To get detailed age-wise distribution of population, we use the ACS data from 2001 to 2017. We obtain the population by age and by state for these years. We identify people who had a different state of residence from a year ago, which indicates that they migrated to a different state. We then get estimates of the in-migrants and out-migrants by state and age.

We then estimate the net domestic migrants for each state as the difference between the in-migrants and out-migrants.

$$NM_{i,j} = I_{i,j} - O_{i,j}$$

where i is the state, j is the five-year age buckets, I is the in-migrants, and O is the outmigrants.

To estimate the net outmigrants from states that have a $NM < 0$, we obtain the Moody's historical net domestic migration data. We then apply these shares by state and age to the net migration data for 2018 to obtain the number of people leaving a state by the five-year age bucket.

$$\Delta P^*_{i,j,out} = \frac{NM_{i,j}}{\Sigma_{i,j} NM_{i,j}} * P_{m,i},$$

where $P^*_{i,j,out}$ is the total change in population (net out-migrants) for states that have net outmigration,

7 These households would be based on the Current Population survey (CPS). To make them consistent with estimates of housing supply from HVS, we apply a multiplier to this gap that is proportional to the gap between the CPS-ASEC and HVS household counts. The CPS-ASEC household estimate for 2018 was 127.6 million. The HVS estimate for that year was 121.3 million. We deflate our target households by a factor equal to 121.3/127.6, or 0.95.

$NM_{i,j}$ is the net out-migrants by age group and state,

$\Sigma NM_{i,j}$ is the sum of the total out-migrants for the state, and

$P_{m,j}$ is the historical net domestic migration data from Moody.

The ratio of $NM / \Sigma NM$ gives the share of the five-year age group in the total out-migrants from the state.

This pool of out-migrants ($P^*_{i,j,out}$) is then divided among the in-migrating states, given that the net flows for the country are 0.

We distribute these migrants according to the share of the state in the total in-migrants as well as by the share of the age group in the total in-migrants to the state.

$$\Delta P^*_{i,j,in} = SI_i * SA_{i,j} * \Delta P^*_{i,j,out}$$

where $\Delta P^*_{i,j,in}$ is the in-migrants to the state i from the outmigrants pool,

SI is the share of the state in total in-migrants,

SA is the share of the five-year age bucket in the total in-migrants, and

$\Delta P^*_{i,j,out}$ is the total out-migrants.

The population of each state is then adjusted according to the change in the population estimated above.

$$Population^*_i = P_{i,j} + \Delta P^*_{i,j,out} \text{ if } NM < 0.$$
$$= P_{i,j} + \Delta P^*_{i,j,in} \text{ if } NM < 0.$$

The households are then computed based on this adjusted population for each state by applying the headship rates by age group. Then the housing stock is estimated as per equation (1).

Prepared by the Economic & Housing Research group

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Len Kiefer, Deputy Chief Economist
Venkataramana Yanamandra, Macro Housing Economics Senior

www.freddiemac.com/finance

Orange County Technical Analysis of SCAG's Regional Determination from HCD

Government Code Section 65584.01(a) states: "If the total regional population forecast for the projection year, developed by the council of governments and used for the preparation of the regional transportation plan, is within a range of 1.5 percent of the total regional population forecast for the projection year by the Department of Finance, then the population forecast developed by the council of governments shall be the basis from which the department determines the existing and projected need for housing in the region….".

As outlined in SCAG's September 18, 2019 objection letter to the California Department of Housing and Community Development (HCD) (see Exhibit B), SCAG's regional population forecast for its Regional Transportation Plan (RTP) differs from the State Department of Finance (DOF) projection by **1.32%,** which falls within the statutory range of 1.5% outlined in state law. Therefore, by statute, the regional determination should be based on SCAG's population projections.

However, HCD's October 15, 2019 response letter to SCAG (see Exhibit C) cites two reasons for not using SCAG's total regional population forecast:

1) The total household projection from SCAG is 1.96% lower than DOF's household projection.
2) The age cohort of under 15-year old persons from SCAG's population projections differ from DOF's projections by 15.8%.

A careful reading of Government Code Section 65584.01(a) demonstrates that HCD's interpretation and rejection of the use of SCAG's regional population forecast is incorrect for the following two reasons:

1) The law clearly states that that the 1.5% range is based on the total regional **population** forecast and not the regional **household** projection forecast.
2) The law clearly states that the 1.5% range is based on the **total** regional population forecast and not on **age-cohort** population forecasts.

While Government Code 65584.01 provides a significant level of discretion to HCD over many of the factors used for the regional determination (i.e., vacancy adjustments, overcrowding rates, replacement adjustments, cost-burdened adjustments, etc.), this one issue is clearly written into the law without any discretion from HCD. Therefore, even though we support all of the arguments SCAG outlined in their September 18, 2019 objection letter, we also recognize that state law grants HCD the final determination for those specific factors. However, there is no discretion in HCD's decision to ignore SCAG's regional population forecast. Had HCD adhered to Government Code 65584.01(a), we estimate that the regional determination should have been at least approximately 133,000 housing units lower (see Exhibit A), or no more than approximately 1.2 million housing units.

We would hope that HCD would reconsider the other SCAG's recommendations as noted in their September 18, 2020 objection letter, especially in light of the change in circumstances related to the current COVID-19 pandemic, as well as the recent studies and reports stating that California's statewide housing shortfall is significantly lower than even SCAG's entire RHNA obligation.

Exhibit A

	OPTION A: SCAG region housing needs, June 30 2021-October 1 2029 (8.25 Years)				
1	**Population: Oct 1,** 2029 (SCAG 2020 RTP/SCS Forecast)				**20,725,878**
2	*- Less Group Quarters Population (SCAG 2020 RTP/SCS Forecast)*				**-327,879**
3	**Household (HH) Population, Oct 1, 2029**				**20,397,998**
	Household Formation Groups	**SCAG Projected HH Population**	***Headship rate - see Table 2***	**Projected Households**	
		20,397,998		**6,668,498**	
	under 15 years	3,812,391		n/a	
	15 - 24 years	2,642,548		147,005	
	25 - 34 years	2,847,526		864,349	
	35 - 44 years	2,821,442		1,304,658	
	45 - 54 years	2,450,776		1,243,288	
	55 - 64 years	2,182,421		1,116,479	
	65 -74 years	1,883,181		1,015,576	
	75 - 84 years	1,167,232		637,415	
	85+	590,480		339,727	
4	**Projected Households (Occupied Unit Stock)**				**6,668,498**
5	+ Vacancy Adjustment (2.63%)				178,896
6	+ Overcrowding (6.76%)				459,917
7	**+** Replacement Adjustment (0.50%)				34,010
8	**-** *Occupied Units (HHs) estimated June 30, **2021** (from DOF data)*				-6,250,261
9	+ Cost-burden Adjustment ((Lower Income: 10.63%, Moderate and Above Moderate Income: 9.28%)				117,505
	6th Cycle Regional Housing Need Assessment (RHNA)				**1,208,565**

SCAG
INNOVATING FOR A BETTER TOMORROW

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September 18, 2019

Mr. Doug McCauley
Acting Director
Housing & Community Development (HCD)
2020 W. El Camino Ave.
Sacramento, CA 95833

Subject: SCAG's Objection to HCD's Regional Housing Need Determination

Dear Mr. McCauley,

This letter represents the Southern California Association of Governments (SCAG)'s formal objection to HCD's Regional Housing Need Determination as submitted to SCAG on August 22, 2019 and is made in accordance with Government Code Section 65584.01(c)(2)(A) and (B). At the outset, please know that SCAG is fully aware that the State of California is in the midst of a housing crisis and that resolving this crisis requires strong partnerships with state, regional and local entities in addition to private and non-profit sectors.

As such, SCAG desires to be an active and constructive partner with the State and HCD on solving our current housing crisis, and this objection should not suggest otherwise. We are in fact currently setting up a housing program that will assist our local jurisdictions on activities and policies that will lead to actual housing unit construction.

In the context of the 6th cycle Regional Housing Needs Assessment (RHNA) process, SCAG appreciates the collaboration with HCD as reflected in the numerous consultation sessions on the regional determination and other staff engagement on housing issues with the objective of making RHNA a meaningful step toward addressing our housing crisis.

As you are aware, HCD transmitted its Regional Housing Needs Determination of 1,344,740 units for the SCAG region last month. This number reflects the housing units that local jurisdictions in the region must plan for during the 8-year period from October 2021 to October 2029. At the September 5, 2019 meeting, SCAG Regional Council authorized staff to file an objection to HCD on regional housing need determination pursuant to Government Code Section 65584.01(c).

I would like to note that SCAG's objection focuses on the process and adherence to state housing law requirements and not necessarily to the regional housing need determination number. The ultimate aim of this objection, as discussed at length by the Regional Council, is to ensure the most technically and legally credible basis for a regional determination so that the 197 local jurisdictions in the SCAG region can approach the difficult task of zoning to accommodate regional needs with the backing of the most robust and realistic target that is possible.

One of our major concerns is that HCD did not base its determination on SCAG's RTP/SCS Growth Forecast, which was inconsistent with Government Code 65584.01(c)(2)(A). Another major concern is that pursuant to Government Code 65584.01(c) (2) (B), HCD's determination of housing need in the SCAG region is not a reasonable application of the methodology and assumptions described in statute. Specifically, HCD compared household overcrowding and cost-burden rates in the SCAG region to national averages rather than to rates in comparable regions as statutorily required. These and two additional basis for objections are described in detail in the section below which also includes a deduction for household growth on tribal land and a concern that the vacancy rate standards used by HCD are not substantiated by data, analysis, or literature. In addition, the attached EXCEL worksheet and technical documentation contain SCAG's alternative proposed 6th cycle RHNA determination, which would consist of a range of total housing unit need between 823,808 and 920,772.

BASIS FOR SCAG OBJECTION

Use of SCAG's Population Forecast

HCD did not base its determination on SCAG's RTP/SCS Growth Forecast, which was provided in the original consultation package and via follow-up email to HCD. Government Code 65584.01(a) indicates [emphasis added]:

"(a) The department's determination shall be based upon population projections produced by the Department of Finance and regional population forecasts used in preparing regional transportation plans, in consultation with each council of governments. ***If the total regional population forecast for the projection year, developed by the council of governments and used for the preparation of the regional transportation plan, is within a range of 1.5 percent of the total regional population forecast for the projection year by the Department of Finance, then the population forecast developed by the council of governments shall be the basis from which the department determines the existing and projected need for housing in the region.*** *If the difference between the total population projected by the council of governments and the total population projected for the region by the Department of Finance is greater than 1.5 percent, then the department and the council of governments shall meet to discuss variances in methodology used for population projections and seek agreement on a population projection for the region to be used as a basis for determining the existing and projected housing need for the region. If no agreement is reached, then the population projection for the region shall be the population projection for the region prepared by the Department of Finance as may be modified by the department as a result of discussions with the council of governments."*

SCAG projects total regional population to grow to 20,725,878 by October, 2029. SCAG's projection differs from Department of Finance (DOF) projection of 20,689,591, which was issued by DOF in May, 2018, by 0.18%. The total population provided in HCD's determination is 20,455,355, reflecting an updated DOF projection, differs from SCAG's projection by 1.32%. As SCAG's total projection is within the statutory tolerance of 1.5%, accordingly HCD is to use SCAG's population forecast.

While HCD has emphasized that consistency in approach to the 6th cycle RHNA across regions is a priority, deference to the Council of Governments' forecast as specified in statute is an important aspect of regional planning. Federal requirements for SCAG's Regional Transportation Plan necessitate a forecast of population, households, and employment for evaluating future land use patterns and measuring future travel demand as well as air quality conformity under the federal Clean Air Act. In addition, under SB 375, the State requires SCAG to develop a Sustainable Communities Strategy which is a coordination of transportation and land use in the regional planning process to achieve State's climate goals. Both federal and State requirements are predicated on SCAG's forecast of population, households and employment.

As a result, SCAG has a long-established and well-respected process for producing a balanced forecast of population, households, and employment for the region, the details of which can be found in each Regional Transportation Plan (e.g. http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS_DemographicsGrowthForecast.pdf). SCAG's quadrennial growth forecast begins with a consensus on appropriate assumptions of fertility, migration, immigration, household formation, and job growth by a panel of state and regional experts including members of DOF's Demographic Research Unit. In addition, SCAG co-hosts an annual demographic workshop with the University of Southern California to keep state and regional experts and stakeholders appraised of demographic and economic trends (https://www.scag.ca.gov/calendar/Pages/DemographicWorkshop.aspx).

SCAG places a high priority on generating its own forecasts of population, households, and employment and ensuring the highest possible degree of consistency and integrity of its projections for transportation, land use, and housing planning purposes.

Use of Comparable Regions

Pursuant to Government Code 65584.01(c)(2)(B), HCD's determination of housing need in the SCAG region is not a reasonable application of the methodology and assumptions described in statute. Specifically, HCD compared household overcrowding and cost-burden rates in the SCAG region to national averages rather than to rates in comparable regions as statutorily required.

SCAG's initial consultation package provided an approach using comparable regions to evaluate household overcrowding SCAG staff met with HCD staff in-person in both Los Angeles and Sacramento to discuss adjustment criteria and how to define a comparable region to Southern California, as our region's size precludes a straightforward comparison. At the direction of HCD, SCAG staff refined its methodology for identifying comparable regions and provided a state-of-the-practice analysis supported by recent demographic and economic literature which determined

that the most appropriate comparison to the SCAG region would be an evaluation against the San Jose, New York, San Francisco, Miami, Seattle, Chicago, San Diego, Washington D.C., Houston, and Dallas metropolitan areas. Despite this collaboration on the subject between HCD and SCAG, HCD elected to reject this approach and instead used national average statistics, which include small metropolitan areas and rural areas having little in common with Southern California.

HCD's choice to use national averages:

- Is inconsistent with the statutory language of SB 828, which added the comparable region standard to RHNA law in order to improve the technical robustness of measures of housing need.

- Is inconsistent with empirical data as economic and demographic characteristics differ dramatically based on regional size and context. For comparison, the median-sized metropolitan region in the country is Fargo, North Dakota with a population of 207,500. That is not a meaningful basis of comparison for the nation's largest MPO.

- Is inconsistent with HCD's own internal practice for the 6th cycle of RHNA. The regional need determination for the Sacramento Area Council of Governments (SACOG), issued on July 18, 2019, was the first 6th cycle RHNA determination following SB 828's inclusion of the comparable region standard. During their consultation process with HCD, SACOG also produced a robust technical analysis to identify comparable regions for the purposes of using overcrowding and cost-burden statistics to determine regional housing needs. However, HCD's final determination for SACOG used this analysis while the SCAG region was held to a different and less reasonable standard.

Improved Vacancy Rate Comparison

HCD seemingly uses unrealistic comparison points to evaluate healthy market vacancy, which is also an unreasonable application of the methodology and assumptions described in statute. While SB 828 specifies a vacancy rate for a healthy rental housing market as no less than 5 percent, healthy market vacancy rates for for-sale housing are not specified. HCD's practice is to compare actual, ACS vacancy rates for the region versus a 5 percent total vacancy rate (i.e. owner and renter markets combined).

During the consultation process, SCAG discussed this matter with HCD staff and provided several points of comparison including historical data, planning standards, and comparisons with other regions. In addition, SCAG staff illustrated that given tenure shares in the SCAG region, HCD's suggestion of a 5 percent total vacancy rate is mathematically equivalent to an 8 percent rental market vacancy rate plus a 2.25 percent for-sale housing vacancy rate. However, in major metropolitan regions, vacancy rates this high are rarely experienced outside of severe economic recessions such as the recent, housing market-driven Great Recession. Given the region's current housing shortage, the high volume of vacant units envisioned in HCD's planning target would be rapidly absorbed, making it an unrealistic standard.

SCAG staff's original suggestion of 5 percent rental vacancy and 1.5 percent for-sale vacancy (resulting in a 3.17 percent total vacancy rate based on current tenure shares) is in fact *higher* than the observed rate in the comparable regions defined above. It is also above Federal Housing Authority standards for regions experiencing slow or moderate population growth. It is also above the very liberal standard of 6 percent for for-rent housing and 2 percent for for-sale housing suggested by the California Office of Planning and Research (equivalent to 3.90 percent total vacancy based on SCAG tenure shares) which would also be a more reasonable application of the methodology.[1]

Additional Considerations

In addition to the three key points above, SCAG's proposed alternative includes several other corrections to technical shortcomings in HCD's analysis of regional housing needs.

1. HCD's evaluation of replacement need is based on an arbitrary internal standard of 0.5 percent to 5.0 percent of total housing units. 2010-2019 demolition data provided by DOF suggest that over an 8.25-year period, it is reasonable to expect that 0.14 percent of the region's total housing units will be demolished, but not replaced. This would form the basis of a more reasonable housing needs determination, as DOF's survey represents the most comprehensive and robust data available.

2. Anticipated household growth on tribal land was not excluded from the regional determination as indicated in the consultation package and follow-up communications. Tribal entities within the SCAG region have repeatedly requested that this estimate be excluded from the RHNA process entirely since as sovereign nations, state law does not apply. SCAG's proposed approach is to subtract estimates of household growth on tribal land from the regional determination and ensure that these figures are also excluded from local jurisdictions' annual progress reports (APRs) of new unit construction to HCD during the 6th cycle.

3. A refinement to the adjustment for cost burden would yield a more reasonable determination of regional housing needs. SCAG has repeatedly emphasized the shortcomings of and overlap across various ACS-based measures of housing need. Furthermore, the relationship between new unit construction and cost burden is poorly understood (i.e., what will be the impact of new units on cost, and by extension, cost-burden). Nonetheless, SCAG recognizes that the region's cost burden exceeds that of comparable regions and proposes one modification to HCD's methodology, which currently considers cost burden separately by lower and higher income categories.

   While housing security is dependent on income, it is also heavily dependent on tenure. While spending above 30 percent of gross income on housing for renters can reflect true housing insecurity, spending above this threshold for owners is substantially less problematic. This is particularly true for higher income homeowners, who generally benefit from housing shortages as it results in home value appreciation. Thus, a more reasonable application of cost burden

[1] See Nelson, AC. (2004), *Planner's Estimating Guide Projecting Land-Use and Facility Needs*. Planners Press, American Planning Association, Chicago. P. 25.

statistics would exclude cost-burden experienced by moderate and above-moderate owner households and instead make an adjustment based on three of the four income and tenure combinations: lower-income renters, higher-income renters, and lower-income owners.

4. From our review, HCD's data and use of data is not current. In large metropolitan regions, there is no reasonable basis for using 5-year ACS data, which reflects average conditions from 2013 to 2017. For cost-burden adjustments, HCD relies on 2011-2015 CHAS data. By the beginning of the 6th cycle of RHNA, some of the social conditions upon which the determination is based will be eight years old.

   During the consultation process, SCAG staff provided HCD with Excel-version data of all inputs needed to replicate their methodology using ACS 2017 1-year data (the most recent available); however, this was not used. The Census bureau is scheduled to release ACS 2018 1-year data on September 26, 2019. SCAG staff would support replicating the same analysis, but substituting 2018 data when it becomes available in order to ensure the most accurate estimates in planning for the region's future.

Finally, given that the manner and order in which modifications are made affects the total housing need, the attachments demonstrate two alternatives with varying interpretations of three of the above points (see boldface, red text in attachments):

- Vacancy rate comparison – SCAG's originally proposed values versus an alternative which emerged from the consultation process
- Replacement need – DOF survey value versus HCD's current practice
- Cost burden measure – whether or not to include higher-income homeowners in this adjustment

We appreciate your careful consideration of this objection. RHNA is a complex process and we recognize the difficult positions that both SCAG and HCD are in but are hopeful that our agencies can reach a reasonable conclusion with respect to the regional need determination. Please contact me if you have questions. I look forward to continuing our close partnership to address the housing crisis in our state.

Sincerely,

Kome Ajise
Executive Director

Attachments

1. SCAG Alternative Determination
2. Excel version: SCAG Alternative Determination and supporting data
3. HCD Letter on Regional Need Determination, August 22, 2019

Attachment 1
SCAG Alternative Determination

1	**OPTION A: SCAG region housing needs, June 30 2021-October 1 2029 (8.25 Years)**				
2	**Population: Oct 1,** 2029 (SCAG 2020 RTP/SCS Forecast)				**20,725,878**
3	*- Less Group Quarters Population (SCAG 2020 RTP/SCS Forecast)*				**-327,879**
4	**Household (HH) Population, Oct 1, 2029**				**20,397,998**
	Household Formation Groups	**SCAG Projected HH Population**	***Headship rate - see Table 2***	**Projected Households**	
		20,397,998		**6,668,498**	
	under 15 years	3,812,391		n/a	
	15 - 24 years	2,642,548		147,005	
	25 - 34 years	2,847,526		864,349	
	35 - 44 years	2,821,442		1,304,658	
	45 - 54 years	2,450,776		1,243,288	
	55 - 64 years	2,182,421		1,116,479	
	65 -74 years	1,883,181		1,015,576	
	75 - 84 years	1,167,232		637,415	
	85+	590,480		339,727	
5	**Projected Households (Occupied Unit Stock)**				**6,668,498**
6	+ Vacancy	Owner	Renter		
	Tenure Share (ACS 2017 1-year)	52.43%	47.57%		
	Households by Tenure	3,496,058	3,172,440		
	Healthy Market Vacancy Standard	**1.50%**	**5.00%**		
	SCAG Vacancy (ACS 2017 1-year)	1.13%	3.30%		
	Difference	0.37%	1.70%		
	Vacancy Adjustment	12,953	53,815		66,768
7	+ Overcrowding (Comparison Point vs. Region ACS %)	5.20%	9.82%	4.62%	308,264
8	+ Replacement Adj (Actual DOF Demolitions)		**0.14%**		9,335
	- Household Growth on Tribal Land (SCAG Estimate)				-2,766
9	- *Occupied Units (HHs) estimated June 30,* ***2021*** *(from DOF data)*				-6,250,261
10	+ Cost-burden Adjustment (Comparison Point vs. Region)				**23,969**
	6th Cycle Regional Housing Need Assessment (RHNA)				**823,808**

1	**OPTION B: SCAG region housing needs, June 30 2021-October 1 2029 (8.25 Years)**				
2	**Population: Oct 1,** 2029 (SCAG 2020 RTP/SCS Forecast)				**20,725,878**
3	*- Less Group Quarters Population (SCAG 2020 RTP/SCS Forecast)*				**-327,879**
4	**Household (HH) Population, Oct 1, 2029**				**20,397,998**
	Household Formation Groups	**SCAG Projected HH Population**	***Headship rate - see Table 2***	**Projected Households**	
		20,397,998		**6,668,498**	
	under 15 years	3,812,391		n/a	
	15 - 24 years	2,642,548		147,005	
	25 - 34 years	2,847,526		864,349	
	35 - 44 years	2,821,442		1,304,658	
	45 - 54 years	2,450,776		1,243,288	
	55 - 64 years	2,182,421		1,116,479	
	65 -74 years	1,883,181		1,015,576	
	75 - 84 years	1,167,232		637,415	
	85+	590,480		339,727	
5	**Projected Households (Occupied Unit Stock)**				**6,668,498**
6	+ Vacancy	Owner	Renter		
	Tenure Share (ACS 2017 1-year)	52.43%	47.57%		
	Households by Tenure	3,496,058	3,172,440		
	Healthy Market Vacancy Standard	**2.00%**	**6.00%**		
	SCAG Vacancy (ACS 2017 1-year)	1.13%	3.30%		
	Difference	0.87%	2.70%		
	Vacancy Adjustment	30,433	85,540		115,973
7	+ Overcrowding (Comparison Point vs. Region ACS %)	5.20%	9.82%	4.62%	308,264
8	+ Replacement Adj (HCD minimum standard)		**0.50%**		33,340
	- Household Growth on Tribal Land (SCAG Estimate)				-2,766
9	*- Occupied Units (HHs) estimated June 30, **2021** (from DOF data)*				-6,250,261
10	+ Cost-burden Adjustment (Comparison Point vs. Region)				**47,724**
	6th Cycle Regional Housing Need Assessment (RHNA)				**920,772**

1	Projection period: Gov. Code 65588(f) specifies RHNA projection period start is December 31 or June 30, whichever date most closely precedes end of previous RHNA projection period end date. RHNA projection period end date is set to align with planning period end date. The planning period end date is eight years following the Housing Element due date, which is 18 months following the Regional Transportation Plan adoption rounded to the 15th or end of the month.
2-5	Population, Group Quarters, Household Population, & Projected Households: Pursuant to Government Code Section 65584.01, projections were extrapolated from SCAG's Regional Transportation Plan projections. Population reflects total persons. Group Quarter Population reflects persons in a dormitory, group home, institution, military, etc. that do not require residential housing. Household Population reflects persons requiring residential housing. Projected Households reflect the propensity of persons, by age-groups, to form households at different rates based on Census trends.
6	Vacancy Adjustment: Pursuant to Government Code 65584.01, a 5% minimum is considered to be healthy market vacancy in the for-rent housing market. Vacancy rates in the for-sale market are unspecified in statute. **SCAG's analysis of vacancy rates suggests a healthy market standard of 5% for fore-rent housing and 1.5% for for-sale housing. After extensive consultation with HCD, a review of historical trends, regional and national comparison, and various planning standards, a more liberal vacancy standard of 6% for for-rent housing and 2% for for-sale housing may also be supported by this analysis.** These standards are compared against ACS 2017 1-year data based on the renter/owner share in the SCAG region.
7	Overcrowding Adjustment: In regions where overcrowding is greater than the Comparable Region Rate, an adjustment is applied based on the amount the region's overcrowding rate (9.82%) exceeds the Comparable Region Rate (5.20%). Data is from 2017 1-year ACS.
8	Replacement Adjustment: A replacement adjustment is applied based on the current 10-year average % of demolitions according to local government annual reports to Department of Finance. **While these data suggest an adjustment of 0.14% is most appropriate, SCAG recognizes that HCD's internal practice is to use an adjustment factor of 0.5%.**
9	Occupied Units: Reflects DOF's estimate of occupied units at the start of the projection period (June 30, 2021).
10	Cost Burden Adjustment: A cost-burden adjustment is applied to the projected need by comparing the difference in cost-burden by income and tenure group for the region to the cost-burden by income and tenure group for comparable regions. Data are from 2017 1-year ACS and the ACS $50,000/year household income threshold is used to distinguish between lower and higher income groups. The lower income RHNA is increased by the percent difference between the region and the comparison region cost burden rate for households earning approximately 80% of area median income and below (88.89%-84.39%=4.51% for renters and 27.33%-20.97%=6.36% for owners), then this difference is applied to very low- and low-income RHNA proportionate to the share of the population these groups currently represent (Very Low=63% of lower, Low=37% of lower). The higher income RHNA is increased by the percent difference between the region and the comparison region cost burden rate (67.15%-65.53%=1.62% for renters and 23.78%-17.06%=6.72% for owners) for households earning above 80% Area Median Income, then this difference is applied to moderate and above moderate income RHNA proportionate to the share of the population these groups currently represent (Moderate=29% of higher, Above Moderate=71% of higher). **SCAG's analysis of the cost-burden measure suggests that it may be less appropriate to apply for higher-income owners and it may be excluded from the adjustment.**

Option A: Regional Housing Need Allocation (RHNA) Determination

SCAG Region

June 30, 2021 through October 1, 2029

Income Category	Percent	Housing Unit Need
Very-Low *	25.8%	212,284
Low	15.1%	124,375
Moderate	17.1%	140,601
Above-Moderate	42.1%	346,547
Total	**100.0%**	**823,808**
* Extremely-Low	14.6%	included in Very-Low Category

Option B: Regional Housing Need Allocation (RHNA) Determination

SCAG Region

June 30, 2021 through October 1, 2029

Income Category	Percent	Housing Unit Need
Very-Low *	25.8%	231,084
Low	15.1%	135,390
Moderate	17.1%	159,982
Above-Moderate	42.1%	394,316
Total	**100.0%**	**920,772**
* Extremely-Low	14.6%	included in Very-Low Category

Income Distribution: Income categories are prescribed by California Health and Safety Code (Section 50093, et.seq.). Percents are derived based on ACS reported household income brackets and county median income, then adjusted based on the percent of cost-burdened households in the region compared with the percent of cost burdened households nationally.

STATE OF CALIFORNIA - BUSINESS, CONSUMER SERVICES AND HOUSING AGENCY GAVIN NEWSOM, *Governor*

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF HOUSING POLICY DEVELOPMENT
2020 W. El Camino Avenue, Suite 500
Sacramento, CA 95833
(916) 263-2911 / FAX (916) 263-7453
www.hcd.ca.gov

October 15, 2019

Kome Ajise
Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

Dear Executive Director Ajise,

RE: Final Regional Housing Need Assessment

The California Department of Housing and Community Development (HCD) has received and reviewed your objection to the Southern California Association of Governments (SCAG)'s Regional Housing Needs Assessment (RHNA) provided on August 22, 2019. Pursuant to Government Code (Gov. Code) section 65584.01(c)(3), HCD is reporting the results of its review and consideration, along with a final written determination of SCAG's RHNA and explanation of methodology and inputs.

As a reminder, there are several reasons for the increase in SCAG's 6th cycle Regional Housing Needs Assessment (RHNA) as compared to the 5th cycle. First, as allowed under Gov. Code 65584.01(b)(2), the 6th cycle RHNA applied housing need adjustment factors to the region's total projected households, thus capturing existing and projected need. Second, overcrowding and cost burden adjustments were added by statute between 5th and 6th cycle; increasing RHNA in regions where incidents of these housing need indicators were especially high. SCAG's overcrowding rate is 10.11%, 6.76% higher than the national average. SCAG's cost burden rate is 69.88% for lower income households, and 18.65% for higher income households, 10.88% and 8.70% higher than the national average respectively. Third, the 5th cycle RHNA for the SCAG region was impacted by the recession and was significantly lower than SCAG's 4th cycle RHNA.

This RHNA methodology establishes the minimum number of homes needed to house the region's anticipated growth and brings these housing need indicators more in line with other communities, but does not solve for these housing needs. Further, RHNA is ultimately a requirement that the region zone sufficiently in order for these homes to have the potential to be built, but it is not a requirement or guarantee that these homes will be built. In this sense, the RHNA assigned by HCD is already a product of moderation and compromise; a minimum, not a maximum amount of planning needed for the SCAG region.

For these reasons HCD has not altered its RHNA approach based on SCAG's objection. However, the cost burden data input has been updated following SCAG's objection due to the availability of more recent data. Attachment 1 displays the minimum RHNA of **1,341,827** total homes among four income categories for SCAG to distribute among its local governments. Attachment 2 explains the methodology applied pursuant to Gov. Code section 65584.01.

The following briefly responds to each of the points raised in SCAG's objection:

Use of SCAG's Population Forecast
SCAG's overall population estimates for the end of the projection period exceed Department of Finance's (DOF) population projections by 1.32%, however the SCAG household projection derived from this population forecast is 1.96% lower than DOF's household projection. This is a result of SCAG's population forecast containing 3,812,391 under 15-year old persons, compared to DOF's population projection containing 3,292,955 under 15-year old persons; 519,436 more persons within the SCAG forecast that are anticipated to form no households. In this one age category, DOF's projections differ from SCAG's forecast by 15.8%.

Due to a greater than 1.5% difference in the population forecast assessment of under 15-year olds (15.8%), and the resulting difference in projected households (1.96%), HCD maintains the use of the DOF projection in the final RHNA.

Use of Comparable Regions
While the statute allows for the council of government to determine and provide the comparable regions to be used for benchmarking against overcrowding and cost burden, Gov. Code 65584.01(b)(2) also allows HCD to "accept or reject information provided by the council of governments or modify its own assumptions or methodology based on this information." Ultimately, HCD did not find the proposed comparable regions an effective benchmark to compare SCAG's overcrowding and cost burden metrics to. HCD used the national average as the comparison benchmark, which had been used previously throughout 6th cycle prior to the addition of comparable region language into the statute starting in January 2019. As the housing crisis is experienced nationally, even the national average does not express an ideal overcrowding or cost burden rate; we can do more to reduce and eliminate these worst-case housing needs.

Vacancy Rate
No changes have been made to the vacancy rate standard used by HCD for the 6th cycle RHNA methodology.

Replacement Need
No changes have been made to the replacement need minimum of adjustment .5%. This accounts for replacement homes needed to account for homes potentially lost during the projection period.

Household Growth Anticipated on Tribal Lands
No changes have been made to reduce the number of households planned in the SCAG region by the amount of household growth expected on tribal lands. The region should plan for these homes outside of tribal lands.

Overlap between Overcrowding and Cost Burden
No changes have been made to overcrowding and cost burden methodology. Both factors are allowed statutorily, and both are applied conservatively in the current methodology.

Data Sources

No changes have been made to the data sources used in the methodology. 5-year American Community Survey data allows for lower margin of error rates and is the preferred data source used throughout this cycle. With regard to cost burden rates, HCD continues to use the Comprehensive Housing Affordability Strategy, known as CHAS data. These are custom tabulations of American Community Survey requested by the U.S. Department of Housing and Urban Development. These customs tabulations display cost burden by income categories, such as lower income, households at or below 80% area median income; rather than a specific income, such as $50,000. The definition of lower income shifts by region and CHAS data accommodates for that shift. The 2013-2016 CHAS data became available August 9, 2019, shortly prior to the issuance of SCAG's RHNA determination so that data is now used in this RHNA.

Next Steps

As you know, SCAG is responsible for adopting a RHNA allocation methodology for the *projection* period beginning June 30, 2021 and ending October 15, 2029. Pursuant to Gov. Code section 65584(d), SCAG's RHNA allocation methodology must further the following objectives:

(1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very-low income households.
(2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.
(3) Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.
(4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.
(5) Affirmatively furthering fair housing.

Pursuant to Gov. Code section 65584.04(e), to the extent data is available, SCAG shall include the factors listed in Gov. Code section 65584.04(e)(1-12) to develop its RHNA allocation methodology. Pursuant to Gov. Code section 65584.04(f), SCAG must explain in writing how each of these factors was incorporated into the RHNA allocation methodology and how the methodology furthers the statutory objectives described above. Pursuant to Gov. Code section 65584.04(h), SCAG must consult with HCD and submit its draft allocation methodology to HCD for review.

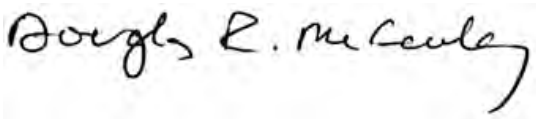
HCD appreciates the active role of SCAG staff in providing data and input throughout the consultation period. HCD especially thanks Ping Chang, Ma'Ayn Johnson, Kevin Kane, and Sarah Jepson.

HCD looks forward to its continued partnership with SCAG to assist SCAG's member jurisdictions meet and exceed the planning and production of the region's housing need. Just a few of the support opportunities available for the SCAG region this cycle include:

- SB 2 Planning Grants and Technical Assistance (application deadline November 30, 2019)
- Regional and Local Early Action Planning Grants
- Permanent Local Housing Allocation

If HCD can provide any additional assistance, or if you, or your staff, have any questions, please contact Megan Kirkeby, Assistant Deputy Director for Fair Housing, at *megan.kirkeby@hcd.ca.gov*.

Sincerely,



Douglas R. McCauley
Acting Director

Enclosures

ATTACHMENT 1

HCD REGIONAL HOUSING NEED DETERMINATION

SCAG: June 30, 2021 – October 15, 2029 (8.3 years)

Income Category	Percent	Housing Unit Need
Very-Low*	26.2%	351,796
Low	15.4%	206,807
Moderate	16.7%	223,957
Above-Moderate	41.7%	559,267
Total	**100.0%**	**1,341,827**
* Extremely-Low	14.5%	Included in Very-Low Category

Notes:

Income Distribution:
Income categories are prescribed by California Health and Safety Code (Section 50093, et.seq.). Percents are derived based on ACS reported household income brackets and regional median income, then adjusted based on the percent of cost-burdened households in the region compared with the percent of cost burdened households nationally.

ATTACHMENT 2

HCD REGIONAL HOUSING NEED DETERMINATION
SCAG: June 30, 2021 – October 15, 2029 (8.3 years)

Methodology

SCAG: June 30, 2021-October 15, 2029 (8.3 Years) HCD Determined Population, Households, & Housing Need					
1.	**Population: DOF 6/30/2029 projection adjusted +3.5 months to 10/15/2029**				20,455,355
2.	*- Group Quarters Population: DOF 6/30/2029 projection adjusted +3.5 months to 10/15/2029*				-363,635
3.	**Household (HH) Population: October 15, 2029**				20,079,930
	Household Formation Groups	**HCD Adjusted DOF Projected HH Population**	***DOF HH Formation Rates***	**HCD Adjusted DOF Projected Households**	
		20,079,930		6,801,760	
	under 15 years	3,292,955	n/a	n/a	
	15 – 24 years	2,735,490	6.45%	176,500	
	25 – 34 years	2,526,620	32.54%	822,045	
	35 – 44 years	2,460,805	44.23%	1,088,305	
	45 – 54 years	2,502,190	47.16%	1,180,075	
	55 – 64 years	2,399,180	50.82%	1,219,180	
	65 – 74 years	2,238,605	52.54%	1,176,130	
	75 – 84 years	1,379,335	57.96%	799,455	
	85+	544,750	62.43%	340,070	
4.	**Projected Households (Occupied Unit Stock)**				6,801,760
5.	+ Vacancy Adjustment (2.63%)				178,896
6.	+ Overcrowding Adjustment (6.76%)				459,917
7.	+ Replacement Adjustment (.50%)				34,010
8.	*- Occupied Units (HHs) estimated (June 30, 2021)*				-6,250,261
9.	+ Cost Burden Adjustment (Lower Income: 10.63%, Moderate and Above Moderate Income: 9.28%)				117,505
6th Cycle Regional Housing Need Assessment (RHNA)					**1,341,827**

Explanation and Data Sources

1-4. Population, Group Quarters, Household Population, & Projected Households: Pursuant to Government Code Section 65584.01, projections were extrapolated from Department of Finance (DOF) projections. Population reflects total persons. Group Quarter Population reflects persons in a dormitory, group home, institution, military, etc. that do not require residential housing. Household Population reflects persons requiring residential housing. Projected Households reflect the propensity of persons, by age-groups, to form households at different rates based on Census trends.

5. Vacancy Adjustment: HCD applies a vacancy adjustment based on the difference between a standard 5% vacancy rate and the region's current "for rent and sale" vacancy percentage to provide healthy market vacancies to facilitate housing availability and resident mobility. The adjustment is the difference between standard 5% and region's current vacancy rate (2.37%) based on the 2013-2017 5-year American Community Survey (ACS) data. For SCAG that difference is 2.63%.

6. Overcrowding Adjustment: In region's where overcrowding is greater than the U.S overcrowding rate of 3.35%, HCD applies an adjustment based on the amount the region's overcrowding rate (10.11%) exceeds the U.S. overcrowding rate (3.35%) based on the 2013-2017 5-year ACS data. For SCAG that difference is 6.76%.

Continued on next page

7. Replacement Adjustment: HCD applies a replacement adjustment between .5% & 5% to total housing stock based on the current 10-year average of demolitions in the region's local

government annual reports to Department of Finance (DOF). For SCAG, the 10-year average is .14%, and SCAG's consultation package provided additional data on this input indicating it may be closer to .41%; in either data source the estimate is below the minimum replacement adjustment so the minimum adjustment factor of .5% is applied.

