TRANSPORTATION SYSTEM

AVIATION & AIRPORT GROUND ACCESS

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

2016 2040 RTPSCS

APPENDIX

PROPOSED FINAL | MARCH 2016

2016
2040 RTPSCS

APPENDIX

TRANSPORTATION SYSTEM | AVIATION & AIRPORT GROUND ACCESS

PROPOSED FINAL | MARCH 2016

AVIATION AND AIRPORT GROUND ACCESS

SCAG REGION AIRPORTS

INTRODUCTION

As illustrated in **EXHIBIT 1**, the six counties of Southern California that make up the SCAG region are home to an airport sywstem of more than 50 airports. The airport identifier codes assigned by the Federal Aviation Administration to the region's airports are listed in **TABLE 1**. Ten of the airports are commercial airports, of which six had schedule commercial airline services in 2012, and one (March Inland Port, RIV) is a joint-use military airfield.

Because Southern California is a region with multiple airports that have overlapping catchment areas, travelers to and from the region can choose among several airports for their needs. Predicting future traffic levels at individual airports cannot be done in isolation and must consider the trends and dynamics occurring at other regional airports.

Therefore, to develop the projections of future activity, a forecast methodology has been adopted that blends a macro-economic forecast model relating historic passenger traffic to key socioeconomic variables for the entire SCAG region, with a traffic allocation model that allocates traffic across the individual airports based on factors that are known to drive a passenger's preference for a certain airport.

HISTORICAL COMMERCIAL PASSENGER TRAFFIC DEVELOPMENT

As illustrated in **FIGURE 1**, aggregate historic passenger traffic at the SCAG region airports increased from 63.0 million annual passengers in 1990 to 88.0 million annual passengers in 2013, equivalent to a compound annual growth rate of 1.5 percent. In the last decade of the 20th century, traffic at the SCAG region airport system experienced a faster growth than had occurred over 1975-1990. In the period between 1990 and 2000, passenger traffic increased at an average growth rate of 3.4 percent, reaching a high of 88.7 million annual passengers in 2000. Following the terrorist attacks of September 11, 2001, the number of passengers decreased significantly. A softening economy in combination with tightened airport security measures led to weakened demand conditions and a decline in passenger traffic. Only in 2007, when the airports in the SCAG region handled 89.4 million passengers, did traffic finally exceed the previous high achieved in 2000. The recovery did not last long though, as the global financial crisis of 2007 had a profound impact on the air transport market in the United States, particularly California, where the housing crisis was severe. As a result, traffic numbers decreased to 79.0 million passengers in 2009, before demand conditions gradually improved again.

Throughout the historic period reviewed, the domestic market accounted for the majority of origin and destination (O&D) traffic at the SCAG region airports. Although the international segment gained importance, domestic O&D traffic in 2013 still accounted for 73.4 percent of total O&D traffic, compared to 80.4 percent in 1990. In addition to O&D traffic, the airport system in the SCAG region also handles a substantial amount of connecting traffic. The share of connecting passengers at the airports in the SCAG region has hovered around 17 percent of total enplaned and deplaned (E/D) passengers during the historic period reviewed.

AIRPORT PROFILES

Los Angeles International Airport (LAX) is the busiest airport located in the SCAG region in terms of passenger volume. As illustrated in **FIGURE 2**, LAX handled nearly three quarters of all commercial passenger traffic in the SCAG region in 2012. John Wayne Airport (SNA), located in Orange Country, is the second busiest airport, followed by LA/Ontario International Airport and Burbank Bob Hope Airport. See the following pages for profiles of the six major airports in the SCAG region that currently have commercial service.

FIGURE 1 Historic Traffic Development SCAG Region Airports

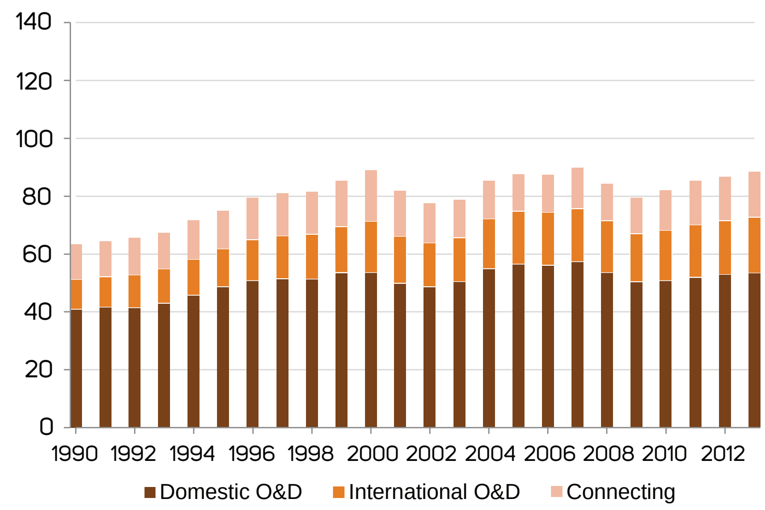
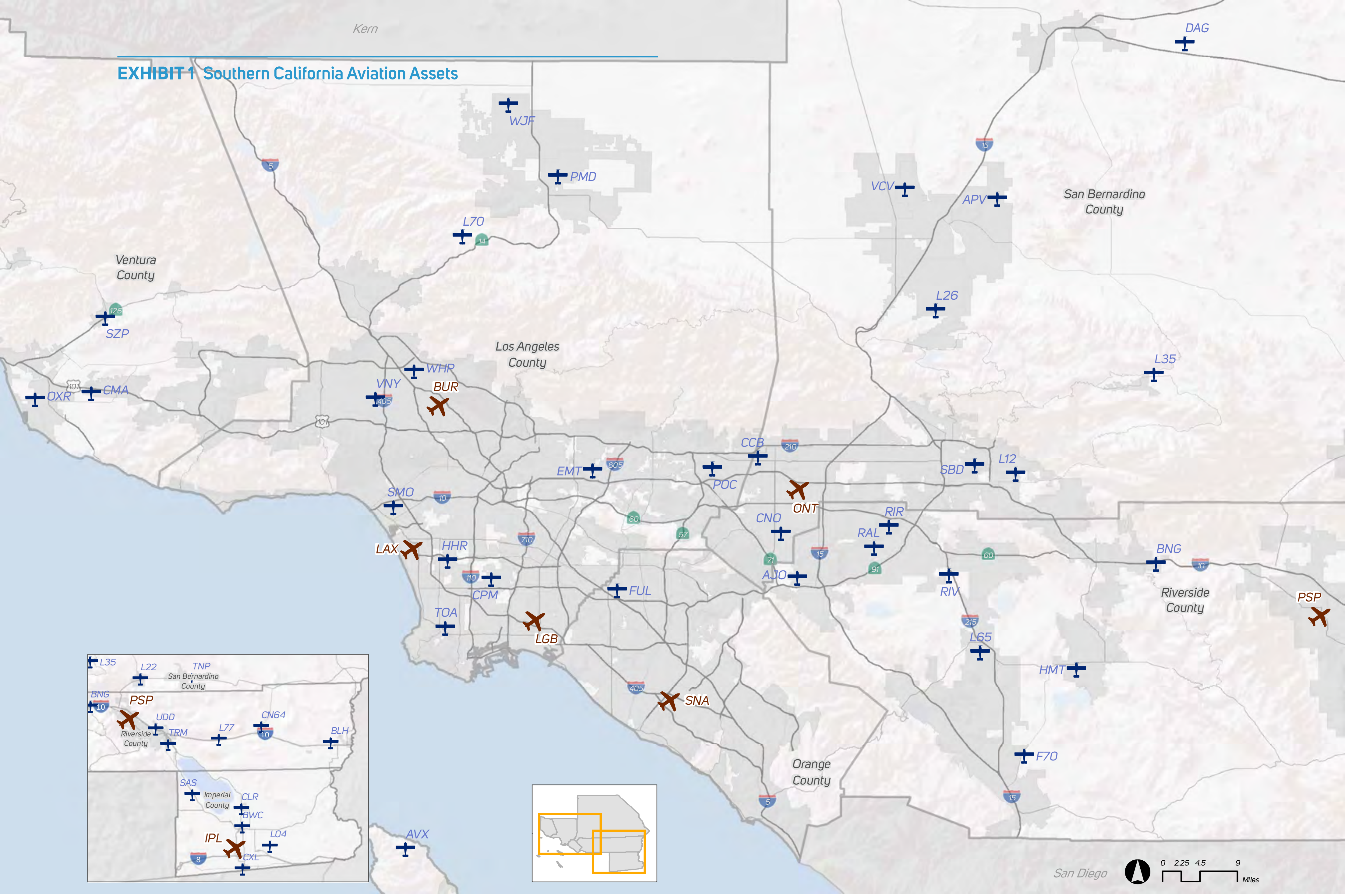


EXHIBIT 1 Southern California Aviation Assets



Airports with scheduled service

All other airports

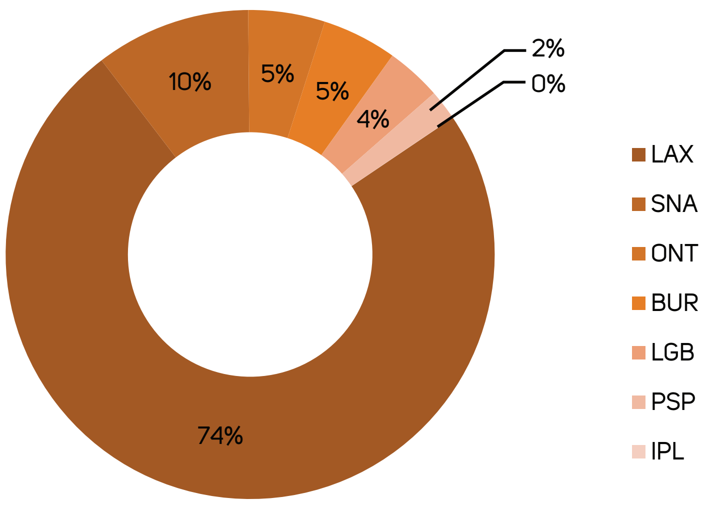
Source: SCAG, 2015

TABLE 1 Airport Identifier Codes

Airport Code	Airport Name
L70	Agua Dulce Airpark
APV	Apple Valley Airport
002	Baker Airport
BNG	Banning Municipal Airport
DAG	Barstow-Daggett Airport
UDD	Bermuda Dunes Airport
L35	Big Bear City Airport
BLH	Blythe Airport
BUR	Bob Hope Airport, Burbank
POC	Brackett Field, La Verne
BWC	Brawley Municipal Airport
CCB	Cable Airport
CXL	Calexico International Airport
CMA	Camarillo Airport
AVX	Catalina Airport
49X	Chemehuevi Valley Airport
CNO	Chino Airport
L77	Chiriaco Summit Airport
CLR	Cliff Hatfield Memorial Airport, Calipatria
CPM	Compton/Woodley Airport
AJO	Corona Municipal Airport
CN64	Desert Center Airport, Palm Desert
RIR	Flabob Airport, Riverside
F70	French Valley Airport
FUL	Fullerton Municipal Airport
WJF	General William J. Fox Airfield, Lancaster
HHR	Hawthorne Municipal Airport
HMT	Hemet-Ryan Airport
L26	Hesperia Airport

Airport Code	Airport Name
IPL	Imperial County Airport
TRM	Jacqueline Cochran Regional Airport, Thermal
SNA	John Wayne Orange County Airport
LGB	Long Beach Airport
LAX	Los Angeles International Airport
RIV	March Air Reserve Base (March Inland Port)
EED	Needles Airport
ONT	Ontario International Airport
OXR	Oxnard Airport
PSP	Palm Springs International Airport
PMD	Palmdale Regional Airport
L65	Perris Valley Airport
L12	Redlands Municipal Airport
RAL	Riverside Municipal Airport
SAS	Salton Sea Airport
SBD	Sam Bernardino International Airport
EMT	San Gabriel Valley Airport
SMO	Santa Monica Airport
SZP	Santa Paula Airport
VCV	Southern California Logistics Airport, Victorville
TNP	Twenty Nine Palms Airport
VNY	Van Nuys Airport
WHP	Whiteman Airport, Pacoima
L22	Yucca Valley Airport
TOA	Zamperini Field, Torrance

FIGURE 2 Market Share of Commercial Airports in 2012



SOCIO-ECONOMIC OVERVIEW

INTRODUCTION

Demand for air travel is derived from socioeconomic interactions between origin and destination markets. Local economic activities generate the need for air travel, while the personal wealth of the local population drives discretionary spending, such as leisure trips requiring air travel. Additionally, an ethnically diverse region home to a significant number of foreign-born residents, such as Southern California, generates demand for air travel internationally, as friends and relatives maintain close ties.

There is a proven close relationship between economic activity and annual traffic growth. This relationship is illustrated in **FIGURE 3**, which shows the passenger traffic growth in the United States between 1990 and 2013 compared to overall economic growth. As the figure illustrates, air traffic activity trends upward with positive economic growth, and trends downward with negative or flat source-country economic growth. Passenger traffic in Southern California also has a high correlation to economic activity in the local market and its major source markets.

Comparatively speaking, air transport is one of the market sectors with the longest product life cycles as a result of high capital investment costs. During these lengthy life cycles, the relevant economic, social and political environment will change considerably.

FIGURE 3 Relationship Between Air Travel and Economy

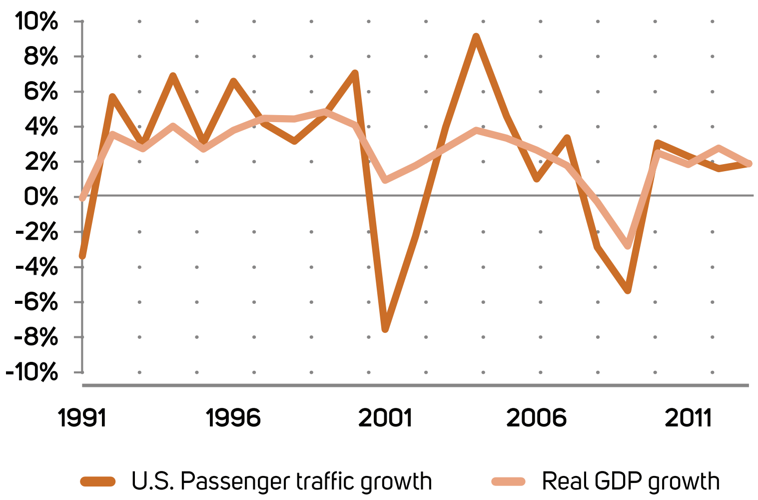
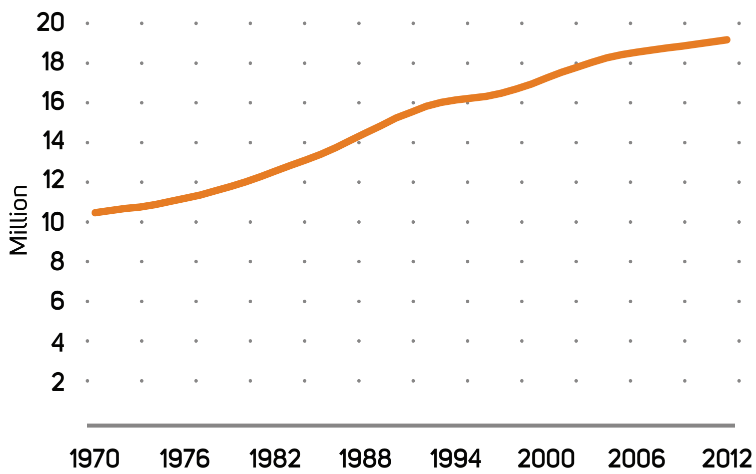
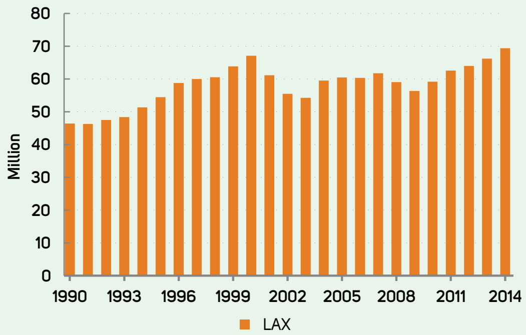
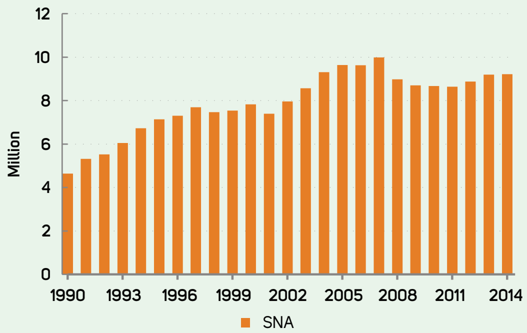


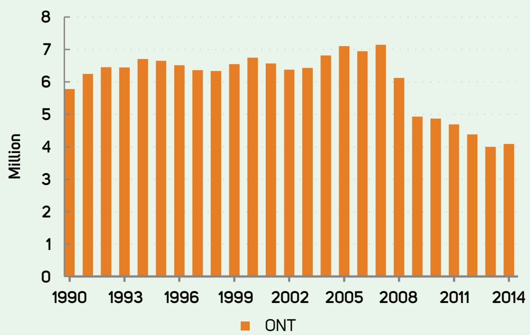
FIGURE 4 Histroical Population Development in Southern California



AIRPORT PROFILES







LOS ANGELES INTERNATIONAL AIRPORT

Following a decade of continuous growth in the nineties, passenger traffic at LAX is still recovering from the impact of subsequent exogenous shocks, including 9/11 and the global financial crisis. Passenger traffic in 2014 was up 6% compared to the previous year; the total of 70.66 million annual passengers was the first time the airport exceeded the previous high of 67.1 million attained in 2000.

