Appendix U6

Regional Aviation Strategic Plan and San Diego Airport Multimodal Accessibility Plan

Appendix U6 Contents

Regional Aviation Strategic Plan and San Diego Airport Multimodal Accessibility Plan

The Regional Aviation Strategic Plan (RASP) for San Diego County was prepared by the San Diego County Regional Airport Authority (the Authority) to assess the long-range capabilities of all public-use airports in the county with the goal of improving the performance of the regional Airport System.

California Senate Bill 10 of 2007 (SB 10) requires that airport multimodal planning in San Diego County be conducted and coordinated by the Authority and the San Diego Association of Governments (SANDAG). The main provisions of SB 10 are the development of the RASP (led by the Authority), and an Airport Multimodal Accessibility Plan (AMAP), which was prepared by SANDAG in order to develop a multimodal strategy to improve transportation access to airports. Findings of the RASP and AMAP have been incorporated into the Regional Transportation Plan. The RASP and the AMAP reports are included as Appendix U6.

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FINAL REPORT

REGIONAL AVIATION STRATEGIC PLAN

San Diego County Regional Airport Authority

www.sdrasp.com

Prepared for

San Diego County Regional Airport Authority
San Diego, California

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EXECUTIVE SUMMARY

The Regional Aviation Strategic Plan (RASP) for the San Diego County was prepared by the San Diego County Regional Airport Authority (the Authority) to assess the long-range capabilities of all public-use airports in the county with the goal of improving the performance of the regional Airport System. The Federal Aviation Administration (FAA) provided funding for the preparation of the RASP.

KEY TAKEAWAYS

The following summarizes key aspects of RASP analyses and findings:

- **Significant Stakeholder Contributions**. A technical RASP Subcommittee, a formal subset of the Authority's Airport Advisory Committee, was formed at the outset of the RASP to provide input and feedback on the technical aspects of the study. In addition to playing an essential role in identifying the full range of reasonable and feasible options that were ultimately considered, the Subcommittee provided constant feedback to key stakeholders regarding the progress of the RASP.

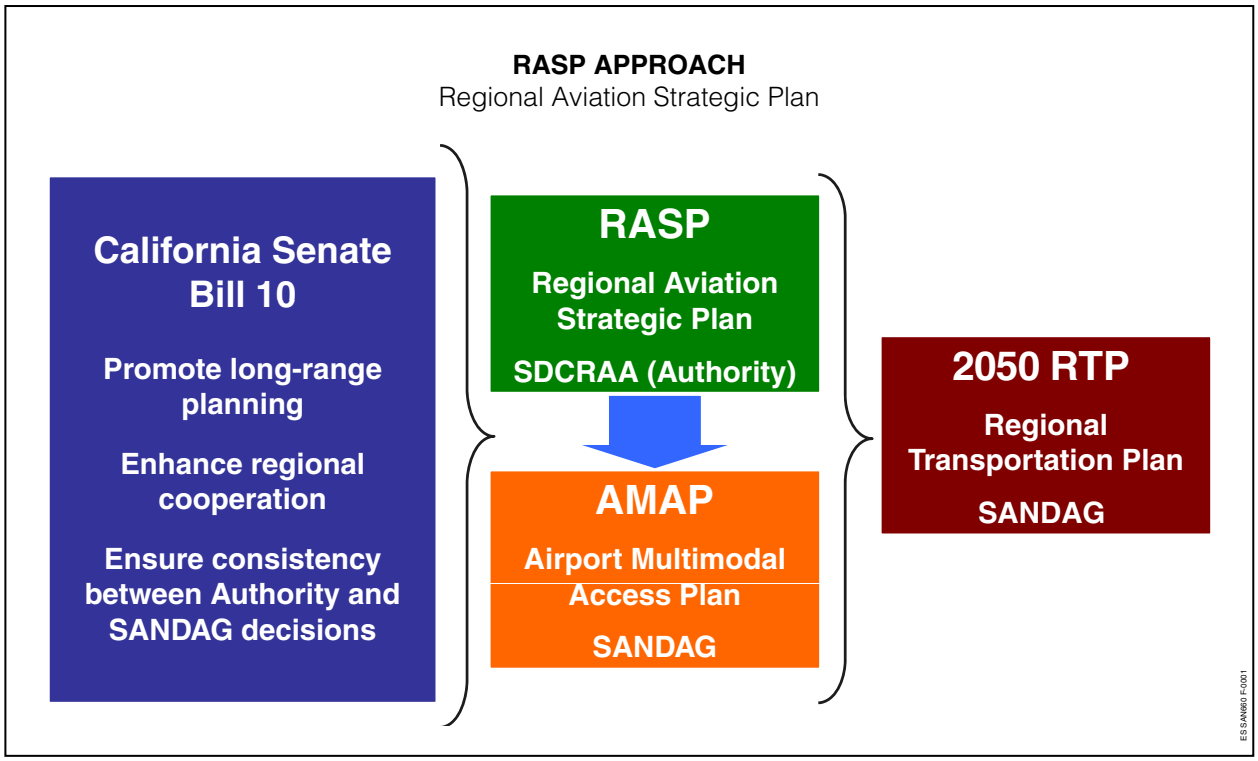
- **All Reasonable Ideas and Concepts Were Evaluated**. The alternatives considered and evaluated in the RASP covered a comprehensive spectrum of possibilities, including: (a) funding, policy, and political factors; (b) surface, rail, and cross border initiatives; (c) physical change in airport capability and/or capacity; (d) expansion of an airport's user base/market; (e) change to an airport's fleet mix; (f) federal, state and/or local aviation initiatives; and (g) changes to surface transportation infrastructure.

- **Regional Airport Improvements Can Be Made**. There is a wide range of improvements and changes to airports in the region that could be made; some potential improvements are positive to airports individually, while some provide benefits to the entire system. However, some positive benefits can only be provided by actions that are legally challenging, impractical, and inadvisable to implement in full.

- **The Passenger Capacity of San Diego International Airport Can Only Marginally Be Improved**. In general, even the most beneficial actions have a nominal effect on improving overall commercial service (passenger airline) capacity in the region, namely at San Diego International Airport.

PROJECT OVERVIEW

California Senate Bill 10 of 2007 (SB-10) and the California Public Utilities Code (sections 132357, 132358 and 132359) requires that airport multimodal planning in San Diego County be conducted and coordinated by the Authority and the San Diego Association of Governments (SANDAG). The main provisions of SB-10 are the development of the RASP (led by the Authority), and an Airport Multimodal Accessibility Plan (AMAP), which is being prepared by SANDAG in order to develop a multimodal strategy to improve transportation access to airports. Findings of the RASP and AMAP will subsequently be incorporated into SANDAG's 2050 Regional Transportation Plan (RTP).



In addition to complying with SB-10, the primary objectives of the RASP are to:

1. Define the region's long-range air transportation needs and the roles of each airport in meeting those needs;

2. Determine opportunities and constraints with respect to accommodating future demand; and

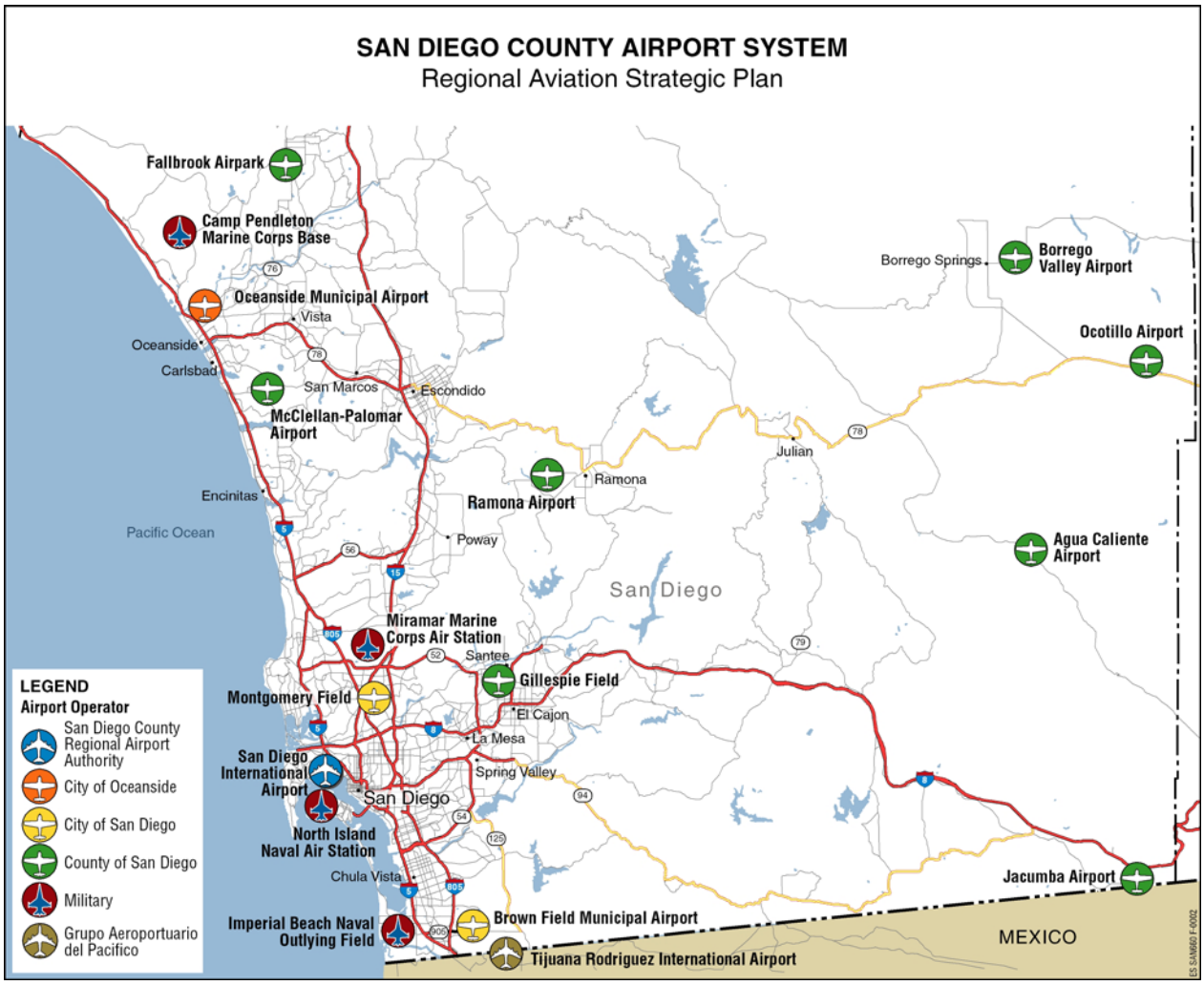
3. Develop strategies to maximize the efficiency and effectiveness of existing and planned facilities.

AIRPORT SYSTEM

The following provides applicable background on the San Diego county "Airport System."

Airport System

The San Diego County "Airport System" is defined by the 12 public-use airports in San Diego County and Tijuana Rodriguez International Airport, which is located just south of the California – Mexico border. Because they do not accommodate civilian air travel, the four military airfields in San Diego County were excluded from the RASP (although airspace impacts were considered).



Planning Challenges

There are a number of important challenges to meeting RASP goals and objectives:

- **Multiple Airport Sponsors**. The San Diego County Airport System includes multiple airport sponsors – the Authority, the County of San Diego, the City of San Diego, the City of Oceanside, and Grupo Aeroportuario del Pacifico (GAP) – and no single sponsor has unilateral authority to implement facility or policy changes for other airports in the region.

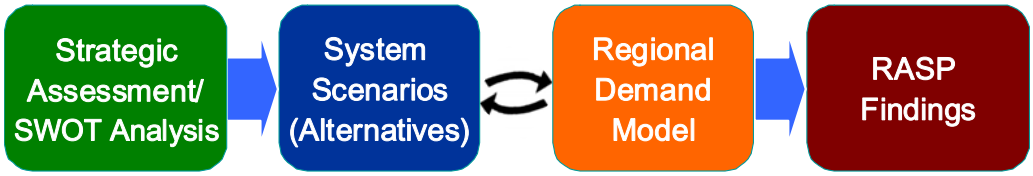
- **Accommodation of Commercial Service**. Of the total airports in San Diego County, only two airports are FAA-certificated for commercial service – McClellan-Palomar and San Diego International. The other public-use airports are general aviation facilities with significant expansion constraints, and San Diego International's growth is constrained by its single-runway airfield.

- **Natural "Balance."** The Airport System has achieved a natural balance with regard to accommodating passenger, cargo, and general aviation activity. This momentum is difficult to change given political, physical, and community factors. Furthermore, the conversion of an existing airport to accommodate new or additional service is complicated by community and political opposition, as well as costs and numerous technical factors.

- **Air Service Options**. Although San Diego International has good domestic air service at competitive airfares, there are large numbers of San Diego County residents and visitors choosing to use other airports, including Tijuana and airports in the greater Los Angeles metropolitan region. These choices are predominantly made based on air service options, rather than cost and accessibility.

STUDY METHODOLOGY AND APPROACH

Four major work elements defined preparation of the RASP.



Strategic Assessment and System Scenarios

A strategic assessment of each system airport was prepared to validate and document existing activity levels and facilities as well as the potential for future changes. Alternative scenarios were established that could have an effect on optimizing the Airport System. The scenarios included a wide range of infrastructure and operational

changes intended to accommodate certain aviation activity or distribute activity across multiple airports.

Regional Demand Model

A regional econometric demand model was developed for the RASP and used as a decision support tool to evaluate various "what-if" scenarios and quantify potential outcomes. The model was based on information regarding the propensity for people to travel and the factors that lead to a choice of airport, which primarily include time and costs associated with accessing aviation services. SANDAG's Regional Travel Demand Model was also incorporated into the RASP model to estimate ground transportation changes and access times.

Based on analyses using the demand model, findings were prepared that summarized the impacts and effects of implementing various scenarios. Model findings indicated the number of air trips (or passenger enplanements) that would occur under each scenario and the potential impact various changes would have on the Airport System.

"Expansion" of the RASP Study Area

Although San Diego International provides good domestic air service at competitive airfares, it was determined early in the study that some San Diego County residents and visitors choose to use airports in the greater Los Angeles metropolitan region and Tijuana in order to capitalize on alternative air service options. Therefore, RASP strategies, alternatives, and findings were considered in the context of San Diego County and the larger region, including the following airports in the greater Los Angeles metropolitan region: Los Angeles International, John Wayne/Orange County, Long Beach, Ontario International, and Burbank.

AVIATION ACTIVITY AND AIRPORT CAPACITY

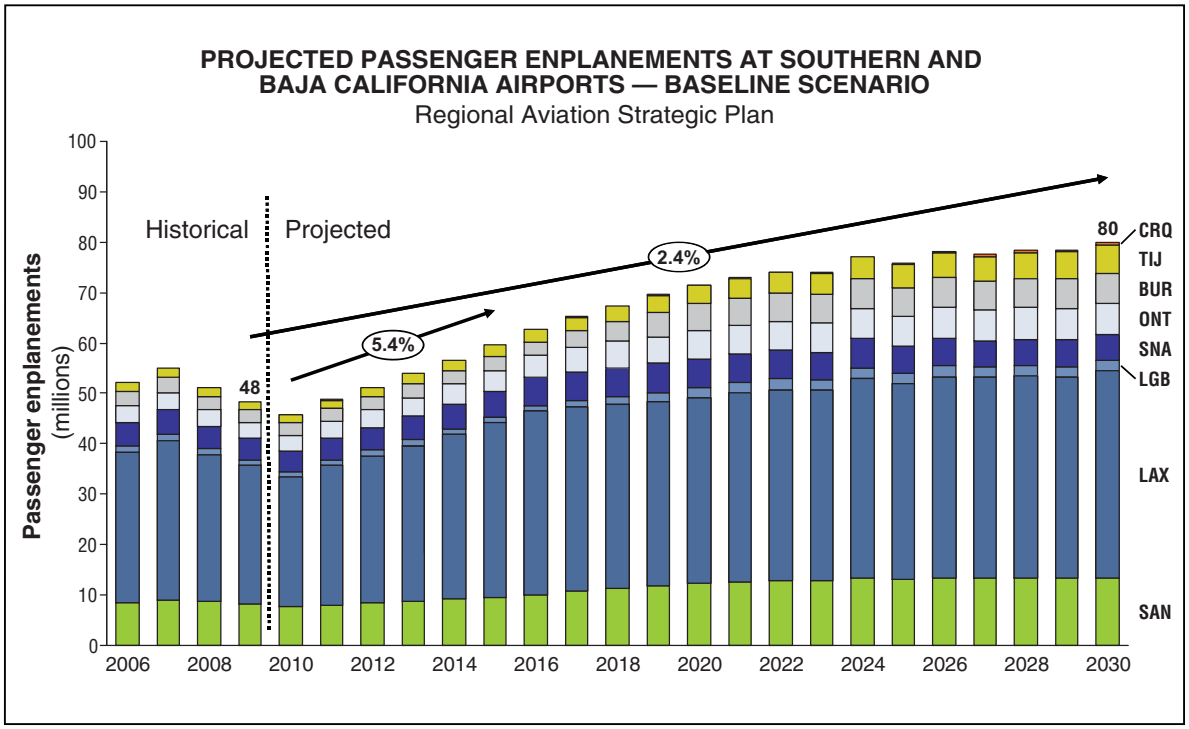
The following summarizes forecast aviation demand in the expanded RASP Study Area; the estimated capacity of the Airport System; and the Baseline Scenario, which is the "do-nothing" scenario against which all alternatives are compared.

Demand for air travel in the U.S. correlates strongly with fluctuations in the U.S. economy. In the post-financial crisis environment, carriers have reduced capacity in an effort to maintain high fares and revenues. Notwithstanding these cuts, the industry was projected to lose billions of dollars in 2009. While 2009 third quarter financials improved, passenger growth and yields remain weak, and a recovery in demand was projected to be modest relative to prior recoveries.

Forecast Aviation Demand

Projected aviation demand (quantified by annual enplaned passengers) in the RASP Study Area – including San Diego, Tijuana, and five airports in the greater Los Angeles

metropolitan region – is projected to increase 50% between 2009 and 2030 from 48 to 80 million passenger enplanements. San Diego International's 20-year compound annual growth rate is projected to be 2.5%. Tijuana Rodriguez International is expected to experience the largest demand increase between 2010 and 2030, with passenger enplanements increasing from 1.6 to 5.6 million at a compound annual growth rate of 6.4%.



Airport System Capacity

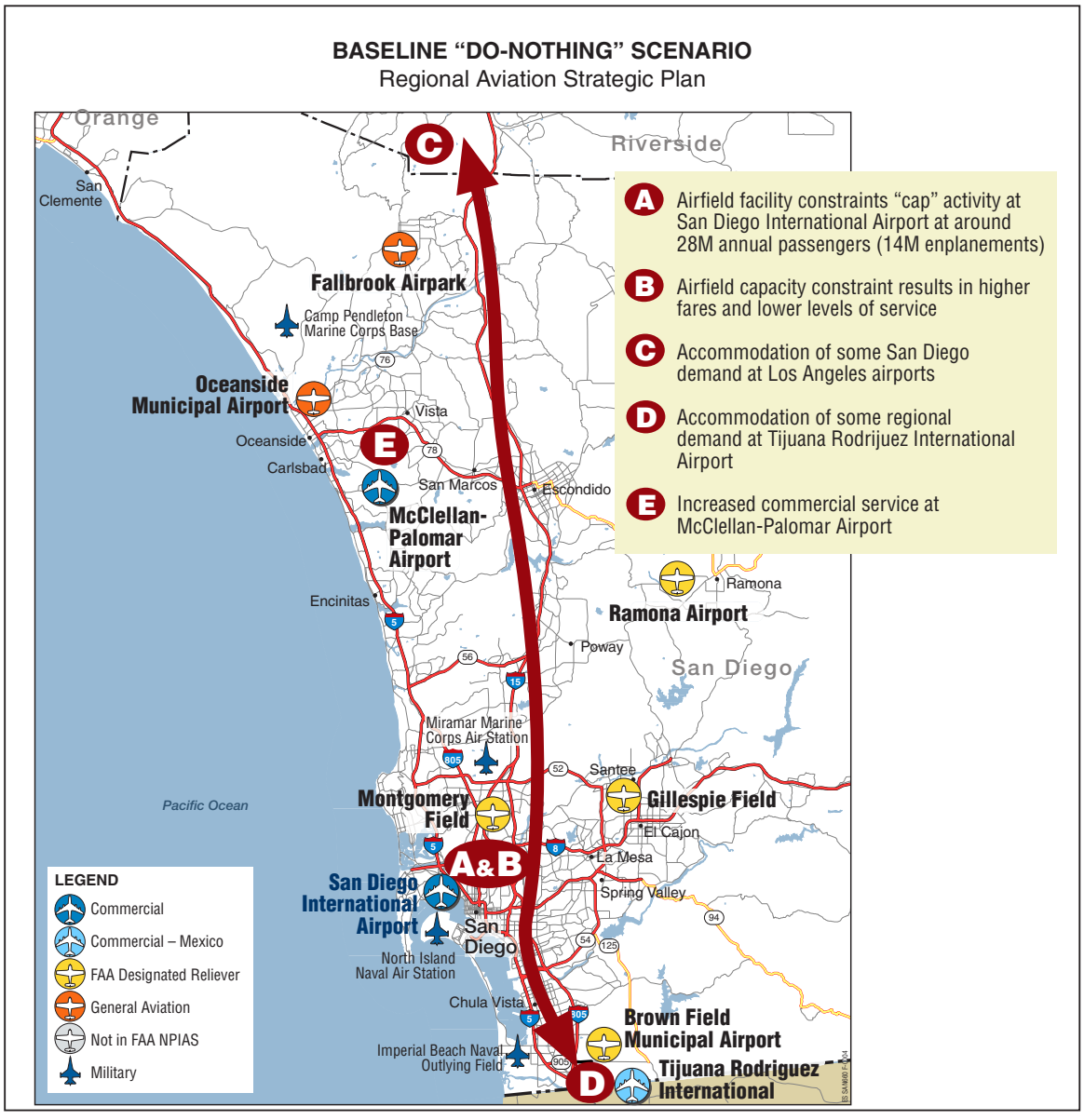
Numerous studies prepared in the past five years have documented that San Diego County will reach commercial service (passenger airline) capacity during the RASP planning horizon. It has been calculated that San Diego International will reach its airfield capacity sometime between 2020 and 2030, at approximately 28 million annual passengers. Once this occurs, the airport's level of service is expected to decrease and result in (1) increased operating delays on the airfield and in the ground transportation network leading to the airport; and (2) increases in the price of air service.

In addition, the RASP demand model predicted that many Southern California airports will reach capacity during the RASP forecast period. Los Angeles International is projected to reach capacity sometime around 2015. This is expected to result in significant increases in passenger enplanements at the other greater Los Angeles metropolitan region airports, thereby moving forward the time in which these airports will reach their respective capacities.