8. Occupied Units: Reflects DOF's estimate of occupied units at the start of the projection period (June 30, 2021).

9. Cost Burden Adjustment: HCD applies an adjustment to the projected need by comparing the difference in cost-burden by income group for the region to the cost-burden by income group for the nation. The very-low and low income RHNA is increased by the percent difference (69.88%-59.01%=10.88%) between the region and the national average cost burden rate for households earning 80% of area median income and below, then this difference is applied to very low- and low-income RHNA proportionate to the share of the population these groups currently represent. The moderate and above-moderate income RHNA is increased by the percent difference (18.65%-9.94%=8.70%) between the region and the national average cost burden rate for households earning above 80% Area Median Income, then this difference is applied to moderate and above moderate income RHNA proportionate to the share of the population these groups currently represent. Data is from 2013-2016 Comprehensive Housing Affordability Strategy (CHAS).

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Double Counting in the Latest Housing Needs Assessment

View PDF Report

Do the Math: The state has ordered more than 350 cities to prepare the way for more than 2 million homes by 2030.

But what if the math is wrong?

Senate Bill 828, co-sponsored by the Bay Area Council and Silicon Valley Leadership Group, and authored by state Sen. Scott Wiener in 2018, has inadvertently doubled the "Regional Housing Needs Assessment" in California.

Use of an incorrect vacancy rate and double counting, inspired by SB-828, caused the state's Department of Housing and Community Development (HCD) to exaggerate by more than 900,000 the units needed in SoCal, the Bay Area and the Sacramento area.

The state's approach to determining the housing need must be defensible and reproducible if cities are to be held accountable. Inaccuracies on this scale mask the fact that cities and counties are surpassing the state's market-rate housing targets, but falling far short in meeting affordable housing targets. The inaccuracies obscure the real problem and the associated solution to the housing crisis—the funding of affordable housing.

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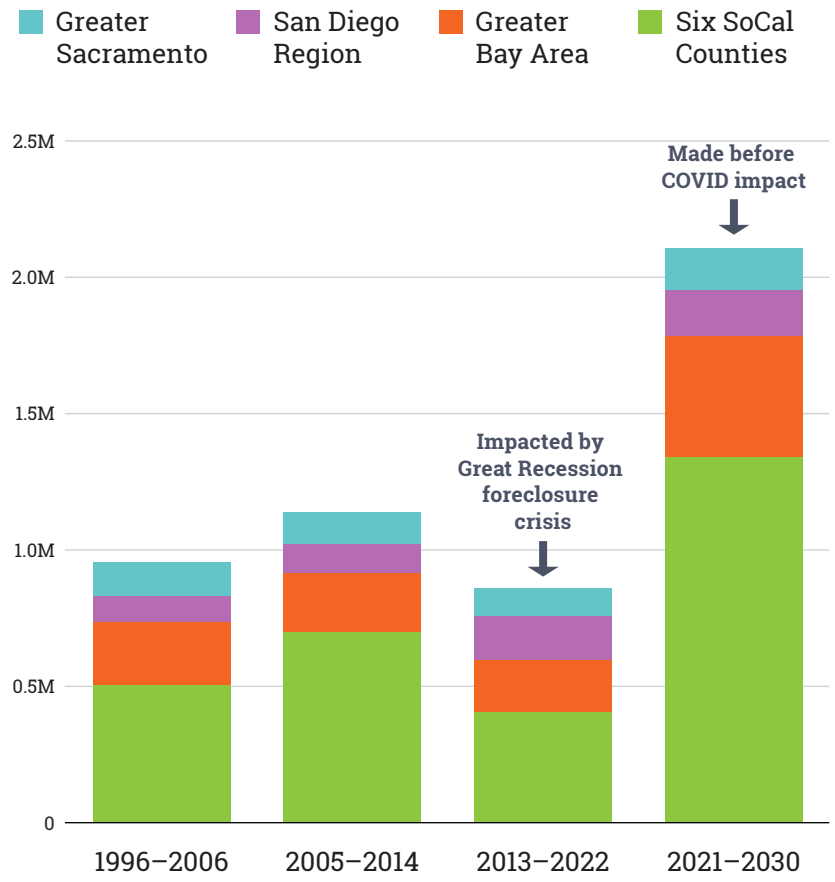
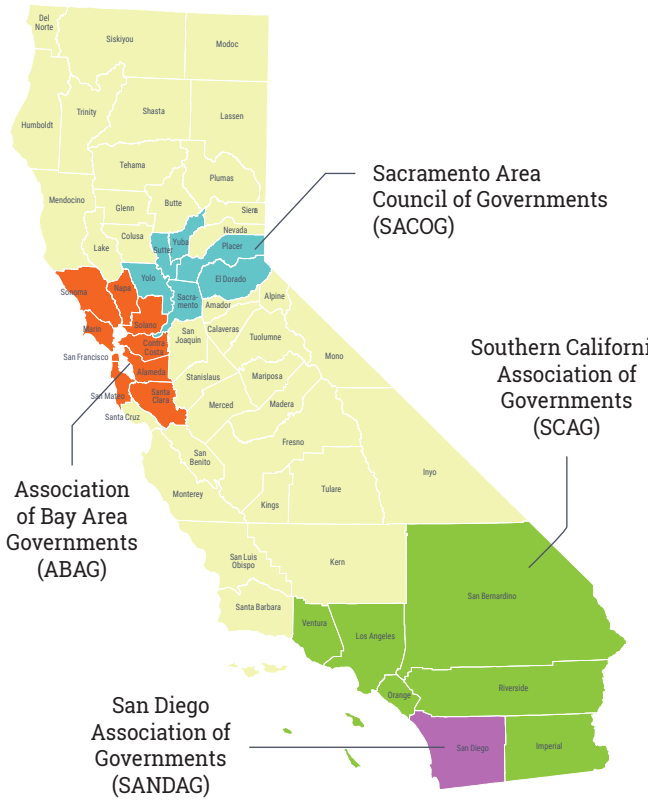
Double counting (not surprisingly) doubled the assessed housing need for the four major planning regions.

Every five to eight years the Department of Housing and Community Development (HCD) supervises and publishes the results of a process referred to as the Regional Housing Needs Assessment (RHNA). Four regional planning agencies cover the 21 most urban counties and account for 80% of California's housing. All four regions saw a significant jump in the state's assessment of their housing need for the years 2021 to 2030.

Housing Units Needed According to the State, (1996–2030)

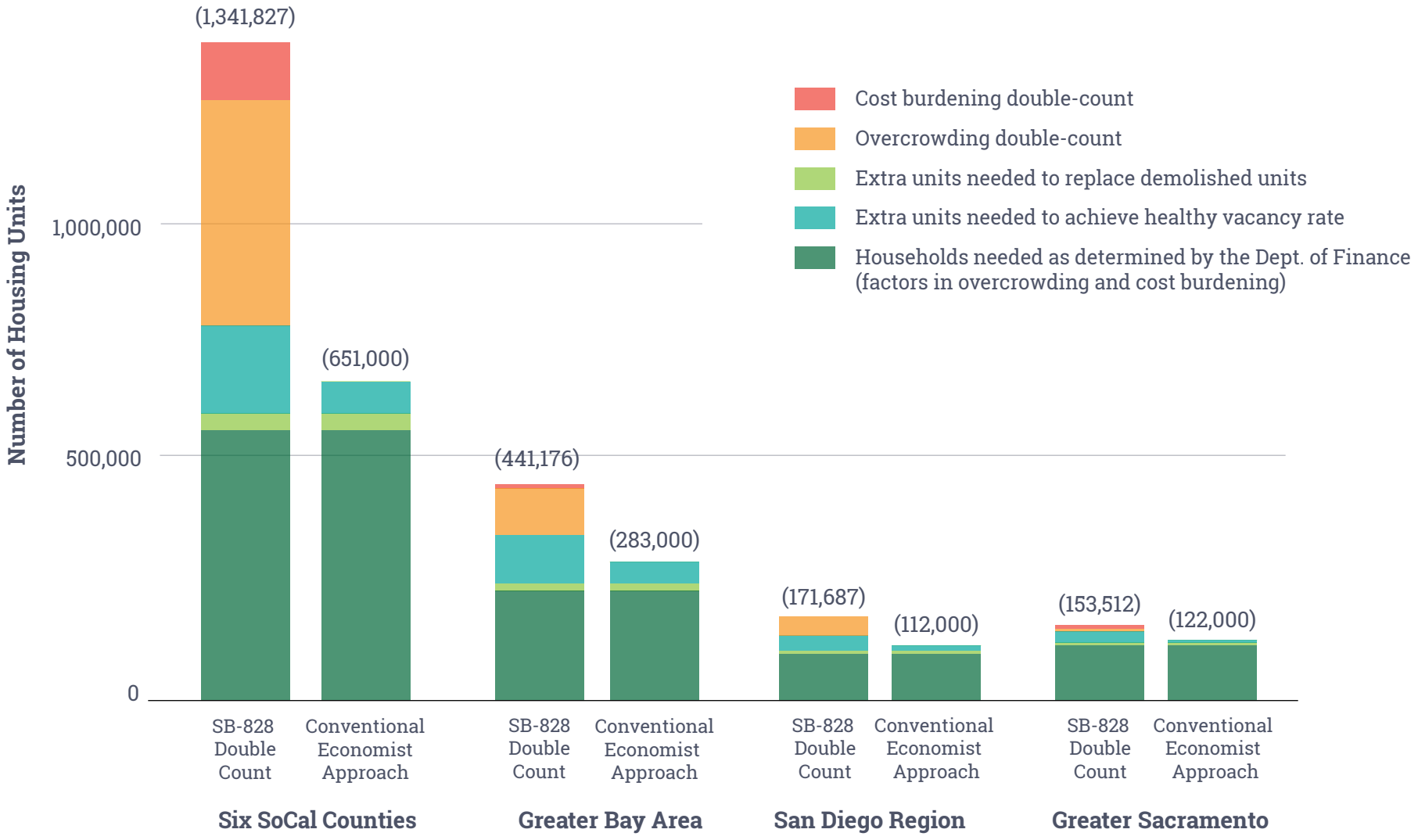


Four Regions Contain 80% of the State's Housing



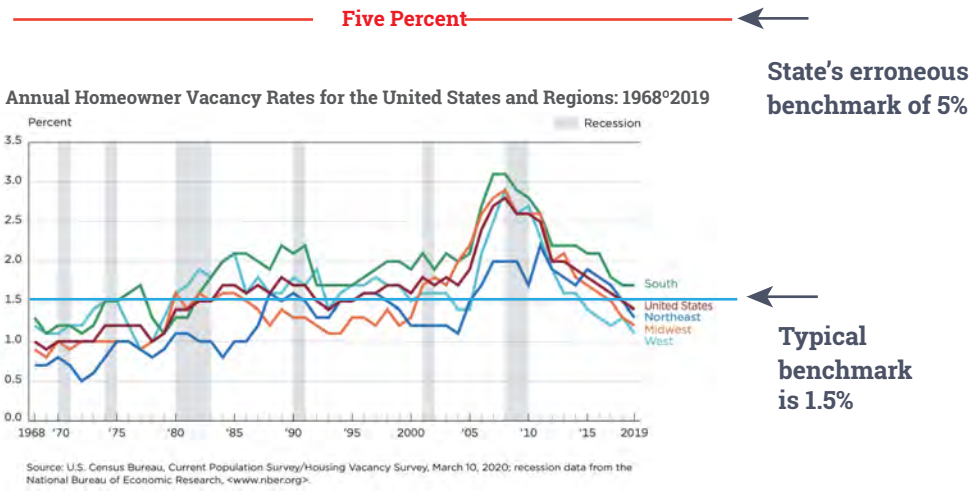
The double count, an unintended consequence of Senate Bill 828, has exaggerated the housing need by more than 900,000 units in the four regions below.

California plans for its housing needs in "cycles." The four regions are on cycles that last roughly eight years with staggered start dates. In the 2021–2030 housing cycle, errors introduced by language in SB-828 nearly equal the entire 1.15M units of new housing required during the 2013–2022 "cycle." As illustrated, Southern California and the Bay Area are the most impacted by the state's methodology errors.



Senate Bill 828 was drafted absent a detailed understanding of the Department of Finance's methodology for developing household forecasts, and absent an understanding of the difference between rental and home-owner vacancies. These misunderstandings have unwittingly ensured a series of double counts.

SB-828 MISTAKENLY ASSUMED:	THE REALITY IS:
1. SB-828 wrongly assumed 'existing housing need' was not evaluated as part of California's previous Regional Housing Need Assessments, or RHNA. There was an assumption that only future need had been taken into account in past assessments. (In fact, as detailed in The Reality section, the state's existing housing need was fully evaluated in previous RHNA assessment cycles).	**1.** Existing housing need has long been incorporated in California's planning cycles. It has been evaluated by comparing existing vacancy rates with widely accepted benchmarks for healthy market vacancies (rental and owner-occupied). The difference between actual and benchmark is the measure of housing need/surplus in a housing market. Confusion about the inclusion of "existing need" may have arisen because vacancy rates at the time of the last assessment of housing need ("the 5th cycle") were unusually high (higher than the healthy benchmarks) due to the foreclosure crisis of 2007–2010, and in fact, the vacancy rates suggested a surplus of housing. So, in the 5th cycle the vacancy adjustment had the effect of lowering the total housing need. Correctly seeing the foreclosure crisis as temporary, the state Department of Finance did not apply the full weight of the surplus, but instead assumed a percentage of the vacant housing would absorbed by the time the 5th cycle began. The adjustment appears in the 5th cycle determinations, not as 'Existing Housing Need' but rather as "Adjustment for Absorption of Existing Excess Vacant Units."
2. SB-828 wrongly assumed a 5% vacancy rate in owner-occupied housing is healthy (as explained in the column on the right, 5% vacancy in owner-occupied homes is never desirable, and contradicts Government Code 65584.01(b)(1)(E) which specifies that a 5% vacancy rate applies only to the rental housing market).	**2.** While 5% is a healthy benchmark for rental vacancies, it is unhealthy for owner-occupied housing (which typically represents half of existing housing). Homeowner vacancy in the U.S. has hovered around 1.5% since the '70s, briefly reaching 3% during the foreclosure crisis. However, 5% is well outside any healthy norm, and thus does not appear on the Census chart (to the right) showing Annual Homeowner Vacancy Rates for the United States and Regions: 1968–2019.
3. SB-828 wrongly assumed overcrowding and cost-burdening had not been considered in Department of Finance projections of housing need. The bill sought to redress what it mistakenly thought had been left out by requiring regional planning agencies to report overcrowding and cost-burdening data to the Dept. of Housing and Community Development (as explained in the right column).	**3.** Unknown to the authors of SB-828, the Department of Finance (DOF) has for years factored overcrowding and cost-burdening into their household projections. These projections are developed by multiplying estimated population by the headship rate (the proportion of the population who will be head of a household). The Department of Finance (DOF) in conjunction with the Department of Housing and Community Development (HCD) has documented its deliberate decision to use higher headship rates to reflect optimal conditions and intentionally "alleviate the burdens of high housing cost and overcrowding." Unfortunately, SB-828 has caused the state to double count these important numbers.



The forced double-counting errors are significant.*

1. Incorrect use of a 5% benchmark vacancy rate for owner-occupied housing.
The vacancy rate was incorrectly used for both existing and projected owner-occupied households.

+ 229,000 housing units

2. Current vacancies were assumed to exist in household projections.
This error is unrelated to SB-828, but is an accounting error introduced by HCD methodology.

– 22,000 housing units

3. Overcrowding and cost-burdening were double counted.**

In addition to the household projection methodology outlined by the Department of Finance (shown to account for overcrowding and cost-burdening), the matter is also mentioned in meeting notes available on the Association of Bay Area Government's (ABAG) website.***

+ 734,000 housing units

> **Quote from ABAG's Housing Methodology Committee Agenda Packet for the 4th RHNA Cycle, July 2006**
>
> "There was also a lot of discussion about the headship rates used by HCD/DOF. Several people commented that headship rates in the Bay Area are generally lower than the State's estimates because the region's high housing costs limit household formation. In response, Mr. Fassinger noted that HCD uses these higher headship rates because the RHNA process is intended to alleviate the burdens of high housing cost and overcrowding."

Despite this, overcrowding and cost-burdening were counted a second time as adjustment factors required by SB-828.

TOTAL: +941,000 housing units

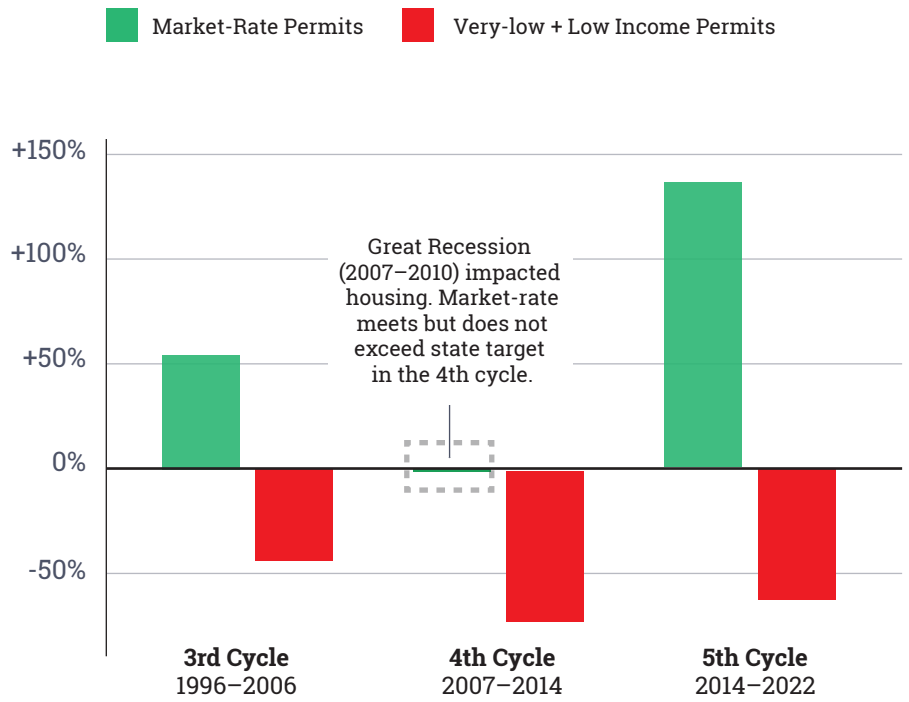
* All errors are rounded to the nearest thousand.
** Overcrowding measures the number of households with more than 1 person per room. Cost-burdening measures the number of households that spend more than 30% of the household income on housing. Cost-burdening is measured by five income levels — extremely low, very low, low, moderate, above moderate
*** P-4 tables are created by the Department of Finance—Household Projection table 2020–2030 and their methodology is fully explained in 'read me' notes that accompany the table.

The state's exaggerated targets unfortunately mask the real story: Decades of overachieving in market-rate housing has not reduced housing costs for lower income households.

The state has shown, with decades of data, that it cannot dictate to the market. The market is going to take care of itself. The state's responsibility is to take care of those left behind in the market's wake. Based on housing permit progress reports published by the Dept. of Housing and Community Development in July 2020, cities and counties in the four most populous regions continue to strongly outperform on the state's assigned market-rate housing targets, but fail to achieve even 20% of their low-income housing target. In the Bay Area where permit records have been kept since 1997, there is evidence that this housing permit imbalance has propagated through decades of housing cycles.

Permit Progress in the 5th Cycle (2013-2022)*
(all 4 regions)

Affordable Housing Languishes as Market-Rate Housing Overachieves
(Bay Area only)*

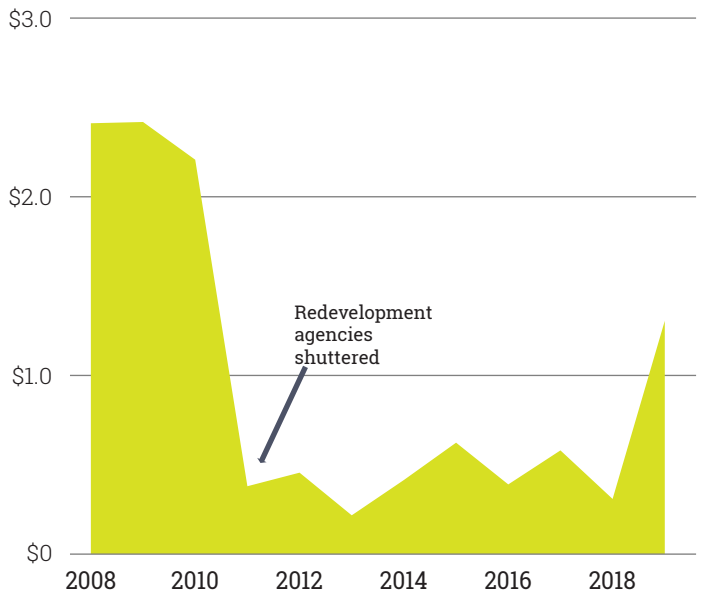


* Based on permit progress reports published by the Dept of Housing and Community Development and updated July 2020, reporting progress through April 2019.
** Only the Bay Area is shown because other regions have not kept detailed records of permit progress through the 3rd and 4th cycles.

It's clear. Market-rate housing doesn't need state incentives. Affordable housing needs state funding.

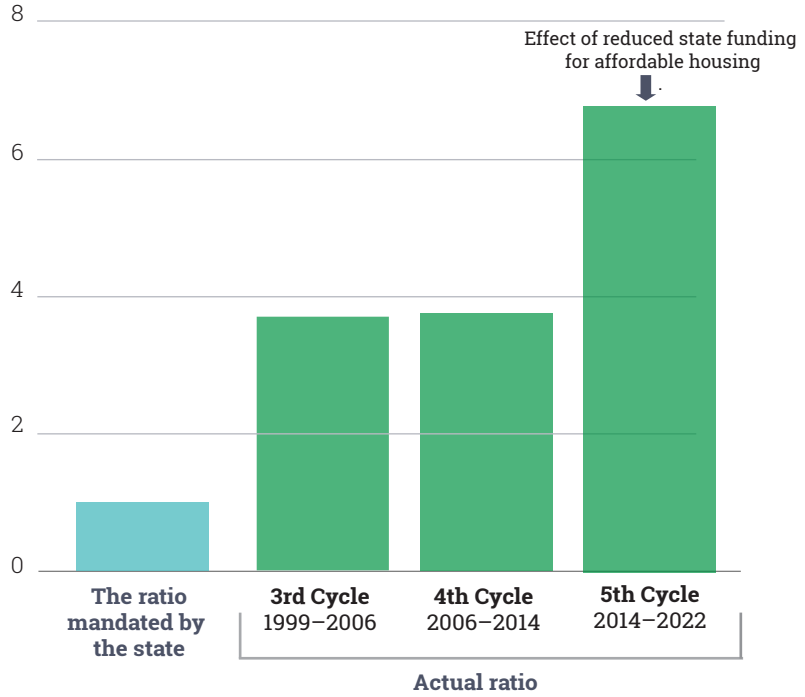
Cities are charged by the state to build one market-rate home for every one affordable home. But state laws, such as the density bonus law, incentivize developers to build market-rate units at a far higher rate than affordable units. As a result, California has been building four market-rate units for every one affordable unit for decades. And with the near-collapse of legislative funding for low-income housing in 2011, that ratio has grown to seven to eight market-rate units to each affordable unit. Yet we need one-to-one. This worsening situation can't be fixed by zoning or incentives which are the focus of many recent housing bills and only reinforce or worsen the ever-higher market-rate housing ratios. From the data it appears that the shortage of housing resulted not from a failure by cities to issue housing permits, but rather a failure by the state to fund and support affordable housing. Future legislative efforts should take note.

State Funds for Affordable Housing, 2008–2019* $ Billion



Market-Rate to Low-Income Housing Permits in the Bay Area has grown from a ratio of 4 : 1 to 7 : 1

(Bay Area only)**



* "The Defunding of Affordable Housing in California", Embarcadero Institute, update June 2020 www.embarcaderoinstitute.com/reports/

** Only Bay Area is shown because other regions have not kept detailed records of permit progress through the 3rd and 4th cycles. Data is from ABAG's permit progress reports for 3rd and 4th cycle and Dept. of Housing and Community Development's 5th cycle Annual Progress Report.

Finally, since penalties are incurred for failing to reach state targets for housing permits, the methodology for developing these numbers must be transparent, rigorous and defensible.

Non-performance in an income category triggers a streamlined approval process per Senate Bill 35 (2017). These exaggerated 6th cycle targets will make it impossible for cities and counties to attain even their market-rate targets, ensuring market-rate housing will qualify for incentives and bonuses meant for low income housing. **Yet again low-income housing will lose out.** The state needs to correct the errors in the latest housing assessement, and settle on a consistent, defensible approach going forward.

At Least Four Different Methodologies Have Been Used Simultaneously by the State to Discuss Housing Need: We Only Need One

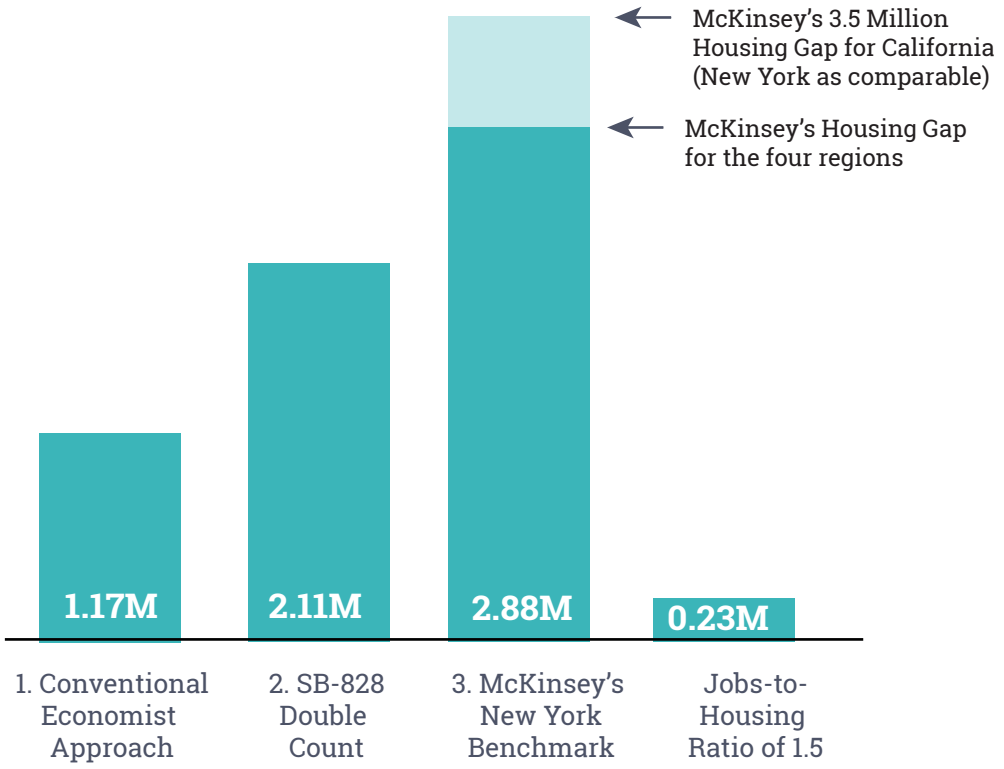
1. **The Conventional Economist Approach**: uses goldilocks (not too big, not too small, just right) benchmarks for vacancies - 1.5% for owner-occupied and 5% for rental housing.

2. **SB-828 Double Count**: incorrectly uses a benchmark of 5% vacancy for owner-occupied housing. It also double counts overcrowding and cost-burdening

3. **McKinsey's New York Benchmark:** the over-simplified approach generated an exaggerated housing gap of 3.5 Million for California. McKinsey multiplied California's population by New York's housing per capita to get 3.5M. New York is not a proper benchmark for California and NY's higher housing per capita is more reflective of NY's declining population rather than a healthy benchmark for housing

4. **Jobs-to-housing ratio of 1.5**: according to state planning agencies 1.5 is the optimal benchmark. Employment in the four regions is estimated to grow to 17 million by 2030 (job growth estimates prepared before COVID).**

Forecast 2030 Housing Need for the Four Regions



* California's Employment Development Department (EDD) estimates employment by county through 2026. Using annualized growth (2016 to 2026) as a basis for future growth 2030 employment is estimated for the four regions.

** The 17 million includes estimates of self employed, private household workers, farm and nonfarm employment. Occupations with employment below 100 in 2016 are excluded.

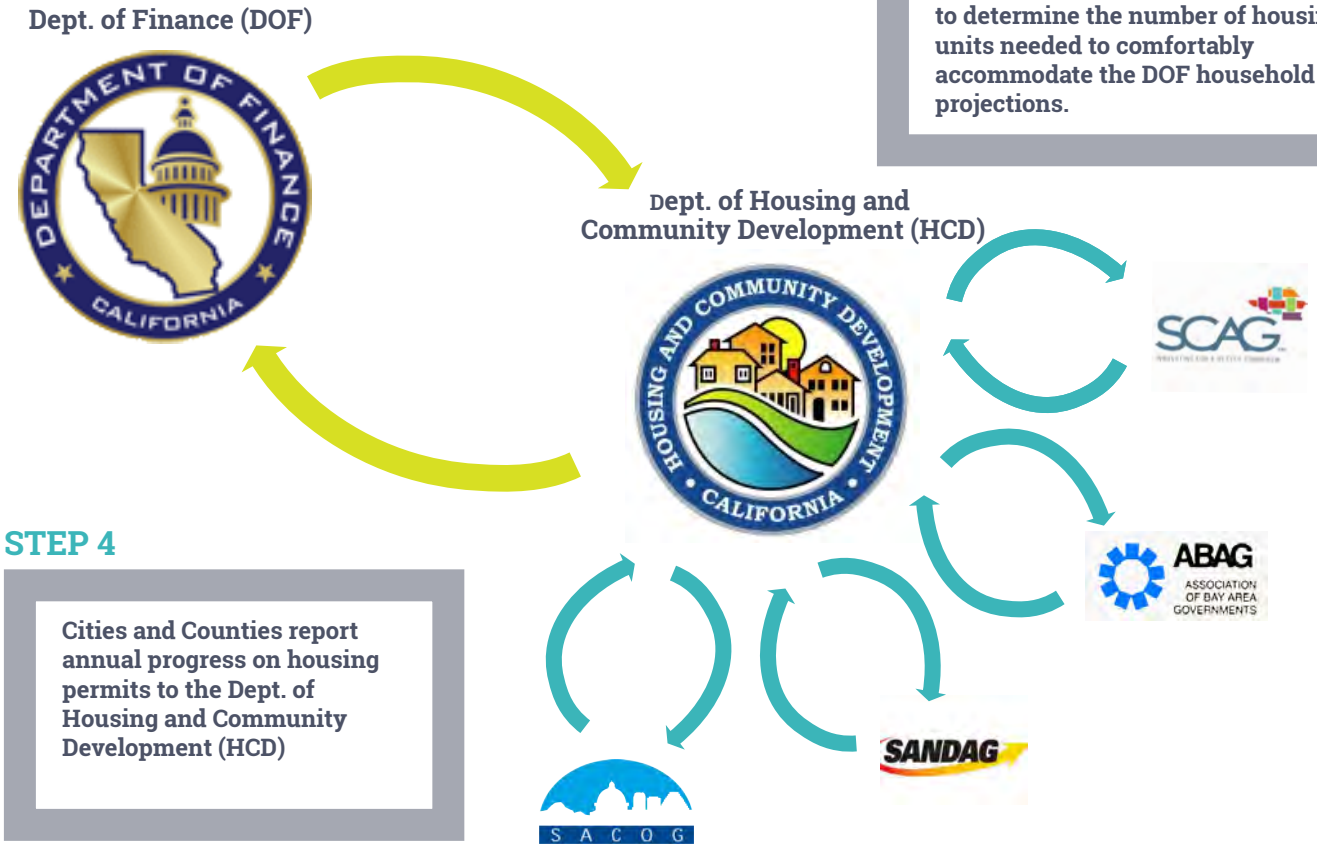
How it Works : A multi-agency collaborative effort has generated past state housing targets. However, in 2018, SB-828 annointed the Dept. of Housing and Community Development with final veto powers.

STEP 1

The Dept. of Finance (DOF) generates household forecasts by county based on population growth and headship rates. This is the step where overcrowding and cost-burdening are factored in .

STEP 2

The Dept. of Housing and Community Development (HCD) then takes the DOF household projections and adds in a healthy vacancy level (1.5% for owner-occupied, 5% for rental housing) to determine the number of housing units needed to comfortably accommodate the DOF household projections.



STEP 3

The regional agencies allocate housing targets to cities and counties in their jurisdiction. These allocations collectively meet their RHNA assessments, and are based on algorithms that may include employment, transit accessibility and local housing patterns

STEP 4

Cities and Counties report annual progress on housing permits to the Dept. of Housing and Community Development (HCD)

SB-828 introduced errors in Step 2 (when the Dept. of Housing and Community Development made adjustments to the Dept. of Finance's household projections).

Southern California and the Bay Area were most impacted by the double counting. San Diego was not assessed for cost-burdening although it is more cost-burdened than the Bay Area. It was perhaps overlooked because its assessment cycle began in July, 2018, a few months before SB-828 passed into law.

The Department of Housing and Community and Development

1. Used a benchmark of 5% vacancy rate for BOTH owner-occupied and rental housing.

Six SoCal Counties	=	+126,000
Greater Bay Area	=	+59,000
San Diego Area	=	+23,000
Greater Sacramento	=	+21,000

+228,000 housing units

2. Assumed vacancies in household projections *

Six SoCal Counties	=	-13,000
Greater Bay Area	=	-4,000
San Diego Area	=	-2,000
Greater Sacramento	=	-3,000

– 22,000 housing units

3. Double counted overcrowding and cost-burdening

Six SoCal Counties	=	+578,000
Greater Bay Area	=	+104,000
San Diego Area	=	+39,000
Greater Sacramento	=	+13,000

+734,000 housing units

* P-4 tables are created by the Department of Finance—Household Projection table 2020–2030 and their methodology is fully explained in 'read me' notes that accompany the table

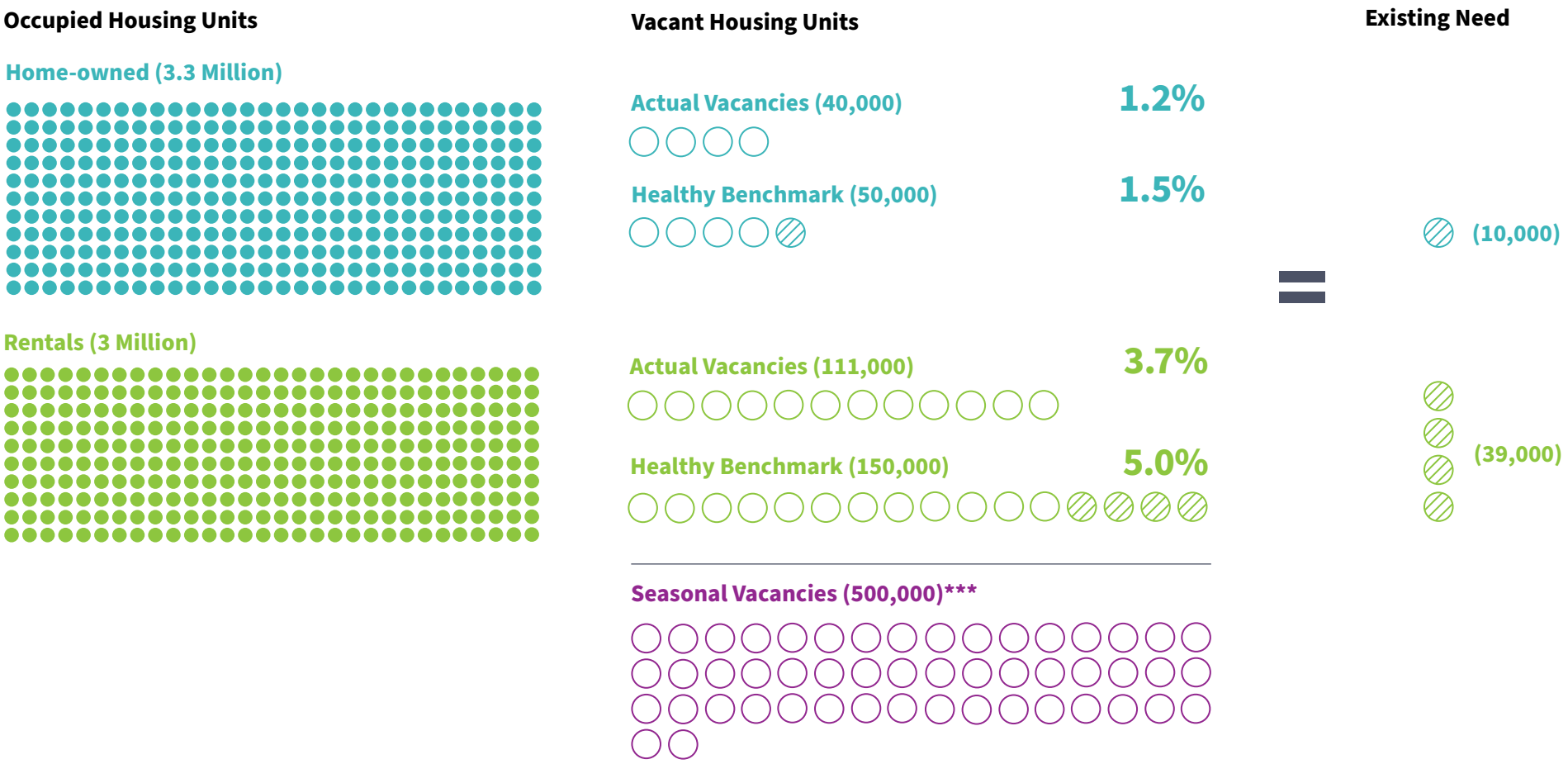
** Overcrowding measures the number of households with more than 1 person per room. Cost-burdening measures the number of households that spend more than 30% of the household income on housing. Cost-burdening is measured by five income levels—extremely low, very low, low, moderate, above moderate.

Detailed explanation of the errors using SoCal Counties as an example: First—the correct approach.

The Department of Housing and Community Development (HCD) have traditionally arrived at a number for pent-up demand or housing shortfall by comparing vacancy rates in owner-occupied and rental housing to healthy benchmarks (1.5% for owner-occupied* and 5% for rental housing). The largest of the four regions, six SoCal Counties (covering Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties) is considered in the example below**.