Los Angeles International Airport is the primary airport serving the Greater Los Angeles Area and is a hub for the major US legacy carriers American Airlines, Delta, and United, in addition to Alaska Airlines and Virgin America.

Besides serving an extensive domestic network, LAX is also a key international gateway, with flights to six continents, and is also a major cargo airport.

JOHN WAYNE AIRPORT

John Wayne Airport is located in unincorporated Orange County, near the cities of Santa Ana, Irvine, Newport Beach and Costa Mesa. The airport is the second busiest airport in the SCAG region.

Passenger traffic at the airport has been more resilient to exogenous shocks than the other airports in the area. Demand recovered quickly after 9/11; however, the global financial crisis negatively affected demand for air travel in Orange County. Total passenger traffic in 2014 was 9.2 million, below the high of 10.0 million in 2007.

In 2014, Southwest was the largest carrier operating at the airport, followed by United, American, Delta, Alaska Airlines, and US Airways. The air service pattern is mostly focused on cities in western United States as well as the main hubs of the legacy airlines.

LA/ONTARIO INTERNATIONAL AIRPORT

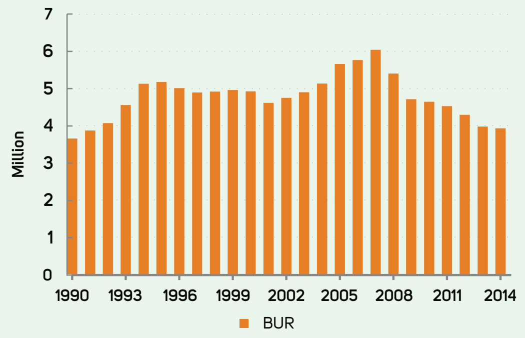
LA/Ontario International Airport is located in Ontario in San Bernardino County. Los Angeles World Airports (LAWA) owns and operates the airport today. LAWA has agreed to terms and conditions for the transfer of the airport in the coming months to a new airport sponsor, the Ontario International Airport Authority (OIAA) , pending review and approval by the Federal Aviation Administration (FAA).

Following the global financial crisis, passenger traffic at the airport dropped sharply from 7.1 million in 2007 to just under 4 million in 2013. Passenger traffic increased by 3.4% between 2013 and 2014.

In 2014, Southwest was the largest carrier operating at the airport. The air service pattern is mostly focused on cities in western United States as well as the main hubs of the legacy airlines.

The airport is also a major cargo hub for UPS, facilitated by its geographic position, long runways, and relatively limited noise restrictions allowing for 24/7 operations.

AIRPORT PROFILES

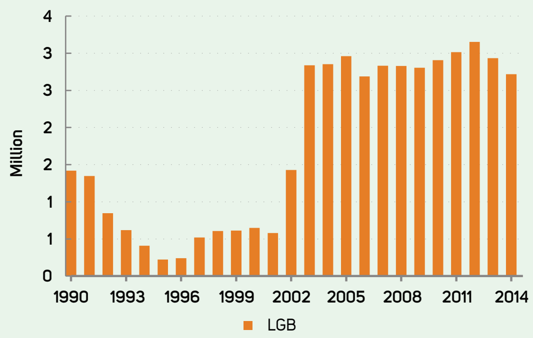


BURBANK BOB HOPE AIRPORT

Bob Hope Airport is located northwest of downtown Burbank in Los Angeles County, serving the northern part of the Greater Los Angeles Area.

In recent years, passenger traffic at the airport has significantly declined from 6.0 million passengers in 2007 to 3.9 million passengers in 2014.

Southwest is the largest airline operating at the airport, serving mainly cities in the western United States.

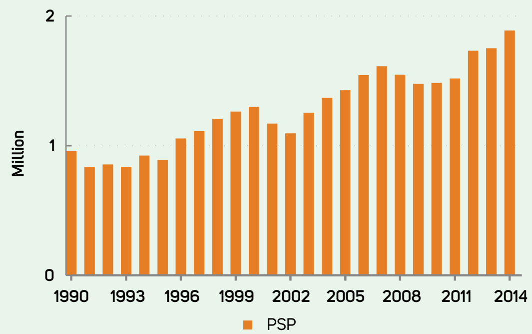


LONG BEACH AIRPORT

Long Beach Airport is located northeast of the city of Long Beach in Los Angeles County.

The arrival of low-cost carrier JetBlue in 2001 led to a rapid increase in air traffic, and solidified LGB's position as an alternative to LAX for flights to the East Coast.

Due to stringent noise restrictions, the number of daily slots is currently restricted to 41, of which JetBlue operates 31. As a result of the local noise compatibility ordinance, traffic levels have been relatively steady, hovering around 3 million annual passengers. It is anticipated that the City of Long Beach will soon allow an additional 9 commercial departures per day based on the terms of the ordinance (for a total of 50 daily commercial departures) .



PALM SPRINGS INTERNATIONAL AIRPORT

Palm Springs International Airport is located in the desert resort city of Palm Springs in the Coachella Valley in Riverside County. The airport mainly caters to seasonal leisure travelers visiting the area during the winter.

Except for a few setbacks following the events of 9/11 as well as the global financial crisis, passenger traffic at the airport has increased steadily. In 2014 the airport handled 1.9 million passengers, which was a 9% increase compared to the previous year.

The main US carriers, such as United, Alaska, Southwest, and American all operate at PSP. Some carriers only provide service during the peak season.

AIRPORT PROFILES

IMPERIAL COUNTY AIRPORT

Imperial County Airport is located in the city of Imperial in Imperial County, approximately twelve miles north of the California-Mexico border. The airport provides limited scheduled air service and also serves the general aviation needs of the surrounding communities.

Imperial County Airport is currently part of the Essential Air Service (EAS) program through the United States Department of Transportation, providing the residents of Imperial County a connection to the national aviation system. Passenger traffic peaked in 2001, with approximately 30,000 annual passengers, before gradually decreasing following the events of 9/11. Traffic began rebounding in 2006 before declining again after the global financial crisis. The airport participates in the federal Essential Air Service (EAS) program, which subsidizes air service to eligible small community airports.

Such change affects the expected trends in traffic growth, and these market dynamics profoundly influence air carrier decisions on fleet and network expansion, which in turn affect airport developments. Given their relevance to air travel trends and developments, the following subsections highlight the socioeconomic conditions in the region.

POPULATION

The population of the SCAG region was about 18.2 million in 2012, as shown in **FIGURE 4**. Since 1970, population has increased at an average annual growth rate of 1.4 percent, although the average growth rate slowed down to 0.9 percent over the decade between 2002 and 2012. This rate of growth is not excessive, indicating that it is sustainable with appropriate investments in the economy. From 2013 to 2040, the population growth is projected to slow down even further to an average rate of 0.7 percent per year, which is consistent with the growth rates that have been experienced in recent years. A growing population drives the potential pool of travelers and is an indicator for future demand levels.

Historically, population growth in California as well as Southern California has outpaced national population growth, as illustrated in **FIGURE 5**. The diverse and large economies, proximity to the coast, and heavily-populated metropolitan areas have attracted a large share of immigrants from other states as well as other nations. Since 2004, however, the trend has reversed, and the country's overall population has increased at a faster rate than the population in the SCAG region.

ECONOMY

As shown in **FIGURE 6**, the economy of California has experienced a somewhat cyclical growth pattern over the past decades. Slow growth during the 1990s recession was followed by an accelerated growth leading to the peak of the dot-com bubble in 2000. During this phase, the growth of the Californian economy actually outpaced national economic growth. While the economy recovered following the dot-com bust in 2001, the financial crisis led to another contraction of the region's economic output. While the region took a very hard hit during the global financial crisis, overall growth in Southern California is pointing toward continued economic recovery and progress.

REGIONAL AIR PASSENGER DEMAND FORECAST

INTRODUCTION

Air travel is a derived demand. Demand for air transportation between origin and destination markets is derived from the socioeconomic interactions between these markets, shaped by carriers' networks and available airlift capacity. Generally, business/trade activity, tourism/visitor activity, and "visiting friends and relatives" (VFR) constitute the primary components of air travel at an airport.

FIGURE 5 Historical Population Development in Southern California, California, and the United States

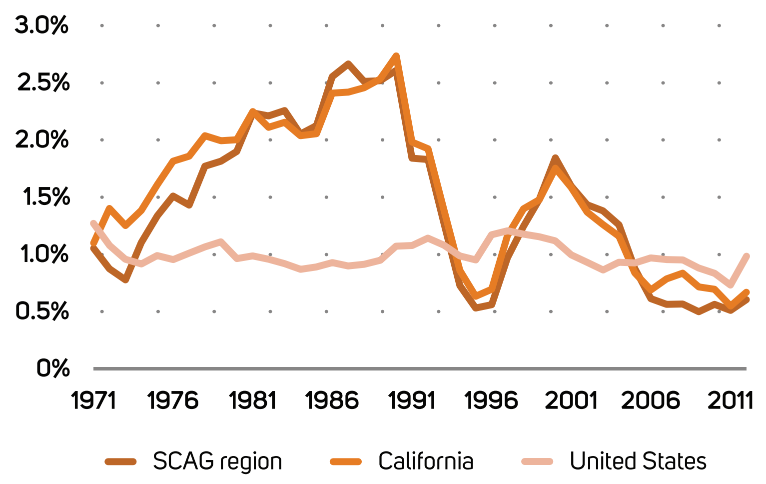
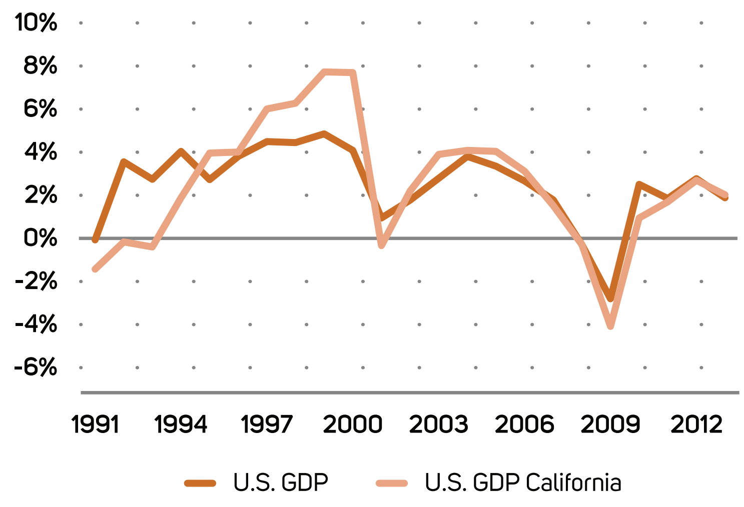


FIGURE 6 Historical Development of California and the United States Gross Domestic Product in Real Terms

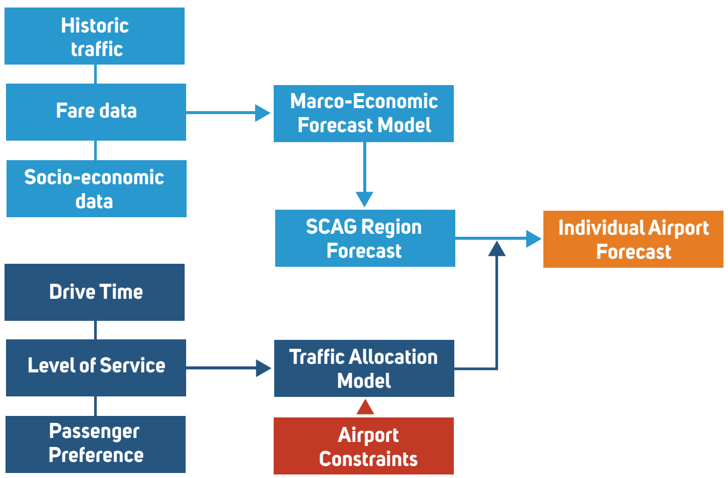


Dependable forecasting practice requires awareness of the uncertainties surrounding the forecasts. Considerable effort has been devoted to analyzing the factors affecting traffic activity at the airports in the SCAG region. However, as with any forecasts, there are uncertainties regarding these factors, such as the outlook for the local and world economies and the structure of the airline industry. A pragmatic and yet systematic approach has been used to produce a set of unbiased aviation activity forecasts for the region's airports.

As mentioned earlier, Southern California is a region with multiple airports that have overlapping catchment areas. Therefore, travelers to and from the region have the option to choose among several airports for their needs. Predicting future traffic levels at individual airports cannot be done in isolation and must consider the trends and dynamics occurring at other airports in the region. Since the catchment areas of the airports of San Diego, Carlsbad and Santa Barbara also overlap with the SCAG region, they have also been considered in the analysis.

To develop the projections of future activity, a forecast methodology has been adopted that blends a macro-economic forecast model relating historic passenger traffic to key socioeconomic variables for the entire SCAG region, with a traffic allocation model that allocates traffic across the individual airports based on factors that are known to drive a passenger's preference for a certain airport. The methodology is illustrated in **EXHIBIT 2**. For intra-California and short-haul domestic travel the model incorporates price and time competitiveness with other modes of travel, such as driving, conventional rail and High Speed Rail. The following sections elaborate upon the methodology used in each step of the forecasting process. The resulting forecasts are presented after the discussion of the methodology.

EXHIBIT 2 Forecast Methodology



DOMESTIC O&D TRAFFIC

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, domestic air passenger traffic to the region was divided into three key domestic market segments.

- Intra-California;
- Short-haul; and
- Medium-Long haul

The forecasting team investigated linear and logarithmic regression models before settling on a log-log specification. Log-log transformed models are typically used in air traffic forecasting, because taking the natural logarithm of the variables improves the model fit, and it also allows the regression coefficients to be easily interpreted as an elasticity, e.g. a 1 percent change in GDP is associated with a proportional percentage change in passenger traffic.