Baseline Scenario

The RASP Baseline Scenario, shown below, is defined by the expected outcomes of the capacity constraint at San Diego International and incorporates the following:

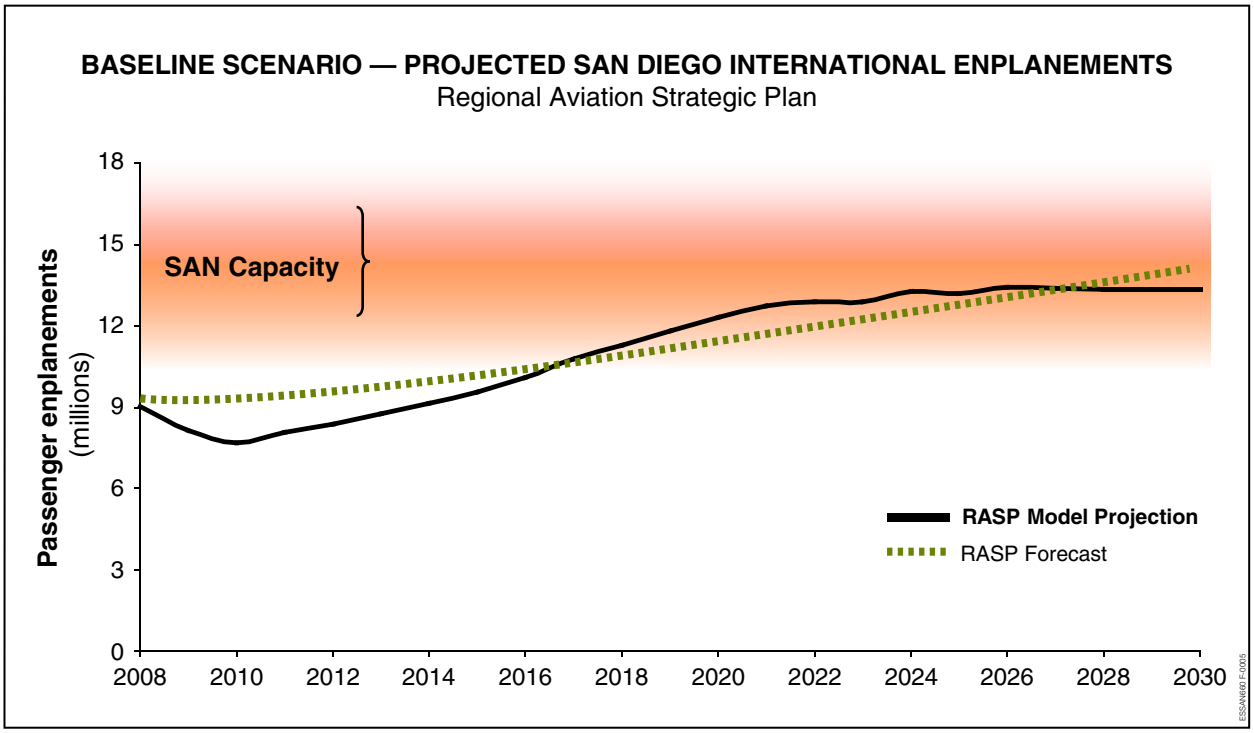
- Reasonably foreseeable "market-driven" reactions to address demand once San Diego International reaches capacity
- Approved improvements in the near-term horizon, such as the Terminal 2 West 10 gate addition in 2013 and *Destination Lindbergh* "Opening Day" recommendation, including an Intermodal Transit Center (ITC) on the north side of the airfield



- Region-wide surface improvements per SANDAG's 2007 RTP – "Revenue Constrained Scenario"

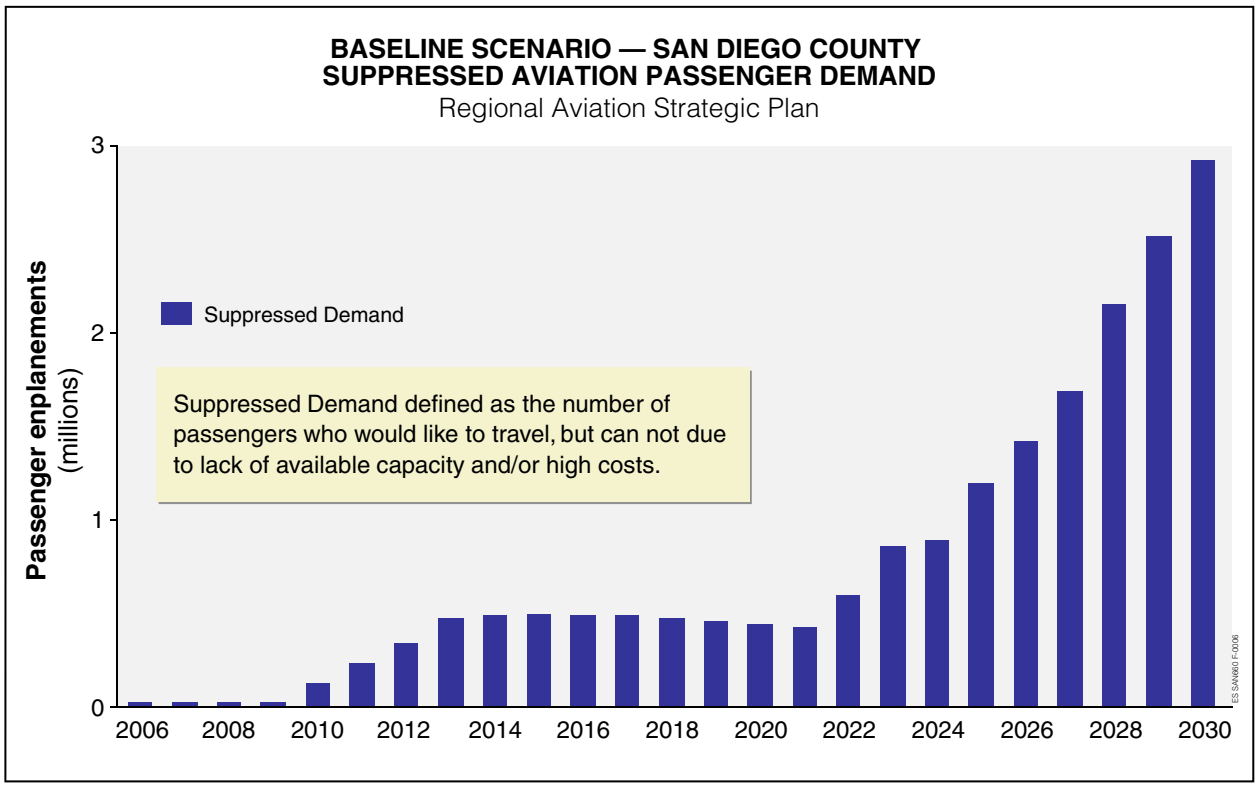
- Capacity constraints at greater Los Angeles metropolitan region airports

The Baseline Scenario assumes the capacity of San Diego International is approximately 14.2 million annual enplanements (28 million passengers), with an implementation cost of approximately $535 million. It should be noted that multiple agencies would be responsible for funding and implementing the various projects in the Baseline Scenario, and not all are the responsibility of the Authority.



Suppressed Demand

The RASP demand model, which incorporates numerous econometric variables as well as capacity constraints at RASP Study Area airports, indicates capacity constraints will occur at San Diego International earlier than previously predicted – beginning between 2020 and 2025. The effects of this capacity constraint will be diminished levels of service, increased operating delays, and higher airline fares. As a result, there will be "lost" or "suppressed" demand, which is defined as potential passengers who desire to utilize air service but do not because of the lack of available capacity and/or prohibitively high costs. As demand eventually nears regional aviation capacity, the number of "suppressed demand" in San Diego County is projected to increase to about 3.0 million annual passengers by 2030.



ALTERNATIVE SCENARIOS

After an extensive process of considering all reasonable measures that could be taken to optimize the Airport System, five families of improvements were identified for analysis. Each family is oriented toward optimizing a certain market or user type associated with the Airport System, and each family includes individual alternatives resulting in the complete set of 15 scenarios developed for detailed evaluation:

Commercial Passenger Optimization: Addresses capacity limitations at San Diego International by developing future facilities, enhancing/introducing airline service at other regional airports, reserving capacity for airline passenger operations, and adjusting the size of aircraft serving the airport.

A. Full build-out of the ITC and north side terminal at San Diego International
B. Preserve San Diego International airfield capacity for commercial service
C. Enhance commercial passenger service at McClellan-Palomar Airport
D. Introduce commercial passenger service at Brown Field Municipal Airport
E. Up-gauge San Diego International's Fleet Mix – Narrow-body Fleet
F. Up-gauge San Diego International's Fleet Mix – Increased Wide-body Fleet

Enhanced Utilization of Tijuana: Focus on improving access to Tijuana Rodriguez International Airport to facilitate the accommodation of future regional passenger demand.

A. Facilitate border crossings
B. Aviation passenger cross border facility
C. Cross border airport terminal

California High Speed Rail (HSR): Offers passengers an alternative ground transportation solution to cities and airports within California; two potential alternative alignments and station locations in San Diego were evaluated.

A. Station at downtown San Diego (line terminates at Santa Fe depot / train station)
B. Station at San Diego International (line terminates at San Diego International)

General Aviation Optimization: Enhancing other airports to accommodate high-end general aviation aircraft (typically corporate users) would provide an attractive alternative to using San Diego International.

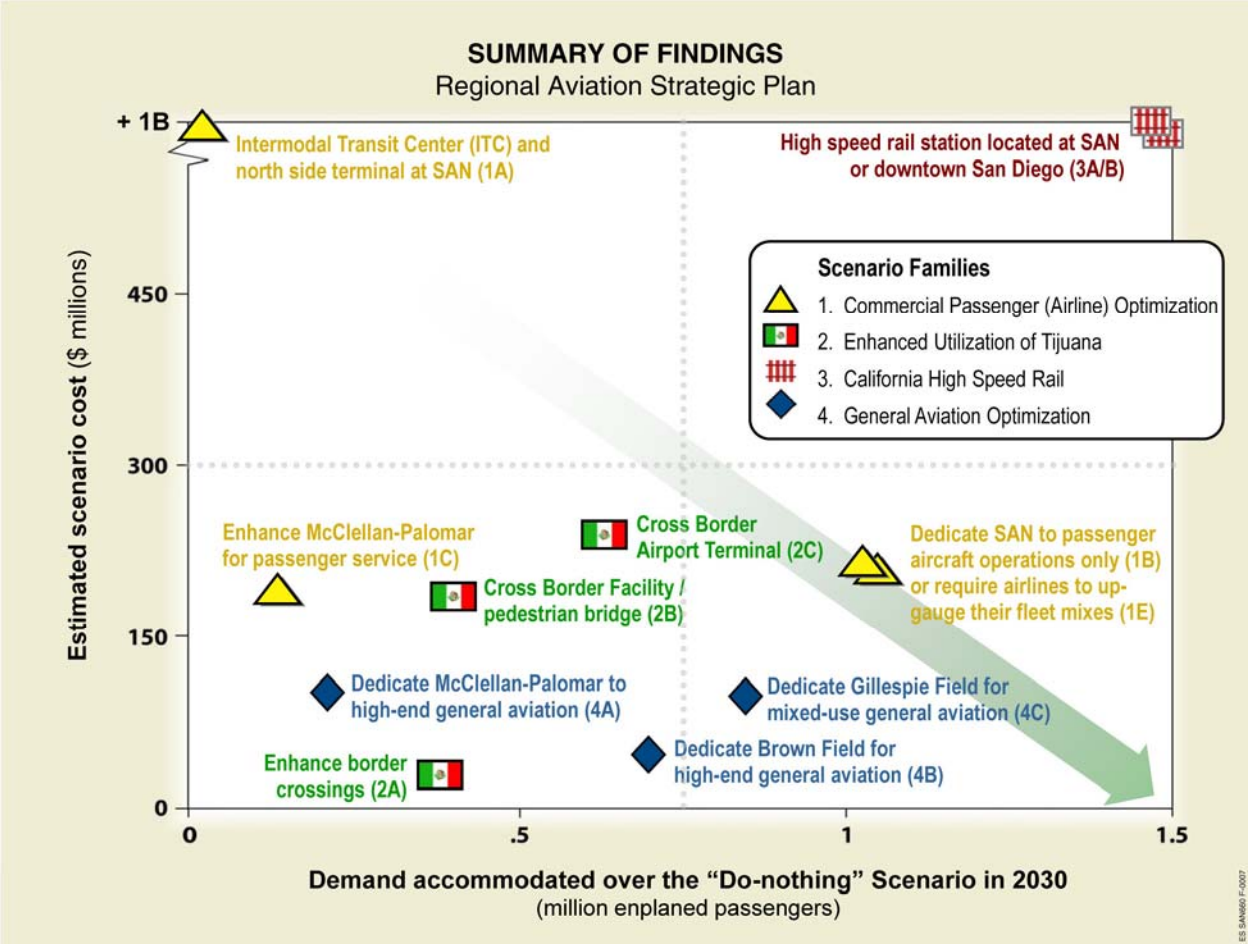
A. Enhance McClellan-Palomar Airport for high-end/corporate general aviation
B. Enhance Brown Field Municipal Airport for high-end/corporate general aviation
C. Enhance Gillespie Field for mixed-use general aviation

Air Cargo Optimization: Alternative locations for air cargo could remove air cargo flights from San Diego International, preserving airfield capacity for commercial passenger airlines.

A. Introduce air cargo service at Brown Field Municipal Airport

The above scenarios include planned and hypothetical measures that could be taken to optimize markets and user types which, if implemented, could serve to optimize the Airport System. Several of the 15 scenarios are designed to measure the maximum possible effect of a particular theoretical action and are legally challenging, impractical, and inadvisable to implement in full. Nevertheless, estimating the impact of these measures was determined valuable by the RASP Subcommittee so as to better understand the full range of available options, benefits, and costs of attempting to address projected demand.

KEY FINDINGS



An evaluation matrix measuring the additional projected demand that could be accommodated over the Baseline Scenario in 2030 for each scenario evaluated in the RASP is presented above. Additional findings are as follows:

1. **Full Build-out of the ITC**. The full build-out of the ITC and north side terminal at San Diego International (Scenario 1A) has no effect on suppressed demand relative to the Baseline Scenario; however, this scenario is expected to yield regional access and other tangible service benefits not captured by RASP analyses.

2. **McClellan-Palomar**. Enhancing commercial passenger service at McClellan-Palomar (Scenario 1C) has little effect on suppressed demand because the maximum capacity of this airport only represents 8% of the total projected suppressed demand in 2030.

3. **Up-gauging the San Diego International Fleet Mix**. Up-gauging the fleet mix at San Diego International (Scenarios 1E and F) provides the same relative

benefits to the region as Scenario 1B (reserving San Diego International capacity for commercial passenger service). San Diego International's fleet mix is already favorable (nearly optimized) as the Airport is projected to have a relatively low proportion of regional jets and turboprops in the future.

4. **Brown Field Municipal Airport**. Brown Field scenarios (Scenarios 1D and 5A) cannot feasibly be implemented for the following reasons: (a) The FAA has determined precision instrument approaches are infeasible at Brown Field due to terrain and airspace complications, thereby precluding commercial operators from conducting all-weather operations; (b) established passenger airlines are reluctant to "split operations" with San Diego International, and there are two other competitive commercial service airports (San Diego International and Tijuana Rodriguez International) in close proximity; (3) air cargo carriers are unwilling to operate from a facility south of San Diego International due to distance from to their demand base in San Diego County and lack of cargo sorting infrastructure.

5. **Tijuana Enhancements**. Tijuana scenarios (Scenarios 2A, B, and C) have a relatively small effect on suppressed demand, which is attributed to the following: (1) significant portions of demand accommodated at Tijuana Rodriguez International prior to 2030 is generated in the greater Los Angeles metropolitan region; and (2) by 2030, more San Diego residents and visitors are already projected to use Tijuana Rodriguez International for international trips with or without airport or access improvements.

6. **California High Speed Rail**. Both California HSR scenarios (Scenarios 3A and B) perform similarly with regard to accommodating intrastate, intercity demand; while a downtown San Diego HSR station shows higher air-rail diversion than a station at San Diego International, their overall regional benefits are similar. Nevertheless, either scenario could play a role to alleviate the region's aviation capacity problems by freeing up scarce San Diego International capacity and accommodating suppressed demand. These benefits may increase beyond the 2030 RASP planning horizon.

7. **General Aviation Optimization**. General aviation scenarios (4A, B, and C) have relatively similar costs and provide nearly the same, but nominal, impact on demand relative to the Baseline Scenario.

OBSERVATIONS AND NEXT STEPS

The following summarizes the key observations of the RASP and identifies next steps for regional airport planning.

- **Even Beneficial Alternatives Yield Marginal Results.** The RASP makes clear that while several scenarios, if implemented, can reduce suppressed demand and allow more passengers to be accommodated they have a marginal effect on increasing overall aviation capacity in San Diego County, especially at San Diego International. Scenarios providing the most benefit outside of HSR (Scenarios 1B, E and F), would provide an additional five years of activity growth at San Diego International (at most). Beyond the end of the forecast period, the region's aviation system will face an imbalance between demand for air service and the supply of infrastructure available to serve it.

- **No Single Entity in the Region Can Implement RASP Findings.** Given the multiple airport sponsors in the region, there is no single entity that can unilaterally implement RASP findings. Implementing any airport improvement or policy change is an individual decision for the sponsor of each airport. The most challenging to implement are RASP scenarios that consider inducing aviation traffic to shift from one airport to another – and therefore, in order for these scenarios to be feasible, two or more airport operators must agree on the implementation costs and policy actions.

- **Regional Airport Sponsors Should Coordinate Future Improvements.** It is recommended that Airport sponsors in San Diego County coordinate future changes and improvements to help optimize overall system performance.

- **A Regional Airport Coordinating Committee Should Be Considered.** Given the multiple Airport sponsors in the region combined with the need to coordinate future changes and improvements, the formation of a regional airport coordinating committee should be considered. This committee should be formed by the airport owners/operators in the region and should include regional planning representatives. The coordinating committee should expand RASP analyses and evaluate economic, environmental, and other qualitative aspects of RASP alternatives that are deemed most appropriate.

Chapter 1

INTRODUCTION AND BACKGROUND

The following sections provide applicable background on the Regional Aviation Strategic Plan (RASP) prepared for the 12 public-use airports located within San Diego County (the Airport System).

1.1 POLICY CONTEXT

California Senate Bill 10 of 2007 (SB-10) and the California Public Utilities Code (Sections 132357, 132358, and 132359) requires airport multimodal planning to be conducted and coordinated in San Diego County by the San Diego County Regional Airport Authority (the Authority) and San Diego Association of Governments (SANDAG). The main planning provisions of SB-10 are the development of RASP and an Airport Multimodal Accessibility Plan (AMAP). The Authority is leading preparation of the RASP, which will identify workable strategies to improve the performance of the Airport System. SANDAG is leading the AMAP, which will develop a multimodal strategy to improve surface transportation access to airports.

The development of the RASP and AMAP is a coordinated process between SANDAG and the Authority, which was given responsibility for preparation of the RASP in SB-10. The overall planning schedule was designed to allow RASP findings to be incorporated into the AMAP, which will subsequently be incorporated into the next update of the Regional Transportation Plan (RTP). SANDAG is required under federal law to update the RTP every four years, with the next update required in 2011.

1.2 STUDY OBJECTIVES

In enacting SB-10, the California Legislature intended to: (a) promote long-range planning for airports in local general plans; (b) advance regional transportation strategies; (c) explore mechanisms for regional cooperation; and (d) ensure consistency between the planning documents prepared or approved by the Authority and SANDAG. The RASP contributes to the accomplishment of these goals by identifying workable strategies to improve the performance of the Airport System.

Accordingly, the primary objectives of the RASP are to:

1. Define the region's long-range air transportation needs and the roles of regional airports in meeting those needs

2. Determine opportunities and constraints with respect to accommodating future aviation demand at regional airports

3. Establish a plan to meet future regional aviation needs while preserving flexibility

4. Develop strategies to maximize the efficiency and effectiveness of existing and planned facilities

5. Comply with SB-10, which requires consideration of: existing airport capacities, forecast demand, ground access, transit facilities and services, compatibility with adjacent communities, and applicable financial issues

The overarching goal of the RASP is to maximize the efficiency and effectiveness of existing and planned aviation facilities. In other words, the goal is not to "force traffic," but rather "optimize assets" across the County's growing areas. Hence, the RASP is unique in that it brings together what have typically been considered separate modal infrastructures to help ensure the region's decisions can be made in an integrated fashion.

1.3 PROJECT OVERVIEW

The RASP was divided into a 3-phase work plan culminating in early 2011.

- **Phase 1** – Conducted between spring and winter 2009, included data gathering and development of the econometric demand model that would be used to assess the various alternative scenarios.

- **Phase 2** – Conducted between spring and summer 2010, included the development of a Baseline or "do-nothing" Scenario, and identification of concepts and strategies intended to optimize the Airport System.

- **Phase 3** – Conducted between fall 2010 and winter 2011, included technical and qualitative evaluations of various alternative scenarios.

Each phase included stakeholder and public outreach (see Section 1.7), as well as individual task-specific documentation and deliverables.

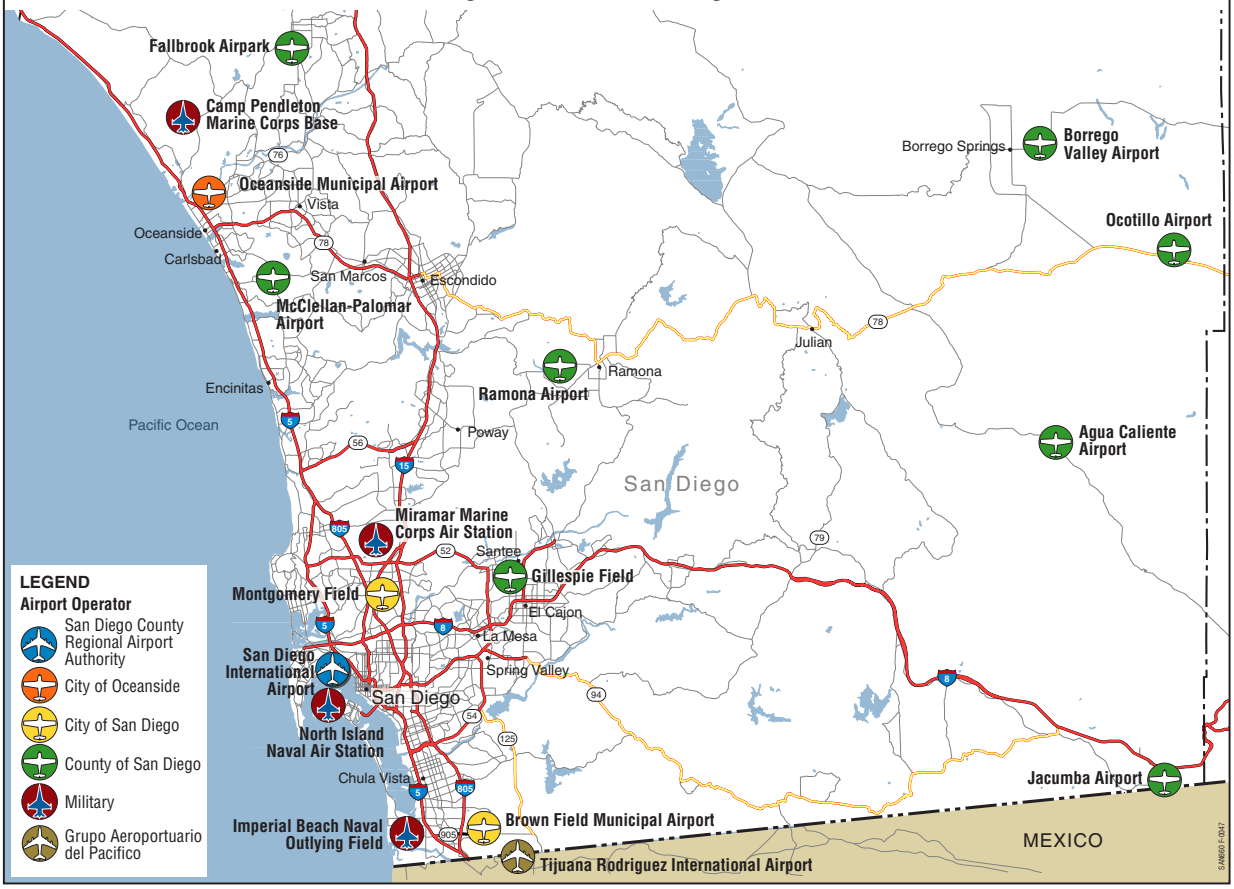
1.4 SAN DIEGO COUNTY AIRPORT SYSTEM

As presented on Figure 1-1, the San Diego County "Airport System" is defined by the 12 public-use airports in San Diego County and Tijuana Rodriguez International Airport, which is located just south of the California – Mexico border. The four military airfields in San Diego County – Camp Pendleton Marine Corps Air Station (NFG); Miramar Marine Corps Air Station (NKX); Imperial Beach Naval Outlying Field (NRS); and North Island Naval Air Station (NZY) – are excluded from the RASP except for consideration of the effects/impacts on regional airspace.

