SOUTHERN CALIFORNIA
ASSOCIATION of GOVERNMENTS

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MEETING OF THE

HIGH-SPEED RAIL & TRANSIT SUBCOMMITTEE

Friday, December 21, 2012
10:00 a.m. – 12:00 p.m.

SCAG Los Angeles Office
818 West Seventh Street, 12th Floor
Policy Room B
Los Angeles, CA 90017
(213) 236-1800

Videoconference Available

Orange County Office
600 S. Main Street, Suite 906
Orange, CA 92863

San Bernardino County Office
1170 W. 3rd Street, Suite 140
San Bernardino, CA 92410

Ventura County Office
950 County Square Drive, Suite 101
Ventura, CA 93003

Imperial County Office
1405 N. Imperial Ave., Suite 1
El Centro, CA 92243

Riverside County Office
3403 10th Street, Suite 805
Riverside, CA 92501

If members of the public wish to review the attachments or have any questions on any of the agenda items, please contact Jane Embry at (213) 236-1826 or via email embry@scag.ca.gov

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. If you require such assistance, please contact SCAG at (213) 236-1928 at least 72 hours in advance of the meeting to enable SCAG to make reasonable arrangements. To request documents related to this document in an alternative format, please contact (213) 236-1928.

High Speed Rail & Transit Subcommittee
Member/Alternate/Ex-Officio Roster

Los Angeles County:	Hon. Mike Antonovich, **Vice-Chair**
	Hon. Frank Quintero
	Hon. Gene Murabito
	Hon. Bruce Barrows, Alternate
	Hon. Steve Hofbauer, Alternate
	Hon. Jess Talamantes, Alternate
Orange County:	Hon. Leroy Mills
Riverside County:	Hon. Karen Spiegel, **Chair**
	Hon. Ron Roberts

Ex-Officio Members

Nancy Pfeffer, Gateway Cities

Michael A. Morris, FHWA

HIGH-SPEED RAIL & TRANSIT SUBCOMMITTEE
AGENDA
DECEMBER 21, 2012

The High-Speed Rail & Transit Subcommittee may consider and act upon any of the items listed on the agenda regardless of whether they are listed as information or action items.

CALL TO ORDER & PLEDGE OF ALLEGIANCE
***(Hon. Karen Spiegel, Chair*)**

PUBLIC COMMENT PERIOD – Members of the public desiring to speak on items on the agenda, or items not on the agenda, but within the purview of the Subcommittee, must fill out and present a speaker's card to the Assistant prior to speaking. Comments will be limited to three minutes. The Chair may limit the total time for all comments to twenty minutes.

REVIEW AND PRIORITIZE AGENDA ITEMS

CONSENT CALENDAR		**Time**	**Page**
Approval Item			
1. Minutes of the November 9, 2012 Meeting	**Attachment**	**5 mins.**	**1**
2. Receive & File: System Performance Report Update			4
3. Receive & File: California High-Speed Train Fact Sheet			7
INFORMATION ITEMS			
1. Regional Transit Update ***(Matt Gleason, SCAG Staff)***	**Attachment**	**15 mins.**	**9**
2. ContextualizingTravel Behavior and Transit Use ***(Brian Taylor, Professor of Urban Planning, UCLA)***	**Attachment**	**20 mins.**	**22**
3. Smart Fare Media in Orange County ***(Jorge Duran, Project Manager – Transit, OCTA)***	**Attachment**	**15 mins.**	**50**
4. Smart Fare Media in Ventura County ***(Vic Kamhi, Bus Transit Director, VCTC)***	**Attachment**	**15 mins.**	**66**
5. Predictive Arrival Technologies ***(Lan-Chi Lam, Web Design and Strategy Manager, Metro)***	**Attachment**	**15 mins.**	**89**
6. First Mile/Last Mile Planning Efforts ***(Matt Gleason, SCAG Staff)***	**Attachment**	**15 mins.**	**105**

HIGH-SPEED RAIL & TRANSIT SUBCOMMITTEE
AGENDA
DECEMBER 21, 2012

CHAIR'S REPORT
(Hon. Karen Spiegel)

STAFF REPORT
(Stephen Fox – Transit/Rail)

GAO Preliminary Assessment of CA HSR Cost Estimates and Other Challenges	**Attachment**	**10 mins.**	**120**

FUTURE AGENDA ITEMS
Any Subcommittee member or staff desiring to place items on a future agenda may make such a request.

ANNOUNCEMENTS

ADJOURNMENT
The next meeting date is January 18, 2013; 10:00 AM to 12:00 PM

HIGH-SPEED RAIL & TRANSIT SUBCOMMITTEE
of the
SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

November 9, 2012
Minutes

THE FOLLOWING MINUTES ARE A SUMMARY OF ACTIONS TAKEN BY THE HIGH-SPEED RAIL & TRANSIT SUBCOMMITTEE. AN AUDIO RECORDING OF THE MEETING IS AVAILABLE FOR LISTENING AT SCAG'S DOWNTOWN OFFICE AND A VIDEO OF THE MEETING IS AVAILABLE ON SCAG'S WEBSITE.

The High-Speed Rail & Transit (HSR&T) Subcommittee held its meeting at SCAG's downtown Los Angeles office with video-conferencing at SCAG's Regional Offices.

Members/Alternates Present

Hon. Mike Antonovich **(Vice-Chair)**	Los Angeles County
Hon. Bruce Barrows, City of Cerritos	Los Angeles County
Hon. Steve Hofbauer, City of Palmdale	Los Angeles County
Hon. Leroy Mills, City of Cypress	Orange County
Hon. Frank Quintero, City of Glendale	Los Angeles County
Hon. Ron Roberts, City of Temecula (via video conference)	District 5
Hon. Karen Spiegel, City of Corona **(Chair)**	WRCOG
Hon. Jess Talamantes, City of Burbank	SFVCOG

Members/Alternates Not Present

Hon. Gene Murabito, City of Glendora	SGVCOG

Ex-Officio Members Present

Nancy Pfeffer	Gateway Cities COG

Ex-Officio Members Not Present

Michael Morris	FHWA

CALL TO ORDER & PLEDGE OF ALLEGIANCE

Hon. Karen Spiegel, Chair, called the meeting to order at approximately 10:01 AM and led the Subcommittee in the Pledge of Allegiance.

The Chair introduced the Subcommittee members, SCAG staff, and members of the public.

PUBLIC COMMENT PERIOD

There were no public comments.

REVIEW AND PRIORITIZE AGENDA ITEMS

There was no reprioritization of the agenda.

CONSENT CALENDAR

Approval Item

1. Minutes of October 5, 2012
   A MOTION was made (Barrows) to approve the Consent Calendar. The MOTION was SECONDED (Mills). A roll-call vote was taken by Joann Africa, Chief Counsel, and the MOTION was UNANIMOUSLY APPROVED.

INFORMATION ITEMS

1. California High-Speed Train Update
   Michelle Boehm, Southern California Regional Director of CHSRA, provided an update on California High-Speed Rail. Ms. Boehm reported that a new business plan was adopted in the spring of 2012, putting forth a vision for a stronger California.

2. Southern California MOU
   Don Sepulveda, Executive Officer of Regional Rail at Metro, provided an update on the Southern California Memorandum of Understanding (MOU) and how it relates to the region. Mr. Sepulveda stated that the MOU was approved by the High-Speed Rail Authority in April 2012, and development of the project list has been a collaborative effort with all the member agencies.

3. Metrolink Update
   Gray Crary, Chief Strategic Officer with Metrolink, stated that his team has been involved in the MOU discussions with the member agencies because many of the proposed projects are very important to Metrolink. Mr. Crary further stated that Metrolink submitted a plan called the Metrolink High-Speed Readiness Program and the CTC approved $89M for the program.

4. Riverside County Rail Update
   Sheldon Peterson, Rail Manager with RCTC, provided an update on Riverside County rail matters, including Commuter Rail, High-Speed Rail, Intercity Rail, and the Perris Valley Line. Mr. Peterson stated that RCTC is actively involved in supporting and expanding commuter rail through Metrolink and is also engaged in efforts to establish and expand other future passenger rail options.

5. LOSSAN Strategic Implementation Plan
   Linda Bohlinger, Vice-President, National Director of Management Consulting with HNTB, provided an overview of the strategic implementation plan, including steps taken in infrastructure and governance. Ms. Bohlinger stated that the goal of their corridorwide vision is to provide additional service, which will integrate operations.

6. California State Rail Plan
   Linda Culp, Principal Planner-Rail with SANDAG, stated that the purpose of this plan is to establish a statewide vision and set goals for an integrated network. Ms. Culp further stated that the plan is anticipated to be adopted in May 2013 and a key component is the integration of the High-Speed Rail blended system concept with the state rail plan.

7. Amtrak Northeast Corridor Visioning

Jonathan Hutchinson, Senior Director of Corridor Development with Amtrak, provided an overview of Amtrak's FY12 performance, both state and nationally, and outlined provisions of SB 1225, as it relates to Amtrak's 2040 Northeast Corridor vision.

CHAIR'S REPORT

There was no report provided.

STAFF REPORT

Philip Law, Acting Manager of Transit/Rail, provided an overview of the Subcommittee Deliverables Outline, which was requested by Councilmember Mills. Mr. Law stated that there are two main elements in the Subcommittee's Deliverables: 1) action steps that would support the implementation of the adopted 2012 RTP/SCS; and 2) the framework for developing the passenger rail and transit element of the 2016 RTP/SCS. Mr. Law also referred to the adopted High-Speed Rail & Transit Work Plan included in the agenda packet.

Hon. Bruce Barrows suggested including a strategy to address natural disaster recovery. Mr. Law stated that there is a safety and security section in the RTP that discusses disaster recovery, but it is not specific to high-speed rail or transit. Mr. Law further stated that he will confer with staff as to how this might be incorporated into the Subcommittee's discussion.

FUTURE AGENDA ITEMS

1) Disaster Recovery Strategy

ANNOUNCEMENTS

Philip Law stated that an email will be going out to the Subcommittee members with proposed dates for the Joint Meeting with the Active Transportation and Transportation Finance Subcommittees.

ADJOURNMENT

The Chair adjourned the meeting at approximately 12:06 PM.

Minutes Approved By:

Philip Law, Acting Manager
Transit/Rail

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REPORT

DATE: December 21, 2012

TO: High Speed Rail & Transit Subcommittee

FROM: Matt Gleason, Associate Regional Planner, 213-236-1832, gleason@scag.ca.gov

SUBJECT: System Performance Report Update

***EXECUTIVE SUMMARY*:**
SCAG typically analyzes available performance data to establish existing conditions as part of the Regional Transportation Plan production process. Staff are seeking to establish an annual effort to provide a yearly review of system performance, and to establish data collection procedures to assist in increased performance monitoring as mandated by MAP-21.

BACKGROUND:
Since the 1990s, MPOs have been advised by the federal government to consider the performance of their long range planning documents. SCAG has a relatively long history of using performance measurement in developing the RTP, going back to the 1998 RTP. For the 2004 RTP, SCAG developed a set of measurable goals and outcomes that included the principal of sustainability, which is not limited only to the environment and the transportation-land use connection, but also has important implications on how the region meets its critical system preservation needs.

Beginning with the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A legacy for Users (SAFETEA-LU), MPOs have been also been called upon to incorporate Maintenance and Operations strategies into both the RTPs and the Congestion Management Plans (CMP) produced by Congestion Management Agencies. Moving Ahead for Progress in the 21st Century (MAP-21) the omnibus transportation authorization passed in June 2012, continues to reinforce the importance of performance based planning in the RTP process, while also reinforcing the importance of maintaining a state of good repair for transportation infrastructure and assets.

MAP-21 amends 23 U.S.C 150(c) to require MPOs to work in collaboration with transit agencies and state DOTs to establish performance measures consistent with performance targets related to transit asset management and transit safety, as set forth in 49 U.S.C. 5326(c) and 5329(d).

MAP-21 also mandates RTPs must employ performance based planning, that RTPs must include a System Performance Report, and that Transportation Improvement Programs must include "a description of the anticipated progress brought about by implementing the TIP towards achieving the performance targets. MAP-21 mandates the Secretary of Transportation to issue final rules for the establishment of performance targets for transit at the state and MPO levels, following which, states shall have three months to establish targets, and MPOs shall follow in enacting their own targets within 180 days (49 U.S.C. 5326(c)(1)). This rulemaking process will impact the production of the 2016 RTP/SCS. Staff expect that the formal adoption of these rules will occur by June 2015, when the technical work to produce the 2016 RTP/SCS will be well underway.

The Secretary is required to promulgate two types of rules for transit: Transit State of Good Repair Standards, and Transit Safety standards. However, in addition to incorporating these new measures and targets, producing a System Performance Report, and addressing performance progress through the FTIP, SCAG will continue to perform the kind of performance based planning it has practiced since the 1998 RTP.

DISCUSSION

As an incremental step towards a) producing of a System Performance Report for the 2016 RTP/SCS, b) to incorporate an annual review of system performance geared towards planning for operations and maintenance into SCAG's transit modal planning practices, staff recommends the production of an annual Regional Transit System Performance Report. This report, similar to MTC's *Statistical Summary of Bay Area Transit Operators (http://www.mtc.ca.gov/library/statsum/statsum.htm),* would provide an annual format for measuring system performance, through the analysis of data reported by transit operators to the National Transit Database and the Office of the State Controller.

Staff have conducted a review of planning documents, reports, and resources to assess what types of performance measures should be analyzed on an annual basis, what modes should be analyzed, and which transit properties should be included in the analysis.

Given this review, staff proposes to produce an examination of current system performance along the following tiers, similar to the tiering structures in the 2001 and 2004 RTPs:

1. Rapid Transit (heavy rail, light rail, commuter rail)
2. Regional / Subregional (larger operations of motor bus service – including operations across jurisdictional boundaries by agencies receiving FTA 5307 funds)
3. Local (local and circulator motor bus service operations)
4. Specialized Operators (demand response and rural transit operations)

Operations within tier one and tier two are proposed to be the focus of the 2012-2013 system performance work effort, due to availability of data sources, including the national Transit Database and the Office of the State Controller's Transit Operators and Non-Transit Claimants Annual Report. In future years, strategies for analyzing tier three and tier four operations will be pursued.

Staff intend that the initial iteration of the report will focus on a series of cost efficiency, cost effectiveness, service delivery, mobility, maintenance and productivity measures, similar to MTC's *MTC Statistical Summary of Bay Area Transit Operators*. The data would be analyzed at the mode and agency level, in contrast to the RTP analyses where data was presented at the regional level. Staff believes that disaggregated analysis at the agency level can provide a benchmarking resource for transit properties in the SCAG region. Wherever feasible, a timeseries including 1991, 2001, and 2011 data will be analyzed to establish trends.

Proposed Measures

Performance Concept	Performance Measure
Cost Efficiency	Operating cost per revenue vehicle hour
	Farebox Recovery
Cost Effectiveness	Operating cost per passenger trip
	Operating cost per passenger mile
Service Effectiveness/ Productivity	Passengers per vehicle revenue hour
	Passengers per vehicle revenue mile
Maintenance	Fleet Average Vehicle Age
Mobility/Travel Time	Average Vehicle Speed

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SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

California High-Speed Train (HST) Update

HST SEGMENTS – CURRENT STATUS

Phase 1 – Initial Construction Segment (ICS)

Merced to Fresno – In September 2012, the Federal Railroad Administration (FRA) issued a Record of Decision that approved the alignment from Merced to Fresno, allowing construction to begin next year. This is the first section of the ICS in the San Joaquin Valley to be built. The design/build proposals for this segment are due January 18, 2013.

Fresno to Bakersfield – The California High-Speed Rail Authority released a Revised Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for this section in July 2012, with a 90-day public comment period that closed on October 19, 2012.

The Authority recently pushed back the completion date of these two segments (130 miles) 12 months to December 2017. This still complies with federal requirements that the federal funds be spent by September 2017.

Phase 1 – Segments in the SCAG Region

Bakersfield to Palmdale – The Draft Supplemental Alternatives Analysis (AA) was completed in February 2012. The Draft EIR/EIS will be released in the Spring of 2014.

Palmdale to Los Angeles – The Draft EIR/EIS is in process and is scheduled for release in the Winter of 2013.

Los Angeles to Anaheim – The Supplemental AA was completed in the summer of 2010. The Draft EIR/EIS will be released in the Fall of 2014.

Phase 2 – Segments in the SCAG Region

Los Angeles to San Diego – The Preliminary AA was completed in the spring of 2011. The Supplemental AA effort has just begun, and is not scheduled to be completed until early 2015.

MOU AND BLENDED APPROACH

The Blended Approach involves using and improving existing passenger rail facilities in Southern California and the Bay Area (the "bookends") to connect to the CA HST as part of a phased implementation strategy to deliver the full system while reducing costs and impacts.

The Blended Approach emerged from the debate and discussion by the Transportation Committee and Regional Council on whether to include Phase 1 of the HST in the 2012 RTP/SCS. Based on these discussions, the Authority committed to spend $500 million in Prop 1A funds (plus $500 million in matching funds) to improve our region's existing passenger rail system as part of the Blended Approach. This commitment was formalized in a MOU with seven signatories representing Metrolink, SANDAG, SANBAG, SCAG, RCTC, L.A. County Metro and the Authority. A working group of these MOU agencies has been meeting regularly to develop a project list and criteria to rank those projects and to identify local match funding strategies. In July 2012, the state appropriated the $500 million in Prop 1A funds, and the signatories have to identify match funds for the $500 million to begin funding the top-ranked projects.

CALIFORNIA HIGH SPEED RAIL

Initial Operating System (IOS)
and Phased Implementation

SOUTHERN CALIFORNIA
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CALIFORNIA HIGH-SPEED TRAIN (HST) UPDATE *Continued*

The Anaheim City Council voted on October 23, 2012 to become a signatory to the MOU, and the Authority is investigating the prospect of the City becoming incorporated in the MOU. The State College Blvd. grade separation project is in the city and is Orange County's top-rated project on the project list.

STAFFING

In October, the Authority announced the hiring of Frank Vacca, formerly the Chief Engineer of Amtrak, as Chief Program Manager. Vacca has over 35 years of experience in commuter, inter-city and high-speed passenger rail systems.

The Authority announced in September the hiring of Michelle Boehm as the new Southern California Regional Director. In addition to Boehm, the Authority announced in August the hiring of Diana Gomez as the Central Valley Regional Director and Ben Tripousis as the Northern California Regional Director.

BUSINESS PLAN

The Authority's current business plan was released in April 2012. This plan incorporates the new Blended Approach and commits to early investments in the bookends (as identified in the Southern and Northern California MOUs). The plan identifies a phased implementation approach that includes the construction of the IOS from Merced to the San Fernando Valley by 2022, and the buildout of Phase 1 from San Francisco to Los Angeles/Anaheim by 2029 at a total cost of $68 billion, down from the previous non-blended cost of $98 billion. The plan will be updated in 2014 as required by Prop. 1A statute.

ECONOMIC BENEFITS

According to the Authority, the CA HST will create economic benefits throughout the state. The Phase 1 Blended System will create an average of 66,000 jobs annually for 15 years during construction, and will create 2,900 permanent jobs as it enters revenue service.

LITIGATION

Pending litigation includes:

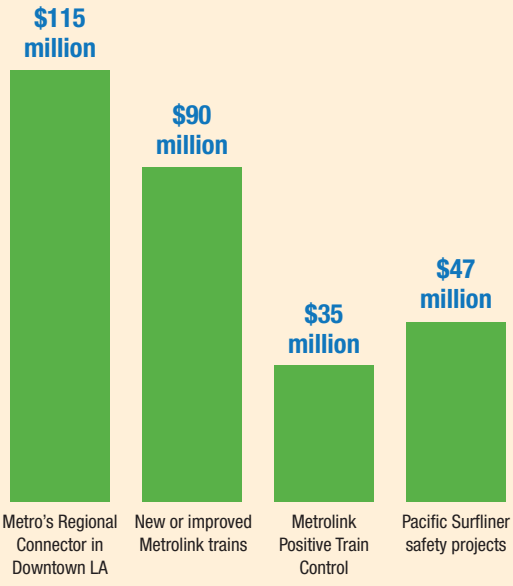
- John Tos; Aaron Fukuda and County of Kings v. California High Speed Rail Authority, Sacramento Superior Court Case No. 34-2001-00113919
- City of Chowchilla v. California High-Speed Rail Authority, Sacramento Superior
- Court No. 34-2012-80001166
- County of Madera v. California High-Speed Rail Authority, Sacramento Superior Court No. 34-2012-80001165
- Timeless Investments, Inc. v. California High-Speed Rail Authority, Sacramento Superior Court No. 34-2012-80001168
- Town of Atherton v. California High-Speed Rail Authority, Sacramento Superior Court No. 34-2008-80000022
- Town of Atherton v. California High-Speed Rail Authority, Sacramento Superior Court No. 34-2010-80000679

FUNDING

$6 billion in funding has been approved to date for the ICS. This includes $2.7 billion in Prop. 1A funds authorized by the state legislature for FY13 and $3.3 billion in federal grant money. The state funding relies on a state bond sale. In addition, $286 million in Prop. 1A Interconnectivity funds and $500 million in Prop. 1A funds for the Southern California Memorandum of Understanding (MOU) have been approved pending a bond sale for our region.