The following sections elaborate on the forecast methodology that was used for each domestic market segment.

INTRA-CALIFORNIA O&D TRAFFIC

To prepare the O&D passenger forecast for the Intra-California market segment the following approach was used:

1. Through an econometric modeling approach, the historic Intra-California O&D passenger traffic to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to the historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. Using the regression analysis, the Gross Regional Product of California (in real terms) and airfares proved to be the variables that best explain the development of Intra-California passenger traffic between 1990 and 2000. The regression analysis produced an R^2 value of 0.89, indicating that these variables are expected to serve as reliable

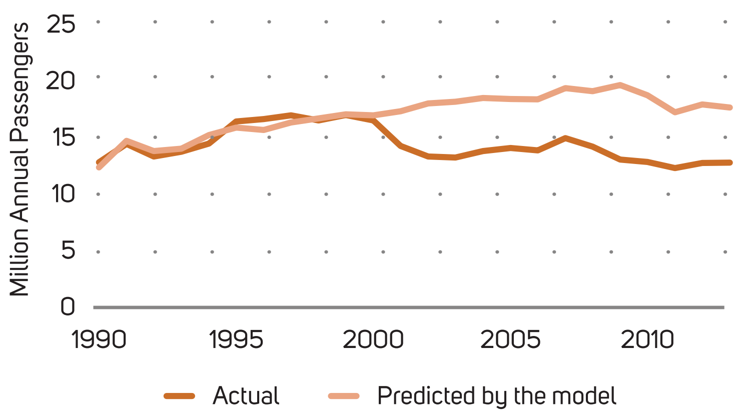
predictors of future traffic development. The tightened security measures post 9/11 significantly increased passenger processing times at airports throughout the country and forced travelers to show up at the airport considerably earlier than before. Especially on short routes within California, the impact of the increased processing times had a relatively large impact on the total trip time. Road transport became a viable alternative, and, consequently, demand for air travel within California declined. This development is also illustrated in **FIGURE 7**, which shows the fit of the values generated by the regression model in comparison with actual historic traffic levels. After the events of 9/11, intra-California O&D passenger traffic dropped significantly until bottoming out in 2003. While the change in passenger behavior post 9/11 could not be anticipated by the regression model, the values produced by the model continue to follow a similar trend as actual traffic, and the model therefore remains a reliable predictor of future intra-California traffic levels, albeit it at a higher level. The difference between the values produced by the regression model and the actual values can be interpreted as a fair representation of the amount of passenger traffic that switched to other modes of transport.

3. The final model for Intra-California O&D traffic can be described by the following equation:

Ln(Intra-California Traffic) = c1 + c2 * Ln(Real California GDP) + c3 * Ln(Real Intra-California Fares) where:

- Ln is the natural log of the variable
- Intra-California traffic is O&D traffic within California

FIGURE 7 Goodness-of-fit Intra-California Traffic Model



- Real California GDP is the Gross Regional Product of California adjusted for inflation
- Real Intra-California Fares are the fares on Intra-California routes in real U.S. dollars
- c1, c2, and c3 are the estimated model parameters capturing the impact of various factors on Intra-California traffic growth

The econometric model describing intra-California traffic resulted in the following values for the dominant parameters, or elasticities:

- GDP elasticity of 0.54
- Air Fare coefficient of -0.56

Considerable research (e.g., Air Travel Demand Elasticities: Concepts, Issues and Measurement, D. Gillen, W.G. Morrison and C. Stewart, 2002) has established a positive relationship between economic growth or income growth and air travel. In many cases, demand for air travel grows at a rate higher than that of the economy, so that each one-percent increase in GDP results in air traffic growth of 1 percent to 2 percent. However, as markets mature, GDP elasticity tends to decline – further GDP growth has a smaller impact on air travel growth. The United States tends to have relatively low elasticities between economic growth and air travel demand. Domestic U.S. air travel demand is often recognized to have an elasticity ratio to economic growth of 1 to 1. In contrast, a developing economy with travel to long-haul destinations may have elasticities exceeding 2 to 1. The regression results indicate a GDP parameter typical for a mature market such as within California: each one percent increase in GDP results in a 0.54 percent increase in traffic.

Research on air fare elasticities have produced values of between -0.2 and -2.0 (for example, see http://www.iata.org/whatwedo/Documents/economics/Intervistas_Elasticity_Study_2007.pdf). The fare elasticity estimates produced by the model fall within that range. Fare elasticities are affected by a range of factors, such as competition dynamics, income levels, and market maturity. The domestic model shows a moderate sensitivity to fare changes.

4. Using forecasts of the California Real Gross Domestic Product and a forecast of real air fares, future domestic forecast levels could be generated. Since 1945, airline yields and fares have declined on an almost continual basis. Between 1990 and 2008, U.S. system-wide yields declined by an average of 2.4 percent per annum . This decline has been the result of technological improvement, increasing load factors, and strong competition, particularly from low cost carriers. Much of this is the consequence of deregulation both within the U.S. and with international jurisdictions (e.g., open skies agreements). However, in recent years, yields in the U.S. have increased slightly, the result of high fuel prices and, more recently,

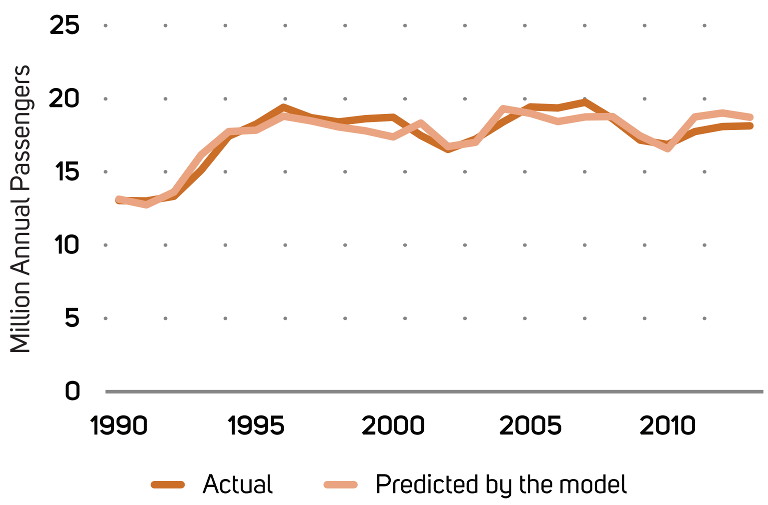
capacity restraint by U.S. carriers. It is assumed that these factors offset each other and air fares remain constant in real terms over the forecast period.

DOMESTIC SHORT-HAUL O&D TRAFFIC

To prepare the O&D passenger forecast for the domestic short-haul market segment the following approach was used:

1. Through an econometric modeling approach, the historic domestic short-haul O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The regression analysis identified the real Gross Regional Product of the short-haul markets in combination with fares as reliable predictors of short-haul domestic passenger traffic between 1990 and 2013. The regression analysis produced an R^2 value of 0.90. **FIGURE 8** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to short-haul domestic markets.
3. The final model for Domestic Short-Haul O&D traffic can be described by the following equation:

FIGURE 8 Goodness-of-fit Domestic Short-Haul Traffic Model



Ln(Domestic Short-Haul Traffic) = c1 + c2 * Ln(Real Domestic Short-Haul GDP) + c3 * Ln(Real Domestic Short-Haul Fares) + c4 * dummyGulf War + c5 * dummy9/11 + c6 * dummyGlobal Financial Crisis where:

- Ln is the natural log of the variable
- Domestic Short-Haul Traffic is O&D traffic to domestic short-haul markets
- Real Domestic Short-Haul GDP is the Gross Regional Product of domestic short-haul markets adjusted for inflation
- Real Domestic Short-Haul Fares are the fares to domestic short-haul markets in real U.S. dollars
- DummyGulf War is a binary variable that takes on the value 1 in 1991 and 1992 and is 0 otherwise to represent the tempoarary impact of the Gulf War on traffic;
- Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
- DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
- c1, c2, c3, c4, c5, and c6 are the estimated model parameters capturing the impact of various factors on domestic short-haul traffic growth

The econometric model describing domestic short-haul traffic resulted in the following values for the dominant parameters, or elasticities:

- GDP elasticity of 0.20
- Air Fare coefficient of -0.70

4. Using forecasts of the Real Gross Regional Product of the short-haul markets and a forecast of real air fares, future forecast levels could be generated.

DOMESTIC MEDIUM-TO LONG-HAUL O&D TRAFFIC

To prepare the O&D passenger forecast for the domestic medium- to long-haul markets the following approach was used:

1. Through an econometric modeling approach, the historic domestic medium- to long-haul O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.

2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Regional Product of the combined medium- and long-haul markets, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.97. **FIGURE 9** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to domestic medium-to long-haul markets.
3. The final model for Medium- to Long-Haul Domestic O&D traffic can be described by the following equation:

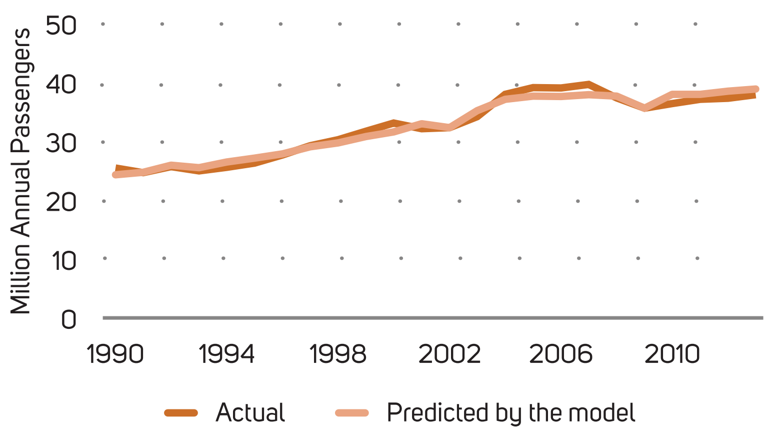
   Ln(Domestic Medium- to Long-Haul Traffic) = c1 + c2 * Ln(Real Domestic Medium- to Long-Haul GDP) + c3 * Ln(Real Domestic Medium- to Long-Haul Fares) + c4 * dummy9/11 + c5 * dummyGlobal Financial Crisis where:

   - Ln is the natural log of the variable
   - Domestic Medium- to Long-Haul Traffic is O&D traffic to domestic medium-to long-haul markets
   - Real Domestic Medium- to Long-Haul GDP is the Gross Regional Product of domestic medium- to long-haul markets adjusted for inflation
   - Real Domestic Medium- to Long-Haul Fares are the fares to domestic medium- to long-haul markets in real U.S. dollars
   - Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
   - DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
   - c1, c2, c3, c4, and c5 are the estimated model parameters capturing the impact of various factors on domestic medium- to long-haul traffic growth

   The econometric model describing domestic medium- to long-haul traffic resulted in the following values for the dominant parameters, or elasticities:

   - GDP elasticity of 0.65
   - Air Fare coefficient of -0.25
4. Using forecasts of the Real Gross Regional Product of the medium- to long-haul markets and a forecast of real air fares, future forecast levels could be generated.

FIGURE 9 Goodness-of-fit Medium- to Long-Haul Domestic Traffic Model



INTERNATIONAL O&D TRAFFIC

Similar to the domestic O&D market, the international O&D market has also been divided into different market segments, based on the characteristics and dynamics of each 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 international market segments.

- Asia and Oceania
- Canada and Greenland
- Mexico, Central America and the Caribbean
- South America
- Trans-Atlantic (Africa, Europe and the Middle East)

The following sections elaborate on the forecast methodology that was used for each international market segment.

ASIA/OCEANIA O&D MARKET

To prepare the O&D passenger forecast for the Asia/Oceania O&D market, the following approach was used:

1. Through an econometric modeling approach, the historic Asia/Oceania O&D passenger traffic development to the SCAG region airports, including the airports of

San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.

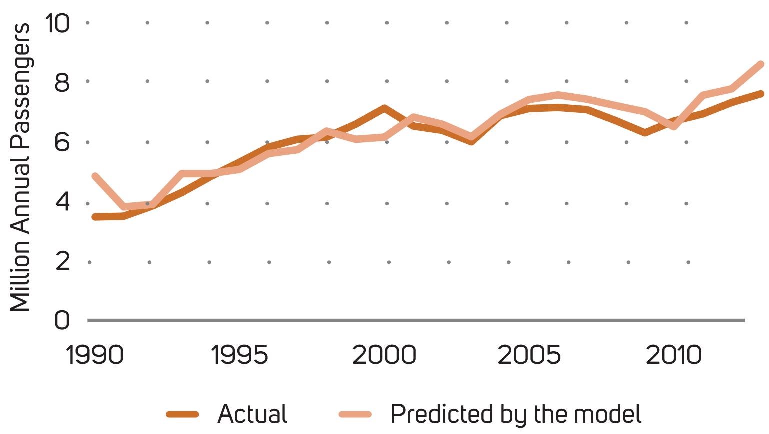
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Domestic Product of the Asia and Oceania markets, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.86. **FIGURE 10** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to Asia and Oceania.

3. The final model for Asia/Oceania O&D traffic can be described by the following equation:

   Ln(Asia/Oceania Traffic) = c1 + c2 * Ln(Real Asia/Oceania GDP) + c3 * Ln(Real Asia/Oceania Fares) + c4 * dummy9/11 + c5 * dummyGlobal Financial Crisis + c6 * dummySARS where:

   - Ln is the natural log of the variable
   - Domestic Asia/Oceania Traffic is O&D traffic to Asia/Oceania
   - Real Asia/Oceania GDP is the Gross Domestic Product of Asia/Oceania adjusted for inflation
   - Real Asia/Oceania Fares are the fares to Asia and Oceania markets in real U.S. dollars

FIGURE 10 Goodness-of-fit Asia/Oceania Traffic Model



   - Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
   - DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
   - DummySARS is a a binary variable that takes on the value 1 in 2003 and is 0 otherwise to reflect the impact of SARS (Severe Acute Respiratory Syndrome) on traffic;
   - c1, c2, c3, c4, c5, and c6 are the estimated model parameters capturing the impact of various factors on Asia/Oceania traffic growth
   - The econometric model describing Asia/Oceania O&D traffic resulted in the following values for the dominant parameters, or elasticities:
   - GDP elasticity of 0.38
   - Air Fare coefficient of -0.96

4. Using forecasts of the Real Gross Domestic Product of Asia and Oceania and a forecast of real air fares, future forecast levels could be generated.

CANADA/GREENLAND O&D MARKET

To prepare the O&D passenger forecast for the Canada/Greenland O&D market the following approach was used:

1. Through an econometric modeling approach, the historic Canada/Greenland O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Regional Product of the California, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.95. **FIGURE 11** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to Canada and Greenland.
3. The final model for Canada/Greeneland O&D traffic can be described by the following equation:

Ln(Canada/Greenland Traffic) = c1 + c2 * Ln(Real California GDP) + c3 * Ln(Real Canada/Greenland Fares) + c4 * dummy9/11 + c5 * dummyGlobal Financial Crisis where:

- Ln is the natural log of the variable
- Domestic Canada/Greenland Traffic is O&D traffic to Canada/Greenland
- Real Canada/Greenland GDP is the Gross Domestic Product of California adjusted for inflation
- Real Canada/Greenland Fares are the fares to Canada and Greenland markets in real U.S. dollars
- Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
- DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
- c1, c2, c3, c4, and c5 are the estimated model parameters capturing the impact of various factors on Canada/Greenland traffic growth

The econometric model describing Canada/Greenland O&D traffic resulted in the following values for the dominant parameters, or elasticities:

- GDP elasticity of 0.54
- Air Fare coefficient of -0.91

4. Using forecasts of the Real Gross Domestic Product of Canada and Greenland and a forecast of real air fares, future forecast levels could be generated.