Figure 1-1

RASP APPROACH AND SAN DIEGO COUNTY AIRPORT SYSTEM

Regional Aviation Strategic Plan



1.4.1 Characteristics

San Diego County is the second most populous county in California, with over 3 million residents accounting for 8% of the state's population. However, only two airports in the County – San Diego International and McClellan-Palomar – are certificated by the Federal Aviation Administration (FAA) for commercial airline service, with San Diego International having one of the smallest footprints of any metropolitan airport in the U.S. The other public-use airports in San Diego County are general aviation facilities with various expansion constraints.

Geographically, the County is bounded on the west by the Pacific Ocean and on the east by rising terrain which generally complicates airport development and requires greater use of navigational aids.

Because there are multiple airports in close proximity (12 public-use and 4 military bases with aviation activity), San Diego County is considered one of the busiest and most complex airspace regions in the U.S. There are numerous competing and conflicting interests (commercial, military, corporate, recreational, etc.) operating in the airspace at any given moment. In addition, San Diego County includes various areas designated as special-use and international airspace (e.g., Mexico).

1.4.2 Airport Sponsors and Roles

The operator (i.e., sponsor), classification, and 2007 activity data for each airport in the Study Area is presented in Table 1-1. The following airports are owned and operated by the County of San Diego: Aqua Caliente, Borrego Valley, Fallbrook Airpark, Gillespie Field, Jacumba, Ocotillo, McClellan-Palomar, and Ramona. Brown Field Municipal and Montgomery are owned and operated by the City of San Diego. The City of Oceanside owns and operates Oceanside Municipal; and the Authority owns and operates San Diego International. Tijuana Rodriguez International is owned and operated by Grupo Aeroportuario del Pacifico (GAP).

Table 1-1
SAN DIEGO COUNTY AIRPORT SYSTEM
Regional Aviation Strategic Plan

Airport	Sponsor	Classification	Operations 2007
San Diego International (SAN)	SDCRAA	Large-hub Commercial Service	229,486
McClellan-Palomar (CRQ)	County of San Diego	Non-hub Commercial Service	212,023
Montgomery Field (MYF)	City of San Diego	Reliever	222,492
Gillespie Field (SEE)	County of San Diego	Reliever	295,652
Brown Field Municipal (SDM)	City of San Diego	Reliever	145,661
Ramona (RNM)	County of San Diego	Reliever	164,699
Oceanside Municipal (OKB)	City of Oceanside	General Aviation	14,128
Fallbrook Community (L18)	County of San Diego	General Aviation	33,286
Borrego Valley (L08)	County of San Diego	General Aviation	26,251
Agua Caliente (L54)	County of San Diego	Limited Use General Aviation	4,400
Ocotillo (L90)	County of San Diego	Limited Use General Aviation	800
Jacumba (L78)	County of San Diego	Limited Use General Aviation	325
Tijuana Rodriguez Int (TIJ)	GAP	Not Applicable	

SDCRAA = San Diego County Regional Airport Authority
GAP = Grupo Aeroportuario del Pacifico

Collectively, the 13 airports accommodate the following types of users:

- Commercial Service – Scheduled passenger service, including scheduled air taxi
- General Aviation – Non-scheduled corporate flight activity, training, and recreational activities
- Cargo Service – Scheduled cargo and freight service; only San Diego International currently provides scheduled cargo service

San Diego International, McClellan-Palomar, and Tijuana Rodriguez International accommodate commercial, general aviation, and corporate services. Airports accommodating only general aviation and corporate services include: Brown Field Municipal, Gillespie Field, Montgomery Field, and Ramona. The remaining airports – Agua Caliente, Borrego Valley, Fallbrook Airpark, Jacumba, Oceanside Municipal, and Ocotillo – accommodate general aviation only.

A summary of facilities and operational data for the Airport System is presented on Figure 1-2.

The National Plan of Integrated Airport Systems (NPIAS) designated San Diego International Airport and McClellan-Palomar Airport as primary airports in the San Diego County. According to the FAA Future Airport Capacity Task (FACT) 2, published in 2007, the San Diego County region would need aviation capacity after 2025. FACT 2 also added that the San Diego International Airport should be closely monitored to gauge the effects of swiftly changing industry outlook as changes could expedite the need for additional capacity.

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Figure 1-2

BASELINE FACILITIES AND OPERATIONAL DATA

Regional Aviation Strategic Plan

Airport Activity Statistics

	San Diego International (SAN)			McClellan-Palomar (CRQ)			Montgomery Field (MYF)			Brown Field Municipal (SDM)			Gillespie Field (SEE)			Ramona (RNM)			Tijuana-Rodriguez (TIJ)		
	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)
Annual Enplanements	9.2 Million	14.1 Million	15.5 Million	46,909	50,000	426,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.3 Million	4.4 Million	6.9 Million
Annual Operations	229,486	309,800	363,400	212,023	268,700	279,900	222,492	271,800	--	145,661	175,900	281,500	295,652	461,000	489,600	164,699	193,000	242,100	56,200	Approx. 70,000	--

	San Diego International (SAN)	McClellan-Palomar (CRQ)	Montgomery Field (MYF)	Brown Field Municipal (SDM)	Gillespie Field (SEE)	Ramona (RNM)	Tijuana-Rodriguez (TIJ)
Regional Forecast Facility Improvement and Operational Assumptions	Baseline Scenario assumes construction of new gates, airfield improvements, auto parking, and roadway improvements beginning in 2009. Continued deployment of narrow body jets; replacement of small regional jets to larger regional jets; increased use of wide body jets as international activity grows; projected increase of load factors. High Scenario enplanement forecast reflects lower fuel prices more than Baseline Scenario.	Baseline Scenario assumes SkyWest will continue to serve LAX and replace EMB120 aircraft with CRJ200 (or similar) aircraft in 2013. Planned 38,000 square feet of new hangar space developed in 2009. High Scenario assumes Runway extension to accommodate CRJ200, EMB170, EMB190 and 72-seat Q400 or similar aircraft without restrictions (no indication of length required). Markets potentially served in addition to LAX include: LAS, PHX, DEN, and SFO.	None Identified	High Scenario assumes planned 356 acre development in association with Distinctive Projects Company is implemented. Development includes additional hangar capacity to accommodate 290 additional based aircraft; full occupancy realized.	High Scenario assumes planned 70 acre Cajon Air Center development is implemented with 55 acres of new aircraft storage hangars; full occupancy realized. Majority of additional based aircraft would originate from outside San Diego County (as opposed to other County airports). Forecasts represent unconstrained conditions, and activity levels may exceed current capacity.	High Scenario assumes planned development of the Ramona Air Center in 2017-2019, including 56 private hangars and 40 public hangars; full occupancy realized.	Not Included in the regional forecast
Airport Facilities							
FAA NPIAS Designation	Large Hub Primary Commercial	Non-Hub Primary Commercial	Reliever	Reliever	Reliever	Reliever	N/A
California Aviation System Plan Designation	Primary Commercial Hub	Primary Commercial Non-Hub	Metropolitan GA	Regional GA	Regional GA	Regional GA	N/A
Total Airport Acreage	661	487	456	880	775	378	1,112
FAA Airport Reference Code	D-V	B-II	B-II	D-IV	B-II	B-II	ICAO 4E
Runway Data	9/27 - 9,401	6/24 - 4,897	5/23 - 3,400 10L/28R - 4,577 10R/28L - 3,400 Runway strength limited to aircraft weighing less than 20K lbs.	8L/26R - 7,972 8R/26L - 3,180	9L/27R - 5,341 9R/27L - 2,737 17/35 - 4,147	9/27 - 5,000 (Paved)	9/27 - 9,711 10/28 - 8,200 CLOSED
Instrument Approach	Runway 9: ILS CAT I Runway 27 Non-precision	Runway 24: ILS CAT I	Runway 28R: ILS CAT I	Non-precision	Non-precision	Non-precision	Runway 9: ILS

Airport Activity Statistics

	Oceanside Municipal (OKB)			Fallbrook Community (L18)			Borrego Valley (L08)			Ocotillo (L90)			Agua Caliente (L54)			Jacumba (L78)		
	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)	Historical 2007	Forecast 2030 (Baseline)	Forecast 2030 (High)
Annual Enplanements	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Annual Operations	14,128	18,200	36,500	33,286	43,200	--	26,251	22,400	--	800	800	--	4,400	4,400	--	325	325	--

	Oceanside Municipal (OKB)	Fallbrook Community (L18)	Borrego Valley (L08)	Ocotillo (L90)	Agua Caliente (L54)	Jacumba (L78)
Regional Forecast Facility Improvement and Operational Assumptions	High Scenario assumes Airport Property Ventures will take over management of airport; 100 new hangars developed for additional based aircraft.	None Identified	None Identified	None Identified	None Identified	None Identified
Airport Facilities						
FAA NPIAS Designation	General Aviation	General Aviation	General Aviation	Not in NPIAS	Not in NPIAS	Not in NPIAS
California Aviation System Plan Designation	Regional GA	General Aviation	General Aviation	General Aviation	General Aviation	General Aviation
Total Airport Acreage	236	290	246	351	160	131
FAA Airport Reference Code	B-I	B-I	B-II	B-I	B-I	B-I
Runway Data	6/24 - 2,712 Runway strength limited to aircraft weighing less than 12K lbs.	18/36 - 2,160 Runway strength limited to aircraft weighing less than 12K lbs.	8/26 - 5,011	9/27 - 2,475 (Dirt) 13/31 - 4,210 (Dirt)	11/29 - 2,500 Runway strength limited to aircraft weighing less than 12K lbs.	7/25 - 2,510 (Gravel) Runway strength limited to aircraft weighing less than 12K lbs.
Instrument Approach	Non-precision	Non-precision	Non-precision	None (visual only)	None (visual only)	None (visual only)

Notes: NPIAS = National Plan of Integrated Airport Systems
N/A = Not Applicable

Sources: Forecast data— *San Diego County Regional Aviation Strategic Plan, Aviation Demand Forecasts*, Landrum & Brown, Inc., December 2008.
Airport facility data—*National Plan of Integrated Airport Systems*, FAA, 2008.
Tijuana-Rodriguez data—*Cross Border Terminal - Market Demand Study*, Infrastructure Management Group, Inc., 2006.

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1.5 SUMMARY OF AVIATION ACTIVITY

Forecasts of aviation activity developed for the RASP were prepared in 2008 as part of the Destination Lindbergh study. As of January 2011, a complete copy of the *San Diego County Regional Aviation Strategic Plan, Aviation Demand Forecasts (*December 2008) can be obtained at the following link:

http://www.san.org/documents/rasp/Aviation_Demand_Forecasts_Draft_December_2008.pdf

Appendix A includes a technical memorandum presenting aviation demand forecasts for 2035 for the 12 public-use airports in San Diego County in support of planning efforts being conducted by SANDAG. The 2035 forecast is an extrapolation of the baseline forecasts which includes enplaned passengers, air cargo, and aircraft operations (passenger and all-cargo airlines and general aviation) for each of the 12 public-use airports in San Diego County.

Understanding that current and projected aviation activity in the San Diego region is an essential and critical component of the RASP, the forecasts were used as a starting point for determining latent demand and facility improvements necessary to meet the region's long-term air service needs. This approach recognizes that potential development scenarios can constrain or further stimulate demand, thereby altering the baseline demand forecast.

Overarching forecast assumptions are summarized below:

- The RASP forecast base year is 2007; consistent with the AMAP, annual operations and fleet mix forecasts are presented for each airport through 2030
- System airports are assumed to maintain their existing roles
- Forecast data was provided from the County of San Diego, City of San Diego, Airport Authority, and FAA sources
- Forecasts account for and consider the following:
  - Continued congestion at San Diego International
  - Planned improvements at San Diego International
  - Potential runway extension at McClellan-Palomar
  - Loss of a flight school at Gillespie Field
  - New high-end fixed based operator (FBO) at Brown Field Municipal
  - Development of the Ramona Air Center
  - Lease of Oceanside Municipal to a private operator
- Forecasts are based on unconstrained demand, which assumes that there are no physical, regulatory, environmental, political, or other impediments to aviation activity growth

The following sections summarize base year (2007) and forecast data for commercial passenger, air taxi, general aviation, and military activity. A summary of actual and forecast operations at each airport is provided on Table 1-2. Total aircraft operations for the Airport System are forecast to increase from 1.35 to 1.77 million operations between 2007 and 2030, representing an average annual growth rate of 1.2%.

1.5.1 Commercial Activity

San Diego International and McClellan-Palomar are the only two airports in San Diego County with scheduled commercial passenger service. San Diego International also has commercial cargo activity. Commercial passenger forecasts were based on regression of domestic origination and destination passengers against personal income and airline yield.

The majority of commercial operations will continue to be accommodated at San Diego International, where the passenger forecast is driven principally by passengers starting and ending their travel in San Diego (over 90% of passengers in 2007). Enplanements are projected to increase from 9.2 million in 2007 to 14.1 million in 2030, an average annual growth rate of 1.9% per year. However, by 2030 McClellan-Palomar is projected to accommodate 0.4% of total commercial passengers and about 25% of commuter passengers. Enplanements at McClellan-Palomar are forecast to return by 2010 to the 50,000 level experienced historically and remain at that level through 2030.

Passenger aircraft operations were derived from enplaned passenger forecasts. The aggregate number of commercial operations at an airport depends on the following three factors: total enplaned passengers, average aircraft size, and average load factor. The domestic passenger operations forecasts were developed based on the following assumptions:

- The historical deployment of 135- to 145-seat narrow-body jets at San Diego International would continue into the future, with the evolution of the fleet being towards similarly sized, next generation replacement aircraft
- Small regional jets are expected to be replaced with larger regional jets
- In general, domestic load factors are expected to increase in the short-term due to increases in fuel prices and corresponding capacity cuts
- International activity is expected to expand somewhat with non-stop service to Europe in 2011 and Pacific destinations by 2015, which will lead to more wide-body aircraft in the fleet. International load factors are expected to increase from almost 70% in 2007 to 75% in 2030

Table 1-2
ACTUAL AND FORECAST AIRCRAFT OPERATIONS — SAN DIEGO COUNTY AIRPORT SYSTEM
Regional Aviation Strategic Plan

		Total operations												
	Year	SAN	CRQ	MYF	SEE	SDM	RNM	OKB	L18	L08	L54	L90	L78	Total
Actual	1990	n.a.	255,369	269,623	188,533	212,293	110,168	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,035,986
	1995	226,994	204,191	227,847	184,291	125,034	133,778	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,102,135
	2000	206,889	255,096	251,645	187,751	112,800	132,407	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,146,588
	2001	206,988	221,898	215,189	175,392	123,761	110,413	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,053,641
	2002	206,380	204,289	245,643	183,145	140,822	106,429	n.a.	20,896	n.a.	n.a.	n.a.	n.a.	1,107,604
	2003	202,577	193,336	216,571	180,749	105,327	95,328	n.a.	18,292	19,554	452	246	1,626	1,034,058
	2004	208,311	207,866	229,673	208,159	104,387	121,875	11,233	22,728	18,697	500	250	1,500	1,135,179
	2005	219,866	208,768	245,234	242,179	116,898	140,900	11,609	36,124	26,454	650	405	325	1,249,412
	2006	220,620	198,590	232,698	278,388	135,485	155,120	14,352	32,586	20,853	650	405	325	1,290,072
	2007	229,486	212,023	222,492	295,652	145,661	164,699	14,128	33,286	26,251	4,400	800	325	1,349,203
Estimate	2008	228,100	201,000	247,000	262,100	120,800	128,400	11,600	22,302	22,400	4,400	800	325	1,249,227
Forecast	2010	219,800	208,900	250,300	266,200	126,500	138,100	12,000	23,000	22,400	4,400	800	325	1,272,725
	2015	231,800	219,200	251,000	278,100	135,800	158,800	14,500	34,300	22,400	4,400	800	325	1,351,425
	2020	254,600	233,800	255,600	315,000	147,700	167,400	15,500	36,700	22,400	4,400	800	325	1,454,225
	2025	280,300	249,600	262,700	376,300	161,300	178,800	16,600	39,600	22,400	4,400	800	325	1,593,125
	2030	309,800	268,700	271,800	461,000	175,900	193,000	18,200	43,200	22,400	4,400	800	325	1,769,525
	Average annual growth rate:													
	1990-2000	n.a.	0.0%	-0.7%	0.0%	-6.1%	1.9%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.0%
	2000-2007	1.5%	-2.6%	-1.7%	6.7%	3.7%	3.2%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.4%
	2007-2010	-1.4%	-0.5%	4.0%	-3.4%	-4.6%	-5.7%	-5.3%	-11.6%	-5.2%	0.0%	0.0%	0.0%	-1.9%
	2010-2020	1.5%	1.1%	0.2%	1.7%	1.6%	1.9%	2.6%	4.8%	0.0%	0.0%	0.0%	0.0%	1.3%
	2020-2030	2.0%	1.4%	0.6%	3.9%	1.8%	1.4%	1.6%	1.6%	0.0%	0.0%	0.0%	0.0%	2.0%
	2007-2030	1.3%	1.0%	0.9%	2.0%	0.8%	0.7%	1.1%	1.1%	-0.7%	0.0%	0.0%	0.0%	1.2%

Note: Tijuana Rodriguez International Airport not included.
Source: *San Diego County Regional Aviation Strategic Plan, Aviation Demand Forecasts*, Landrum & Brown, Inc., December 2008.

Legend:

SAN - San Diego International Airport
CRQ - McClellan-Palomar Airport
MYF - Montgomery Field
SEE - Gillespie Field
SDM - Brown Field Municipal Airport
RNM - Ramona Airport
OKB - Oceanside Municipal Airport
L18 - Fallbrook Community Airpark
L08 - Borrego Valley Airport
L54 - Agua Caliente Airport
L90 - Ocotillo Airport
L78 - Jacumba Airport

As a result, commercial passenger operations are expected to grow at 1.3% per year from 199,900 in 2007 to 269,200 operations by 2030.

Based on the domestic nature of cargo at San Diego International, it was assumed that the long-term forecast growth rate for air cargo would likely be less than the growth projected by national cargo forecasts prepared by the FAA, Boeing, and Airbus. Based on this assumption, cargo tonnage is expected to grow at a rate of 1.7% annually from 155,000 tons in 2007 to 225,600 tons in 2030.

1.5.2 General Aviation and Military Activity

General aviation forecasts were prepared based on an econometric model using a regression analysis of the total San Diego County air taxi and general aviation activity against historical personal income for San Diego County. San Diego International forecast air taxi/general aviation activity was calculated based on a market share analysis. San Diego International's historical contribution of air taxi/general aviation traffic has averaged 2.3 percent of the total air taxi/general aviation activity in San Diego County between 1995 and 2007. However, based on the 2008 air taxi/general aviation activity estimates at the airport, this is expected to fall to 1.9%. Furthermore, as commercial passenger operations increase and airside congestion worsens, it is expected that this amount will decrease even further over time, reaching 1.6% by 2030.

Unconstrained general aviation operations are forecast to grow from 1.0 million to nearly 1.5 million by 2030, with Gillespie Field accounting for the majority of growth. The following assumptions were included in the forecasts:

- **McClellan-Palomar** – Assumes implementation of a 1,000-foot runway extension (under consideration since 2003); construction of a new terminal building; and 38,000 sq ft of new hangar space in 2009. Air taxi operations are forecast to reach 2007 levels by 2010 and increase at an average annual rate of 2.8% from 2010 to 2030, based on FAA growth rates. Itinerant general aviation operations grow based on FAA national forecasts; and local operations remain at 2008 levels through 2030.

- **Montgomery Field** – Assumes construction of a planned 423-foot runway extension, pavement rehabilitations, and 12 aircraft parking positions. Air taxi operations expected to continue to decline. Itinerant general aviation forecast to hold constant at 2008 levels through 2030; local operations projected based on national FAA forecasts.

- **Brown Field Municipal** – Assumes implementation of planned development of FBO and firefighting base and commercial, industrial, hotel, and educational facilities. Air taxi and itinerant general aviation projected based on trend analyses; local operations projected based on national FAA forecasts.

- **Ramona** – Assumes implementation of planned public-private development of hangars for approximately 100 aircraft. By 2012, itinerant general aviation reaches 2007 levels and local general aviation reaches 2006 levels; forecast operations increase based on FAA growth rates.

- **Oceanside Municipal** – General aviation operations expected to recover and reach 2007 levels in 2012; forecast operations increase at FAA growth rates.

- **Fallbrook Community Airpark** – Fallbrook Master Plan 2006 is not adopted for the RASP. General aviation activity projected based on FAA growth rates.

- **Borrego Valley, Agua Caliente, Ocotillo, and Jacumba Airports** – General aviation activity projected to remain constant at 2007 levels.

The future general aviation fleet mix was based on national trends, local demand, and planned development at each airport.

Military forecasts anticipate no growth in annual county-wide operations (approximately 12,500 operations) and no change in share by airport.

1.6 PLANNING CHALLENGES

There are numerous challenges to meeting RASP goals and objectives, as summarized below:

- Of the total system airports, only two are certificated by the FAA for commercial airline service – San Diego International and McClellan-Palomar. The other public-use airports are general aviation facilities with various expansion constraints. Airports with available land are not located near the population/economic base, complicating traffic redistribution strategies.

- San Diego International has one of the smallest footprints of any metropolitan airport in the U.S. The Airport's growth is constrained by the single-runway airfield which will "cap" activity at around 28 million annual passengers. Since San Diego International is currently the only facility equipped to accommodate the full range of commercial service, the airfield constraint will likely ultimately limit regional growth.