Prop. 1A Interconnectivity Funds

In September 2012, the California Transportation Commission (CTC) approved the release of Prop. 1A Interconnectivity funds ($950 million statewide), of which $286 million was allocated to four Southern California projects:



2502 updated: 2012.12.06

Regional Transit Update

High-Speed Rail & Transit Subcommittee

Southern California Association of Governments

December 21, 2012

Matt Gleason

SOUTHERN CALIFORNIA ASSOCIATION of GOVERNMENTS

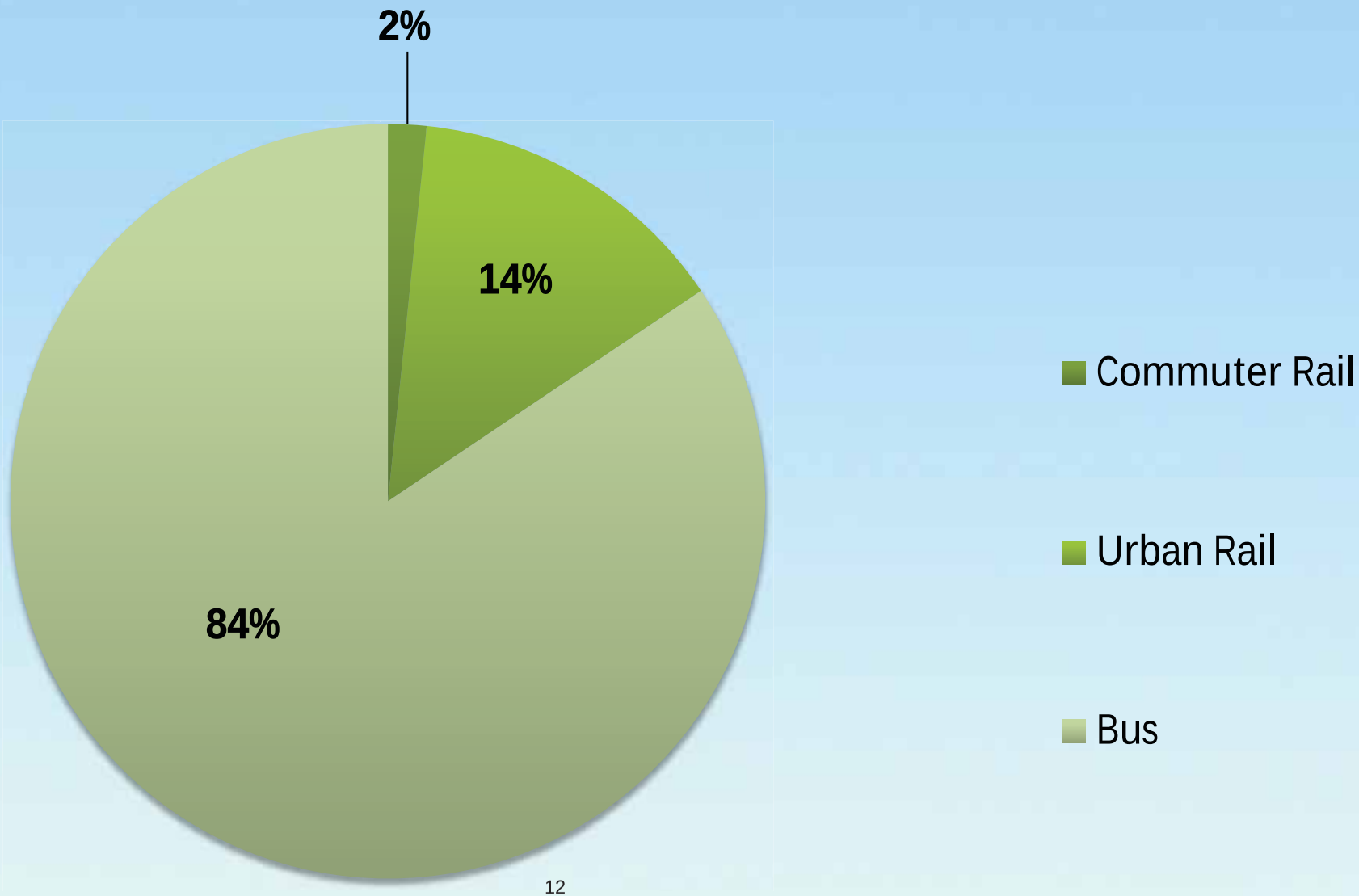
Transit in the SCAG Region

- Nearly 70 providers of fixed route service
- Almost 100 total transit providers
- Nearly 9,000 Route Miles
- Nearly half of all investment in the 2012 RTP/SCS

Transit Modes Operating in the SCAG Region

- Fixed Route
  - Bus/Bus Rapid Transit
  - Urban Rail
    - Heavy Rail
    - Light Rail
  - Commuter Rail
- Demand Response
  - ADA Paratransit
  - Dial-a-Rides
  - Human services/ other specialized transit services

Mode share, Transit Modes in SCAG Region, 2011 NTD



2012 RTP/SCS
2035 Plan Regional Transit Network

2012 RTP/SCS Transit Projects, Policies, and Strategies

- Transit Capital Projects
  - Measure R -- LA County
  - BRT -- Orange, Riverside and San Bernardino counties
  - Go Local -- Orange County
  - Metrolink expansion -- Riverside County
  - LOSSAN Corridor speed and capacity enhancements
  - 10% ZEV fleet by 2020

2012 RTP/SCS Transit Projects, Policies, and Strategies

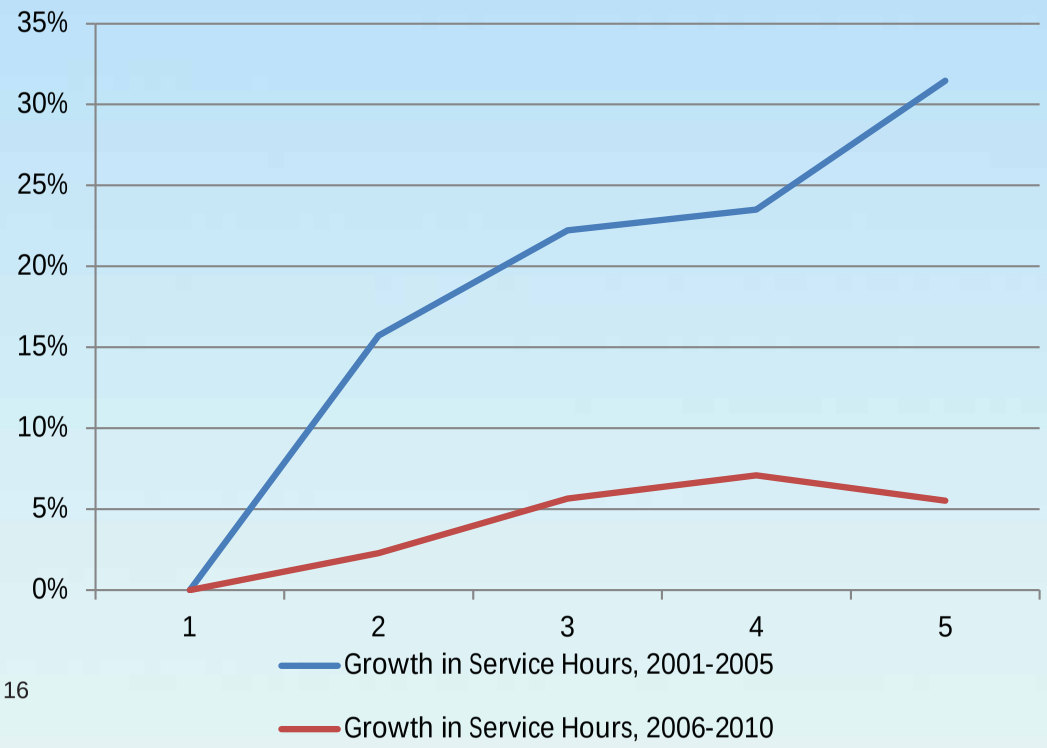
- Operations Strategies
  - Expanded transit signal priority and dedicated lanes
  - Expanded predictive arrival systems
  - Increased bicycle parking and carrying capacity at stations and on-board vehicles
  - Increased point-to-point express bus service
  - Increased bus service in highly productive corridors

Service Cuts, 2008-2012

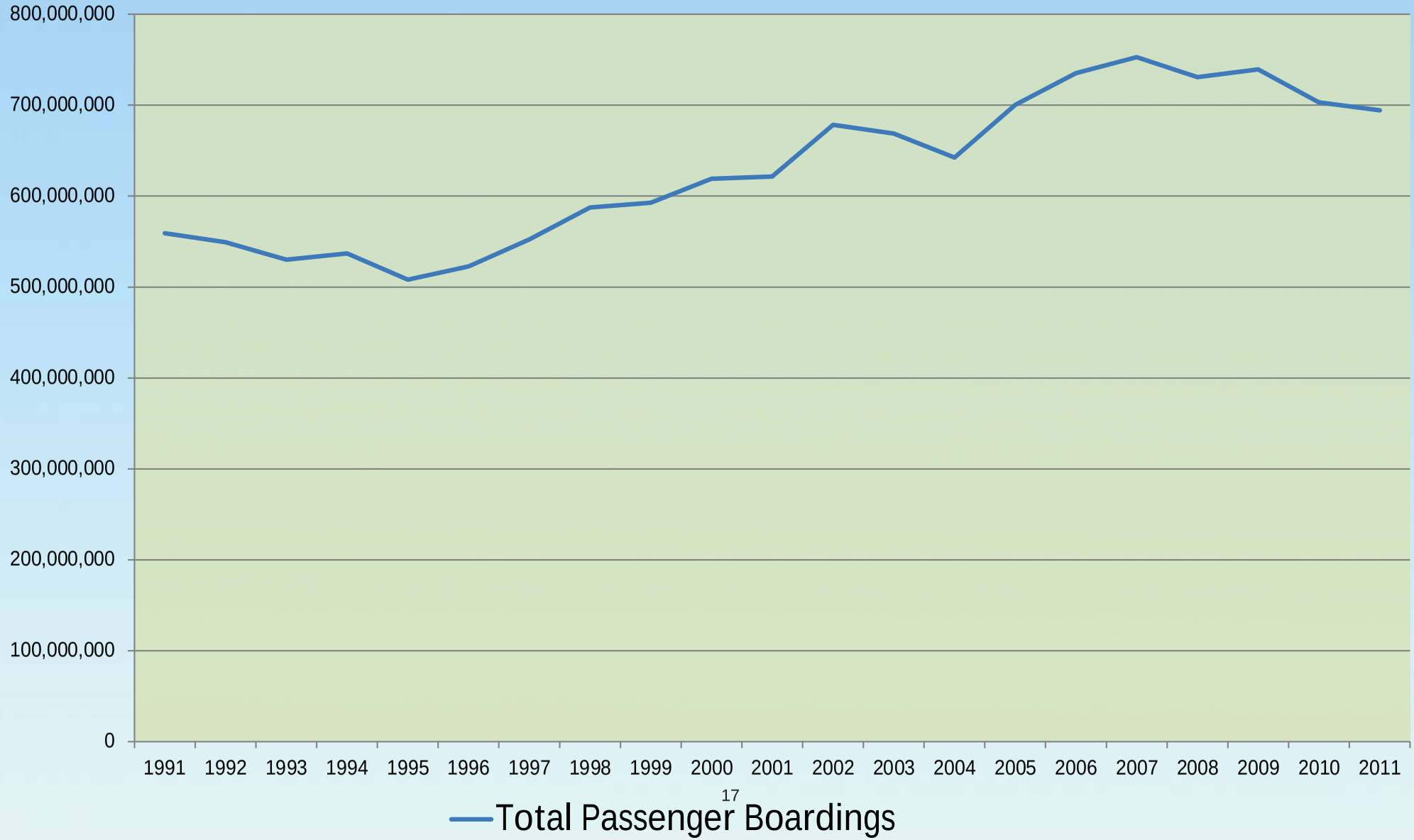
2008-2009 Recession led to significant decreases in passenger boardings and state operations funding

- FY07-FY10: 21% Drop in Local Transportation Funds
- FY08-FY11: $759 Million reduction in State Transit Assistance funds
- Half of operators made drastic cuts
  - 2% to 20%; four >10%
  - Despite service expansions in some areas, overall hours relatively flat
- 63% Operators saw loss in boardings
  - 2% to 27%
  - Four > 15%
- Almost all operators raised fares

Growth in Service Hours, 2001-2005 and 2006-2010, NTD 2010



Total Fixed Route Transit Boardings, SCAG Region, 1991-2011 NTD



Recovering from the Recession

- Operations funding remains a challenge in short run
- Early 2012 numbers show ridership growth on transit systems throughout Southern California
- Still significant effort needed to get back to pre-recession service growth levels

2016 RTP/SCS Transit Element

Staff has been working toward the 2016 RTP/SCS Transit Element

- Analyzing 2012 Regional Transit Network
- Assessing current year transit system performance
- Identifying strategies/policies and best practices to consider including in the 2016 RTP/SCS

Questions?

For more information, please contact:

Matt Gleason – gleason@scag.ca.gov

(213)-236-1832

www.scag.ca.gov/transit/

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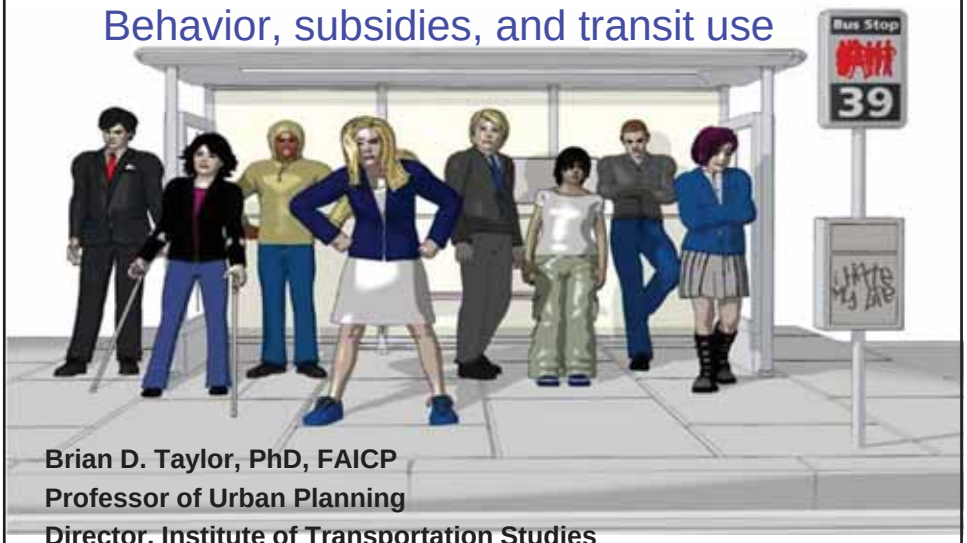
Thinking Outside the Bus

Behavior, subsidies, and transit use



Brian D. Taylor, PhD, FAICP
Professor of Urban Planning
Director, Institute of Transportation Studies
Director, Lewis Center for Regional Policy Studies
UCLA Luskin School of Public Affairs

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Game plan

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Game plan

1. A quick overview of travel behavior
2. A thumbnail sketch of public transit today
3. Implications of transit subsidy and patronage research
4. Cost-effective ways to increase transit use
    1. Pricing transit services
    2. Reducing traveler uncertainty

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Game plan

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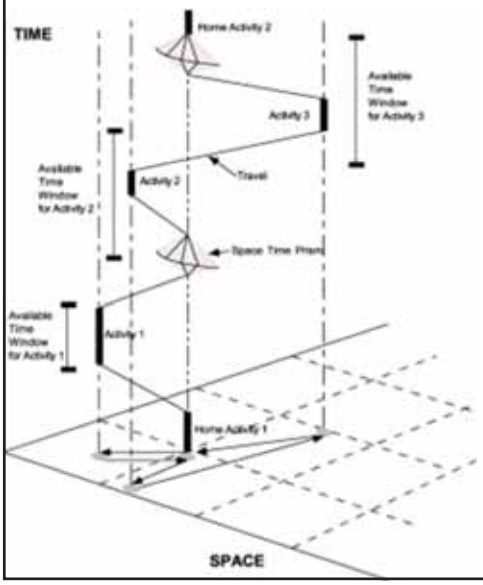
Travel Behavior 101



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Travel behavior 101

- Travel is a means, not an end
  - Most trips are to do something elsewhere
    - Activity participation is associated with subjective well-being
    - Trips are associated with activity participation

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Travel behavior 101

- Travel is a means, not an end
  - Most trips to do something elsewhere
- People think about “tours” and not trips
  - The easiest way to Point B, may not be the easiest to Points C, D, and E
    - “Trip chaining” harder to do on traditional transit
    - “Schlepping” one’s stuff harder too

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Travel behavior 101

- Travel is a means, not an end
  - Most trips to do something elsewhere
- People think about “tours” and not trips
  - The easiest way to Point B, may not be the easiest to Points C, D, and E
- Risk/uncertainty, time, and money are most important
  - In that order!
    - Fear for safety trumps all
    - Reliability more important than speed
    - Out-of-pocket spending most noted

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Travel behavior 101

- Travel is a means, not an end
  - Most trips to do something elsewhere
- People think about “tours” and not trips
  - The easiest way to Point B, may not be the easiest to Points C, D, and E
- Risk/uncertainty, time, and money are most important
  - In that order!
- People love car travel for good reason
  - Walking and biking share cars’ flexibility
  - Traditional transit less so

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Game plan

1. A quick overview of travel behavior
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   2. Reducing traveler uncertainty

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Public transit?

- Can take many forms:
  - Buses, streetcars, subways, and ferries operating in most urban areas on fixed-routes with fixed-schedules for a nominal fare

Public transit?

- Can take many forms:
  - Buses, streetcars, subways, and ferries operating in most urban areas on fixed-routes with fixed-schedules for a nominal fare
  - Paratransit and taxis share much with cars, bikes, and feet, but are unfortunately viewed by many as mere niche players

Public transit?

- 75 years ago:
  - Almost exclusively private, for-profit systems
  - Today, almost entirely public
- With shift to public ownership
  - Ever expanding public agenda for transit
  - Service and subsidies growing faster than ridership

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Public transit?

- Transit's strengths
  - Moving large numbers of people from a few origins to a few destinations at the same time

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Public transit?

- Transit's strengths
  - Moving large numbers of people from a few origins to a few destinations at the same time

- Metropolitan person trips 2009
  - Private vehicles = 83.5%
  - Public transit = 3.9%

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What are transit's primary markets?

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What are transit's primary markets?

- People who – because of age, income, or disability – have limited access to and use of automobiles
  - Most transit users are low-income

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What are transit's primary markets?

- People who – because of age, income, or disability – have limited access to and use of automobiles
  - Most transit users are low-income
- Trips to and from places where parking is limited and/or expensive
  - Downtowns, universities, airports, etc..
- In sum:
  - The central parts of the oldest, and largest cities

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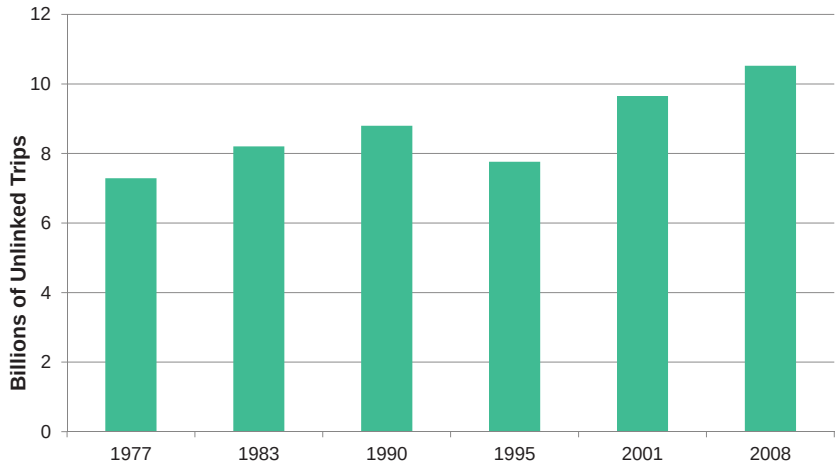
But transit use is climbing of late

(up 36% since 1995 and 9% since 2001)



Source: American Public Transit Association

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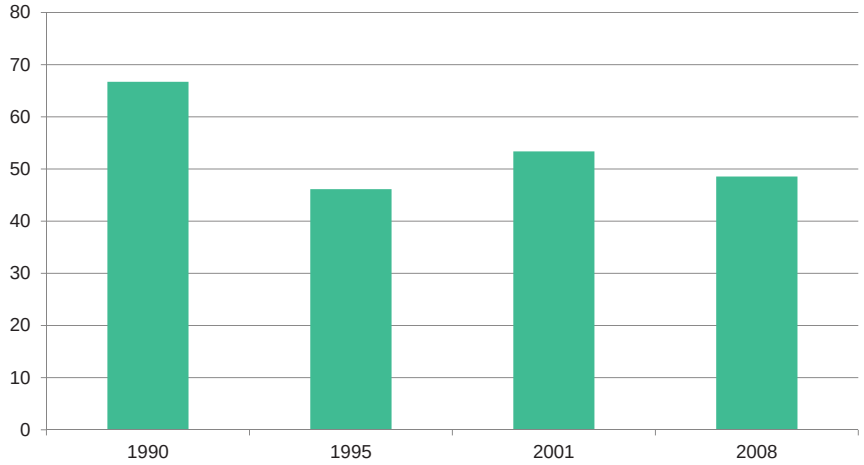
Metropolitan areas are growing (up 85 million since 1990) but transit *trips per urban resident* are down 27%



Source: Author's Calculations from American Public Transit Association data

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Why aren't major investments in public transit "buying" more new riders?