MEXICO/CENTRAL AMERICA/CARIBBEAN O&D MARKET

To prepare the O&D passenger forecast for the Mexico/Central America/Caribbean O&D market the following approach was used:

1. Through an econometric modeling approach, the historic Mexico/Central America/Caribbean O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Regional Product of the California, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.93. **FIGURE 12** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic

FIGURE 11 Goodness-of-fit Canada/Greenland Traffic Model

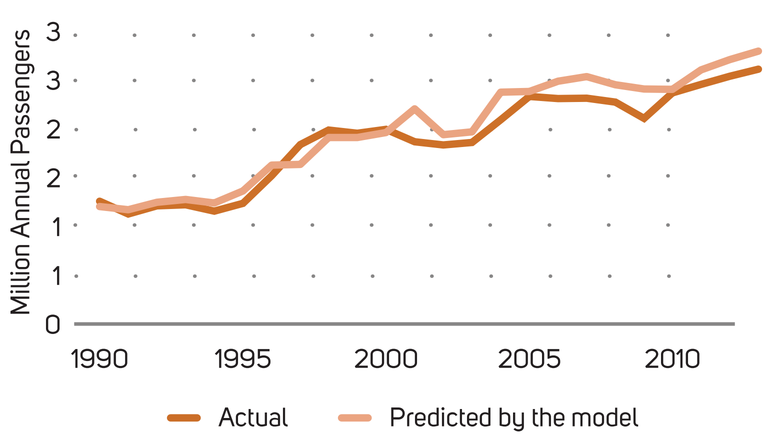
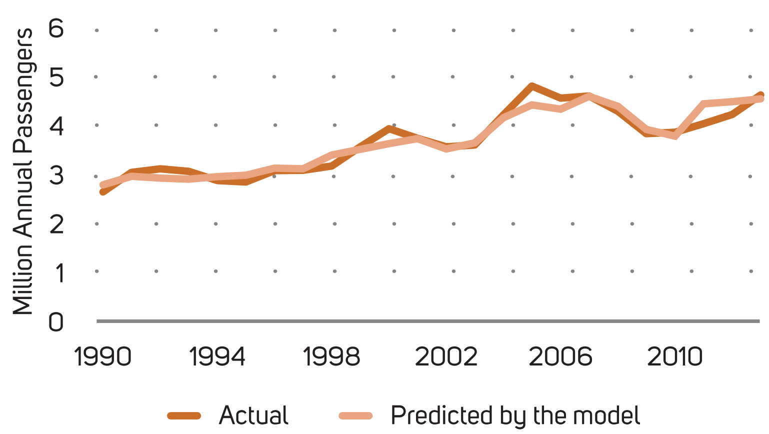


FIGURE 12 Goodness-of-fit Mexico/Central America/Caribbean Traffic Model



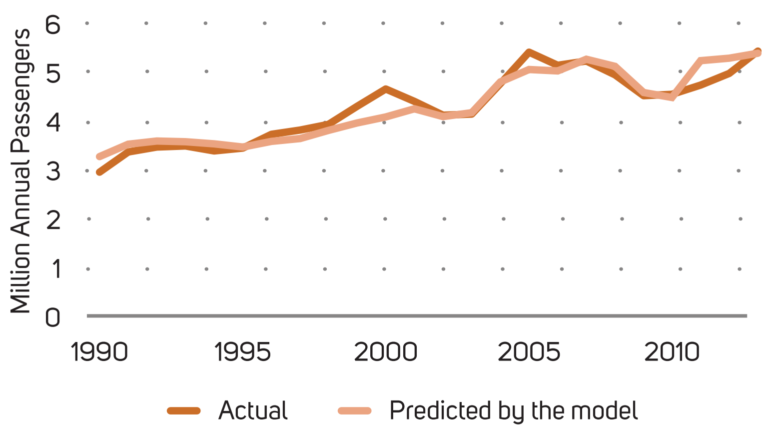
levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to Mexico, Central America, and the Caribbean.

3. The final model for Mexico/Central America/Caribbean O&D traffic can be described by the following equation:

   Ln(Mexico/Central America/Caribbean Traffic) = c1 + c2 * Ln(Real California GDP) + c3 * Ln(Real Mexico/Central America/Caribbean Fares) + c4 * dummy9/11 + c5 * dummyGlobal Financial Crisis where:

   - Ln is the natural log of the variable
   - Domestic Mexico/Central America/Caribbean Traffic is O&D traffic to Mexico/Central America/Caribbean
   - Real Mexico/Central America/Caribbean GDP is the Gross Domestic Product of California adjusted for inflation
   - Real Mexico/Central America/Caribbean Fares are the fares to Canada and Greenland markets in real U.S. dollars
   - Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
   - DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;

FIGURE 13 Goodness-of-fit Latin America Traffic Model



   - c1, c2, c3, c4, and c5 are the estimated model parameters capturing the impact of various factors on Mexico/Central America/Caribbean traffic growth

   The econometric model describing Mexico/Central America/Caribbean O&D traffic resulted in the following values for the dominant parameters, or elasticities:

   - GDP elasticity of 0.48
   - Air Fare coefficient of -0.64

4. Using forecasts of the Real Gross Domestic Product of Mexico, Central America, and the Caribbean and a forecast of real air fares, future forecast levels could be generated.

SOUTH AMERICA O&D MARKET

While O&D traffic to South America has shown robust growth rates over the past decades, the traffic volumes are still too modest to produce meaningful and reliable macro-economic models. Since a significant share of O&D traffic to South America flows through one of the hubs in Central America, such as Panama or Mexico City, O&D traffic to South America will be influenced by the available capacity to Mexico and Central America. The South America market is therefore combined with the Mexico/Central America/Caribbean market into an aggregate Latin America market segment.

To prepare the O&D passenger forecast for the South America O&D market the following approach was used:

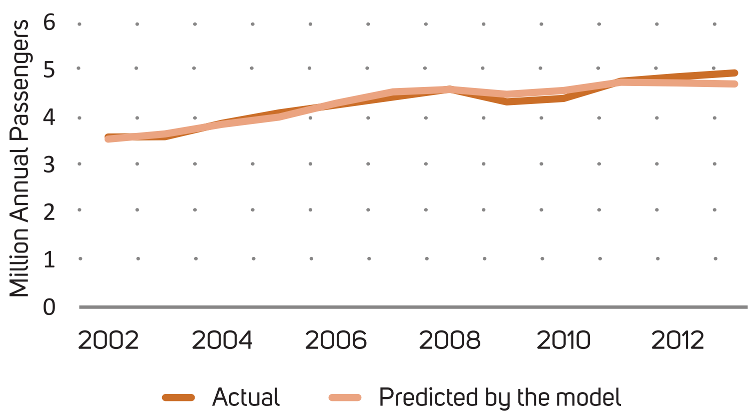
1. Through an econometric modeling approach, the historic Latin America O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Domestic Product of the Latin America countries, in combination with fares, show the best fit with the historic passenger traffic development between 1990 and 2013. The regression analysis produced an R^2 value of 0.90. **FIGURE 13** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to Latin America.
3. The final model for Latin America O&D traffic can be described by the following equation:

Ln(Latin America Traffic) = c1 + c2 * Ln(Real Latin America GDP) + c3 * Ln(Real Latin America Fares) + c4 * dummy9/11 + c5 * dummyGlobal Financial Crisis where:

- Ln is the natural log of the variable
- Domestic Latin America Traffic is O&D traffic to Latin America
- Real Latin America GDP is the Gross Domestic Product of the Latin American countries adjusted for inflation
- Real Latin America Fares are the fares to Canada and Greenland markets in real U.S. dollars
- Dummy9/11 is a binary variable that takes on the value 1 in 2002 and 2003 and is 0 otherwise to represent the immediate impact of the September 11th events on traffic;
- DummyGlobal Financial Crisis is a binary variable that takes on the value 1 in 2009 and 2010 and is 0 otherwise to represent the impact of the global financial crisis on traffic;
- c1, c2, c3, c4, and c5 are the estimated model parameters capturing the impact of various factors on Latin America traffic growth

The econometric model describing Latin America O&D traffic resulted in the following values for the dominant parameters, or elasticities:

FIGURE 14 Goodness-of-fit Trans-Atlantic Traffic Model



- GDP elasticity of 0.46
- Air Fare coefficient of -0.54

4. Using forecasts of the Real Gross Domestic Product of Mexico, Central America and the Caribbean and a forecast of real air fares, future forecast levels could be generated.
5. Apply the growth rates of the resulting Latin America traffic model to the actual South America O&D traffic levels

TRANS-ATLANTIC O&D MARKET

To prepare the O&D passenger forecast for the Trans-Atlantic O&D market the following approach was used:

1. Through an econometric modeling approach, the historic Trans-Atlantic O&D passenger traffic development to the SCAG region airports, including the airports of San Diego, Carlsbad and Santa Barbara, has been related to historic development of various socio-economic variables such as the economic growth in the region, population, per capita incomes, fare levels, crude oil prices and others.
2. A regression analysis has been performed to identify the variables that have the strongest correlation with the historic traffic development. The real Gross Domestic Product of Europe, in combination with fares, show the best fit with the historic passenger traffic development between 2002 and 2013. The regression analysis produced an R^2 value of 0.94. **FIGURE 14** shows the excellent fit of the values generated by the regression model in comparison with actual historic traffic levels. The model is therefore deemed to be a reliable predictor of future O&D traffic to the Trans-Atlantic markets.
3. The final model for Trans-Atlantic O&D traffic can be described by the following equation: **Ln(Trans-Atlantic Traffic) = c1 + c2 * Ln(Real Europe GDP) + c3 * Ln(Real Trans-Atlantic Fares)** where:
   - Ln is the natural log of the variable
   - Domestic Trans-Atlantic Traffic is O&D traffic to Africa, Europe and the Middle East
   - Real Trans-Atlantic GDP is the Gross Domestic Product of Europe adjusted for inflation
   - Real Trans-Atlantic Fares are the fares to Africa, Europe, and the Middle East markets in real U.S. dollars
   - c1, c2, and c3 the estimated model parameters capturing the impact of various factors on Trans-Atlantic traffic growth

The econometric model describing Trans-Atlantic O&D traffic resulted in the following values for the dominant parameters, or elasticities:

- GDP elasticity of 2.28
- Air Fare coefficient of -0.20

As the Trans-Atlantic market matures and gradually reaches saturation, the GDP parameter will decline to a value of 1.0 in 2040 reflecting the maturity of the local air transport market. As the forecast years progress, gradually decreasing elasticities of demand were therefore applied so that the long-term forecast accurately reflects the growing maturity of the Trans-Atlantic market. Finally, after applying the elasticities to generate passenger forecasts, the forecasts were critically reviewed for reasonableness and validated against the projections of independent industry regional forecasts, such as those prepared by Boeing and Airbus. Based on these comparisons, adjustments to the year-over-year passenger growth rates were made as necessary.

4. Using forecasts of the Real Gross Domestic Product of Europe and a forecast of real air fares, future forecast levels could be generated.

REGIONAL AIR PASSENGER DEMAND FORECAST RESULTS

Based on the methodology described above, forecast O&D passenger demand in the SCAG region is forecast to increase from 72.6 MAP in 2013 to 112.2 MAP in 2040. This rate of growth is equivalent to a compound annual growth rate of 1.6 percent. As shown in **FIGURE 15**, the U.S. domestic market remains the largest segment of demand, constituting nearly 70 percent of the market in 2040. Despite the continued dominance of the U.S. market, the demand for international travel to and from the region increases at a slightly higher rate over the forecast period.

Forecast total enplaned and deplaned passenger demand in the SCAG region is forecast to increase from 88.0 MAP in 2013 to 136.2 MAP in 2040. As shown in **FIGURE 16**, the share of connecting passengers is forecast to remain stable at about 17 percent. The forecast of 136.2 million E/D passengers and 112.2 million O&D passengers by 2040 represents a slower growth rate than anticipated in previous RTP documents. Below are the forecasts of total E/D passengers from the previous 5 RTPs:

- 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/SCS—145.9 MAP in 2035 (Baseline Scenario)

Through 2014, actual air passenger demand has been considerably below the trend lines predicted by prior forecasts. The declines in air travel resulting from the terrorist attacks of 2001, the bursting of the tech bubble in 2001 and the global financial crisis of 2007-2008,

FIGURE 15 Forecast O&D Passenger Demand

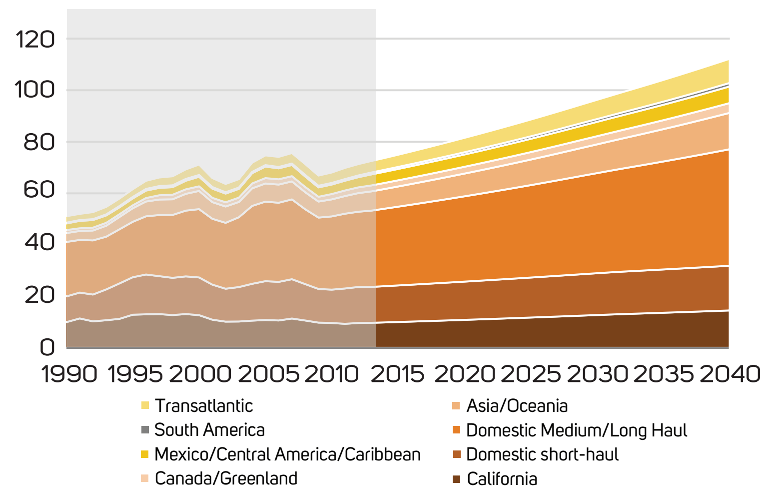
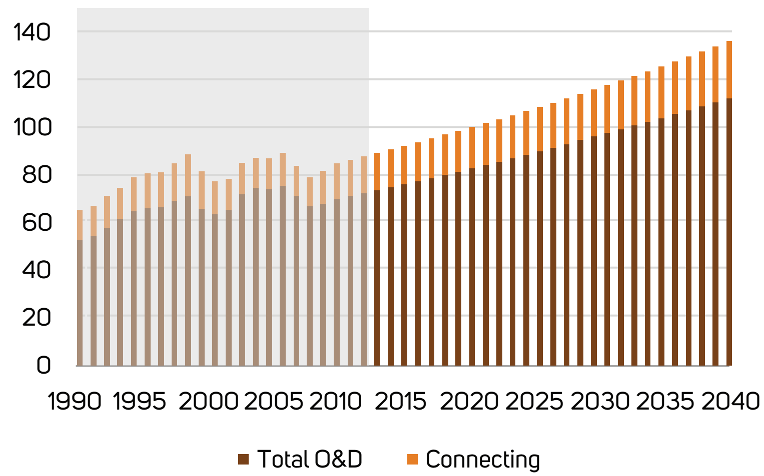


FIGURE 16 Forecast Total Enplaned and Deplaned Passengers



and the ensuing recessions could not have been forecast. Although annual growth in air travel may exceed the currently forecast rate of 1.6 percent in some of the years ahead, there will almost certainly be other worldwide economic and geopolitical events between now and 2040 that will temper the overall growth rate. The forecast average growth in air travel of 1.6 percent per year is based on the same regional socioeconomic forecasts used elsewhere in this RTP/SCS.

AIRPORT DEMAND FORECASTS

The previous sections described the methodology used to forecast passenger traffic to the SCAG region as a whole. In the next step, this regional air passenger traffic has to be allocated to the individual airports in the SCAG region. The air passenger demand handled by each airport in the region depends on passengers' choices regarding which airport to use, as well as physical and policy constraints that may limit an airport's ability to accommodate the demand. As discussed below, passengers' choices regarding which airport to use are themselves constrained by airlines' decisions concerning which airports to serve. The following subsections discuss these factors and the resulting forecast passenger demand at each airport in the region.

