Regional Aviation Demand Forecast
Presentation to the Aviation Technical Advisory Committee (ATAC)

April 23, 2015
SECTION ONE
Introduction and Overview

Purpose of the Air Traffic Forecast

• Objective of the forecast study is to generate long-term forecasts for air passengers and cargo at the SCAG Region Airports
  • Forecasts are prepared through 2040

• The Air Traffic Forecast serves a number of purposes:
  • Indicate range of long-term passenger demand
  • Inform long-term strategic aviation policy
  • Inform long-term strategic regional transportation plans
SCAG Region Airports Matter

SCAG Region Airports combined handled **88 million annual passengers** in 2013

- In 2015, the SCAG Region Airports combined:
  - Serve **169** nonstop destinations daily in **37** countries
  - Have **1,200** daily departures
  - Have over **170,000** daily departing seats on **64** airlines

Sources: United States Department of Transportation T-100 Onboard Passenger and 298(c) Commuter Onboard databases, Innovata Schedules via Diio, March 2015.
Southern California’s Aviation Assets
Strong relationship between demand for air travel and economic conditions

- For every 1% growth in GDP, air travel typically increases between 1% and 2%

Sources: United States Department of Transportation T-100 Onboard Passenger and 298(c) Commuter Onboard databases, Bureau of Economic Analysis.
Every long-term traffic forecast therefore starts with a good understanding of the socio-economic trends…

- Air travel demand is derived from socio-economic interactions between origin and destination markets:
  - The size and wealth of the population quantifies the potential pool of travelers
  - Economic activity is a measure for business travel
  - Currency exchange rate with destination country affects leisure traveler’s decision to travel

…at both ends of the trip

- Since we make a distinction between:
  - **Outbound passengers**: passengers having the SCAG Region Airports as the origin, or starting point, of their trip
  - **Inbound passengers**: passengers having the SCAG Region Airports as the destination of their trip

…the socio-economic trends at both ends of the trip need to be analyzed
Drivers for air travel demand depend on trip purpose

- Passengers can be divided according to the following reasons for undertaking air travel:
  - **Business travel**: driven by the level of business and trade activity, level of foreign investments, presence of large companies
  - **Leisure (inbound and outbound)**: consumer spending, household income, currency exchange rates, fares
  - **Visiting friend and relatives**: driven by the presence of an ethnically diverse population, fares
Business and leisure are the key travel purposes

ONT Passenger Survey (2001)

LAX Passenger Survey (2011)

SNA Passenger Survey (2013)

Sources: ONT, SNA, and LAX passenger surveys.
Some definitions: the concept of O&D passengers

- Distinction is made between **Origin & Destination (O&D)** passengers and **onboard, or Enplaned/Deplaned** passengers.
  - O&D passengers: relates to a passenger’s *first and final destination*
  - Onboard passengers: relates to a passenger’s *next destination*

- Total Onboard Pax = O&D Pax + Connecting Pax
Example 1: BUR – SFO – YVR
Passenger traveling from Burbank to Vancouver via SFO

- Demand for air travel between BUR and YVR depends on socio-economic conditions in Burbank and Vancouver, not SFO.
Example 2: SNA – PHX - DTW
Passenger traveling from Orange County to Detroit via Phoenix

- SNA - PHX: Domestic onboard passenger
- PHX - DTW: Domestic onboard passenger
- SNA - DTW: Domestic O&D passenger
Population in the SCAG region increased from 10.1 million in 1970 to 18.2 million in 2012.

Between 1970 and 2012, the population in the SCAG Region increased by a compound annual growth rate of 1.4%.

Average growth slowed down to 0.9% over the last decade between 2002 and 2012.

Source: SCAG GIS/Data Services
The number of jobs increased at an annual rate of 1.7% between 1975 and 2011

- The number of jobs increased at a compound annual growth rate of 1.7% between 1975 and 2011
- However, employment growth has slowed down to 0.7% since 2002 and has actually decreased since the start of the financial crisis in 2007

Source: SCAG GIS/Data Services
Until 2004, population growth in California and the SCAG region outpaced national population growth

- Traditionally, population growth in California and SCAG Region has outpaced national population growth
- Since 2004, however, the trend has reversed, and the country’s overall population increases at a faster rate than the SCAG Region

Source: SCAG GIS/Data Services and Woods & Poole
California’s economic output boomed before dot-com bubble bust in 2000

- California’s economic output surged before the dot-com bubble bust in 2000
- After 2001, California GDP increases at a similar growth rate as the national output

Source: Woods & Poole
California’s economic output is expected to increase 2.3% per annum over the forecast period.