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Behind the eight-ball

- Transit increasingly operates in places that were designed around the automobile
  - Low densities
  - Lots of streets and roads
  - Lots and lots of free parking

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Why so much driving?

- **Average journey-to-work time in 2010**
  - Public transit: 56.0 minutes
  - Private vehicles: 22.9 minutes

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Why all of this driving?

- **Average journey-to-work time in 2010**
  - Public transit: 56.0 minutes
  - Private vehicles: 22.9 minutes
- **Goods movements and personal business travel growing fastest**
  - Errands now outnumber work trips by more than 2.5:1
  - Increasing share of peak hour trips are chained into tours

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Game plan

1. A quick overview of travel behavior
2. A thumbnail sketch of public transit today
3. Implications of transit subsidy and patronage research
4. Cost-effective ways to increase transit use
   1. Pricing transit services
   2. Reducing traveler uncertainty

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So What Explains Overall Transit Ridership?

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Nature and Nurture

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Nature and Nurture

- Nature
  - Bakersfield is never going to have as much transit use as San Francisco
- Nurture
  - Fare and service policies can double (or halve) patronage in a given area

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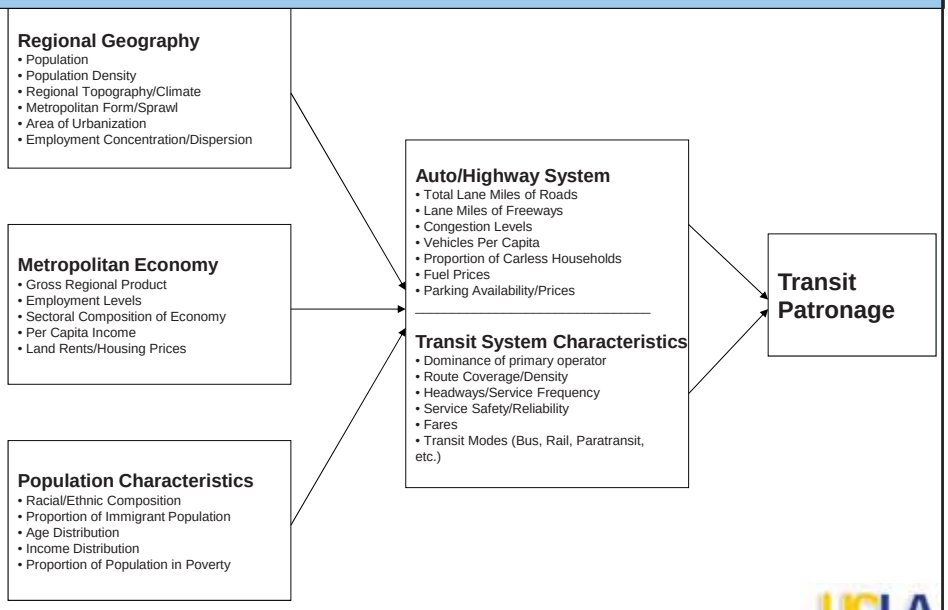
What Explains Transit Ridership: A Conceptual Model



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Of the things that transit managers' control, fares and headways have the most effect on ridership

	5th Percentile	95th Percentile	% Difference
Average Fare per Unlinked Boarding	$0.95	$0.20	-78.9%
Predicted Per Capita Boardings	7.1	15.6	119.7%
Average Headways	2,340	12,803	447.2%
Predicted Per Capita Boardings	6.4	15.1	135.9%

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So are there any cost-effective ways to boost transit ridership?

Yes!

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Game plan

1. A quick overview of travel behavior
2. A thumbnail sketch of public transit today
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Two promising paths forward

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Two promising paths forward

1. Pricing services like businesses do would increase cost-efficiency, service-effectiveness, and social equity

2. Thinking outside of the bus to reduce uncertainty of transit travel

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Current approaches to transit pricing

CUSTOMER ALERT

Fare Change

Effective Tuesday, January 1, 2013

Everett Transit's proposed fare increase has been approved by city council and will take effect on **January 1, 2013.**

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Current approaches to transit pricing

- While the costs of transit trips vary dramatically by time of day, distance, direction, and travel mode
  - Most transit operators do not carefully analyze their "marginal" costs
- As a result, fares tend to be "flat"
  - That is, they don't vary much (if at all) by time, distance, or mode
  - Result: Lots of inefficient (and inequitable) "cross-subsidies"

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"Marginal cost" pricing…

- Encourages riders to consume more "cheap to provide" service
  - Off-peak trips
  - Backhaul trips
  - Short trips
  - Bus trips
- And to "co-pay" for more "expensive to provide" trips
  - Demand for these trips is more "inelastic"
  - Riders tend to be wealthier

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Responses of "choice" and "dependent" riders to fare changes

	Fare Increases	***Fare Decreases***
Lower-Income Riders	Relatively inelastic; have relatively few alternatives	Relatively elastic; limited incomes and few alternatives creates latent demand for transit travel
Higher-Income Riders	Relatively elastic; typically have many alternatives	Relatively inelastic; higher incomes and plenty of alternatives means that transit remains an inferior good for most

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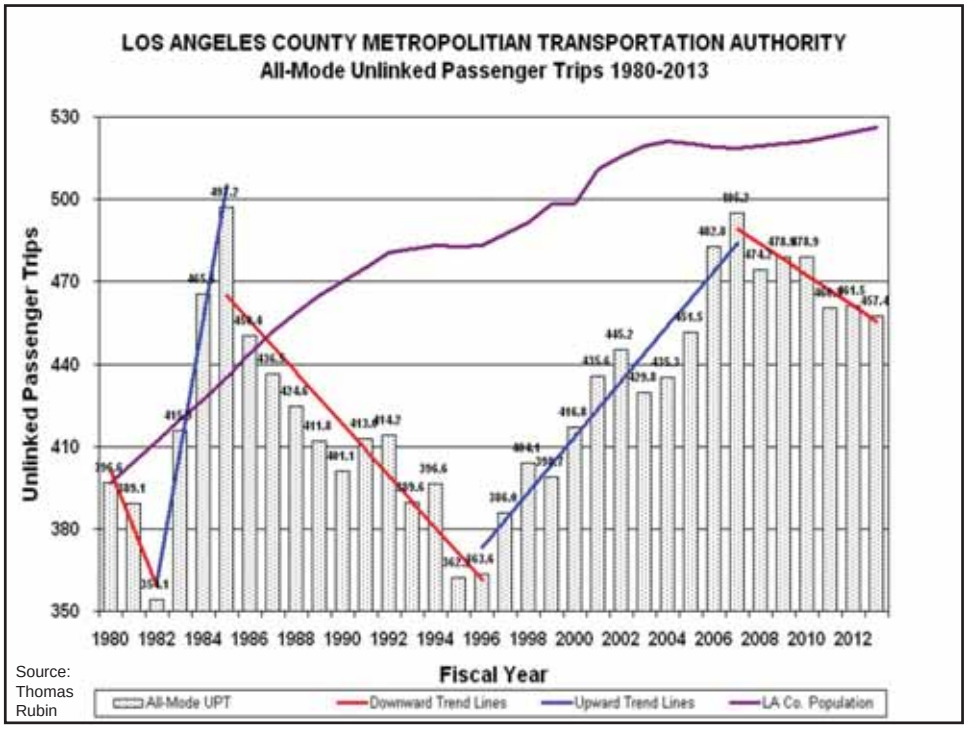
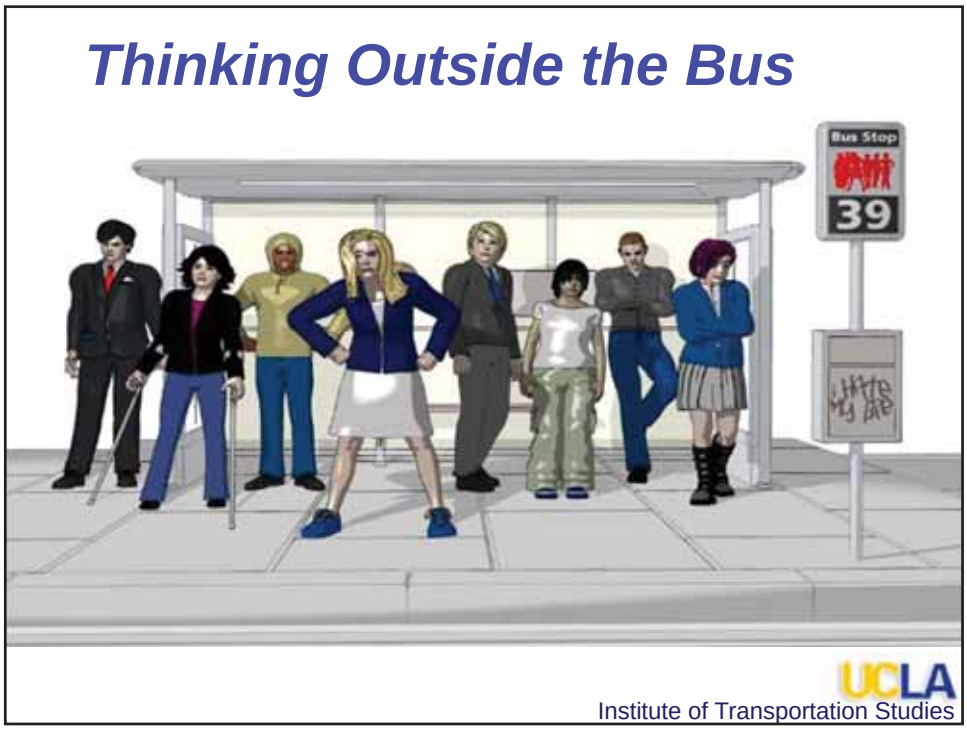


Source: Thomas Rubin



Out-Of-Vehicle Experience

- Public transit passengers must typically wait for and transfer between buses and trains
- Rider behavior tells us that this “out-of-vehicle” is 1.5 to 4 times more important than “in-vehicle” travel

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Conclusions

- The most important determinant of user satisfaction is frequent and reliable service in an environment of personal safety



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Conclusions

- Reliability, safety, and security factors outweighed other attributes of stops/stations
- Reliability, safety, and security were consistently important regardless of wait time
- Cleanliness, schedule/route info, shelter, guards, restroom, seating, food/drink become more important with increased wait times



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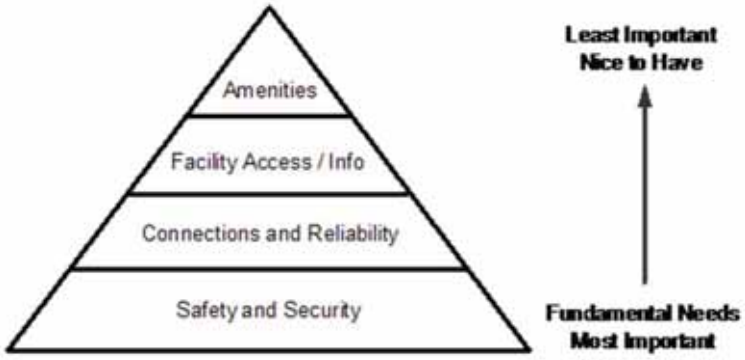
Example

- Bus-only lanes in congested, high-ridership corridors…
  - Increase vehicle speeds and reduce in-vehicle travel times
  - But also reduce headways, which may have an even *greater* effect on patronage

Thinking outside the bus about transit passenger needs



The transit users' hierarchy of needs

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Let's Recap

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OK, so it's complicated. But what's most important?

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OK, so it's complicated. But what's most important?

- #1: Travel time reliability
  - Travelers like speed, but they like reliability even more
  - Wait and transfer times are especially burdensome (1.5 to 4 times more than in-vehicle time)
    - Frequent service with few transfers will beat fast service with transfers every time
  - Lesson: Increasing service frequency and schedule adherence attracts lots of riders

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Thinking outside the bus

- #1: Travel time reliability
  - Lesson: Increasing service frequency and schedule adherence attracts lots of riders
  - Cost-effective ways to improve reliability
    - Better tracking and management of vehicle spacing
    - Realistic schedule setting
    - Real-time "Next Bus" information at major stops and on smart phones
    - Transit signal prioritization
    - Queue jumper and, in limited cases, bus-only lanes

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OK, so it's complicated. But what's most important?

- #2: Price
  - The cost of providing transit varies a lot
    - Peak hour, peak direction, and rail service cost a lot more than off-peak, contra-flow, and bus service
  - But transit fares tend to be "flat," per trip or even per month
    - Long-distance, peak hour, peak direction rail passengers get the biggest government subsidies, while short bus trips in the off-peak tend to require little subsidy
    - This encourages inefficiency

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What's a fair fare?

- #2: Price
  - Conventional wisdom holds that lowering fares is a costly way to add riders
  - Fare elasticity research:
    - Fare increases chase away higher-income riders (who can switch to cars)
    - Fare reductions attract lower-income riders (who have fewer choices)

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OK, so it's complicated. But what's most important?

- #2: Price
  - Lesson: Use smartcards to vary fares to reflect costs
    - Lower fares for inexpensive-to-provide trips (short, off-peak, backhaul trips)
    - Higher fares for expensive-to-provide trips (long, peak-period, peak direction, express and rail trips)
    - Would encourage better utilization of existing capacity, such as by adding rapid turnover short trips
      - Would add riders without adding much to costs

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Make transit smarter

- #2: Price
  - Lesson: Use smartcards to vary fares to reflect costs
    - Would increase both system performance and social equity
    - since higher-income riders disproportionately consume expensive-to-provide trips and lower-income riders disproportionately consume inexpensive-to-provide trips

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There is low-hanging fruit out there to cost-effectively increase transit use

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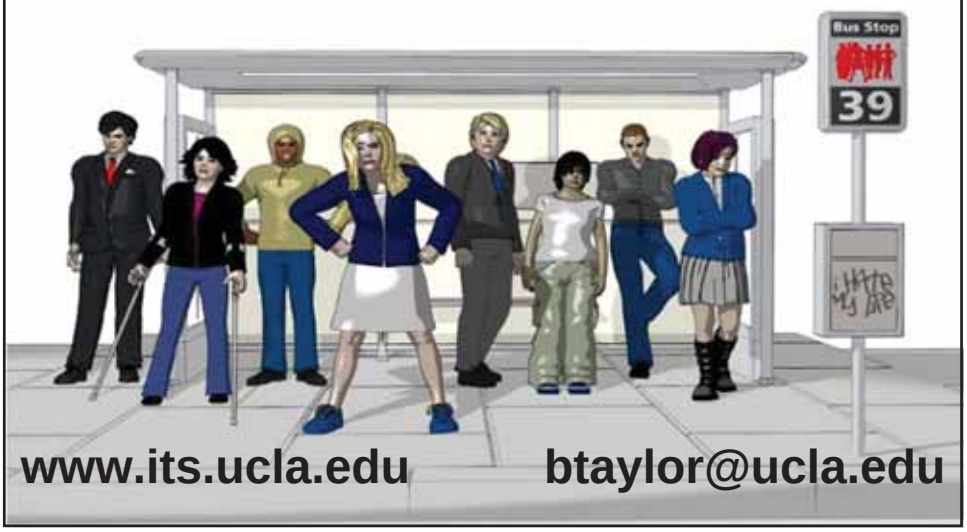
Thank you



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FARE INTEGRATION PROJECT

SCAG's High Speed Rail and Transit Subcommittee Meeting
December 21, 2012

Orange County Transportation Authority PO Box 14184 - Orange, CA 92863-1584

OCTA

Project Benefits and Goals

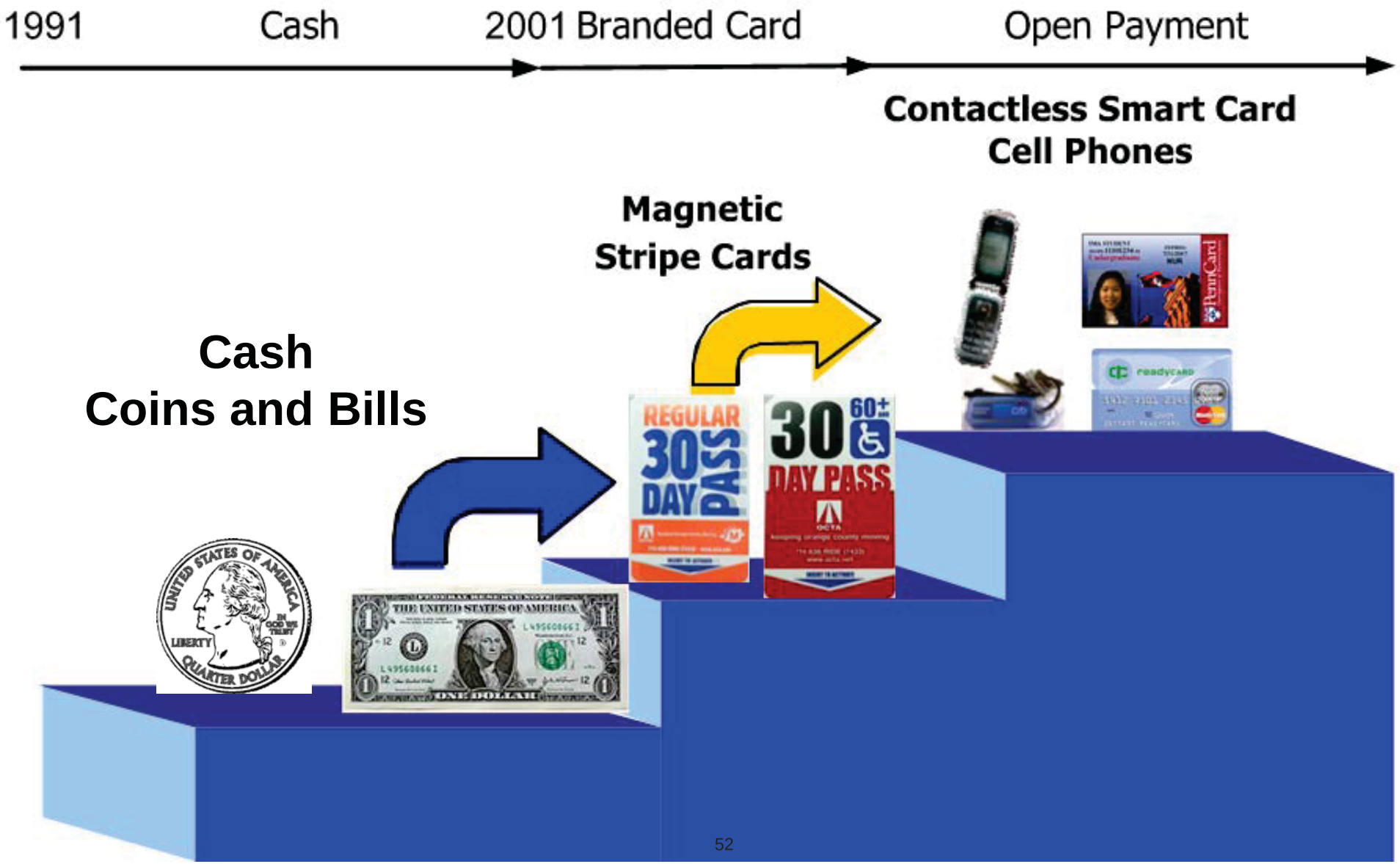
OCTA

- Better integrate fare collection system with other Orange Co transit projects (Measure M2 , Go Local, and Metrolink Service Expansion Program
- Reduce dwell time at bus stops
- Utilize new technology to reduce cost of handling cash payment
- Improve travel time
- Ease of transferring from one bus to another or from bus to rail, regardless of service provider
- Improve customer experience by offering new payment options