AIR TRAFFIC ALLOCATION MODEL

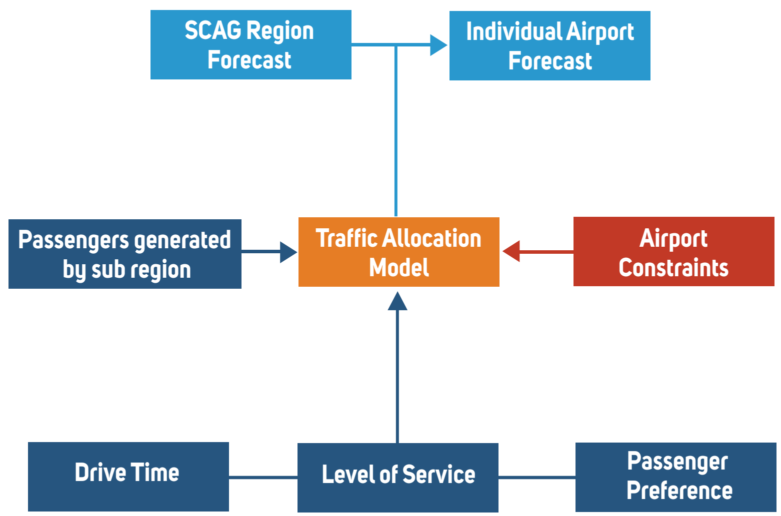
A traveler's decision to use a particular airport to begin or end a journey depends on a number of factors. The drive time required to reach the airport, the level of air service in terms of the number of frequencies and destinations that are offered, the airline portfolio, as well as other less quantifiable factors, such as convenience and past experiences, also influence the passenger's choice.

The methodology to allocation traffic across the individual airports is presented in **EXHIBIT 3**. Before traffic can be allocated across the various airports, an assessment must be made concerning how much passenger traffic each subregion within the SCAG region generates. For each of the subregions, an estimate has been made of what share it generated of the total air passenger traffic in the region in 2012. The traffic-generating ability of each subregion can be expressed through a wealth-, or income-adjusted population size, where the population size of each region is either discounted or increased by the ratio between the average household income of that particular subregion divided by the average household income of the entire region. The amount of passenger traffic handled by all the airports in the region is then allocated proportionally based on the wealth-adjusted population calculated for each subregion.
With the amount of traffic generated by each subregion estimated, the next step is to allocate traffic across the various airports. As mentioned earlier, this is primarily a function of access time, level of airline service, and general passenger preferences.

These factors are discussed below:

- **DRIVE TIME:** Access time to an airport is an important factor driving the decision of a traveler to use a particular airport; to minimize total trip time, people typically have a preference for nearby airports. By using geographic information system software, the size of the population living within a certain drive time of the airport can be calculated. For each airport in the region, the population size within a 30-minute, 60-minute, and 90-minute drive time has been calculated. The results are compiled into a single catchment area population size, in which the number of people living within a 60-minute and 90-minute drive are discounted to reflect the fact that the attractiveness of an airport decreases with drive time. Based on the total number of people living in the overall catchment area, each airport receives a score to represent its attractiveness to travelers from each sub region in terms of drive time.
- **LEVEL OF AIRLINE SERVICE:** Another important criterion influencing a passenger's choice is the level of service that is offered at the particular airport. This is mainly determined by the airline and destination portfolio as well as the number of frequencies that are offered. Based upon these factors, each airport received a level of service score.
- **PASSENGER PREFERENCE:** In addition to access time and level of service, the passenger's choice to use a certain airport is also driven by less quantifiable and subjective factors, such as past experiences and perceived convenience.

EXHIBIT 3 Air Traffic Allocation Model



For airports with existing service passenger preference was based on historic passenger enplanements. These factors are combined into an overall passenger preference score that represent the attractiveness of each airport to travelers from each sub region.

The individual scores of each decision factor are combined into an overall score for each airport. Based on the overall score that each airport received for a particular airport, the amount of traffic that each region generates is allocated proportionally to each airport. The airport scores are calibrated until the outcome for each airport matches the actual passenger numbers of 2012. Finally, the results are validated by comparing them with passenger surveys, where available, of the origin of a sample set of passengers. By applying this allocation mechanism to the passenger forecast developed for the entire region, passenger traffic can be distributed over the individual airports through 2040.

The resulting allocations represent the unconstrained demand case, i.e., where passenger traffic at each airport can develop unimpeded and is not hindered by any physical capacity constraints or policy constraints. In reality, however, a number of airports in the region will face capacity constraints within the forecast horizon. Since there are a number of different paths along which airport development might proceed as a result of different constraints, the capacity restrictions are input to the scenario development described in the next section.

CAPACITY CONSTRAINTS

Four of the commercial airports in urban areas of the region face physical or policy constraints that may limit their capacity to accommodate increases in demand by 2040. Therefore, these constraints were analyzed to develop a range of plausible scenarios for the development of air traffic allocation in the region. The airports at which constraints were analyzed are as follows:

- Burbank Bob Hope Airport
- Los Angeles International Airport
- Long Beach Airport
- John Wayne Airport

At each airport, planning-level analyses of the capacities of the airfield and the terminals were conducted. The long-term configurations of the airfield and terminal at each airport were identified from Airport Master Plans and similar studies. Policy constraints were also reviewed. The overall airport capacity is the minimum of the constraints imposed by the airfield, the terminal, and policy considerations.

The following methodologies were used for the review of the airfield and terminal capacity limits:

AIRFIELD CAPACITY: Based on the ultimate airport layout plan from each airport with the feasible ultimate runway configuration, the hourly capacity and annual service volume (ASV) of the airfield were estimated in terms of aircraft operations utilizing processes and formulas prescribed in FAA Advisory Circular 150/5060-5, "Airport Capacity and Delay." The percentage of commercial operations, load factor and seating capacity were then estimated from historical data and anticipated future trends. The ASV, percentage of commercial operations, and occupied seats per plane yield the estimated maximum annual passenger volume.

TERMINAL CAPACITY: Based on the ultimate airport layout plan from each airport, the feasible ultimate terminal gate (active and remote) configuration was identified. Historic gate utilization data was analyzed (e.g., design day schedule and gate chart, average number of turns per gate, fleet mix, seating capacity) to estimate the maximum gate capacity by maximizing the usage of each gate in the ultimate terminal layout plan.

A series of sensitivity analyses were conducted around the airfield and terminal capacities. In these sensitivity analyses, input assumptions were varied to develop a range of possible capacity limits for each airport.

The following sections summarize the analysis at each of the four constrained urban airports.

BURBANK BOB HOPE AIRPORT

Burbank Airport staff reported that the airport's airfield was limited to a practical capacity of 50 operations per hour based on the runway configuration and airspace conflicts with Van Nuys Airport to the west. In recent years, 50 percent of operations have been commercial operations, 75 percent of which have been scheduled air carriers. Based on historic load factors, these conditions yield an airfield capacity of approximately 7.3 MAP. Sensitivity analyses varying the mix of operations and load factors produced some scenarios with higher ASV and airfield capacity, but 7.3 MAP was the most reasonable estimate of airfield capacity based on their knowledge of the operations of the airport.

The existing airport terminal includes 14 air carrier gates. A proposed replacement terminal now in the planning stages would also have 14 gates. All 14 gates of the existing and proposed replacement terminals are designated for airplane design group (ADG) III aircraft, such as a Boeing 737. Since the airport uses ramps and stairways to load from the front and the back of aircraft, airport staff indicated that each gate can handle up to 15 arrivals and departures per day. Based on the anticipated use of larger aircraft within ADG III in the future, the 14-gate terminal arrangement would have a maximum capacity of approximately 12 MAP.

Burbank Airport currently imposes a voluntary nighttime curfew. However, it is not legally enforceable and does not affect the overall capacity of the airport. Therefore, the overall capacity of Burbank Airport is 7.3 MAP.

LOS ANGELES INTERNATIONAL AIRPORT (LAX)

LAX has a complex runway system that can be utilized in several alternative configurations. The runway system consists of two sets of dual parallel runways. The north runway complex consists of Runways 6L-24R (8,925 feet long and 150 feet wide), and 6R-24L (10,285 feet long and 150 feet wide). There is 700 feet runway centerline-to-centerline separation between the north complex runways. The close separation of the two parallel north runways precludes independent operations during weather conditions where cloud ceilings are less than 1,000 feet and visibility is less than 3 miles. Each end of Runways 6R-24L and 6L-24R is equipped with Category I instrument landing systems. Runway 6R-24L is primarily used for departing aircraft, and Runway 6L-24R is primarily used for arriving aircraft.

The south runway complex consists of Runways 7L-25R (12,091 feet long and 150 feet wide), and 7R-25L (11,095 feet long and 200 feet wide). The separation between these two runways is 800 feet. Each end of Runway 7L-25R and Runway 7R is equipped with Category I instrument landing systems. Runway 25L is equipped with a Category IIIB instrument landing system. Runway 7L-25R is used primarily for departing aircraft. Runway 7R-25L is used primarily for arriving aircraft. The separation between runway 6R-24L and runway 7L-25R is more than 4,500 feet, which allows for independent operations.

The LAX airfield capacity was estimated based on the runway configuration as described in the LAX Specific Plan Amendment Study (SPAS), which identified four basic runway operating configurations:

- Visual flight rules (VFR) with visual approaches – West Flow (currently occurs 69.2 percent of the time)
- VFR with simultaneous instrument landing (ILS) approaches – West Flow (occurs 24.6 percent of the time)
- Instrument meteorological conditions (IMC)/Instrument flight rules (IFR) with instrument approaches – West Flow (occurs 4.1 percent of the time)
- VFR with simultaneous ILS approaches – East Flow (occurs 2.1 percent of the time)

The analysis of LAX's airfield capacity included estimation of hourly capacity and ASV from six sensitivity tests that varied in their assumptions about the percentage of time that the runway system is operated in each of the configurations described above, and based on airside simulations from previous studies as well as the FAA Airport Capacity Benchmark Report 2004. The range of sensitivity tests was then applied to three scenarios that varied in terms of the percentage of aircraft operations that would be by scheduled carriers, commuter carriers, and charter carriers, using aircraft of different sizes and with varying load factors. Each scenario was then subjected to six sensitivity tests that varied in their assumptions about the percentage of time that the runway system is operated in each of the configurations described above. The scenarios and sensitivity tests yielded a range of airfield capacities from 82.9 MAP to 96.6 MAP. This range is not a projection of demand for a future year, but an estimate of how many passengers the airfield (according to approved plans) could accommodate.

The LAX Master Plan and SPAS include a limit of a total of 153 gates at all terminals at LAX. However, in different scenarios, some gates may be designed for different airplane design group classifications. In addition, gates that are used for larger design groups will be able to handle fewer arrivals and departures each day. Therefore, a variety of terminal configurations were analyzed that varied with regard to their assumptions about the distribution of gate designs. The resulting estimates of the overall terminal capacity range from 85 to 104 MAP.

LAX is subject to a court sanctioned settlement agreement until 2020. Consistent with that settlement agreement, the SPAS was prepared to "plan for the modernization and improvement of LAX in a manner that is designed for a practical capacity of 78.9" MAP. After 2020, barring further court action, there is no enforceable cap on the number of gates or total annual passenger volume at LAX. Therefore, the capacity of LAX is in the range of 82.9 MAP to 96.6 MAP, limited by the airfield, based on the runway configuration described above and as in the SPAS. Alternative runway configurations (e.g., Alternate A or B in the LAX Master Plan) could yield higher airfield capacities.

LONG BEACH AIRPORT

Long Beach Airport has two sets of parallel runways forming a square and a fifth, diagonal runway crossing all four of the other runways. However, only the diagonal runway (runway 12/30) is used for commercial operations. Therefore, the estimate of airfield capacity in terms of annual passenger volume was based on a one-runway system for commercial operations. A series of scenarios crossed with sensitivity tests varying in assumptions about fleet mix and runway operations was conducted for Long Beach Airport, similar to the analyses conducted for the other airports.

Long Beach Airport, however, is subject to a noise compatibility ordinance that in practice limits the airport to 41 commercial and 25 commuter departures per day. (The 41 commercial flight limit may only be exceeded if the City of Long Beach determines that the additional flights will not exceed the "noise budget" limits based on the baseline year of 1989-90.) A commuter flight is defined as one completed by an airplane with a maximum take-off weight of less than 75,000 pounds. Based on the anticipated use of larger aircraft within

ADG III in the future (having an average of 162 seats) and current load factors, 41 commercial flights could potentially accommodate 4.0 MAP. Commuter service with a typical regional jet having 66 seats could accommodate another 1.0 MAP, at current load factors. Therefore, the noise compatibility ordinance imposes a practical limit of 5.0 MAP at Long Beach Airport. This limit is also below the capacity of the airport's terminal and airfield. It is anticipated that the City of Long Beach will soon allow an additional 9 commercial departures per day based on the terms of the ordinance (for a total of 50 daily commercial departures) . If the additional departures are able to be utilized the assumptions and capacity analysis results may need to be updated for Long Beach Airport.

JOHN WAYNE AIRPORT

The runway system at John Wayne Airport consists of two parallel runways. The primary runway 2L/20R is 5,701 feet long, while the secondary runway 2R-20L is only 2,887 feet long. The secondary runway is not equipped for instrument approach procedures. The centerlines of the runways are separated by 500 feet, which does not allow for operation of simultaneous arrivals and departures under visual flight rules (VFR). The short secondary runway offers some operational benefits for smaller aircraft that enhances capacity under VFR conditions. During periods of instrument flight rule (IFR), operations are basically limited to the primary runway, on which the airlines operate.

As with the other airports, a series of scenarios crossed with sensitivity tests varying in assumptions about fleet mix and runway operations was conducted for John Wayne Airport, similar to the analyses conducted for the other airports. The scenarios varied with regard to the percentage of flight operations assumed to be conducted by commercial carriers (from 35 percent to 55 percent). The sensitivity tests varied primarily in the percentage of time that it is assumed the airport can operate under VFR conditions (from 53 percent to 95 percent).

TABLE 2 Airport Capacity Constraints (MAP, Million Annual Passengers)

Airport	Constraint	Source of Constraint
BUR	7.3	Airfield
LAX	82.9 – 96.6	Airfield
LGB	5.0	Noise compatibility ordinance
SNA	12.5	Settlement agreement adopted by Board of Supervisors

The results of the analyses suggest a capacity of the airfield in the range of 9.6 to 18.7 MAP. However, it should be noted that the airport has handled more than 9.6 MAP in the past.

The existing terminal includes twenty air carrier gates with passenger loading bridges and six ground loading gates for commuter aircraft. Thirteen of the twenty gates with passenger loading bridges are ADG IV gates designed to accommodate the Boeing 757, and seven are ADG III gates. While the Boeing 757 is no longer being produced and will likely be retired from airline fleets in the coming years the next versions of typical ADG III aircraft, such as the Boeing 737 MAX 9 and the Airbus A321neo are planned to have approximately 185 seats, comparable with today's typical ADG IV aircraft. Based on the estimated maximum number of operations per gate, average seat capacity for different ADG, and load factors, the existing terminal would have a capacity of approximately 16 MAP.

John Wayne Airport is currently subject to a court sanctioned settlement agreement. The agreement limits the airport to 12.5 MAP (subject to certain conditions) and remains in effect through 2030. However, the Orange County Board of Supervisors has adopted the limit imposed by the settlement agreement, so further action by the Board of Supervisors would be required to modify this limit, even after 2030. Therefore, the limit of 12.5 MAP at John Wayne Airport is considered to extend through the analysis period of the 2016-2040 RTP/SCS. **TABLE 2** summarizes the capacity constraints at the four constrained urban airports.