**FORECAST OF REAL GDP**
California and United States

California GDP
CAGR 2013 – 2040: +2.3%

Source: Woods & Poole
SCAG is home to a significant foreign-born communities that generate demand for air travel

The SCAG Region is an ethnically diverse region:
• More than 5.3 million people in the Los Angeles-Long Beach-Santa Ana and Riverside-San Bernardino-Ontario Metro Area were born in another country

• With friends and relatives becoming more and more dispersed, the need for travel increases to maintain close links
Technology is a vital force in the SCAG Region economy…

• Technology sector includes:
  • Bio-medical
  • Digital information technology
  • Environmental Technology
  • Computer Software
  • Semiconductors
...while the SCAG Region also hosts major manufacturing centers

- The SCAG Region hosts major manufacturing centers:
  - Los Angeles County is the largest manufacturing center in the U.S., employing 365,500 workers in 2012.
  - The largest sectors include transportation equipment, apparel, fabricated metal products, computer and electronic products, and food products
  - Orange County is also home to a major manufacturing center with 157,700 jobs
  - Main sectors here include computer and electronic products, fabricated metal products, medical equipment, transportation (primarily aerospace), and machinery
  - The Inland Empire is also an important manufacturing center with employment reaching 93,600 jobs in 2012

Source: Los Angeles County Economic Development Corporation, The Kyser Center for Economic Research
Largest Public Companies in SCAG Region
Annual revenues range from $12 billion to $48 billion
Higher and specialized education is a core strength of the SCAG Region

- The SCAG region hosts well over 100 four-year public and private college and university campuses:
  - Three University of California campuses (UCLA, UCI, UCR)
  - Eight Cal State campuses, including Cal Poly Pomona
  - Nationally recognized private institutions, including USC, California Institute of Technology, the Claremont Colleges, the University of Redlands
  - Top-rated specialized institutions, such as the Art Center College of Design and the California Institute for the Arts
  - Medical research centers, such as the Loma Linda University School of Medicine

Source: Los Angeles County Economic Development Corporation, The Kyser Center for Economic Research
In 2013, California had 227.2 million domestic person-trips, 184.2 million of which were for leisure.

78.6% of California’s domestic leisure visitors in 2013 were residents of California.

Source: VisitCalifornia.com
15.6 million international visitors traveled to California in 2013

- Of these inbound visitors:
  - 6.6 million were from overseas origin

<table>
<thead>
<tr>
<th>Country / region</th>
<th>Number of Visitors</th>
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<tbody>
<tr>
<td>China</td>
<td>819,000</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>652,000</td>
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<td>Australia</td>
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<td>France</td>
<td>388,000</td>
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<tr>
<td>Scandinavia</td>
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</tbody>
</table>

- 7.4 million were from Mexico
- 1.5 million were from Canada
15.6 million international visitors traveled to California in 2013

- Hollywood
- Downtown Los Angeles
- Santa Monica / Venice Beach
- Malibu
- Amusement Parks
  - Disneyland
  - Universal Studios
  - Knott’s Berry Farm
  - Magic Mountain
- Palm Springs/Coachella Valley
- Joshua Tree National Park
- Big Bear
- Ventura/Channel Islands
SECTION FIVE
Historical Air Traffic

- Total enplaned traffic at SCAG Region Airports increased from 63.0 MAP in 1990 to 88.0 MAP in 2013 – equivalent to a compound annual growth rate of 1.5%

- Combined, the share of connecting passenger at SCAG Region Airports hovers around 17% during the historic period reviewed

Sources: United States Department of Transportation Origin and Destination Passenger Survey, T-100 Onboard Passenger, and 298(c) Commuter Onboard databases.
Total O&D traffic to the SCAG Region Airports increased from 51.1 MAP in 1990 to 72.6 MAP in 2013.