Region

- Lead the development of strategy for a seamless regional fare collection system and fare policies
- Implement an open payment system that can be integrated with other agencies in the region
- Encourage seamless regional travel with common payment methods and common fare policies
- Allow agencies to maintain their individual fare policies
- Ease of transferring from one agency to another

OCTA Fare Payment Evolution



OCTA's Current Fare Collection System

- GFI Odyssey System
- Over 800 Units
- Acquired and installed in 2001
- Accepts Cash and Magnetics
- Bill and coin validator
- The Operator Control Unit (OCU) allows Operator to control farebox
- Interface with the AMDT for login and alarms
- Reached maximum available fare categories (keys and TTPs)

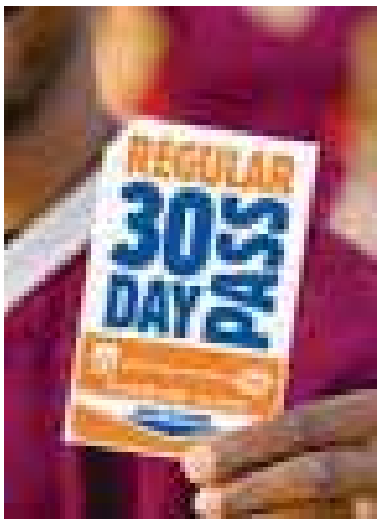
Customer Behavior

Survey Results

- 38% use credit/debit card
- 59% use cell phones
- 27% use a smart phone

Other Factors

- 65% use a multi-ride pass
- 30% use cash



Study Recommendations

- Implement a Smart Card system
  - Retain current farebox
  - Retain current magnetic stripe media
  - Add a stand beside card reader

- Smart Card reader
  - Los Angeles Metro TAP cards
  - San Diego Compass cards
  - Contactless credit/debit cards and cell phones
  - Seamless transfer from bus to bus and bus to rail
- Integrate fare system with OCTA's other Intelligent Transportation System elements
- Consider low to medium cost options with flexibility for expansion

Regional Efforts

- Conducted a Peer-to-Peer (P2P) Review, sponsored by the US DOT in Mar 2011

- Hosted a Southern California "Super Users" Group discussion in partnership with SCRRA and USDOT Volpe National Transportation Systems Center in Jul 2011

- Engaged USDOT Volpe to assist in the Regional Fare Collection System Project in Dec 2011

Regional Efforts Continue…

- Hosted a Regional Fare Collection Vendor Expo in Feb 2012
- In cooperation with Long Beach Transit, hosted a workshop with vendors following the APTA Conference in Long Beach in May 2012
- Visits and meetings with many of our neighboring agencies
- Conducting monthly teleconference meeting with Super Users team

Interagency Transfer Agreements

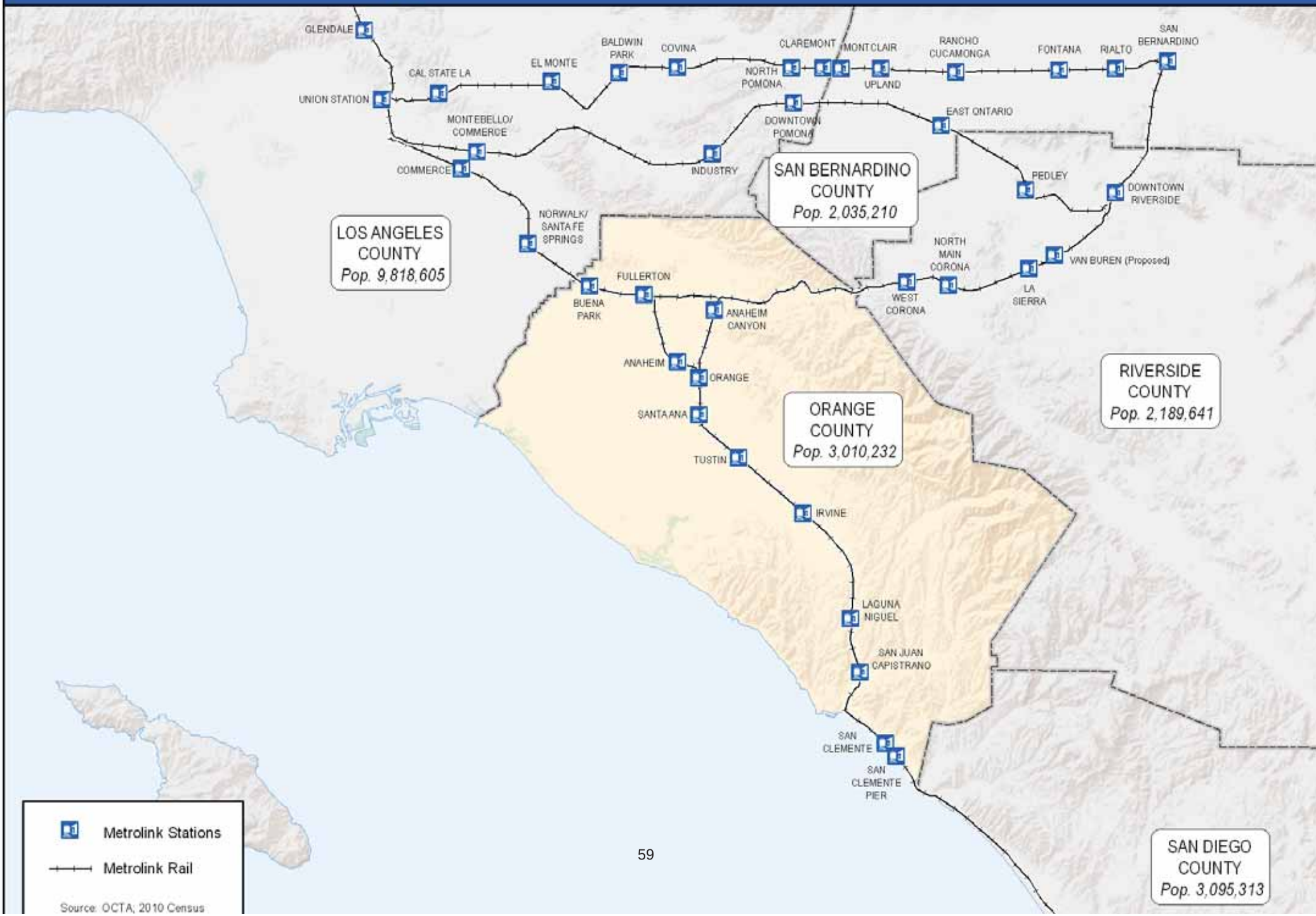
Agencies Outside of Orange County

- North County Transit District
- Riverside Transit Agency
- Omnitrans (San Bernardino)
- Foothill Transit
- Norwalk Transit
- Los Angeles Metro
- Long Beach Transit
- SCRRA (Metrolink commuter rail)

Agencies Within Orange County

- Laguna Beach – Laguna Beach Transit
- Anaheim - Anaheim Transportation Network
- Irvine - iShuttle

Southern California Region



Benefits of Open Payment Fare System

- Will reduce dwell time and improve travel times
- May reduce cost of processing fare revenue collected
- Regional payment coordination will make transit more seamless and increase transit usage
- Will improve customer experience

- Smart cards can be processed more efficiently and potentially reduce complaints and customer service-related costs

Lessons Learned

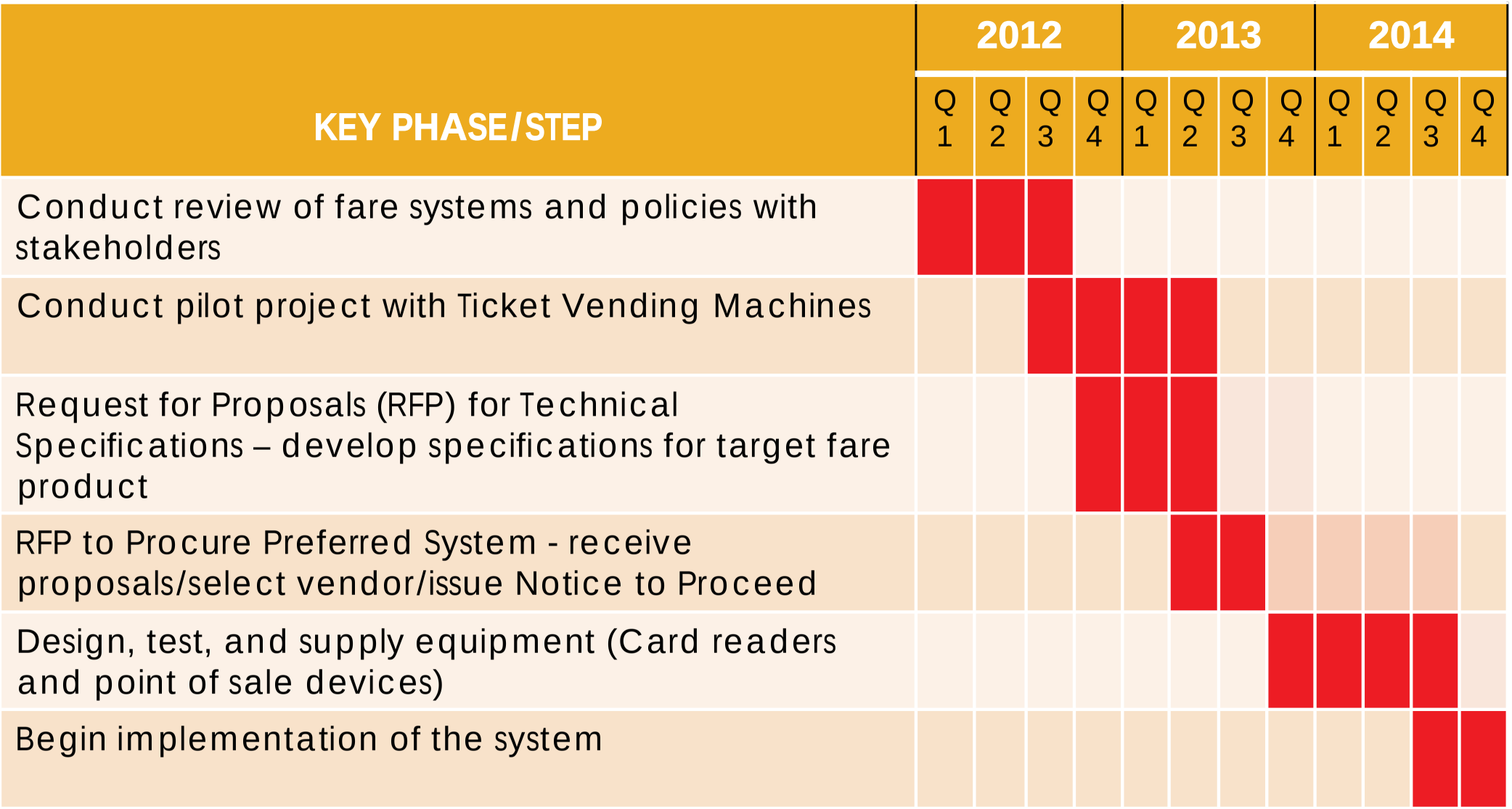
- Peer agencies expressed a strong interest in account based, open payment system
- No account based, open payment system fully operational in the U.S. currently
- Several agencies in the U.S. have awarded or will be awarding contracts, none have been deployed
- No firm figures on bank charges or transaction authorizing
- Develop a solid transition plan

Possible Risks

- Cooperation from other agencies
- Cost more than the existing system
- Agreement on seamless fare policy

- Existing systems may not be supported by vendors in the future as traditional fareboxes are becoming obsolete

Project Timeline



Next Steps

- Finalize system specification package
- Seek Board of Directors approval to release RFP for open payment system and equipment
- Continue to facilitate regional fare integration and fare policy discussions with “Super Users” group
- Procure and implement the new system

Questions?

Thank you,

Jorge Duran
Project Manager
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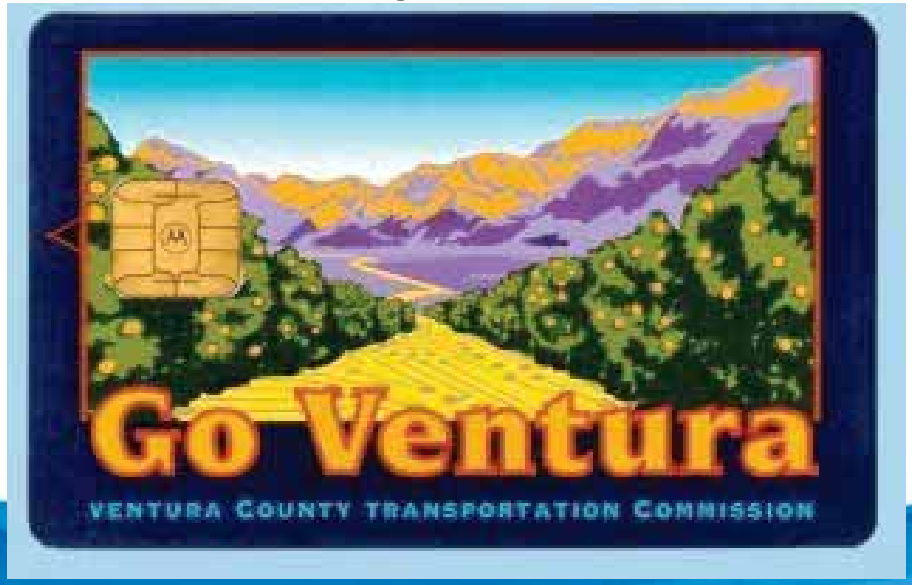
jduran@octa.net

GOVENTURA SMARTCARD

- Begun in 2002, the VCTC Goventura Smartcard is used by 6 transit providers, approximately 140 buses and paratransit vehicles, and over 3000 patrons in Ventura County.



GOVENTURA SMARTCARD

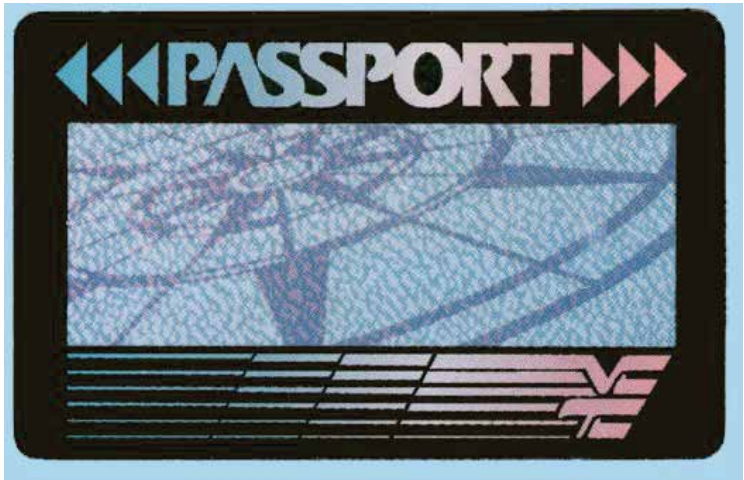
- GOALS OF SMARTCARD
- Seamless Regional Travel
- Enhanced Passenger Convenience
- Reduced Dwell Time
- Collection and of Planning Data
- Section 15 (National Transit Database)
- Increased Transit Use & Revenue

GOVENTURA SMARTCARD

VCTC's efforts began in 1994, with a Smartcard Demonstration Partnership

Went live in 1996, ended in 1999.

- Contactless Smartcards
- Automatic Passenger Counters (APC)
- Global Positioning Systems (GPS)
- 6 operators
- 76 vehicles



GOVENTURA SMARTCARD

Challenges Encountered

- Different Expectations - No clear vision or goals
- Lack of full disclosure to participants
- Lack of comprehensive, overall project planning
- Lack of “buy-in” by drivers and mechanics - Incorrect log-on by drivers
- Some vandalism by disgruntled drivers
- Little computer literacy among drivers and operators
- Need for constant software updates, Windows 3.1 to Windows ‘98
- Underlying database not robust enough for system
- Excessive delays in replacing defective equipment
- Questionable Accuracy of Data & Incomplete GPS baseline

GOVENTURA SMARTCARD

Business Rules, Fares

- All operator's fare structures will remain in place
- E-Purse has a 10% discount
- Passengers warned when balance on E-Purse is $5 or less
- E-Purse balance is allowed to go $2 negative
- All operators (except GCT) add value aboard the bus (NEVER USED)
- $5 replacement fee for lost, stolen or vandalized cards
- 4 minute lockout on reuse of any card to prevent passbacks
- All existing transfer rules remain in place for E-Purse users

GOVENTURA SMARTCARD

Business Rules, Revenue

- Outlets reconcile and send money/checks for passes sold,renewed or value added to E-Purses to VCTC within 30 days of the close of the month
- Revenue is shared based on actual “usage”
- VCTC prepares quarterly payment schedule and issues the checks

GOVENTURA SMARTCARD

Business Rules, Reports

- Monthly reports on card sales and on-bus usage for all outlets and agencies by card and fare type
- Quarterly reports on route performance for all agencies to show:
  - Average daily boarding and alightings by stop
  - Route load profile
  - Ridership summary
- Schedule adherence statistics for each route on all buses, as needed
- National Transit Database Report

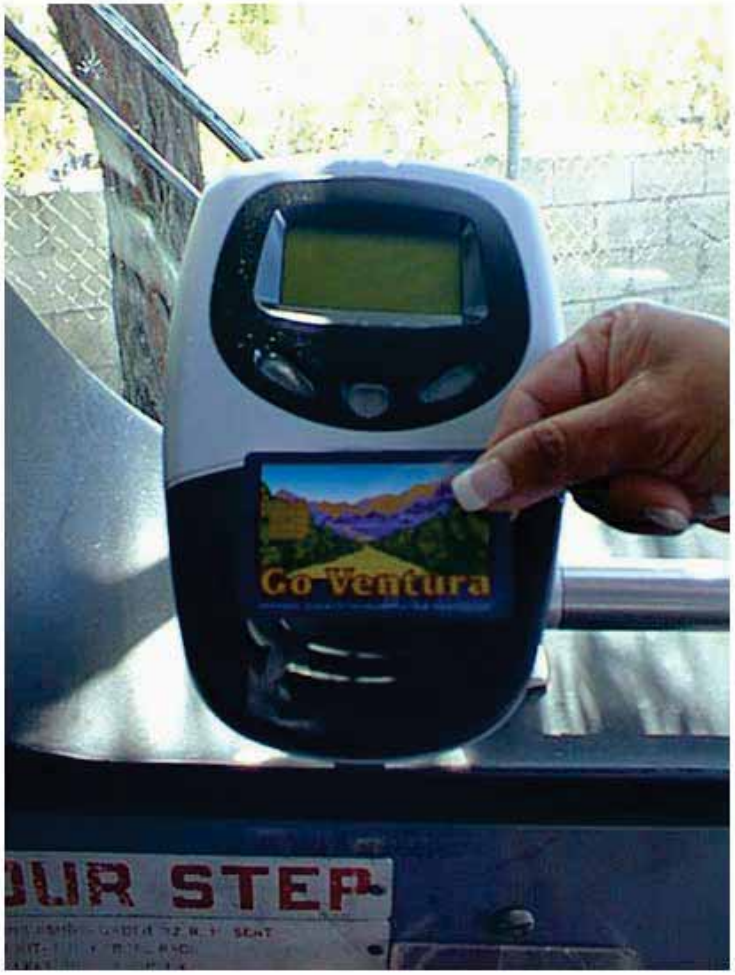
GOVENTURA SMARTCARD

MOTOROLA

- MV5000 Smartcard

  (Venus Card)

GOVENTURA SMARTCARD



- **ERG CP4000**
  Card Processor

GOVENTURA SMARTCARD

ERG
DC4000

Driver Console

GOVENTURA SMARTCARD

Automatic Passenger Counters

- Very good accuracy
- Hardware integration minor difficulties
- Highly reliable equipment
- Added complexity to overall project
- Database configuration difficult
- Data management - driver dependent

GOVENTURA SMARTCARD

INFODEV

Automatic Passenger Counters

GPS

GOVENTURA SMARTCARD

PUBLIC BENEFITS

- Improved Customer Satisfaction
- Seamless Travel Across Transit Systems
- Faster Boarding
- More Fare Payment Options

GOVENTURA SMARTCARD

OPERATOR BENEFITS

- Increased Revenues
- Increased Ridership
- Reduced Fraud Or Theft
- Automated Passenger Counts
- Faster Boarding/Schedule Adherence
- National Transit Database Reports

GOVENTURA SMARTCARD

Monthly Pass

- Valid on all systems (different passes for intercounty and DAR systems)
- Unlimited trips
- Purchase for several months in advance

E-Purse

Honors all operators cash fares

Incorporates transfers electronic

GOVENTURA SMARTCARD

Maintenance
Facility/SalesOutlet

Dial Up
Communications

VCTC
Clearinghouse

Wireless
Communication

Bus Patron

GOVENTURA SMARTCARD

Point of Sale (Sales Outlets)