FORECAST AIR PASSENGER ALLOCATION SCENARIOS

Since there are a number of different paths along which airport development in the region might proceed, air passenger demand allocations were developed for the region's airports under several three scenarios representing different conditions: a scenario with no constraints on airport capacity, a scenario with a relatively high degree of regionalization of air travel demand, and a scenario with a relatively low degree of regionalization of demand sets of constraints. All airport allocation scenarios incorporate the overall forecast regional air passenger demand of 136.2 MAP in 2040; they differ with respect to how the total demand is spread across the region's airports. The initial scenario represents the unconstrained demand case, i.e., where passenger traffic at the airport can develop unimpeded and is not hindered by any physical capacity constraints or policy constraints. This scenario constitutes a future baseline from which alternative scenarios incorporating various constraints can be developed. The airport allocations in the unconstrained scenario are shown in the third column of **TABLE 3.**

In the unconstrained scenario, the 2040 demand at Los Angeles International Airport and John Wayne Airport exceeds the identified capacities of those airports, and the demand at Long Beach Airport is at the airport's identified capacity. Therefore, since the identified capacity of LAX spans a large range, two alternative scenarios were analyzed that differ with respect to the share of demand that is shifted to other airports in the region. In the "Less Regionalization" scenario, LAX is assumed to operate at the high end of its identified capacity, and all other airports can accommodate up to their identified capacities. In addition, it is assumed that all airports in the region capable of handling passenger traffic identify a market niche of at least 200,000 annual passengers (0.2 MAP). The airport allocations in the "Less Regionalization" scenario are shown in the fourth column of **TABLE 3** .

In the "More Regionalization" scenario, LAX is assumed to operate at the low end of its identified capacity, and all other airports can accommodate up to their identified capacities. In addition, it is again assumed that all airports in the region capable of handling passenger traffic identify a market niche of at least 0.2 MAP. The airport allocations in the "More Regionalization" scenario are shown in the last column of **TABLE 3**.

While the "Less Regionalization" and "More Regionalization" scenarios shown in Table 3 were developed based on a range of physical capacities for LAX, many other factors will determine what level of demand each airport in the region will actually serve in 2040. Actions taken by policy makers at multiple levels in the SCAG region can influence the direction of the development of the region's aviation infrastructure. SCAG's Transportation Committee was presented with the Urbanized and Constrained Airport Capacity Analysis,[1] reviewed various scenarios and adopted the forecast ranges shown in the second column of **TABLE 3** on August 6, 2015. In addition, the Transportation Committee approved the total regional demand of 136.2 MAP which represents the middle of the range for the airports that are assigned ranges. The high end of the range represents approximately a 10 percent increase to 149 MAP; the low end of the range represents a 10 percent decrease to 123 MAP.

One of the factors that will influence the direction of the development of the region's aviation infrastructure is investment in ground access infrastructure, which is discussed in the following section.

AIRPORT GROUND ACCESS

The ground access network serving the region's airports is critical to both the aviation system and the ground transportation system. Passengers' choice of airports is based in part on the travel time to the airport and the convenience of access, so facilitating airport access is essential to the efficient functioning of the aviation system. In addition, airport related ground trips can contribute to local congestion in the vicinity of the airports.

TABLE 3 2040 Airport Demand Forecast Scenarios (MAP, Million Annual Passengers)

Airport	Adopted	Unconstrained	Less Regionalization	More Regionalization
Total	136.2	136.2	136.2	136.2
BUR	7.3	6.3	7.3	7.3
IPL	0.2	0.2	0.2	0.2
LAX	82.9 - 96.6	100.7	96.6	82.9
LGB	5.0	5.0	5.0	5.0
ONT	11.0 -19.0	7.2	10.1	20.0
OXR	0.2	—	0.2	0.2
PMD	0.5 - 2.5	—	0.5	2.5
PSP	3.7	3.0	3.2	3.7
RIV	0.2	—	0.2	0.2
SBD	0.2 - 1.5	—	0.2	1.5
SNA	12.5	13.8	12.5	12.5
VCV	0.2	—	0.2	0.2

In 2012, more than 200,000 air passengers arrived or departed from the region's airports each day. By 2040, this number is expected to increase to more than 330,000. About half of all air passengers in the region are picked up or dropped off at the airport by a friend or relative. Each end of these pick-up/drop-off air trips results in two ground trips: one to the airport followed by one returning from the airport. Therefore, encouraging the use of transit or other shared-ride modes of transportation to the region's airports is especially effective in reducing automobile trips.

SCAG and its regional partners have brought a new focus on improving ground access to the region's airports in recent years. In July 2012, the Metro Board directed its staff to develop a Regional Airport Connectivity Plan (RACP) that addresses transit connections to five Southern California airports: Burbank Bob Hope (BUR), Long Beach (LGB), LA/Ontario International (ONT), Los Angeles International (LAX) and LA/Palmdale Regional (PMD). The RACP was completed in January 2013. In November 2014, San Bernardino Association of Governments (SANBAG) completed its Ontario Airport Rail Access Study. SCAG is currently initiating an L.A. and San Bernardino Inter-County Transit and Rail Connectivity Study, which will continue these prior planning efforts undertaken by Metro and SANBAG.

Airport operators have also undertaken their own initiatives, ranging from planning through implementation, to improve ground access at their facilities. The City of Burbank and the Burbank-Glendale-Pasadena Airport Authority conducted the Bob Hope Airport Area Ground Transportation and Land Use Study to analyze potential transportation and related land use development in the Bob Hope Airport area.

Los Angeles World Airports (LAWA) has been working closely with Metro to improve transit access to LAX. The agency is currently in the environmental review phase of the LAX Landside Access Moderniazation Program, a series of improvements including an Automated People Mover, a consolidated rental car facility, and two intermodal transportation facilities, one of which will provide direct access to the Metro Crenshaw Line, which is currently under construction.

To continue the current high level of airport ground access planning underway in the region, on October 8, 2015, SCAG's Transportation Committee adopted a conceptual framework for regional aviation ground access to support these ongoing efforts, based on the following principles:

- Advance regionalization of air travel demand
- Continue to support regional and inter-regional projects that facilitate airport ground access (e.g., High-Speed Train, High Desert Corridor)
- Support on-going local planning efforts by
  - Airport operators
  - County Transportation Commissions
  - Local jurisdictions
- Encourage development and use of transit access to the region's airports
- Encourage use of modes with high average vehicle occupancy (AVO)
- Discourage use of modes that require "deadhead" trips to/from airports (a deadhead trip is a vehicle trip with no traveling passenger in the vehicle, such as when a parent drives an otherwise empty car to an airport to pick up a college student arriving by air for Thanksgiving vacation.)

The following sections describe the recent and planned ground access studies and improvements at each of the region's airports.

BURBANK AIRPORT (BUR)

Burbank Airport is located on Hollywood Way in the City of Burbank, south and west of Interstate 5. Passenger access to the terminals is currently primarily via Hollywood Way at Thornton Avenue and secondarily via Empire Avenue, west of Hollywood Way. The airport is currently preparing an Environmental Impact Report for the development of a replacement terminal. Vehicular access is expected to remain via Hollywood Way, although it may be relocated to a different location along the roadway. An arterial roadway network surrounds the airport, providing connections from residential areas and to destinations throughout Burbank, North Hollywood, Los Angeles and beyond. The Metrolink Ventura line tracks are located immediately south of the airport, and the Antelope Valley line tracks are located immediately north of the airport. The California High Speed Rail Authority is also planning for a station at Burbank Airport in the future.

Regional freeway access to Burbank Airport is primarily provided by I-5 and SR 134. Regional traffic from the north uses the Hollywood Way interchange on I-5. The I-5 North Improvement Project, currently under construction, will improve regional access from the south with the construction of a new interchange at Empire Avenue.

Burbank Airport is the only airport in the region with a direct rail-to-terminal connection, via the recently completed Regional Intermodal Transportation Center (RITC).
The RITC is located on airport property just northwest of the Hollywood Way/Empire Avenue intersection. An elevated moving walkway transports people between the RITC and the airport terminals. The RITC serves multiple modes, including public parking, a consolidated rental car facility, regional bus service and bicycles, as well as commuter rail at the Metrolink Ventura line station. A pedestrian bridge connecting the Metrolink station to the RITC that is currently in design will further facilitate access between the train station and the airport. In addition, a second rail station is currently planned on the Metrolink Antelope Valley line.

TABLE 4 BUR Ground Access Projects

BUR Ground Access Projects
Recently Completed Ground Access Projects
Regional Intermodal Transportation Center (Empire Area Transit Center)
Install traffic signal at North Avon Street and Empire Avenue
Ground Access Projects Currently Under Construction (or in Design)
I-5 Empire Project
I-5 North Improvement Project: Add HOV lanes on I-5 (from SR-134 to SR-170)
New Antelope Valley Metrolink Line Station at Hollywood Way/San Fernando Road
Burbank Bob Hope Airport Station Pedestrian Grade Separation and Regional Intermodal Transportation Center Connection
Recent and On-going Ground Access Studies
Burbank-Glendale-Pasadena Airport Intermodal Ground Access Link Feasibility Study
Vanowen/Empire/Clybourn Railroad Crossing Grade Separation Study Project
BUR Terminal Upgrade Environmental Impact Analysis
2016 RTP Ground Access Projects
1120004: Metro Red Line Extension to BUR
LA000358: Route 5 from Route 134 to Route 170, add HOV lanes.
2015 FTIP Ground Access Projects
LA000358: I-5 North Improvement Project: Route 5 from Route 134 to Route 170, add HOV lanes.
LAE0726: Vanowen/Empire/Clybourn Railroad Crossing Grade Separation Study Project
LA000789: Burbank-Glendale-Pasadena Airport Intermodal Ground Access Link Feasibility Study

TABLE 4 BUR Ground Access Projects: Continued

BUR Ground Access Projects
LA000789A: Burbank-Glendale-Pasadena Airport Intermodal Ground Access Link
LAE0396: Construction of Empire Area Transit Center near BUR
LA0G1049: Burbank Bob Hope Airport Station Pedestrian Grade Separation and Regional Intermodal Transportation Center Connection
LAF5701: Burbank Traveler Information and Wayfinding System

BurbankBus has recently begun operating all-day bus service between the North Hollywood Metro Red Line Station and the airport, utilizing the RITC. The North Hollywood Station provides connections to the Metro rail system via the Red Line to Union Station and the Metro Orange Line, a dedicated BRT right-of-way servicing the San Fernando Valley.

TABLE 4 provides a detailed list of the ground access improvements at Burbank Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

IMPERIAL COUNTY AIRPORT (IPL)

Imperial County Airport is located on Airport Road at Imperial Avenue (State Route 86), which is one of the main north-south throughways in the area. Regional highway access from the east and west utilizes I-8, which is located four miles to the south. Currently, one rental car company offers services at the airport terminal. There is no public transit service to the airport, although a private company operates an on-demand shuttle bus from the surrounding area.

TABLE 5 IPL Ground Access Projects

IPL Ground Access Projects
Recently Completed Ground Access Projects
None
Ground Access Projects Currently Under Construction (or in Design)
None
Recent and On-going Ground Access Studies
None
2016 RTP Ground Access Projects
6120002: Reconstruct I-8 interchange at Imperial Avenue
2015 FTIP Ground Access Projects
0515: Reconstruct I-8 interchange at Imperial Avenue

TABLE 5 provides a detailed list of the ground access improvements at Imperial County Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

LOS ANGELES INTERNATIONAL AIRPORT (LAX)

Los Angeles International Airport (LAX) is located in southwestern Los Angeles County in the neighborhood of Westchester. Regional freeway access is provided by I-405 to the east and I-105 to the south. Vehicles arriving from the north and south utilize I-405 or Sepulveda Boulevard, and drivers arriving from the east use I-105 or Century Boulevard. World Way is the internal circulation roadway around the passenger terminals and has a lower level for arriving passengers and an upper level for departing passengers.

LAX is owned and operated by Los Angeles World Airports (LAWA), a proprietary department of the City of Los Angeles. LAWA operates LAX FlyAway, which provides non-stop bus service between each of the LAX terminals and seven locations: Van Nuys Airport, Union Station, Westwood, Hollywood, Santa Monica, Orange Line and Long Beach. In 2013, ridership on the two most used FlyAway routes, Van Nuys and Union Station, was 890,740 and 508,019 passengers, respectively. For longer distance bus travel from the airport, numerous private operators provide regularly scheduled bus service to LAX from the Antelope Valley, Bakersfield, the Central Coast, Santa Barbara and Ventura County. Two private shared-ride shuttle services are authorized to operate at LAX and serve the entire SCAG region.

LAX operates three shuttle routes on World Way. Route A circulates around the airport to provide passengers connections between terminals. Routes C and G have a stop within the central terminal area, with Route C connecting to the LAX-operated parking Lot C at the intersection of 96th Street and Sepulveda Boulevard, and Route G transporting passengers to and from the Metro Green Line Aviation Station. In addition to the LAX-operated Lot C, many other parking lots and structures are available in the surrounding neighborhood, and many hotels in the area and privately operated parking lots offer their customers courtesy shuttles to and from the passenger terminals.

Public bus services operated by Metro, Culver City Bus Lines, Santa Monica Big Blue Bus and Torrance Transit are available at the Metro Bus Center by connecting in Lot C using the LAX Shuttle Route C and to connect to their respective coverage areas. The Metro Green Line Aviation Station is the nearest urban rail line, nearly two miles to the southeast of the terminals and accessible using the LAX Shuttle Route G.

All rental car facilities are currently located off-site and are provided by about 40 companies.

TABLE 6 LAX Ground Access Projects

LAX Ground Access Projects
Recently Completed Ground Access Projects
Widen Arbor Vitae Street (Airport Boulevardd to La Cienega Boulevard)
I-405 Sepulveda Pass Improvements Project
Additional LAX FlyAway Service from Santa Monica, Hollywood, Orange Line and Long Beach
Ground Access Projects Currently Under Construction (or in Design)
Crenshaw/LAX Transit Corridor Project and expansion of regional rail connectivity (Expo/Green Lines)
Recent and On-going Ground Access Studies
I-105: Study report for interchange improvements at LAX Airport
LAX Landside Access Modernization Program
LAX Consolidated Rental Car Center (CONRAC) and long-term parking in Manchester Square
Intermodal Transportation Facility (ITF) in the vicinity of Lot C
Specific Plan Amendment Study
LAX Airport Metro Connector
Coastal Corridor Study
Green Line Extension to LAX
South Bay Metro Green Line Extension
Century Corridor Streetscape Plan

LAX Ground Access Projects
2016 RTP Ground Access Projects
1TR1020: New airport bus division (capital costs only)
1122003: Consolidated Rental Car Facility (ConRAC)
1122002: Intermodal Transportation Facilities (ITFs)
1122001: Automated People Mover System (APM)
1TR0101: New Light Rail Station & Consolidated Bus facilities
LA0D198: Crenshaw/LAX Transit Corridor Project
LA0D332: I-405 from La Tijera Boulevard to Jefferson Boulevard, add auxiliary lanes
2015 FTIP Ground Access Projects
LA0D332: I-405 from La Tijera Boulevard to Jefferson Boulevard, add auxiliary lanes
LAE3764: ITS and intersection improvements in and near LAX Airport
LA0F073: Projects within and near LAX to eliminate traffic bottlenecks
LA0G1161: Crenshaw/LAX accommodations near 96th Street/Aviation Boulevard
LA0G1162: Airport Metro Connector
LA0F073: Projects within and near LAX Airport to eliminate traffic bottlenecks

Eleven of these companies are permitted to operate courtesy shuttles between the terminals and their facilities. Taxicabs are available curbside at each terminal outside the baggage claim area at the yellow taxi signs. In December, 2015 LAX began to allow Transportation Networking Companies (TNC's) such as Uber and Lyft to pick up and drop off passengers at designated points at the airport.