EXISTING HOUSING: Six SoCal Counties

1 circle = 10,000 households



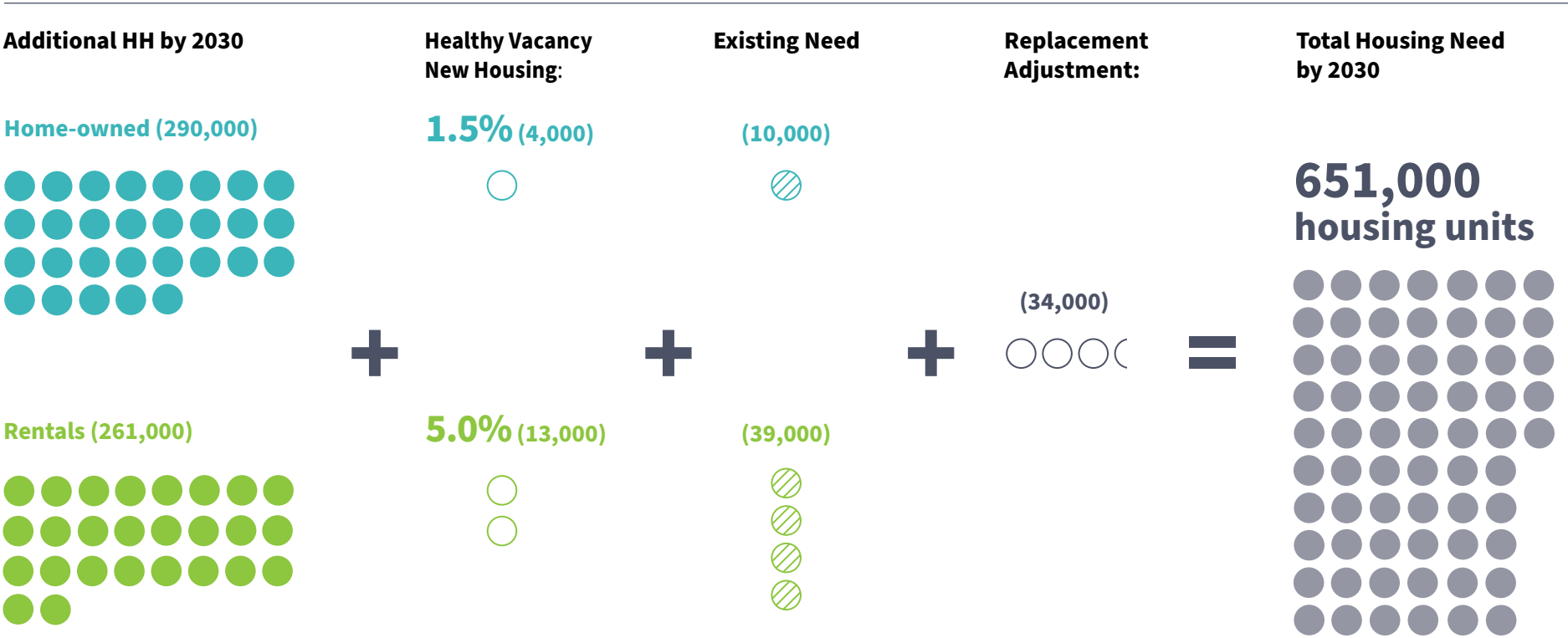
* Owner-occupied has a lower healthy vacancy rate because it is usually only vacant while a house is for sale
** All numbers are rounded to the nearest thousand.
*** Seasonal Vacancies represent second homes, coprorate housing, and short-term rentals such as AIrBnBs

The housing need also takes into account for future growth.

The Dept. of Finance (DOF) supplies the Dept. of Housing and Community Development (HCD) with an estimate of additional households (HH) needed by the end of the cycle. The DOF forecast the 2030 population and using an optimal household formation rate determine the number of households needed to comfortably house that population*. The DOF also supply the HCD with the number of existing households at the start of the cycle. The HCD adds to the base number of additional households needed, factoring in vacancies for a healthy market, and adding a replacement adjustment (also supplied by the DOF)**.

PROJECTED HOUSING NEED: Six SoCal Counties

1 circle = 10,000 households



* Households represent occupied housing units. The number of housing units is always higher as at any given time than the number of households because some housing will be vacant or unutilized. The DOF is responsible for the base projection because they manage population projections for the state, and determine those by analyzing births, deaths and net migration.

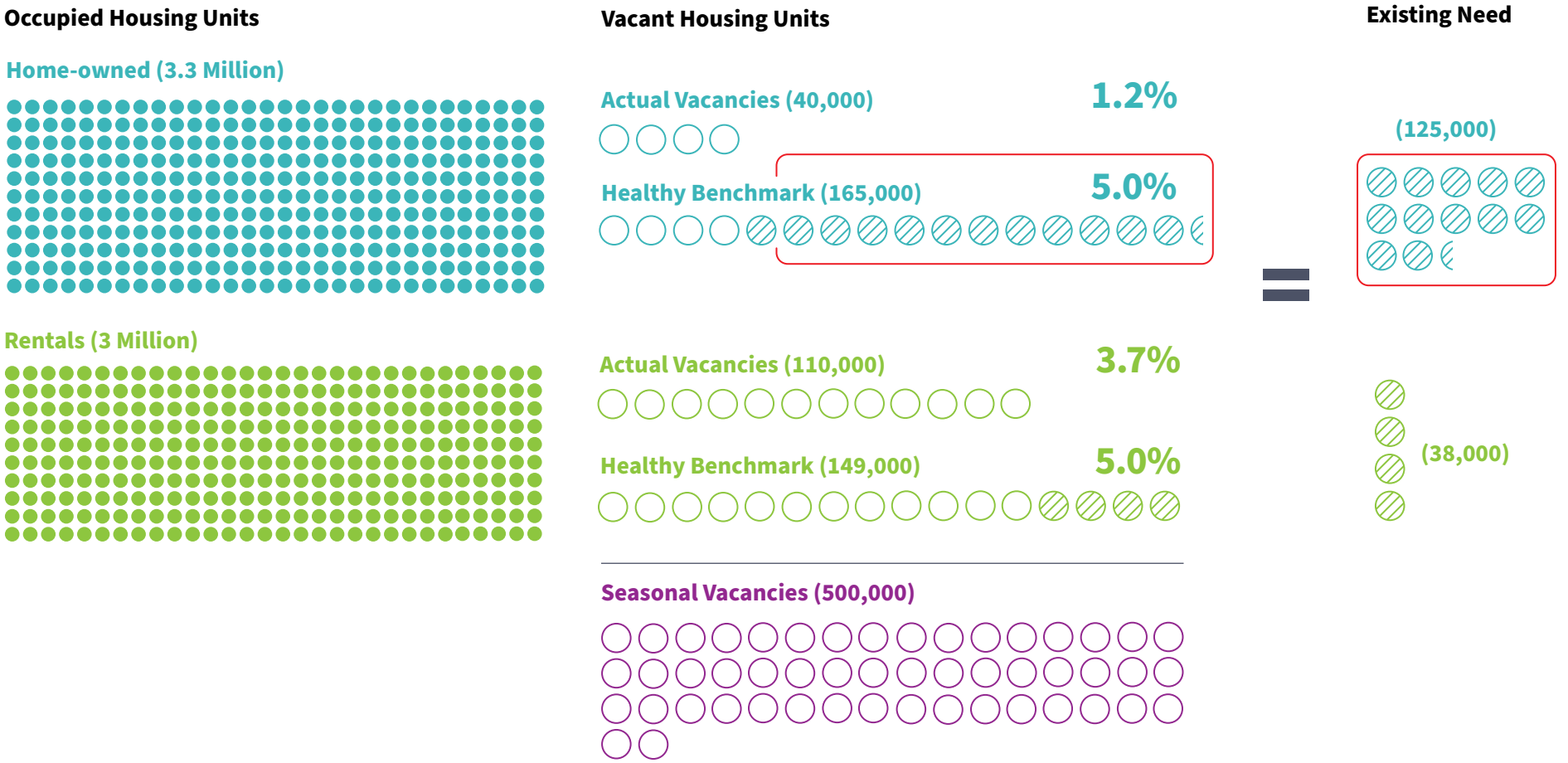
** Replacement represents houses that may be demolished or replaced during the cycle*.

However, the Dept. of Housing and Community Development has adopted an unusual methodology in evaluating existing need in the 6th housing cycle.

Instead of the typical 1.5% benchmark for owner-occupied housing, they used a 5% vacancy rate usually reserved for rental housing. A 5% vacancy in owner-occupied housing is indicative of a distressed housing market. At 5%, SoCal's existing housing need is increased by 115,000 housing units. Existing need for rental housing is unchanged.

EXISTING HOUSING: Six SoCal Counties

1 circle = 10,000 households

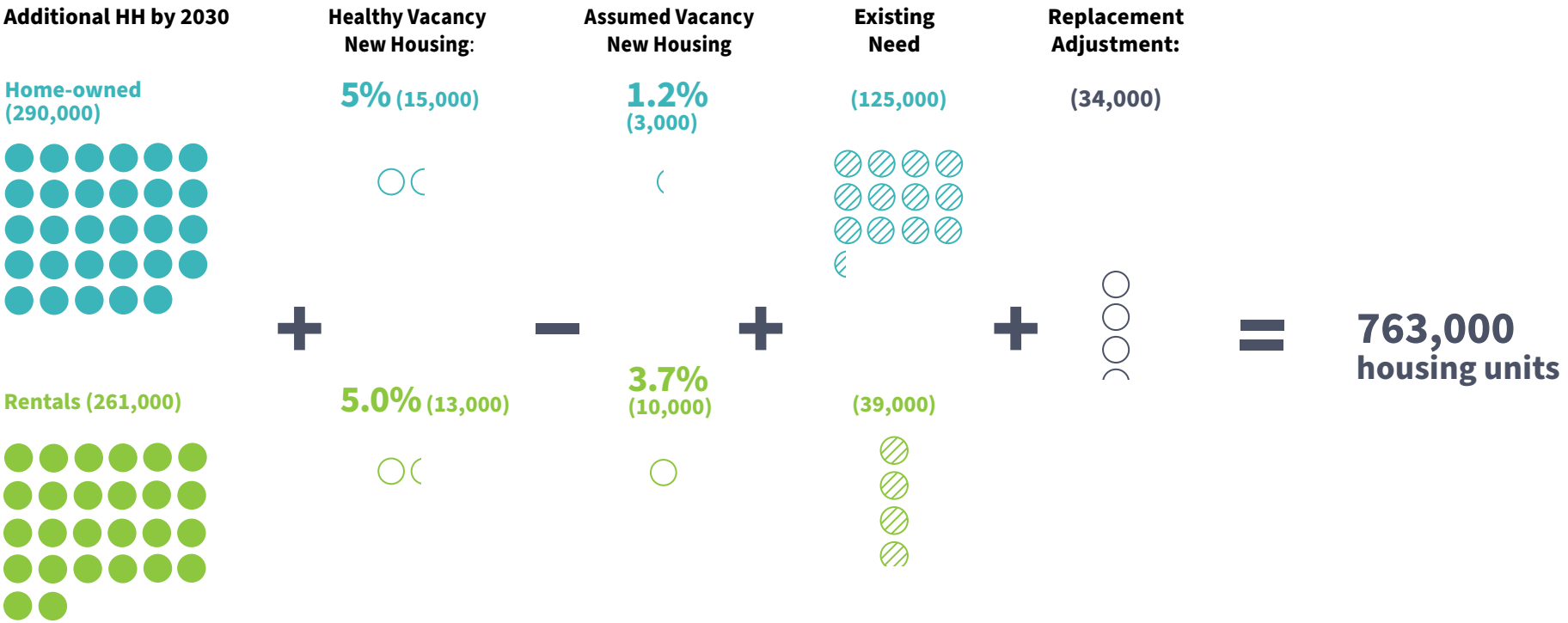


The Dept. of Housing and Community Development have also taken an unual approach in evaluating projected housing need.

Again, instead of using the separate benchmark of 1.5% for owner-occupied housing, 5% was used for all housing. It was also assumed that new projected households had existing vacancies. The full benchmark was not applied to new households. Instead, the difference between the benchmark and the current vacancy rate was applied. The replacement adjustment was applied as it has been in the past.

PROJECTED HOUSING NEED: Six SoCal Counties

1 circle = 10,000 households

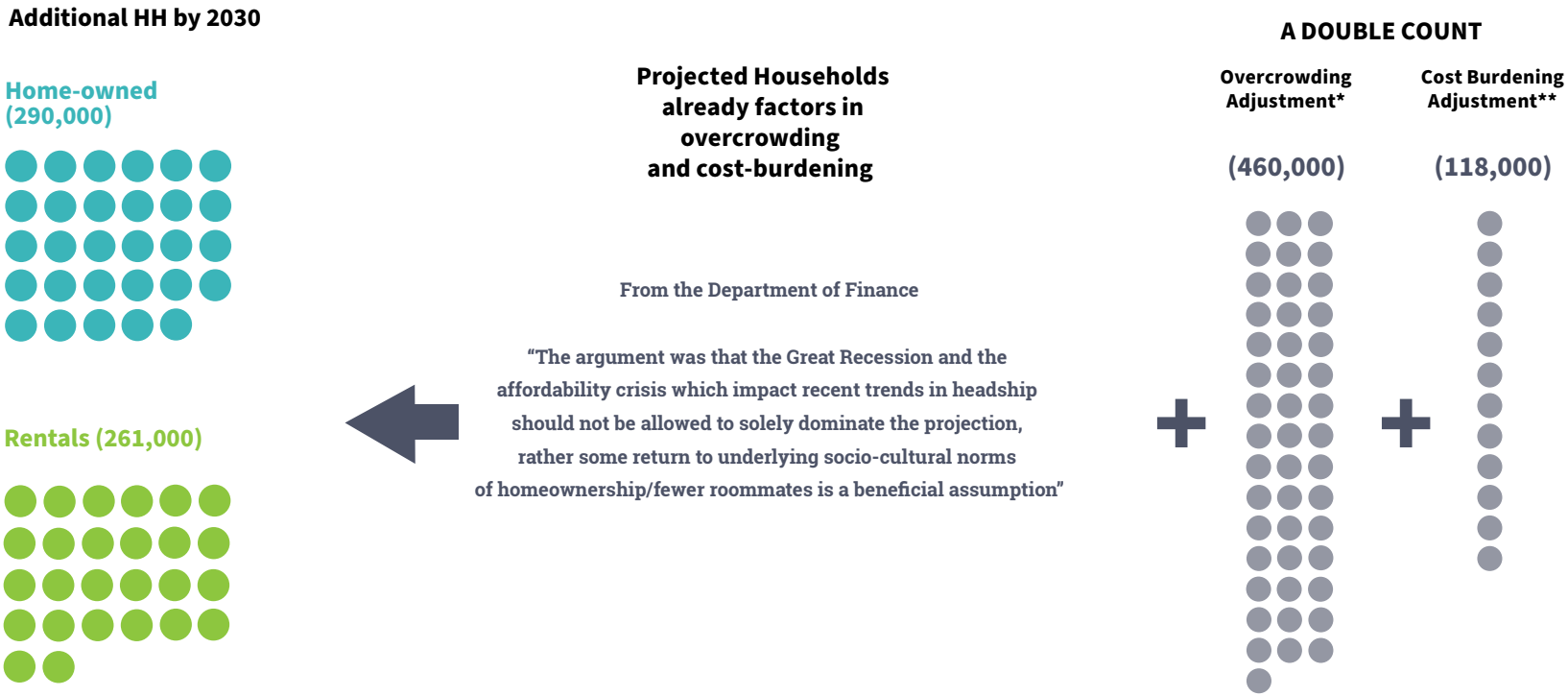


Lastly, the Dept. of Housing and Community Development double counted by adding two new factors that had already been factored into household forecasts made by the Dept. of Finance (DOF).

Two new factors were introduced into the 6th assessment — overcrowding and cost burdening. These factors had already been rolled into the DOF's household projections. The DOF explicitly recognized that regional household formation rates might be depressed (a symptom of overcrowding and cost-burdening) because of the affordable housing crisis. The household formation rate used by the DOF is higher than the actual rate experienced. As such it generates a higher housing target meant to relieve overcrowding and cost-burdening.

PROJECTED HOUSING NEED: Six SoCal Counties

1 circle = 10,000 households



* In addition to double counting, HCD incorrectly calculated the overcrowding factor. They assumed that for every house that was overcrowded another house would be required to relieve overcrowding. The more accurate analysis would be to assess the number of extra people to be housed and divide by the average household size.

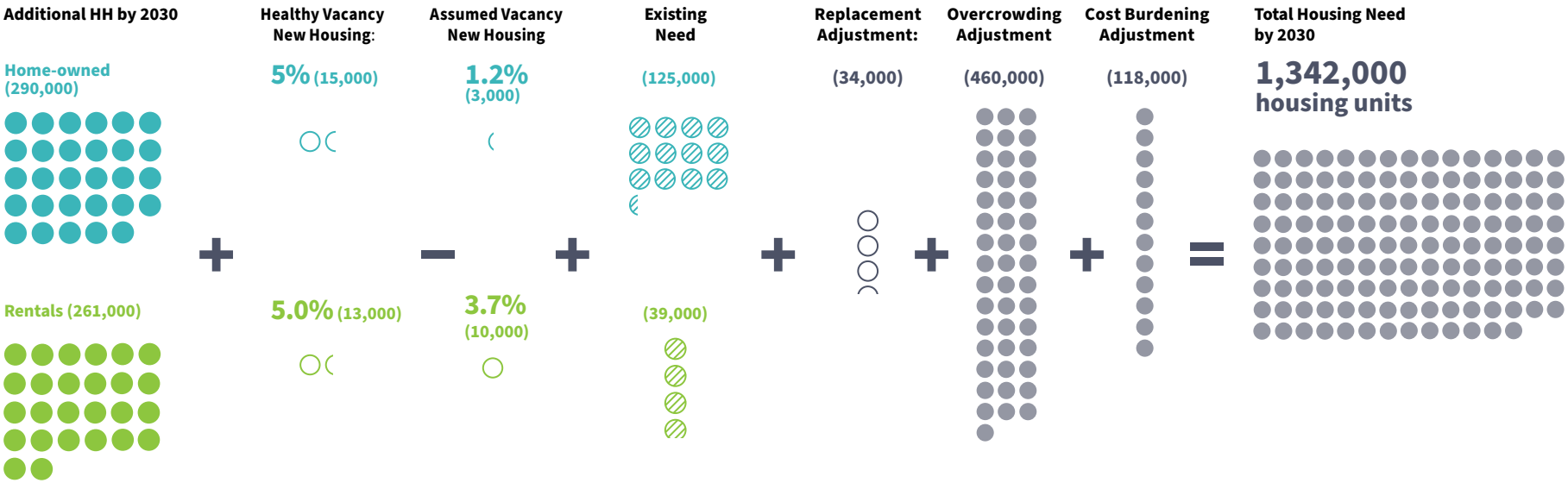
** HCD only applied cost-burdening adjustments to future households not existing households. It is unclear why cost-burdening would only be considered an issue for future households, as the data is for current households.

The vacancy errors and double counting resulted in a doubling of the housing needs assessment for the six counties of SoCal.

TYPICAL METHODOLOGY

1 circle = 10,000 households

HCD 6TH CYCLE METHODOLOGY



Complete data tables: *RHNA Data and Models 6th cycle,* www.embarcaderoinstitute.com

References used in the analysis :

Dept. of Housing and Community Development (HCD) https://www.hcd.ca.gov

Regional Housing Needs Allocation and Housing Elements

Regional Housing Needs

Allocations for 6th Cycle Housing Elements:

Association of Bay Area Governments Regional Housing Need Determination Plan for the Sixth Housing Element Update

Sacramento Area Council of Governments Regional Housing Need Determination for the Sixth Housing Element Update

Southern California Association of Governments Regional Housing Need Determination for the Sixth Housing Element Update

San Diego Association of Governments Regional Housing Need Determination and Plan for the Sixth Housing Element Update

Allocations for 5th Cycle Housing Elements:

Association of Bay Area Governments (February 24, 2012)

Sacramento Area Council of Governments (September 26, 2011)

San Diego Association of Governments (November 23, 2010)

Southern California Association of Governments (August 17, 2011)

Annual Progress Reports

Annual Progress Report APR: 5th Cycle Annual Progress Report Permit Summary (updated 730/2020)

Allocations for Earlier Cycles and Housing Element

RHNA 2007-2014 - Housing Methodology Committee Agenda Packet 07-27-06

Regional Housing Needs Plan 2006 to 2013 SACOG February 2008

3rd and 4th Cycle RHNA allocations (data sent in personal communication witthe Department of Housing and Comunity Development)

Department of Finance Methodology for Household Forecasts

"Read Me" P4 Tables : Household Projections 2020 to 2030

Association of Bay Area Governemnets Digital Library: RHNA Documents, Regional Housing Neeed Allocation Documents

RHNA 2007-2014 - Housing Methodology Committee Agenda Packet 07-27-06, Regional Housing Need Allocation p 2

Other Housing Assessment Methodologies

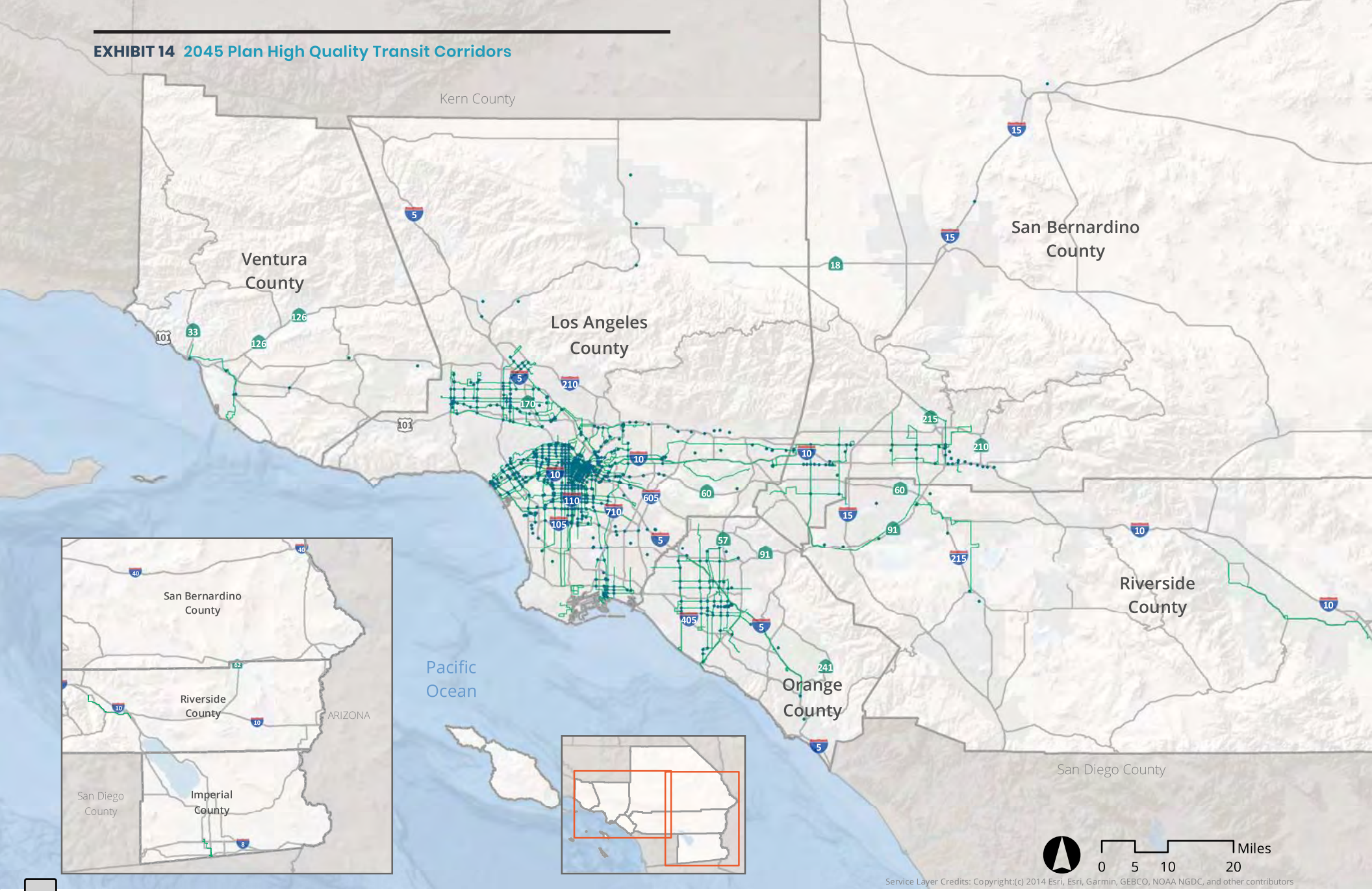
"Mckinsey & Company: A TOOL KIT TO CLOSE CALIFORNIA'S HOUSING GAP: 3.5 MILLION HOMES BY 2025", October 2016

Jobs to Housing

Employment Development Department, State of California, Employment Projections : Long Term Projections

https://www.labormarketinfo.edd.ca.gov/data/employment-projections.html

EXHIBIT 14 2045 Plan High Quality Transit Corridors



- Major Transit Stops (2045)
- High Quality Transit Corridors (HQTCs) (2045)

Note: SCAG identifies Major Transit Stops and HQTCs using the methodology described in the Transit Technical Report. In summary, these maps and data are intended for planning purposes only. SCAG shall incur no responsibility or liability as to the completeness, currentness, or accuracy of this information, and assumes no responsibility arising from use of this information by individuals, businesses, or other public entities. The information is provided with no warranty of any kind, expressed or implied. Local jurisdictions should consult with the appropriate transit provider(s) to obtain the latest information on transit routes, stop locations, and service intervals before making determinations regarding CEQA exemption or streamlining.

Sou

PLAN PROJECTS AND STRATEGIES

Connect SoCal includes significant investment in public transit across all transit modes. It includes a $67 billion investment in transit capital and a $174 billion investment in transit operations and maintenance. Transit represents 55 percent of total operations and maintenance in Connect SoCal and 23 percent of capital investments. **TABLE 10** displays selected major transit capital projects included in Connect SoCal. These investments include new rail transit facilities, vehicle replacements, bus system improvements and capitalized maintenance projects.

Through its metropolitan planning process, SCAG will continue to support local efforts to redesign transit systems to better support travelers' needs, such as Metro's NextGen Study and OCTA's OC Bus 360 and Transit Master Plan. SCAG will also continue to share best practices and promote regional coordination and consistency in how transit agencies can leverage technology and innovation to promote seamless multimodal travel, improve first/last mile connections and provide shared on–demand services where and when fixed route transit isn't cost effective.

EXHIBITS 8 through **13** depict each county's local transit network as the plan envisions it in 2045.

PLANNED HQTCS

Planned HQTCs are future improvements that are expected to be implemented by transit agencies by the RTP/SCS horizon year of 2045. These are assumed by definition to meet the statutory requirements of HQTC. SCAG's methodology is included as an Appendix to this technical report.

SCAG updates its inventory of planned HQTCs with the adoption of a new RTP/SCS, once every four years. **EXHIBIT 14** identifies the planned future HQTCs included in Connect SoCal.

FIXED GUIDEWAY GAP CLOSURES

The previous 2016 RTP/SCS included as regional initiatives five fixed guideway gap closures, funded by the Plan's innovative financing strategies. These projects are included above and beyond locally funded CTC investments, providing important links in the future transit network. They leverage existing investments to expand the connectivity of the regional rail system and support seamless transferability throughout the network. Three of the projects, the Gold Line Foothill Extension to Montclair, Vermont Corridor, and Metro Green Line Norwalk extension to the Norwalk/Santa Fe Springs Metrolink Station, are now included Metro's Measure M expenditure plan. All of these fixed guideway gap closures, including the Slauson Corridor and Metro Red Line extension to Burbank Airport, are carried forward into Connect SoCal.

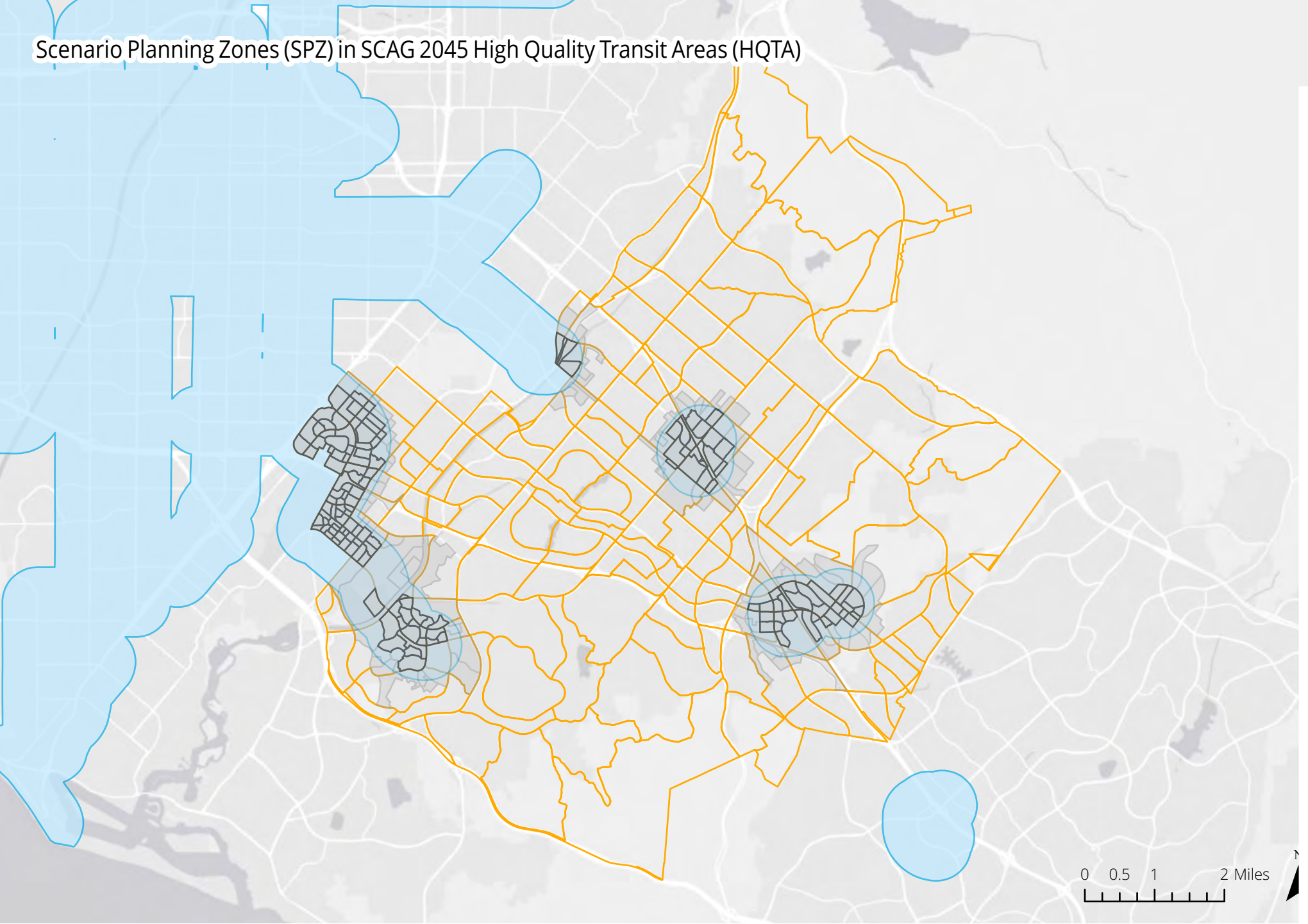
DEDICATED MULTIMODAL LANES

As previously noted, the City of Los Angeles's Mobility Plan 2035 calls for a Transit–Enhanced Network that includes peak–hour and dedicated all day bus–only lanes. While Connect SoCal recognizes that the network identified in the City of Los Angeles Mobility Plan is subject to further local planning and project development, including environmental impact analysis, implementation of such a network would support regional and statewide environmental goals, including a reduction in greenhouse gas emissions. SCAG therefore estimates "off–model" greenhouse gas emissions reductions in 2035 from such a network as part of the Connect SoCal Sustainable Communities Strategy.

PLAN PERFORMANCE

Our region's investment in transit and passenger rail, coupled with its commitment to attaining sustainable communities, result in significant growth in transit trips and passenger miles by 2045. The output from the travel demand model indicates a 144 percent increase in, or more than doubling of, transit and rail boardings. This includes a 104 percent increase for bus, and a fourfold increase for rail (light, heavy, and commuter). Passenger miles are also up significantly for bus service including BRT and local, and especially for rail, reflecting a higher percentage of transit trips on rail due to the new rail facilities to be built between now and 2045. On a per capita level, transit ridership will double, outpacing the region's growth in population (19.5 percent) and

Scenario Planning Zones (SPZ) in SCAG 2045 High Quality Transit Areas (HQTA)



SPZ within HQTA (150) SPZ partially within HQTA (127) HQTA (2045) City Tier2 TAZ Boundary

Source: SCAG, 2020

Date Saved: 1/

APPENDIX 1 OF 1

High Quality Transit Corridors and Major Transit Stops

BACKGROUND

The Sustainable Communities and Climate Protection Act of 2008, Senate Bill (SB) 375, requires that Metropolitan Planning Organizations (MPOs) develop a Sustainable Communities Strategy (SCS) to reduce per capita greenhouse gas emissions through integrated transportation, land use, housing and environmental planning. SB 375 creates incentives for residential or mixed–use residential projects that may be exempt from, or subject to a limited review of, the California Environmental Quality Act (CEQA), provided they are consistent with the MPO's adopted SCS. These "transit priority projects" must, among other criteria, be located within one–half mile of a major transit stop or high–quality transit corridor (HQTC).

SB 743, signed into law in 2013, provides further opportunities for CEQA exemption and streamlining to facilitate transit oriented development (TOD). Specifically, certain types of projects within "transit priority areas" (TPAs) can benefit from a CEQA exemption if they are consistent with an adopted specific plan and the SCS. A TPA is an area within one–half mile of a major transit stop that is existing or planned, if the planned stop is scheduled to be completed within the planning horizon included in a Federal Transportation Improvement Program (FTIP).

STATUTORY DEFINITIONS

Definitions of "major transit stop" and "high quality transit corridor" are set forth under California law as follows:

CA Pub. Res. Code § 21155(b)

For purposes of this chapter, a transit priority project shall (1) contain at least 50 percent residential use, based on total building square footage and, if the project contains between 26 percent and 50 percent nonresidential uses, a floor area ratio of not less than 0.75; (2) provide a minimum net density of at least 20 dwelling units per acre; and (3) be within one–half mile of a major transit stop or high–quality transit corridor included in a regional transportation plan. A major transit stop is as defined in Section 21064.3, except that, for purposes of this section, it also includes major transit stops that are included in the applicable regional transportation plan. For purposes of this section, a high–quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. A project shall be considered to be within one–half mile of a major transit stop or high–quality transit corridor if all parcels within the project have no more than 25 percent of their area farther than one–half mile from the stop or corridor and if not more than 10 percent of the residential units or 100 units, whichever is less, in the project are farther than one–half mile from the stop or corridor.

CA Pub. Res. Code § 21064.3

"Major transit stop" means a site containing any of the following:
(a) An existing rail or bus rapid transit station.

(b) A ferry terminal served by either a bus or rail transit service.

(c) The intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

CA Pub. Res. Code § 21060.2

(a) "Bus rapid transit" means a public mass transit service provided by a public agency or by a public-private partnership that includes all of the following features:

(1) Full-time dedicated bus lanes or operation in a separate right-of-way dedicated for public transportation with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

(2) Transit signal priority.

(3) All-door boarding.

(4) Fare collection system that promotes efficiency.

(5) Defined stations.

(b) "Bus rapid transit station" means a clearly defined bus station served by a bus rapid transit.

METHODOLOGY

SCAG's technical methodology for identifying HQTCs and major transit stops is based on input from the Regional Transit Technical Advisory Committee (RTTAC), as well as consultation with local agencies, other large MPOs in California, and the Governor's Office of Planning and Research. The methodology and assumptions are discussed below. This methodology may be periodically updated to incorporate revisions or clarifications. Questions should be directed to Steve Fox, at fox@scag.ca.gov, or Philip Law, at law@scag.ca.gov.

SCAG maps and data depicting HQTCs and major transit stops are intended for planning purposes only. SCAG shall incur no responsibility or liability as to the completeness, currentness, or accuracy of this information. SCAG assumes no responsibility arising from use of this information by individuals, businesses, or other public entities. The information is provided with no warranty of any kind, expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose.

For the methodology SCAG uses to identify "high quality transit areas," see the Sustainable Communities Strategies Technical Report.

EXISTING HQTCS AND MAJOR TRANSIT STOPS

SCAG updates its inventory of existing major transit stops and HQTCs with the adoption of a new Regional Transportation Plan (RTP) and SCS, once every four years. Data for the existing ("base year") condition for the RTP/SCS are typically obtained several years before plan adoption. The base year transit network for *Connect SoCal*, the 2020 RTP/SCS, is based primarily on data for 2016. This inventory of existing major transit stops and HQTCs is therefore only a snapshot in time as of 2016, and does not reflect the existing levels of transit service for any other timeframe.

See **EXHIBIT 7**, *2016 Base Year "existing" major transit stops and high quality transit corridors.*

Transit agencies make adjustments to bus service on a regular basis. Therefore, given the limitations of the RTP/SCS base year transit network, local jurisdictions should consult with the appropriate transit provider(s) to obtain the latest information on existing transit routes, stop locations, and service intervals before making determinations regarding CEQA exemption or streamlining. It is the responsibility of the lead agency under CEQA to determine if a project meets statutory requirements.

STOP–BASED ANALYSIS

SCAG calculates peak commute bus service intervals at the stop level using schedule data published by transit agencies in the General Transit Feed Specification (GTFS) format (see for example, www.transitfeeds.com). An HQTC therefore comprises or is determined by the qualifying stops on an individual bus route.

PEAK PERIOD BUS SERVICE INTERVAL (FREQUENCY)

To determine whether the peak commute bus service interval (also called frequency) meets the statutory threshold of 15 minutes or less, SCAG uses the peak period defined in its regional travel demand model. The morning peak is defined as 6am to 9am and the afternoon peak is defined as 3pm to 7pm. A transit operator may have a different, board–adopted or de facto peak period; in such cases SCAG will accept requests to use operator–specific peak–hour periods on a case–by–case basis.

SCAG uses the total population of bus trips during the combined seven–hour morning and afternoon peak periods to determine the peak frequency at a bus stop. This is done for each bus route, by direction. The peak frequency is calculated by dividing 420 minutes (the seven–hour peak converted to minutes) by the total peak bus trips. This average frequency should be 15 minutes or less in order to qualify. The threshold is strict, at 15.0 minutes.

DIRECTIONAL FREQUENCY

A bus route must only meet the 15–minute service interval threshold in one direction to qualify as an HQTC. This is based on RTTAC feedback that transit agencies often operate very peak–directional service or operate predominantly one–way service on a corridor.

CORRIDORS WITH MULTIPLE OVERLAPPING BUS ROUTES

Separate but overlapping bus routes that do not individually meet the 15–minute threshold may not be combined in order to qualify as an HQTC. However, based on RTTAC feedback, there are certain corridors where overlapping "line families" or local/bus rapid transit (BRT) lines are intended to function as one bus route. On these corridors, transit riders typically board the first bus available, whether it be a local, express, or BRT line. For these line families or local/BRT corridors, SCAG uses the combined routes to calculate the frequency.

ROUTE ALIGNMENT

The entire alignment of a bus route, based on the stops that meet the 15–minute peak frequency threshold, is considered an HQTC. This would include,

for example, express bus services that operate along freeways where there are no stops along the freeway right–of–way.

BUS RAPID TRANSIT

As defined in statute, a BRT must include full-time dedicated bus lanes. In the SCAG region, there are existing and proposed BRT projects that have only a portion of their alignment in a full-time dedicated bus lane. For these BRT projects, only those stations that are adjacent to a full-time dedicated bus lane are considered major transit stops. For the BRT projects that have a full-time dedicated bus lane on their entire route, all of the stations are considered major transit stops.

MAJOR TRANSIT STOPS AND INTERSECTING SERVICE TRANSFER ZONES

As defined in statute, major transit stops include the intersection of two or more HQTCs. For purposes of transferring between intersecting service, SCAG uses a 500–foot buffer to determine a major transit stop. In other words, two intersecting HQTCs must have stops that are within 500 feet of each other to qualify as a major transit stop. A 500–foot buffer is assumed to be a reasonable limit to the distance that a transit patron would walk to transfer between bus routes. It is also consistent with the Metro Transfers Design Guide definition of a transfer zone.

AMTRAK STATIONS AND FERRY STATIONS

Amtrak intercity passenger rail stations with only limited long–distance service are not automatically included as a major transit stop unless requested by a local agency. Similarly, ferry stations with seasonal and/or non–commuter based service (and that are served by bus or rail transit) are not automatically included as a major transit stop unless requested by a local agency.