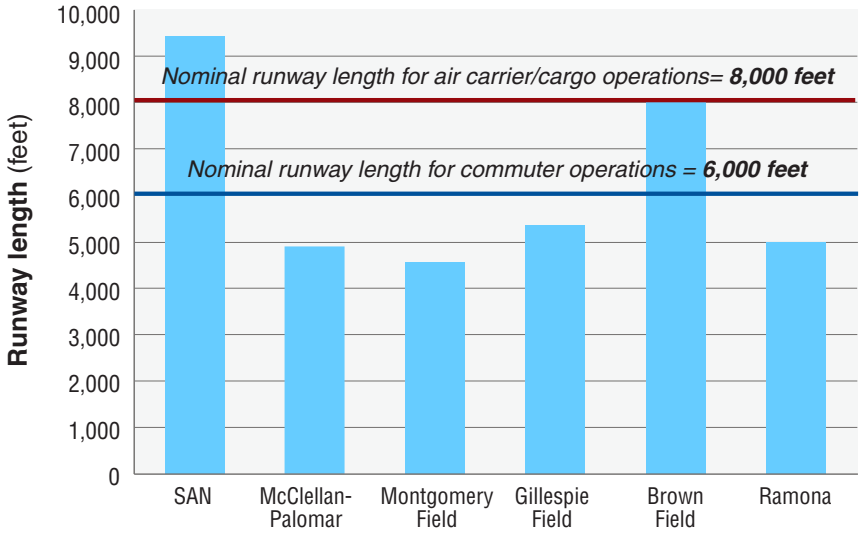
- The best use of all aviation infrastructure is possible with an integration of air and ground (i.e., intermodal strategies). The potential for high speed rail to connect San Diego to other airports in Southern California may alleviate some short-haul demand at San Diego County airports, freeing up precious airfield capacity at San Diego International.

- Only San Diego International and Brown Field have runways capable of accommodating the full range of commercial activity (see Figure 1-3). In

addition to runway length, factors related to accommodating commercial service include: runway strength, airfield design standards, ability to lengthen runway, political and/or community opposition. Unrestricted accommodation of commercial aviation demand is not possible at McClellan-Palomar due to its runway length and also existing airfield layout constraints.

Figure 1-3

EXISTING RUNWAY LENGTHS
Regional Aviation Strategic Plan



Note: Nominal runway length includes aircraft payload and range considerations.

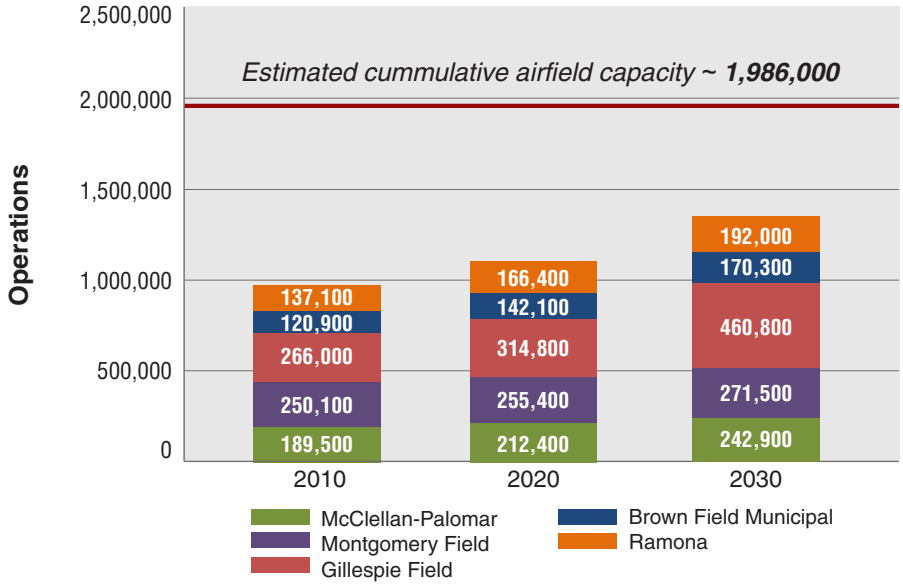
- The conversion of an existing general aviation airport to a FAR Part 139 certificated airport to accommodate commercial service (passenger or cargo) is unlikely due to community and political opposition and significant costs associated with such an action.

- The collective capacity of the five general aviation airports is well above forecast demand (see Figure 1-4). In addition, capacity significantly exceeds demand at all facilities, except at Gillespie Field, where demand is projected to exceed capacity by 10,000 operations in 2030.

Figure 1-4

AIRFIELD DEMAND AND CAPACITY AT GENERAL AVIATION AIRPORTS

Regional Aviation Strategic Plan



- The Airport System has achieved a natural "balance" with regard to accommodating activity (passenger, cargo, general aviation, etc.); this "balance" will be difficult to change given political, physical, and community factors associated with each airport.

- Although San Diego International has good domestic air service at competitive airfares, there are large numbers of passengers choosing to use other airports in the region, including Mexico. These choices are predominantly based on air service options rather than cost. In addition, there have been recent increases in interregional and international travel, with more people working in San Diego but living in Riverside and Imperial counties, and Mexico.

- No single entity has sole authority to implement recommendations, although many interests are part of the process and participated in the RASP.

1.7 COORDINATION AND OUTREACH

Many stakeholders have a vested interest in the outcome of the RASP, including:

- Airport sponsors, including the Airport Authority, the County of San Diego, City of San Diego, City of Oceanside, and GAP
- Federal, state, and regional agencies – FAA, Caltrans, California High Speed Rail Authority, SANDAG
- Regional transportation agencies – San Diego Metropolitan Transit System (MTS) and North County Transit District (NCTD)
- Local communities and the public, including all 18 cities in San Diego County represented by SANDAG
- Public and airport-specific stakeholders

While the Airport Authority led the RASP, significant coordination was required with the other airport sponsors and regional agencies. To meet this need, a technical Subcommittee of the Airport Advisory Committee was formed with representatives from the City of San Diego and County of San Diego, and other entities that have a responsibility in the development and operations of airports in the county.

In addition, and in compliance with SB-10 requirements, the Airport Authority implemented an extensive public outreach program to accompany preparation of the RASP. A summary of the public and stakeholder outreach program is documented separately.

1.8 AMAP INTEGRATION

Throughout the conduct of the RASP, the Authority worked closely with SANDAG, the agency leading the AMAP, to ensure that (1) ground access estimates used in the RASP econometric model were based on actual estimates from SANDAG's latest RTP; (2) RASP analyses were consistent with the planning protocols of the AMAP; and (3) RASP findings could be incorporated into the AMAP and ultimately into the next update of the RTP. Based on RASP findings, the AMAP will identify and prioritize relevant ground access improvements in order to develop workable strategies to improve the overall performance of the ground access to various San Diego County airports. Coordination with SANDAG was accomplished via monthly meetings and regular updates regarding project strategies, technical assumptions, and preliminary findings. The Authority also collaborated with SANDAG and other regional planning agencies to ensure that the assumptions and the findings for scenarios pertaining to California High Speed Rail were consistent with the California High Speed Rail Authority's plans, as well as other regional rail efforts.

Chapter 2

STRATEGIC ASSESSMENT

The following summarizes the results and findings of a Strategic Assessment conducted on the San Diego County Airport System. The data and findings presented herein represent actual conditions during mid-2009.

2.1 OBJECTIVES

The primary objective of the Strategic Assessment is to identify airports in the system that may be considered for a change in their current role in order to optimize the region's aviation infrastructure. Additional objectives include the following:

1. Develop an understanding of system airport capabilities, users, and market potential

2. Collect key inventory and baseline data for ensuing tasks; gather information that will be utilized in the development and evaluation of alternative scenarios

3. Offer opportunities to understand stakeholder needs and issues and provide a forum to initiate discussions with committees and other stakeholders on RASP issues and opportunities

2.2 ASSESSMENT OF SYSTEM AIRPORTS

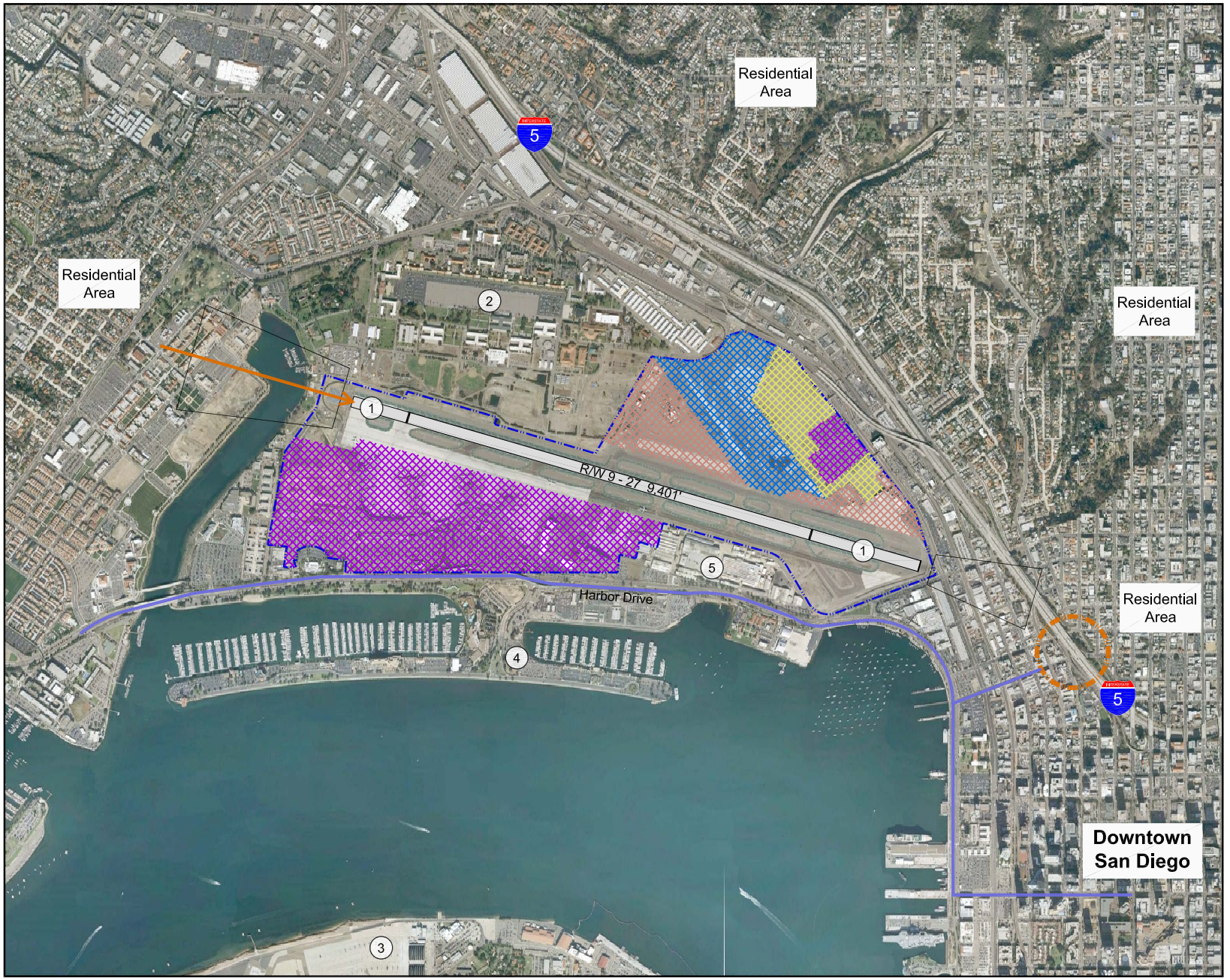
The strategic assessment prepared for each system airport was organized along on the following:

- **Existing** airport facility Strengths (S) and Weaknesses (W) with regard to accommodating the airport's current market

- **Future** airport Opportunities (O) and Threats (T) with respect to accommodating future aviation demand

2.2.1 San Diego International Airport

San Diego International, depicted on Figure 2-1, is the Airport System's only FAA-designated Large-hub Primary Commercial Service Airport. The airport is operated by the San Diego County Regional Airport Authority and is located three miles west of the downtown business district. Vehicle access is provided via Harbor Drive 1.5 miles west of Interstate 5. The airport provides non-stop service to over 35 domestic and three international markets (Canada and Mexico); with passenger service provided by 14 domestic carriers, including six low-cost carriers and two seasonal carriers. In addition, the airport accommodates the majority of regional cargo demand via passenger airlines (belly cargo) and four dedicated all-cargo air carriers.



LEGEND

- Airport property line
- RPZ
- Instrument approach
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

1. Displaced threshold due to obstructions to the approach
2. U.S. Marine Corps Recruit Depot (MCRD)
3. Naval Air Station North Island
4. Harbor Island
5. Former Teledyne - Ryan site

SOURCES

1/ Aerial Photo - Google Earth, May (2009).
2/ *Destination Linbergh - Project Overview*, Jacobs Consultancy, Feb 2009.

NORTH

0' 750' 1500' 3000'

Scale: 1" = 1500'

Figure 2-1
SAN DIEGO INTERNATIONAL AIRPORT FACILITIES AND EXISTING LAND USES

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority
January 2011

JACOBS CONSULTANCY
Airport Management Consulting

In April 2008, the Authority began an effort to define the ultimate configuration for San Diego International Airport. This study, titled *Destination Lindbergh*, is aligned with the San Diego region's long-range multimodal transportation priorities, and identifies the potential for a multimodal transit center to be located near, or adjacent to the airport. As part of the study, the Authority invited SANDAG and the City of San Diego to participate in the planning so as to facilitate a regional decision-making process. *Destination Lindbergh* was accepted by the Authority in February 2009.

Strengths

- Convenient location three miles west of the downtown business district provides a strong origination and destination base
- Historically strong and consistent local economic drivers – military and tourism – provide a steady business and leisure passenger base
- The busiest commercial air service provider in the County
- Efficient and customer-friendly facilities; high passenger satisfaction ratings

Weaknesses

- Single Runway 9-27 (9,401 feet) – considered the "busiest single runway" in the U.S.
- Site constrained by neighboring land uses and environmental and natural obstacles making expansion difficult and expensive
- Terrain and obstacles in the approach and departure paths limit aircraft payloads for some domestic and international markets
- Some outdated infrastructure will require costly upgrades and redevelopment in next 10 years
- Prohibition on takeoffs between 11:30 p.m. and 6:30 a.m. limits potential service in certain international and domestic markets

Opportunities

- Potential to serve additional long-haul domestic (U.S. East Coast) and international destinations
- Leverage proximity to existing intercity and planned public transportation (Amtrak, COASTER, light rail, HSR, etc.) to facilitate momentum for a regional intermodal hub, a key component of *Destination Lindbergh*

- On-airport land available for reconfiguration/optimization of infrastructure, including the former Teledyne-Ryan site expected to be available after remediation

- Construction of new gates, airfield improvements, roadway and parking improvements beginning in 2009 will improve efficiency and flexibility

Threats

- Airfield capacity constraints of the single runway will hinder growth sometime between 2020 and 2030 at around 28 million annual passengers

- Airport and demand base (passenger and cargo) located within the greater Los Angeles metropolitan area airports' catchment area

- Active and vocal community opposition, largely from noise exposure and vehicle traffic congestion

2.2.2 McClellan-Palomar Airport

McClellan-Palomar, depicted on Figure 2-2, is the Airport System's only FAA-designated Non-hub Primary Commercial Service Airport. The airport is operated by the County of San Diego and is located approximately 32 miles north of downtown San Diego and 30 miles south of the center of Orange County. The airport provides non-stop commuter service to Los Angeles (LAX); there are currently seven flights per day offered by a single carrier (Skywest/United Express). The airport's primary market is high-end corporate general aviation activity with some recreational general aviation activity.

Strengths

- Located near population centers in north San Diego County

- FAR Part 139 certification and commuter service already established

- New 18,000 sq ft terminal and support facilities constructed in 2009 include international customs building

- Strong on-airport tenant base – four FBOs, with three recently constructed or remodeled and over 15 aviation-related on-airport businesses

- Relatively small area affected by cumulative noise exposure

- Commercial air service supported by mass transit (bus service only) providing access to north County locations and the COASTER

- On airport property revenue – producing leaseholds from commercial development

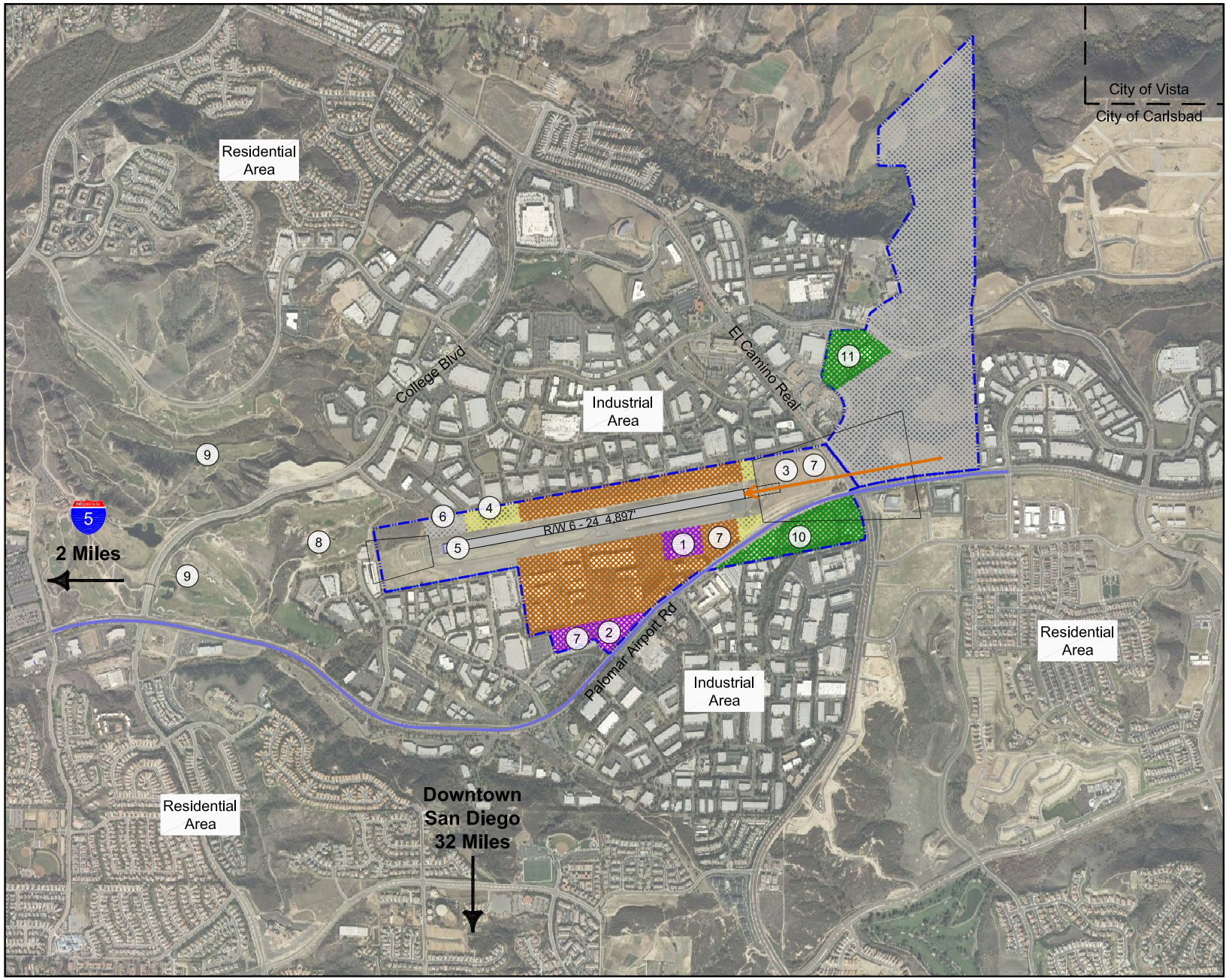


Figure 2-2

McCLELLAN-PALOMAR AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority

January 2011

JACOBS CONSULTANCY
Airport Management Consulting

Weaknesses

- Runway length prohibits most regional jets and some general aviation aircraft from operating at maximum operational capabilities, limiting service to markets within 500 miles
- Low levels of commercial activity; single airline (United Airlines) service to a single market (LAX)
- Cost to maintain FAR Part 139 status not adequately offset by revenues generated by commercial operations

Opportunities

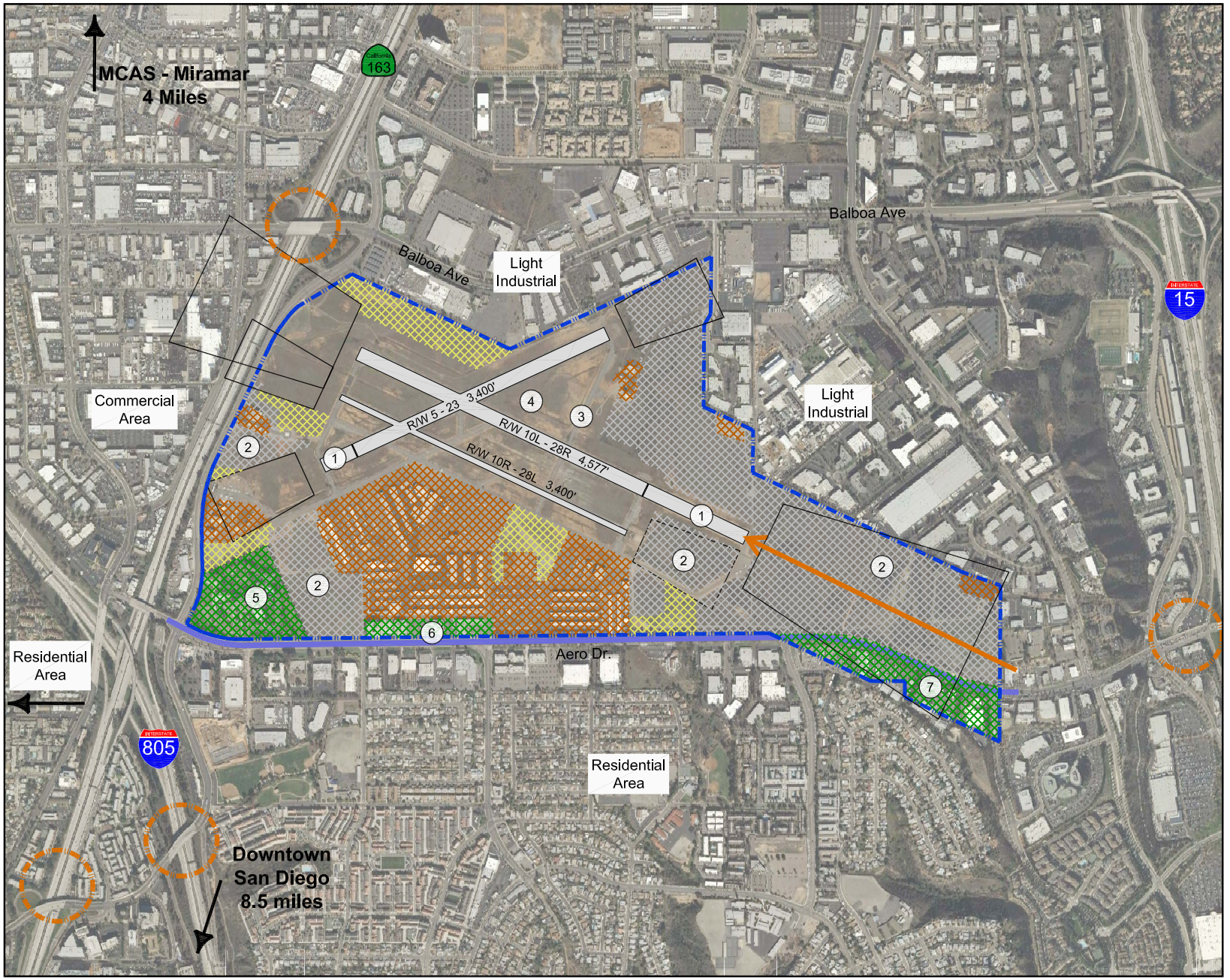
- Potential 1,000-foot runway extension would provide reasonable departure capability for most regional jets (e.g., CRJ200, EMB145) and larger corporate general aviation aircraft
- Proximity of COASTER provides opportunities to attract additional activity
- New terminal facility could be expanded to accommodate up to 240,000 annual passengers
- Potential for San Diego Metropolitan Transit System (MTS) to utilize excess parking facilities for Park & Ride services

Threats

- Significant and costly impediments to runway extensions – eastern extension would require landfill remediation; western extension not practical due to significant grade changes
- On-airport environmental obstacles and sensitive areas (i.e., landfills) would increase development costs
- Some community opposition to airport expansion primarily based on noise

2.2.3 Montgomery Field

Montgomery Field, depicted on Figure 2-3, is one of four FAA-designated Reliever Airports to San Diego International. The airport is operated by the City of San Diego and located approximately 8.5 miles north of downtown San Diego. The airport primarily accommodates recreational general aviation activity. Airspace is shared with MCAS Miramar; interactions are coordinated by military air traffic control services, resulting in minimal operational impacts.