In December 2014, LAWA's Board of Airport Commissioners approved a plan to overhaul and modernize LAX's ground access and transportation connections for arriving and departing passengers. The approved program includes the LAX Train (Automated People Mover System), Intermodal Transportation Facilities (ITF), Consolidated Rent-A-Car Center (CONRAC), central terminal area improvements, and connection with the Metro Crenshaw Line, which is under construction. The CONRAC will consolidate the numerous off-site rental car facilities in the surrounding area into one convenient location 1.5-miles east of LAX and adjacent to I-405 for convenient regional highway access. Two ITFs are included in the program offering airport travelers locations for parking, passenger pick-up and drop off, and flight check-in outside the terminal and away from the congested World Way roadway within LAX. The eastern ITF will include Metro facilities to connect with Metro's planned 96th Street/Aviation Boulevard Station serving the under-construction Metro Crenshaw/LAX Transit Project and existing Metro Green Line as well as a bus plaza for Metro and municipal buses. The LAX Train will be an elevated automated people mover system with six stations connecting the CONRAC, both ITFs, and Metro facilities to the LAX passenger terminals by connecting into an upgraded central terminal area. The environmental review process for this project began in 2015 and construction is expected to begin in 2017.

TABLE 6 provides a detailed list of the ground access improvements at LAX completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

LONG BEACH AIRPORT (LGB)

Long Beach Airport (LGB) is located on Lakewood Boulevard north of I-405 in the City of Long Beach. The airport has one terminal building with two concourses (north and south) and eleven total gates. In December 2012, construction was completed on renovations to the terminal to expand and modernize its amenities and plan for an expected increased passenger demand.

Regional automobile traffic arrives via I-405 and Lakewood Boulevard. Donald Douglas Drive is an internal airport roadway that circles the Airport Ground Transportation Center and provides access to the terminals. The Airport Ground Transportation Center includes a recently completed five-story parking garage with over 5,000 spaces and also houses six rental car companies. A taxi stand is located on Donald Douglas Drive just outside the terminal. In addition, 28 shuttle providers are currently authorized to pick passengers up on airport property.

Transit access is provided by bus on Long Beach Transit Authority's Routes 102, 104, 111 and 176 utilizing the Airport Ground Transportation Center.

TABLE 7 provides a detailed list of the ground access improvements at Long Beach Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

TABLE 7 LGB Ground Access Projects

LGB Ground Access Projects
Recently Completed Ground Access Projects
Long Beach Airport Access: Spring Street and Lakewood Boulevard tunnel improvements
Long Beach Airport Terminal Area Improvement Project
Ground Access Projects Currently Under Construction (or in Design)
None
Recent and On-going Ground Access Studies
None
2016 RTP Ground Access Projects
None
2015 FTIP Ground Access Projects
None

ONTARIO INTERNATIONAL AIRPORT (ONT)

Ontario International Airport is located just south of I-10 in the City of Ontario, about 35 miles east of downtown Los Angeles. Two passenger terminal buildings are located along the northern side of the airport along Terminal Way. Los Angeles World Airports (LAWA) owns and operates the airport today. LAWA has agreed to terms and conditions for the transfer of the airport in the coming months to a new airport sponsor, the Ontario International Airport Authority (OIAA) , pending review and approval by the Federal Aviation Administration (FAA).

The airport is located between two major east-west highway corridors within the SCAG region, I-10 and SR 60. Regional access is generally provided by these freeways, with regional north-south access provided by I-15 about two miles to the east. The Archibald Avenue interchange on I-10 is the primary access point to Terminal Way, which circles a large surface parking lot and provides drop-off/pick-up access to the passenger terminals. Additional private airport parking is provided on Airport Drive, just east of the airport.

A Consolidated Rental Car Facility (ConRAC) is located in the northeast corner of the airport, near the intersection of Airport Drive and Haven Avenue, and serves eight on-airport rental car companies. Three additional off-airport rental car companies also serve the airport. A courtesy shuttle operated by the airport provides service between the passenger terminals, the long-term parking lot, and the ConRAC. Taxicab service can be picked up curbside outside the baggage claim area. A private shared-ride shuttle operator offers door-to-door shared-ride services from the terminals on both on an advanced reservation and walk up basis.

Two bus routes operated by OmniTrans have stops that serve the airport. Routes 81 and 82 have stops at the intersection of Airport Drive and Haven Avenue, where passengers can transfer to the airport courtesy shuttle to be transported to the terminals.

No direct rail service currently operates to the airport. The East Ontario Metrolink Station, which serves the Metrolink Riverside Line, is located about two miles southeast of the airport terminals, but no direct transit connection is currently provided to the terminals. The California High Speed Rail Authority is also planning to have a station at Ontario International Airport.

The 2014 SANBAG Ontario Airport Rail Access Study examined six alternatives to connect Ontario Airport to the regional rail system. One of these alternatives is the Metro Gold Line Foothill Extension Phase 2C that would extend the eastern terminus of the Metro Gold Line to the airport. Phase 2B to Montclair is included in the Financially Constrained Project list in this RTP/SCS, but Phase 2C is currently not funded. A direct shuttle bus connection from the Rancho Cucamonga Metrolink Station is included in the project list for 2020, and a rail connection from Metrolink to the airport is included for 2040.

TABLE 8 ONT Ground Access Projects

ONT Ground Access Projects
Recently Completed Ground Access Projects
None
Ground Access Projects Currently Under Construction (or in Design)
North Vineyard Avenue Railroad Grade Separation at Holt Boulevard
Construct a Grade Separation at Milliken/Union Pacific LA Line
Recent and On-going Ground Access Studies
SANBAG Ontario Airport Rail Access Study
Gold Line LRT Foothill Extension
2016 RTP Ground Access Projects
4160023: Widen Archibald Avenue from Inland Empire Boulevard for 4 to 6 lanes
4160035: Widen Guasti Road from Holt Boulevard to Archibald Avenue from 2 to 4 lanes
4160063: Widen State Street from Bon View Avenue to Grove Avenue from 2 to 4 lanes
4120145: Spot widen Airport Drive from Rochester Avenue to Etiwanda Avenue from 2 to 4 lanes
200804: South Archibald Avenue grade separation (at Mission Boulevard).
4G0104/4G0112: Widen grade separation @ UPRR Alhambra/Los Angeles Lines from 2 to 4 lanes
4A07325: Construct bridge on Holt Boulevard over West Cucamonga Creek and widen from 4 to 6 lanes
4A01203: Widen Francis Street from Benson Avenue to Campus Avenue from 2 to 4 lanes
4A01210: Widen Holt Boulevard from Benson Avenue to Vineyard Avenue from 2 to 4 lanes
4A07327: Construct bridge on Holt Boulevard over Cucamonga Creek-and widen from 4 to 6 lanes
4A01213: Widen Jurupa Street from Turner Avenue to Hofer Ranch Road from 2 to 6 lanes

TABLE 8 ONT Ground Access Projects: Continued

ONT Ground Access Projects
4A07233: Widen Mission Boulevard from Benson to Milliken Avenue from 4 to 6 lanes
4A07317: Construct bridge on Mission Boulevard over Cucamonga Creek and widen from 4 to 6 lanes
4A07215: Construct bridge on Mission Boulevard over West Cucamonga Creek and widen from 4 to 6 lanes
4A07266: Widen Philadelphia Street from Campus Avenue to 750' e/o Grove Avenue from 2 to 4 lanes
4A07138: Widen Philadelphia Street from Vineyard Avenue to Cucamonga Creek from 2 to 4 lanes, including bridge over Cucamonga Creek
4A07267: Construct bridge on Riverside Drive over Cucamonga Creek and widen from 4 to 6 lanes
4A01222: Widen Vineyard Avenue from 4th Street to I-10 from 4 to 6 lanes
2002160-2002160: I-10 at Grove Avenue interchange and Grove Avenue corridor
4160002: Widen Interchange for I-10 @ Vineyard Avenue from 4 to 6 lanes, widen on/off ramps from 2 to 4 lanes
200803: I-10 at Vineyard Avenue interchange: widening from 4-6 lanes and widen on and off ramps to two lanes, intersection improvements and enhance existing landscaping
200602-200602: SR 60 and Vineyard Avenue interchange reconstruction-lengthen bridge to accommodate Vineyard Avenue widening and ramp widening 4-6 lanes
200604: SR 60 at Grove Avenue interchange reconstruction and Grove Avenue +/-300 ft. n/s of SR 60-widen from 4-6 lanes
4M07017: SR 60 at Archibald Avenue widen on and off ramps (2-3 lanes each way)
416009: Interchange reconstruction for SR 60 at Grove Avenue
4160010: Interchange reconstruction for SR 60 at Vineyard Avenue
4122002: Double tracking of Metrolink San Bernardino Line between CP Central and CP Archibald in San Bernardino County
4160048: Direct Shuttle bus connection from Rancho Cucamonga Metrolink Station to Ontario Airport
4160049: Passenger Rail Service from San Bernardino to Metrolink Line to Ontario Airport
4120004-20159902: I-10 corridor express lane widening (phase 1)

ONT Ground Access Projects
4120005-20159903: I-10 corridor express lane widening (phase 2)
2015 FTIP Ground Access Projects
2002160: I-10 at Grove Avenue and 4th Street: relocate interchange from 4th Street to Grove Avenue. Widen the existing 4th Street undercrossing (2-4 lanes) to match rest of 4th Street. Concurrent project with Grove Avenue widening (20150201)
20150201: Grove Avenue Corridor: Widen Grove Avenue from I-10 to Airport Drive (4-6 lanes). Concurrent with I-10/Grove Avenue Interchange Project (2002160)
200803: I-10 at Vineyard Avenue interchange. Widen interchange from 4-6 lanes and widen on and off ramps to two lanes, intersection improvements and enhance existing landscaping.
200602: SR 60 and Vineyard Avenue interchange reconstruction-lengthen bridge to accommodate Vineyard Avenue widening and ramp widening 4-6 lanes
200604: SR60 at Grove Avenue interchange reconstruction and Grove Avenue +/-300 ft. n/s of SR 60-widen from 4-6 lanes
201132: SR-60 at Archibald Avenue widen on and off ramps (2-3 lanes each way); add additional left turn pockets from Archibald to SR-60 on ramps (non-capacity enhancing along Archibald)
200602: SR 60 and Vineyard Avenue interchange reconstruction-lengthen bridge to accommodate Vineyard Avenue widening and ramp widening 4-6 lanes
200805: North Vineyard Avenue grade separation - between Holt Boulevard and Airport Drive building railroad bridge flyover-no lanes added to arterials. The grade separation is at the UPRR Alhambra Line
200405: South Milliken Avenue grade separation - on Milliken from UPR to north of Mission Boulevard railroad grade separation-construct o/c/u/c at RR-realignment of STS to meet overcrossing & intersection improvements

TABLE 8 provides a detailed list of the ground access improvements at LA/Ontario International Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

PALMDALE REGIONAL AIRPORT (PMD)

Palmdale Regional Airport is in the City of Palmdale, about 60 miles north of downtown Los Angeles. Since 2013, it has been managed by the Palmdale Airport Authority. The Airport Authority has the ability to use both Department of Defense owned runways. The passenger terminal is located at the southwest corner of the airport, on Avenue P.

Regional access to the airport is provided by SR 14, about three miles west of the airport. As Palmdale Airport currently has no scheduled commercial air service, there are no rental car facilities at the airport, and no private operators provide ground transportation services to the airport.

The Palmdale Transportation Center, including the Palmdale Metrolink Station on the Metrolink Antelope Valley Line, is located about two miles southwest of the airport. The Transportation Center currently provides connections with the local public transit provider, Antelope Valley Transit Authority (AVTA). No AVTA routes currently serve the airport. The Palmdale Transportation Center is the proposed site of a future California High-Speed Rail station.

TABLE 9 provides a detailed list of the ground access improvements Palmdale Regional Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

OXNARD AIRPORT (OXR)

Oxnard Airport is located in the northwest part of the City of Oxnard in Ventura County. Regional highway access is from SR 1 to the north and south, or US 101 to the north and east. Ground access to the passenger terminal is provided by Fifth Street. No scheduled passenger service has been offered at the airport since 2010.

Four rental car companies operate from the airport terminal. Additionally, the Ventura County Airporter Shuttle operates eight daily roundtrips between OXR and LAX.

Gold Coast Transit is the municipal transit provider, and bus Route 19 has a stop on Fifth Street near the terminal. The Oxnard Transportation Center is located about two miles east

TABLE 9 PMD Ground Access Projects

PMD Ground Access Projects
Recently Completed Ground Access Projects
None
Ground Access Projects Currently Under Construction (or in Design)
Rancho Vista Boulevard grade separation
Recent and On-going Ground Access Studies
Transit Oriented Development Project near Palmdale Transit Center
Avenue Q Feasibility Study
High Desert Corridor/P-8 Freeway
2016 RTP Ground Access Projects
LA962212: Route 138: In Palmdale @ Avenue P-8 from Route 14 to 100th Street - Acquisition of ROW for future Route 138
1TDL04: Expansion and Improvement to existing Transit Center in the City of Palmdale
2015 FTIP Ground Access Projects
LAF3403: Palmdale Transportation Center - Platform Extension
LA0G897: SR 138/14: Widening from Rancho Vista Boulevard (RVB) to Palmdale Boulevard
LAF1104: Rancho Vista Boulevard (RVB) Grade Separation at Sierra Highway/UPRR/Metrolink RR Crossing
LAF1104B: Phase 2-Construct a railroad grade separation of Rancho Vista Boulevard at both Sierra Highway and the double-track at-grade crossing of the Southern California Regional Rail Authority (SCRRA) Metro-link and Union Pacific Railroad (UPRR) tracks

of the airport and provides connections to additional Gold Coast Transit routes, as well as rail connections to Amtrak's Coast Starlight and Pacific Surfliner Routes, as well as Metrolink's Ventura County Line.

There are no recently planned or completed ground access projects at Oxnard Airport.

MARCH AIR RESERVE BASE (RIV)

March Air Reserve Base (RIV) is operated as a public-use airport under a Joint Use Agreement with the Air Force. It is located in unincorporated Riverside County between the cities of Riverside and Moreno Valley. A passenger terminal opened in 2013 to accommodate general aviation activities. Parking lots are located adjacent to the operations control tower and the passenger terminal. Currently, no on-site facilities for rental cars, taxicabs or shuttle services exist.

Regional access is provided by I-215, which runs in a north-south alignment directly west of the airport, and SR 60, which runs in an east-west alignment north of the airport. Ground access to airport facilities is provided by Cactus Avenue. Recent and planned improvements to Heacock Street and Harley Knox Boulevard will facilitate ground access to the airport, particularly for trucks.

The Moreno Valley/March Field Station on the Perris Valley Line extension of the Metrolink 91 Line is located near the entrance to the airport. Rail service is anticipated to begin in late 2015.