PLANNED HQTCS AND MAJOR TRANSIT STOPS

Planned HQTCs and major transit stops are future improvements that are expected to be implemented by transit agencies by the RTP/SCS horizon year of 2045. These are assumed by definition to meet the statutory requirements of an HQTC or major transit stop. SCAG updates its inventory of planned major transit stops and HQTCs with the adoption of a new RTP/SCS, once every four years. However, transit planning studies may be completed by transit agencies on a more frequent basis than the RTP/SCS is updated by SCAG. Local jurisdictions should consult with the appropriate transit provider(s) to obtain the latest information on planned transit routes, stop locations, and service intervals/frequencies before making determinations regarding CEQA exemption or streamlining.

See **EXHIBIT 14**, *planned (year 2045) major transit stops and high quality transit corridors.*

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January 13, 2020

Kome Ajise
Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

Dear Executive Director Ajise:

RE: Review of Draft Regional Housing Need Allocation (RHNA) Methodology

Thank you for submitting the draft Southern California Association of Governments (SCAG) Sixth Cycle Regional Housing Need Allocation (RHNA) Methodology. Pursuant to Government Code Section 65584.04(i), the California Department of Housing and Community Development (HCD) is required to review draft RHNA methodology to determine whether the methodology furthers the statutory objectives described in Government Code Section 65584(d).

In brief, the draft SCAG RHNA methodology begins with the total regional determination provided by the California Department of Housing and Community Development (HCD) and separates it into two methodologies to allocate the full determination: projected need (504,970) and existing need (836,857).

For projected need, the household growth projected in SCAG's Connect SoCal growth forecast for the years 2020-2030 is used as the basis for calculating projected housing need for the region. A future vacancy and replacement need are also calculated and added to the projected need.

The existing need is calculated by assigning 50 percent of regional existing need based on a jurisdiction's share of the region's population within the high-quality transit areas (HQTAs) based on future 2045 HQTAs. The other 50 percent of the regional existing need is based on a jurisdiction's share of the region's estimated jobs in 2045 that can be accessed within a 30-minute driving commute. For high segregation and poverty areas as defined by HCD/TCAC Opportunity Maps,[1] referred to by SCAG as extremely disadvantaged communities (DACs), existing need in excess of the 2020-2045 household growth forecast is reallocated to non-DAC jurisdictions within the same county.

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[1] Created by the California Fair Housing Task Force and commissioned by HCD and the California Tax Credit Allocation Committee (TCAC) to assist public entities in affirmatively furthering fair housing. The version used in this analysis is the 2019 HCD/TCAC Opportunity Maps available at treasurer.ca.gov/ctcac/opportunity.asp.

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Within both the projected and existing need methodologies the four RHNA income categories (very low, low, moderate, and above moderate) are assigned to each jurisdiction by the use of a 150 percent social equity adjustment, which inversely adjusts based on the current incomes within the jurisdiction. An additional percentage of social equity adjustment is made for jurisdictions that have a high concentration of DACs or Highest Resource areas as defined by the HCD/TCAC Opportunity maps. Overall, the social equity adjustments result in greater shares of lower income RHNA to higher income and higher-resource areas.

HCD has completed its review of the methodology and finds that the draft SCAG RHNA Methodology furthers the five statutory objectives of RHNA.[2] HCD acknowledges the complex task of developing a methodology to allocate RHNA to 197 diverse jurisdictions while furthering the five statutory objectives of RHNA. This methodology generally distributes more RHNA, particularly lower income RHNA, near jobs, transit, and resources linked to long term improvements of life outcomes. In particular, HCD applauds the use of objective factors specifically linked the statutory objectives in the existing need methodology.

Below is a brief summary of findings related to each statutory objective described within Government Code Section 65584(d):

1. Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low-income households.

The methodology generally allocates increased shares of lower income RHNA to jurisdictions that have higher housing costs. In support of a mix of affordability, the highest housing cost cities generally receive higher shares of lower income RHNA. Under this methodology the 15 cities with the highest median housing costs all receive greater than 50 percent of the RHNA as lower income RHNA. Beverly Hills with the 18th highest median housing costs receives the 25th highest share of lower income RHNA; Westlake Village with the 14th highest median housing costs receives the 12th highest share of lower income RHNA; Aliso Viejo with the 23rd highest median housing costs receives the 38th highest share of lower income RHNA; and Villa Park with the 10th highest median housing costs receives the 31st highest share of lower income RHNA.

2. Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.

The draft SCAG RHNA methodology furthers the environmental principles of this objective as demonstrated by the transportation and job alignment with the RHNA allocations.

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[2] While HCD finds that this particular methodology furthers the objectives of RHNA, HCD's determination is subject to change depending on the region or cycle, as housing conditions in those circumstances may differ.

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3. Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.

Half of the existing need portion of the draft SCAG RHNA methodology is set based on the jurisdiction's share of the region's estimated jobs in 2045. While future looking job projections are important for housing planning, and housing built in the next decade will likely exist for 50-100 years or more, it is also critical to plan for the needs that exist today. This objective specifically considers the balance of low-wage jobs to housing available to low-wage workers. As part of HCD's analysis as to whether this jobs-housing fit objective was furthered by SCAG's draft methodology, HCD analyzed how the percentage share of the region's lower income RHNA compared to the percentage share of low-wage jobs.

For example, under the draft SCAG RHNA methodology Irvine would receive 1.84 percent of the region's lower income RHNA, and currently has 2.07 percent of the region's low-wage jobs, .23 percent less lower income RHNA than low-wage jobs for the region. Pomona would receive .71 percent of the region's lower income RHNA, and currently has .57 percent of the region's low-wage jobs, .13 percent more lower income RHNA than low-wage jobs for the region. Across all jurisdictions there is generally good alignment between low-wage jobs and lower income RHNA, with all but 15 jurisdictions within a half percent plus or minus difference between their share of lower income RHNA for the region and their percentage low-wage jobs for the region.

HCD is aware there has been some opposition to this current methodology from jurisdictions that received lower allocations under prior iterations; however it is worth noting that even if it is by a small amount, many of the jurisdictions that received increases are still receiving lower shares of the region's lower income RHNA compared to their share of the region's low-wage jobs. HCD recommends any changes made in response to appeals should be in the interest of seeking ways to more deeply further objectives without compromising other objectives.

4. Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.

This objective is furthered directly by the social equity adjustment factor included in the draft SCAG RHNA methodology. Jurisdictions in the SCAG region range from as little as 10.9 percent lower income households to 82.7 percent lower income households. The 20 jurisdictions with the greatest share of lower income households, 67.2-82.7 percent lower income households, would receive an average of 31.6 percent lower income share of their RHNA; compared to the 20 jurisdictions with the lowest share of lower income households, 10.9-25.1 percent lower income households, would receive an average of 59.1 percent lower income share of their RHNA. While the social equity adjustment explicitly responds to objective four, it also assists in the methodology furthering each of the other objectives.

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5. Affirmatively furthering fair housing, which means taking meaningful actions, in addition to combating discrimination, that overcome patterns of segregation and foster inclusive communities free from barriers that restrict access to opportunity based on protected characteristics. Specifically, affirmatively furthering fair housing means taking meaningful actions that, taken together, address significant disparities in housing needs and in access to opportunity, replacing segregated living patterns with truly integrated and balanced living patterns, transforming racially and ethnically concentrated areas of poverty into areas of opportunity, and fostering and maintaining compliance with civil rights and fair housing laws.

HCD applauds the inclusion of the affirmatively furthering fair housing adjustment factor in the methodology. This factor directs more lower income RHNA to higher opportunity areas and reduces allocations in segregated concentrated areas of poverty, as defined in the HCD/TCAC Opportunity Maps, which evaluate access to opportunity, racial segregation, and concentrated poverty on 11 dimensions, which are all evidence-based indicators related to long term life outcomes. 14 of the top 15 highest shares of lower income RHNA are in regions over 99.95 percent High and Highest Resource areas. These include: Imperial, La Habra Heights, Rolling Hills Estates, Hermosa Beach, La Cañada Flintridge, Palos Verdes Estates, Manhattan Beach, Rolling Hills, Agoura Hills, Rancho Palos Verdes, Westlake Village, San Marino, Eastvale, and Hidden Hills. With the exceptions of the cities of Vernon and Industry, the 31 jurisdictions with the highest share of lower income RHNA are all over 95 percent High and Highest Resource areas.

HCD appreciates the active role of SCAG staff in providing data and input throughout the draft SCAG RHNA methodology development and review period. HCD especially thanks Ping Chang, Kevin Kane, Sarah Jepson, and Ma'Ayn Johnson for their significant efforts and assistance.

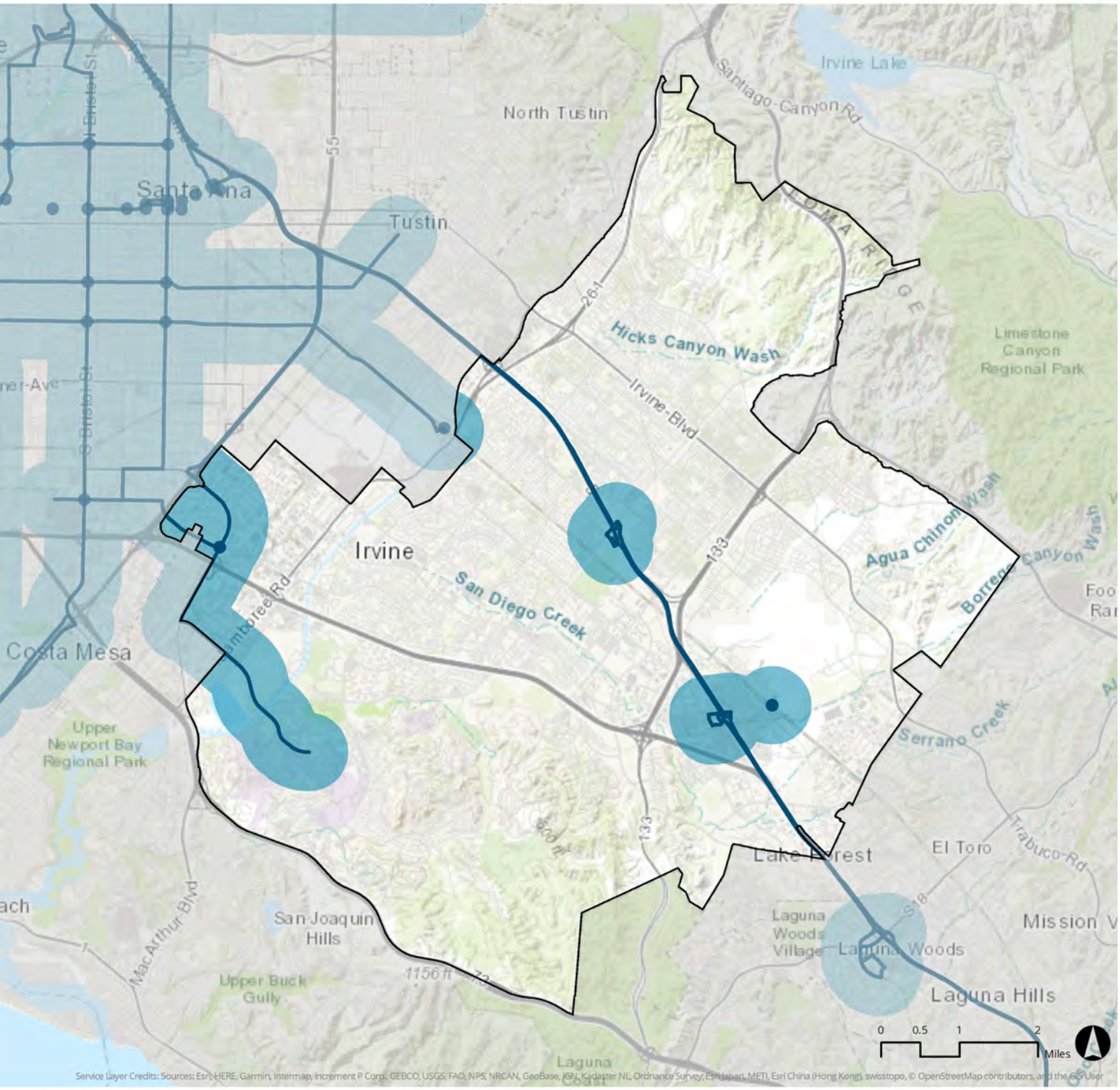
HCD looks forward to continuing our partnership with SCAG to assist its member jurisdictions to meet and exceed the planning and production of the region's housing need.

Support opportunities available for the SCAG region this cycle include, but are not limited to:

- SB 2 Planning Technical Assistance (Technical assistance available now through June 2021)
- Regional and Local Early Action Planning grants (25 percent of Regional funds available now, all other funds available early 2020)
- SB 2 Permanent Local Housing Allocation (Available April – July 2020)

If HCD can provide any additional assistance, or if you, or your staff, have any questions, please contact Megan Kirkeby, Assistant Deputy Director for Fair Housing, megan.kirkeby@hcd.ca.gov.

Megan Kirkeby
Assistant Deputy Director for Fair Housing



Major Transit Stops and High Quality Transit Areas in City of Irvine [Year 2045]

● Major Transit Stops ∿ High Quality Transit Corridors (HQTCs) ▭ High Quality Transit Areas (HQTAs)

Note: SCAG identifies Major Transit Stops and High Quality Transit Corridors (HQTCs), and their surrounding areas in one-half mile radius distance as specified in Section 21155.(b)(3). Major transit stops and HQTCs are extracted from 2045 plan year data of Connect SoCal.
SCAG's High Quality Transit Area (HQTA) is within one-half mile from Major Transit Stops and HQTCs and developed based on the language in SB375; however, freeway transit corridors with no bus stops on the freeway alignment do not have a directly associated HQTA. The RHNA process, per Section 65584 et seq., specifies that SCAG's housing needs allocation plan shall further several objectives including those related to infill development and jobs-housing balance. To that end, SCAG's Regional Council-adopted 6th Cycle Final RHNA Methodology relies on a jurisdiction's forecasted 2045 population within HQTAs to allocate housing need.

Data Source: SCAG, County Transportation Commissions, 2020 | Map Created: 10/22/2020

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December 10, 2020

Kome Ajise, Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

Dear Executive Director Ajise:

RE: Comment on Appeals of the Draft Regional Housing Need Allocation (RHNA) Plan

Thank you for the opportunity to comment on the 52 appeals Southern California Association of Governments (SCAG) has received regarding the draft RHNA plan. The appeal process is an important phase in the development of a RHNA plan that ensures that all relevant factors and circumstances are considered.

The only circumstances under which a jurisdiction can appeal are:

- 65584.05(b)(1): The council of governments failed to adequately consider the information regarding the factors listed in subdivision (e) of section 65584.04.
- 65584.05(b)(2): The council of governments failed to determine the share of the regional housing need in a manner that furthers the intent of the objectives listed in subdivision (d) of section 65584.
- 65584.05(b)(3): A significant unforeseen change in circumstances occurred in the local jurisdiction that merits a revision of the information submitted pursuant to subdivision (e) of Section 65584.04.

The California Department of Housing and Community Development (HCD) urges SCAG to only consider appeals that meet these criteria.

Per Government Code section 65584.05(e)(1), SCAG's final determination on whether to accept, reject, or modify any appeal must be accompanied by written findings, including how the final determination is based upon the adopted RHNA allocation methodology, and how any revisions are necessary to further the statutory objectives of RHNA described in Government Code section 65584(d).

Among the appeals based on Government Code section 65584.05(b)(1), several appeals state that SCAG failed to consider the factor described in Government Code section 65584.04(e)(2)(B), citing the lack of land suitable for development as a basis for the appeal. However, this section states the council of governments may not limit its consideration of suitable housing sites to existing zoning and land use restrictions and must consider the potential for increased development under alternative zoning and

land use restrictions. Any comparable data or documentation supporting this appeal should contain an analysis of not only land suitable for urban development, but land for conversion to residential use, the availability of underutilized land, and opportunity for infill development and increased residential densities. In simple terms, this means housing planning cannot be limited to vacant land, and even communities that view themselves as built out must plan for housing through means such as rezoning commercial areas as mixed-use areas and upzoning non-vacant land.

With regard to appeals submitted related to Government Code section 65584.05(b)(2), that SCAG failed to determine the RHNA in a manner that furthers the statutory objectives, it should be noted that HCD reviewed SCAG's draft allocation methodology and found that the draft RHNA allocation methodology furthered the statutory objectives described in Government Code section 65584.

Among the appeals based on Government Code section 65584.05(b)(2), several contend that the cap on units allocated to extremely disadvantaged communities (DACs) does not further RHNA's statutory objectives. This cap furthers the statutory objective to affirmatively further fair housing by allocating more units to high opportunity areas and fewer units to low resource communities, and concentrated areas of poverty with high levels of segregation. Due to the inclusion of this factor, as well as the use of TCAC/HCD Opportunity Maps, SCAG's methodology allocates 14 of the top 15 highest shares of lower-income RHNA to jurisdictions with over 99.95 percent High and Highest Resource areas. With the exceptions of two jurisdictions, the 31 jurisdictions with the highest share of lower-income RHNA are all over 95 percent High and Highest Resource areas. Any weakening of these inputs to the methodology could risk not fulfilling the statutory objective to affirmatively further fair housing.

Several appeals argue that SCAG's RHNA allocation methodology does not adequately promote access to jobs and transit, as required in objectives two and three. HCD's review of SCAG's RHNA methodology found the allocation does further the environmental principles of objective two. SCAG's overall allocation includes significant weight related to the location of high-quality transit areas and the regional distribution of jobs that can be accessed within a 30-minute driving commutes. Regarding objective three, HCD's analysis as to whether jobs-housing fit was furthered by SCAG's draft methodology found that across all jurisdictions there is generally good alignment between low-wage jobs and lower-income RHNA, with all but 15 jurisdictions within a half percent plus or minus difference between their share of lower-income RHNA for the region and their percentage low-wage jobs for the region.

Several appeals are based upon the provision described in Government Code section 65584.05(b)(3), arguing that the COVID-19 pandemic represents a significant and unforeseen change in circumstances that will affect future population and job growth. Ensuring everyone has a home is critical to public health. Reducing and preventing overcrowding and homelessness are essential concerns for every community. The COVID-19 pandemic has only increased the importance that each community is planning for sufficient affordable housing.

Lastly, several appeals state that the Regional Housing Needs Determination (RHND) HCD provided to the SCAG region is too large. SCAG submitted an objection to the RHND at the appropriate time and through the appropriate process. HCD considered those objections and determined the final RHND for 6th Housing Element Cycle for the SCAG region on October 15, 2019. There are no further appeal procedures available to alter the SCAG region's RHND for this cycle. Government Code section 65584.05(b) does not allow local governments to appeal the RHND during the 45-day period following receipt of the draft allocation.

HCD acknowledges that many local governments will need to plan for more housing than in the prior cycle to accommodate a RHND that more fully captures the housing need and as the statutory objectives of RHNA shift more housing planning near jobs, transit, and resources. The Southern California region's housing crisis requires each jurisdiction to plan for the housing needs of their community and the region. In recognition of this effort there are more resources available than ever before to support jurisdictions as they prepare to update their 6th cycle housing elements:

- SB 2 Planning Grants – $123 million one-time allocation to cities and counties
- SB 2 Planning Grants Technical Assistance offered to all jurisdictions
- Regional and Local Early Action Planning Grants – $238 million one-time allocation for local and regional governments
- SB 2 Permanent Local Housing Allocation – approximately $175 million annually in ongoing funding for local governments to increase affordable housing stock

If HCD can provide any additional assistance, or if you, or your staff, have any questions, please contact Megan Kirkeby, Deputy Director, megan.kirkeby@hcd.ca.gov.

Megan Kirkeby
Deputy Director

City of Whittier

13230 Penn Street, Whittier, California 90602-1716
(562) 567-9320 Fax (562) 567-2872 www.cityofwhittier.org

Electronically Transmitted to: Housing@scag.ca.gov

December 10, 2020

RHNA Appeals Committee
Southern California Association of Governments
900 Wilshire Blvd, Suite 1700
Los Angeles, CA 90017

SUBJECT: City of Whittier's Comments on Appeals to the Sixth Cycle Regional Housing Needs Assessment (RHNA) Allocation

Honorable Chair and Honorable Committee Members:

The City of Whittier ("City") appreciates the challenges that are inherent in allocating 1,341,827 housing units by the thousands (a 226% increase above the baseline 412,137 unit) to cities across Southern California, especially in built-out cities. However, the City is deeply concerned its housing allocation of 3,431 units from the State Department of Housing and Community Development ("HCD") and the Southern California Association of Government's ("SCAG") unit distribution methodology, along with recent housing legislation will fundamentally abridge the City's ability to develop effective land-use policies that are appropriate for managing the community's actual needs. The 878 units in the 5th cycle RHNA allocation has been increased by 290%to 3,431 units in the current 6th cycle. Particularly challenging in the 6th cycle, is the number of low and very low-income units (1,558) which combined with the moderate and above moderate unit totals forces unplanned and unnecessary residential densification of the community.

The affordable units are an unfunded mandate with very limited regional or State financial support for their development. Considering the affordable housing subsidies typically range from $50,000 to $250,000 per unit, the overall funding requirements could range from $78,000,000 to $390,000,000 which is clearly beyond the reach of the City of Whittier in that the City's general fund budget is just $72,000,000 which already include $2,000,000 annually to house the City's unsheltered residents in transitional housing. Additionally, the City only receives 7.5%of each property tax dollar to provide general services including police and library services.

The City is currently in the process of updating its Housing Element as well as the General Plan to incorporate the current RHNA allocation, so Whittier is acutely aware of the various housing needs as well as the potential obstacles, such as aging infrastructure and unplanned density, to creating the requisite housing within a city that

is essentially built out. The changes in the State's housing laws (SB 35, SB 166 and AB 1397) have created additional constraints for the agencies and may severely impact the City's ability to accomplish our regional and local housing goals.

Since development in Whittier began more than 130 years ago, the City is virtually built-out with little developable vacant land outside of its designated open space areas that are dedicated to accommodating existing and future residents. While the City has made significant efforts through its specific plans to densify existing corridors and districts, the majority of Whittier's remaining single-family residential neighborhoods cannot accommodate similar densification. Furthermore, the hills north of Whittier contain regional open space, sensitive habitat and wildlife areas that must be preserved in perpetuity. There are also significant infrastructure and water service constraints that impact Whittier's ability to produce significantly more housing. Although these facts may not be desirable, they must be pragmatically accounted for and mitigated by not further increasing Whittier's share of housing units contained in SCAG's 6th Cycle RHNA. The final RHNA allocation and methodology must be fair and equitable while reflecting the capacity for reasonable housing unit construction.

As with many other cities, the City is concerned about the current allocation, but an even greater concern is that additional units may be applied to the City if reallocated from cities that are successful in their appeals. To that end, the City believes the appeal process itself was unclear as to the potential ramifications to other cities and not fully understood.

Although we fully support the surrounding cities in their appeals, the potential for additional units being applied to the City would exacerbate the problems described herein and in Whittier's September 13, 2019 letter to SCAG.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Jeffery S. Adams
Director of Community Development

File

From: Christopher Koontz <Christopher.Koontz@longbeach.gov>
Sent: Thursday, December 3, 2020 11:14 AM
To: Regional Housing
Subject: RHNA Appeals

Categories: Response Required, Record

Good morning,

The purpose of this email is to provide the City of Long Beach's position in regards to pending RHNA appeals before SCAG. The City of Long Beach seeks to meet its housing needs and obligations for the benefit of Long Beach residents and the region. Our allocation was extremely large and presents a planning and financing challenge for the City. Nonetheless we chose not to appeal our allocation because the allocation process was fair and transparent including taking the City of Long Beach's input into consideration.

We oppose and will not accept any transfer of additional allocation due to the pending appeals. We note that within our area, the Gateway COG, appeals are pending from Bellflower, Cerritos, Downey, Huntington Park, La Mirada, Lakewood, Pico Rivera, and South Gate. Each of these appeals should be evaluated by SCAG on the merits, however Long Beach opposes any transfer of allocation to our City. It would be inappropriate to transfer a further burden to Long Beach when we have already accepted a large allocation and have done more than many cities in the region to accommodate housing growth under the current RHNA cycle, including fully meeting our market-rate RHNA allocation.

The City of Long Beach will continue to work with SCAG and our neighbor jurisdictions to address the housing needs of our residents.

We thank you for consideration and please do not hesitate to contact the City regarding our position.

Christopher Koontz, AICP
Deputy Director

Development Services
411 W. Ocean Blvd., 3rd Floor | Long Beach, CA 90802
Office: 562.570.6288 | Fax: 562.570.6068

Southern California Association of Governments
Remote Participation Only
January 25, 2021

To: Regional Housing Needs Assessment Subcommittee (RHNA)

EXECUTIVE DIRECTOR'S APPROVAL

Kome Ajise

From: Kevin Kane, Senior Regional Planner,
(213) 236-1828, kane@scag.ca.gov

Subject: Appeal of the Draft RHNA Allocation for the City of Garden Grove

RECOMMENDED ACTION:
Deny the appeal filed by the City of Garden Grove to reduce the Draft RHNA Allocation for the City of Garden Grove by 2,813 units.

STRATEGIC PLAN:
This item supports the following Strategic Plan Goal 2: Advance Southern California's policy interests and planning priorities through regional, statewide, and national engagement and advocacy.

SUMMARY OF APPEAL(S):
The City of Garden Grove requests a reduction of its RHNA allocation by 2,813 units (from 19,122 units to 16,309 units). Garden Grove bases its appeal on the following:

1. Application of the adopted Final RHNA Methodology for the 6th Cycle (2021 – 2029) - the "DAC" or Disadvantaged Communities adjustment places a disproportionate burden on Non-DAC jurisdictions which fall just below the 50% DAC threshold.

2. Changed circumstances - the COVID-19 pandemic has uniquely impacted its future employment and that this should lead to a reduction of the City's housing need.

RATIONALE FOR STAFF RECOMMENDATION:
Staff have reviewed the appeal(s) and recommend no change to the City of Garden Grove's RHNA allocation.

Regarding Issue 1, the assertion that the application of the DAC adjustment was inequitable and disproportionate is a challenge to the Final RHNA methodology, which was adopted in final form by the Regional Council on March 5, 2020. This is not a valid basis for an appeal as the adopted Final RHNA methodology cannot be revised by the RHNA Appeals Board.

Regarding Issue 2, while the City of Garden Grove indicates that COVID-19 has resulted in job losses, it does not provide evidence as to how and why this information merits a revision of information used to determine housing need, per Government Code 65584.05(b)(3).

BACKGROUND:

Draft RHNA Allocation

Following the adoption of the Final RHNA Methodology on March 5, 2020 and the adoption of Connect SoCal on September 3, 2020, all local jurisdictions received draft RHNA allocations on September 11, 2020. A summary is below.

Total RHNA for the City of Garden Grove: 19,122 units
Very Low Income: 4,155 units
Low Income: 2,795 units
Moderate Income: 3,204 units
Above Moderate Income: 8,968 units

Additional background related to the Draft RHNA Allocation is included in Attachment 1.

Summary of Comments Received during 45-day Comment Period

No comments were received from local jurisdictions or HCD during the 45-day public comment period described in Government Code section 65584.05(c) which specifically regard the appeal filed for the City of Garden Grove. Three comments were received which relate to appeals filed generally:

- HCD submitted a comment on December 10, 2020 delineating the statutory basis for RHNA appeals and the requirement that any appeals granted must include written findings regarding how revisions are necessary to further RHNA's statutory objectives.
- The City of Whittier submitted a comment on December 10, 2020 supporting surrounding cities in their appeals, but expressing concern that additional units may be applied to Whittier if reallocated from cities which are successful in their appeals.
- The City of Long Beach submitted a comment on December 3, 2020 indicating their view that the RHNA allocation process was fair and transparent, their support for evaluating appeals on their merits (specifically those from the Gateway Council of Governments), and their opposition to any action which would result in a transfer of additional units to Long Beach.

ANALYSIS:

Issue 1: *Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029) [Government Code Section 65584.05 (b)(2)].*

The City of Garden Grove raises issues related to the "DAC adjustment." The City contends that in its application, an exemption for five of the 35 Orange County jurisdictions inequitably redistributes 24% of the County's total allocation to the 30 "non-DAC" jurisdictions based on their job and transit accessibility measures. Relatedly, the City claims that the 2019 state Tax Credit Allocation Commission (TCAC) data are being used outside their intended purpose.

The City, with 48% of its population in a low or very-low resourced area, requests that a "sliding scale exemption" would result in a more equitable distribution of housing need based on this criterion rather than an all-or-nothing approach.

Furthermore, the City claims that SCAG failed to adequately consider information submitted and available to SCAG prior to the adoption of the RHNA Methodology. Specifically, Garden Grove uses data from the websites of the 5 DAC jurisdictions in Orange County to suggest that their planned and approved units as of September 2020 exceed their 6th cycle RHNA allocation.

SCAG Staff Response:

RHNA Methodology and AFFH Objectives

SCAG's adopted RHNA Methodology balanced a wide range of policy and statutory objectives (i.e., the objectives set forth in Government Code section 65584(d)). For example, the methodology incorporates locally envisioned growth from Connect SoCal, recognizes the importance of job and transit access in future housing planning, and demonstrates a commitment to social equity in the form of the social equity adjustment and the reallocation of residual housing need in lower-resourced jurisdictions to higher-resourced jurisdictions.

With respect to the statutory objectives, SCAG used objective measures to advance certain principles, but since local and regional conditions vary tremendously across the state and over time, there are few consistent quantitative standards which can be used to evaluate all aspects of the methodology. Ultimately, however, the RHNA statute vests HCD with the authority to decide whether statutory objectives have been met. On January 13, 2020, HCD found that SCAG's (then draft) 6th cycle Methodology advanced all five statutory objectives of RHNA.[1]

[1] The objectives are: 1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low-income households. (2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080. (3) Promoting an

Affirmatively Furthering Fair Housing (AFFH) is a RHNA objective, and the residual reallocation is part of the adopted Final RHNA Methodology. The DAC adjustment is a feature of the RHNA Methodology whereby lower-resourced jurisdictions, as measured by having 50% or more of their population within low or very-low resource areas using the 2019 state Tax Credit Allocation Commission (TCAC) opportunity mapping indicators, have a cap on their RHNA Allocation based on their 2020-2045 local input-based growth forecast. Government Code section 65584.04(i) vests authority to assess whether a methodology furthers the statutory objectives in HCD. In HCD's comment letter dated December 20, 2020 (HCD Comment Letter), HCD specifically explains that the cap on units allocated to DACs furthers the AFFH statutory objective:

> "Among the appeals based on Government Code section 65584.05(b)(2), several contend that the cap on units allocated to extremely disadvantaged communities (DACs) does not further RHNA's statutory objectives. This cap furthers the statutory objective to affirmatively further fair housing by allocating more units to high opportunity areas and fewer units to low resource communities, and concentrated areas of poverty with high levels of segregation. Due to the inclusion of this factor, as well as the use of TCAC/HCD Opportunity Maps, SCAG's methodology allocates 14 of the top 15 highest shares of lower-income RHNA to jurisdictions with over 99.95 percent High and Highest Resource areas. With the exceptions of two jurisdictions, the 31 jurisdictions with the highest share of lower-income RHNA are all over 95 percent High and Highest Resource areas. Any weakening of these inputs to the methodology could risk not fulfilling the statutory objective to affirmatively further fair housing." (HCD Comment Letter at p.2).

Furthermore, in HCD's January 13, 2020 letter approving the Draft RHNA Methodology (HCD RHNA Methodology Letter) (attached), HCD finds that SCAG's RHNA Methodology furthers all five statutory objectives, stating,

> "HCD applauds the inclusion of the affirmatively furthering fair housing adjustment factor in the methodology. This factor directs more lower income RHNA to higher opportunity areas and reduces allocations in segregated concentrated areas of poverty, as defined in the ***HCD/TCAC Opportunity Maps***, which evaluate access to opportunity, racial segregation, and concentrated poverty on 11 dimensions, which are all evidence-based indicators related to long term life outcomes." (HCD RHNA Methodology Letter at p.1) (emphasis added and footnote omitted).

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improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction. (4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey. (5) Affirmatively furthering fair housing (Govt. Code § 65584(d)).

Opportunity Mapping Data and "Sliding Scale" Proposal

While the City argues that the TCAC's Opportunity Mapping Tool was never intended to identify jurisdictions with more than 50% of their population located in DACs, HCD, the co-creator of this data source, has found that the tool's use for this purpose to be a critical component in SCAG's RHNA Methodology and furthers the AFFH statutory objective. The 2019 opportunity mapping data been part of several proposed variations of SCAG's RHNA Methodology as they underwent review during 2019 and also went through an extensive development and public review process during their development by the California Fair Housing Task Force (see https://www.treasurer.ca.gov/ctcac/opportunity.asp) and vetting through TCAC and HCD.

The City proposes an alternative method for measuring advantage or disadvantage in a jurisdiction which involves utilizing a "sliding scale exemption". However, an appeal citing RHNA Methodology as its basis must appeal the application of the adopted Methodology, not the Methodology itself. An example of an improper application of the adopted Methodology might be a data error which was identified by a local jurisdiction, not the presentation of an alternative methodology.

Information Submitted and/or Available Regarding DAC Jurisdictions

Attachment 1 describes SCAG's Bottom-Up Local Input and Envisioning Process in detail. All local jurisdictions were provided the same opportunity to comment on and provide additional information regarding anticipated population, household, and employment growth. In order to ensure ample time for required modeling analyses and public review, data inputs were due in October 2018, with two subsequent opportunities for providing technical refinements in December 2019 and June 2020 (jurisdiction-level growth totals could *not* be changed during these opportunities). These data constitute what was submitted to SCAG described in 65584.04(e).

The RHNA statute provides defined timeframes guided by the deadline for the housing element revisions[2] for HCD's RHNA determination and SCAG's Final RHNA Allocation Plan. HCD, in consultation with each council of governments (COG), shall determine each region's existing and projected housing need pursuant to Section 65584.01 at least **two years prior** to the scheduled revision required pursuant to Section 65588. Govt. Code § 65584(b). This "determination shall be based upon population projections produced by the Department of Finance and regional population forecasts used in preparing regional transportation plans, in consultation with each council of governments." Govt. Code § 65584.01(b). HCD begins the process **26 months prior** to the scheduled revision so the data HCD relies on is the available provided by the COGs at that time.

[2] Currently, local governments within the jurisdiction of SCAG are required to adopt their sixth revision of the housing element on or before October 15, 2021. Govt. Code § 65588(e)(2)(II).

Similarly, the COG issues its survey for information to develop the RHNA allocation methodology up to **30 months prior** to the scheduled revision. By necessity, the data used for these processes is data available at that time.

Under the constraints of the timeframe and considering the comprehensive and equitable process whereby local input had already been solicited, submitted, and included in the RHNA methodology, SCAG does not have a responsibility or the authority to include every piece of information "available" as Garden Grove contends. SCAG relies on the local input process for jurisdictions to provide the most accurate and relevant information for SCAG to consider in its growth forecast.

SCAG staff does not recommend a reduction on the basis of new information regarding the websites of the 5 DAC jurisdictions in Orange County since the information is not related to the City of Garden Grove. Government code 65584.05(b)(1) permits a jurisdiction to appeal the Draft RHNA Allocation of another jurisdiction on the same grounds. Garden Grove has filed a separate appeal of Santa Ana's Draft RHNA Allocation, requesting an increase of 7,087 units, also contending that SCAG failed to adequately consider housing development data in the City of Santa Ana. These issues are addressed in the appeal of Santa Ana's Draft RHNA Allocation.

Issue 2: *Changed circumstances [Government Code 65584.05(b)].*

The City of Garden Grove claims that a change in circumstances warrants a revision to the Draft RHNA Allocation. The COVID-19 pandemic has resulted in a "significant and unforeseen" change in circumstance since employment projection data were submitted in 2018 which result in an anticipated decrease in the City's 2020-2030 job forecast by 1,746 jobs.

SCAG Staff Response: Citing the Covid-19 pandemic, the City asserts that changed circumstances merit revisions to data previously relied upon. The City states that nearly 2,800 service jobs have been lost and as such the 2020-2030 employment outlook for the City is 1,746 jobs lower than it previously had been.

First, while SCAG staff recognizes that COVID-19 presents unforeseen circumstances and that local governments have been affected by significant unemployment, these facts, as presented by the City, do not "merit a revision of the information submitted pursuant to subdivision (b) of Section 65584.04" (Government Code section 65584.05(b)(3)). Furthermore, section 65584.05(b) requires that,

> "Appeals shall be based upon comparable data available for all affected jurisdictions and accepted planning methodology, and supported by adequate documentation, and shall include a statement as to why the revision is necessary to further the intent of the objectives listed in subdivision (d) of Section 65584."

Such comparable data is not provided by the City of Garden Grove.

In fact, SCAG's Regional Council delayed the adoption of the 2020 RTP/SCS by 120 days in order to assess the impact of COVID-19; however, the document's long-range (2045) forecast of population, employment, and household growth remained unchanged. The Demographics and Growth Forecast Technical Report[3] outlines the process for forecasting long-range employment growth which involves understanding national growth trends and regional competitiveness, i.e., the SCAG's region share of national jobs. Short-term economic forecasts commenting on COVID-19 impacts generally do not provide a basis for changes in the region's long-term competitiveness or the region's employment outlook for 2023-2045. As such, SCAG's assessment is that comparable data would not suggest long-range regional employment declines.

Secondly, the City of Garden Grove suggests that the loss of employment in the City should reduce its housing need by 1,512 units. However, no evidence is provided that this loss of jobs will reduce housing need. While the City references the RHNA objective regarding regional jobs-housing relationships (Government Code § 65584(d)(3)) as a basis for this connection, SCAG's RHNA Methodology addresses this statutory objective through the job accessibility measure—in large part due to the fact that 80 percent of the SCAG region's workers live and work in different jurisdictions. Specifically, the City's share of regional job accessibility is used to allocate housing units. This measure indicates that 2,175,000 future jobs (21.64% of the region's total employment of 10,049,000) can be accessed within a 30-minute AM peak automobile commute. Note that as discussed above, HCD found that the Draft Methodology furthers the five statutory objectives of RHNA, including promoting an improved intraregional relationship between jobs and housing.

Assuming arguendo Garden Grove's reduction of future employment by 1,746, this would mean that 2,173,254 future jobs (21.63% of the regional total) would be accessible. Using the largest city job loss figure referenced in the City's appeal of 4,500 jobs, future Garden Grove residents would still be able to access 21.60% of the region's jobs. Such a change would result in an extremely small decrease in Garden Grove's share of regional job access. However, Garden Grove asserts that this job reduction has crippled the tourism economy more broadly and can reasonably be assumed to decrease jobs outside of the City as well. As such, it cannot be assessed from the evidence provided how the City's job accessibility relative to the region would decrease.

Ultimately, these issues do not "merit a revision of the information submitted pursuant to subdivision (b) of Section 65584.04(b)." (Government Code section 65584.05(b)(3)). The inputs to the RHNA Methodology are not impacted by these purported changes in circumstance and SCAG staff does not recommend a reduction of the City of Garden Grove's Draft RHNA Allocation.

[3] See https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Demographics-And-Growth-Forecast.pdf

FISCAL IMPACT:
Work associated with this item is included in the current FY20-21 Overall Work Program (300-4872Y0.02: Regional Housing Needs Assessment).

ATTACHMENT(S):
1. Local Input and Development of Draft RHNA Methodology (City of Garden Grove)
2. Garden Grove Appeal and Supporting Documentation
3. Map of Job Accessibility near the City of Garden Grove (2045)
4. Comments Received during the Comment Period
5. HCD Review of Draft RHNA Methodology (Jan 13, 2020)

Southern California Association of Governments
Remote Participation Only
City of Garden Grove RHNA Appeal
January 25, 2021

Attachment 1: Local Input and Development of the Draft RHNA Allocation

This attachment sets forth the nature and timing of the opportunities which the City of Garden Grove had to provide information and local input on SCAG's growth forecast, the RHNA methodology, and the Growth Vision of the 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or Connect SoCal). It also describes how the RHNA Methodology development process integrates this information in order to develop the City of Garden Grove's Draft RHNA Allocation.