LEGEND

- Airport property line
- RPZ
- Instrument approach
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

1. Displaced threshold due to obstructions to the approach
2. Protected plant and wildlife habitat area may preclude development
3. City ordinance restricts aircraft weight to 20,000 lbs limiting commercial, cargo and corporate activity
4. Noise abatement restrictions for flight training in place to minimize noise impacts
5. Hotel and golf course
6. Retail and commercial development
7. Light Industrial

SOURCES

1/ Aerial photograph – Google Earth, May 2009.
2/ Airport land uses – *Montgomery Field Airport Layout Plan*, Shutt Moen Associates, March 2004.
3/ Airport Facilities – *Montgomery Field Airport Land Use Compatibility Plan, SDCRAA, October 2004.*
4/ Airnav.com.

NORTH
0' 500' 1000' 2000'
Scale: 1" = 1000'

Figure 2-3
MONTGOMERY FIELD AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority
January 2011

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Airport Management Consulting

Strengths

- Close proximity to downtown San Diego and large segments of the County's population
- Parallel runways allow segregation of flight training (touch-and-go) activity from other operations
- Runway 10L-28R extended to 4,577 feet to reduce noise exposure for neighborhoods to the west (added length allows aircraft to reach higher altitudes before overflying residential areas)
- Convenient ground access provided via major state roads (CA 163 and CA 274 – Balboa Avenue) and interstates (I-15 and I-805)

Weaknesses

- Operations limited to small general aviation aircraft due to the relatively short runway length (4,577 feet for departures and 3,400 feet for arrivals); and City Ordinance prohibiting operations by aircraft weighing more than 20,000 lbs.
- Noise abatement restrictions further restrict activity: daytime noise limit 88 dB Community Noise Exposure Level (CNEL) 6:30 a.m. to 11:30 p.m.; nighttime noise limit 70 dB CNEL 11:30 p.m. to 6:30 a.m.

Opportunities – On-airport land available for redevelopment

Threats

- Significant impediments to extending primary Runway 10L-28R, including location of CA 163 and environmentally sensitive areas
- On-airport environmental obstacles (vernal pools and protected plant species) may limit facility expansion and increase development costs
- Opposition from nearby residential areas based on aircraft noise, and flight patterns
- Miramar airspace may preclude future instrument operations or changes in airport operational patterns

2.2.4 Brown Field Municipal Airport

Brown Field, depicted on Figure 2-4, is one of four FAA-designated Relievers to San Diego International. The airport is operated by the City of San Diego and is located approximately 20 miles southeast of downtown San Diego, and 1.5 miles north of the Mexican border. The location is near the Otay Mesa Port of Entry (POE),

one of the busiest commercial land border POEs in the U.S. The airport serves a mix of corporate and recreational general aviation activity.

Strengths

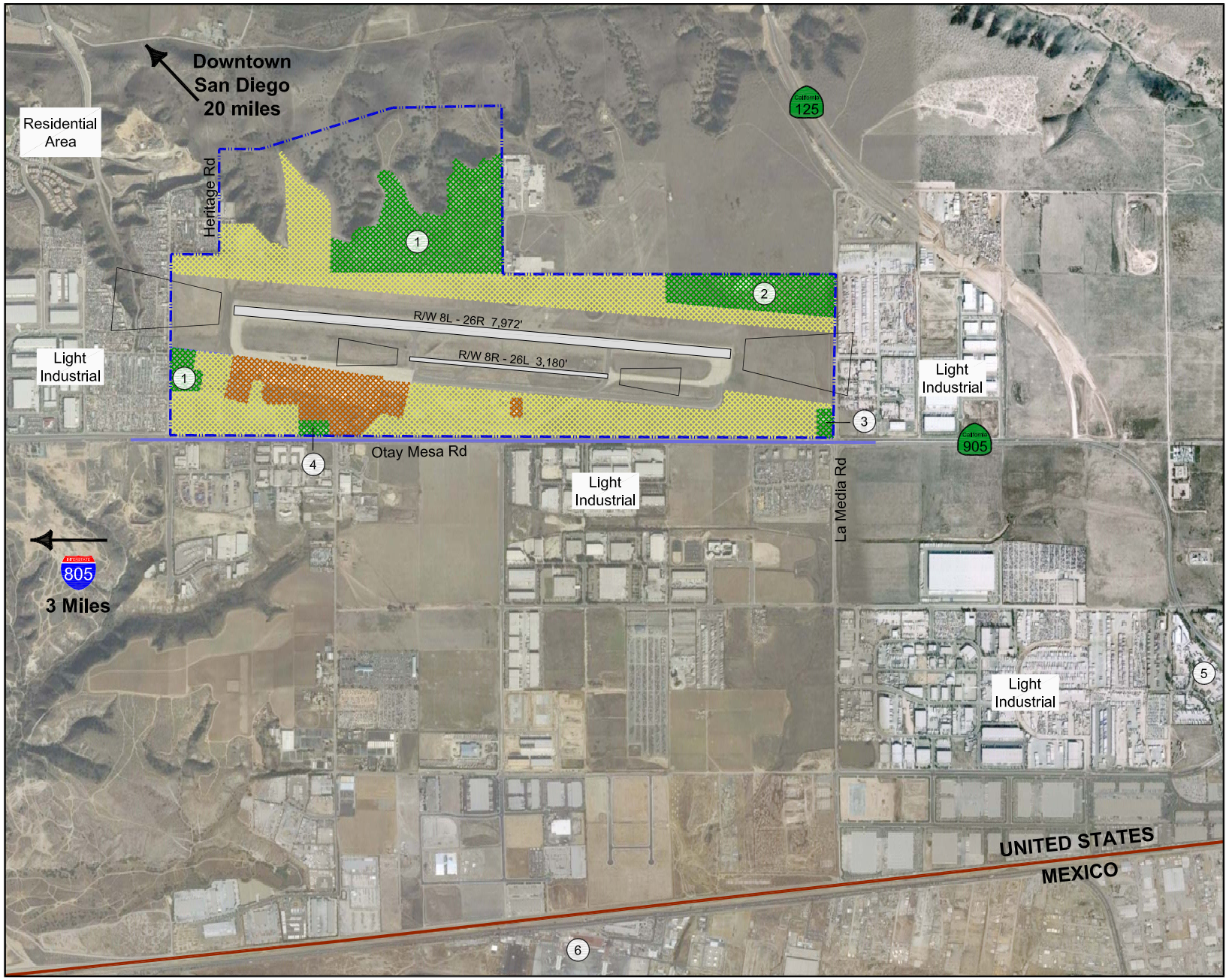
- Sufficient runway length to accommodate a wide range of aircraft types, including most passenger air carrier and cargo aircraft
- Proximity to Otay Mesa Port of Entry, designation as a Foreign Trade Zone (FTZ), and inclusion in the California Enterprise Zone Program attracts both aviation and non-aviation service providers
- Serves as a "first port of entry" for general aviation aircraft traveling from the Baja region of Mexican to California airspace, driving demand for U.S. Customs and FBO services
- Proximity to State Highways 805 and 125 provides access to the San Diego surface transportation network

Weaknesses

- Limited and older general aviation and FBO facilities do not adequately support the primary general aviation market
- Airspace operations and instrument approach capability complicated by Otay Mountain located directly east of the airport; only instrument approach is to Runway 8L from the west

Opportunities

- On- and off-airport land potentially available for future development
- Agreement with Distinctive Projects Company (private developer) to develop approximately 365 acres of available airport property; proposal includes: new general aviation facilities – FBO/GA center, hangars; helicopter FBO and City/County firefighting services; and the San Diego Air and Space Museum
- Location, airport facilities, and FTZ role could be leveraged to attract corporate, light industrial, and other non-aviation development
- Planned roadway improvements will increase surface transportation access to the airport and nearby development



LEGEND

- Airport property line
- RPZ
- International border
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

1. Auto salvage
2. Organic Recycling West
3. Fire station
4. Retail commercial development
5. Otey Mesa Point of Entry
6. Tijuana International Airport

SOURCES

1/ Aerial Photo - Google Earth, May (2009).
2/ *Brown Field Municipal Airport Layout Plan*, Mead & Hunt, February 2005 .
3/ *San Diego Regional Transit Plan*, SANDAG, 2007.

NORTH

0' 750' 1,500' 3,000'

Scale: 1" = 1,500'

Figure 2-4
BROWN FIELD MUNICIPAL AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

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San Diego County Regional Airport Authority
January 2011

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Threats

- Residential areas to the west oppose airport expansion and have resisted prior airport development plans
- Airspace conflicts, including rising terrain and mountains to the east, San Diego International arrival path, and Mexican airspace could limit growth in activity

2.2.5 Gillespie Field

Gillespie Field, depicted on Figure 2-5, is one of four FAA-designated Reliever Airports to San Diego International. The airport is operated by the County of San Diego and is located between El Cajon and Santee, approximately 23 miles northeast of downtown San Diego. The airport primarily accommodates flight school activity (approximately 60% of total operations), recreational general aviation activity, and some limited corporate activity.

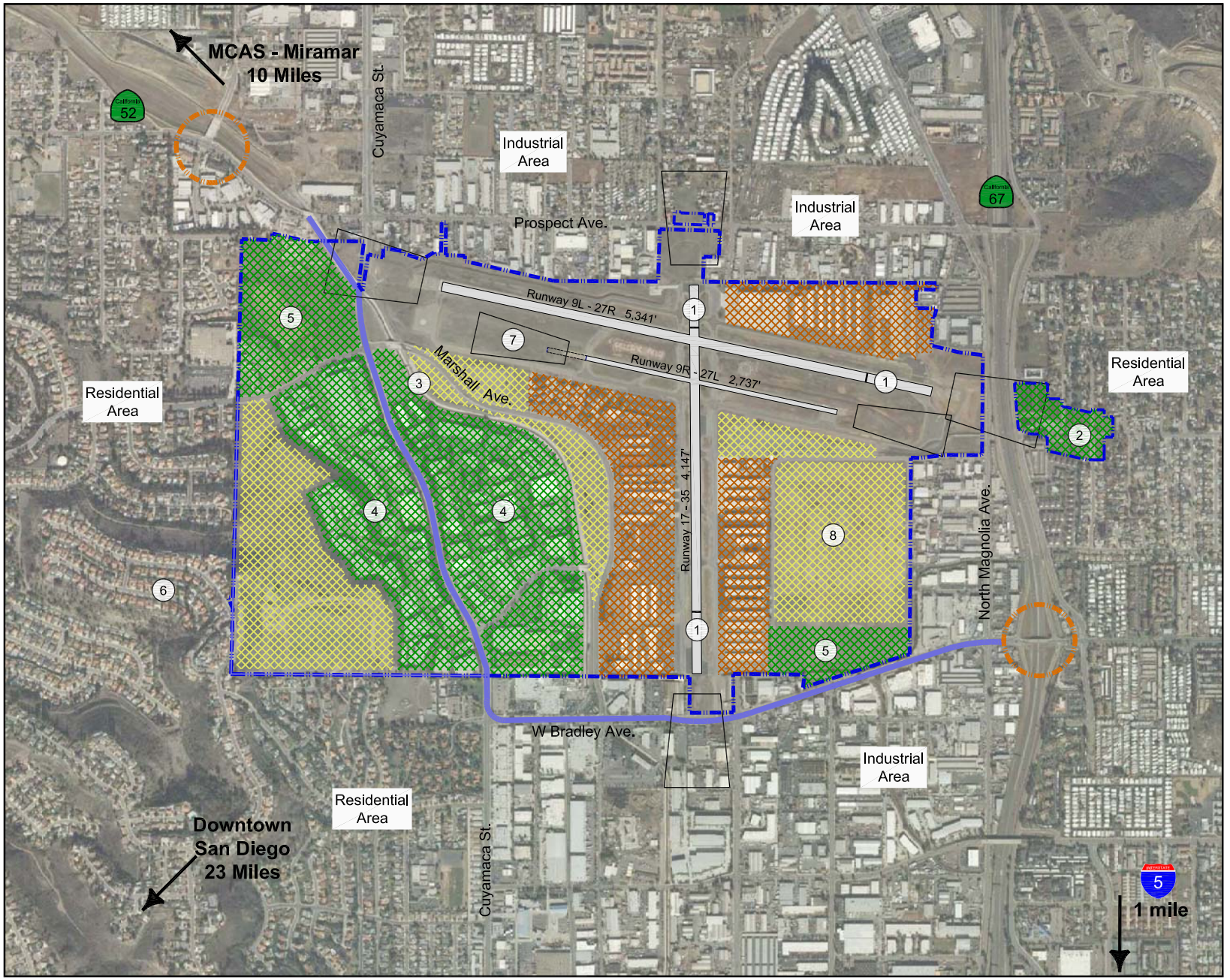
Strengths

- Substantial on-airport land available for development
- Orange and Green Trolley lines stop at Gillespie Field, providing convenient public transportation between the airport, downtown San Diego, and other locations
- Parallel runways allow segregation of training from other operations

Weaknesses – Instrument approach capabilities complicated by surrounding military (MCAS Miramar) airspace and terrain

Opportunities

- El Cajon Plaza, a planned near-term 70-acre development, will provide opportunity to expand the tenant base; proposal includes additional indoor storage hangars and tie-down leaseholds; substantial interest expressed in leasing space
- Potential intermodal public transit link on the west side (connecting with the existing MTS trolley stop) could improve regional access
- Completion of CA 52 extension and interchange with CA 67 will provide improved accessibility to the north side and ease congestion on surrounding roadways



LEGEND

- Airport property line
- RPZ
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

1. Displaced thresholds resulting from RSA deficiencies and obstructions to approach
2. Tree farm
3. MTS Gillespie Field trolley station (Orange and Green lines)
4. Industrial park
5. Golf driving range
6. Fletcher Hills neighborhood
7. Planned 423' runway extension to accomodate 95% of small aircraft
8. El Cajon Plaza (future development)

SOURCES

1/ Aerial photograph – Google Earth, May 2009.
2/ *Gillespie Field ALP Update Narrative Report*, P&D Aviation, September 2005.
3/ AirNav.com.

NORTH
0' 500' 1000' 2000'
Scale: 1" = 1000'

Figure 2-5
GILLESPIE FIELD AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

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San Diego County Regional Airport Authority
January 2011

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Threats

- Primary runway bordered by roads on both ends, increasing the cost of a potential runway extension
- Historical opposition from nearby residential areas primarily due to flight training activity; airport expansion and increases in based aircraft/operations may conflict with community redevelopment initiatives

2.2.6 Ramona Airport

Ramona, depicted on Figure 2-6, is one of four FAA-designated Reliever Airports to San Diego International. The airport is operated by the County of San Diego and is located approximately 36 miles northeast of downtown San Diego. The airport primarily accommodates recreational general aviation activity, although 75% of all activity is local flight training.

Strengths

- Strong on-airport general aviation tenant base
- California Department of Forestry (CDF) firefighting is a major anchor tenant
- Available on-airport land for development

Weaknesses

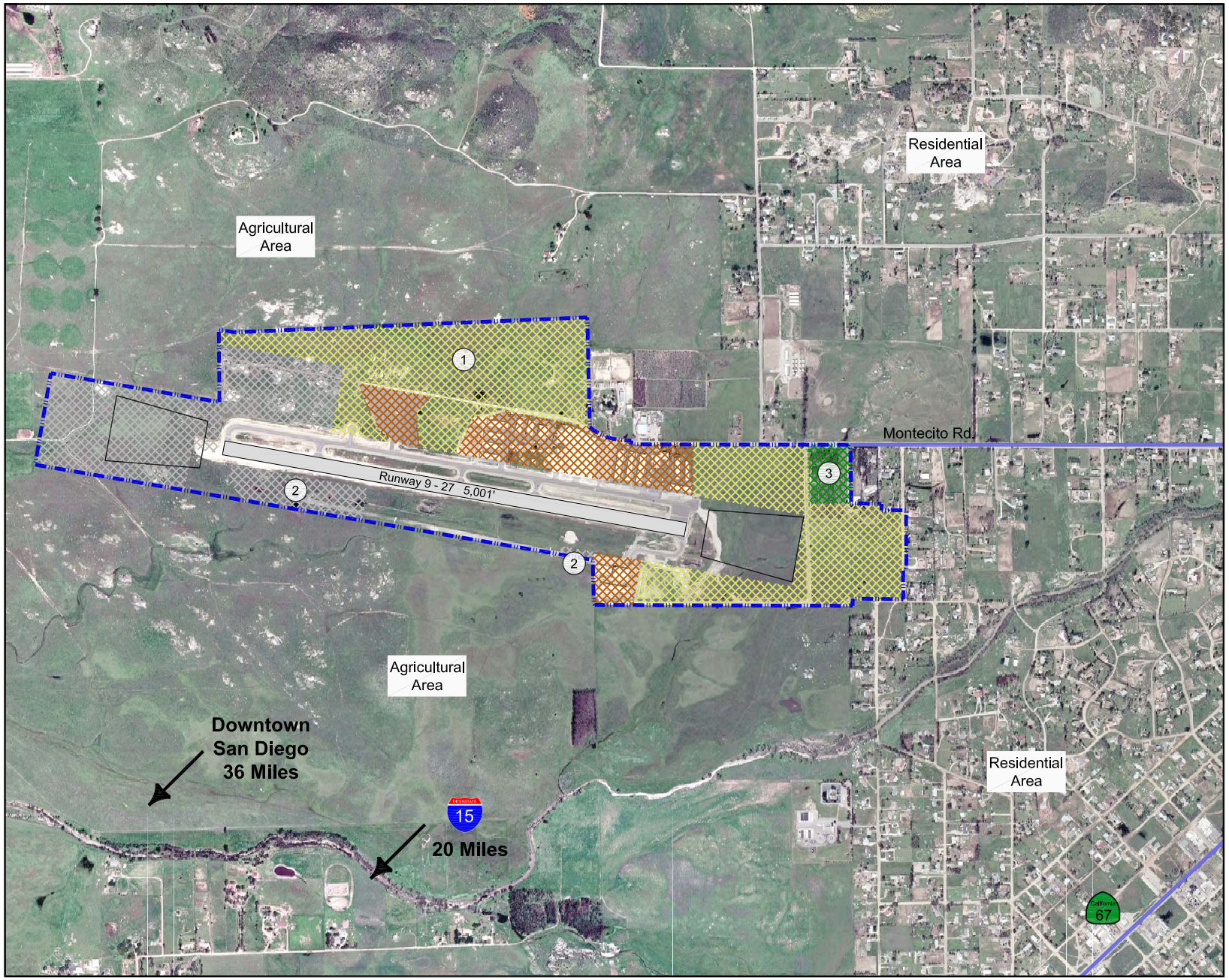
- Terrain to the east precludes implementation of an ILS to Runway 27
- Potential for airspace conflicts between turbo-jet departures from Runway 27 and operations at MCAS Miramar
- Not well connected to the San Diego surface transportation network

Opportunities

- Development of additional general aviation facilities (Ramona Air Center) currently under County of San Diego review; other smaller airport development opportunities exist
- Adjacent undeveloped land may be available for development

Threats

- Land immediately east of the Runway 27 and north of the airport is committed to low density residential uses, which could result in a physical barrier or community opposition to growth due to noise
- Potential development restricted by largest vernal pools in northern San Diego County located in the rare native grasslands supporting endangered spices surrounding the airport



LEGEND

- Airport property line
- RPZ
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

1. Planned Ramona Air Center
2. Vernal pool mitigation area
3. Tree farm

SOURCES

1/ Aerial photograph – Google Earth, May 2009.
2/ *Fallbrook Community Airpark Airport Layout Plan*, P&D Aviation, December 2005.
3/ AirNav.com.

0' 500' 1000' 2000'

Scale: 1" = 1000'

Figure 2-6
RAMONA AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

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San Diego County Regional Airport Authority
January 2011

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2.2.7 Oceanside Municipal Airport

Oceanside Municipal, depicted on Figure 2-7, is an FAA-designated Public-use General Aviation Airport. The airport is operated by the City of Oceanside and is located in the eastern section of the City of Oceanside, approximately 35 miles north of downtown San Diego. The airport primarily accommodates recreational general aviation activity.

Strengths

- Close proximity to North San Diego and Orange County market base
- Proximity to Interstate 5 and COASTER along State Highway 76

Weaknesses

- Runway length and pavement strength limit use to small general aviation aircraft weighting less than 12,000 pounds; some areas of the airfield are non-compliant with FAA design standards
- Airfield expansion constrained by a road and river to the west and commercial development to the east
- 2003 settlement with Citizens for a Better Oceanside (CBO) limits potential to expand tenant base

Opportunities

- Proposal for Airport Property Ventures (APV) to lease the airport site and develop FBO and additional aircraft parking, as well as provide FAA-required design criteria
- Leverage proximity of the COASTER for alternative airport access

Threats

- Camp Pendleton airspace may preclude future instrument operations or changes in airport operational patterns
- Community opposition to airport operations

Figure 2-7

OCEANSIDE MUNICIPAL AIRPORT FACILITIES AND EXISTING LAND USES

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority
January 2011

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2.2.8 Fallbrook Community Airpark

Fallbrook Community, depicted on Figure 2-8, is an FAA-designated Public-use General Aviation Airport. The airport is operated by the County of San Diego and is located approximately 58 miles east-northeast of downtown San Diego. The airport primarily accommodates recreational general aviation activity.