TABLE 10 provides a detailed list of the ground access improvements March Air Reserve

TABLE 10 RIV Ground Access Projects

RIV Ground Access Projects
Recent and On-going Ground Access Studies
None
2016 RTP Ground Access Projects
3A01WT049A: In the City of Moreno Valley - Widen Alessandro Boulevard between i-215 and Frederick Street from 4 to 6 lanes.
RIV071240-RIV071240: In the City of Moreno Valley - east bound Cactus Avenue widening between Veterans Way & Heacock Street
I-215 North Project (Phase 3 of 3): Add HOV lane in each direction and WB auxiliary lane
3A04WT054: In the City of Moreno Valley - widen Heacock Street between Cactus Avenue and San Michele Road
3160037: Widen Heacock Street between Heacock Bridge Lateral A and Cactus Avenue
3A0801: In the City of Moreno Valley - Widen Heacock Street between San Michele Road and Harley Knox Boulevard
3A04WT068: Widen San Michele Road between Heacock Street and Indian Avenue
3M04WT017: Widen/reconstruct Heacock interchange, ramps, and channelization improvements.
RIV050533-RIV050533: At I-215/Cactus Avenue interchange
2015 FTIP Ground Access Projects
RIV080905: In the City Of Moreno Valley - Widen Alessandro Boulevard between I-215 and Frederick Steet
RIV071240: In the City Of Moreno Valley – E/B Cactus Avenue Widening between Veterans Way & Heacock Street
RIV080910: In the City of Moreno Valley - Widen Heacock Street between Cactus Avenue and San Michele Road
RIV080911: In the City Of Moreno Valley - Widen Heacock Street between San Michele Road and Harley Knox Boulevard
RIV050533: At I-215/Cactus Avenue Interchange: widen interchange
Recently Completed Ground Access Projects
I-215/Van Buren Boulevard Interchange Improvements
Ground Access Projects Currently Under Construction (or in Design)
Perris Valley Metrolink extension, including a March Field Station
Harley Knox Boulevard Improvements

Base completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

PALM SPRINGS INTERNATIONAL AIRPORT (PSP)

Palm Springs International Airport is located in the Coachella Valley, in the City of Palm Springs. The passenger terminal is located at the end of Tahquitz Canyon Way in the southwest portion of the airport and consists of two concourses with a total of 17 gates.

Regional access is provided by I-10, about four miles north of the airport. Kirk Douglas Road is the internal airport roadway that circles the on-site surface parking lots and provides access to the terminals. Taxicabs, private transportation companies, and public shared-shuttle companies, and can be picked up on the north side of the terminal adjacent to rental car facilities.

Transit access is provided by municipal bus provider Sunline's SunBus Route 24, which stops just outside the airport at the Kirk Douglas Way/El Cielo Road/Tahquitz Canyon Way intersection. Regional bus connections include the Morongo Basin Transit Authority's Routes 12 and 15.

TABLE 11 PSP Ground Access Projects

PSP Ground Access Projects
Recently Completed Ground Access Projects
Upgrade I-10/Gene Autry Trail interchange ramps to a 2-lane configuration. Modify Gene Autry Trail from 2 to 6 lanes (from I-10 interchange to Salvia Rd.)
Upgrade I-10/Date Palm interchange ramps to a 2-lane configuration
Widen Indian Canyon Drive to a 6-lane configuration (from Union Pacific Rail Road to I-10)
Ground Access Projects Currently Under Construction (or in Design)
None
Recent and On-going Ground Access Studies
None

TABLE 11 PSP Ground Access Projects: Continued

PSP Ground Access Projects
2016 RTP Ground Access Projects
3A07100-RIV110124: In the Coachella Valley in the City of Palm Springs - Ramon Road widening between San Luis Rey Drive & Landau Boulevard
3A07004: Gene Autry Trail, new bridge to replace existing low water crossing at Whitewater River.
3A07018A: Landau Boulevard, construct new 6-lane road between Vista Chino and I-10, including overcrossing at Whitewater River
3A01CV078: Widen Ramon Road from 4 to 6 lanes between Gene Autry Rail and White water River
3A07005: Widen Ramon Road from 4 to 6 lanes between S. Indian Canyon to Sunrise Way, including Baristo Storm Channel crossing)
3A07145: Widen Ramon Road from 4 to 6 lanes between S. Palm Canyon Dr to S. Indian Canyon Drive
RIV031205: In the City of Palm Springs - widen Ramon Road from 4 to 6 lanes
3M0722: On I-10, Construct new 6-lane mixed flow, partial cloverleaf IC with auxiliary lanes and 4 two lane ramps plus 6 lane grade separation bridge over UPRR between Palm Drive ICDr Interchange and Date Palm Drive Interchange
3TR04C: Implement Bus Rapid Service/BRT on Highway 111
3TC04TR3: Construct 3 transit centers (west, central, and east valley) in Coachella Valley
2015 FTIP Ground Access Projects
RIV110124: In the Coachella Valley in the City of Palm Springs - Ramon Road Widening between San Luis Rey Drive & Landau Boulevard
RIV031205: In the City of Palm Springs - widen Ramon Road from 4 to 6 lanes
RIV041021: Bus rapid transit (BRT) enhancements

TABLE 11 provides a detailed list of the ground access improvements Palm Springs International Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

SAN BERNARDINO INTERNATIONAL AIRPORT (SBD)

San Bernardino International Airport (SBD) is located in the City of San Bernardino. The airport has domestic and international passenger terminals on the northwestern portion of the property but does not currently have scheduled passenger service. The international terminal has Federal Inspection Service (FIS) facilties. I-10 provides regional access from the east and west, and I-215 provides regional access from the north and south. SR 210 provides additional access from the northwest. Recent and ongoing improvements to I-215 through downtown San Bernardino and to the Tippecanoe Avenue interchange on I-10 have improved ground access to the airport. Local access to the airport facilities is provided by Tippecanoe Avenue and Third Street.

OmniTrans is the municipal public transit provider in San Bernardino County. Its Route 8 has a stop on Harry Shepard Boulevard at Del Rosa Drive, a quarter-mile from the terminal building entrances. There are no rental car facilities at the airport, and no private operators provide ground transportation services to the airport.

TABLE 12 SBD Ground Access Projects

SBD Ground Access Projects
Recently Completed Ground Access Projects
Construct a truck traffic access road to SBD Air Cargo Terminal at Perimeter Road
Construct a 4-lane bridge on Mountain View Avenue over the Santa Ana River
Ground Access Projects Currently Under Construction (or in Design)
Upgrade 5th St to a 4-lane major arterial and improve capacity at intersections
Tippecanoe Ave/Anderson Street Interchange with I-10 (Phase 2)

TABLE 12 SBD Ground Access Projects: Continued

SBD Ground Access Projects
Recent and On-going Ground Access Studies
Redlands Passenger Rail Project will have a station on Tippecanoe Avenue
Improve 3rd St near SBD
2016 RTP Ground Access Projects
200213: Widen 3rd St. from Palm Ave. to 5th St.
200852: Del Rosa Drive From 5th Street to 6th Street-Widen from 2 to 4 Lanes
4A07142: Tippecanoe Avenue From 3rd Street To 5th Street - Widen from 2-4 Lanes
SBD55031: Alabama Street From 3rd Street To South City Limits
4M01003-2011154: SR 210 At 5th St/Greenspot Rd; On and Off Ramps Widening; Add Lanes
200419: Alabama St widening - widen from 2-4 lanes from north city limits to 3,000 ft. north Palmetto
4A01237: Widen Alabama St from 2 to 4 lanes
4A07017: Widen Alabama St from Lugonia Ave to Barton Rd from 4 to 6 lanes
4A07042: Widen Alabama St from North Redlands City Limits to Palmetto Ave from 2 to 4 lanes
4A07184: Widen California St from Redlands Blvd to Palmetto Ave from 5 to 6 lanes
4A07255: Widen Lugonia Ave from California St to Tennesee St from 2 to 4 lanes
4A01246: Widen Lugonia Ave from Tenessee St to Orange St from 2 to 4 lanes
4A07154: Widen Palmetto Ave from California St to Alabama St from 2 to 4 lanes

TABLE 12 SBD Ground Access Projects: Continued

SBD Ground Access Projects
4A01281: Widen San Bernardino Ave from Alabama St to California St from 2 to 4 lanes
200609: Mt. View Widening/Extension Project- Widen S/B From 2-4 lanes- from Coulston to Riverview
4A07119: 5th Street from Sterling Ave to Victoria Ave Widen from 2-4 lanes
40M0701-201184: Sterling Ave from 3rd Street to 5th Street - Widen from 2-4 lanes
SBD41317: Mountain View Ave bridge at Mission Creek Channel - Widen roadway
4A07230: Widen 5th St from Pedley Rd to Tippecanoe Ave from 2 to 4 lanes
4A07292: Widen 5th St from Warm Creek (0.3 mi. east of Waterman) to Pedley Ave from 2 to 4 lanes
4A07081: Widen Coulston Ave Av from Tippecanoe Ave to Mountain View Ave from 2 to 4 lanes
4A07380: Widen Del Rosa Ave from Del Rosa Dr to San Bernardino City Limits from 2 to 4 lanes
4A07135: Widen Rialto Ave Av from Lena Rd to Tippecanoe Ave Av from 2 to 4 lanes
4A07178: Widen Rialto Ave from Sierra Way to Waterman Ave from 2 to 4 lanes
4A07152: Widen Tippecanoe Ave from Mill St to Harriman from 4 to 6 lanes
44810: I-10 Tippecanoe reconfigure Interchange and local road Improvements/Modifications
2015 FTIP Ground Access Projects
200213: On 3rd St. from Palm Ave. to 5th St. - Widen 3rd St. e/o Palm Ave. from 2 to 3 lanes
201180: Del Rosa Drive from 5th Street to 6th Street-Widen from 2 to 4 lanes
201182: Tippecanoe Avenue from 3rd Street to 5th Street - Widen from 2-4 lanes
SBD55031: Alabama Street From 3rd Street To South City Limits - Widen From 2 To 3 S/B Lanes
2011154: SR 210 at 5th St/Greenspot Rd; On and off ramps widening; Add Lanes
201183: 5TH ST FROM TIPPECANOE AVE TO DEL ROSA DR – WIDEN FROM 2-4 LANES

TABLE 12 provides a detailed list of the ground access improvements San Bernardino International Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

JOHN WAYNE ORANGE COUNTY AIRPORT (SNA)

John Wayne Orange County Airport is located in unincorporated Orange County, near the cities of Santa Ana, Irvine, Newport Beach and Costa Mesa. Three terminal buildings are located just off MacArthur Boulevard in the northeast corner of the airport along Airport Way.

John Wayne Airport sits in between multiple major highways, including I-405 to the north, SR 55 to the west and SR 73 to the south, that provide regional access to the airport. MacArthur Boulevard in Irvine connects directly to the airport facilities. Airport Way operates as the circulating roadway between the three terminals and other airport passenger facilities. Several parking garages are available in the main terminal area. An additional off-site parking lot is located on Main Street in Irvine, with a free shuttle to the terminal.

Most of the ground transportation facilities are located in the Ground Transportation Center (GTC), on the lower concourse level on Airport Way in the middle of the terminal buildings. The GTC contains transfers to buses, shuttles, taxicabs and eight on-site rental car providers. An additional fifteen off-site rental car companies are authorized to pick up passengers from the terminal and shuttle them to each company's personal facilities. As a major destination in the area, the Disneyland Resort operates an express shuttle for passengers that can be picked up at the GTC.

The local public transit service providers are the Orange County Transportation Authority (OCTA) and City of Irvine's Irvine Shuttle (iShuttle). OCTA bus Routes 76 and 212 directly serve the airport with a stop at the GTC on the lower level. The iShuttle's Route A operates between the GTC and the Tustin Metrolink Station about five miles to the northeast. The Tustin Metrolink Station provides connections with trains on both the Orange County and Inland Empire Metrolink lines, as well as other OCTA bus routes and iShuttle Route B.

TABLE 13 SNA Ground Access Projects

SNA Ground Access Projects
Recently Completed Ground Access Projects
Add 1 northbound ramp and westbound right-turn lane on Paularino at SR-55
Ground Access Projects Currently Under Construction (or in Design)
None
2016 RTP Ground Access Projects
ORA016: Paularino Avenue (SR-55 northbound frontage road at Paularino Avenue) in Costa Mesa
2M0733: On SR-55, add 1 mixed flow lane each direction and fix chokepoints from I-405 to I-5
2H0706: On SR-73, add HOV connector between I-405 and SR-73
2H0707: On SR-73, add 1 HOV lane each direction from MacArthur to I-405
ORA030605-ORA030605: I-405 from SR-73 to I-605. Add 1 mixed flow lane in each direction
ORA030605-ORA030605A: I-405 from SR-73 to I-605. Convert existing HOV to HOT.
2M0728: Add 1 MF lane each direction from I-5 to SR-55 and add southbound auxiliary lanes from 133 to Irvine Center Drive
2015 FTIP Ground Access Projects
ORA015: Baker Street and SR-55; northbound & southbound frontage road improvements
ORA016: Paularino Avenue (SR-55 northbound frontage road at Paularino Avenue) Costa Mesa intersection improvement
ORA017: Paularino Avenue (SR-55 southbound frontage road in Costa Mesa), Intersection improvement add southbound right-turn lane.
ORA100511: SR-55 widening between I-405 and I-5 - add 1 mixed flow lane each direction and fix chokepoints from I-405 to I-5
ORA030605: I-405 from SR-73 to I-605. Add 1 MF lane in each direction
ORA030605A: I-405 from SR-73 to I-605. Convert existing HOV to HOT
ORA131304: I-405(I-5 to SR-55)-Add 1 MF lane each direction from I-5 to SR-55 and improve merging

TABLE 13 provides a detailed list of the ground access improvements John Wayne Orange County Airport completed since the 2012 RTP/SCS, those currently in design or under construction, airport-related ground access improvements included in the 2016 RTP/SCS, and airport-related ground access improvements included in the 2015 FTIP.

SOUTHERN CALIFORNIA LOGISTICS AIRPORT (VCV)

Southern California Logistics Airport is located in the City of Victorville in San Bernardino County, about 20 miles north of the city of San Bernardino. Regional access to the airport is provided by US 395 and I-15. Direct access to airport facilities is available from Phantom Way at Worley Boulevard/George Boulevard.

As the airport currently has no scheduled passenger air service, there are no rental car facilities at the airport, and no private operators provide ground transportation services to the airport. Victor Valley Transit bus Route 32 has a stop just outside the airport at the Phantom Way/George Boulevard intersection.

The proposed High Desert Corridor project is currently in the environmental review stage. When constructed, it will provide a new multipurpose east-west corridor between SR 14 and SR 18 and greatly improve ground connections from the airport to the regional highway system.

There are no recently planned or completed ground access projects at Southern California Logistics Airport.

TECHNICAL AND POLICY COMMITTEE REVIEW

The development of the regional and airport forecasts was reviewed by technical and policy committees throughout the preparation of the 2016 RTP/SCS. In addition, airport operators were consulted regarding the operations of their airports. **TABLE 14** lists the dates of committee meetings and the actions taken at each.

TABLE 14 Lists the dates of committee meetings and the actions taken at each

Date	Committee	Agenda/Action
8/28/14	Aviation Technical Advisory Committee	Data request to airport operators
3/13/15	Aviation Technical Advisory Committee	Review of airport capacity constraints methodology and results
4/23/15	Aviation Technical Advisory Committee	Review of overall regional passenger demand forecast methodology and results
6/4/15	Transportation Committee	Approval of overall regional passenger demand forecast
6/25/15	Aviation Technical Advisory Committee	Review of ground access modeling methodology
7/2/15	Transportation Committee	Initial airport forecasts agendized but not presented
7/23/15	Transportation Committee	Presentation of initial airport forecasts; no action taken
8/6/15	Transportation Committee	Approval of individual airport demand forecasts
10/8/15	Transportation Committee	Approval of cargo forecasts and of ground access strategies

NOTES

[1] Southern California Association of Governments. August 2015. Regional Aviation Forecast: Analysis of Airport Capacity Constraints Technical Memorandum. Prepared by: AECOM.

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APPENDIX

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