- Easy deployment
- Accurate business rule implementation
- Simple operation (but time consuming)
- Requires continuous training

GOVENTURA SMARTCARD

Backend/Clearinghouse

- Difficult deployment
- Database integration difficulties
- Volume of passenger data underestimated
- Accounting not ERG's first language
- Operational complexities, requires knowledge of:
  - Database administration
  - Network administration
  - Transit operations

GOVENTURA SMARTCARD

System Maintenance

- Overall reliable
- System network requires daily attention
- Data management requires daily attention
- Bus hardware generally very reliable; but revenue lost when system goes down on route
- Longer hours, rough roads = more repairs
- No such thing as too much training

GOVENTURA SMARTCARD

Detailed Stop Data

Allows for a variety of easy data sorts

including plots of courtesy or unknown stops

DATE	DATE TIME	UD SEQ NO	BUS NUMBER	ROUTE ID	ROUTE SEQUENCE	FEET FROM STOP	LATITUDE	LONGITUDE
9/3/2005	09/03/2005 06:55:48	746188	3101	12	0	(7854)	34.20139	-119.1742636
9/3/2005	09/03/2005 06:58:48	746189	3101	12	0	(8122)	34.20074389	-119.1747281
9/3/2005	09/03/2005 07:03:49	746191	3101	12	0	(8042)	34.20079361	-119.1743981
9/3/2005	09/03/2005 07:14:57	746196	3101	12	1	115	34.23315417	-119.1785072
9/3/2005	09/03/2005 07:18:23	746200	3101	12	3	6	34.23440528	-119.1712894
9/3/2005	09/03/2005 07:20:21	746203	3101	12	5	109	34.24363722	-119.1643219
9/3/2005	09/03/2005 07:26:40	746211	3101	12	11	34	34.22798167	-119.1653853
9/3/2005	09/03/2005 07:45:02	746217	3101	12	15	18	34.217195	-119.1566497
9/3/2005	09/03/2005 07:46:20	746219	3101	12	16	229	34.21876833	-119.1576828
9/3/2005	09/03/2005 07:48:53	746225	3101	12	18	40	34.21867944	-119.1445208
9/3/2005	09/03/2005 07:52:47	746227	3101	12	19	67	34.22735944	-119.1303775
9/3/2005	09/03/2005 08:01:21	746231	3101	12	24	12	34.22477917	-119.1499747
9/3/2005	09/03/2005 08:02:39	746233	3101	12	25	17	34.22518139	-119.1545714
9/3/2005	09/03/2005 08:08:02	746238	3101	12	28	115	34.22798889	-119.1651347
9/3/2005	09/03/2005 08:11:28	746243	3101	12	31	24	34.23650056	-119.1597653
9/3/2005	09/03/2005 08:17:31	746251	3101	12	37	104	34.22988306	-119.1749875
9/3/2005	09/03/2005 08:35:08	746255	3101	12	38	153	34.23307944	-119.1784181
9/3/2005	09/03/2005 08:48:29	746267	3101	12	10	32	34.23304139	-119.1603456
9/3/2005	09/03/2005 08:50:17	746269	3101	12	11	23	34.22790667	-119.1654361
9/3/2005	09/03/2005 08:54:33	746273	3101	12	13	28	34.22180139	-119.1594944
9/3/2005	09/03/2005 09:06:14	746276	3101	12	15	17	34.2172125	-119.1566472
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9/3/2005	09/03/2005 09:27:02	746295	3101	12	28	100	34.22807278	-119.1651828
9/3/2005	09/03/2005 09:31:32	746300	3101	12	32	53	34.23847639	-119.1577172
9/3/2005	09/03/2005 09:34:01	746303	3101	12	34	14	34.2436225	-119.1631992
9/3/2005	09/03/2005 09:38:34	746308	3101	12	37	123	34.22982583	-119.1749775
9/3/2005	09/03/2005 09:39:46	746310	3101	12	0	(1323)	34.2272425	-119.1774825
9/3/2005	09/03/2005 09:57:36	746318	3101	12	38	162	34.23307389	-119.1783842
9/3/2005	09/03/2005 10:10:46	746331	3101	12	11	15	34.22788111	-119.1654108
9/3/2005	09/03/2005 10:13:37	746335	3101	12	13	7	34.22174722	-119.1594467
9/3/2005	09/03/2005 10:16:06	746338	3101	12	14	233	34.21874444	-119.1576569
9/3/2005	09/03/2005 10:25:05	746340	3101	12	15	11	34.21717583	-119.1566158
9/3/2005	09/03/2005 10:33:06	746348	3101	12	19	61	34.22738889	-119.1303686
9/3/2005	09/03/2005 10:36:06	746349	3101	12	20	19	34.22268361	-119.1362983
9/3/2005	09/03/2005 10:43:05	746354	3101	12	25	12	34.22524028	-119.1546019
9/3/2005	09/03/2005 10:56:34	746371	3101	12	37	140	34.22979222	-119.1750306
9/3/2005	09/03/2005 11:16:33	746375	3101	12	38	187	34.23302889	-119.1783206
9/3/2005	09/03/2005 11:16:42	746376	3101	12	38	188	34.2330275	-119.1783189
9/3/2005	09/03/2005 11:17:42	746378	3101	12	2	28	34.23196278	-119.1762472
9/3/2005	09/03/2005 11:20:45	746381	3101	12	3	18	34.23444861	-119.1712483
9/3/2005	09/03/2005 11:21:48	746383	3101	12	4	12	34.23904667	-119.1677719
9/3/2005	09/03/2005 11:29:18	746391	3101	12	0	(872)	34.23014889	-119.1631631
9/3/2005	09/03/2005 11:30:10	746393	3101	12	11	22	34.22789472	-119.1654353
9/3/2005	09/03/2005 11:35:30	746397	3101	12	13	13	34.22176694	-119.1594683
9/3/2005	09/03/2005 11:44:54	746400	3101	12	15	11	34.21718806	-119.1566239
9/3/2005	09/03/2005 11:53:45	746408	3101	12	19	42	34.22742528	-119.1304128

GOVENTURA SMARTCARD

Go Ventura Revenue Split

	Start Date:	June 1, 2005		End Date:	June 30, 2005		Start Date:
		Print Date:	October 31, 2005				

Summary of Distribution by Pass Type:

Pass Type	Fare Category	Number of Trans.	Total Amount
Intercounty	Adult	519	$ 975.00
	Student	4	$ 75.00
	Senior	138	$ 140.00
	Disabled	125	$ 210.00
Sub Total		**786**	**$ 1,400.00**
Premium	Adult	503	$ 1,064.00
	Student	5	$ 56.00
	Senior	0	$ -
	Disabled	153	$ 72.00
Sub Total		**661**	**$ 1,192.00**
Regular	Adult	4572	$ 4,800.00
	Student	446	$ 680.00
	Senior	689	$ 360.00
	Disabled	3784	$ 2,020.00
Sub Total		**9491**	**$ 7,860.00**
DAR	Adult	1370	$ 928.00
	Student	1268	$ 1,440.00
	Senior	144	$ 64.00
	Disabled	459	$ 208.00
Sub Total		**3241**	**$ 2,640.00**
E-Purse		**5195**	
Total Due		**19374**	**$ 19,515.87**

CARD USAGE

Operator	Purse Type	Fare Category	Product Price	Number	Value
VISTA					
	e Purse	Adult	$0.90	337	$303.30
		Student	$0.90	982	$883.80
		Senior	$0.45	82	$36.90
		Disabled	$0.45	161	$72.45
			CountSub Total	1,562	$1,296.45
	e Purse Surcharge	Adult	$0.00	0	$0.00
		Student	$0.00	0	$0.00
		Senior	$0.00	0	$0.00
		Disabled	$0.00	0	$0.00
			CountSub Total	0	$0.00
	Bus to DAR	Adult	$0.50	5	$2.50
		Student	$0.50	3	$1.50
		Senior	$0.50	0	$0.00
		Disabled	$0.50	1	$0.50
			CountSub Total	9	$4.50
	DAR to Bus	Adult	$0.00	5	$0.00
		Student	$0.00	0	$0.00
		Senior	$0.00	0	$0.00
		Disabled	$0.00	0	$0.00
			CountSub Total	5	$0.00
	Conejo Connection	Adult	$1.00	0	$0.00
		Student	$1.00	3	$3.00
		Senior	$0.50	0	$0.00
		Disabled	$0.50	0	$0.00
			CountSub Total	3	$3.00
	e Purse DAR	Adult	$1.35	56	$75.60
		Student	$1.35	21	$28.35
		Senior	$0.68	15	$10.20
		Disabled	$0.68	14	$9.52
			CountSub Total	106	$123.67
	e Purse Zone Surcharge	Adult	$0.00	0	$0.00
		Student	$0.00	0	$0.00
		Senior	$0.00	0	$0.00
		Disabled	$0.00	0	$0.00
			CountSub Total	0	$0.00
	e Purse Intercounty	Adult	$1.80	2,159	$3,886.20
		Student	$1.80	79	$142.20
		Senior	$0.90	60	$54.00
		Disabled	$0.90	48	$43.20
			CountSub Total	2,346	$4,125.60
			Purse TotalCount	4,031	$5,553.22

All reports in Excel files with formulas imbedded

GOVENTURA SMARTCARD

Boarding and Alighting

(totals or averages)

Average Boarding and Alighting Report
Route 15 - El Rio/Northeast

REPORTING PERIOD: 09/01/2005-09/30/2005

SEQUENCE	PRIMARY_STREET	SECONDARY_STREET	Average Weekday		Average Saturday	
			On	Off	On	Off
0	UNMATCHED STOPS		47	60	23	23
1	ESPLANADE		2	1	2	0
2	ESPLANADE DRIVE	TARGET	39	2	17	2
3	VINEYARD	OLIVE	3	5	1	3
4	VINEYARD	COLLINS	1	5	1	1
5	VINEYARD AVENUE	SIMON WAY	2	5	1	1
6	SIMON WAY	CORTEZ	3	6	1	2
7	BALBOA	SALEM	4	6	2	5
8	WALNUT	BALBOA	2	3	0	2
9	ALVARDO	WALNUT	1	2	0	0
10	ALVARDO	COLLINS	2	3	1	2
11	ALVARDO	VENTURA BLVD	18	10	7	8
12	ROSE AVENUE	AUTO CENTER DRIVE	0	0	0	0
13	ROSE	LOCKWOOD	7	18	6	16
14	GONZALES ROAD	ROSE AVENUE	8	4	2	1
15	ST JOHN'S HOSPITAL		41	35	18	15
16	GONZALES ROAD	ROSE AVENUE	5	1	1	1
17	GONZALES ROAD	LOMBARD	12	16	2	1
18	GONZALES ROAD	SOLAR	3	8	1	1
19	FRIEDRICH	ORANGE	11	11	4	2
20	VENTURA BLVD	ORANGE	10	8	4	5
21	NYELAND AVENUE	EUCALYPTUS	6	5	3	2
22	AUTO CENTER DRIVE	SANTA CLARA	3	1	1	0
23	AUTO CENTER DRIVE	LOS OLIVOS	2	1	0	0
24	PASEO MERCADO		6	8	3	4
25	VENTURA BLVD	MARKET PLACE	3	4	3	4
26	AUTO CENTER DRIVE	VENTURA BLVD	0	0	0	1
27	VENTURA BLVD	ROYAL DUKE	5	3	1	1
28	ALVARDO	VENTURA BLVD	10	14	5	6
29	ALVARDO	COLLINS	3	3	4	0
30	ALVARDO	WALNUT	1	1	0	0
31	WALNUT	BALBOA	3	1	0	1
32	BALBOA	SALEM	9	3	5	3
33	SIMON WAY	CORTEZ	7	3	2	1
34	SIMON WAY	MINNA	7	4	2	1
35	VINEYARD	COLLINS	3	3	2	1
36	VINEYARD	OLIVE	3	3	1	5
37	VINEYARD	ESPLANADE	2	40	1	23
38	ESPLANADE		61	46	24	24

GOVENTURA SMARTCARD

National Transit Database Input

2004 - 2005 UNLINKED PASSENGER TRIPS			
TRANSIT OPERATOR	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE SUNDAY
Simi Valley Transit	1566.48	642.48	0

2004 - 2005 AVERAGE PASSENGER MILES			
OPERATOR	AVERAGE WEEKDAY	AVERAGE SATURDAY	AVERAGE SUNDAY
Simi Valley Transit	6.12	5.27	0

2004 - 2005 REVENUE MILES AND HOURS								
ROUTE	AVERAGE WORKDAY HOURS	AVERAGE WORKDAY MILES	AVERAGE SATURDAY HOURS	AVERAGE SATURDAY MILES	AVERAGE SUNDAY HOURS	AVERAGE SUNDAY MILES	TOTAL HOURS	TOTAL MILES
SIMI VALLEY A	29.3	376.2	14.0	239.4	0.0	0.0	8268.0	109029.6
SIMI VALLEY B	32.2	397.9	14.0	242.2	0.0	0.0	9007.6	114768.2
SIMI VALLEY C	14.7	242.0	13.0	286.0	0.0	0.0	4434.0	76736.0
SIMI VALLEY D	15.0	215.6	0.0	0.0	0.0	0.0	3878.6	55624.8
						TOTAL	25588.2	356158.6

2004 - 2005 ROUTE LOAD REPORT		
ROUTE	DATE / TIME	RATIO
SIMI VALLEY A	8/24/2004 18:55	1.42
SIMI VALLEY B	4/25/2005 15:26	1.45
SIMI VALLEY C	6/14/2005 16:14	0.95
SIMI VALLEY D	7/7/2004 11:45	1.15

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Metro Mobile

Mobile App, Mobile Web, and Mobile Tools

Lan-Chi Lam, Interactive Design & Strategy Manager

Creative Services, Communications

laml@metro.net | @metroloasangeles

Metro's Online Presence

Web

metro.net is the primary online portal; access everything Metro 24/7

Social Media

Inform, translate, educate; blogs, Twitter, Facebook, Youtube, Flickr, RSS

Data & Widgets

Enable app developers; go beyond Metro's known circle

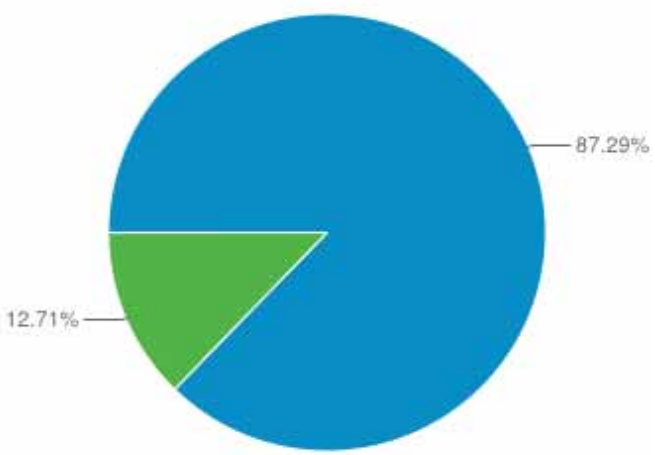
Mobile

Leverage technology to bring Metro to customers; mobile web and apps

Mobile History

Summer 2009	Partner with Google / developer.metro.net Google Transit, launch transit data website
Winter 2009	m.metro.net Launch mobile website
Summer 2010	Developer Challenge App contest for desktop, mobile, web
Winter 2010	Go Metro v1.0 Transit app for native iPhone
Spring 2011	Nextrip Bus real time arrivals
Spring 2012	Go Metro v2.0 Transit app for iPhone, iPad, Android

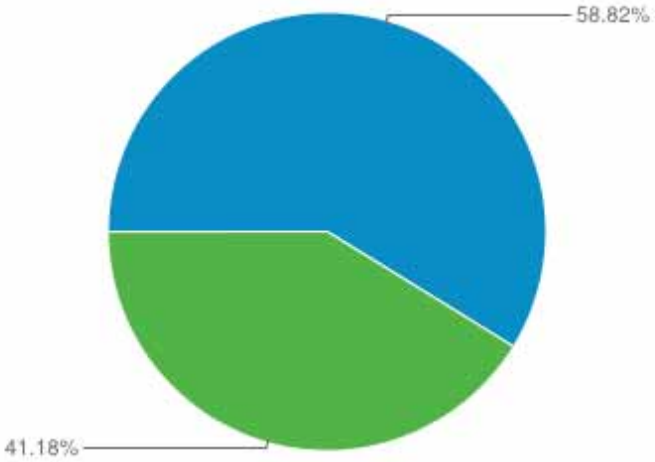
Web Traffic & Mobile Devices



Desktop	698,873	87.29%
Mobile	101,755	12.71%

November 2010 - 13%

- **101,755 of 800,628 visits**
- *Device breakdown not available*



Desktop	735,973	58.82%
Mobile	515,191	41.18%

November 2012 - 41%

- **515,191 of 1.25 Million visits**
- **400% growth/increase**
- Android 54%
- Apple 43%
- All Others 3%

Google Analytics 2010-2012

Riders & Mobile Devices

Bus Customers	Rail Customers	Pew Institute
76% of customers have a working cell phone –58% are smartphones	69% of customers have a working cell phone –52% are smartphones	85% of American adults have a cell phone – 45% have a smartphone
Metro Customer Satisfaction Survey, Spring 2012	*Metro Customer Satisfaction Survey, Spring 2012*	*Pew Internet & American Life Project (www.pewinternet.org)*

Metro's Mobile Tools

- Mobile web: any mobile browser
  - `m.metro.net, Trip Planner, Rapid Bus`
- Nextrip: mobile web, SMS Text
  - Real time bus arrivals
- Mobile app: iPhones, iPads, Androids
  - Closest stations/stops based on GPS location
  - Real time bus arrivals
  - Scheduled info offline (does not need wifi)
  - Maps offline (does not need wifi)
  - Service Alert notification
  - Favorite a map, line, stop/station, trip itinerary

Mobile Web

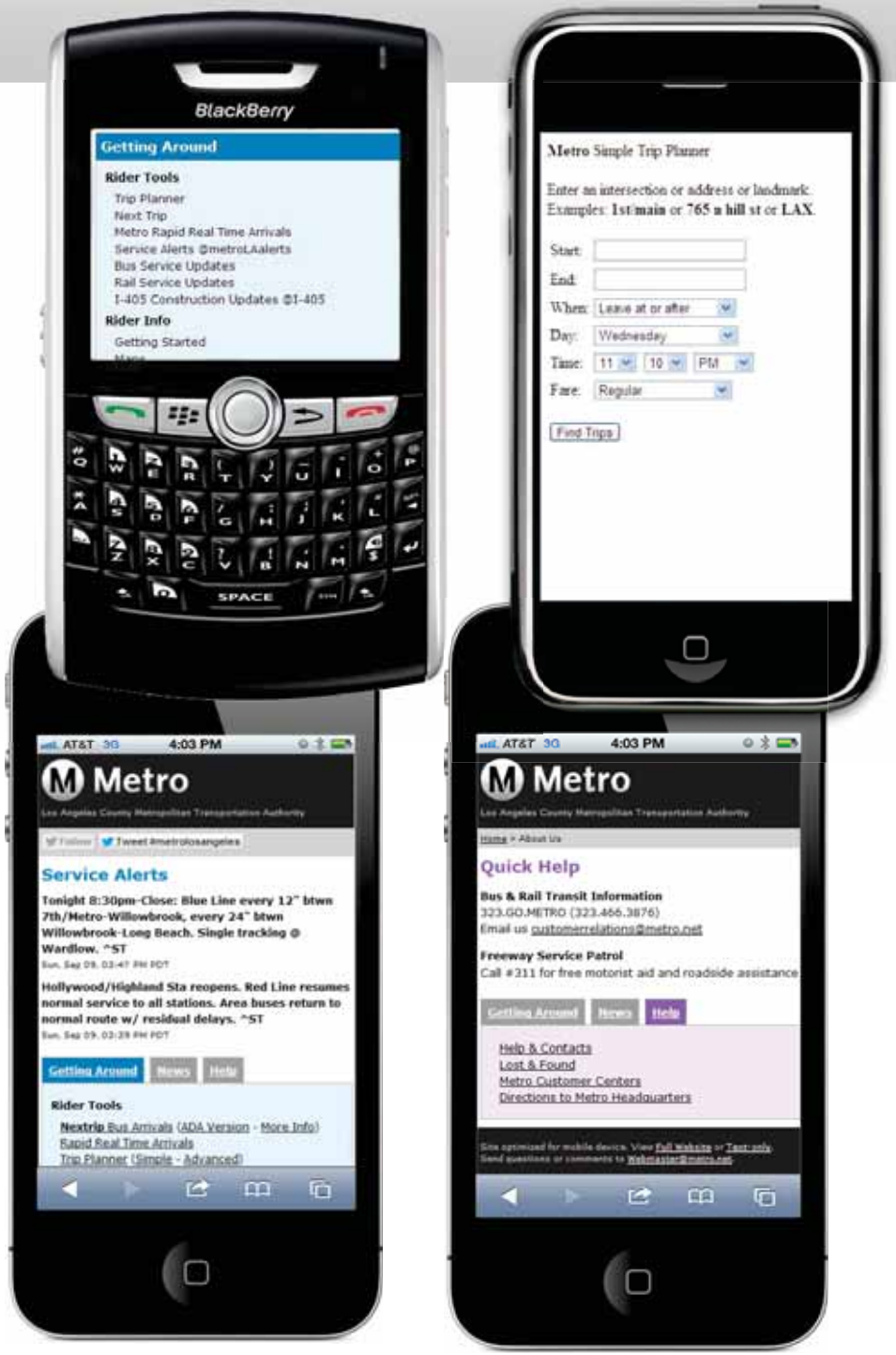
Metro info 24/7 – anywhere

http://m.metro.net
http://metro.net/mobile

Metro's mobile website
optimized for mobile devices.