Strengths – Located in proximity to North County and Orange County market base

Weaknesses

- Runway length and pavement strength limit use to small general aviation aircraft weighting less than 12,500 pounds
- Borders MCB Camp Pendleton, which prohibits unrestricted operations
- Poor airport access infrastructure

Opportunities

- Open space for potential expansion of airfield and aviation facilities is available on existing airport property
- Airport Master Plan, completed and approved by the County of San Diego Board of Supervisors, includes complete redevelopment of runway, taxiway, and related pavement areas

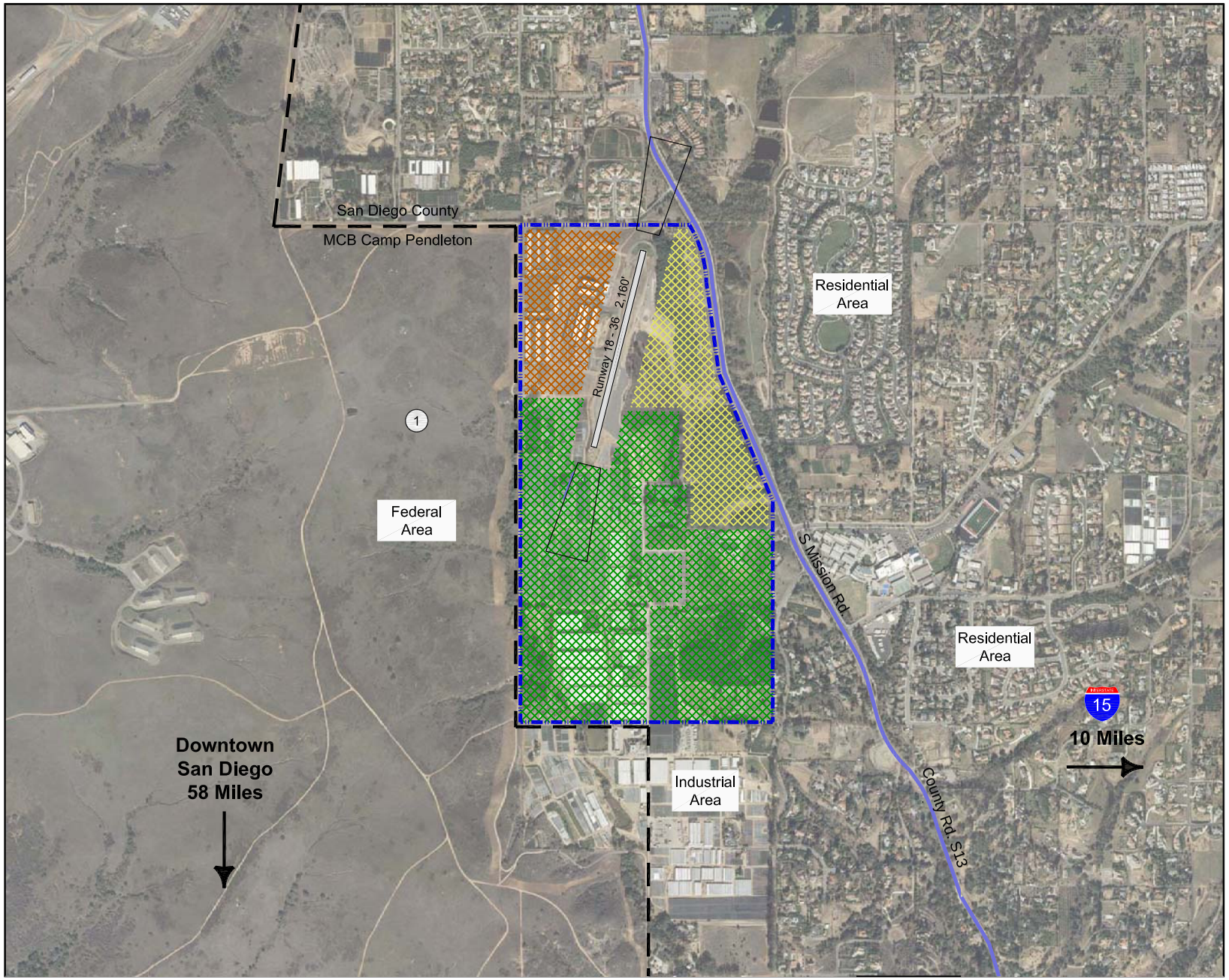
Threats – Camp Pendleton airspace may preclude future instrument operations or changes in airport operational patterns

2.2.9 Borrego Valley Airport

Borrego Valley, depicted on Figure 2-9, is a Limited-use General Aviation Airport. The airport is operated by the County of San Diego and is located approximately 90 miles northeast of downtown San Diego. The airport primarily accommodates recreational general aviation activity, and is the aviation gateway for tourists visiting Anza-Borrego Desert State Park.

Strengths

- Surrounded by vacant/airport-compatible land uses
- Location near the Anza-Borrego State Park attracts recreational general aviation activity to the airport



LEGEND

- Airport property line
- RPZ
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

(1) Marine Corps Base Camp Pendleton

SOURCES

1/ Aerial photograph – Google Earth, May 2009.
2/ *Fallbrook Community Airpark Airport Layout Plan*, P&D Aviation, December 2005.
3/ AirNav.com.

NORTH

0' 500' 1000' 2000'

Scale: 1" = 1000'

Figure 2-8
FALLBROOK COMMUNITY AIRPARK
AIRPORT FACILITIES AND EXISTING LAND USES

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San Diego County Regional Airport Authority
January 2011

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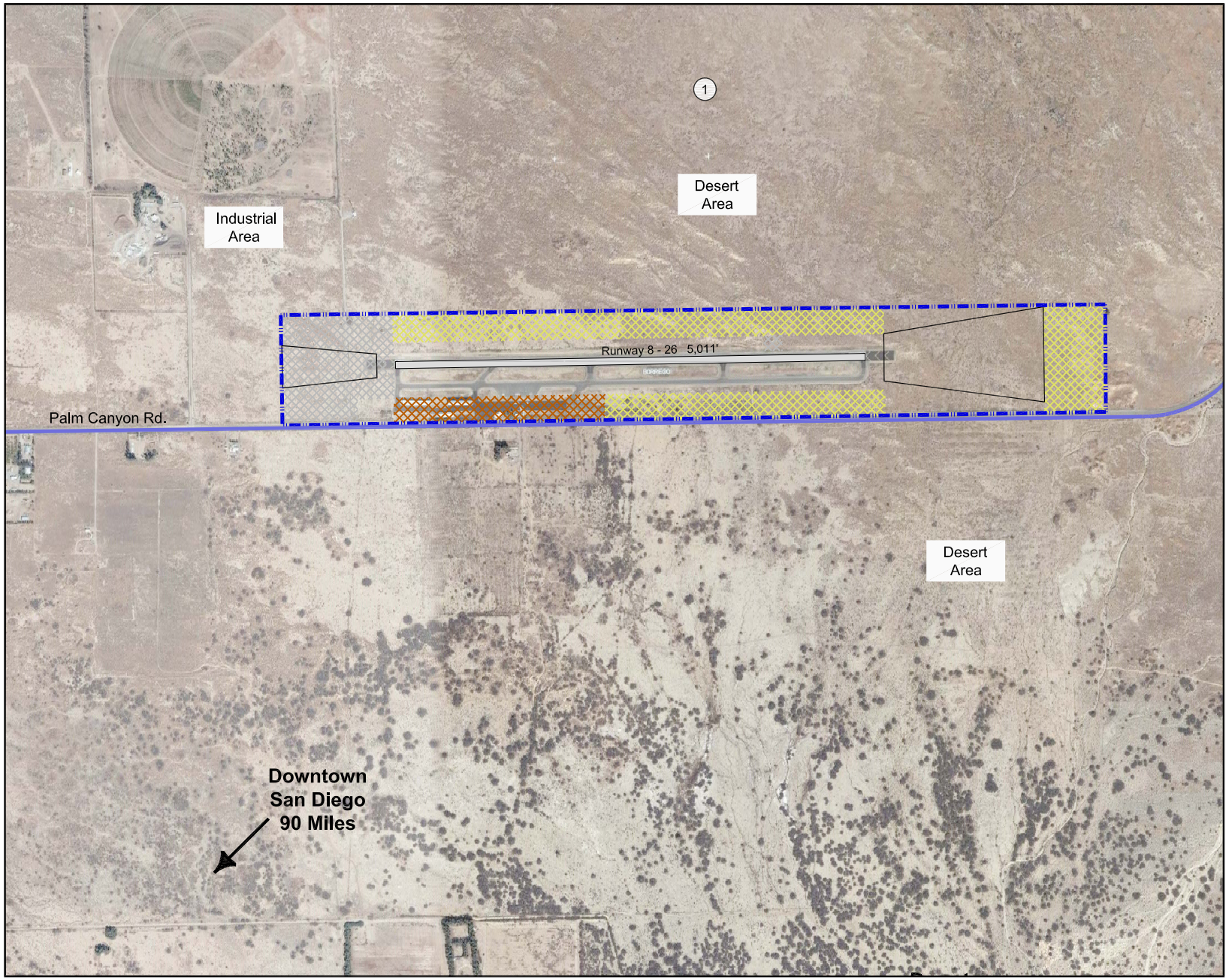
Airport Management Consulting



LEGEND

- Airport property line
- RPZ
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

(1) Proposed Solar Farm

SOURCES

1/ Aerial photograph – Google Earth, May 2009.
2/ *Borrego Valley Airport Layout Plan*, Wadell Engineering Co., June 2007.
3/ AirNav.com.

NORTH

0' 500' 1000' 2000'

Scale: 1" = 1000'

Figure 2-9
BORREGO VALLEY AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority
January 2011

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Weaknesses

- Lack of suitable on- and off-airport infrastructure
- Located within 100-year floodplain

Opportunities – Undeveloped desert land to the north, south and east for potential expansion

Threats – Remote location 90 miles (+ 2 hour drive) from downtown San Diego

2.2.10 Ocotillo Airport

Ocotillo, depicted on Figure 2-10, is a Limited-use General Aviation Airport. The airport is operated by the County of San Diego and is located approximately 65 miles east of downtown San Diego. The airport primarily accommodates recreational general aviation activity; there were 800 operations in 2007.

Strengths

- Surrounded by vacant/airport-compatible land
- Proximity to off-road vehicle park

Weaknesses

- Runway length and lack of paved surface restrict operations to small single-engine aircraft
- Lack of suitable infrastructure; runways are not paved and airport is unlighted

Opportunities – Undeveloped adjacent desert lands could facilitate expansion

Threats – Remote location 65 miles (+ 2 hour drive) from downtown San Diego

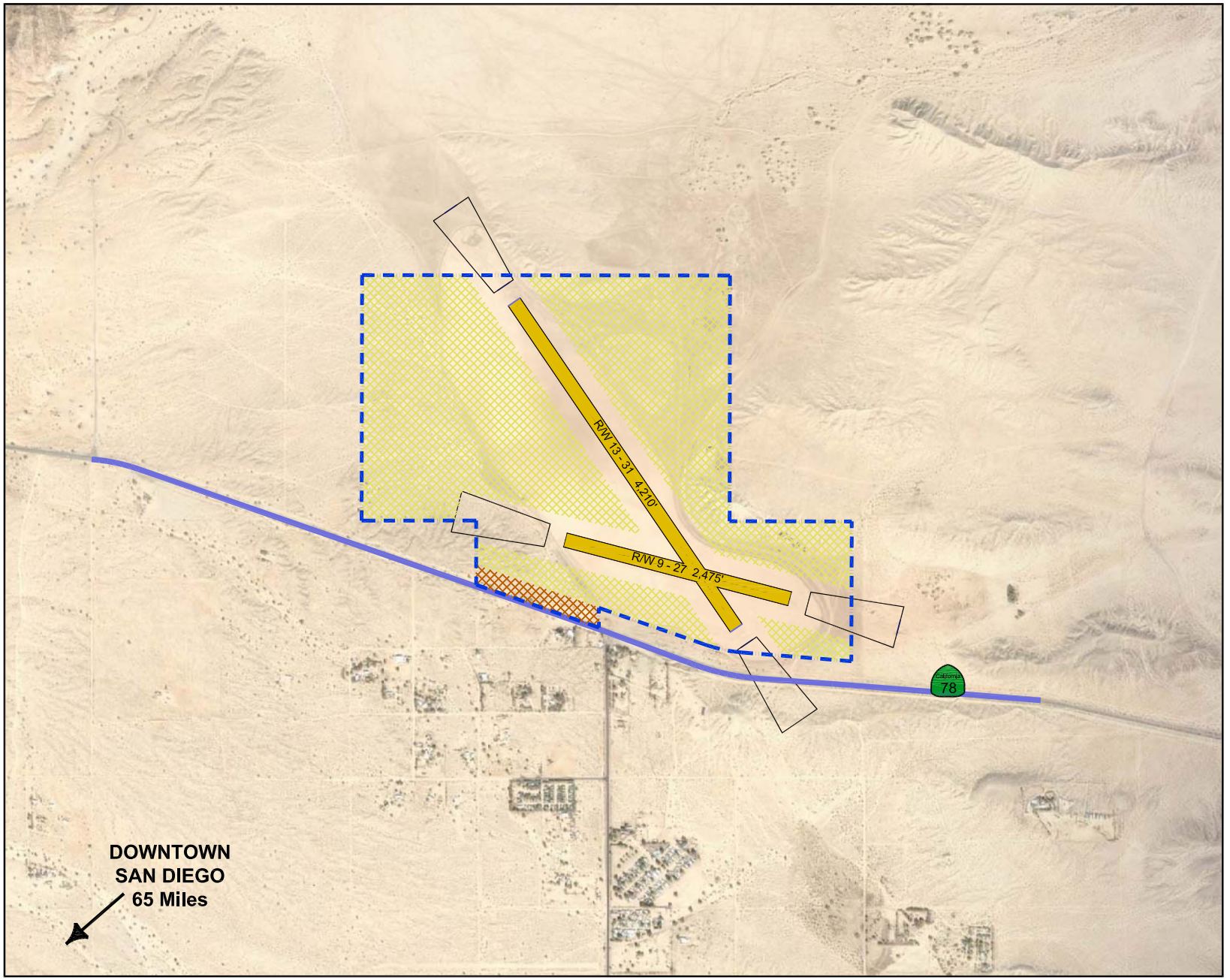
2.2.11 Agua Caliente Airport

Agua Caliente, depicted on Figure 2-11, is a Limited-use General Aviation Airport. The airport is operated by the County of San Diego and is located approximately 77 miles east of downtown San Diego. The airport primarily accommodates recreational general aviation activity; there were 800 operations in 2007.

Strengths – Surrounded by undeveloped land/parklands including Agua Caliente County Park (natural hot springs)

Weaknesses

- Runway length and pavement strength limit use to small general aviation aircraft
- Lack of suitable infrastructure; airport is unlighted and has no aircraft hangar or tie-down facilities, and no FBO
- Surrounded by state-owned parkland with high terrain



LEGEND

- Airport property line
- RPZ
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

SOURCES

1/ Aerial Photo - Google Earth, May (2009).
2/ *Ocotillo Airport Land Use Compatibility Plan,* Mead & Hunt, December 2006.

NORTH

0' 500' 1,000' 2,000'

Scale: 1" = 1,000'

Figure 2-10
OCOTILLO AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

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San Diego County Regional Airport Authority
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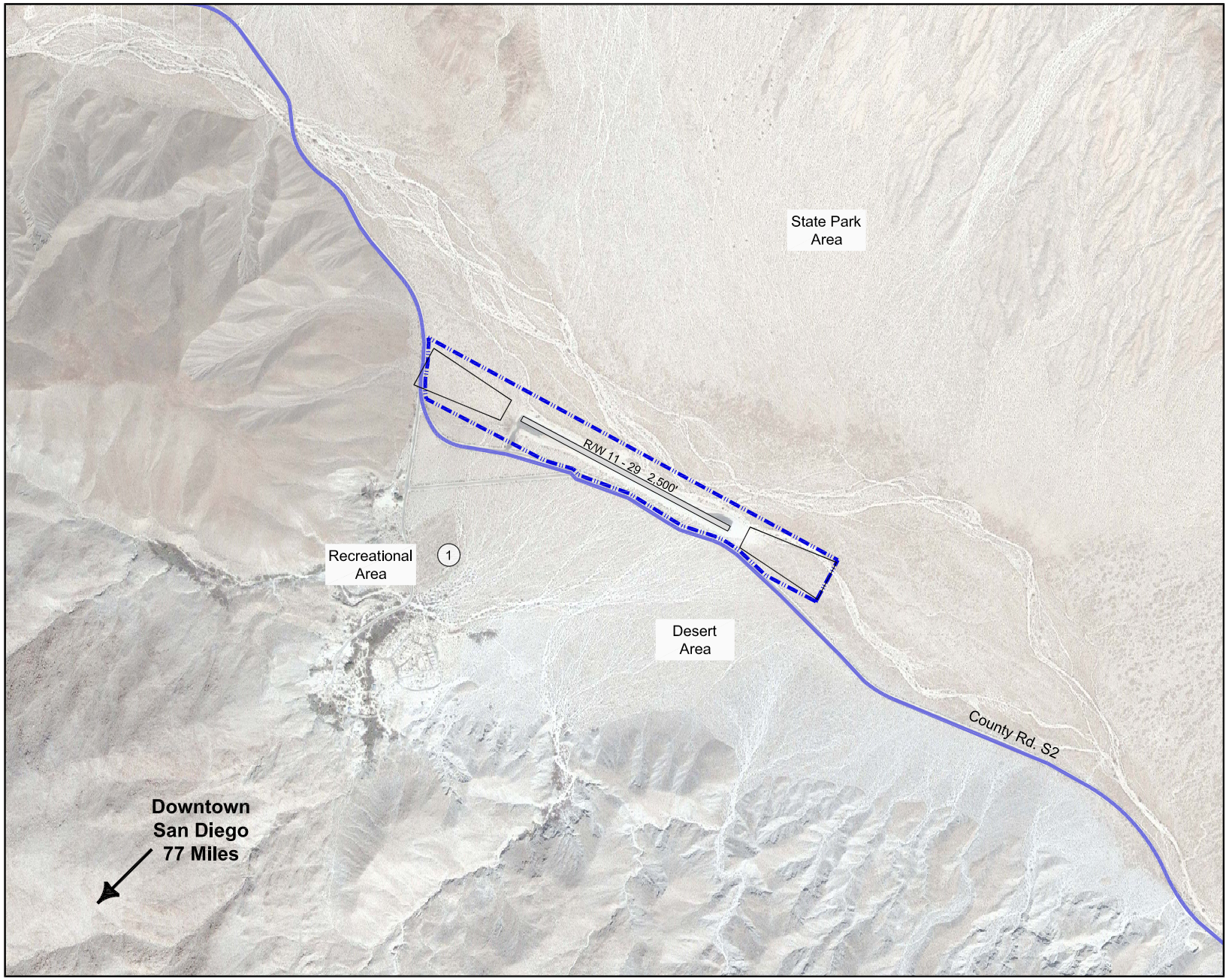

LEGEND

- Airport property line
- RPZ
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

(1) Agua Caliente County Park

SOURCES

1/ Aerial photograph – Google Earth, May 2009.
2/ *Airport Land Use Compatibility Plan,* San Diego Regional Airport Authority, October 2004.
3/ AirNav.com.

NORTH

0' 500' 1000' 2000'

Scale: 1" = 1000'

Figure 2-11
AGUA CALIENTE AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority
January 2011

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Opportunities – Adjacent undeveloped desert land for potential expansion

Threats

- Remote location 77 miles (+ 1.5 hour drive) from downtown San Diego
- Lease agreement stipulates airport property may not be subleased or developed for more than what is needed for operation of the landing strip

2.2.12 Jacumba Airport

Jacumba, depicted on Figure 2-12, is a Limited-use General Aviation Airport. The airport is operated by the County of San Diego and is located approximately 74 miles east-southeast of downtown San Diego. The airport is primarily used as a glider/sailplane facility; there were 325 operations in 2007.

Strengths – Surrounded by vacant/airport-compatible land

Weaknesses

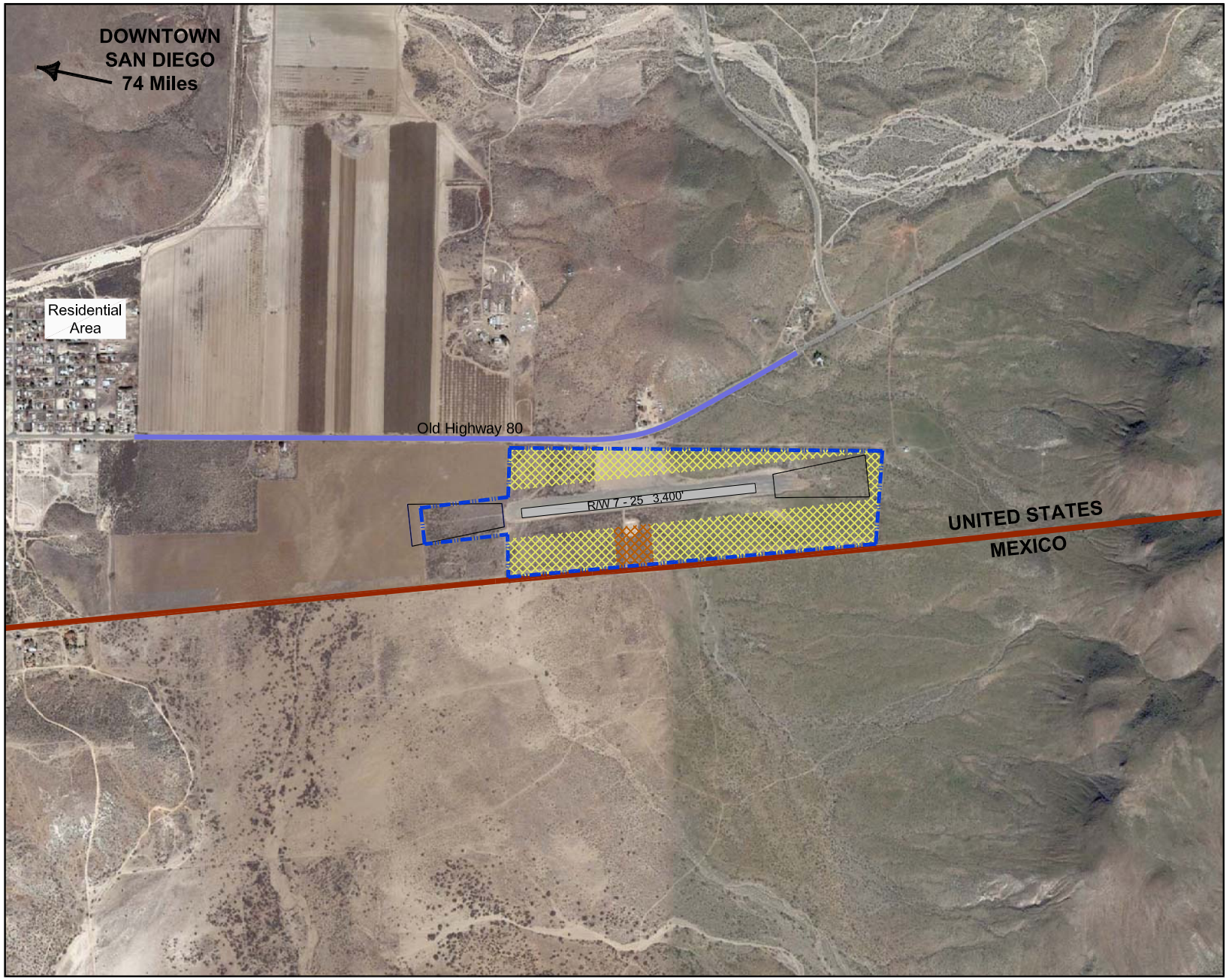
- Runway length and gravel surface restrict operations to small single-engine aircraft
- Lack of suitable infrastructure; airport is unlighted

Opportunities – Adjacent undeveloped desert lands for potential expansion

Threats – Remote location 74 miles (+ 1.5 hour drive) from downtown San Diego

2.2.13 Tijuana Rodriguez International Airport

Tijuana Rodriguez International, depicted on Figure 2-13, is located 20 miles south of downtown San Diego in Tijuana, Mexico, immediately south and adjacent to the Mexico-U.S. border. The airport is operated by the GAP. The airport provides non-stop service to over 26 destinations in Mexico, international service to Asia and Cuba, and is a gateway to many Mexican tourism destinations. Service is provided by 10 carriers including four low cost carriers. However, there has been no U.S. carrier service since Delta ceased operating service to LAX in 2007.