1. Local input

a. Bottom-Up Local Input and Envisioning Process

On October 31, 2017, SCAG took the first step toward developing draft RHNA allocations by initiating the Bottom-Up Local Input and Envisioning Process. At the direction of the Regional Council, the objective of this process was to seek local input and data to prepare for Connect SoCal and the 6th cycle of RHNA.[1] Each jurisdiction was provided with a package of land use, transportation, environmental, and growth forecast data for review and revision which was due on October 1, 2018.[2] While the local input process materials focus principally on jurisdiction-level and Transportation Analysis Zone (TAZ) level growth, input on specific parcels, sites, and project areas were welcomed and integrated into SCAG's growth forecast as well as data on other elements. SCAG met one-on-one with all 197 local jurisdictions between November 2017 and July 2018 and provided training opportunities and staff support. Following input from SCAG's Technical Working Group (TWG), the Connect SoCal growth forecast reflected precisely the jurisdiction-level growth totals provided during this process.

Forecasts for jurisdictions in Orange County were developed through the 2018 Orange County Projections (OCP-2018) update process conducted by the Center for Demographic Research (CDR) at Cal State Fullerton. Jurisdictions were informed of this arrangement by SCAG at the kickoff of the Process. For the City of Garden Grove, the anticipated number of households in 2020 was 46,870 and in 2030 was 48,350 (growth of 1,480 households). In March 2018, SCAG staff and CDR staff met with staff from the City of Garden Grove to discuss the Bottom-Up Local Input and Envisioning Process and answer questions.

[1] While the RTP/SCS and RHNA share data elements, they are distinct processes. The RTP/SCS growth forecast provides an assessment of reasonably foreseeable future patterns of employment, population, and household growth in the region given demographic and economic trends, and existing local and regional policy priorities. The RHNA identifies anticipated housing need over a specified eight-year period and requires that local jurisdictions make available sufficient zoned capacity to accommodate this need. A further discussion of the relationship between these processes can be found in Connect SoCal Master Response 1 at https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Public-Participation-Appendix-2.pdf.

[2] A detailed list of data during this process reviewed can be found in each jurisdiction's Draft Data/Map Book at https://scag.ca.gov/local-input-process-towns-cities-and-counties

b. *RHNA Methodology Surveys*

On March 19, 2019, SCAG distributed a packet of methodology surveys, which included the local planning factor survey (formerly known as the AB2158 factor survey), Affirmatively Furthering Fair Housing (AFFH) survey, and replacement need survey, to SCAG jurisdictions' Community Development Directors. Surveys were due on April 30, 2019. SCAG reviewed all submitted responses as part of the development of the Draft RHNA Methodology. The City of Garden Grove submitted the following surveys prior to the adoption of the Draft RHNA Methodology:

☒ Local planning factor survey
☐ Affirmatively Furthering Fair Housing (AFFH) survey
☒ Replacement need survey
☐ No survey was submitted to SCAG

c. *Connect SoCal Growth Vision and Additional Refinements*

Beginning in May 2018, SCAG's Sustainable Communities Working Group began the process of developing growth scenarios for the SCAG region. The culmination of this work was the development of the Connect SoCal Growth Vision, which directly uses jurisdictional-level growth projections from the Bottom-Up Local Input and Envisioning process, and also features strategies for growth at the TAZ-level that help to reduce greenhouse gas emissions (GHG) from automobiles and light trucks to achieve Southern California's GHG reduction target, approved by the California Air Resources Board (CARB) in accordance with state planning law. Additional detail regarding the Connect SoCal Growth Vision, specifically the Transportation Analysis Zone (TAZ, or neighborhood) level projections is found at https://www.connectsocal.org/Documents/DataMapBooks/Growth-Vision-Methodology.pdf.

As a result of these strategies, in some jurisdictions growth at the TAZ-level differed from locally anticipated growth conveyed during the Bottom-Up Local Input and Envisioning Process.

As such, SCAG provided two additional opportunities for all local jurisdictions to make TAZ-level technical refinements on the topics of general plan capacities and entitlements. During the release of the draft Connect SoCal Plan, jurisdictions were notified on October 31, 2019 that SCAG would accept additional refinements until December 11, 2019. Following the Regional Council's decision to delay full adoption of Connect SoCal for 120 days due to the COVID-19 pandemic, all jurisdictions were again notified on May 26, 2020 that SCAG would accept additional refinements until June 9, 2020.

Connect SoCal Growth Vision data have been available to local jurisdiction staff during the entirety of this process through SCAG's Scenario Planning Model Data Management Site (SPM-DM) at http://spmdm.scag.ca.gov and updates were shared with local jurisdictions on technical refinements to the data in February 2020 and August 2020 to share the results of both review opportunities. SCAG

received additional technical corrections from the City of Garden Grove and incorporated them into the Growth Vision in December 2019.

2. Development of the Final RHNA Methodology

SCAG convened the first meeting of the RHNA Subcommittee in October 2018. In their subsequent monthly meetings, this body reviewed and advised on the development of SCAG's 6th cycle RHNA process, including the development of the RHNA methodology. Per Government Code 65584.04(a), SCAG must develop a RHNA methodology which furthers the five statutory objectives of RHNA:

> *(1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households.*
>
> *(2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.*
>
> *(3) Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.*
>
> *(4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.*
>
> *(5) Affirmatively furthering fair housing (Govt. Code § 65584(d)).*

As explained in more detail below, the Draft RHNA Methodology (which was adopted as the Final RHNA Methodology) set forth the policy factors, data sources, and calculations which would be used to generate draft RHNA allocations for all local jurisdictions. Following extensive debate and public comment, SCAG's Regional Council voted to approve the Draft RHNA Methodology on November 7, 2019 and provide it to HCD for review. Per Government Code 65584.04(i), HCD is vested with the authority to determine whether a methodology furthers the objectives set forth in Government Code section 65584(d). On January 13, 2020, HCD found that the Draft RHNA Methodology furthers these five statutory objectives of RHNA. Specifically, HCD noted that:

> *"This methodology generally distributes more RHNA, particularly lower income RHNA, near jobs, transit, and resources linked to long term improvements of life outcomes.*

In particular, HCD applauds the use of the objective factors specifically linked the statutory objectives in the existing need methodology." (Letter from HCD to SCAG dated January 13, 2020 at https://scag.ca.gov/sites/main/files/file-attachments/hcd-review-rc-approved-draft-rhna-methodology.pdf?1602190239).

On March 5, 2020, again following extensive debate and public comment, the Regional Council voted to approve the Draft RHNA Methodology as the Final RHNA Methodology. Unlike SCAG's 5th cycle RHNA methodology which relies almost entirely on the household growth component of the RTP/SCS, SCAG's 6th cycle RHNA methodology consists of two primary elements: "projected need" which includes the number of housing units required to accommodate anticipated population growth over the 8-year RHNA planning period and "existing need," which refers to the number of housing units required to accommodate excess or unsatisfied housing demand experienced by the region's current population.[3] Furthermore, the Final RHNA methodology utilizes measures of 2045 job accessibility and High Quality Transit Area (HQTA) population measures based on TAZ-level projections in the Connect SoCal Growth Vision.

More specifically, the Final RHNA Methodology considers three primary factors in determining a local jurisdiction's total housing need which are primarily based on data from Connect SoCal's aforementioned Bottom-Up Local Input and Envisioning Process:

- Forecasted growth over 2020-2030 (projected need)
- Transit accessibility in 2045 (existing need)
- Job accessibility in 2045 (existing need)

The methodology is described in further detail at http://scag.ca.gov/programs/Documents/RHNA/SCAG-Final-RHNA-Methodology-030520.pdf.

3. Draft RHNA Allocation for the City of Garden Grove

Following the adoption of the Final RHNA Methodology on March 5, 2020 and the 120 day delay due to the COVID-19 pandemic, SCAG adopted Connect SoCal on September 3, 2020, and the City of Garden Grove received its draft RHNA allocation on September 11, 2020. Application of the RHNA methodology yields the draft RHNA allocation for the City of Garden Grove as summarized in the data and calculations in the tables below.

[3] Legislative changes in 2018 modified the nature of the regional housing need determination for the 6th cycle of RHNA by adding measures of household overcrowding and housing cost burden to the list of factors to be considered by HCD for the determination of housing need. These new measures are not included in the Connect SoCal Growth Forecast because they are not direct inputs to the growth forecasting process and are independent of employment and population projections. In contrast, they reflect additional latent housing needs in the current population (i.e., "existing need") and would not result in a change in regional population. For further discussion see Connect SoCal Master Response 1 at https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Public-Participation-Appendix-2.pdf.

Garden Grove city statistics and inputs:	
Forecasted household (HH) growth, RHNA period: *(2020-2030 Household Growth * 0.825)*	1221
Percent of households who are renting:	46%
Housing unit loss from demolition (2009-18):	253
Adjusted forecasted household growth, 2020-2045: *(Local input growth forecast total adjusted by the difference between the RHNA determination and SCAG's regional 2020-2045 forecast, +4%)*	2,421
Percent of regional jobs accessible in 30 mins (2045): *(For the jurisdiction's median TAZ)*	21.64%
Jobs accessible from the jurisdiction's median TAZ (2045): *(Based on Connect SoCal's 2045 regional forecast of 10.049M jobs)*	2,175,000
Share of region's job accessibility (population weighted):	1.48%
Jurisdiction's HQTA population (2045):	135,945
Share of region's HQTA population (2045):	1.33%
Share of population in low/very low-resource tracts:	47.92%
Share of population in very high-resource tracts:	0.00%
Social equity adjustment:	150%

Calculation of Draft RHNA Allocation for Garden Grove city	
Forecasted household (HH) growth, RHNA period:	1221
Vacancy Adjustment *(5% for renter households and 1.5% for owner households)*	38
Replacement Need	253
TOTAL PROJECTED NEED:	1512
Existing need due to job accessibility (50%)	6172
Existing need due to HQTA pop. share (50%)	5561
Net residual factor for existing need *(Negative values reflect a cap on lower-resourced community with good job and/or transit access. Positive values represent this amount being redistributed to higher-resourced communities based on their job and/or transit access.)*	5877
TOTAL EXISTING NEED	17611
TOTAL RHNA FOR GARDEN GROVE CITY	**19122**
Very-low income (<50% of AMI)	4155
Low income (50-80% of AMI)	2795
Moderate income (80-120% of AMI)	3204
Above moderate income (>120% of AMI)	8968

The transit accessibility measure is based on the population anticipated to live in High-Quality Transit Areas (HQTAs) in 2045 based on Connect SoCal's designation of high-quality transit areas and population forecasts. With a forecasted 2045 population of 135,945 living within HQTAs, the City of Garden Grove represents 1.33% of the SCAG region's HQTA population, which is the basis for allocating housing units based on transit accessibility.

Job accessibility is defined as the jurisdiction's share of regional jobs accessible within a 30-minute drive commute. Since over 80 percent of the region's workers live and work in different jurisdictions, the RHNA methodology uses a measure based on Connect SoCal's travel demand model output for the year 2045 rather than assigning housing units based on the number of jobs with a specific jurisdiction. Specifically, the share of future (2045) regional jobs which can be reached in a 30-minute

automobile commute from the local jurisdiction's median TAZ is used as to allocate housing units based on transit accessibility. From the City of Garden Grove's median TAZ, it will be possible to reach 21.64% of the region's jobs in 2045 within a 30-minute automobile commute (2,175,000 jobs, based on Connect SoCal's 2045 regional job forecast of 10,049,000 jobs).

An additional factor is included in the methodology to account for RHNA Objective #5 to Affirmatively Further Fair Housing (AFFH). Several jurisdictions in the region which are considered disadvantaged communities (DACs) on the basis of access to opportunity measures (described further in the RHNA methodology document), but which also score highly in job and transit access, may have their total RHNA allocations capped based on their long-range (2045) household forecast. This additional housing need, referred to as residual, is then reallocated to non-DAC jurisdictions in order to ensure housing units are placed in higher-resourced communities consistent with AFFH principles. This reallocation is based on the job and transit access measures described above, and results in an additional 5,877 units assigned to the City of Garden Grove.

Please note that the above represents only a partial description of key data and calculations which result in the Draft RHNA Allocation.

Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal Request Form

All appeal requests and supporting documentation must be received by SCAG October 26, 2020, 5 p.m.
Appeals and supporting documentation should be submitted to housing@scag.ca.gov.
Late submissions will not be accepted.

Date: 10/26/20

Jurisdiction Subject to This Appeal Filing:
(to file another appeal, please use another form)
City of Garden Grove

Filing Party (Jurisdiction or HCD)
Garden Grove

Filing Party Contact Name
Lisa L. Kim

Filing Party Email:
lisak@ggcity.org

APPEAL AUTHORIZED BY:

Name: Steve Jones

PLEASE SELECT BELOW:

- [x] Mayor
- [ ] Chief Administrative Office
- [ ] City Manager
- [ ] Chair of County Board of Supervisors
- [ ] Planning Director
- [ ] Other: _____

BASES FOR APPEAL

- [x] Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029)
- [ ] Local Planning Factors and/or Information Related to Affirmatively Furthering Fair Housing (See Government Code Section 65584.04 (b)(2) and (e))
  - [ ] Existing or projected jobs-housing balance
  - [ ] Sewer or water infrastructure constraints for additional development
  - [ ] Availability of land suitable for urban development or for conversion to residential use
  - [ ] Lands protected from urban development under existing federal or state programs
  - [ ] County policies to preserve prime agricultural land
  - [ ] Distribution of household growth assumed for purposes of comparable Regional Transportation Plans
  - [ ] County-city agreements to direct growth toward incorporated areas of County
  - [ ] Loss of units contained in assisted housing developments
  - [ ] High housing cost burdens
  - [ ] The rate of overcrowding
  - [ ] Housing needs of farmworkers
  - [ ] Housing needs generated by the presence of a university campus within a jurisdiction
  - [ ] Loss of units during a state of emergency
  - [ ] The region's greenhouse gas emissions targets
  - [ ] Affirmatively furthering fair housing
- [x] Changed Circumstances (Per Government Code Section 65584.05(b), appeals based on change of circumstance can only be made by the jurisdiction or jurisdictions where the change in circumstance occurred)

FOR STAFF USE ONLY:
Date_____ Hearing Date: _____ Planner: _____

Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal Request Form

All appeal requests and supporting documentation must be received by SCAG October 26, 2020, 5 p.m.
Appeals and supporting documentation should be submitted to housing@scag.ca.gov.
Late submissions will not be accepted.

Brief statement on why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584 (please refer to Exhibit C of the Appeals Guidelines):

Please include supporting documentation for evidence as needed, and attach additional pages if you need more room.

1. SCAG Failed to Determine Each Jurisdiction's Regional Housing Need in a Manner that Furthers, and does not Undermine, State Housing Goals.

2. SCAG Failed to Adequately Consider Information Submitted and Available to SCAG Prior to Adoption of the RHNA Allocation Methodology.

3. Garden Grove Has Experienced Changed Circumstances Which Warrant a Revisions to the Draft RHNA Allocation.

Brief Description of Appeal Request and Desired Outcome:

The City of Garden Grove requests a reduction of our draft allocation of 19,122 units to 16,309 units. See Exhibit 1 to attached "SCAG Letter - GG RHNA Appeal" for impact on County-wide allocations.

Number of units requested to be reduced or added to the jurisdiction's draft RHNA allocation (circle one):

Reduced 2,813 **Added** _____

List of Supporting Documentation, by Title and Number of Pages
(Numbers may be continued to accommodate additional supporting documentation):

1. SCAG Letter - GG RHNA Appeal (10 Pages)
2.
3.

FOR STAFF USE ONLY:
Date_____ Hearing Date: _____ Planner: _____

GARDEN GROVE

CITY OF GARDEN GROVE

October 26, 2020

RHNA Appeals Board
Southern California Association of Governments
Attn: Mr. Kome Ajise, Executive Director
900 Wilshire Blvd., Suite 1700
Los Angeles, CA 90017

SUBJECT: CITY OF GARDEN GROVE APPEAL OF THE REGIONAL HOUSING NEEDS ASSESSMENT ALLOCATION OF 19,122 UNITS

Dear Mr. Ajise,

The City of Garden Grove (City) commends the Southern California Association of Governments (SCAG) for taking on the task of developing methodology to distribute the Department of Housing and Community Development's (HCD) Regional Determination of 1.34 million housing units. The City appreciates the time and effort that has gone into this process. And while the City is prepared to do its part in accommodating the regional housing need, it is the City's position that the allocation of regional housing need to the City was inappropriately determined for several reasons.

First, SCAG failed to determine each jurisdiction's regional housing need in a manner that furthers, and does not undermine, the intent and objectives of state housing law as required by Government Code section 65584(d). Specifically, SCAG granted an exemption to jurisdictions with more than 50% of their population located in high poverty/segregation areas, otherwise known as Disadvantaged Communities (DAC), rather than proportionately distributing those residential need units based upon the percentage of each jurisdiction's total population that lives in a high DAC area. Then, SCAG exacerbated that problem by redistributing the residential unit needs of the jurisdictions eligible for the DAC exemption ("DAC Jurisdictions") to those jurisdictions that are not eligible for the DAC exemption (Non-DAC Jurisdictions) through utilization of an Existing Need Methodology which failed to account for various relevant factors and, as a result, inequitably redistributed those units among the Non-DAC Jurisdictions.

Second, SCAG failed to consider information submitted to it as a result of the survey required by Government Code section 65584.04(b) and information that was readily available to SCAG during the development of its regional housing need allocation methodology. Specifically, SCAG failed to hold DAC Jurisdictions accountable for their fair share of the housing burden by failing to recognize planned and approved housing projects by DAC Jurisdictions, which in turn, causes the units that were redistributed to Non-DAC Jurisdictions to be double-counted. Further, SCAG relied upon unreliable data in determining which jurisdictions qualify for the DAC exemption.

Finally, and in addition to the grounds for appeal stated above, the City has experienced changed circumstances due to the Coronavirus pandemic which has disproportionately affected jurisdictions which are dependent upon tourism such as Garden Grove. The data submitted by the City in advance of SCAG's adoption of the allocation methodology was premised upon pre-Covid employment projections which have drastically changed due to the pandemic.

1. **SCAG Failed to Determine Each Jurisdiction's Regional Housing Need in a Manner that Furthers, and does not Undermine, State Housing Goals.**

Pursuant to Government Code section 65584.05(b)(2), a jurisdiction may appeal SCAG'S regional housing need allocation on the grounds that "[t]he council of governments . . . failed to determine the share of the regional housing need in accordance with the information described in, and the methodology established pursuant to, Section 65584.04, *and in a manner that furthers, and does not undermine, the intent of the objectives listed in subdivision (d) of Section 65584*." (Emphasis added) Government Code section 65584(d) sets forth five objectives that must be furthered by SCAG's regional housing need allocation, the first of which is "[i]ncreasing the housing supply and mix of housing types, tenure, and affordability in all cities and counties within the region *in an equitable manner*, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households." (Emphasis added)

The approved RHNA methodology, in its application, results in an exemption for five (5) of the 35 Orange County jurisdictions which inequitably redistributes 24% of the County's total allocation of 183,431 units (i.e. 44,451 units) to the 30 Non-DAC jurisdictions. Further, two (2) of the five (5) Orange County DAC Jurisdictions have the largest Total Need Allocations in Orange County with a combined Total Need of 54,925 units, which represents 30% of the entire County's Total Need allocation.

a) Inequitable and Disproportionate Application of the DAC Exemption

The DAC exemption was applied only to jurisdictions in which 50% or more of the jurisdiction's population live in high poverty/segregation areas, otherwise known as DACs. But this "all or nothing" approach places a disproportionate burden on Non-DAC Jurisdictions which fall just below the 50% DAC threshold. The City of Garden Grove is a prime example of this inequity in that 48% of its residents live in DACs. So not only does Garden Grove barely miss the threshold for the exemption itself, but since it does miss that threshold, it is not only responsible for accommodating its

own housing need, but must also share in the additional housing need burden of the five (5) DAC Jurisdictions. And that is true whether the DAC Jurisdiction's total DAC population is just 2% higher than Garden Grove's at 50%, or is at 100%. Stated differently, the draft RHNA allocation completely dismisses the disadvantaged populations of Non-DAC Jurisdictions. For Garden Grove, this equates to approximately 90,000 disadvantaged individuals.

The application of this exemption does not "increase[e] the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner" as contemplated by Gov. Code 65584(d)(1). To the contrary, it undermines that objective by treating jurisdictions that are substantially similar in terms of their DAC population in a completely different, and almost punitive, fashion; specifically, by requiring a Non-DAC Jurisdiction that just missed the 50% threshold to accommodate ***thousands of additional units***, while a DAC Jurisdiction that barely met that threshold is not required to accommodate any of its ***own*** housing need.

The City hereby requests that SCAG consider a more equitable approach by ***utilizing a "sliding scale exemption"*** which would continue to provide relief to disadvantaged communities, but in a manner that is proportionate to each jurisdiction's disadvantaged population. This application would not discount any jurisdiction's entire DAC population, nor would it treat a jurisdiction that is 51% DAC as though it were 100% disadvantaged. With the sliding scale application proposed by Garden Grove, a jurisdiction identified as having 60% of its population in DACs would receive a 10% reduction of their Total Need allocation, a jurisdiction with 70% in DACs would receive a 20% reduction, and so on (i.e. a one percent reduction in Total Need allocation for each percent over 50% of the jurisdiction's population that lives in a DAC). For the 30 Non-DAC Jurisdictions in Orange County, this "sliding scale exemption" would reduce the number of Residual Units from 44,451 to 23,168, creating a much more equitable redistribution. The following (Table 1) is an illustration of the more equitable sliding-scale methodology. See **Exhibit 1** for implementation of a sliding-scale methodology for all jurisdictions within Orange County.

Table 1: Proposed Sliding Scale Exemption Application Illustration

Orange County DAC Jurisdictions	Total Need Allocation	% of Disadvantaged Population	% of Reduction to Total Need Allocation	Reduction to Total Need (Residual)	Total RHNA Allocation
Santa Ana city	26,256	88.81%	-38.81%	(10,191)	16,064
Anaheim city	28,669	82.93%	-32.93%	(9,439)	19,230
Orange city	9,533	56.88%	-6.88%	(656)	8,877
Stanton city	3,768	99.46%	-49.46%	(1,864)	1,904
La Habra city	2,684	87.95%	-37.95%	(1,019)	1,666
TOTALS	**70,909**		**-33%**	**(23,168)**	**47,741**

*Table data derived from the RHNA Methodology Calculator released on 9/3/20.

b) Inequitable Redistribution of DAC Jurisdictions' Residual Need Units

As discussed in section 1(a) of this appeal, the exemption provided to the five (5) Orange County DAC Jurisdictions reduces their Total Need Allocations by 63% (44,514 housing units), which necessitates redistribution of those Residual Units to Non-DAC Jurisdictions located within the County. Under the current draft allocation, this redistribution is accomplished by utilizing Existing Need methodology, which ***allocates a higher percentage of units to jurisdictions with greater access to jobs and transit.***

SCAG's redistribution of Residual Need units based on Existing Need Methodology furthers the inequity created by the DAC exemption in that it fails to take other relevant factors into consideration. For example:

- Garden Grove is considered 48% disadvantaged
- Garden Grove has greater access to jobs than 98% of all SCAG jurisdictions.
- Garden Grove has greater access to high quality transit than 96% of all SCAG jurisdictions.

So, despite the fact that 48% of Garden Grove's residents live in DACs the City does not qualify for any DAC exemption under the current draft allocation. To make matters worse, the current redistribution criteria for Residual Units now places the City in a position to receive the ***2nd highest Residual Need allocation among all of the 197 SCAG jurisdictions***; second only to Los Angeles City which has a population of nearly 4 million people.

The following (Table 2) represents the five SCAG jurisdictions receiving the highest redistribution of Residual Units.

Table 2: Highest Redistribution of Residual Units in SCAG region

Jurisdiction	Projected Population by 2045	Population within 1/2 mile of High Quality Transit	Population with High Job Accessibility	Residual Units Redistributed to non-DAC
Los Angeles city	4,771,326	84.8%	17.5%	27,732
Garden Grove city	185,829	73.2%	21.6%	5,877
Irvine city	327,664	13.4%	17.5%	5,294
Huntington Beach city	205,310	36.4%	17.6%	4,304
Unincorp. Los Angeles Co.	1,258,026	40.6%	11.7%	4,105

*Table data derived from the RHNA Methodology Calculator released on 9/3/20.

The City believes SCAG failed to meet the objectives of State housing law in the form of equitable distribution of housing units by redistributing Residual Units based primarily on Job Accessibility and High-Quality Transit. This inequity is intensified by the fact that SCAG failed to consider that the City very nearly qualified

for a complete exemption given its 48% DAC designation. Consider this: If only 3,503 of Garden Grove's 175,155 residents were to reside in what are defined as DACs, the City would have received ***zero*** Residual Units under the draft allocation methodology. Instead, Garden Grove is now set to receive 5,877 Residual Need units. This simply cannot meet the state housing objective of *equitable* distribution of housing units among various jurisdictions.

2. **SCAG Failed to Adequately Consider Information Submitted and Available to SCAG Prior to Adoption of the RHNA Allocation Methodology.**

Pursuant to Government Code section 65584.05(b)(2), a jurisdiction may appeal SCAG'S regional housing need allocation on the grounds that "[t]he council of governments . . . failed to adequately consider the information submitted pursuant to subdivision (b) of Section 65584.04." Here, SCAG failed to consider two crucial pieces of information when reaching its 6th Cycle RHNA allocation decision.

a) SCAG Failed to Consider the Housing Units that have Already Been Planned and/or Approved for Development by DAC Jurisdictions During the 6th Cycle.

In the midst of a state-wide housing crisis, as evidenced by the 6th Cycle Regional Allocation of 1.34 million units, jurisdictions are being called upon to carry their fair share of the housing burden by taking on RHNA allocations significantly higher than in previous cycles. While the City understands the daunting nature of the aforementioned task, the adopted methodology failed to consider the current and future housing production of DAC Jurisdictions, thus causing ***redistributed units to be double-counted***. With the approved RHNA allocation, SCAG has completely ***disregarded housing production that has already been planned and/or approved in DAC Jurisdictions***, while concurrently creating a DAC exemption for those jurisdictions. In short, SCAG failed to account for the anticipated overproduction of units by DAC Jurisdictions.

The following (Table 3) represents an analysis of planned/approved units as part of Specific Plans, zone overlay districts, and/or individual planned or approved projects per websites of the respective DAC Jurisdictions as of September 2020.

Table 3: Illustration of Planned and Approved Units in Orange County DACs

DAC Jurisdiction	RHNA Requirements					Units Planned/Approved (Sep. 2020)			Remaining Units Needed
	5th Cycle			6th Cycle					
	5th Cycle	2020 Annual Progress Report	Difference	6th Cycle	Total RHNA (6th + 5th Cycle Remainder)	Planned	Approved	Total	
Anaheim	5,702	7,377	(1,675)	17,412	17,412	15,899	11	15,910	1,502
Santa Ana	204	2,996	(2,792)	3,087	3,087	7,504	2,650	10,154	(7,067)
Orange	363	1,910	(1,547)	3,927	3,927	685	590	1,275	2,652
La Habra	4	518	(514)	803	803	202	0	202	601
Stanton	313	268	45	1,228	1,273	951	47	998	275
Total	*6,586*	*13,069*	*(6,483)*	*26,457*	*26,502*	*25,241*	*3,298*	*28,539*	*(2,037)*
Garden Grove	*747*	*639*	*108*	*19,122*	*19,230*	*225*	*1,084*	*1,309*	*17,921*

*Table data derived from websites of the specific jurisdictions

As shown in Table 3 above, prior to the start of the 6th RHNA Cycle, DAC Jurisdictions are planning for, or have approved, a total of 28,539 units, which is 2,037 units over their total 6th Cycle allocation. The City is requesting a more equitable allocation that would consider the planned/approved housing production of DAC Jurisdictions and reduce the number of Residual Units redistributed to Non-DAC Jurisdictions accordingly. In conjunction with the proposed "sliding scale application" for DAC exemptions described in 1(a) of this appeal, this approach would result in a more equitable distribution of the region's housing need allocation. For Garden Grove, inclusion of Planned and Approved Units from DAC Jurisdictions would equitably reduce the City's Residual Unit allocation from 5,877 to 3,063.

b) SCAG Relied Upon the Tax Credit Allocation Committee's Opportunity Mapping Tool to Determine What Constitutes a DAC Without Considering that the Data Generated by the Tool is Unreliable for that Purpose.

As mentioned previously, SCAG's exemption for DAC Jurisdictions has resulted in an overwhelmingly inequitable allocation of Regional Housing Need to Non-DAC Jurisdictions. With that in mind, it is important to note that the data used by SCAG to identify DACs *was never intended to be used for that purpose.* The Tax Credit Allocation Committee's (TCAC) Opportunity Mapping Tool was created to assist in the review of 9% Tax Credit applications by ensuring the greatest level of assistance is allocated to housing projects in the highest resource areas, thus breaking the cycle of concentrated poverty/segregation and giving disadvantaged populations increased access to much-needed resources.

Conversely, the methodology adopted by SCAG utilizes the TCAC Opportunity Mapping Tool to identify jurisdictions with more than 50% of their population located in high poverty/high-segregation areas (DACs) in order to offer a substantial reduction to the number of units determined to be necessary to accommodate Total Need. Further, pursuant to the TCAC Opportunity Mapping Tool Methodology (see excerpt below), the data that drives the Tool has limitations since it is based on surveys, may not be reliable in some areas, and is delayed by two years.

> *"Opportunity mapping also has limitations. For example, maps' accuracy is dependent on the accuracy of the data behind them. Data may be derived from self-reported surveys of subsets of an area's population, and sometimes may not be recorded or reliable in some areas. Further, even the most recent publicly available datasets typically lag by two years, meaning they may not adequately capture conditions in areas undergoing rapid change."*

Being that the DAC exemption results in redistribution of 25% of Orange County's Total Need allocation, and 63% of the five Orange County DAC Jurisdictions' Total Need allocation, SCAG's utilization of a tool that was never intended for such a purpose and is, by its own admission, based on outdated and unreliable data, constitutes a failure to consider relevant information.

3. **Garden Grove Has Experienced Changed Circumstances Which Warrant a Revisions to the Draft RHNA Allocation.**

Pursuant to Government Code section 65584.05(b)(3), a jurisdiction may appeal a regional council of government's draft allocation if "[a] significant and unforeseen change in circumstances has occurred in the local jurisdiction or jurisdictions that merits as revision of the information submitted pursuant to subdivision (b) of Section 65584.04."

Household Growth Projections, a key factor in SCAG's determination of Projected Need, were based upon employment projection data for the period from 2020 to 2030, which was submitted by the City to the Center of Demographic Research (CDR) in March 2018[1]. The importance of this data to the RHNA allocation process is due to the state's objective of "[p]romoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction." (Gov. Code § 65584(d)(3))

But the City has experienced a "significant and unforeseen change in circumstances" since 2018 when that employment projection data was submitted to CDR. Specifically, the employment projection data submitted in 2018 was based on a thriving tourism market and the future development of hotels and commercial uses in the Grove Resort District along Harbor Boulevard. However, the Coronavirus pandemic, which has disproportionately affected the tourism industry and jurisdictions that rely upon it, resulted in a significant economic downturn that has crippled the tourism market and (per the U.S. Department of Labor's WARN Report, See **Exhibit 2**), as of August 2020, has resulted in nearly 2,800 service jobs being lost in Garden Grove. Due to the change in circumstance caused by COVID-19, the

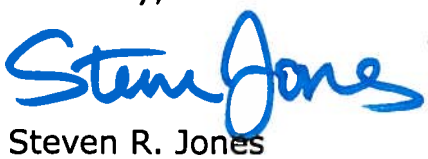
[1] Household Growth Projections also take into consideration housing unit production and population growth estimates.

City is amending its 2020-2030 employment growth projection from 5,477 to 3,731, a reduction of 1,746 jobs (-32%). Therefore, due to the significant loss of over 4,500 new and existing jobs, the City requests a reduction of its current Projected Need allocation of 1,512 housing units.

Conclusion

The City of Garden Grove respectfully requests that SCAG revise the draft RHNA allocation through utilization of the sliding-scale DAC exemption formula as explained herein. Doing so would further the state housing objectives identified by Government Code section 65584(d) by "increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region *in an equitable manner*," and by "promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction." (Gov. Code § 65584(d), subsections (1) and (3)) Further, the City requests that, due to the changed circumstances experienced as a result of the Coronavirus pandemic, it's Projected Need Allocation be reduced from 1,512 housing units to account for the loss of jobs and decreased employment growth projection in the City.

Sincerely,



Steven R. Jones
Mayor

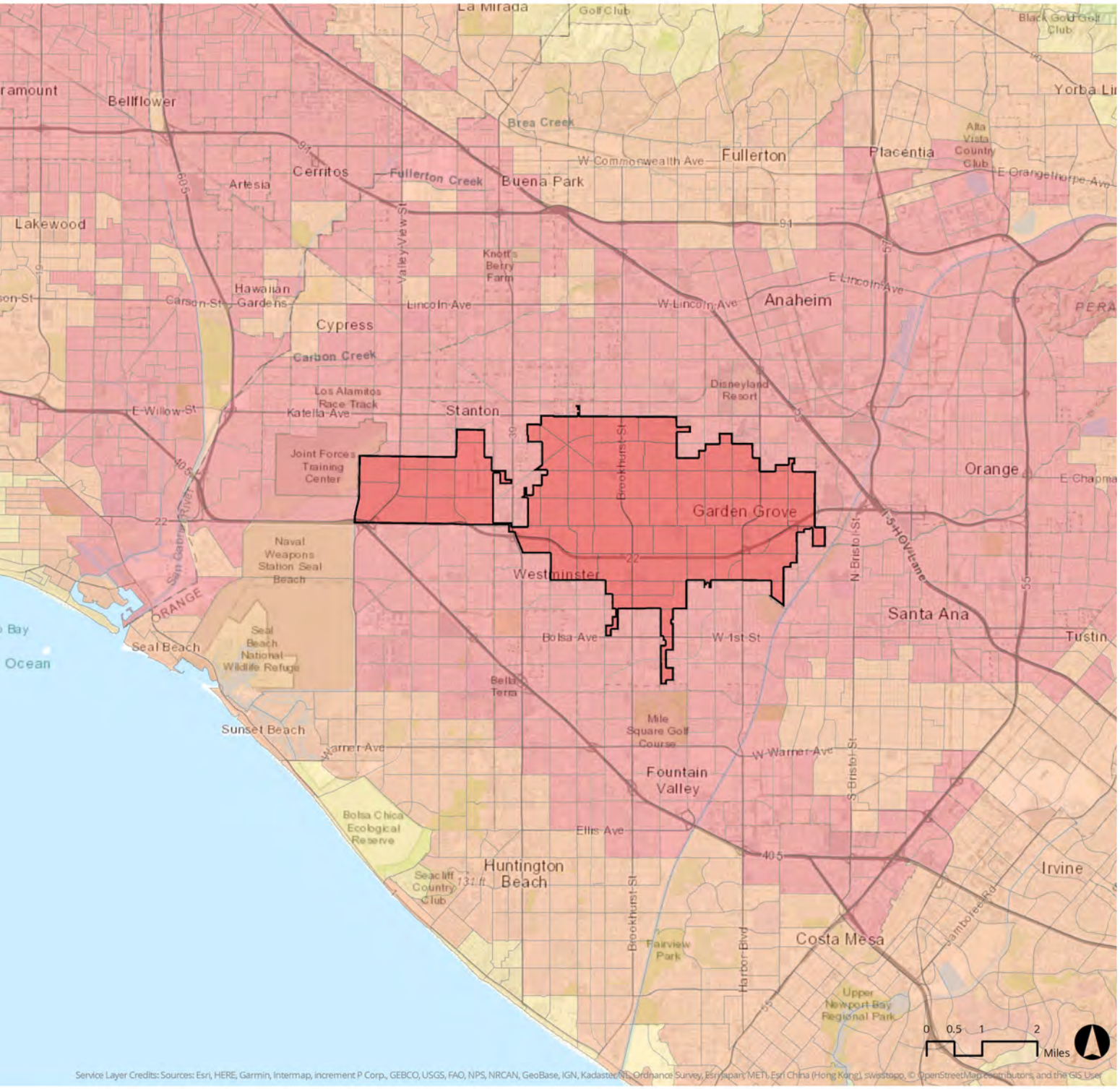
Exhibit 1:
Sliding-Scale DAC Methodology

OC Jurisdiction	BASELINE			CURRENT METHODOLOGY			SLIDING SCALE METHODOLOGY						
	Proj Need	Exist Need	Total Need	Residual Units	Redistri-bution	Total RHNA	DAC %	DAC Reduction (%)	New Residual Units	Redistri-bution %	New Redistri-bution	New RHNA	Difference New - Old RHNA
Stanton	667	561	3768	2540	0	1228	99.5%	49.5%	1864	0.0%	0	1904	676
Santa Ana	2114	973	26256	23168	0	3087	88.8%	38.8%	10191	0.0%	0	16064	12977
La Habra	341	463	2684	1881	0	803	87.9%	37.9%	1019	0.0%	0	1666	863
Anaheim	4113	13299	28669	11257	0	17412	82.9%	32.9%	9439	0.0%	0	19230	1818
Orange	2192	1735	9533	5606	0	3927	56.9%	6.9%	656	0.0%	0	8877	4950
Garden Grove	1512	17611	13246	0	5877	19122	47.9%	0.0%	0	13.2%	3063	16309	(2813)
Buena Park	1533	7366	6441	0	2458	8899	43.4%	0.0%	0	5.5%	1281	7722	(1177)
San Juan Capistrano	277	774	793	0	258	1051	42.5%	0.0%	0	0.6%	135	927	(124)
Laguna Woods	20	974	669	0	325	994	38.6%	0.0%	0	0.7%	169	839	(155)
Westminster	709	9027	6724	0	3013	9736	37.8%	0.0%	0	6.8%	1570	8294	(1442)
Tustin	49	6717	4525	0	2241	6766	35.2%	0.0%	0	5.0%	1168	5693	(1073)
Fullerton	1641	11538	9329	0	3850	13179	33.5%	0.0%	0	8.7%	2007	11335	(1844)
Placentia	860	3503	3194	0	1169	4364	29.8%	0.0%	0	2.6%	609	3804	(560)
Lake Forest	428	2799	2293	0	934	3228	24.8%	0.0%	0	2.1%	487	2780	(448)
Costa Mesa	411	11322	7955	0	3778	11733	19.2%	0.0%	0	8.5%	1969	9924	(1809)
Fountain Valley	177	4650	3275	0	1552	4827	12.3%	0.0%	0	3.5%	809	4084	(743)
Unincorporated OC	5407	4974	8721	0	1660	10381	8.7%	0.0%	0	3.7%	865	9587	(794)
Dana Point	209	321	422	0	107	529	8.6%	0.0%	0	0.2%	56	478	(51)
Huntington Beach	441	12896	9033	0	4304	13337	7.8%	0.0%	0	9.7%	2243	11276	(2061)
Brea	136	2224	1618	0	742	2360	6.6%	0.0%	0	1.7%	387	2004	(356)
Laguna Hills	848	1132	1602	0	378	1980	6.4%	0.0%	0	0.8%	197	1799	(181)
Irvine	7690	15864	18260	0	5294	23554	5.8%	0.0%	0	11.9%	2759	21019	(2535)
Newport Beach	320	4514	3327	0	1506	4834	4.3%	0.0%	0	3.4%	785	4112	(722)
Villa Park	10	285	200	0	95	295	2.0%	0.0%	0	0.2%	50	249	(46)
Cypress	112	3815	2654	0	1273	3927	0.3%	0.0%	0	2.9%	664	3317	(610)
Mission Viejo	41	2170	1487	0	724	2212	0.0%	0.0%	0	1.6%	378	1865	(347)
Aliso Viejo	48	1144	811	0	382	1193	0.0%	0.0%	0	0.9%	199	1010	(183)
La Palma	6	794	535	0	265	800	0.0%	0.0%	0	0.6%	138	673	(127)
Laguna Beach	18	375	267	0	125	393	0.0%	0.0%	0	0.3%	65	333	(60)
Laguna Niguel	62	1143	824	0	381	1205	0.0%	0.0%	0	0.9%	199	1023	(182)
Los Alamitos	158	609	564	0	203	767	0.0%	0.0%	0	0.5%	106	669	(98)
Rancho Santa Margarita	43	636	467	0	212	679	0.0%	0.0%	0	0.5%	111	578	(101)
San Clemente	462	517	806	0	172	979	0.0%	0.0%	0	0.4%	90	896	(83)
Seal Beach	112	1128	863	0	377	1240	0.0%	0.0%	0	0.8%	196	1060	(180)
Yorba Linda	34	2376	1617	0	793	2410	0.0%	0.0%	0	1.8%	413	2030	(380)
	33201	150229	183431	44451	44451	183431		12.6%	23168		23168	183431	

Exhibit 2:
U.S. Department of Labor's WARN Report (as of 8/27/20)

Worker Adjustment and Retraining Notification Act ("WARN")

Company	Street Address	CSZ	Date	Associates
Basic Energy Services	12891 Neson Street	Garden Grove, CA 92840	1-Apr-20	52
Burlington #772	13092 Harbor Boulevard	Garden Grove, CA 92843	8-Apr-20	69
Club Demonstration Services			11-Apr-20	43
Enterprise Holdings (Enterprise Rent-A-Car)	13292 Brookhurst St.	Garden Grove, CA 92843	2-May-20	2
Evans Manufacturing				73
Garden Grove Kia			10-Apr-20	50
GKN Aerospace	12122 Western Avenue	Garden Grove, CA 92841	4-Jun-20	40
Goodwill - Orange County	11052 Magnolia Street	Garden Grove, CA 92841	7-Apr-20	32
Great Wolf Lodge	12681 Harbor Boulevard	Garden Grove, CA 92840	26-Mar-20	721
Hyatt Regency			9-Apr-20	369
Island Hospitality Group/Residence Inn	11931 Harbor Boulevard	Garden Grove, CA 92840	7-Apr-20	16
Keolis	13591 Harbor Boulevard	Garden Grove, CA 92843	30-Apr-20	19
Outback Steakhouse - Out West Restaurant Group, Inc	12001 Harbor Boulevard	Garden Grove, CA 92840	3-Apr-20	59
Regal	9741 Chapman Avenue	Garden Grove, CA 92841	27-Apr-20	62
ROSS	13200 Harbor Boulevard	Garden Grove, CA 92843	3-Apr-20	62
Safran Cabin	73300 Lincoln Way	Garden Grove, CA 92840	15-Apr-20	304
Saint Gobain				110
SPS Technologies DBA Air Industries				534
STG Auto Group				37
The Roman Catolic Bishop of Orange ("the Diocese")	13280 Chapman Ave.	Garden Grove, CA 92840	21-Apr-20	52
United Here Local				7
Western Dental & Orthodontics	12141 Garden Grove Blvd	Garden Grove, CA 92843	30-Mar-20	11
Western Transit System, Inc.	13591 Harbor Boulevard	Garden Grove, CA 92843	29-Apr-20	39
Yellow Cab of Greater Orange County	13591 Harbor Boulevard	Garden Grove, CA 92843	30-Apr-20	33
			Total Job Loss	2796



TAZ-level job accessibility in and around: City of Garden Grove [Year 2045]

0% - 2.3% | 2.4% - 7.8% | 7.9% - 11.7% | 11.8% - 15.5% | 15.6% - 19.6% | 19.7% - 32.3

Note: These data represent the share of jobs in the SCAG region accessible by automobile commute in 30 minutes in 2045 during the peak AM commute (6-9am). Further detail on the job accessibility measure can be found in SCAG's Final RHNA Methodology. Note that since the SCAG region's total employment forecast for 2045 is 10,049,000 jobs, the number of jobs available can be measured by multipling the percentage found on the map by this number. For example, a TAZ-level job accessibility measure of 10.0% means that 1,049,000 future jobs could be reached in 30 minutes.