Scaled down, core system information enabling customers to ride the system.

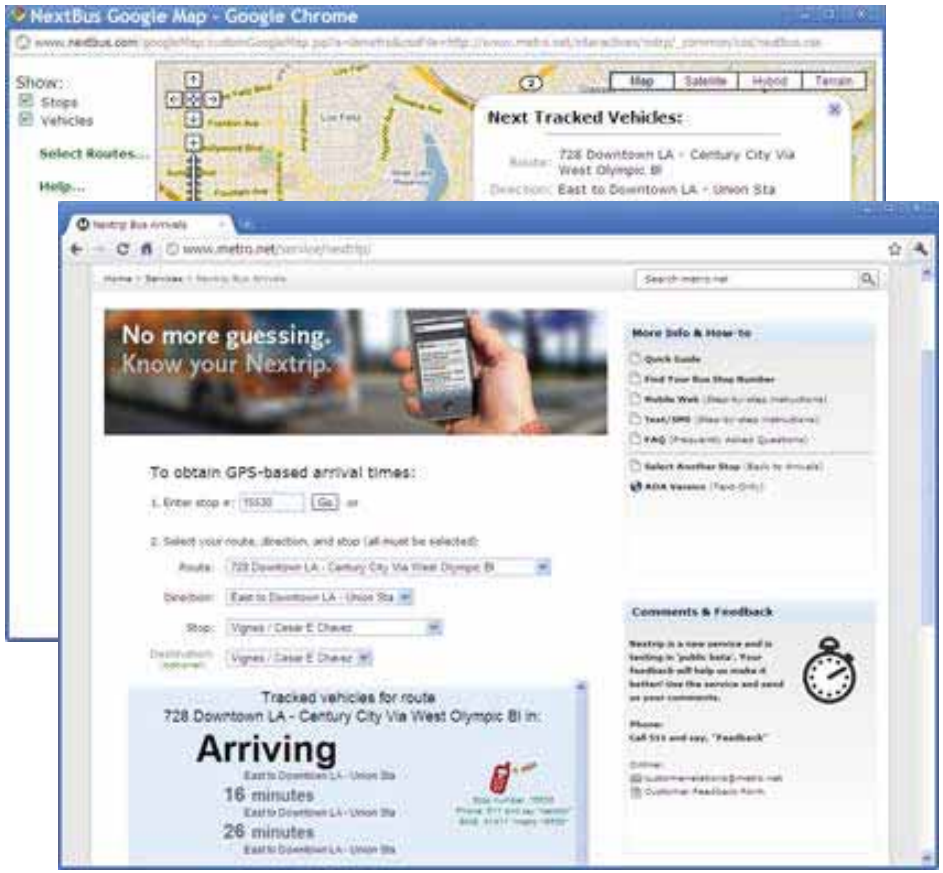
Available on any mobile browser
with internet access.



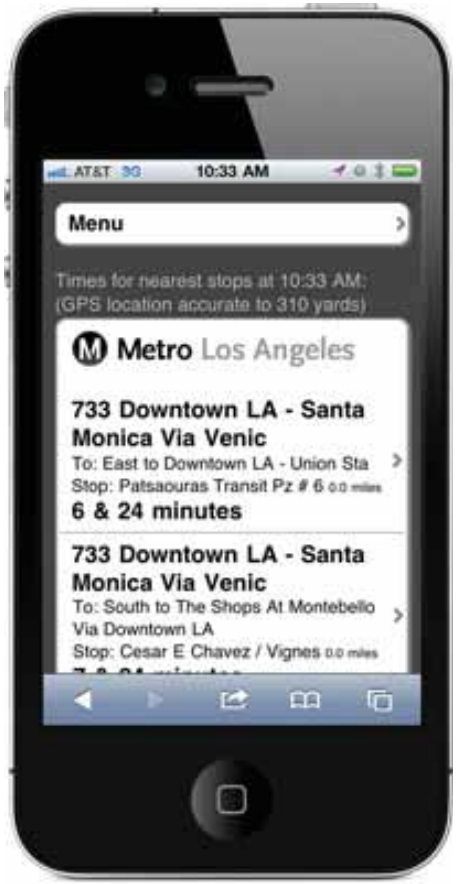
Nextrip: Web/Mobile/Voice

Real time bus arrival information

Customer-facing tools for desktop, mobile web, and SMS



Desktop Web

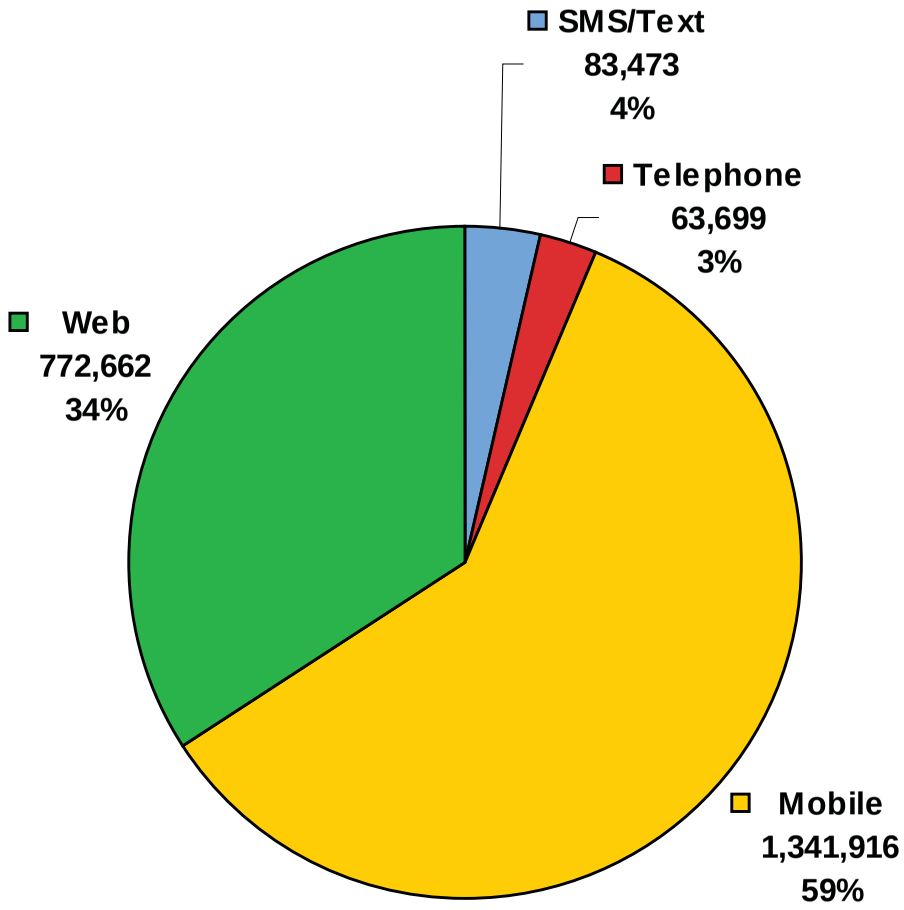


Mobile Web

SMS/Text

Nextrip: Use Metrics

Month	Total Hits
Apr-11	143,573
May-11	209,086
Jun-11	347,244
Jul-11	626,817
Aug-11	805,046
Sept-11	924,510
Oct-11	1,130,282
Nov-11	1,339,738
Dec-11	1,437,774
Jan-12	1,549,643
Feb-12	1,577,132
Mar-12	1,772,141
Apr-12	1,772,134
May-12	1,915,317
Jun-12	1,752,623
Jul-12	1,774,992
Aug-12	1,911,870
Sept-12	2,009,965
Oct-12	2,198,051



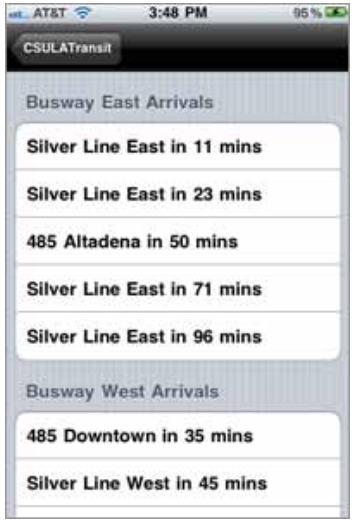
Usage Breakdown - October 2012

Apps: Developer Challenge

$10,000.00 cash prizes in 5 categories

LA Metro Alerts

Best Mobile App



CSULA Transit

Best Mobile App – College

Smart Ride

Best Mobile App – NextBus

Walkscore Public Transit

Best Web Mashup

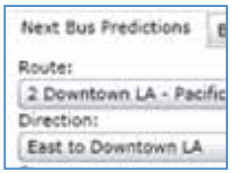
Multimodal Trip Helper

Best Web Mashup – Mapping

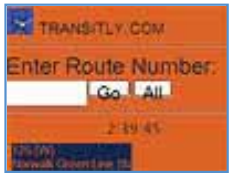
3rd Party Apps

50+ known applications created with Metro transit data

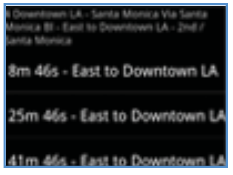
Desktop, SMS, iPhone, Android, Blackberry

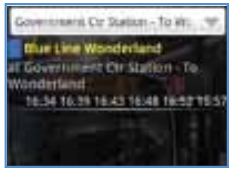




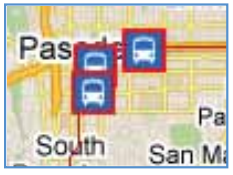













Go Metro v1.0 - key features

Fall 2010 / Free

– Metro Trip Planner

– Find Park & Ride, fare, safety rules and help information

– Latest headline news and service updates

– Locate the nearest lines and stations based on the iPhone's GPS capabilities.

Lessons Learned from 1.0

App design and specifications

- Do Not duplicate your website
- Keep it simple with a short list of features
- Performance (fast) = Quality!
- Usability (pretty) = Quality!
- Select a contractor with mobile development experience (mobile web ≠ mobile app)

Beta, launch, and updates

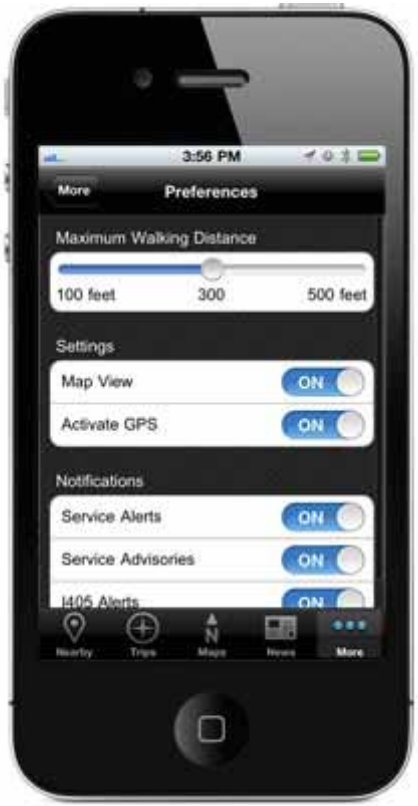
- Beta test as much as possible
- Launch ≠ done, its just the start
- Incorporate customer feedback and implement updates
- Don't be afraid to get it wrong

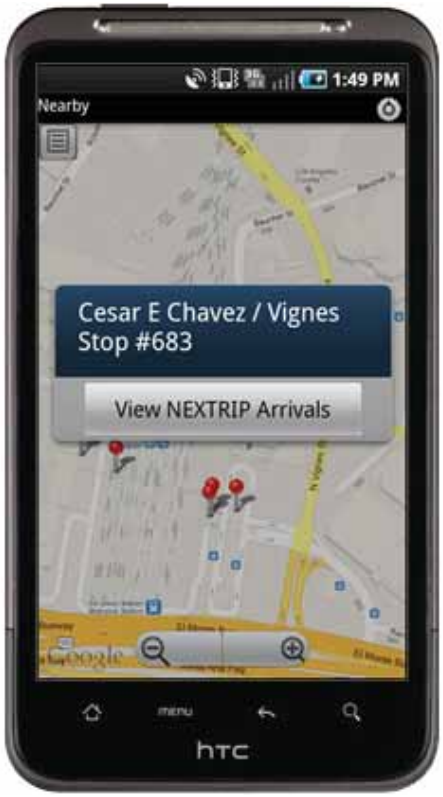
Go Metro v2.0 - key features

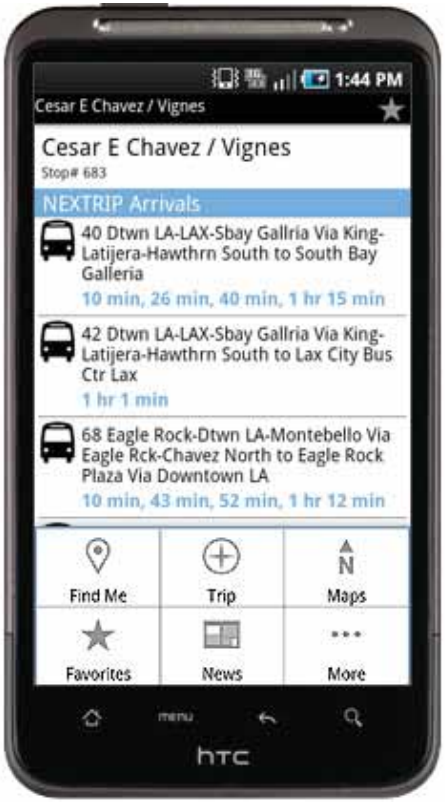
Spring 2012 / Free

- Available for iPhone, iPad, and Android
- Closest stations/stops based on GPS location
- Real time bus arrivals
- Scheduled info offline (does not need wifi)
- Maps offline (does not need wifi)
- Service Alert notification
- Favorite a map, line, stop/station, trip itinerary

Go Metro v2: So Far...







App Store	Android Store
3 out of 5 stars	4 out of 5 stars
Downloaded 50,000+ times	Downloaded 40,000+ times
4 updates since launch	4 updates since launch

What's Next?

- Nextrip Rail – Spring 2013
  - Go Metro Nextrip mobile app
- Go511 mobile app – Early 2013
  - Regional
  - Multi-modal
- Investigation
  - Real time Transit System alerts
  - Real time Highway alerts
  - Real time Construction alerts

First Mile / Last Mile Planning Efforts

High-Speed Rail & Transit Subcommittee

Southern California Association of Governments

December 21, 2012

Matt Gleason

SOUTHERN CALIFORNIA ASSOCIATION of GOVERNMENTS

First Mile/Last Mile Planning

- As the region increasingly moves toward fixed guideway transit, journeys to and from transit stations become increasingly important
- “First mile/last mile” planning focuses on addressing the mobility needs of those whose trip origins or destinations are outside of a short walking distance
- Seeks to establish strategies that allow additional travelers to access fixed guideway networks

Maximizing Mobility Options in the City of Los Angeles

- 2009 Study of first mile/last mile mobility strategies in partnership with Metro and the City of Los Angeles
- Evaluated connectivity to Metro Rail stations in the City of Los Angeles
- Proposed six mobility strategies to enhance station area connectivity

Maximizing Mobility Options in the City of Los Angeles Study Goals

- Evaluate practical, user-friendly services to bridge the first mile/last mile gap in order to:
  - Realize full benefits from ongoing transit investment
  - Meet VMT/ GHG emissions reductions goals
  - Develop a fully integrated multimodal transportation system.
  - Provide implementation-focused toolkit of first mile/last mile and alternative mobility strategies

Regional, City and Transit Zone Demographic Characteristics, 2000

	Region	City of Los Angeles	Los Angeles Station Areas
Share taking Transit, Walking and Biking to Work	8%	14%	24%
Share of Households with 0 or 1 Car	46%	57%	66%
Median Household Income	$45,280	$36,687	$29,726
Share of Renter Households	46%	61%	73%
Average Household Size	3.00	2.83	3.02

Mobility Strategy Evaluation Criteria

- Capital costs
- Operating costs
- Ease of Implementation
- Addresses first mile/last mile gap
- Potential for attracting "choice" riders
- Market potential in LA
- Already operational in LA
- Innovative/new strategy
- Potential for public/private partnership
- Couldn’t happen on its own/needs a champion

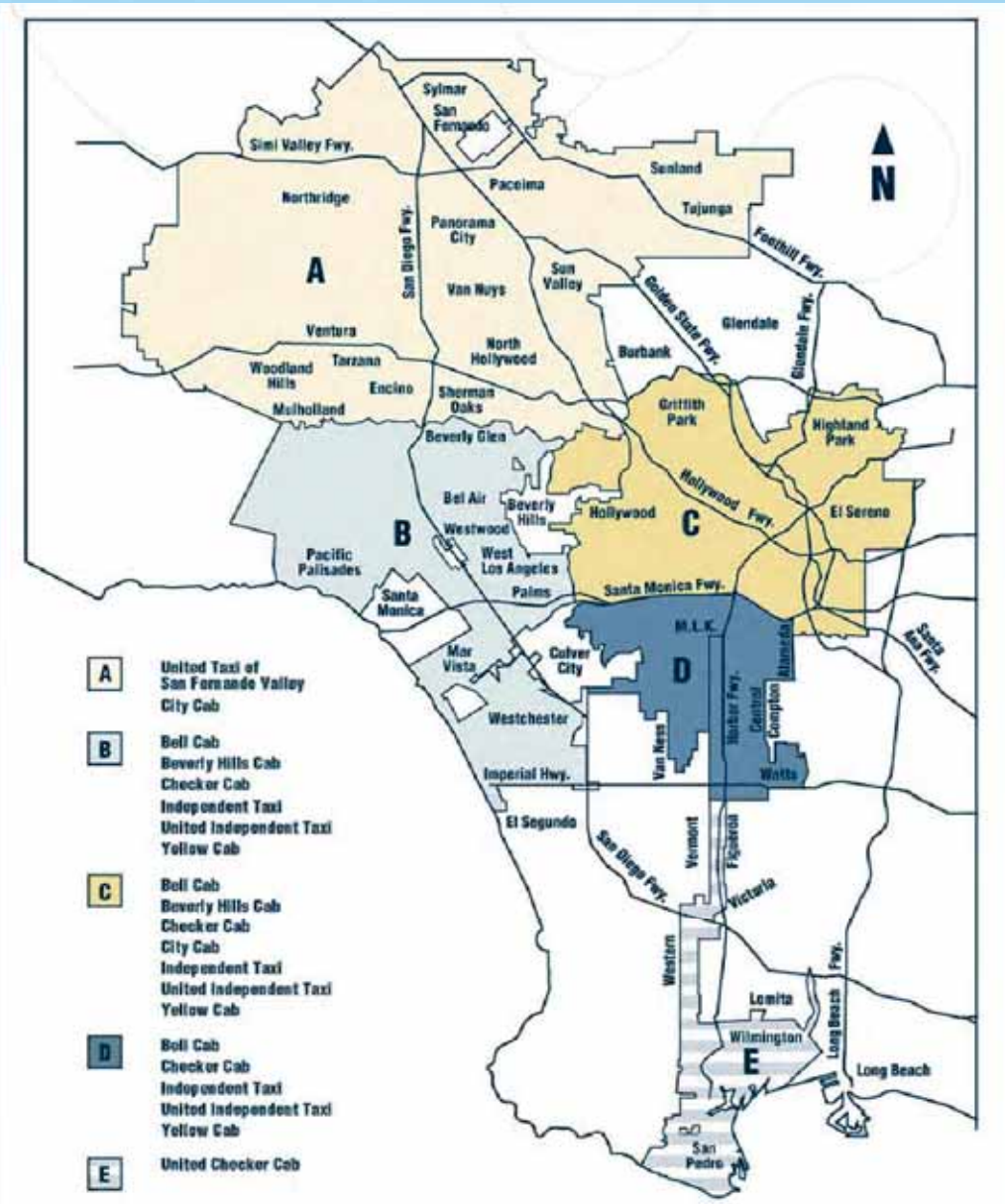
Casual Carpools

Ridesharing that is not established in advance

- Benefits
  - Maximizes flexibility and minimizes advanced planning
  - Accommodates occasional or unscheduled trips
- Expansion Potential
  - Pick up locations can be located near transit stations
  - HOV network provides travel time savings to Casual Carpoolers

Taxis
Door to Door Travel Options

- Benefits
  - Convenience, door-to-door service
  - Advanced planning not required
  - Existing fleets can be re-oriented towards stations
- Expansion Potential
  - Expanded hail-a-taxi
  - Smart Fare media integration
  - “Shared fare” rides



Car-sharing

On-demand access to a shared fleet of vehicles

- Benefits
  - Reduced need for businesses or households to own vehicles
  - Reduces personal transportation costs
- Expansion Potential
  - Expand number of locations
  - Convert fleet vehicles

Short-term Car Rental
Standard but Short term Contract

- Benefits
  - Similar to Car sharing
  - Ease of implementation – existing fleets and practices
- Expansion Potential
  - Opportunity to work with major car rental companies that already have large fleets
  - Study finding that Downtown LA would be good trial location

Folding Bikes on Transit
Folding Bicycles increase capacity of transit vehicles

- Benefits
  - Extends effective area reachable by fixed guideway transit
  - Reduces transfers
- Expansion potential
  - Little new space needed on board vehicles
  - Metro Folding Bike Implementation Plan

Bicycle Sharing Programs
Access to shared fleet of bicycles

- Benefits
  - Increased mobility options
  - Public health benefits
  - No on-board bicycle storage capacity needed
- Expansion Potential
  - Ongoing pilot projects in Orange County
  - Potential for Public private partnerships
  - Potential for smart fare media integration

Subsequent Studies

- SCAG and Metro - First Mile Last Mile Strategic Plan
  - Focused on analyzing barriers to active mobility near transit stations
- SANBAG - Improving Access to Metrolink for Cyclists and Pedestrians
  - Focused on improving access to Metrolink and SBX BRT Stations for non-motorized users
- City of LA, Metro, various partners – Los Angeles Mobility Hub Project
  - Focused on analyzing the feasibility of first mile/last mile pilot projects at 'integrated mobility hubs' in the cities of Los Angeles and Long Beach

Questions?