LEGEND

- Airport property line
- RPZ
- International border
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

SOURCES

1/ Aerial Photo - Google Earth, May (2009).
2/ *Jacumba Airport Land Use Compatibility Plan*, Mead & Hunt, December 2006.

NORTH

0' 500' 1,000' 2,000'

Scale: 1" = 1,000'

Figure 2-12
JACUMBA AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

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San Diego County Regional Airport Authority
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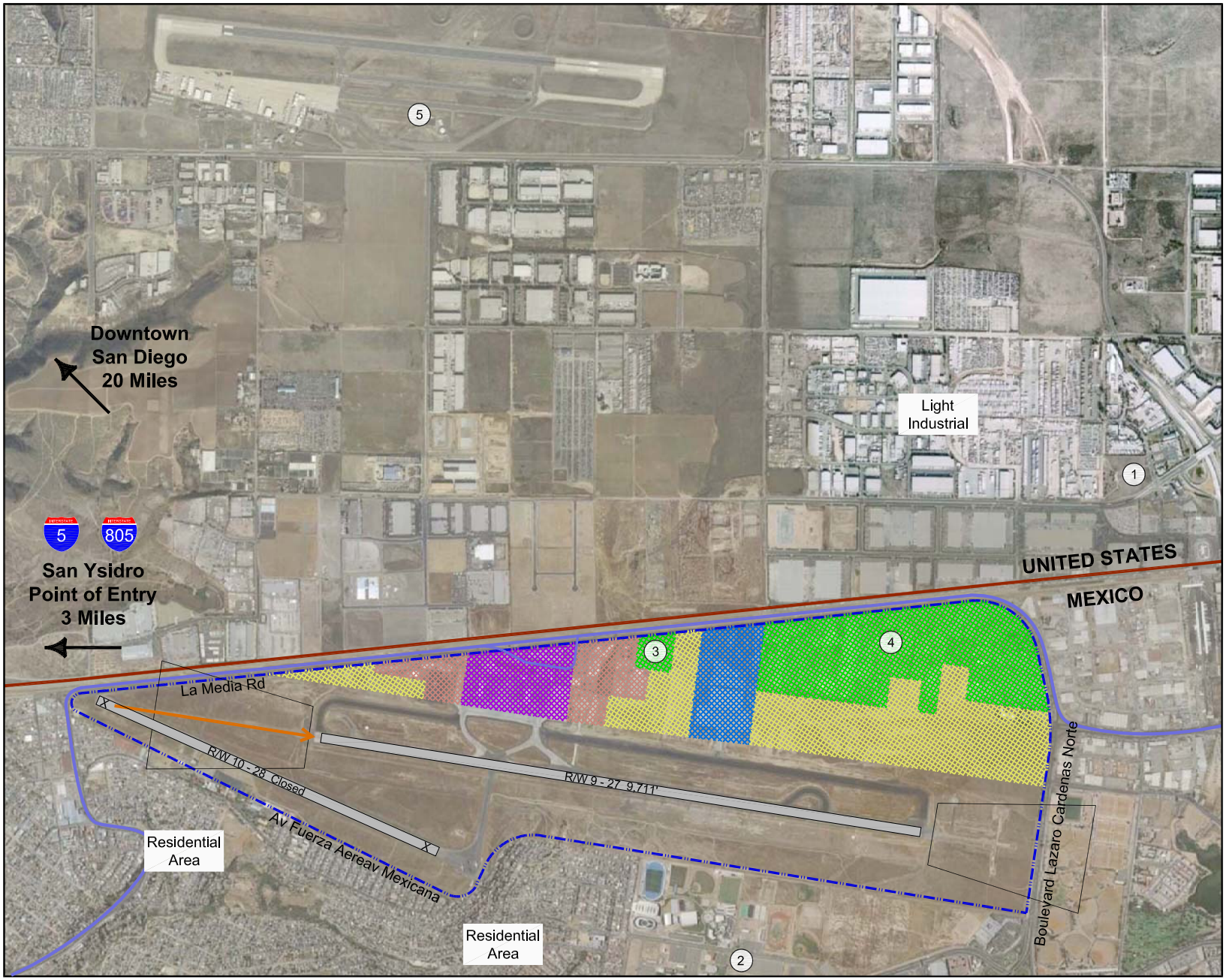

LEGEND

- Airport property line
- RPZ
- International border
- Primary airport access road
- Primary highway access

GENERALIZED LAND USES

- Commercial
- Non-aviation
- Open/Reserve
- Environmentally sensitive
- General aviation
- Air cargo

REMARKS

1. Otay Mesa Point of Entry
2. La Universidad de Tijuana
3. Recreational field
4. Truck/trailer storage/staging
5. Brown Field Municipal Airport

SOURCES

1/ Aerial photograph – Google Earth, April 2009.
2/ *Cross Border Terminal Market Demand Study*, Infrastructure Management Group, 2006.

NORTH

0' 750' 1500' 3000'

Scale: 1" = 1500'

Figure 2-13
TIJUANA RODRIGUEZ INTERNATIONAL AIRPORT
AIRPORT FACILITIES AND EXISTING LAND USES

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority
January 2011

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Airport Management Consulting

Strengths

- Close proximity to large passenger base, including the city of Tijuana, which is Mexico's 3rd largest city; border access via the Blue Line Trolley which connects to downtown San Diego
- Direct service to multiple Mexican destinations at competitive fares attract Mexican and U.S. passengers
- No existing airfield delays or congestion; demand is less than 60% of the estimated airfield capacity
- Sufficient on-airport land for construction of additional facilities; only 30% of available land is already developed

Weaknesses

- Congested and outdated passenger terminal facilities; international facilities inadequate and require major upgrades to satisfy standard international requirements; existing automobile parking demand exceeds capacity
- Language, cultural barriers, and safety concerns deter some U.S. travelers

Opportunities

- U.S. passenger use of the airport is forecast to grow significantly over the next 20 years; potential cross border facility concept could provide a more attractive alternative and further increase activity
- Additional commercial service opportunities as San Diego International nears capacity
- Located in the rapidly developing Otay Mesa area which offers manufacturing, storage, and inexpensive labor; "border economy" projected to continue to flourish
- Improvements to CA 125 and CA 905 will increase regional surface transportation access to the airport

Threats

- International border processing hinders efficient passenger operations and level of service; U.S. passengers may wait in excess of two hours to cross the border
- U.S. perceptions that Mexico is unsafe

2.3 KEY FINDINGS AND RECOMMENDATIONS

Based on the findings of the Strategic Assessment, each system airport was categorized into one of the following three categories:

- **Airports That *Should* Be Considered For Additional Uses/Opportunities** – Defined as airports that are in proximity to the demand base, possess adequate, or potentially adequate, facilities, and have sufficient land area or infrastructure for development opportunities. These airports include McClellan-Palomar, Gillespie Field, and Brown Field.

- **Airports That *May Be* Considered For Additional Uses/Opportunities** – Defined as airports that possess the same characteristics as the group above, but also have significant physical or environmental barriers to future development, thereby prohibiting their potential future use. These airports include San Diego International, Tijuana-Rodriguez International, Montgomery Field, and Ramona.

- **Airports That *Should Not Be* Considered For Additional Uses/Opportunities** – Defined as airports that are too far from the demand base, lack sufficient infrastructure or facilities, include community opposition, and/or lack available land for development. These airports include Oceanside, Fallbrook and the four smaller general aviation airports located in the eastern section of the County.

Figure 2-14 summarizes the key Strategic Assessment findings.

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Figure 2-14

STRATEGIC ASSESSMENT FINDINGS

Regional Aviation Strategic Plan

	Commercial Service		FAA Designated Reliever				General Aviation			Not in FAA NPIAS			
	San Diego International (SAN)	McClellan-Palomar (CRQ)	Montgomery Field (MYF)	Brown Field Municipal (SDM)	Gillespie Field (SEE)	Ramona (RNM)	Oceanside Municipal (OKB)	Fallbrook Community (L18)	Borrego Valley (L08)	Ocotillo (L90)	Agua Caliente (L54)	Jacumba (L78)	Tijuana-Rodriguez (TIJ)
Current Market/Role													
Ownership/Control	San Diego Regional Airport Authority	San Diego County	City of San Diego	City of San Diego	San Diego County	San Diego County	City of Oceanside	San Diego County	San Diego County	San Diego County	San Diego County	San Diego County	U.S./Mexico partnership
GA - Small/Recreational and Training	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—
GA - Large/Corporate Jet and Air Taxi	✓	✓	✓	✓	✓	✓	—	—	—	—	—	—	✓
Air Carrier - Commuter	✓	✓	—	—	—	—	—	—	—	—	—	—	✓
Air Carrier - Mainline	✓	—	—	—	—	—	—	—	—	—	—	—	✓
Air Cargo	✓	—	✓	—	—	—	—	—	—	—	—	—	✓
Facility Assessment/Accommodation of Current Users													
Primary Regional Access	1.5 mi from I-5	2 mi from I-5	2 mi from CA 163	3 mi from I-805	1 mi from CA 67	20 mi from I-15	2 mi from I-15	10 mi from I-15	14 mi from CA 78	<1 mi from CA 78	37 mi from I-8	2 mi from I-8	3 mi from I-5
Airfield - Runway Length	9,401' Paved	4,897' Paved	4,577' Paved 3,400' Paved	7,972' Paved 3,180' Paved	5,341' Paved 4,147' Paved	5,000' Paved	2,712' Paved	2,160' Paved	5,011' Paved	4,210' Dirt 2,475 Dirt	2,500' Paved	2,510' Gravel	9,711' Paved
Instrument Approach	R/W 9: ILS/CAT I, R/W 27R Localizer	R/W 24: ILS/CAT I	R/W 28R: ILS/CAT I	Non precision	Non precision	Non precision	GPS	Non precision	GPS	None	None	None	R/W 9 ILS/CAT I; R/W 27R Localizer
Passenger Terminal Building	41 gates; 18M annual passengers	New terminal w/ 4 gates; 50K annual passengers	None	None	None	None	None	None	None	None	None	None	16 gates; 4M annual passengers
FBO/Corporate Terminal	Existing	Modern	Existing	Planned	Existing	Existing	None	Existing	Existing	None	None	None	Existing
Cargo Facilities	Existing	None	Limited	None	None	None	None	None	None	None	None	None	Existing

Possible Change In Role? **Possible Change In Role?**

Development Potential													
Proximity to Users/Market Base *(a)*	3 mi from downtown San Diego	32 mi from downtown San Diego	8 mi from downtown San Diego	20 mi from downtown San Diego	23 mi from downtown San Diego	36 mi from downtown San Diego	40 mi from downtown San Diego	56 mi from downtown San Diego	90 mi from downtown San Diego	95 mi from downtown San Diego	75 mi from downtown San Diego	74 mi from downtown San Diego	25 mi from downtown San Diego
Runway Upgrade	Physical constraints	Runway extension to 6,000' possible	Physical and environmental constraints	On- and off-airport land available	Physical constraints	Environmental constraints	Physical constraints	On-Airport land available	Off-Airport land available	Off-Airport land available	Off-Airport land available	Off-Airport land available	Land available
On-Airport Land Available for Development	40 acres	Terminal upgrade possible; 10 acres	17 acres	257 acres	191 acres	130 acres	17 acres	45 acres	70 acres	238 acres	N/A	56 acres	166 acres
Proximity to Highway/Mass Transit	Close to I-5; bus service	Close to I-5; bus service	Close to I-805 and I-15; bus service	Close to I-805 and I-5, CA 905 ext. planned	CA 52 extension; link to 2 trolley lines	Planned improvements	Close to I-5; bus service	Access difficult; no mass transit	Access difficult; no mass transit	Access difficult; no mass transit	Access difficult; no mass transit	Access difficult; no mass transit	CA 905 extension; bus service
Environmental Concerns/On-Airport	Some contaminated sites; habitat protection	Environmental contamination	Vernal pools, habitat protection	Vernal pools, habitat protection	No known	Extensive vernal pools	No known	No known	100-year floodplain on pg. 2-20	No known	No known	No known	Unknown
Community Concerns	Noise and traffic congestion	Potential noise and development	Aircraft noise	Aircraft noise	Noise and community redevelopment	Potential future residential development	See "Citizens for better oceanside" on pg. 2-15	No known	No known	No known	No known	No known	Social and inter-governmental issues

Summary **Summary**

Consideration in the RASP													
Should the airport be considered for additional uses/opportunities to optimize the region's aviation system?	Consideration for additional uses/opportunities not expected; *Destination Lindbergh* established that SAN will reach capacity before 2030	Consideration for additional uses/opportunities should be considered in the RASP because of existing FAA certifications, proximity to population base, terminal infrastructure, and potential for runway extension	Consideration for additional uses/opportunities may be considered in the RASP because of proximity to population base and availability of land for passenger and cargo activity; physical and environmental barriers to runway extension/upgrade may prohibit accomodation of new user groups	Consideration for additional uses/opportunities should be considered in the RASP because of proximity to population base, existing runway length, and availability of developable land for terminal or cargo facilities	Consideration for additional uses/opportunities should be considered in the RASP because of proximity to population base, access to light rail, and availability of developable land to accommodate new user groups	Consideration for additional uses/opportunities may be considered in the RASP because of proximity to existing facilities, projected population growth, and planned roadway improvements; potential environmental constraints may restrict development	Consideration for additional uses/opportunities should not be considered in the RASP because of lack of infrastructure, community opposiiton, and limited available land for development; significant constraints to runway extension	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, access, and potential development costs	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, access, and potential development costs	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, poor access, and potential development costs	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, poor access, and potential development costs	Consideration for additional uses/opportunities should not be considered in the RASP based on remote location, poor access, and potential development costs	Consideration for additional uses/opportunities may be considered in the RASP because of proximity to population base and existing infrastructure; intergovernmental agreement required for cross border operation

(a) Proximity to downtown San Diego used as criterion in this matrix.

Note: NPIAS = National Plan of Integrated Airport Systems

LEGEND Compatible Marginal Incompatible

SAN6697-0052

Chapter 3

AIRPORT SYSTEM OPTIMIZATION

This chapter presents the numerous factors that affect aviation and surface capacity and the wide range of Airport System optimization options that were considered in consultation with the RASP Subcommittee and other stakeholders during the completion of the RASP.

3.1 FACTORS AFFECTING AVIATION AND SURFACE CAPACITY

The following summarizes the various factors that affect aviation and surface capacity, and influence the evaluation and selection of optimization options considered.

3.1.1 Funding, Policy, and Political Factors

The following summarizes relevant funding, policy, and political factors that affect aviation and surface capacity. Because of a dynamic political and economic environment, there is a great deal of uncertainty about long-term federal policies and funding programs for transportation.

- **FAA Authorization (Aviation Programs).** Since the previous multi-year authorization expired on September 30, 2007, Congress has passed a series of short-term authorization extensions. However, there is no estimate as to when a multi-year bill will be enacted. When a new multi-year authorization is passed, airports are likely to continue to receive approximately the same amount of formula-based Airport Improvement Program (AIP) funding. It is unclear whether or not airports will receive a Passenger Facility Charge (PFC) increase from the current ceiling of $4.50 (if they do, the ceiling is likely to be between $5.50 and $6.00). A marginal increase in discretionary AIP funds is also possible for significant capacity-enhancing projects.

- **Surface Transportation Authorization (Highways and Transit).** Since the previous multi-year authorization expired on September 30, 2009, Congress has passed a series of short-term authorization extensions (continuing existing authorities). However, there is no estimate as to when a new multi-year bill will be enacted. Due to limitations on the Highway Trust Fund, highway and public transportation programs are unlikely to see significant increases. It is also unclear whether or not the Obama Administration's initiatives to increase funding for multimodal discretionary projects will be incorporated in a future multi-year authorization.

- **FAA Regulatory Policy.** The FAA's Policy on Airport Rates and Charges, governing aeronautical charges to airport users, was recently modified to provide greater rate-setting flexibility to airports deemed by the FAA as congested. This could provide the Authority with an enhanced ability to

promote more efficient use of its capacity-constrained airside infrastructure, including incentivizing some existing and future users to take advantage of alternative system airports.

- **U.S. Department of Transportation/FAA Congestion Management.** The U.S. Department of Transportation (USDOT), working with the FAA, has aggressively regulated airports that have become congested and cause delays that impact the National Airspace System. As San Diego International nears capacity within the RASP forecast period, the risk of delays and federal action increase significantly. Actions by USDOT and the FAA could potentially include federal slot controls, which could effectively address delays, but would result in some loss of the Authority's control over the airport. Measures identified in the RASP to accommodate demand offer the potential to delay federal congestion management policies.

- **USDOT/Federal Railroad Administration/Amtrak Rail Policies.** The USDOT and the Federal Railroad Administration (FRA) have sought to aggressively expand the nation's passenger rail system over the last two years. Incremental improvements to the nation's public railroad (Amtrak) and new investments in high speed rail (with tracks dedicated to passenger trains) and higher speed rail (running on shared freight-passenger tracks) have been made as part of the Economic Recovery And Reinvestment Act stimulus program and as part of the rail authorization. Dedicated, multi-year funding for rail improvements, however, has not been identified.

- **Community and Political Views.** Notwithstanding forecasts that highlight a mismatch between future aviation demand and available capacity at San Diego International, there is no public or political consensus in the Study Area that San Diego International in fact will reach its capacity. Many political entities solidified their "capacity" positions regarding the accommodation of long-term aviation demand during the Airport site selection process which concluded in 2006. Their views appear to be driven by strong local concerns about the environmental effects associated with increases in aviation activity and the impacts of infrastructure improvements that would increase capacity to accommodate future demand. Accordingly, measures to address the issue in the Airport System must take into account community views as well as any local political commitments.

3.1.2 Surface, Rail, and Cross Border Initiatives

The following summarizes relevant surface and rail initiatives that will affect aviation and surface transportation capacity and services in the RASP.

- **SANDAG Regional Transportation Plan**. The 2030 Regional Transportation Plan (RTP) provides a regional and integrated surface transportation plan for freeways, roads, and transit. It is the product of collaboration between

SANDAG, the County of San Diego, the County's 18 cities, and a number of regional transportation partners. It serves as the basis for investing in infrastructure from regional, state, and federal sources and prioritizes projects so the plan may be implemented according to the level of funding and changes in transportation needs over the period. Specific projects, such as improved access to San Diego International from I-5 and upgrades to roadways serving San Diego International's air cargo areas, are integral elements of the RTP.

- **California High Speed Rail (HSR)**. The state's largest infrastructure project offers the potential for a new intrastate, intercity mode of transportation. Current planning has the Los Angeles to San Francisco segment (Phase 1) opening in approximately 2019 and the Los Angeles to San Diego segment (Phase 2) opening around 2027. For capacity constrained airports across California, HSR offers the possibility of diverting a significant portion of intrastate point-to-point air traffic to rail, thereby freeing up capacity for long-haul, premium traffic at the larger metropolitan airports and alleviating capacity pressures at congested airports for an additional period of time. For Phase 2, the HSR alignments in Southern California, including Ontario International Airport and a still to be determined location in San Diego (the exact alignment will be identified in 2011), offer the potential to help accommodate intrastate, intercity demand beginning late in the 2020s. The California HSR Authority still faces the significant challenge of developing a funding plan for the full build-out of HSR.

- **Los Angeles to San Diego Rail Improvements**. The LOSSAN Corridor (Los Angeles to San Diego, also running north to San Luis Obispo) is a heavily traveled passenger rail corridor operated by Amtrak, offering a convenient link to San Diego from north San Diego County and south Orange County. The State of California, the federal government, Amtrak, and local agencies have contributed to upgrades in the corridor which will continue to improve the level of service in the coming years. Existing planning would connect the LOSSAN Corridor to a future San Diego International Intermodal Transportation Center.

- **Cross-Border (Tijuana) Initiatives**. Tijuana Rodriguez International may have substantial impacts on the RASP and may provide potential system solutions, but will be highly dependent on U.S.-Mexican economic conditions, especially in the Southern California region; convenience of the border-crossing process; and fare differentials between U.S. and Mexican airlines.

3.2 SYSTEM OPTIMIZATION STRATEGIES

The following summarizes the range of Airport System optimization options considered in consultation with the RASP Subcommittee and other stakeholders.

3.2.1 Change in Airport Capability and/or Capacity

The following summarizes potential changes in airport capability or capacity that were considered in the RASP. Considering the County's multiple airports, such actions offer the potential to optimize the Airport System by shifting traffic among the various facilities.

- **Runway Upgrade or Extension**. Increase runway lengths to accommodate larger aircraft types or serve more distant markets; or enhance runway capabilities (FAA design criteria, pavement strength, etc.) to accommodate larger/heavier aircraft types.

- **Passenger Terminal or Cargo Facility Development**. Enhance existing or construct new passenger terminal or air cargo facilities to accommodate higher levels of demand or accommodate new commercial activity.

- **General Aviation Facility Development**. Construct general aviation facilities to accommodate additional based aircraft and/or itinerant demand; upgrade facilities (enhance apron pavement strengths, high-end fixed base operator, etc.) to attract and accommodate additional user types.

- **On-Airport Access Improvements**. Enhance access roadways and parking facilities to accommodate higher levels of passenger, employee, and cargo demand; construct new roadways and parking facilities to accommodate intended users and development programs.

3.2.2 Change in Airport User or Market Served

Since all system airports can accommodate at least a portion of the general aviation fleet, and the majority are capable of accommodating corporate aviation, measures considered in this category focus on constructing facilities and implementing operating procedures to accommodate new or additional commercial passenger or air cargo activity (policies under FAR Part 139).