Data Source: SCAG, 2020 | Map Created: 10/22/2020

Disclaimer: The data underlying the information shown on this map reflect jurisdiction's input submitted during the Local Input and Envisioni... Connect SoCal. SCAG shall not be responsible for user's misuse or misrepresentation of this map. For the details regarding the sources, meth... of this map, please refer to the SCAG Data/Map Book at https://www.connectsocal.org/Pages/Local-Input-Process.aspx or contact RTPLocalInp...

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF HOUSING POLICY DEVELOPMENT
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December 10, 2020

Kome Ajise, Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

Dear Executive Director Ajise:

RE: Comment on Appeals of the Draft Regional Housing Need Allocation (RHNA) Plan

Thank you for the opportunity to comment on the 52 appeals Southern California Association of Governments (SCAG) has received regarding the draft RHNA plan. The appeal process is an important phase in the development of a RHNA plan that ensures that all relevant factors and circumstances are considered.

The only circumstances under which a jurisdiction can appeal are:

- 65584.05(b)(1): The council of governments failed to adequately consider the information regarding the factors listed in subdivision (e) of section 65584.04.
- 65584.05(b)(2): The council of governments failed to determine the share of the regional housing need in a manner that furthers the intent of the objectives listed in subdivision (d) of section 65584.
- 65584.05(b)(3): A significant unforeseen change in circumstances occurred in the local jurisdiction that merits a revision of the information submitted pursuant to subdivision (e) of Section 65584.04.

The California Department of Housing and Community Development (HCD) urges SCAG to only consider appeals that meet these criteria.

Per Government Code section 65584.05(e)(1), SCAG's final determination on whether to accept, reject, or modify any appeal must be accompanied by written findings, including how the final determination is based upon the adopted RHNA allocation methodology, and how any revisions are necessary to further the statutory objectives of RHNA described in Government Code section 65584(d).

Among the appeals based on Government Code section 65584.05(b)(1), several appeals state that SCAG failed to consider the factor described in Government Code section 65584.04(e)(2)(B), citing the lack of land suitable for development as a basis for the appeal. However, this section states the council of governments may not limit its consideration of suitable housing sites to existing zoning and land use restrictions and must consider the potential for increased development under alternative zoning and

land use restrictions. Any comparable data or documentation supporting this appeal should contain an analysis of not only land suitable for urban development, but land for conversion to residential use, the availability of underutilized land, and opportunity for infill development and increased residential densities. In simple terms, this means housing planning cannot be limited to vacant land, and even communities that view themselves as built out must plan for housing through means such as rezoning commercial areas as mixed-use areas and upzoning non-vacant land.

With regard to appeals submitted related to Government Code section 65584.05(b)(2), that SCAG failed to determine the RHNA in a manner that furthers the statutory objectives, it should be noted that HCD reviewed SCAG's draft allocation methodology and found that the draft RHNA allocation methodology furthered the statutory objectives described in Government Code section 65584.

Among the appeals based on Government Code section 65584.05(b)(2), several contend that the cap on units allocated to extremely disadvantaged communities (DACs) does not further RHNA's statutory objectives. This cap furthers the statutory objective to affirmatively further fair housing by allocating more units to high opportunity areas and fewer units to low resource communities, and concentrated areas of poverty with high levels of segregation. Due to the inclusion of this factor, as well as the use of TCAC/HCD Opportunity Maps, SCAG's methodology allocates 14 of the top 15 highest shares of lower-income RHNA to jurisdictions with over 99.95 percent High and Highest Resource areas. With the exceptions of two jurisdictions, the 31 jurisdictions with the highest share of lower-income RHNA are all over 95 percent High and Highest Resource areas. Any weakening of these inputs to the methodology could risk not fulfilling the statutory objective to affirmatively further fair housing.

Several appeals argue that SCAG's RHNA allocation methodology does not adequately promote access to jobs and transit, as required in objectives two and three. HCD's review of SCAG's RHNA methodology found the allocation does further the environmental principles of objective two. SCAG's overall allocation includes significant weight related to the location of high-quality transit areas and the regional distribution of jobs that can be accessed within a 30-minute driving commutes. Regarding objective three, HCD's analysis as to whether jobs-housing fit was furthered by SCAG's draft methodology found that across all jurisdictions there is generally good alignment between low-wage jobs and lower-income RHNA, with all but 15 jurisdictions within a half percent plus or minus difference between their share of lower-income RHNA for the region and their percentage low-wage jobs for the region.

Several appeals are based upon the provision described in Government Code section 65584.05(b)(3), arguing that the COVID-19 pandemic represents a significant and unforeseen change in circumstances that will affect future population and job growth. Ensuring everyone has a home is critical to public health. Reducing and preventing overcrowding and homelessness are essential concerns for every community. The COVID-19 pandemic has only increased the importance that each community is planning for sufficient affordable housing.

Lastly, several appeals state that the Regional Housing Needs Determination (RHND) HCD provided to the SCAG region is too large. SCAG submitted an objection to the RHND at the appropriate time and through the appropriate process. HCD considered those objections and determined the final RHND for 6th Housing Element Cycle for the SCAG region on October 15, 2019. There are no further appeal procedures available to alter the SCAG region's RHND for this cycle. Government Code section 65584.05(b) does not allow local governments to appeal the RHND during the 45-day period following receipt of the draft allocation.

HCD acknowledges that many local governments will need to plan for more housing than in the prior cycle to accommodate a RHND that more fully captures the housing need and as the statutory objectives of RHNA shift more housing planning near jobs, transit, and resources. The Southern California region's housing crisis requires each jurisdiction to plan for the housing needs of their community and the region. In recognition of this effort there are more resources available than ever before to support jurisdictions as they prepare to update their 6th cycle housing elements:

- SB 2 Planning Grants – $123 million one-time allocation to cities and counties
- SB 2 Planning Grants Technical Assistance offered to all jurisdictions
- Regional and Local Early Action Planning Grants – $238 million one-time allocation for local and regional governments
- SB 2 Permanent Local Housing Allocation – approximately $175 million annually in ongoing funding for local governments to increase affordable housing stock

If HCD can provide any additional assistance, or if you, or your staff, have any questions, please contact Megan Kirkeby, Deputy Director, megan.kirkeby@hcd.ca.gov.

Megan Kirkeby
Deputy Director

City of Whittier

13230 Penn Street, Whittier, California 90602-1716
(562) 567-9320 Fax (562) 567-2872 www.cityofwhittier.org

Electronically Transmitted to: Housing@scag.ca.gov

December 10, 2020

RHNA Appeals Committee
Southern California Association of Governments
900 Wilshire Blvd, Suite 1700
Los Angeles, CA 90017

SUBJECT: City of Whittier's Comments on Appeals to the Sixth Cycle Regional Housing Needs Assessment (RHNA) Allocation

Honorable Chair and Honorable Committee Members:

The City of Whittier ("City") appreciates the challenges that are inherent in allocating 1,341,827 housing units by the thousands (a 226% increase above the baseline 412,137 unit) to cities across Southern California, especially in built-out cities. However, the City is deeply concerned its housing allocation of 3,431 units from the State Department of Housing and Community Development ("HCD") and the Southern California Association of Government's ("SCAG") unit distribution methodology, along with recent housing legislation will fundamentally abridge the City's ability to develop effective land-use policies that are appropriate for managing the community's actual needs. The 878 units in the 5th cycle RHNA allocation has been increased by 290%to 3,431 units in the current 6th cycle. Particularly challenging in the 6th cycle, is the number of low and very low-income units (1,558) which combined with the moderate and above moderate unit totals forces unplanned and unnecessary residential densification of the community.

The affordable units are an unfunded mandate with very limited regional or State financial support for their development. Considering the affordable housing subsidies typically range from $50,000 to $250,000 per unit, the overall funding requirements could range from $78,000,000 to $390,000,000 which is clearly beyond the reach of the City of Whittier in that the City's general fund budget is just $72,000,000 which already include $2,000,000 annually to house the City's unsheltered residents in transitional housing. Additionally, the City only receives 7.5%of each property tax dollar to provide general services including police and library services.

The City is currently in the process of updating its Housing Element as well as the General Plan to incorporate the current RHNA allocation, so Whittier is acutely aware of the various housing needs as well as the potential obstacles, such as aging infrastructure and unplanned density, to creating the requisite housing within a city that

is essentially built out. The changes in the State's housing laws (SB 35, SB 166 and AB 1397) have created additional constraints for the agencies and may severely impact the City's ability to accomplish our regional and local housing goals.

Since development in Whittier began more than 130 years ago, the City is virtually built-out with little developable vacant land outside of its designated open space areas that are dedicated to accommodating existing and future residents. While the City has made significant efforts through its specific plans to densify existing corridors and districts, the majority of Whittier's remaining single-family residential neighborhoods cannot accommodate similar densification. Furthermore, the hills north of Whittier contain regional open space, sensitive habitat and wildlife areas that must be preserved in perpetuity. There are also significant infrastructure and water service constraints that impact Whittier's ability to produce significantly more housing. Although these facts may not be desirable, they must be pragmatically accounted for and mitigated by not further increasing Whittier's share of housing units contained in SCAG's 6th Cycle RHNA. The final RHNA allocation and methodology must be fair and equitable while reflecting the capacity for reasonable housing unit construction.

As with many other cities, the City is concerned about the current allocation, but an even greater concern is that additional units may be applied to the City if reallocated from cities that are successful in their appeals. To that end, the City believes the appeal process itself was unclear as to the potential ramifications to other cities and not fully understood.

Although we fully support the surrounding cities in their appeals, the potential for additional units being applied to the City would exacerbate the problems described herein and in Whittier's September 13, 2019 letter to SCAG.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Jeffery S. Adams
Director of Community Development

File

[redacted]

From: Christopher Koontz <Christopher.Koontz@longbeach.gov>
Sent: Thursday, December 3, 2020 11:14 AM
To: Regional Housing
Subject: RHNA Appeals

Categories: Response Required, Record

Good morning,

The purpose of this email is to provide the City of Long Beach's position in regards to pending RHNA appeals before SCAG. The City of Long Beach seeks to meet its housing needs and obligations for the benefit of Long Beach residents and the region. Our allocation was extremely large and presents a planning and financing challenge for the City. Nonetheless we chose not to appeal our allocation because the allocation process was fair and transparent including taking the City of Long Beach's input into consideration.

We oppose and will not accept any transfer of additional allocation due to the pending appeals. We note that within our area, the Gateway COG, appeals are pending from Bellflower, Cerritos, Downey, Huntington Park, La Mirada, Lakewood, Pico Rivera, and South Gate. Each of these appeals should be evaluated by SCAG on the merits, however Long Beach opposes any transfer of allocation to our City. It would be inappropriate to transfer a further burden to Long Beach when we have already accepted a large allocation and have done more than many cities in the region to accommodate housing growth under the current RHNA cycle, including fully meeting our market-rate RHNA allocation.

The City of Long Beach will continue to work with SCAG and our neighbor jurisdictions to address the housing needs of our residents.

We thank you for consideration and please do not hesitate to contact the City regarding our position.

Christopher Koontz, AICP
Deputy Director

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January 13, 2020

Kome Ajise
Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

Dear Executive Director Ajise:

RE: Review of Draft Regional Housing Need Allocation (RHNA) Methodology

Thank you for submitting the draft Southern California Association of Governments (SCAG) Sixth Cycle Regional Housing Need Allocation (RHNA) Methodology. Pursuant to Government Code Section 65584.04(i), the California Department of Housing and Community Development (HCD) is required to review draft RHNA methodology to determine whether the methodology furthers the statutory objectives described in Government Code Section 65584(d).

In brief, the draft SCAG RHNA methodology begins with the total regional determination provided by the California Department of Housing and Community Development (HCD) and separates it into two methodologies to allocate the full determination: projected need (504,970) and existing need (836,857).

For projected need, the household growth projected in SCAG's Connect SoCal growth forecast for the years 2020-2030 is used as the basis for calculating projected housing need for the region. A future vacancy and replacement need are also calculated and added to the projected need.

The existing need is calculated by assigning 50 percent of regional existing need based on a jurisdiction's share of the region's population within the high-quality transit areas (HQTAs) based on future 2045 HQTAs. The other 50 percent of the regional existing need is based on a jurisdiction's share of the region's estimated jobs in 2045 that can be accessed within a 30-minute driving commute. For high segregation and poverty areas as defined by HCD/TCAC Opportunity Maps,[1] referred to by SCAG as extremely disadvantaged communities (DACs), existing need in excess of the 2020-2045 household growth forecast is reallocated to non-DAC jurisdictions within the same county.

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[1] Created by the California Fair Housing Task Force and commissioned by HCD and the California Tax Credit Allocation Committee (TCAC) to assist public entities in affirmatively furthering fair housing. The version used in this analysis is the 2019 HCD/TCAC Opportunity Maps available at treasurer.ca.gov/ctcac/opportunity.asp.

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Within both the projected and existing need methodologies the four RHNA income categories (very low, low, moderate, and above moderate) are assigned to each jurisdiction by the use of a 150 percent social equity adjustment, which inversely adjusts based on the current incomes within the jurisdiction. An additional percentage of social equity adjustment is made for jurisdictions that have a high concentration of DACs or Highest Resource areas as defined by the HCD/TCAC Opportunity maps. Overall, the social equity adjustments result in greater shares of lower income RHNA to higher income and higher-resource areas.

HCD has completed its review of the methodology and finds that the draft SCAG RHNA Methodology furthers the five statutory objectives of RHNA.[2] HCD acknowledges the complex task of developing a methodology to allocate RHNA to 197 diverse jurisdictions while furthering the five statutory objectives of RHNA. This methodology generally distributes more RHNA, particularly lower income RHNA, near jobs, transit, and resources linked to long term improvements of life outcomes. In particular, HCD applauds the use of objective factors specifically linked the statutory objectives in the existing need methodology.

Below is a brief summary of findings related to each statutory objective described within Government Code Section 65584(d):

1. Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low-income households.

The methodology generally allocates increased shares of lower income RHNA to jurisdictions that have higher housing costs. In support of a mix of affordability, the highest housing cost cities generally receive higher shares of lower income RHNA. Under this methodology the 15 cities with the highest median housing costs all receive greater than 50 percent of the RHNA as lower income RHNA. Beverly Hills with the 18th highest median housing costs receives the 25th highest share of lower income RHNA; Westlake Village with the 14th highest median housing costs receives the 12th highest share of lower income RHNA; Aliso Viejo with the 23rd highest median housing costs receives the 38th highest share of lower income RHNA; and Villa Park with the 10th highest median housing costs receives the 31st highest share of lower income RHNA.

2. Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.

The draft SCAG RHNA methodology furthers the environmental principles of this objective as demonstrated by the transportation and job alignment with the RHNA allocations.

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[2] While HCD finds that this particular methodology furthers the objectives of RHNA, HCD's determination is subject to change depending on the region or cycle, as housing conditions in those circumstances may differ.

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3. Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.

Half of the existing need portion of the draft SCAG RHNA methodology is set based on the jurisdiction's share of the region's estimated jobs in 2045. While future looking job projections are important for housing planning, and housing built in the next decade will likely exist for 50-100 years or more, it is also critical to plan for the needs that exist today. This objective specifically considers the balance of low-wage jobs to housing available to low-wage workers. As part of HCD's analysis as to whether this jobs-housing fit objective was furthered by SCAG's draft methodology, HCD analyzed how the percentage share of the region's lower income RHNA compared to the percentage share of low-wage jobs.

For example, under the draft SCAG RHNA methodology Irvine would receive 1.84 percent of the region's lower income RHNA, and currently has 2.07 percent of the region's low-wage jobs, .23 percent less lower income RHNA than low-wage jobs for the region. Pomona would receive .71 percent of the region's lower income RHNA, and currently has .57 percent of the region's low-wage jobs, .13 percent more lower income RHNA than low-wage jobs for the region. Across all jurisdictions there is generally good alignment between low-wage jobs and lower income RHNA, with all but 15 jurisdictions within a half percent plus or minus difference between their share of lower income RHNA for the region and their percentage low-wage jobs for the region.

HCD is aware there has been some opposition to this current methodology from jurisdictions that received lower allocations under prior iterations; however it is worth noting that even if it is by a small amount, many of the jurisdictions that received increases are still receiving lower shares of the region's lower income RHNA compared to their share of the region's low-wage jobs. HCD recommends any changes made in response to appeals should be in the interest of seeking ways to more deeply further objectives without compromising other objectives.

4. Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.

This objective is furthered directly by the social equity adjustment factor included in the draft SCAG RHNA methodology. Jurisdictions in the SCAG region range from as little as 10.9 percent lower income households to 82.7 percent lower income households. The 20 jurisdictions with the greatest share of lower income households, 67.2-82.7 percent lower income households, would receive an average of 31.6 percent lower income share of their RHNA; compared to the 20 jurisdictions with the lowest share of lower income households, 10.9-25.1 percent lower income households, would receive an average of 59.1 percent lower income share of their RHNA. While the social equity adjustment explicitly responds to objective four, it also assists in the methodology furthering each of the other objectives.

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5. Affirmatively furthering fair housing, which means taking meaningful actions, in addition to combating discrimination, that overcome patterns of segregation and foster inclusive communities free from barriers that restrict access to opportunity based on protected characteristics. Specifically, affirmatively furthering fair housing means taking meaningful actions that, taken together, address significant disparities in housing needs and in access to opportunity, replacing segregated living patterns with truly integrated and balanced living patterns, transforming racially and ethnically concentrated areas of poverty into areas of opportunity, and fostering and maintaining compliance with civil rights and fair housing laws.

HCD applauds the inclusion of the affirmatively furthering fair housing adjustment factor in the methodology. This factor directs more lower income RHNA to higher opportunity areas and reduces allocations in segregated concentrated areas of poverty, as defined in the HCD/TCAC Opportunity Maps, which evaluate access to opportunity, racial segregation, and concentrated poverty on 11 dimensions, which are all evidence-based indicators related to long term life outcomes. 14 of the top 15 highest shares of lower income RHNA are in regions over 99.95 percent High and Highest Resource areas. These include: Imperial, La Habra Heights, Rolling Hills Estates, Hermosa Beach, La Cañada Flintridge, Palos Verdes Estates, Manhattan Beach, Rolling Hills, Agoura Hills, Rancho Palos Verdes, Westlake Village, San Marino, Eastvale, and Hidden Hills. With the exceptions of the cities of Vernon and Industry, the 31 jurisdictions with the highest share of lower income RHNA are all over 95 percent High and Highest Resource areas.

HCD appreciates the active role of SCAG staff in providing data and input throughout the draft SCAG RHNA methodology development and review period. HCD especially thanks Ping Chang, Kevin Kane, Sarah Jepson, and Ma'Ayn Johnson for their significant efforts and assistance.

HCD looks forward to continuing our partnership with SCAG to assist its member jurisdictions to meet and exceed the planning and production of the region's housing need.

Support opportunities available for the SCAG region this cycle include, but are not limited to:

- SB 2 Planning Technical Assistance (Technical assistance available now through June 2021)
- Regional and Local Early Action Planning grants (25 percent of Regional funds available now, all other funds available early 2020)
- SB 2 Permanent Local Housing Allocation (Available April – July 2020)

If HCD can provide any additional assistance, or if you, or your staff, have any questions, please contact Megan Kirkeby, Assistant Deputy Director for Fair Housing, megan.kirkeby@hcd.ca.gov.

Megan Kirkeby
Assistant Deputy Director for Fair Housing

AGENDA ITEM 1.4*
REPORT

Southern California Association of Governments
Remote Participation Only
January 2p, 2021

To: Regional Housing Needs Assessment Subcommittee (RHNA)

EXECUTIVE DIRECTOR'S APPROVAL

From: Karen Calderon, Associate Regional Planner, Compliance & (213) 236-1983, calderon@scag.ca.gov

Kome Ajise

Subject: Appeal of the Draft RHNA Allocation for the City of Pico Rivera

RECOMMENDED ACTION:
Deny the appeal filed by the City of Pico Rivera (City) to reduce the Draft RHNA Allocation for the City by 3,251 units.

STRATEGIC PLAN:
This item supports the following Strategic Plan Goal 2: Advance Southern California's policy interests and planning priorities through regional, statewide, and national engagement and advocacy.

SUMMARY OF APPEAL:
The City of Pico Rivera requests a reduction of its RHNA allocation by 3,251 units (from 3,939 units to 688 units) based on the following issues:

1. Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029) - the RHNA allocation does not meet the housing objectives and is unfair as it assigns the City a disproportionately higher amount of lower income units, based upon a flawed methodology that is inconsistent with regional growth forecasts.
2. Distribution of household growth assumed for purposes of comparable Regional Transportation Plans - SCAG's RHNA methodology is inconsistent with the household growth projections determined in Connect SoCal Plan.
3. Sewer or water infrastructure constraints for additional development - adequate water supply capacity to accommodate the development of their RHNA allocation is not available.
4. Availability of land suitable for urban development or for conversion to residential use - the City is constrained due to flood risks and there is little vacant land suitable for residential uses and available sites may not meet AB 1397 requirements.
5. Changed circumstances - COVID-19 pandemic has affected the economy and housing dynamics resulting in a decrease need for housing.

RATIONALE FOR STAFF RECOMMENDATION:

Staff have reviewed the appeal and recommend no change to the City of Pico Rivera's RHNA allocation. Regarding Issue 1, statute vests HCD with the authority to decide whether statutory objectives were met by the RHNA Methodology, and HCD made this determination. Also, the City is challenging the adopted RHNA Methodology rather than the application of the methodology. Additionally, the City's allocation of low-income units was conducted pursuant to the final RHNA methodology and in a fair and consistent manner across all local jurisdictions. Regarding Issue 2, the jurisdiction's RHNA allocation was assigned in a manner consistent with the development pattern in Connect SoCal. Regarding Issue 3, evidence from a utility service provider that would preclude the construction of new housing was not demonstrated. Issue 4 was not demonstrated to be an impediment to meeting Pico Rivera's RHNA allocation since AB 1397 does not preclude consideration of all non-vacant sites. Regarding Issue 5, evidence that COVID-19 reduces housing need for the entire RHNA planning period was not demonstrated. Moreover, impacts from COVID-19 are not unique to any single SCAG jurisdiction and no evidence was provided indicating that housing need within jurisdiction is disproportionately impacted in comparison to the rest of the SCAG region.

BACKGROUND:

Draft RHNA Allocation

Following the adoption of the Final RHNA Methodology on March 5, 2020 and the adoption of Connect SoCal on September 3, 2020, all local jurisdictions received draft RHNA allocations on September 11, 2020. A summary is below.

Total RHNA for the City of Pico Rivera: 3,939 units

- Very Low Income: 1,149 units
- Low Income: 562 units
- Moderate Income: 572 units
- Above Moderate Income: 1,656 units

Additional background related to the Draft RHNA Allocation is included in Attachment 1.

Summary of Comments Received during 45-day Comment Period

No comments were received from local jurisdictions or HCD during the 45-day public comment period described in Government Code section 65584.05(c) which specifically regard the appeal filed for the City of Pico Rivera. Three comments were received which relate to appeals filed generally:

- HCD submitted a comment on December 10, 2020 delineating the statutory basis for RHNA appeals and the requirement that any appeals granted must include written findings regarding how revisions are necessary to further RHNA's statutory objectives.
- The City of Whittier submitted a comment on December 10, 2020 supporting surrounding cities in their appeals but expressing concern that additional units may be applied to Whittier if reallocated from cities which are successful in their appeals.
- The City of Long Beach submitted a comment on December 3, 2020 indicating their view that the RHNA allocation process was fair and transparent, their support for evaluating appeals on their merits (specifically those from the Gateway Council of Governments), and their opposition to any action which would result in a transfer of additional units to Long Beach.

ANALYSIS:

Issue 1: *Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029) [Government Code Section 65584.05 (b)(1)].*

The City contends SCAG failed to determine Pico Rivera's share of the regional housing need in accordance with the information described in the Final RHNA Methodology established and approved by SCAG, and in a manner that furthers, and does not undermine the five objectives listed in Government Code Section 65584 (d). Additionally, the RHNA allocation is unfair as it assigns the City a disproportionately higher amount of lower income units, based upon a flawed methodology that is inconsistent with regional growth forecasts.

SCAG Staff Response: SCAG's adopted RHNA Methodology balanced a wide-range of policy and statutory objectives (i.e., the objectives set forth in Government Code section 65584(d)). For example, the methodology incorporates locally-envisioned growth from Connect SoCal, recognizes the importance of job and transit access in future housing planning, and demonstrates a commitment to social equity in the form of the social equity adjustment and the reallocation of residual housing need in lower-resourced jurisdictions to higher-resourced jurisdictions.

With respect to the statutory objectives, SCAG used objective measures to advance certain principles, but since local and regional conditions vary tremendously across the state and over time, there are few consistent quantitative standards which can be used to evaluate all aspects of the methodology. Ultimately, however, the RHNA statute vests HCD with the authority to decide whether statutory objectives have been met. On January 13, 2020, HCD found that SCAG's (then draft) 6th cycle methodology advanced all five statutory objectives of RHNA.

Regarding the amount of low income units assigned to the jurisdiction, a regional determination of approximately 1.34 million units was issued by HCD on October 15, 2019 per state housing law, which included allocation by income categories in order to promote equity across the region. The RHNA methodology includes a minimum 150 percent social equity adjustment and an additional 10 to 30 percent added in areas with significant populations that are defined as very low or very high resource areas, to further the objectives of allocating a lower proportion of households by income and affirmatively furthering fair housing. A social equity adjustment ensures that jurisdictions accommodate their fair share of each income category. It does so by adjusting current household income distribution in comparison to county distribution. The result is that jurisdictions that have a higher concentration of lower income households than the county will receive lower percentages of RHNA for the lower income categories. As shown in Table 1, below, after the 150% equity adjustment, Pico Rivera's Draft RHNA Allocation by income category is similar to the County's distribution, and consistent with HCD's regional determination by income category for the region.

Table 1: RHNA Allocation by Income Category

	Very-low Income	**Low Income**	**Moderate**	**Above Moderate**	**Total Units**
Region	26%	15%	17%	42%	1.34 million
Los Angeles County	26%	15%	16%	43%	813,082
Pico Rivera	28%	14%	15%	43%	3,939

However, an appeal citing RHNA methodology as its basis must appeal the application of the adopted methodology, not the methodology itself. Since the final calculation of income levels was conducted pursuant to the final RHNA methodology and in a fair and consistent manner across all local jurisdictions, SCAG staff does not recommend a reduction to the jurisdiction's draft RHNA allocation based on this factor.

Regarding inconsistencies between RHNA and Connect SoCal's regional growth forecasts, see SCAG Staff Response for Issue 2, below.

Issue 2: *Distribution of household growth assumed for purposes of comparable Regional Transportation Plans [Section 65584.04(e)(3)].*

The City argues SCAG's RHNA methodology is inconsistent with the household growth projections determined in Connect SoCal. Specifically, the City's household growth projected over the 2045 forecast period in Connect SoCal results in an annual household growth of 66.5 households. The RHNA forecast growth amortized over the 8-year planning period results in growth of 492 housing units per year, which is 7.5 times above the Connect SoCal forecast. Therefore, the RHNA allocation is inconsistent with the 2045 growth forecast in Connect SoCal, which undermines the validity of the

assumptions in the Draft RHNA Allocations and Government Code Section 65584(d)(1) by failing to provide the distribution of units in an equitable manner.

SCAG Staff Response: As described in Attachment 1, Pico Rivera's RHNA Draft Allocation is comprised of projected and existing need components. The projected need component is primarily based on household growth in Connect SoCal, SCAG's 2020-2045 Regional Transportation Plan which was fully adopted in September 2020. For Pico Rivera, this amount is 657 units. Small adjustments are made to account for future vacancy (16 units) and replacement need (23 units).

Legislative changes in 2018 modified the nature of the regional housing need determination for the 6th cycle of RHNA by adding measures of household overcrowding and housing cost burden to the list of factors to be considered by HCD for the determination of housing need. As determined by HCD, a large share of the region's housing need is based on factors other than future household growth and can be characterized as existing need. For Pico Rivera, this amounts to 3,283 units (83.3% of the City's total need, see Attachment 1). These new measures are not included in the Connect SoCal Growth Forecast because they are not direct inputs to the growth forecasting process and are independent of employment and population projections. In contrast, they reflect additional latent housing needs in the current population (i.e., "existing need") and would not result in a change in regional population. SCAG's RHNA methodology explicitly ensures that these units are allocated to jurisdictions across the region based on measures of transit and job accessibility such that future housing development can maximize the use of public transportation and existing infrastructure.

Ultimately, the Regional Transportation Plan/Sustainable Communities Strategy is a related, but separate process from the Regional Housing Needs Assessment. The RHNA identifies anticipated housing need over a specified eight-year period and requires that local jurisdictions make available sufficient zoned capacity to accommodate this need. In contrast, the Connect SoCal Growth Forecast is an assessment of the reasonably foreseeable future pattern of growth given, among other factors described above, the availability of zoned capacity. For further discussion see Attachment 1 as well as Connect SoCal Master Response 1 at https://scag.ca.gov/sites/main/files/file-attachments/0903fconnectsocal_public-participation-appendix-2.pdf

In summary, Pico Rivera's RHNA allocation is consistent with the distribution of household growth envisioned in Connect SoCal and maximizes the opportunity to match future housing unit growth with public transportation and existing transportation infrastructure. For this reason, SCAG staff does not recommend a reduction to its draft RHNA allocation based on this factor.

Issue 3: *Sewer or water infrastructure constraints for additional development [Section 65584.04(e)(2)(A)].*

The City argues it does not have adequate water supply capacity to accommodate the development of their RHNA allocation. Pico Rivera has a finite amount of water it can draw from the Central Basin, controlled by the Department of Water Resources, and is not permitted to draw the additional water supply that would be needed to accommodate the City's RHNA allocation. Based the City's 2015 Urban Water Management Plan, the City's RHNA allocation represents a dwelling unit growth that will exceed the City's available water supply totals by 2023. The City contends that a realistic estimate of future growth need should be directly tied to the realistic water capacity available within to the City of Pico Rivera as described in the City's Urban Water Management Plan.

SCAG Staff Response: For Government Code Section 65584.04(e)(2)(A) to apply in this case, the jurisdiction must be precluded from providing necessary infrastructure for additional development due to supply and distribution decisions made by a sewer or water provider other than the local jurisdiction. For the water constraints mentioned by the jurisdiction, it is not evident that the respective water provider has rendered a decision that would prevent the jurisdiction from providing necessary infrastructure to obtain the additional water supply necessary for its RHNA allocation. For this reason, SCAG staff does not recommend a housing need reduction based upon this planning factor.

Issue 4: *Availability of land suitable for urban development or for conversion to residential use [Section 65584.04(e)(2)(B)].*

The entire City of Pico Rivera lies within the Whittier Narrows Dam's flood inundation area. Due to the high risk of flooding in the event of a Dam failure, Pico Rivera is extremely limited in areas where it can plan for future housing in a manner that is safe for future residents. The City contends that a realistic estimate of future growth need should be directly tied to the amount of available land within the City of Pico Rivera, suitable for urban development that is not subject to the risk of flooding.

The City of Pico Rivera further contends it is almost entirely built out, with little vacant land suitable for residential uses. AB 1397 requires land inventory sites be "available" and may only include non-vacant sites with realistic development potential (Govt Code Section 65583). Because much of the City's acreage may not meet AB 1397 requirements, it cannot be counted in the City's available land inventory for purposes of determining the City's RHNA allocation. Specifically, the City is developed with public facilities, open space, and critical infrastructure used for water conservation and flood management that cannot be used for residential development per the Army Corps. Government Code requires that 2021-2029 Housing Elements analyze the lease structures of potential candidate housing sites, which disqualifies most of the City's industrial areas. Commercial and retail areas are

also unlikely to be redeveloped as they provide employment for the City. To meet the RHNA allocation the City will need to rely on infill development, primarily in existing residential areas. Given the amount of available vacant land, it is unreasonable to assume the City will be able to demonstrate that the opportunity exists to develop the required 3,939 units on infill properties over the 8-year planning period, pursuant to the analysis required under AB 1397.

SCAG Staff Response: Regarding the City's risk of flooding, per Government Code 65584.04(e)(2)(B), "the determination of land available suitable for urban development may exclude lands where the Federal Emergency Management Agency (FEMA) or the Department of Water Resources has determined that the flood management infrastructure designed to protect that land is not adequate to avoid the risk of flooding." While SCAG staff does not dispute that there may be areas at risk of flooding in the jurisdiction, the jurisdiction has not provided evidence that an agency or organization such as FEMA has determined that flood management infrastructure is inadequate to avoid flood risk in these areas. For these reasons, SCAG staff does not recommend a reduction to the jurisdiction's draft RHNA allocation.

Pursuant to Government Code Section 65584.04(e)(2)(B), SCAG "may not limit its consideration of suitable housing sites or land suitable for urban development to existing zoning ordinances and land use restrictions of a locality" (which includes the land use policies in its General Plan). 'Available land suitable for urban development or conversion to residential use,' as expressed in 65584.04(e)(2)(b), is not restricted to vacant sites; rather, it specifically indicates that underutilized land, opportunities for infill development, and increased residential densities are a component of 'available' land. As indicated by HCD in its December 10, 2020 comment letter (HCD Letter):

> "In simple terms, this means housing planning cannot be limited to vacant land, and even communities that view themselves as built out must plan for housing through means such as rezoning commercial areas as mixed-use areas and upzoning non-vacant land." (HCD Letter at p. 2).

As such, the City can consider other opportunities for development. This includes the availability of underutilized land, opportunities for infill development and increased residential densities, or alternative zoning and density. Alternative development opportunities should be explored further and could possibly provide the land needed to zone for the City's 6th cycle RHNA allocation.

Indeed, AB1397, reiterates this concept and sets forth housing element site inventories which specifically include nonvacant sites. SCAG acknowledges that AB 1397 modifies the housing element update process in Government Code Section 65583 and requires stronger justification for using certain types of sites to meet RHNA need, particularly nonvacant sites. While these statutory changes have increased the extent of analysis or supportive policy required to demonstrate development likelihood, they do not preclude the consideration of non-vacant sites. For example,

page 25 of HCD's June 10, 2020 Housing Element Site Inventory Guidebook[1] covering Government Code Section 65583.2 states:

> *The inventory analysis should describe development and/or redevelopment trends in the community as it relates to nonvacant sites, i.e., the rate at which similar sites have been redeveloped. This could include a description of the local government's track record and specific role in encouraging and facilitating redevelopment, adaptive reuse, or recycling to residential or more intensive residential uses. If the local government does not have any examples of recent recycling or redevelopment, the housing element should describe current or planned efforts (via new programs) to encourage and facilitate this type of development (e.g., providing incentives to encourage lot consolidation or assemblage to facilitate increased residential-development capacity). The results of the analysis should be reflected in the capacity calculation described in Part C, above.*

Thus, statute permits, and HCD has provided guidance on how, several approaches may be taken in order to demonstrate site suitability.

While the City provides a breakdown of the existing zoning and general uses within the City (i.e. open space, industrial, commercial, etc.), the inability to develop residential uses was not demonstrated at a parcel-level. The City can consider other opportunities for development. This includes the availability of underutilized land, opportunities for infill development and increased residential densities, alternative zoning and density, and accessory dwelling units. Alternative development opportunities should be explored further and could possibly provide the land needed to zone for the City's projected growth.