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SOUTHERN CALIFORNIA ASSOCIATION of GOVERNMENTS

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MEMO

DATE: December 21, 2012

TO: High-Speed Rail & Transit Subcommittee Members

FROM: Steve Fox, Senior Regional Planner, 213-236-1855, fox@scag.ca.gov

SUBJECT: Government Accountability Office High-Speed Rail Preliminary Report

BACKGROUND

On December 6, 2012, the U.S. House of Representatives' Transportation and Infrastructure Committee held a hearing titled: "An Update on the High Speed and Intercity Passenger Rail Program: Mistakes Made and Lessons Learned." One of the testifiers was Susan A. Fleming, Director of Physical Infrastructure for the Government Accounting Office (GAO). The GAO recently published a report called: "High-Speed Passenger Rail: Preliminary Assessment of California's Cost Estimates and Other Challenges." The other challenges include a discussion of funding prospects, ridership estimates, and right-of-way (ROW) acquisition.

DISCUSSION

The GAO found that the Authority's cost estimates exhibit both strengths and weaknesses. The GAO uses as a standard its *Cost Guide* that identifies best practices that help ensure that a cost estimate is comprehensive, accurate, well documented, and credible. The GAO found that:

- the Authority followed best practices in the *Cost Guide* to ensure comprehensiveness, but also exhibited some shortcomings;
- the construction cost estimate is based on detailed construction unit costs that are, in certain cases, more detailed than the cost categories required by the Federal Railroad Administration (FRA) in its grant applications;
- the operating costs were not as detailed as the capital costs, as over half of the operating costs are captured in a single category called "Train Operations and Maintenance"; and,
- the Authority did not clearly describe certain assumptions underlying both cost estimates. (For example, Authority officials told the GAO that the California project will rely on proven high-speed rail technology from systems in other countries, but it is not clear if the cost estimates were adjusted to account for any challenges in applying the technology in California.)

The GAO also looked at the Authority's ridership estimates, prospects for future funding and ROW acquisition issues. The GAO did not have a particular issue with the Authority's ridership forecasting, but the discussion centered on the general tendency for ridership estimates to be overly optimistic for an array of different rail projects historically. It also brought up that the FRA has not established guidance on acceptable approaches to the development of reliable ridership and revenue forecasts and the need to do so.

One of the biggest challenges facing California's high-speed rail project is securing funding beyond the first construction segment. While the Authority has secured $11.5 billion from federal and state sources for project construction, almost $57 billion in funding remains unsecured. The GAO's report simply emphasizes the precarious funding situation the Authority is facing.

The GAO report finishes by discussing concerns that the environmental and ROW acquisition processes may, and in fact already have, resulted in lawsuits that could cause significant delays in the project. The federal funding received for construction of the Initial Construction Segment must be expended by September 30, 2017.

Secretary of Transportation Ray LaHood also spoke before the committee, supporting the administration's investment in higher speed rail. He cited population growth, increasing congestion on our nation's roadways and airports, year over year growth in rail ridership and America's much higher per capita energy consumption, among other things, as crucial reasons to invest in rail. In addition, he cited an American Public Transit Association report from July 2012 showing that continued rail investments will generate $26.4 billion in net economic benefits over the next forty years.

Chairman John Mica also spoke. One of his main issues is that a majority of the funds have been spent on what he considers "non-high-speed" Amtrak corridors. He believes the Northeast Corridor is the most deserving of high-speed funding. California Congressman and House Majority Whip Kevin McCarthy testified that there are serious concerns about the California project's viability and "when, if ever" it will be built.

United States Government Accountability Office

GAO

Testimony
Before the Committee on
Transportation and Infrastructure,
House of Representatives

For Release on Delivery
Expected at 9:30 a.m. EST
Thursday, December 6, 2012

HIGH-SPEED PASSENGER RAIL

Preliminary Assessment of California's Cost Estimates and Other Challenges

Statement of Susan A. Fleming, Director
Physical Infrastructure Issues

December 6, 2012

HIGH-SPEED PASSENGER RAIL

Preliminary Assessment of California's Cost Estimates and Other Challenges

GAO Highlights

Accountability * Integrity * Reliability

Highlights of GAO-13-163T, a testimony before the Committee on Transportation and Infrastructure, House of Representatives

Why GAO Did This Study

The California high-speed rail project is the single largest recipient of federal funding from the Federal Railroad Administration's (FRA) High Speed Intercity Passenger Rail (HSIPR) grant program. The 520-mile project (see map) would link San Francisco to Los Angeles at an estimated cost of $68.4 billion. Thus far, FRA has awarded $3.5 billion to the California project. The Authority has to continue to rely on significant public-sector funding, in addition to private funding, through the project's anticipated completion date in 2028. This testimony is based primarily on GAO's ongoing review of the California high-speed rail project and discusses GAO's preliminary assessment of (1) the reliability of the project's cost estimates developed by the Authority and (2) key challenges facing the project.

As part of this review, we obtained documents from and conducted interviews with Authority officials, its contractors, and other state officials. GAO analyzed the extent to which project cost estimates adhered to best practices contained in GAO's *Cost Estimating and Assessment Guide (Cost Guide)*, which identifies industry best practices to ensure cost estimates are comprehensive, accurate, well documented, and credible—the four principal characteristics of a reliable cost estimate. GAO also reviewed project finance plans as outlined in the Authority's April 2012 revised business plan. To identify key challenges, GAO reviewed pertinent legislation, federal guidelines and best practices related to ridership and revenue forecasting, and interviewed, among others, federal, state, and local officials associated with the project.

View GAO-13-163T. For more information, contact Susan A. Fleming at (202) 512-2834 or flemings@gao.gov.

What GAO Found

Based on an initial evaluation of the California High Speed Rail Authority's (Authority) cost estimates, GAO found that they exhibit certain strengths and weaknesses when compared to best practices in GAO's *Cost Guide*. Adherence with the *Cost Guide* reduces the risk of cost overruns and missed deadlines. GAO's preliminary evaluation indicates that the cost estimates are comprehensive in that they include major components of construction and operating costs. However, they are not based on a complete set of assumptions, such as how the Authority expects to adapt existing high-speed rail technology to the project in California. The cost estimates are accurate in that they are based on the most recent project scope, include an inflation adjustment, and contain few mathematical errors. And while the cost estimates' methodologies are generally documented, in some cases GAO was unable to trace the final cost estimate back to its source documentation and could not verify how certain cost components, such as stations and trains, were calculated. Finally, the Authority evaluated the credibility of its estimates by performing both a sensitivity analysis (assessing changes in key cost inputs) and an independent cost estimate, but these tests did not encompass the entire cost estimate for the project. For example, the sensitivity analysis of the construction cost estimate was limited to 30 miles of the first construction segment. The Authority also did not conduct a risk and uncertainty analysis to determine the likelihood that the estimates would be met. The Authority is currently taking some steps to improve its cost estimates.

The California high-speed rail project faces many challenges. Chief among these is obtaining project funding beyond the first 130-mile construction segment. While the Authority has secured $11.5 billion from federal and state sources, it needs almost $57 billion more. Moreover, the HSIPR grant program has not received federal funding for the last 2 fiscal years, and future federal funding is uncertain. The Authority is also challenged to improve its ridership and revenue forecasts. Factors, such as limited data and information, make developing such forecasts difficult. Finally, the environmental review process and acquisition of necessary rights-of-way for construction could increase the risk of the project's falling behind schedule and increasing costs.

Map of Planned California High-Speed Rail System and Construction Timeline

Sources: California High Speed Rail Authority and GAO.

GAO
Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

Chairman Mica, Ranking Member Rahall, and Members of the Committee:

Thank you for the opportunity to be here today as the committee examines the Department of Transportation's (DOT) High Speed Intercity Passenger Rail (HSIPR) program.[1] As you know, this program was established to provide grant funds to states and others to develop high-speed intercity passenger-rail corridors and projects. HSIPR is administered by the Federal Railroad Administration (FRA), and, as of October 2012, almost $10 billion has been obligated for 150 projects under this program, though it has received no appropriations since fiscal year 2010. The projects range from multibillion dollar high-speed rail systems, like that in California, to smaller projects designed to improve speeds, frequency, and reliability of conventional intercity passenger-rail service.

My statement today will discuss our ongoing examination of the California high-speed rail project—the largest recipient of HSIPR grant funds to date. We are providing preliminary observations based on our work to date, particularly related to the California High Speed Rail Authority's (Authority) project cost estimates. We also identify some of the key challenges facing the project. Our ongoing review, which this committee and other Members of the House requested, focuses on assessing the reliability of the project's cost estimates and financing plans, evaluating the reasonableness of ridership and revenue forecasts, and examining the comprehensiveness of potential project economic impacts. As such, we are assessing the quality of the information used by policymakers and not evaluating the merits of the project itself, which should be considered in light of whether this project best meets the transportation needs of the estimated 51 million Californians in 2050.

This testimony is based on our preliminary assessment of the first phase of the project's cost estimates using GAO's *Cost Estimating and Assessment Guide*[2] (*Cost Guide*). While FRA did not require HSIPR grant

[1]The program was authorized under the Passenger Rail Investment and Improvement Act of 2008 (PRIIA). Pub. L. No. 110-432, Div. B (Oct. 16, 2008).

[2]GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: March 2009).

applicants to follow the *Cost Guide*, the *Cost Guide* identifies best practices that help ensure cost estimates are well documented, comprehensive, accurate, and credible. The *Cost Guide* has been used to evaluate cost estimates across the government, including infrastructure projects. We also assessed the Authority's analysis of the project's finance plans as outlined in the Authority's April 2012 revised business plan. We analyzed the extent to which the project's cost estimates adhered to the best practices contained in the *Cost Guide* and interviewed Authority officials, its contractors, and other federal officials. To identify key challenges, we reviewed pertinent legislation, federal guidelines and best practices related to ridership and revenue forecasting, prior GAO reports on the topic of high-speed passenger rail and reports published by the DOT's Office of Inspector General (OIG). In addition, we interviewed federal, state, and local officials associated with the project as well as members of the ridership and revenue peer review panel established by the Authority. We also reviewed the status of the project's environmental reviews and sought to identify legal challenges to the project as well as interviewed officials from the Authority, the California Department of Transportation, and other state officials about right-of-way acquisition.[3] We conducted our work in accordance with generally accepted government auditing standards. We plan to report the final results of our work in early 2013.

Background

While high-speed passenger rail has been in operation in Europe and Asia for several decades, it is in its relative infancy in the United States. The Passenger Rail Investment and Improvement Act of 2008 (PRIIA) called for development of high-speed rail corridors in the United States and led to establishment of the HSIPR program. FRA administers the HSIPR program as a discretionary grant program to states and others. This program was appropriated $8 billion in funding from the American Recovery and Reinvestment Act (Recovery Act) in 2009 and an additional $2.5 billion in funding from the fiscal year 2010 DOT Appropriations Act.[4] According to FRA, as of October 2012, about $9.9 billion has been

[3]This project will construct new rail right of way to provide service, some of which may require acquisition of privately owned land.

[4]Pub. L. No. 111-5, 123 Stat. 208 (Feb. 17, 2009); Pub. L. No. 111-117, 123 Stat. 3056 (Dec. 16, 2009). For fiscal years 2011 and 2012, no appropriations were made to the program. For fiscal year 2011, $400 million in unobligated funds were rescinded. Pub. L. No. 112-10, § 2222 (Apr. 15, 2011).

obligated for 150 projects.[5] The California high-speed rail project is the largest recipient of HSIPR funds, with approximately $3.5 billion (about 35 percent of program funds obligated). We have previously reported on high-speed rail and the HSIPR program. For example, in March 2009 we reported on the challenges associated with developing and financing high-speed rail projects. These included securing the up-front investments for such projects and sustaining public and political support and stakeholder consensus.[6] We concluded that whether any high-speed rail proposals are eventually built hinges on addressing the funding, public support, and other challenges facing these projects. In June 2010, we reported that states would be the primary recipients of Recovery Act funds for high-speed rail, but many states did not have rail plans that would, among other things, establish strategies and priorities of rail investments in a particular state.[7]

California's high-speed rail project is poised to be the first rail line in the United States designed to operate at speeds greater than 150 miles per hour.[8] The planned 520-mile line will operate between San Francisco and Los Angeles at speeds up to 220 miles per hour (see fig.1). At an estimated cost of $68.4 billion,[9] it is also one of the largest transportation infrastructure projects in the nation's history. The project's planning began in 1996 when the Authority was created but began in earnest after initial funding was approved in 2008 with the passage of Proposition 1A, which authorized $9.95 billion in state bond funding for construction of the high-speed rail system and improvements to connections (see fig. 2). Construction is expected to occur in phases beginning with the 130-mile first construction segment from just north of Fresno, California, to just north of Bakersfield, California. In July 2012, the California legislature appropriated $4.7 billion in state bond funds. The process of acquiring

[5]Five of these projects were pending obligations.

[6]GAO, *High Speed Passenger Rail: Future Development Will Depend on Addressing Financial and Other Challenges and Establishing a Clear Federal Role*, GAO-09-317 (Washington, D.C.: Mar. 19, 2009).

[7]GAO, *High Speed Rail: Learning From Service Start-Ups, Prospects for Increased Industry Investment, and Federal Oversight*, GAO-10-625 (Washington, D.C.: June 17, 2010). California has a state rail plan that is in the process of being updated.

[8]Amtrak's *Acela* service is capable of operating at speeds greater than 150 miles per hour but is not currently authorized by FRA to do so.

[9]All costs are in year-of-expenditure dollars unless otherwise noted.

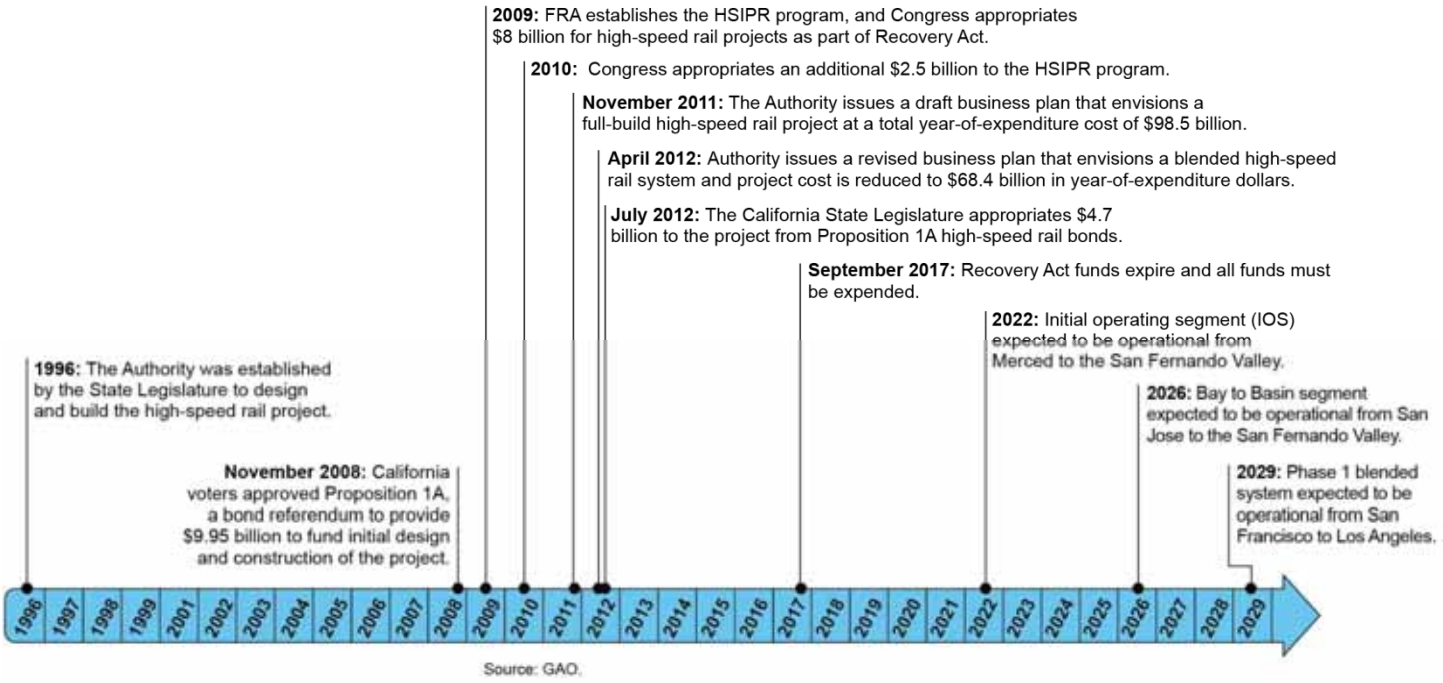
property for the right-of-way and construction is expected to begin soon. Request for proposals to select construction contractors and right-of-way acquisitions were issued in March and September 2012, respectively. According to the Authority, a design-build contract for the first construction segment is expected to be awarded in June 2013 with construction potentially commencing no earlier than summer 2013.

Figure 1: Map of Planned California High-Speed Rail System and Construction Timeline

Sources: California High Speed Rail Authority and GAO.

[a]The IOS includes the first construction segment. The construction southward of the IOS will continue as funding becomes available (anticipated after 2015).
[b]Early investments will be made in the bookends of the system (San Francisco peninsula and in the Los Angeles basin) beginning in 2013.

Figure 2: Timeline of California High Speed Rail Project



Source: GAO.

The project underwent substantial revision earlier this year after the Authority issued its November 2011 draft business plan in response to the initial high cost and other criticisms. Most significantly, the Authority scaled back its plans to build dedicated high-speed rail lines over its entire length. Instead, the April 2012 revised business plan adopted a "blended" system in which high-speed rail service would be provided over a mix of dedicated high-speed lines and existing and upgraded local rail infrastructure (primarily at the bookends of the system on the San Francisco peninsula and in the Los Angeles basin). This change was made, in part, to respond to criticism that the cost of the full-build system contained in the November 2011 draft business plan—$98.5 billion—was too high. The revised cost in the April 2012 plan was $68.4 billion. In addition, the ridership and revenue forecasts in the April 2012 revised business plan reflected a wider uncertainty range than the forecast

presented in the November 2011 plan.[10] For example, in the November 2011 draft business plan, the Authority estimated 2030 ridership to be between 14.4 million and 21.3 million passengers and annual revenues of the high speed rail system to be between $1.05 billion and $1.56 billion.[11] This range increased in the April 2012 revised business plan, to between 16.1 million and 26.8 million passengers and annual revenues to be between $1.06 billion and $1.81 billion.[12] The Authority attributed the increase in the uncertainty range to additional conservatism in the low ridership estimate and the ridership changes to several factors such as the adoption of the blended approach which, among other things, allows one-seat service from San Francisco to Los Angeles to begin sooner than the original full-build approach. However, over time ridership forecasts under the blended approach are less than the original full-build approach.