HISTORICAL O&D PASSENGER DEVELOPMENT
SCAG Region Airports

Sources: United States Department of Transportation Origin and Destination Passenger Survey
Domestic medium/long-haul remains the largest O&D market
But Asia-Pacific is among the fastest growing segments, together with South America

- Although its share decreased from 80.4% in 1990 to 73.4% in 2013, domestic O&D traffic remains the largest O&D segment
- Decrease in Intra-California O&D passenger traffic
Forecast methodology builds on recognized relationship between air travel demand and socio-economic variables

• There is a proven close relationship between socio-economic conditions and traffic growth, e.g.:
  - Demand increases with positive growth in source-market GDP levels
  - Demand decreases with increases in oil prices and fares

• For each of the market segments, the forecast methodology aims to statistically explain changes in the historical number of air passengers through changes in the economic variables
  - A regression analysis is a statistical tool that can find the relationship that best explains historical air traffic development
  - A number of variables were tested to identify the factors that show the best correlation with historic traffic developments:
    - U.S. GDP, California State GRP, GDP of the main source markets, income per capita, oil prices, currency exchange rates and real air fare data.
Forecast approach focuses on aggregate demand to SCAG Region Airports plus SBA, SAN, and CLD

- SCAG Region is home to multiple airports that have overlapping catchment areas
- Travelers to/from SCAG region have the option to choose between several airports for their needs
- Predicting future traffic levels at individual airports in the SCAG region cannot be done in isolation and should consider the region-wide trends and dynamics
- The airports of SBA, SAN and CLD are also included in the forecast methodology as their catchment areas overlap with the SCAG Region Airports
- The forecasting process starts by producing a Macro-Economic Forecast Model to predict total O&D traffic to the region
A macro-economic forecast model was developed for each primary geographic market segment

- Recognizing that different market regions have different demand drivers and dynamics, passenger O&D markets are typically divided into different market segments
- This can be done based on characteristics of the market, such as geography and length of flight
- By analyzing historic O&D traffic levels, air passenger traffic to the region was divided in terms of the key market segments:
  - **Domestic**
    - Intra-California, Short-haul, Medium-Long haul
  - **International**
    - Asia/Oceania, Canada/Greenland, Mexico/Central America/Caribbean, South America, Transatlantic
Segmentation of domestic passenger traffic
Intra-California vs. short-haul vs. medium/long-haul
Segmentation of international passenger traffic
Forecast model for medium-and long-haul domestic traffic focuses on GDP and Fares

GOODNESS-OF-FIT ECONOMETRIC MODEL
Domestic medium-to long-haul O&D traffic

Million Annual Passengers

- Actual traffic
- Predicted by model
SECTION SEVEN
Air Traffic Forecast Results

• Total O&D passenger movements to the region increase from 72.6 MAP in 2013 to 112.2 MAP in 2040 (Equivalent to annual growth of 1.6%)

• Total passengers increase from 88.0 MAP in 2013 to 136.2 MAP in 2040 (Equivalent to annual growth of 1.6%)
Comparison to previous RTP forecasts

• 1998 RTP—157.4 MAP in 2020
• 2001 RTP—167 MAP in 2025
• 2004 RTP—170 MAP in 2030
• 2008 RTP—165.3 MAP in 2035
• 2012-2035 RTP—145.9 MAP in 2035 (Baseline Scenario)

• Current forecast is 136 MAP in 2040
  • Events since 9/11, including the sharp increase in fuel prices in the early 2000s followed by the financial crisis, have resulted in consistently less aggressive forecasts of aviation demand
Total O&D passenger movements to the region increase from 72.6 MAP in 2013 to 112.2 MAP in 2040

- Although international traffic grows at slightly higher clip, the domestic market remains the largest segment, representing 69.1% in 2040
Total enplaned/deplaned passengers increase from 88.0 MAP in 2013 to 136.2 MAP in 2040

- The share of connecting passengers remains stable around 17%
Allocate aggregate demand for the SCAG region over the individual commercial airports

Distinguish between the regional forecast and the FAA generated Terminal Area Forecast (TAF)

Analyze demand scenarios as directed by the Transportation Committee

Solicit ideas for ground access improvements from the airport sponsors

Refine the projects in Aviation Ground Access Element for the 2016 RTP

Develop air cargo and aircraft operations forecasts

Incorporate available economic impact information from the region’s commercial service and general aviation airports
Questions? Comments? Thank you…

For more information on this presentation or the SCAG Aviation Program please contact:

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