Note that while zoning and capacity analysis is used to meet RHNA need, they should not be used to determine RHNA need at the jurisdictional level. Per the adopted RHNA methodology, RHNA need at the jurisdictional level is determined by projected household growth, transit access, and job access. Housing need, both existing and projected need, is independent of zoning and other related land use restrictions, and in some cases is exacerbated by these very same restrictions. Thus, land use capacity that is restricted by factors unrelated to existing or projected housing need cannot determine existing or projected housing need. For these reasons, SCAG staff does not recommend a reduction to its draft RHNA allocation based on this factor.

[1] https://www.hcd.ca.gov/community-development/housing-element/docs/sites_inventory_memo_final06102020.pdf

Issue 5: *Changed Circumstances [Government Code Section 65584.05(b)].*

COVID-19 presents an unforeseen change in circumstance that affects the City's economy and housing dynamics. While the City acknowledges the long-term impacts of COVID-19 on housing is unknown, it provides statistics to show that an above average portion of the population is choosing to cohabitate with other households or is unable to make rent payments. Economic hardships on homeowners, renters, cities, and developers will likely lead to a decreased demand for housing, as well as a decreased ability for the private market to create housing. The City's financial ability to assist in lower income housing production also decreased. Additionally, California is experiencing historically low growth trends with a "Freddie Mac" report from February 2020 indicating that California's shortage of housing units is 820,000, considerably lower than the 1.34 million provided by HCD for the SCAG region alone. Therefore, an inflated RHNA allocation will result in Pico Rivera and California drastically and incorrectly reshaping the housing landscape as opposed to organically responding to market trends.

SCAG Staff Response: SCAG recognizes that COVID-19 presents unforeseen circumstances and that local governments have been affected by significant unemployment. However, these facts, as presented by the City, do not "merit a revision of the information submitted pursuant to subdivision (b) of Section 65584.04." (Govt. Code § 65584.05(b)(3)). Furthermore, Section 65584.05(b) requires that:

> "Appeals shall be based upon comparable data available for all affected jurisdictions and accepted planning methodology, and supported by adequate documentation, and shall include a statement as to why the revision is necessary to further the intent of the objectives listed in subdivision (d) of Section 65584."

SCAG's Regional Council delayed the adoption of its 2020-2045 RTP/SCS by 120 days in order to assess the extent to which long-range forecasts of population, households, and employment may be impacted by COVID-19; however, the document's long-range (2045) forecast of population, employment, and household growth remained unchanged. The Demographics and Growth Forecast Technical Report[2] outlines the process for forecasting long-range employment growth which involves understanding national growth trends and regional competitiveness, i.e. the SCAG's region share of national jobs. Short-term economic forecasts commenting on COVID-19 impacts generally do not provide a basis for changes in the region's long-term competitiveness or the region's employment outlook for 2023-2045. As such, SCAG's assessment is that comparable data would not suggest long-range regional employment declines.

The COVID-19 pandemic has had various impacts throughout Southern California; however, it has not resulted in a slowdown in major construction nor has it resulted in a decrease in a demand for

[2] See https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Demographics-And-Growth-Forecast.pdf

housing or housing need. Southern California home prices continue to increase (+2.6 percent from August to September 2020) led by Los Angeles (+10.4 percent) and Ventura (+6.2 percent) counties. Demand for housing as quantified by the RHNA allocation is a need that covers an 8-year period, not simply for impacts that are in the immediate near-term. A temporary increase in co-habiting households, delayed rent payments due to financial hardships, or growth trends cannot be considered a decrease in housing need, since there is no evidence that these trends will persist for the entire RHNA planning period. Moreover, impacts from COVID-19 are not unique to any single SCAG jurisdiction and no evidence has been provided in the appeal that indicates that housing need within jurisdiction is disproportionately impacted in comparison to the rest of the SCAG region. For these reasons, SCAG staff does not recommend a reduction to the jurisdiction's Draft RHNA Allocation.

In February 2020 national home lending agency Freddie Mac's Economic & Housing Research group prepared a national analysis of housing supply shortages titled "The Housing Supply Shortage: State of the States" (the Freddie Mac report). This information cannot now be considered for adjusting HCD's regional housing needs determination. The RHNA statute outlines a very specific process for arriving at a regional housing needs determination for RHNA. It also prescribes a specific timeline which necessitated the completion of the regional determination step by fall 2019 in order to allow enough time for the development of a methodology, appeals, and local housing element updates.

The defined timeframes are guided by the deadline for the housing element revisions for HCD's RHNA determination and SCAG's Final RHNA Allocation Plan. HCD, in consultation with each council of governments (COG), shall determine each region's existing and projected housing need pursuant to Section 65584.01 at least two years prior to the scheduled revision required pursuant to Section 65588. Govt. Code § 65584(b). This "determination shall be based upon population projections produced by the Department of Finance and regional population forecasts used in preparing regional transportation plans, in consultation with each council of governments." Govt. Code § 65584.01(b). HCD begins the process 26 months prior to the scheduled revision so the data HCD relies on is the available provided by the COGs at that time. Similarly, the COG issues its survey for information to develop the RHNA allocation methodology up to 30 months prior to the scheduled revision. By necessity, the data used for these processes is data available at that time.

Without assessing the merits of the report, because the Freddie Mac report was not available during at the time HCD was determining regional housing need, it could not be considered then; and it cannot be considered now that the regional housing need has been determined. Furthermore, the Freddie Mac report is regional in nature and does not provide information on individual jurisdictions. For an appeal to be granted on the incorrect application of RHNA methodology, arguments and evidence must be provided that demonstrate the methodology was applied incorrectly to determine the jurisdiction's share of regional housing need. Because a regional study does not meet this criterion, these studies cannot be used to justify a particular

jurisdiction's appeal. Moreover, any reduction would have to be redistributed to the region when in theory, all jurisdictions would be impacted by the regional study.

In sum, it would be untenable to reopen the process anytime new data or materials become available, particularly when there is a codified process. If so, there would be no finality to the process and local government could not meet the deadlines for their housing element updates. Procedurally, SCAG cannot consider a regional study outside of the regional determination process nor should it apply a regional study to reduce an individual jurisdiction's draft RHNA allocation. For these reasons, SCAG staff does not recommend a reduction to the jurisdiction's draft RHNA allocation.

FISCAL IMPACT:
Work associated with this item is included in the current FY20-21 Overall Work Program (300-4872Y0.02: Regional Housing Needs Assessment).

ATTACHMENT(S):
1. Local Input and Development of Draft RHNA Allocation (City of Pico Rivera)
2. Appeal Form and Supporting Documentation (City of Pico Rivera)
3. Comments Received During the Comment Period (General)

Southern California Association of Governments
Remote Participation Only
City of Pico Rivera RHNA Appeal
January 2p, 2021

Attachment 1: Local Input and Development of Draft RHNA Allocation

This attachment sets forth the nature and timing of the opportunities which the City of Pico Rivera had to provide information and local input on SCAG's growth forecast, the RHNA methodology, and the Growth Vision of the 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS or Connect SoCal). It also describes how the RHNA Methodology development process integrates this information in order to develop the City of Pico Rivera's Draft RHNA Allocation.

1. Local Input

a. Bottom-Up Local Input and Envisioning Process

On October 31, 2017, SCAG took the first step toward developing draft RHNA allocations by initiating the Bottom-Up Local Input and Envisioning Process. At the direction of the Regional Council, the objective of this process was to seek local input and data to prepare for Connect SoCal and the 6th cycle of RHNA.[1] Each jurisdiction was provided with a package of land use, transportation, environmental, and growth forecast data for review and revision which was due on October 1, 2018.[2] While the local input process materials focus principally on jurisdiction-level and Transportation Analysis Zone (TAZ) level growth, input on specific parcels, sites, and project areas were welcomed and integrated into SCAG's growth forecast as well as data on other elements. SCAG met one-on-one with all 197 local jurisdictions between November 2017 and July 2018 and provided training opportunities and staff support. Following input from SCAG's Technical Working Group (TWG), the Connect SoCal growth forecast reflected precisely the jurisdiction-level growth totals provided during this process.

The local input data included SCAG's preliminary growth forecast information. For the City of Pico Rivera, the anticipated number of households in 2020 was 16,778 and in 2030 was 17,526 (growth of 748 households). In May 2018, SCAG staff met with local jurisdiction staff to discuss the Bottom-Up Local Input and Envisioning Process and answer questions. Input was not received. The preliminary figures above were used by SCAG.

[1] While the RTP/SCS and RHNA share data elements, they are distinct processes. The RTP/SCS growth forecast provides an assessment of reasonably foreseeable future patterns of employment, population, and household growth in the region given demographic and economic trends, and existing local and regional policy priorities. The RHNA identifies anticipated housing need over a specified eight-year period and requires that local jurisdictions make available sufficient zoned capacity to accommodate this need. A further discussion of the relationship between these processes can be found in Connect SoCal Master Response 1 at: https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Public-Participation-Appendix-2.pdf.

[2] A detailed list of data during this process reviewed can be found in each jurisdiction's Draft Data/Map Book at http://scagrtpscs.net/Pages/DataMapBooks.aspx

b. *RHNA Methodology Surveys*

On March 19, 2019, SCAG distributed a packet of methodology surveys, which included the local planning factor survey (formerly known as the AB2158 factor survey), Affirmatively Furthering Fair Housing (AFFH) survey, and replacement need survey, to SCAG jurisdictions' Community Development Directors. Surveys were due on April 30, 2019. SCAG reviewed all submitted responses as part of the development of the Draft RHNA Methodology. The City of Pico Rivera submitted the following surveys prior to the adoption of the Draft RHNA Methodology:

☐ Local planning factor survey
☐ Affirmatively Furthering Fair Housing (AFFH) survey
☐ Replacement need survey
☒ No survey was submitted to SCAG

c. *Connect SoCal Growth Vision and Additional Refinements*

Beginning in May 2018, SCAG's Sustainable Communities Working Group began the process of developing growth scenarios for the SCAG region. The culmination of this work was the development of the Connect SoCal Growth Vision, which directly uses jurisdictional-level growth projections from the Bottom-Up Local Input and Envisioning process, and also features strategies for growth at the TAZ-level that help to reduce greenhouse gas emissions (GHG) from automobiles and light trucks to achieve Southern California's GHG reduction target, approved by the California Air Resources Board (CARB) in accordance with state planning law. Additional detail regarding the Connect SoCal Growth Vision, specifically the Transportation Analysis Zone (TAZ, or neighborhood) level projections is found at https://www.connectsocal.org/Documents/DataMapBooks/Growth-Vision-Methodology.pdf.

As a result of these strategies, in some jurisdictions growth at the TAZ-level differed from locally anticipated growth conveyed during the Bottom-Up Local Input and Envisioning Process.

As such, SCAG provided two additional opportunities for all local jurisdictions to make TAZ-level technical refinements on the topics of general plan capacities and entitlements. During the release of the draft Connect SoCal Plan, jurisdictions were notified on October 31, 2019 that SCAG would accept additional refinements until December 11, 2019. Following the Regional Council's decision to delay full adoption of Connect SoCal for 120 days due to the COVID-19 pandemic, all jurisdictions were again notified on May 26, 2020 that SCAG would accept additional refinements until June 9, 2020.

Connect SoCal Growth Vision data have been available to local jurisdiction staff during the entirety of this process through SCAG's Scenario Planning Model Data Management Site (SPM-DM) at http://spmdm.scag.ca.gov and updates were shared with local jurisdictions on technical refinements to the data in February 2020 and August 2020 to share the results of both review opportunities. SCAG received additional technical corrections from the City of Pico Rivera and incorporated them into the

Growth Vision. The City of Pico Rivera's TAZ-level data utilized in the Connect SoCal Growth Vision matches input provided during the Bottom-Up Local Input and Envisioning Process.

2. Development of the Final RHNA Methodology

SCAG convened the first meeting of the RHNA Subcommittee in October 2018. In their subsequent monthly meetings, this body reviewed and advised on the development of SCAG's 6th cycle RHNA process, including the development of the RHNA methodology. Per Government Code 65584.04(a), SCAG must develop a RHNA methodology which furthers the five statutory objectives of RHNA:

> *(1) Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households.*
>
> *(2) Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.*
>
> *(3) Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.*
>
> *(4) Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.*
>
> *(5) Affirmatively furthering fair housing (Govt. Code § 65584(d)).*

As explained in more detail below, the Draft RHNA Methodology (which was adopted as the Final RHNA Methodology) set forth the policy factors, data sources, and calculations which would be used to generate draft RHNA allocations for all local jurisdictions. Following extensive debate and public comment, SCAG's Regional Council voted to approve the Draft RHNA Methodology on November 7, 2019 and provide it to HCD for review. Per Government Code 65584.04(i), HCD is vested with the authority to determine whether a methodology furthers the objectives set forth in Government Code section 65584(d). On January 13, 2020, HCD found that the Draft RHNA Methodology furthers these five statutory objectives of RHNA. Specifically, HCD noted that:

> *"This methodology generally distributes more RHNA, particularly lower income RHNA, near jobs, transit, and resources linked to long term improvements of life outcomes.*

In particular, HCD applauds the use of the objective factors specifically linked the statutory objectives in the existing need methodology." (Letter from HCD to SCAG dated January 13, 2020 at https://scag.ca.gov/sites/main/files/file-attachments/hcd-review-rc-approved-draft-rhna-methodology.pdf?1602190239).

On March 5, 2020, again following extensive debate and public comment, the Regional Council voted to approve the Draft RHNA Methodology as the Final RHNA Methodology. Unlike SCAG's 5th cycle RHNA methodology which relies almost entirely on the household growth component of the RTP/SCS, SCAG's 6th cycle RHNA methodology consists of two primary elements: "projected need" which includes the number of housing units required to accommodate anticipated population growth over the 8-year RHNA planning period and "existing need," which refers to the number of housing units required to accommodate excess or unsatisfied housing demand experienced by the region's current population.[3] Furthermore, the Final RHNA methodology utilizes measures of 2045 job accessibility and High Quality Transit Area (HQTA) population measures based on TAZ-level projections in the Connect SoCal Growth Vision.

More specifically, the Final RHNA Methodology considers three primary factors in determining a local jurisdiction's total housing need which are primarily based on data from Connect SoCal's aforementioned Bottom-Up Local Input and Envisioning Process:

- Forecasted growth over 2020-2030 (projected need)
- Transit accessibility in 2045 (existing need)
- Job accessibility in 2045 (existing need)

The methodology is described in further detail at:
http://scag.ca.gov/programs/Documents/RHNA/SCAG-Final-RHNA-Methodology-030520.pdf.

3. Draft RHNA Allocation for the City of Pico Rivera

Following the adoption of the Final RHNA Methodology on March 5, 2020 and the 120 day delay due to the COVID-19 pandemic, SCAG adopted Connect SoCal on September 3, 2020, and the City of Pico Rivera received its draft RHNA allocation on September 11, 2020. Application of the RHNA methodology yields the draft RHNA allocation for the City of Pico Rivera as summarized in the data and calculations in the tables below.

[3] Legislative changes in 2018 modified the nature of the regional housing need determination for the 6th cycle of RHNA by adding measures of household overcrowding and housing cost burden to the list of factors to be considered by HCD for the determination of housing need. These new measures are not included in the Connect SoCal Growth Forecast because they are not direct inputs to the growth forecasting process and are independent of employment and population projections. In contrast, they reflect additional latent housing needs in the current population (i.e. "existing need") and would not result in a change in regional population. For further discussion see Connect SoCal Master Response 1 at https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal_Public-Participation-Appendix-2.pdf.

Pico Rivera city statistics and inputs:	
Forecasted household (HH) growth, RHNA period: *(2020-2030 Household Growth * 0.825)*	617
Percent of households who are renting:	33%
Housing unit loss from demolition (2009-18):	23
Adjusted forecasted household growth, 2020-2045: *(Local input growth forecast total adjusted by the difference between the RHNA determination and SCAG's regional 2020-2045 forecast, +4%)*	1,762
Percent of regional jobs accessible in 30 mins (2045): *(For the jurisdiction's median TAZ)*	20.99%
Jobs accessible from the jurisdiction's median TAZ (2045): *(Based on Connect SoCal's 2045 regional forecast of 10.049M jobs)*	2,109,000
Share of region's job accessibility (population weighted):	0.52%
Jurisdiction's HQTA population (2045):	20,254
Share of region's HQTA population (2045):	0.20%
Share of population in low/very low-resource tracts:	13.98%
Share of population in very high-resource tracts:	0.00%
Social equity adjustment:	150%

Calculation of Draft RHNA Allocation for Pico Rivera city	
Forecasted household (HH) growth, RHNA period:	617
Vacancy Adjustment *(5% for renter households and 1.5% for owner households)*	16
Replacement Need	23
TOTAL PROJECTED NEED:	657
Existing need due to job accessibility (50%)	2171
Existing need due to HQTA pop. share (50%)	829
Net residual factor for existing need *(Negative values reflect a cap on lower-resourced community with good job and/or transit access. Positive values represent this amount being redistributed to higher-resourced communities based on their job and/or transit access.)*	283
TOTAL EXISTING NEED	3283
TOTAL RHNA FOR PICO RIVERA CITY	**3939**
Very-low income (<50% of AMI)	1149
Low income (50-80% of AMI)	562
Moderate income (80-120% of AMI)	572
Above moderate income (>120% of AMI)	1656

The transit accessibility measure is based on the population anticipated to live in High-Quality Transit Areas (HQTAs) in 2045 based on Connect SoCal's designation of high-quality transit areas and population forecasts. With a forecasted 2045 population 20,254 living within HQTAs, the City of Pico Rivera represents 0.20% of the SCAG region's HQTA population, which is the basis for allocating housing units based on transit accessibility.

Job accessibility is defined as the jurisdiction's share of regional jobs accessible within a 30-minute drive commute. Since over 80 percent of the region's workers live and work in different jurisdictions, the RHNA methodology uses a measure based on Connect SoCal's travel demand model output for the year 2045 rather than assigning housing units based on the number of jobs with a specific jurisdiction. Specifically, the share of future (2045) regional jobs which can be reached in a 30-minute automobile commute from the local jurisdiction's median TAZ is used as to allocate housing units based on transit accessibility. From the City of Pico Rivera's median TAZ, it will be possible to reach 20.99% of the region's jobs in 2045 within a 30-minute automobile commute (2,109,000 jobs, based on Connect SoCal's 2045 regional job forecast of 10,049,000 jobs).

An additional factor is included in the methodology to account for RHNA Objective #5 to Affirmatively Further Fair Housing (AFFH). Several jurisdictions in the region which are considered disadvantaged communities (DACs) on the basis of access to opportunity measures (described further in the RHNA methodology document), but which also score highly in job and transit access, may have their total RHNA allocations capped based on their long-range (2045) household forecast. This additional housing need, referred to as residual, is then reallocated to non-DAC jurisdictions in order to ensure housing units are placed in higher-resourced communities consistent with AFFH principles. This reallocation is based on the job and transit access measures described above, and results in an additional 283 units assigned to the Pico Rivera.

Please note that the above represents only a partial description of key data and calculations in the RHNA methodology.

Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal Request Form

All appeal requests and supporting documentation must be received by SCAG October 26, 2020, 5 p.m.
Appeals and supporting documentation should be submitted to housing@scag.ca.gov.
Late submissions will not be accepted.

Date:

10/22/20

Jurisdiction Subject to This Appeal Filing:
(to file another appeal, please use another form)
City of Pico Rivera

Filing Party (Jurisdiction or HCD)

Jurisdiction - City of Pico Rivera

Filing Party Contact Name

Luis Rodriguez

Filing Party Email:

lrodriguez@pico-rivera.org

APPEAL AUTHORIZED BY:

Name: Michael L. Garcia

PLEASE SELECT BELOW:

- ☐ Mayor
- ☐ Chief Administrative Office
- ☐ City Manager
- ☐ Chair of County Board of Supervisors
- ☑ Planning Director
- ☐ Other: _____

BASES FOR APPEAL

- ■ Application of the adopted Final RHNA Methodology for the 6th Cycle RHNA (2021-2029)
- ■ Local Planning Factors and/or Information Related to Affirmatively Furthering Fair Housing (See Government Code Section 65584.04 (b)(2) and (e))
  - ☐ Existing or projected jobs-housing balance
  - ■ Sewer or water infrastructure constraints for additional development
  - ■ Availability of land suitable for urban development or for conversion to residential use
  - ☐ Lands protected from urban development under existing federal or state programs
  - ☐ County policies to preserve prime agricultural land
  - ■ Distribution of household growth assumed for purposes of comparable Regional Transportation Plans
  - ☐ County-city agreements to direct growth toward incorporated areas of County
  - ☐ Loss of units contained in assisted housing developments
  - ☐ High housing cost burdens
  - ☐ The rate of overcrowding
  - ☐ Housing needs of farmworkers
  - ☐ Housing needs generated by the presence of a university campus within a jurisdiction
  - ☐ Loss of units during a state of emergency
  - ☐ The region's greenhouse gas emissions targets
  - ☐ Affirmatively furthering fair housing
- ■ Changed Circumstances (Per Government Code Section 65584.05(b), appeals based on change of circumstance can only be made by the jurisdiction or jurisdictions where the change in circumstance occurred)

FOR STAFF USE ONLY:
Date_____ Hearing Date: _____ Planner: _____

Sixth Cycle Regional Housing Needs Assessment (RHNA) Appeal Request Form

All appeal requests and supporting documentation must be received by SCAG October 26, 2020, 5 p.m.
Appeals and supporting documentation should be submitted to housing@scag.ca.gov.
Late submissions will not be accepted.

Brief statement on why this revision is necessary to further the intent of the objectives listed in Government Code Section 65584 (please refer to Exhibit C of the Appeals Guidelines):

Please include supporting documentation for evidence as needed, and attach additional pages if you need more room.

Section 65584(d)(1) - The Draft RHNA allocation undermines this objective as it does not assign housing unit growth need in an equitable manner. The allocation is a marked increase in allocations from prior RHNA planning cycles and a disproportionately higher amount of lower income need to the community, based upon a flawed methodology that is inconsistent with regional growth forecasts at the regional, state and federal level.

Brief Description of Appeal Request and Desired Outcome:

See attached Appeal Letter for a full description of the appeal request.

The appeal is based on the following grounds: 1) Local Planning Factors- a variety of local factors directly impact future housing production; 2) Methodology to develop RHNA Allocations for Pico Rivera; and 3) Changed Circumstances impacting the City subsequent to the development of the RHNA Methodology.

The City of Pico Rivera is requesting a RHNA reduction from 3,939 units to 688

Number of units requested to be reduced or added to the jurisdiction's draft RHNA allocation (circle one):

Reduced 3,251 **Added** _____

List of Supporting Documentation, by Title and Number of Pages
(Numbers may be continued to accommodate additional supporting documentation):

1. City of Pico Rivera Appeal of the Sixth Cycle Draft RHNA Allocation - 18 Pages
2.
3.

FOR STAFF USE ONLY:
Date_____ Hearing Date: _____ Planner: _____

City of Pico Rivera
COMMUNITY AND ECONOMIC DEVELOPMENT DEPARTMENT
6615 Passons Boulevard · Pico Rivera, California 90660
(562) 801-4332
Web: www.pico-rivera.org
e-mail: communitydevelopment@pico-rivera.org

Michael L. Garcia
Director

October 22, 2020

Southern California Association of Governments
Attn: Peggy Huang, Executive Director
900 Wilshire Blvd., Suite 1700
Los Angeles, CA 90017

Subject: City of Pico Rivera Appeal of Draft Housing Unit Allocation for the Sixth Cycle Housing Element (2021-2029)

Dr. Ms. Huang:

On behalf of our residents, in accordance with applicable Government Code provisions, the City of Pico Rivera (City) hereby submits its appeal to the Southern California Association of Governments (SCAG) of SCAG's Final Draft Housing Unit Allocation (Final Draft Allocation), released September 3, 2020, which is based on the Final Regional Housing Needs Assessment (RHNA) Methodology for the Sixth Housing Element Cycle (2021-2029) for the SCAG region (referred to herein as the Sixth Cycle) also adopted by the SCAG Board of Directors on that date.

A revision to the Final Draft Allocation is necessary to further the intent of the statutorily mandated objectives listed in Government Code Section 65584(d). This appeal is consistent with, and not to the detriment of, the development pattern in the applicable sustainable communities strategy (SCAG's Connect SoCal Plan) developed pursuant to Government Code Section 65080(b)(2) as explained herein.

INTRODUCTION

The methodology used to determine the 6th Cycle RHNA allocation results in an increase in the number of housing units allocated to the City of Pico Rivera from 850 units for the 5th cycle Housing Element to a proposed 3,939 units. The proposed dwelling unit allocation increase is based on flawed methodologies that are in conflict with the determinations found within the Connect SoCal Plan and do not fully consider local planning factors unique to the City.

Pursuant to Government Code section 65584.05, Pico Rivera is exercising its right to file an appeal to modify its allocated share or another jurisdiction's share of the regional housing need included as part of SCAG's Draft Regional Housing Needs Assessment (RHNA) Allocation Plan.

Basis for the City of Pico Rivera Appeal

A revision to the Final Draft Allocation is necessary to further the intent of the statutorily mandated objectives listed in Government Code Section 65584(d). In addition, this appeal is consistent with, and not to the detriment of, the development pattern in the applicable sustainable communities strategy (SCAG's Connect SoCal Plan) developed pursuant to Government Code Section 65080(b)(2) as explained herein. This appeal is based on the following grounds:

1. *METHODOLOGY - SCAG failed to determine Pico Rivera's share of the regional housing need in accordance with the information described in the Final RHNA Methodology established and approved by SCAG, and in a manner that furthers, and does not undermine the five (5) objectives listed in Government Code Section 65584(d). These objectives are:*
    i. *Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households.*
    ii. *Promoting infill development and socioeconomic equity, the protection of environmental and agricultural resources, the encouragement of efficient development patterns, and the achievement of the region's greenhouse gas reductions targets provided by the State Air Resources Board pursuant to Section 65080.*
    iii. *Promoting an improved intraregional relationship between jobs and housing, including an improved balance between the number of low-wage jobs and the number of housing units affordable to low-wage workers in each jurisdiction.*
    iv. *Allocating a lower proportion of housing need to an income category when a jurisdiction already has a disproportionately high share of households in that income category, as compared to the countywide distribution of households in that category from the most recent American Community Survey.*
    v. *Affirmatively furthering fair housing.*

2. *LOCAL PLANNING FACTORS AND INFORMATION AFFIRMATIVELY FURTHERING FAIR HOUSING - SCAG failed to consider information submitted by Pico Rivera relating to certain local factors outlined in Govt. Code § 65584.04(e) and information submitted by the local jurisdiction relating to affirmatively furthering fair housing pursuant to Government Code § 65584.04(b)(2) and 65584(d)(5) [NO INFORMATION FOUND THAT WAS SUBMITTED]*

3. *CHANGED CIRCUMSTANCES - That a significant and unforeseen change in circumstance has occurred in Pico Rivera after April 30, 2019 and merits a revision of the information previously submitted by Pico Rivera. Appeals on this basis shall only be made by the jurisdiction or jurisdictions where the change in circumstances has occurred.*

The City hereby submits its appeal of the Draft Allocation, pursuant to Govt. Code Section 65584. 05. (Govt. Code Section 65584. 05(b).) As described in the introduction, the City is basing its appeal on the following criteria.

1	**Methodology**	SCAG failed to determine the share of the regional housing need in accordance with the information described in, and the methodology established pursuant to Section 65584.04, and in a manner that furthers, and does not undermine, the intent of the objectives listed in Section 65584(d).

(A) SCAG's proposed methodology is inconsistent with the household growth projections determined in the Connect SoCal Plan.

SCAG failed to adequately consider local household growth factors and utilized growth projections inconsistent with the Connect SoCal Plan.

SCAG's Connect SoCal Plan, a 25-year plan, was formally adopted September 3, 2020. Appendix 1-Demographics and Growth Forecast of the Connect SoCal Plan[1], list Pico Rivera's household growth is forecasted to reach 18,500 in 2045. Comparatively, the 5-year estimates in the Census' American Community Survey from 2018 for the City of Pico Rivera currently estimates 17,244 households.

Table 1 shows a comparison between the annual household development projections in the Connect SoCal Plan and the City's RHNA allocation. When the projected Connect SoCal forecast growth is projected over the forecast period, it results in an annual household growth of 66.5 households. The RHNA forecast growth amortized over the 8 year planning period results in growth of 492 housing unit per year. This results in an additional 426 housing units per year over the projected household growth in the Connect SoCal Plan. If RHNA development was achieved, the City would hit its projection growth needs identified in the Connect SoCal Plan in 4 years, approximately 26 years early.

TABLE 1: Comparison of Household Growth Rates (Connect SoCal vs. RHNA)

Connect SoCal Forecasted Households Units (2016-2045)	Connect SoCal Forecast Year	Average per year household units creation (2016-2045)	RHNA Estimate Total Growth Need	RHNA Forecast Year	Average per year household units creation (2021-2029)
1,900	2045	65.5	3,939	2029	492

The City contends that the household formation assumed in the RHNA far exceeds any reasonable projection for growth during the 2021-2029 Housing Element planning period. SCAG's own 2045 growth forecast, stated in the Connect SoCal Plan is inconsistent and directly undermines the validity of the assumptions in the Draft RHNA Allocations

[1] Connect SoCal (2020 - 2045 Regional Transportation Plan/Sustainable Communities Strategy) Appendix 1, Table 14.

More recently, a Federal Home Loan Mortgage Corporation ("Freddie Mac") report (February 2020) indicates that all of California "has a shortage of 820,000 housing units," which is considerably lower than the 1.34 million provided by State HCD for the SCAG region alone. Since the SCAG region is 47.8% of the State's population per DOF's May 2020 E-5 estimates, the SCAG regional allocation would be closer to 392,075 units. If the regional need assumed by SCAG of 1,341,827 units is revised to 392,075, the City would have a draft RHNA of 1,150 units rather than the 3,939 units for this upcoming 6th Housing Element Cycle.

The discrepancy demonstrates the RHNA allocation undermines Government Code Section 65584(d)(1) by failing to provide the distribution of units in an equitable manner. This is demonstrated by a household growth rate that is 7.5 times above Connect SoCal forecasts. The City contends that a realistic estimate of future growth need should be directly tied to realistic projections of household formation, consistent with SCAG's own projections in the Connect SoCal Plan.

2	**Changed Circumstance**	A significant and unforeseen change in circumstances has occurred in the local jurisdiction or jurisdictions that merits a revision of the information submitted pursuant to Section 65584. 04(b).
Lack of capacity for sewer or water service due to federal or state laws, regulations or regulatory actions, or supply and distribution decisions made by a sewer or water service provider other than the local jurisdiction that preclude the jurisdiction from providing necessary infrastructure for additional development during the planning period.		

(A) The City of Pico Rivera does not have adequate water supply capacity to accommodate development of their 2021-2029 RHNA. The City receives water supply from the Central Basin groundwater Basin, which is controlled by the Department of Water Resources (DWR).

Infrastructure Capacity

The City of Pico Rivera receives water service from two independent water purveyors. These are the Pico Rivera Water Authority (PRWA) and Pico Water District (PWD). In 2015, the City of Pico Rivera completed their Urban Water Management Plan (UWMP)[2], which provides information on the water supply available within the City over the next 25 years and the anticipated demand based on census growth trends. The following information is from the City's current UWMP regarding the supply capacity of the City's larger water purveyor, PRWA.

The Urban Water Management Planning Act states that every urban water supplier shall include, as part of its plan, an assessment of the reliability of its water supplies. The water supply and demand assessment must compare the total projected water use with the expected water supply over the next 25 years in 5-year increments. This reliability assessment is required for normal, single dry-year and multiple dry water years. The City of Pico Rivera completed this assessment as part of their 2015 UWMP and the results are shown in the following section.

[2] http://www.pico-rivera.org/civicax/filebank/blobdload.aspx?blobid=52378

The UWMP used the following growth assumptions based on 2010 US Census population counts for its future demand projections. The UWMP also assumed an average of 3.8 residents per dwelling unit and stated that PRWA's service area is built-out and increased future densification will come from anticipated densification within existing residential areas. As shown in the table below, the City is anticipated to add 3,272 residents between 2020 and 2030, which equates to 327 residents per year and at the assumed rate of 3.8 residents per household, **86 dwelling units per year**.

TABLE 2: UWMP – Population Assumptions

	2015	2020	2025	2030	2035
PRWA Service Area	40,934	41,936	42,963	42,963	44,014
City of Pico Rivera	64,482	66,061	67,677	69,334	70,570
Compound Annual Growth Rate	0.40%	0.40%	0.40%	0.40%	0.40%

Notes: Derived by Atkins for 2015 UWMP Update based on 2010 US Census population counts within the City of Pico Rivera that reflects changes in population (a Citywide decline in between 2000 and 2010) due to a downturn in economic conditions

Based on actual water deliveries measures for the year 2015, PRWA had 8,959 residential accounts which used a total volume of 3,611 acre-feet (AF) of water as shown below. That is .403 AF per account, with the majority of accounts attributed to one dwelling unit.

TABLE 3: UWMP – Water Deliveries (Actual, 2015)

	2015 Metered	
Water Use Sectors	**# of accounts**	**Volume (AF)**
Single-family residential	8,959	3,611
Multi-family residential		
Commercial / Institutional/Governmental	432	945
Total	9,391	4,561

Source: DWR Water Report for PRWA

The table below shows projected demand and supply during normal years. The projected supply in this table is less than the projected demand, however the UWMP states that these assumptions do not hold true if increasing densification within PRWA's service areas increased demand above 5,779 acre feet per year (AFY).

TABLE 4: UWMP – Supply and Demand Comparison – Normal Year (AF)

Table 36 Supply and Demand Comparison — Normal Year (AF)

Water supply sources	**2020**	**2025**	**2030**	**2035**
Groundwater	5,579	5,579	5,579	5,579
Recycled Water	200	200	200	200
Supply totals	5,779	5,779	5,779	5,779
Demand totals	5,365	5,364	5,388	5,412
Difference	**414**	**415**	**391**	**367**

Note: Application of GPCD used to determine projected demand over 25-year planning horizon.

Conclusion

Based on the information provided and the assumptions made in the City's UWMP regarding project water deliveries (Table 5), the City's RHNA allocation represents a dwelling unit growth that will exceed the City's available water supply totals by 2023. Table 6 shows the City's assumptions within the UWMP compared to the dramatically increased density that would result from development of the units in the City's proposed RHNA allocation.

PRWD receives all of its water supply from the Central Basin groundwater basin, for which the Department of Water Resources (DWR) is the Watermaster. Pico Rivera has a finite amount of water it can draw from the Central Basin and is not permitted to draw the additional water supply that would be needed to accommodate the City's RHNA. The discrepancy demonstrates the RHNA allocation undermines Government Code Section 65584(d)(2)(A) by failing to provide the distribution of units in an equitable manner. The City contends that a realistic estimate of future growth need should be directly tied to the realistic water capacity available within to the City of Pico Rivera as described in the City's Urban Water Management Plan.

TABLE 5: UWMP – Water Deliveries (Projected 2020, 2025, 2030, and 2035 (AF)

Water Use Sectors	2020	2025	2030	2035
Single-family residential	3,463	3,461	3,545	3,632
Multi-family residential	269	269	275	282
Commercial / Institutional/Governmental	974	973	997	1,021
Landscape (Recycled Water)	200	200	200	200
Other	6	6	6	6
Total	4,912	4,909	5,023	5,141

Note: A one-percent increase per five years was applied to both the number of accounts and the total deliveries.

TABLE 6: Comparison of Water Demand (UWMP vs. RHNA)

Growth Assumption	Anticipated Dwelling Unit Growth per year (DU)	Projected 2020-2030 Increase in Water Deliveries for Residential (AF)	2030 Total Anticipated Demand Including All Uses (AF)	2030 Capacity
City of Pico Rivera UWMP (2015)	86	88	5,023	5,779
City's 2021-2029 RHNA Allocation	492	1,982	6,917	5,779

(B) Flood Inundation Area

The entire City of Pico Rivera lies within the flood inundation area (See **Figure 1**) of the Whittier Narrows Dam (Dam). Flood risk for this structure under normal operations or as a consequence of an event such as an earthquake is classified as high by both the U.S. Army Corps of Engineers (Army Corp) Dam Safety Action Classification (DSAC) System, and the FEMA HAZUS program. The Dam has a risk characterization of "DSAC 1" by the Army Corps due to the risk of life loss of life with very high likelihood of failure of the

Dam by a rare flood event. The Dam is the only DSAC 1 dam in the nation. The Army Corps prepared a Dam Safety Modification Study in May 2019 that proposed alternatives or risk management plans (RMPs) to reduce the potential for and consequences of catastrophic flooding resulting from failure of the Dam during rare to extremely rare flood events. The goal is to be ready to start construction on these safety modifications in 2021.

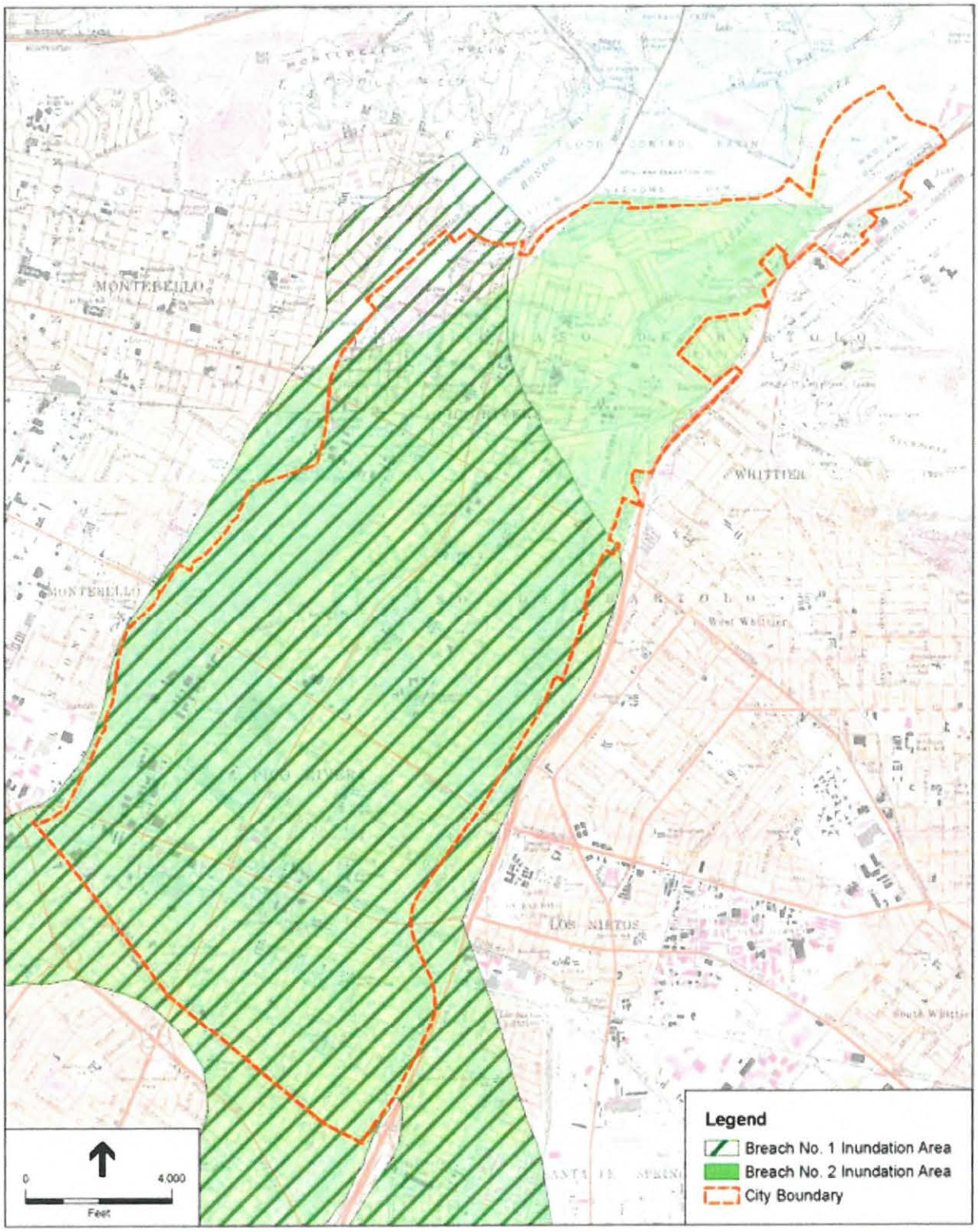
Potential Failure Modes (PFMs) are used to describe the manner in which the Dam could fail. The Army Corp report identified two PFMs that dominate the risk at the Dam and set the basis for plan formulation. They consist of backward erosion piping (BEP) in the foundation and overtopping. A third PFM, premature opening of the automatic spillway gates, is currently being addressed through operations and maintenance actions, and, accordingly, the RMPs developed for the Dam. If either of these two PFMs, or any other failures within the Whittier Narrows Dam structure, were to occur, there is the potential for significant flood damage encompassing the majority of the City of Pico Rivera.