To date, the state of California and the federal government have committed funding to the project. In July 2012, the California state legislature appropriated approximately $4.7 billion dollars in Proposition 1A bond funds, including $2.6 billion for construction of the high-speed rail project and $1.1 billion for upgrades in the bookends.[13] The federal government has also obligated $3.3 billion in HSIPR grant funds.[14] Most of the HSIPR money awarded to the project was appropriated under the Recovery Act and in accordance with governing grant agreements must be expended by September 30, 2017. In addition, approximately $945 million in fiscal year 2010 funding was awarded to the project by FRA and is to remain available until expended.

[10]The Authority retained Cambridge Systematics—a transportation consulting firm that provides ridership forecasting and modeling services—to develop a travel-demand model that was used to generate the November 2011 ridership and revenue forecasts. Cambridge Systematics also prepared the updated ridership and revenue forecasts that were included in the April 2012 revised business plan.

[11]These revenue forecasts are in 2010 dollars.

[12]These revenue forecasts are in 2011 dollars.

[13]An additional $819.3 million was appropriated by the state legislature for connectivity projects and about $252.6 million for environmental, system design, and preliminary engineering work.

[14]Approximately $231 million in additional HSIPR grants have also been awarded primarily for environmental review and preliminary engineering work. In addition, $400 million was awarded to the Transbay Joint Powers Board for construction of a train box at the Transbay Transit Center in San Francisco. The Transbay Transit Center is the expected northern terminus of the California high speed rail line.

Preliminary Assessment of California's Cost Estimates

The Authority estimates that the high-speed rail project in California will cost $68.4 billion to construct and hundreds of millions of dollars to operate and maintain annually. Since the project is relying on significant investments of state and federal funds—and, ultimately private funds—it is vital that the Authority, FRA, and Congress be able to rely on these estimates for the project's funding and oversight (see table 1 below for a summary of the sources of funding). GAO's *Cost Guide* identifies best practices that help ensure that a cost estimate is comprehensive, accurate, well documented, and credible.

- A comprehensive cost estimate ensures that costs are neither omitted nor double counted.
- An accurate cost estimate is unbiased, not overly conservative or overly optimistic, and based on an assessment of most likely costs.
- A well-documented estimate is thoroughly documented, including source data and significance, clearly detailed calculations and results, and explanations for choosing a particular method or reference.
- A credible estimate discusses any limitations of the analysis from uncertainty or biases surrounding data or assumptions.

These four characteristics help minimize the risk of cost overruns, missed deadlines, and unmet performance targets. Our past work on high-speed rail projects around the world has shown that projects' cost estimates tend to be underestimated.[15] As such, it is important to acknowledge the potential for this bias and ensure that cost estimates are as reliable as possible.

Based on our ongoing review, we have found that the Authority's cost estimates exhibit strengths and weaknesses. The quality of any cost estimate can always be improved as more information becomes available. And based in part on evaluations from the Peer Review Group, the Authority is taking some steps to improve the cost estimates that will be provided in the 2014 business plan.

[15]GAO-09-317.

The Authority followed best practices in the *Cost Guide* to ensure comprehensiveness, but also exhibited some shortcomings. The cost estimates include the major components of the project's construction and operating costs.[16] The construction cost estimate is based on detailed construction unit costs that are, in certain cases, more detailed than the cost categories required by FRA in its grant applications. However, the operating costs were not as detailed as the capital costs, as over half of the operating costs are captured in a single category called Train Operations and Maintenance. In addition, the Authority did not clearly describe certain assumptions underlying both cost estimates. For example, Authority officials told us that the California project will rely on proven high-speed rail technology from systems in other countries, but it is not clear if the cost estimates were adjusted to account for any challenges in applying the technology in California.

The Authority took a number of steps to develop accurate cost estimates consistent with best practices in the *Cost Guide*. The estimates have been updated to reflect the new "blended" system which will rely, in part, on existing rail infrastructure; they are based on a dataset of costs to construct comparable infrastructure projects; they contain few, if any, mathematical errors; and they have been adjusted for inflation. For example, the Authority's contractor used a construction industry database of project costs supplemented with actual bid-price data from similar infrastructure projects. However, the cost estimates used in the April 2012 revised business plan do not represent final design and route alignments, and the estimates will change as the project moves into construction and operation. The Authority did not produce a risk and uncertainty analysis of its cost estimates that would help anticipate the impact of these changes. The *Cost Guide* recommends conducting a risk and uncertainty analysis to determine the primary risk factors and assess the likelihood that they may occur, helping to ensure that the estimate is neither overly conservative nor optimistic.

The Authority followed some, but not all, best practices in the *Cost Guide* to ensure that the cost estimate is well documented. In many cases, the methodologies used to derive the construction cost estimates were well documented, but in other cases the documentation was more limited. For example, while track infrastructure costs were thoroughly

[16]Operating costs include maintenance costs.

documented, costs for other elements, such as stations and trains, were supported with little detail or no documentation. Additionally, in some cases where the methodologies were documented, we were unable to trace the estimates back to their source data and recreate the estimates using the stated methodology. For example, we were unable to identify how the operating costs from analogous high-speed rail projects were adjusted for the California project.

The Authority took some steps consistent with our *Cost Guide* to ensure the cost estimates' credibility, but not with respect to some best practices. In order to make cost estimates credible, GAO's *Cost Guide* recommends:

- testing such estimates with sensitivity analysis (making changes in key cost inputs),
- a risk and uncertainty analysis (discussed above), and
- an independent cost estimate conducted by an unaffiliated party to see how outside estimates compare to the original estimates.

While the Authority performed a sensitivity analysis for the first 30 miles of construction and an independent cost estimate for the first 185 miles of construction in the Central Valley, neither covered the entire Los Angeles to San Francisco project. For the operating-cost estimate, the Authority conducted a sensitivity test under various ridership scenarios; however, this test was designed to measure the ability of the system to cover operating costs with ticket revenues and not to determine the potential risk factors that may affect the operating-cost estimate itself. The Authority also did not compare their operating-cost estimate to an independent cost estimate. Finally, as noted above, the Authority did not perform a risk and uncertainty analysis, which would improve the estimates' credibility by identifying a range of potential costs and indicating the degree of confidence decision-makers, can place on the cost estimates.

The Authority is taking steps to improve its cost estimates. To make its operating-cost estimate more comprehensive and better documented, the Authority has contracted with the International Union of Railways to evaluate the existing methodology and data and help refine its estimates. In addition, to improve the construction cost estimates, the Authority will have the opportunity to validate and enhance, if necessary, the accuracy of its cost estimates once actual construction package contracts are

awarded for the initial construction in the Central Valley in 2013. The bids for the first 30-mile construction package are due in January 2013 and will provide a check on how well the Authority has estimated the costs for this work as well as provide more information on potential risks that cost estimates of future segments may encounter.

California High-Speed Rail Project Faces Financial and Other Challenges

In addition to challenges in developing reliable cost estimates, the California high-speed rail project also faces other challenges. These include obtaining project funding beyond the first construction segment, continuing to refine ridership and revenue estimates beyond the current forecasts, and addressing the potential increased risks to project schedules from legal challenges associated with environmental reviews and right-of-way acquisitions.

Challenges To Securing Project Funding

One of the biggest challenges facing California's high-speed rail project is securing funding beyond the first construction segment. While the Authority has secured $11.5 billion from federal and state sources for project construction, almost $57 billion in funding remains unsecured. A summary of funding secured to-date can be found in Table 1.

Table 1: Funding Secured for Constructing the High-Speed Rail Project

(Dollars in billions)	
State high speed rail bonds	$8.2[a]
Federal HSIPR grants	3.3 [b]
Total secured funding	**$11.5**

Source: GAO analysis of FRA grant information and the California High Speed Rail Authority April 2012 Revised Business Plan.

[a]The Authority expects approximately $8.2 billion in proceeds from the $9.95 in authorized Proposition 1A high-speed rail bonds to be available for construction of high-speed rail. The remainder is for connectivity projects and engineering and environmental work.

[b]Approximately $3.3 billion of $3.5 in obligated HSIPR grants is available for construction of high-speed rail project. The remainder is for engineering and environmental work.

As with other large transportation infrastructure projects, including high-speed rail projects in other countries, the Authority is relying primarily on public financial support, with $55 billion or 81 percent of the total construction cost, expected to come from state and federal sources. A summary of the Authority's funding plan can be found in table 2.

Table 2: California's Funding Plan for Construction of the High-Speed Rail Project, according to the April 2012 Revised Business Plan

(Dollars in billions)

Funding source	First construction	Initial operating segment	Bay-to-Basin	Phase 1 blended	Total	
Federal	$3.3	$20.3	$8.4	$10.0	$ 42.0	(61%)
State high-speed rail bond	2.7	4.4	0.0	1.1	8.2	(12)
Locally generated	0.0	0.7	1.2	3.1	5.0	(7)
Subtotal public	**6.0**	**25.4**	**9.6**	**14.2**	**55.2**	(81%)
Private investment	0.0	0.0	10.1	3.0	13.1	(19)
Operating cash flow	0.0	0.0	0.2	0.0	0.2	(0)
Subtotal private investment and operating cash flow	**0.0**	**0.0**	**10.3**	**3.0**	**13.3**	(19%)
Total	**$6.0**	**$25.4**	**$19.9**	**$17.2**	**$68.5**	(100%)

Source: GAO analysis of California High Speed Authority's April 2012 revised business plan.

Of the total $55 billion in state and federal funding, about $38.7 billion are uncommitted federal funds, an average of over $2.5 billion per year over the next 15 years. Most of the remaining funding is from unidentified private investment once the system is operational—a model that has been used in other countries, such as for the High Speed One line in the United Kingdom. As a result of the funding challenge, the Authority is taking a phased approach—building segments as funding is available. However, given that the HSIPR grant program has not received funding for the last 2 fiscal years and that future funding proposals will likely be met with continued concern about federal spending, the largest block of expected funds is uncertain. The Authority has identified revenues from California's newly implemented emissions cap and trade program in the event other funding is not made available, but according to state officials, the amounts and authority to use these funds are not yet established.[17]

[17]California's Legislative Analyst's Office has evaluated the risks of applying cap and trade revenues to the high-speed rail project. See Legislative Analyst's Office, *The 2012-2013 Budget: Funding Requests for High Speed Rail* (Sacramento, CA: Apr. 17, 2012).

Challenges to Developing Ridership and Revenue Forecasts

Developing reliable ridership and revenue forecasts is difficult in almost every circumstance and for a variety of reasons. Chief among these are (1) limited data and information, (2) risks of inaccurate assumptions, and (3) accepted forecast methods vary. Although forecasting the future is inherently risky, reliable ridership and revenue forecasts are still critical components in estimating the economic viability of a high-speed rail project and in determining what project modifications, if any, may be needed. For example, the financial viability of California's high-speed rail project depends on generating sufficient ridership to cover its operating expenses. Ridership and revenue forecasts enable policymakers and private entities to make informed decisions on policies related to the proposed high-speed rail system and to determine the risks associated with a high-speed rail project when making investment decisions. Addressing these challenges will be important for the Authority as it works toward updating its ridership and revenue forecasts for the 2014 business plan.

Limited data and information, especially early in a project before specific service characteristics are known, make developing reliable ridership and revenue forecasts difficult. And to the extent early stage data and information are available, they need to be updated to reflect changes in the economy, project scope, and consumer preferences. For example, in developing the ridership and revenue forecasts for the April 2012 revised business plan, the Authority updated several assumptions and inputs used to develop the initial ridership and revenue forecasts that were presented in the November 2011 draft business plan. Authority officials said this update was done, in part, to build in additional conservatism in the ridership forecasts, in particular in the low scenario, and to avoid optimism bias. Among other updates, the Authority revised model assumptions to reflect changes in current and anticipated future conditions for airfares and airline service frequencies, decreases in gasoline price forecasts, and anticipated declines in the growth rates for population, number of households, and employment. Peer review groups, such as the Ridership and Revenue Peer Review Panel (Panel) established by the Authority, and academic reviewers have examined the Authority's ridership and revenue forecast methodology. These reviewers

recommended additional improvements to the model going forward.[18] For example, in developing the forecasts used for the April 2012 revised business plan, the Authority relied on data from a 2005 survey that was conducted at airports, rail stations, and by telephone from August to November 2005.[19] In a May 2012 report to the Authority, the Panel pointed out limitations with this data source and recommended that new data be collected to supplement the existing data for model enhancement purposes. Authority officials stated that they are currently developing a new revealed-preference and stated-preference survey to update the 2005 survey data and that they plan to begin collecting this new survey data in December 2012.[20] Portions of the new 2012 data will be used to re-estimate and re-calibrate the ridership model to develop updated ridership and revenue forecasts for the 2014 business plan. The Authority also plans to develop a new version of the model that will make full use of the new 2012 survey data; however, the new model is not expected to be developed in time for the 2014 business plan. It will be important to complete these future model improvements as the project is developed.

Risks of inaccurate forecasts are a recurring challenge for sponsors of the project. Research on ridership and revenue forecasts for rail infrastructure projects have shown that ridership forecasts are often overestimated and actual ridership is likely to be lower. For example, a recent study examined a sample of 62 rail projects and found that for 53 of them, the demand forecasts were overestimated and that actual demand was lower than forecasted demand.[21] According to the Authority, the ridership and

[18]Several groups have examined the Authority's ridership and revenue forecast methodology including the Ridership and Revenue Peer Review Panel—a panel convened by the Authority to conduct an independent review of the Authority's ridership- and revenue-forecasting process and outcomes. In addition, academic experts from the University of California Berkeley's Institute of Transportation Studies conducted a review of ridership and revenue forecast models used to develop forecasts in June 2010.

[19]This survey data included revealed-preference and stated-preference mode choice data from air, rail, and auto trip passengers. These data were used to construct a model of travelers' choices among different modes of travel, including high-speed rail, for different segments of the market.

[20]In addition, the Authority conducted a supplemental trip-frequency survey in May 2011. These survey data were not used to replace the 2005 survey data but were used to enable recalibration and validation to more recent conditions.

[21]Bent Flyvbjerg, "*Quality Control and Due Diligence in Project Management: Getting Decisions Right by Taking the Outside View,*" *International Journal of Project Management* (November 2012), http://dx.doi.org/10.1016/j.ijproman.2012.10.007.

revenue forecasts, in its April 2012 revised business plan, include a wider range of ridership and revenue forecasts and lower ridership and revenue forecasts compared to earlier forecasts, to help mitigate the risks of optimism bias. In addition, the Authority performed a sensitivity analysis of an extreme downside scenario to test the ridership and revenue implications of a series of downside events coinciding, such as increased average rail-travel time from Merced to the San Fernando Valley and lower auto-operating costs. Based on this analysis, the Authority determined that an extreme downside scenario would be expected to reduce ridership and revenue forecasts by 27 percent and 28 percent, respectively, below that shown for the low forecasts in the April 2012 revised business plan. According to the Authority, these forecasts would still be sufficient to cover the Authority's estimated operating costs and would not require a public operating subsidy. Authority officials stated that they intend to conduct additional sensitivity analyses going forward.

Finally, accepted forecasting methods vary, and FRA has not established guidance on acceptable approaches to the development of reliable ridership and revenue forecasts. Industry standards vary, and FRA has established minimal requirements and guidance related to information HSIPR grant applicants must provide regarding forecasts. As we have previously reported, different ridership-forecasting methods may yield diverse and therefore uncertain results.[22] As such, we have recommended that the Secretary of Transportation develop guidance and methods for ensuring reliability of ridership forecasts. Similarly, the DOT OIG has also recommended that FRA develop specific and detailed guidance for the preparation of HSIPR ridership and revenue forecasts.[23] Best practices identified by various agencies and transportation experts have identified certain components of the ridership- and revenue-forecasting process that affect results more than others and that are necessary for developing reasonable forecasts. Among others, key components include processes for developing *trip tables*,[24] developing a

[22]GAO-09-317.

[23]DOT OIG, *FRA Needs to Expand Its Guidance on High Speed Rail Project Viability Assessments*, CR-2012-083, (Washington, D.C.: Mar. 28, 2012).

[24]*Trip tables* are estimates of numbers of trips taken between specific locations. Trip tables, in conjunction with mode-choice models, provide the foundation for ridership forecasts.

mode-choice model,[25] conducting sensitivity analyses, and conducting validation testing. The Authority's forecasts included each of these key components in developing the ridership and revenue forecasts for the April 2012 revised business plan.[26] While addressing these components does not assure ridership and revenue forecasts are accurate, it does provide greater assurance that the Authority's processes for developing these forecasts are reasonable. In our ongoing review of the California high speed rail project, we are evaluating the extent to which the Authority's ridership and revenue forecasts followed best practices when completing each of these tasks. We will present the results of our assessment of the Authority's process in our 2013 report on this subject.

Environmental Review and Right-of-Way Acquisitions May Increase Risk of Project Delays

Among the other challenges facing the project, which may increase the risk of project delays, are potential legal challenges associated with the environmental laws. Under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA),[27] government agencies funding a project with significant environmental effects are required to prepare environmental impact statements or reports (EIS/EIR) that describe these impacts.[28] Under CEQA, an EIR must also include mitigation measures to minimize significant effects on the environment. The Authority is taking a phased approach to comply with NEPA and CEQA by developing EIS/EIRs for both the project as a whole as well as for particular portions of the project. To date, program level EIS/EIRs have been prepared for the project as a whole (August 2005) and for the Bay Area to Central Valley (initial certification by the Authority in July 2008 and a revised final EIS/EIR issued in April 2012). Project level EIS/EIRs have been prepared for the Merced-to-Fresno portion of the project (issued April 2012), and a draft EIS/EIR has been prepared for the Fresno-to-Bakersfield portion of the project (initial draft issued in August 2011 and revised final issued July 2012). Environmental concerns have been the subject of legal

[25]*Mode-choice models* estimate how many travelers would choose the high-speed rail option versus other available modes of travel.

[26]This includes validation testing of the ridership model, testing that, according to the Authority, was performed in January 2012 through a comparison of actual ridership (2008) and 2030 forecasts on Amtrak's *Acela* service on the Northeast Corridor.

[27]42 U.S.C. § 4321 et seq. (NEPA); Cal. Pub. Res.Code § 21000 et seq. (CEQA).

[28]Under NEPA, the document is referred to as an EIS, while under CEQA it is called an EIR.

challenges. For example, a lawsuit was filed in October 2010 against the Authority challenging the decision to approve the Bay Area to Central Valley segment based on an EIR alleged to be inadequate. Several lawsuits have been filed and these cases are still pending.

The project also faces the potential challenge of acquiring rights-of-way. Timely right-of-way acquisition will be critical since some properties will be in priority construction zones. Property to be acquired will include homes, businesses, and farmland. Not having the needed right-of-way could cause delays as well as add to project costs. Acquisition of right-of-way will begin with the first construction segment, which has been subdivided into 4 design-build construction packages. There are a total of approximately 1,100 parcels to be acquired for this segment; all of which are in California's Central Valley. In September 2012, the Authority issued a *Request for Proposals* to obtain the services of one or more contractors to provide right-of-way and real property services. The Authority estimated in its April 2012 revised business plan that the purchase or lease of real estate for the phase I blended system will cost between $3.6 billion and $3.9 billion (in 2011 dollars). According to the Authority, the schedule for right-of-way acquisition will be phased, based on construction priorities with delivery of all required parcels in the Central Valley no later than spring 2016. Acquisition is anticipated to begin in February 2013. The timely acquisition of rights-of-way may be affected by *at-risk* properties—that is, those properties that the Authority considers at-risk for timely delivery to design-build contractors for construction.[29] There could be a significant number of at-risk properties. For example, Authority officials told us there are about 400 parcels in the first construction package, about 200 of which are in priority construction zones. Of these, about 100 parcels (50 percent) are considered to be potentially at-risk for timely delivery. Since right-of-way acquisition has not yet begun, the extent that at-risk properties will ultimately affect project schedules or cost is not known. However, there may be an increased risk given the initial high percentage of at-risk parcels.

[29]There could be a number of reasons why a property is deemed *at-risk*, including instances where a property owner is contesting a property valuation or a property owner has not yet vacated a property.

Chairman Mica, Ranking Member Rahall, this concludes my prepared remarks. I am happy to respond to any questions that you or other Members of the Committee may have at this time.

GAO Contacts and Staff Acknowledgments

For future questions about this statement, please contact Susan Fleming, Director, Physical Infrastructure, at (202) 512-2834 or flemings@gao.gov. In addition, contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals who made key contributions to this statement include Paul Aussendorf, (Assistant Director), Russell Burnett, Delwen Jones, Richard Jorgenson, Jason Lee, James Manzo, Maria Mercado, Josh Ormond, Paul Revesz, Max Sawicky, Maria Wallace, and Crystal Wesco.

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