Conclusion

Due to the high risk of flooding in the event of a Dam failure, Pico Rivera is extremely limited in areas where it can plan for future housing in a manner that is safe for future residents. The discrepancy demonstrates the RHNA allocation undermines Government Code Section 65584(d)(2)(B) by failing to provide the distribution of units in an equitable manner.

The City of Pico Rivera contends that a realistic estimate of future growth need should be directly tied to the amount of available land within the City of Pico Rivera, suitable for urban development that is not subject to the risk of flooding, if flood management infrastructure fails.

FIGURE 1 – Pico Rivera Dam Inundation



3	**Changed Circumstances**	A significant and unforeseen change in circumstances has occurred in the local jurisdiction or jurisdictions that merits a revision of the information submitted pursuant to Section 65584. 04(b).
Availability of Land Suitable for Urban Development or for Conversion to Residential Use, the Availability of Underutilized Land, and Opportunities for Infill Development and Increased Residential Densities		

The City of Pico Rivera is almost entirely built out, with little to no available vacant land to accommodate the number of housing units anticipated by the City's draft RHNA allocation. The areas described within this section demonstrate that the realistic availability of land suitable for urban development or for conversion to residential uses is dramatically less than was considered when assigning the City's RHNA allocation. As a built out City, Pico Rivera has little to no vacant land which means that the City will need to rely on infill development, primarily in existing commercial and residential areas. The information below shows that many of these areas may not meet the AB 1397 requirements as outlined below and therefore, cannot be counted in the City's available land inventory for purposes of determining the City's RHNA allocation for the 6th Cycle. These areas, and the total acreage allocated to each, are shown in **Table 7** below.

Table 7: Existing City Acreages

Total City Acreage	Existing Open Space & Public Facilities	Existing Industrial	Existing Commercial	Existing SFR and PUD	Remaining Potentially Developable Area
4738	1603	764	222	2142	**7**
100%	34%	16%	5%	45%	**<1%**

Recently enacted AB 1397 modified Government Code section 65580,65583 and 65583.2. Generally, jurisdictions must demonstrate the following:

- Land Inventory Sites Must Be "Available" and May Only Include Non-Vacant Sites with Realistic Development Potential (Govt Code Section 65583).
- Sites in the Land Inventory Must Have Demonstrated Potential for Development (Govt Code Section 65583(a)(3))

This provision in state law requires the City to explicitly demonstrate the availability of vacant lands to accommodate future housing growth need.

(a) Existing Public Facilities, Open Space, and Critical Infrastructure Areas

There is approximately 1,603 acres of Public Facilities and Open Space within Pico Rivera. The majority of this land is critical water conservation and flood management infrastructure that serves not only the City, but neighboring cities within the region. Included in this are the Rio Hondo and San Gabriel Spreading Grounds, which serve as water storage/groundwater recharge facilities that conserve approximately 150,000 acre-feet of local, imported, and reclaimed water annually.

Open space within Pico Rivera is primarily situated around the San Gabriel River, including the Pico Rivera Bicentennial Park and Sports Arena. These spaces are not able to be utilized for residential buildings per the Army Corps, and serve as vital flood overflow areas that help to prevent further damage to the surrounding areas.

As this is critical infrastructure for the region, it cannot be anticipated to redevelop within the planning period. **Figure 2** shows the location and size of the Public Facilities and Open Space areas within Pico Rivera.

(b) Existing Industrial Areas

There is approximately 764 acres of heavy and light industrial uses within Pico Rivera, including a number of parcels within an entitled specific plan area. Many of these buildings were built within the last 20 years and contain lease structures that span 99 years. The Government Code requires that 2021-2029 Housing Elements analyze, to the extent possible, the lease structures of potential candidate housing sites. Lease structures found to exceed the planning period are not considered as sites that can realistically be expected to redevelop for residential uses within the planning period. **Figure 3** shows the location and size of the existing industrial areas within Pico Rivera.

(c) Existing Commercial Areas

There is approximately 222 acres of commercial/retail land within Pico Rivera. Much of the existing commercial and retail lands in the city are built out and highly utilized. As the primary generator of employment in the City, these lands possess some of the most successful and viable investments within the City. Redevelopment of these parcels of these sites to accommodate the RHNA allocations is highly unlikely as these are some of the primary job-creating uses within the City. **Figure 4** shows the location and size of the existing commercial areas within Pico Rivera.

(d) Existing Non-Vacant Residential and Planned Unit Development (PUD) Areas

There is approximately 1,913 acres of single-family residential land within Pico Rivera. As shown in **Figure 5**, the majority of existing residential land consists of currently developed properties. There is little to no vacant land currently available to provide additional opportunities for residential development. Therefore, future residential development must be accommodated on infill, reuse and redevelopment of these existing residential properties.

Figure 2 – Pico Rivera Public Facilities and Open Space Areas

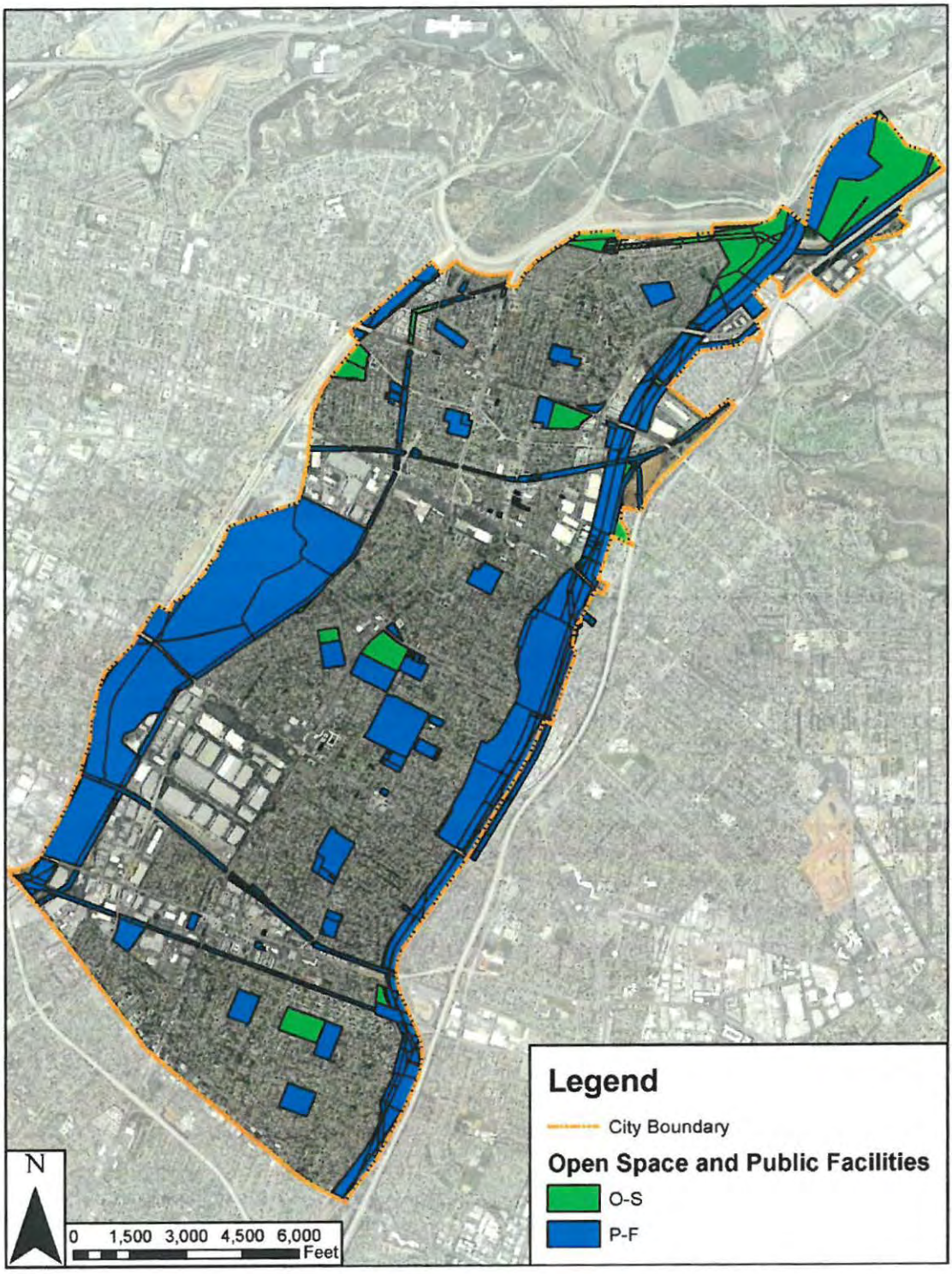


Figure 3 – Pico Rivera Industrial and Specific Plan Areas

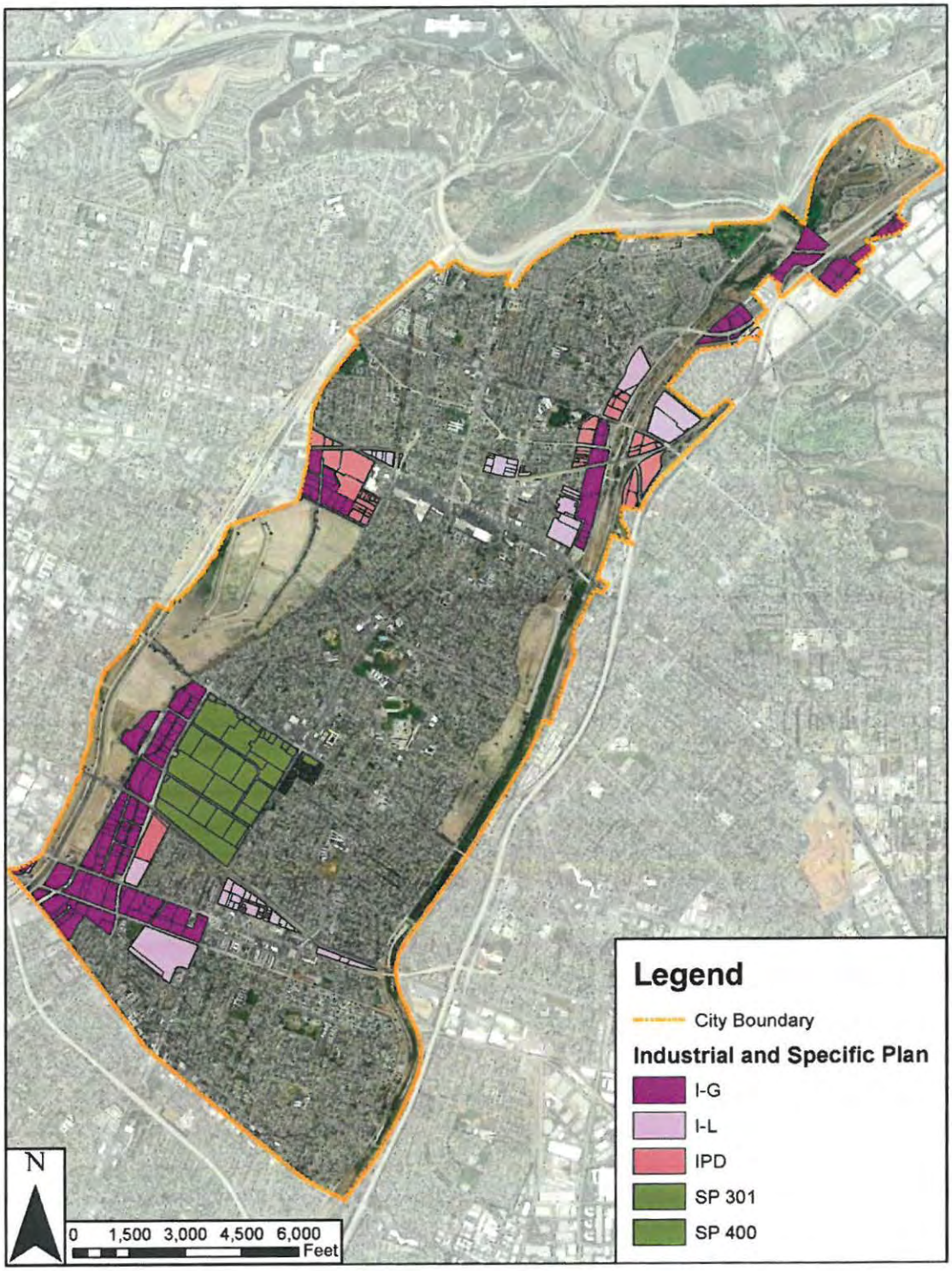


Figure 4 – Pico Rivera Commercial Areas

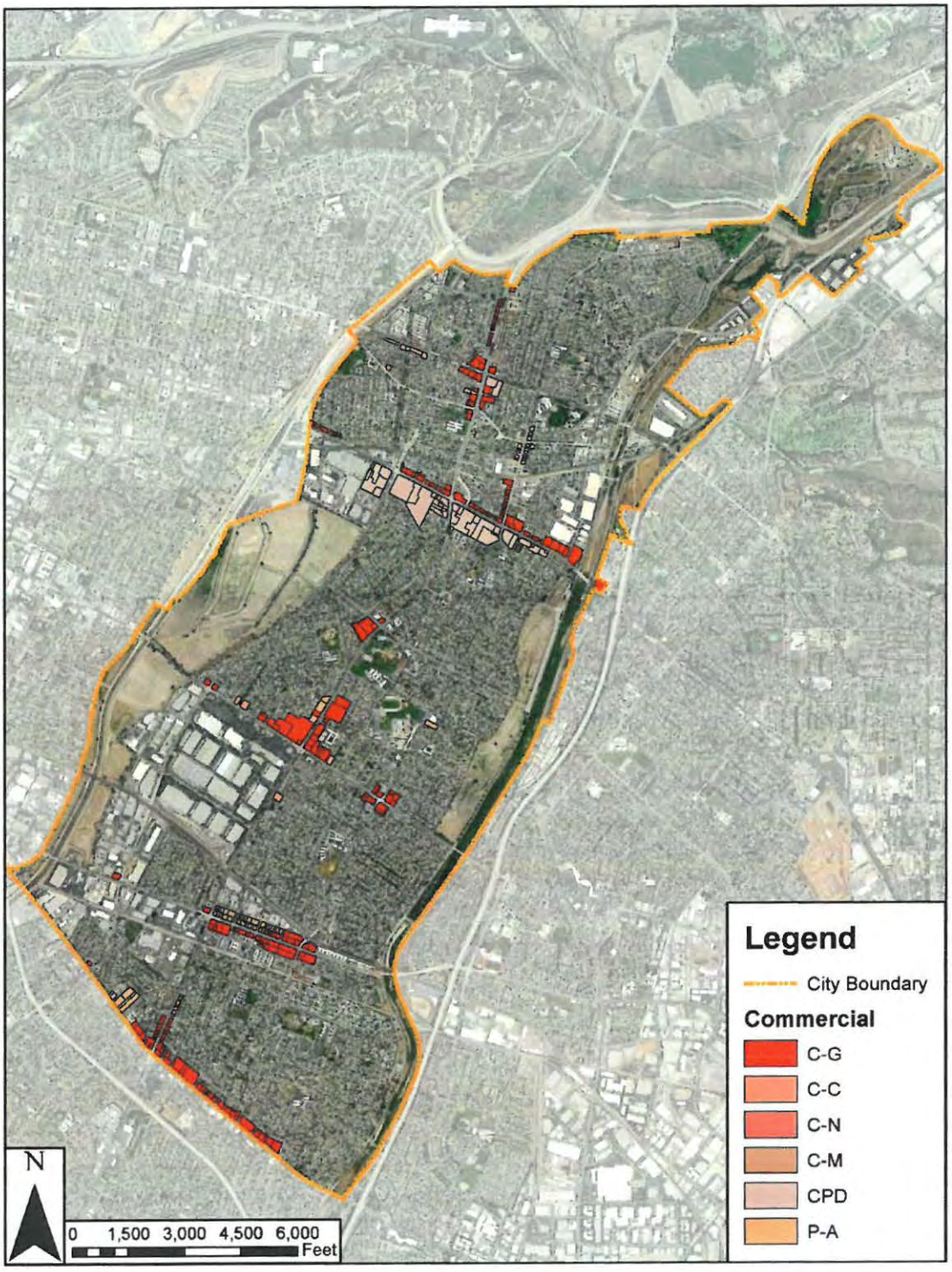
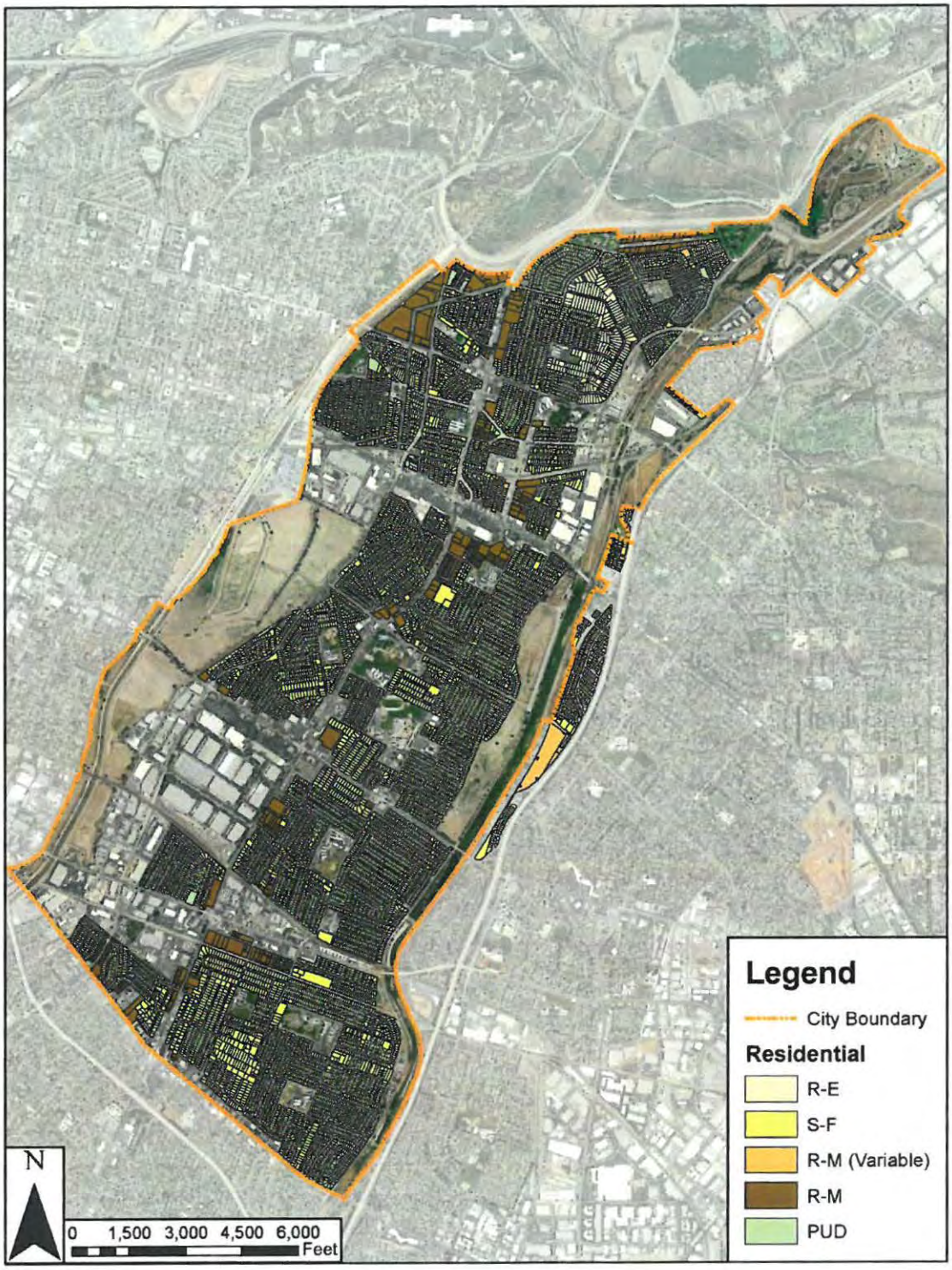


Figure 5 – Pico Rivera Nonvacant Residential and PUD Areas



(e) Available Vacant Land

Table 7 demonstrates the available vacant land within the City across all zoning classifications. As shown, the City has approximately 32.7 acres of vacant land, only 2.24 of which is zoned within residential areas that are not within Planned Residential Unit Development (PUD) areas. The majority of this land is within Industrial Planned Development (IPD) areas that is not suitable for the development of residential uses. The majority of these parcels do not meet the size requirements for adequate sites within AB 1397.

Table 7: City of Pico Rivera Vacant Lands Inventory

Zoning Classification	Size (Ac)
Single-Family Residential (SF)	1.61
Multiple-Family Residential (RM)	0.63
General Commercial (CG)	4.27
Community Commercial(CC)	0.54
Commercial Manufacturing (CM)	0.60
Light Industrial (IL)	1.68
Open Space (OS)	0.04
Public Facilities (PF)	4.09
Professional and Administrative (PA)	0.65
Commercial Planned Development (CPD)	0.62
Planned Residential Unit Development (PUD)	3.25
Industrial Planned Development (IPD)	14.72
Total	**32.70**

(f) Comparison of Densities Versus RHNA Growth Allocation

As described in **Table 8**, the City must transition up to 131 acres of existing developed high value land to accommodate future growth need. Therefore, the City must demonstrate that the opportunity exists to develop the required 3,939 units on infill properties over the 8-year planning period. It is unreasonable to assume the City will be able to justify this extent of sites, pursuant to the analysis required under AB 1397 and given the amount of available vacant land as demonstrated in section 3(e).

Table 8: Comparison of Densities Versus RHNA Growth Allocation

Density Range	RHNA Allocation	Acreage Needed to Accommodate Growth
30 Dwelling Units/Acre	3,939 units	131.3 acres
60 Dwelling Units/Acre	3,939 units	65.7 acres
100 Dwelling Units/Acre	3,939 units	39.4 acres

4	**Changed Circumstances**	A significant and unforeseen change in circumstances has occurred in the local jurisdiction or jurisdictions that merits a revision of the information submitted pursuant to Section 65584. 04(b).

(A) The novel coronavirus (COVID-19) presents an unforeseen changed circumstance that has severely impacted the City's financial status and impacted the development capacity of the private market to create housing within Pico Rivera.

On March 4, 2020, the Los Angeles County Board of Supervisors and the Department of Public Health, which acts as the City of Pico Rivera's de facto Healthy agency, declared a local and public health emergency in response to the spread of the novel Coronavirus (COVID-19) within Los Angeles County. On the same day, California Governor Gavin Newsom declared a state of emergency in the State of California due to COVID-19's public health threat.

The relative impacts of COVID-19 on the existing and future housing needs within Pico Rivera are not known at this time, but it may influence short-term and long-term housing policy and program considerations within the community. The City acknowledges the substantial impact that this pandemic has had and will continue to have on the local economy, the ability to develop housing within Pico Rivera, and the City's financial ability to assist in lower income housing production.

Per July 2020 research completed by the Pew Research Center[3] found that around one-in-ten adults ages 18 to 29 (9%) say they moved (either permanently or temporarily) due to the coronavirus outbreak. This was due in part to job losses and the shutdown of college housing.

Additionally, data from Zillow[4] made the following findings related to local housing trends:

- More than 32 million adults lived with a parent or grandparent as of April, up 9.7% from the same period a year ago and the highest level on record.
- More than 80% of those who recently moved back in with their parents are Gen Zers who pay an estimated $726 million in rent each month. Those payments, about 1.4% of the total rental market, could be at risk if moves home become permanent.
- The same study identified that the Los Angeles rental market may stand to lose up to 0.9% of the total rental market in lost rent.

Lastly, a joint UCLA-USC Report[5] found that:

- About 16% of tenants report paying rent late each month from April through July.
- About 10% did not pay rent in full for at least one month between May and July.
- About 2% of renters are three full months behind on rent. This translates to almost 40,000 households in a deep financial hole.
- Late payment and nonpayment are strongly associated with very low incomes (households earning less than $25,000 annually) and being Black or Hispanic.
- This crisis is particularly acute in the Los Angeles region and other high-cost cities, where an existing affordable housing crisis and an economic slowdown resulting from mitigation efforts to curb the pandemic intersect to threaten the stability of many households.

While the long-term impacts of COVID-19 on local and regional housing trends is unknown, it is clear that a larger than normal segment of the population is leaving their housing situation to join with another household or is unable to make rent payments due to financial hardships. As the region continues to

[3] https://www.pewresearch.org/fact-tank/2020/07/06/about-a-fifth-of-u-s-adults-moved-due-to-covid-19-or-know-someone-who-did/
[4] https://www.zillow.com/research/coronavirus-adults-moving-home-27271/
[5] https://news.usc.edu/175065/los-angeles-tenants-covid-19-pandemic-rent-usc-study/

battle with controlling the spread of COVID-19, the continued economic hardships presented by the virus on homeowners, renters, cities, and developers will likely lead to a decreased demand for housing and a higher percentage of co-habiting households.

Conclusion

Due in part to the COVID-19 pandemic, the state of California is experiencing population growth rates at historically low levels. Recent downward revisions by the Department of Finance illustrates the rate of population growth rate throughout California is slowly and a faster rate anticipated. In the last three years, the state has experienced the lowest population growth rates on record since 1900. Population growth is directly tied to household formation. The flattening of the population growth curve is contrary to the rate of growth identified in the Final Draft RHNA allocation. Furthermore, according to Freddie Mac's February 2020 report, "The Housing Supply Shortage: State of the States," their research indicates that "...California has a shortage of 820,000 housing units. But history suggests that California's shortage may be overestimated if interstate migration is considered."[6]

COVID-19 presents an unforeseen circumstance which will likely result in Pico Rivera and the State of California as a whole drastically and incorrectly reshaping the housing landscape in an effort to meet RHNA needs as opposed to organically in response to market trends. The impacts to the economy of the City and consequently to the housing market are profound and should be a consideration when evaluating realistic development potential over the 8-year RHNA planning period.

CONCLUSION

If the City developed at a pace consistent with the Connect SoCal Plan, the City would be on target to produce **524 units** for the 6th RHNA Cycle 2021-2029, at a rate of **65.5 units** per year. However, the City believes that a feasible growth rate of **86 units** per year can be achieved, and is consistent with the water supply assessment documented in its Urban Water Management Plan (UWMP) 2015-2040. This would achieve a growth of **688 units** for the same 8-year period. Without enough water, the City cannot physically achieve to produce the RHNA allocated amount of 3,939 units for the 6th Cycle. Therefore, the City has determined that a total equitable RHNA allocation is based on the following reductions in the current draft allocations:

Government Code Requirements	Requested RHNA Reduction
Section 65584(d)(1) - *Increasing the housing supply and the mix of housing types, tenure, and affordability in all cities and counties within the region in an equitable manner, which shall result in each jurisdiction receiving an allocation of units for low- and very low income households.* **Reason** - The Draft RHNA allocation undermines this objective as it does not assign housing unit growth need in an equitable manner. The allocation is a marked increase in allocations from prior RHNA planning cycles and a disproportionately higher amount of lower income need to the community, based upon a flawed methodology that is inconsistent with regional growth forecasts at the regional, state and federal level.	-3,251
Total	**-3,251**

[6] Freddie Mac, "The Housing Supply Shortage: State of the States" February 2020, Page 6.

The table below summarizes the City of Pico Rivera's recommended RHNA allocation by income category: The recommended 6th Cycle RHNA allocations acknowledges the need to accommodate future growth in the City, pursuant to consistently applied regional growth forecasts.

Income Category	Draft SCAG RHNA Allocation	Pico Rivera Recommended RHNA Allocation
Very Low	1,148 Units (29%)	200 Units (29%)
Low	562 Units (14%)	96 Units (14%)
Moderate	572 Units (15%)	103 Units (15%)
Above Moderate	1,657 Units (42%)	289 Units (42%)
TOTAL	**3,939 Units**	**688 Units**

Michael L. Garcia

Michael L. Garcia
Community and Economic Development Director
City of Pico Rivera

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF HOUSING POLICY DEVELOPMENT
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December 10, 2020

Kome Ajise, Executive Director
Southern California Association of Governments
900 Wilshire Boulevard, Suite 1700
Los Angeles, CA 90017

Dear Executive Director Ajise:

RE: Comment on Appeals of the Draft Regional Housing Need Allocation (RHNA) Plan

Thank you for the opportunity to comment on the 52 appeals Southern California Association of Governments (SCAG) has received regarding the draft RHNA plan. The appeal process is an important phase in the development of a RHNA plan that ensures that all relevant factors and circumstances are considered.

The only circumstances under which a jurisdiction can appeal are:

- 65584.05(b)(1): The council of governments failed to adequately consider the information regarding the factors listed in subdivision (e) of section 65584.04.
- 65584.05(b)(2): The council of governments failed to determine the share of the regional housing need in a manner that furthers the intent of the objectives listed in subdivision (d) of section 65584.
- 65584.05(b)(3): A significant unforeseen change in circumstances occurred in the local jurisdiction that merits a revision of the information submitted pursuant to subdivision (e) of Section 65584.04.

The California Department of Housing and Community Development (HCD) urges SCAG to only consider appeals that meet these criteria.

Per Government Code section 65584.05(e)(1), SCAG's final determination on whether to accept, reject, or modify any appeal must be accompanied by written findings, including how the final determination is based upon the adopted RHNA allocation methodology, and how any revisions are necessary to further the statutory objectives of RHNA described in Government Code section 65584(d).

Among the appeals based on Government Code section 65584.05(b)(1), several appeals state that SCAG failed to consider the factor described in Government Code section 65584.04(e)(2)(B), citing the lack of land suitable for development as a basis for the appeal. However, this section states the council of governments may not limit its consideration of suitable housing sites to existing zoning and land use restrictions and must consider the potential for increased development under alternative zoning and

land use restrictions. Any comparable data or documentation supporting this appeal should contain an analysis of not only land suitable for urban development, but land for conversion to residential use, the availability of underutilized land, and opportunity for infill development and increased residential densities. In simple terms, this means housing planning cannot be limited to vacant land, and even communities that view themselves as built out must plan for housing through means such as rezoning commercial areas as mixed-use areas and upzoning non-vacant land.

With regard to appeals submitted related to Government Code section 65584.05(b)(2), that SCAG failed to determine the RHNA in a manner that furthers the statutory objectives, it should be noted that HCD reviewed SCAG's draft allocation methodology and found that the draft RHNA allocation methodology furthered the statutory objectives described in Government Code section 65584.

Among the appeals based on Government Code section 65584.05(b)(2), several contend that the cap on units allocated to extremely disadvantaged communities (DACs) does not further RHNA's statutory objectives. This cap furthers the statutory objective to affirmatively further fair housing by allocating more units to high opportunity areas and fewer units to low resource communities, and concentrated areas of poverty with high levels of segregation. Due to the inclusion of this factor, as well as the use of TCAC/HCD Opportunity Maps, SCAG's methodology allocates 14 of the top 15 highest shares of lower-income RHNA to jurisdictions with over 99.95 percent High and Highest Resource areas. With the exceptions of two jurisdictions, the 31 jurisdictions with the highest share of lower-income RHNA are all over 95 percent High and Highest Resource areas. Any weakening of these inputs to the methodology could risk not fulfilling the statutory objective to affirmatively further fair housing.

Several appeals argue that SCAG's RHNA allocation methodology does not adequately promote access to jobs and transit, as required in objectives two and three. HCD's review of SCAG's RHNA methodology found the allocation does further the environmental principles of objective two. SCAG's overall allocation includes significant weight related to the location of high-quality transit areas and the regional distribution of jobs that can be accessed within a 30-minute driving commutes. Regarding objective three, HCD's analysis as to whether jobs-housing fit was furthered by SCAG's draft methodology found that across all jurisdictions there is generally good alignment between low-wage jobs and lower-income RHNA, with all but 15 jurisdictions within a half percent plus or minus difference between their share of lower-income RHNA for the region and their percentage low-wage jobs for the region.

Several appeals are based upon the provision described in Government Code section 65584.05(b)(3), arguing that the COVID-19 pandemic represents a significant and unforeseen change in circumstances that will affect future population and job growth. Ensuring everyone has a home is critical to public health. Reducing and preventing overcrowding and homelessness are essential concerns for every community. The COVID-19 pandemic has only increased the importance that each community is planning for sufficient affordable housing.

Lastly, several appeals state that the Regional Housing Needs Determination (RHND) HCD provided to the SCAG region is too large. SCAG submitted an objection to the RHND at the appropriate time and through the appropriate process. HCD considered those objections and determined the final RHND for 6th Housing Element Cycle for the SCAG region on October 15, 2019. There are no further appeal procedures available to alter the SCAG region's RHND for this cycle. Government Code section 65584.05(b) does not allow local governments to appeal the RHND during the 45-day period following receipt of the draft allocation.

HCD acknowledges that many local governments will need to plan for more housing than in the prior cycle to accommodate a RHND that more fully captures the housing need and as the statutory objectives of RHNA shift more housing planning near jobs, transit, and resources. The Southern California region's housing crisis requires each jurisdiction to plan for the housing needs of their community and the region. In recognition of this effort there are more resources available than ever before to support jurisdictions as they prepare to update their 6th cycle housing elements:

- SB 2 Planning Grants – $123 million one-time allocation to cities and counties
- SB 2 Planning Grants Technical Assistance offered to all jurisdictions
- Regional and Local Early Action Planning Grants – $238 million one-time allocation for local and regional governments
- SB 2 Permanent Local Housing Allocation – approximately $175 million annually in ongoing funding for local governments to increase affordable housing stock

If HCD can provide any additional assistance, or if you, or your staff, have any questions, please contact Megan Kirkeby, Deputy Director, megan.kirkeby@hcd.ca.gov.

Megan Kirkeby
Deputy Director

City of Whittier

13230 Penn Street, Whittier, California 90602-1716
(562) 567-9320 Fax (562) 567-2872 www.cityofwhittier.org

Electronically Transmitted to: Housing@scag.ca.gov

December 10, 2020

RHNA Appeals Committee
Southern California Association of Governments
900 Wilshire Blvd, Suite 1700
Los Angeles, CA 90017

SUBJECT: City of Whittier's Comments on Appeals to the Sixth Cycle Regional Housing Needs Assessment (RHNA) Allocation

Honorable Chair and Honorable Committee Members:

The City of Whittier ("City") appreciates the challenges that are inherent in allocating 1,341,827 housing units by the thousands (a 226% increase above the baseline 412,137 unit) to cities across Southern California, especially in built-out cities. However, the City is deeply concerned its housing allocation of 3,431 units from the State Department of Housing and Community Development ("HCD") and the Southern California Association of Government's ("SCAG") unit distribution methodology, along with recent housing legislation will fundamentally abridge the City's ability to develop effective land-use policies that are appropriate for managing the community's actual needs. The 878 units in the 5th cycle RHNA allocation has been increased by 290%to 3,431 units in the current 6th cycle. Particularly challenging in the 6th cycle, is the number of low and very low-income units (1,558) which combined with the moderate and above moderate unit totals forces unplanned and unnecessary residential densification of the community.

The affordable units are an unfunded mandate with very limited regional or State financial support for their development. Considering the affordable housing subsidies typically range from $50,000 to $250,000 per unit, the overall funding requirements could range from $78,000,000 to $390,000,000 which is clearly beyond the reach of the City of Whittier in that the City's general fund budget is just $72,000,000 which already include $2,000,000 annually to house the City's unsheltered residents in transitional housing. Additionally, the City only receives 7.5%of each property tax dollar to provide general services including police and library services.

The City is currently in the process of updating its Housing Element as well as the General Plan to incorporate the current RHNA allocation, so Whittier is acutely aware of the various housing needs as well as the potential obstacles, such as aging infrastructure and unplanned density, to creating the requisite housing within a city that

is essentially built out. The changes in the State's housing laws (SB 35, SB 166 and AB 1397) have created additional constraints for the agencies and may severely impact the City's ability to accomplish our regional and local housing goals.

Since development in Whittier began more than 130 years ago, the City is virtually built-out with little developable vacant land outside of its designated open space areas that are dedicated to accommodating existing and future residents. While the City has made significant efforts through its specific plans to densify existing corridors and districts, the majority of Whittier's remaining single-family residential neighborhoods cannot accommodate similar densification. Furthermore, the hills north of Whittier contain regional open space, sensitive habitat and wildlife areas that must be preserved in perpetuity. There are also significant infrastructure and water service constraints that impact Whittier's ability to produce significantly more housing. Although these facts may not be desirable, they must be pragmatically accounted for and mitigated by not further increasing Whittier's share of housing units contained in SCAG's 6th Cycle RHNA. The final RHNA allocation and methodology must be fair and equitable while reflecting the capacity for reasonable housing unit construction.

As with many other cities, the City is concerned about the current allocation, but an even greater concern is that additional units may be applied to the City if reallocated from cities that are successful in their appeals. To that end, the City believes the appeal process itself was unclear as to the potential ramifications to other cities and not fully understood.

Although we fully support the surrounding cities in their appeals, the potential for additional units being applied to the City would exacerbate the problems described herein and in Whittier's September 13, 2019 letter to SCAG.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Jeffery S. Adams
Director of Community Development

File

[redacted]

From: Christopher Koontz <Christopher.Koontz@longbeach.gov>
Sent: Thursday, December 3, 2020 11:14 AM
To: Regional Housing
Subject: RHNA Appeals

Categories: Response Required, Record

Good morning,

The purpose of this email is to provide the City of Long Beach's position in regards to pending RHNA appeals before SCAG. The City of Long Beach seeks to meet its housing needs and obligations for the benefit of Long Beach residents and the region. Our allocation was extremely large and presents a planning and financing challenge for the City. Nonetheless we chose not to appeal our allocation because the allocation process was fair and transparent including taking the City of Long Beach's input into consideration.

We oppose and will not accept any transfer of additional allocation due to the pending appeals. We note that within our area, the Gateway COG, appeals are pending from Bellflower, Cerritos, Downey, Huntington Park, La Mirada, Lakewood, Pico Rivera, and South Gate. Each of these appeals should be evaluated by SCAG on the merits, however Long Beach opposes any transfer of allocation to our City. It would be inappropriate to transfer a further burden to Long Beach when we have already accepted a large allocation and have done more than many cities in the region to accommodate housing growth under the current RHNA cycle, including fully meeting our market-rate RHNA allocation.

The City of Long Beach will continue to work with SCAG and our neighbor jurisdictions to address the housing needs of our residents.

We thank you for consideration and please do not hesitate to contact the City regarding our position.

Christopher Koontz, AICP
Deputy Director

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