For candidate airports, changes required to change an airport's user base/market include: (1) facility construction to meet FAA design standards, (2) policy and operational requirements (e.g., security) to meet FAR Part 139 requirements, and (3) increases in operations and maintenance (O&M) costs. Community and political opinions were also considered.

With regard to the Airport System, Montgomery Field and Gillespie Field would require substantial airfield improvements to accommodate commercial passenger aircraft, such as regional jets. Montgomery has appropriate runway and taxiway

separations, but may require relocation of other facilities. Brown Field has the necessary design standards in place, but the runway would need to be reconstructed and strengthened to accommodate all commercial service. In addition, there is considerable community opposition to initiating commercial service at Brown Field.

In most cases, however, this option was deemed infeasible due to cost considerations. Based on rough order of magnitude cost estimates for Brown Field and Montgomery Field, the cost to receive an FAR Part 139 operating certificate from FAA ranges between $20-30 million, primarily for upgrades to airport layout and design standards and facility construction (i.e., security equipment, aircraft rescue, fire fighting, etc.). In addition, approximately $1.0 million would be required annually for increased staffing and O&M costs.

3.2.3 Change in Airport Fleet Mix

Potential changes to the types of aircraft that may operate from San Diego International were suggested as a potential optimization option. Such measures hypothetically would be implemented by a specific policy call to shift to larger capacity aircraft to maximize the efficiency of the airfield and better accommodate long-term passenger demand. However, there are numerous restrictions and complications associated with such a policy, as summarized below:

First, when providing airport funding grants, FAA requires assurances from airport sponsors that limit the sponsor's ability to discriminate against any aircraft, whether they are small commercial service or general aviation aircraft. Therefore, a sponsor cannot dictate the type of aircraft its users operate from the facility. If an airport accepts federal grants, it must accept all and any type of aircraft that wants to operate from the facility (the only exceptions are governed by a federal slot regime).

Second, San Diego International's existing fleet mix is already favorable as the airport has a relatively low proportion of regional jets and turboprops. The airport's largest carrier is Southwest Airlines which flies narrow-body aircraft (i.e., B737). While air carriers can and do fly aircraft with greater capacities from San Diego International (e.g., B757, B767, and B777), the likelihood is that given the size of the markets served, air carriers are unlikely to shift a large proportion of their fleets to wide-body aircraft, especially Southwest, which does not fly larger aircraft. In addition, while average seat capacity has increased in some markets as air carriers have shifted from small 30- and 50-seat regional jets to 70- and 90- seat aircraft, that is unlikely to be widespread at San Diego International due to the fact that a large number of 30- and 50- seat aircraft are used to connect to Los Angeles International Airport (LAX). Frequent service from San Diego, which is necessary to support connecting traffic at LAX, serves to keep the average aircraft size down.

3.2.4 Federal, State, and/or Local Aviation Initiatives

The following summarizes potential Federal, state, and/or local aviation-based initiatives considered in the RASP.

- **Congestion Management (Locally Initiated)**. This strategy is intended to promote more efficient use of existing aviation facilities (airfield or landside) through changes in aeronautical and non-aeronautical rate setting. Such strategies are heavily circumscribed by federal law, FAA regulations, and policy.

- **Airport Rates/Charges by User Type**. In 2008, the FAA clarified its airport rates and charges policy in several areas, including explicitly permitting airport operators to enact a two-part landing fee structure consisting of both an operation charge and a weight-based charge. Such a policy would proportionally reduce the charges on higher-capacity aircraft and raise the charges on smaller-capacity aircraft. Implementation of a two-part landing fee could potentially encourage more flights in larger aircraft and greater passenger throughput. Airports seeking to implement a two-part landing fee would have to conduct an airfield cost allocation study and consult with users prior to its implementation.

- **Traffic to Other Airports**. A strategy of inducing traffic (primarily general aviation traffic) from San Diego International to other system airports could be implemented through a "push" strategy – raising fees (landing fees, leasing costs, etc.) at San Diego International and/or a "pull" strategy – lowering fees at San Diego International's reliever airports and improving facilities at alternative airports. These measures, in combination with facility improvements to meet FAR Part 139 requirements, could also result in a shifting of commuter operations (using smaller aircraft) to alternative airports. Options available under FAA rules to multi-airport systems, such as that of the Metropolitan Airport Commission in Minneapolis-St. Paul (which operates six reliever airports in additional to a large-hub commercial service airport), to explicitly subsidize reliever airports are unavailable in San Diego where governance authority over airports is divided.

- **Slot Control (Federal Management)**. Federal slot controls are imposed by USDOT and the FAA where airport delays become severe and impact an airport, regional air traffic, and/or the National Airspace System. Typically, limits or "caps" are placed on the airport's airside operations, providing preference to current commercial aviation users and reserving a very small allotment for general aviation and new users. Federal controls represent in effect a federal takeover of the airport, severely constraining an airport's ability to attract new air service. Generally, communities prefer to avoid losing control of the airport either through new infrastructure development or through measures to prioritize commercial service traffic while offering alternatives for other users.

- **Enhancement of Tijuana Airport for U.S.-Based Travelers**. Public-private partnerships for enhanced border crossings offer possibilities for better access

to Tijuana Rodriguez International Airport. Customs, security, and ease of landside access/connections are important criteria for success.

3.2.5 Changes to Surface Infrastructure

The following summarizes potential changes to surface infrastructure considered in the RASP.

- **Improve Access (links) Between Airports and Regional Surface System**. This strategy would enhance surface capacity and access into or out of system airports through new roadways and better operation of existing infrastructure. Costs vary considerably based on the nature and extent of improvement.

- **Enhance the Regional Transportation System.** This strategy would enhance surface capacity and connections to system airports through multimodal regional infrastructure improvements (e.g., LOSSAN Rail, Transit First, San Diego Bus Rapid Transit, and Corridor System Management Plans).

- **Improve Local Transit Services**. This strategy would enhance surface capacity and access into or out of system airports by improving existing transit systems, including expanded route coverage, frequencies, and connections (e.g., connections from downtown San Diego to San Diego International).

- **Remote Terminals/"HOV" Lanes**. Remote terminals provide aviation passenger express bus service between airport and remotely located passenger terminal/station or parking facilities (e.g., Los Angeles' Van Nuys FlyAway, Boston's Logan Express, or San Francisco's Marin Airporter). In the San Diego Study Area, there is the potential for remote terminals at McClellan-Palomar or Brown Field with bus service to San Diego or Tijuana Rodriguez International Airports.

Chapter 4

DEMAND FINDINGS AND BASELINE SCENARIO

This chapter presents a summary of (1) the myriad factors that affect aviation demand in San Diego County; and (2) the Baseline or "do-nothing" scenario upon which all other alternatives will be compared.

As evidenced in the following sections, although San Diego International provides good domestic air service at competitive airfares, some San Diego County residents choose to use airports in the greater Los Angeles metropolitan region and Tijuana in order to capitalize on enhanced air service options. Therefore, RASP strategies, alternatives, and findings were considered in the context of the San Diego County Airport System, as well as a larger region inclusive of Tijuana and the following five airports in the greater Los Angeles metropolitan area: Los Angeles International (LAX), John Wayne/Orange County, Long Beach, Ontario International, and Burbank (herein referred to as the RASP Study Area).

4.1 DEMAND FINDINGS

A regional econometric demand model ("the Model") was developed for the RASP in order to capture and assess the regional demographics and air travel demand characteristics of the RASP Study Area. In later phases of the study, the Model was used as a decision support tool to evaluate various "what-if" scenarios and quantitatively measure the impact of infrastructure enhancements and/or policy measures on the regional aviation system. The Model basically "computes" the propensity for people to travel and the factors that lead to a choice of airport, which primarily includes the time and costs associated with accessing aviation services. SANDAG's Regional Travel Demand Model was also incorporated into the RASP Model to estimate ground transportation changes and access times. A detailed description of the RASP Model development and output is provided in Appendix B.

The following sections summarize the key air travel demand findings of the RASP Study Area.

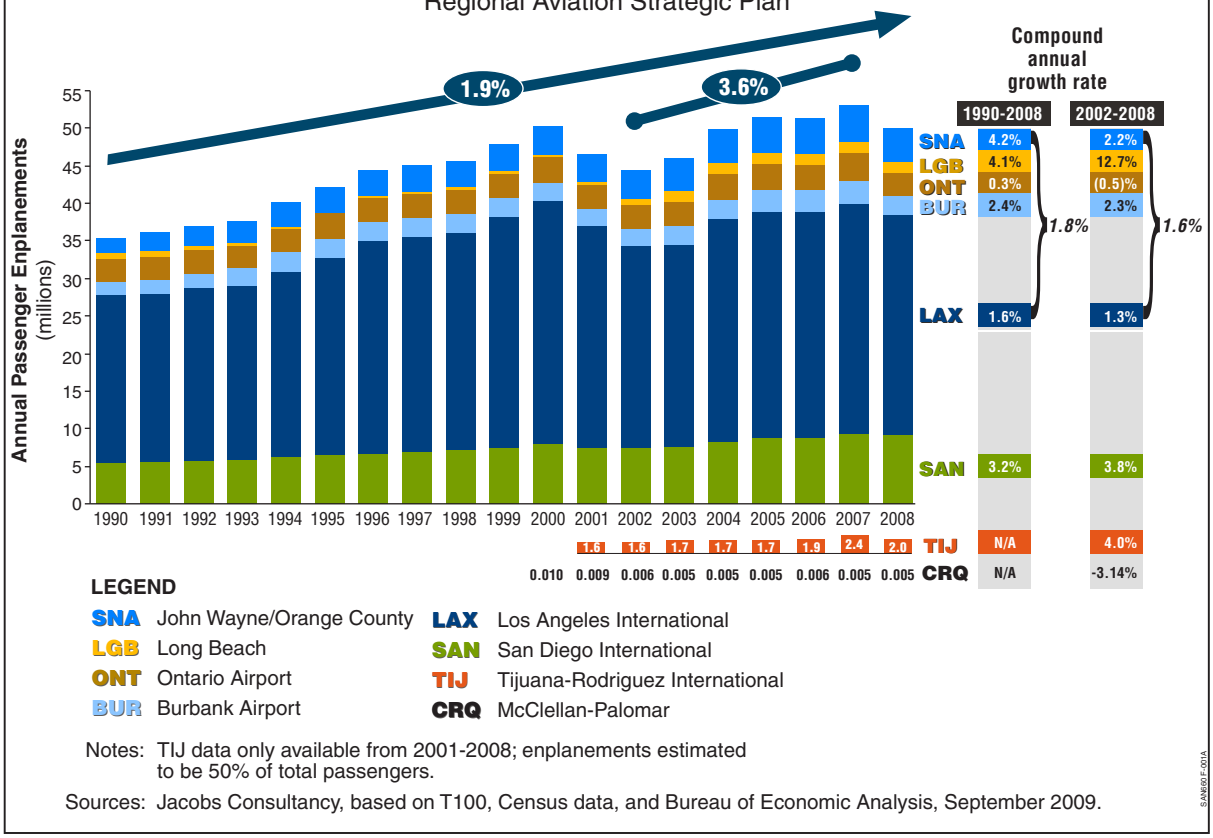
4.1.1 Historic Growth in Regional Aviation Demand

Notwithstanding economic recessions and industry-wide passenger reductions, San Diego has experienced above average growth compared to the greater Los Angeles metropolitan region, Mexico, and the United States as a whole. Historical annual passenger demand for the RASP Study Area is presented on Figure 4-1.

Figure 4-1

HISTORICAL ANNUAL PASSENGER ENPLANEMENTS—RASP STUDY AREA

Regional Aviation Strategic Plan



LEGEND

SNA	John Wayne/Orange County	LAX	Los Angeles International
LGB	Long Beach	SAN	San Diego International
ONT	Ontario Airport	TIJ	Tijuana-Rodriguez International
BUR	Burbank Airport	CRQ	McClellan-Palomar

Notes: TIJ data only available from 2001-2008; enplanements estimated to be 50% of total passengers.

Sources: Jacobs Consultancy, based on T100, Census data, and Bureau of Economic Analysis, September 2009.

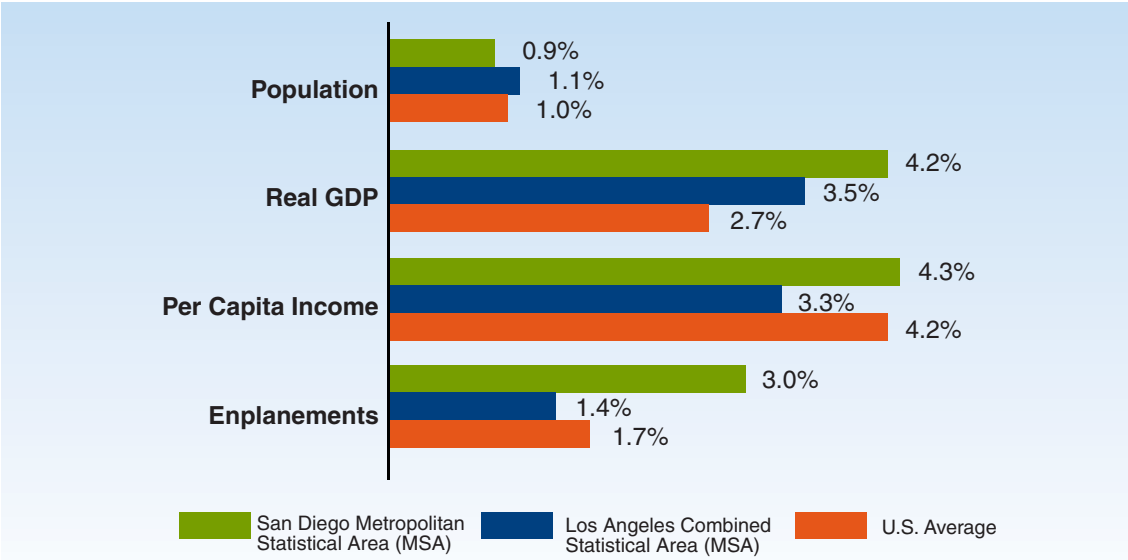
As presented on Figure 4-2, the real GDP and per capita income in San Diego are growing at 4.2% and 4.3% compound annual rates, respectively, compared to 3.5% and 3.3% in the greater Los Angeles metropolitan region. Enplanements in the San Diego region have also substantially outpaced the U.S. average, at 3.0% compound annual growth rate compared to 1.7%. As presented in Figure 4-3, this strong growth in enplanements can be attributable to the steady growth in per capita income and population in San Diego. Since 1990, per capita income and population have grown by 200% and 20% by 2009 respectively.

Except for LAX, aviation growth in the RASP Study Area is significantly influenced by the business model of low cost carriers, which dominate the majority of airports in the region, including Tijuana Rodriguez International and many of the airports in greater Los Angeles metropolitan area. As shown on Figure 4-4, based on 2008 data, low cost carriers – primarily Southwest Airlines and JetBlue Airways – represented the largest share of the market at San Diego International, Ontario, Burbank, and Long Beach airports. Volaris, a Mexican low cost carrier, represented 50% of the market at Tijuana Rodriguez International.

Figure 4-2

KEY ECONOMIC DATA COMPOUND ANNUAL GROWTH RATE (1998-2007)

Regional Aviation Strategic Plan



Sources: Bureau of Economic Analysis, *Interactive Tables for Regional Economic Accounts*; U.S. DOT T100 Database; September 2009.

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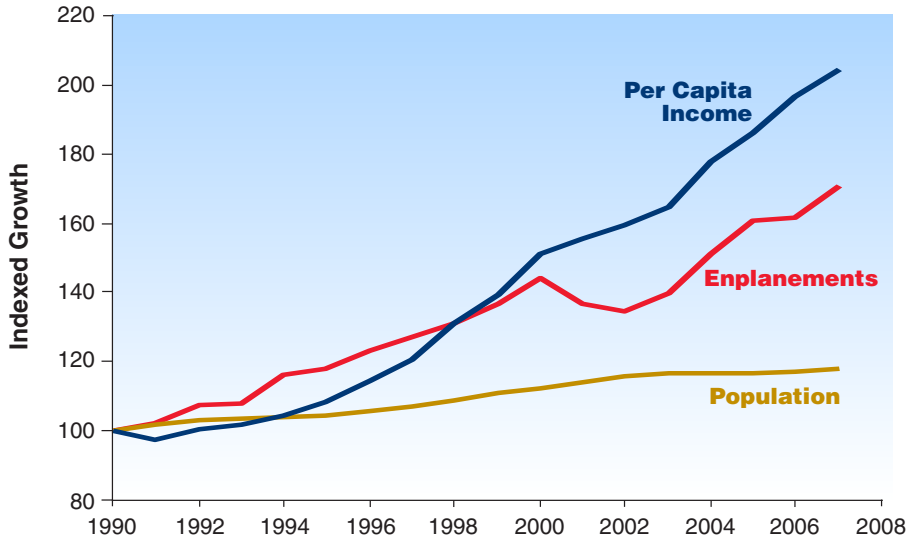
Figure 4-3

INDEXED GROWTH IN SAN DIEGO METROPOLITAN STATISTICAL AREA (INDEXED TO 1990)

Regional Aviation Strategic Plan



Notes: Real GDP compound annual growth rate (CAGR) is for 2001-2006; San Diego Metropolitan Statistical Area (MSA) aligns with San Diego County boundaries.

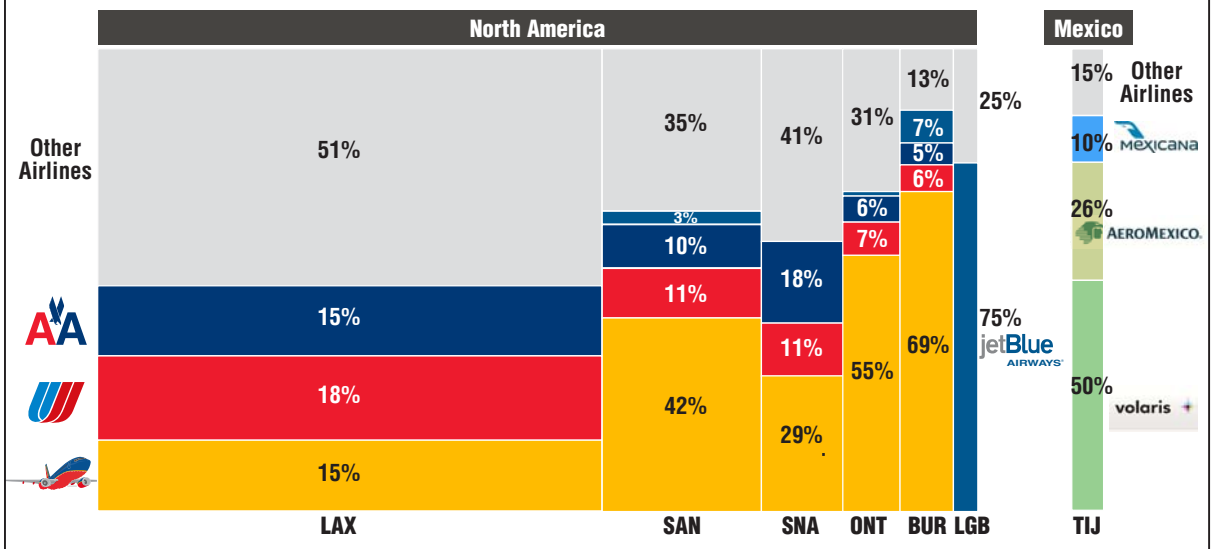
Sources: Jacobs Consultancy, based on *San Diego County Regional Aviation Strategic Plan, Aviation Demand Forecasts*, Landrum & Brown, Inc., December 2008; FAA Terminal Area Forecast; Bureau of Economic Analysis, *Interactive Tables for Regional Economic Accounts*; September 2009.

SAN660 F-0012

Figure 4-4

2008 AIRLINE MARKET SHARE

Regional Aviation Strategic Plan



Notes: Column width proportional to total annual seat capacity from that airport; includes international demand.
LCC = Low Cost Carrier
SNA = John Wayne Airport
ONT = Ontario International Airport
BUR = Bob Hope Burbank Airport
LGB = Long Beach Airport
TIJ = Tijuana Rodriguez International Airport

Sources: Jacobs Consultancy, based on U.S. DOT Airline Origin and Destination Survey (DB1B), September 2009.

SAN660 F-003

4.1.2 Air Service Background

The following summarizes air service findings for the three dominant commercial service airports in the RASP Study Area – San Diego International, Los Angeles International, and Tijuana Rodriguez International.

4.1.2.1 San Diego International Airport

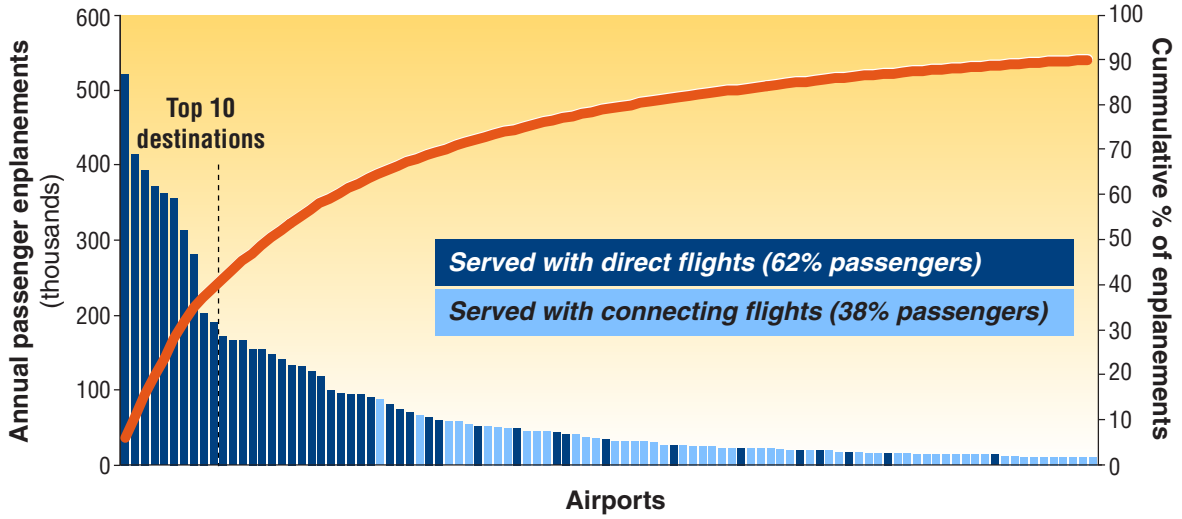
As presented on Figure 4-5, ten destinations account for more than 40% of San Diego International's outbound traffic. Moreover, four of the top ten destinations are located in California: San Francisco, Sacramento, Oakland, and San Jose.

Similar to the region, Southwest Airlines has driven the majority of passenger growth at San Diego International since 1990. As shown on Figure 4-6, the compound annual growth rate (CAGR) of Southwest Airlines between 1990 and 2008 was 7.2%, compared to 1.4% for all other carriers operating at San Diego International. In addition, Southwest's market share increased during this same period from 18% to 38%, while all other carriers cumulatively decreased their market share from 82% to 62%.

Figure 4-5

TOP 100 DESTINATIONS FROM SAN DIEGO INTERNATIONAL AIRPORT

Regional Aviation Strategic Plan



Note: Based on 2008 annual enplanements.

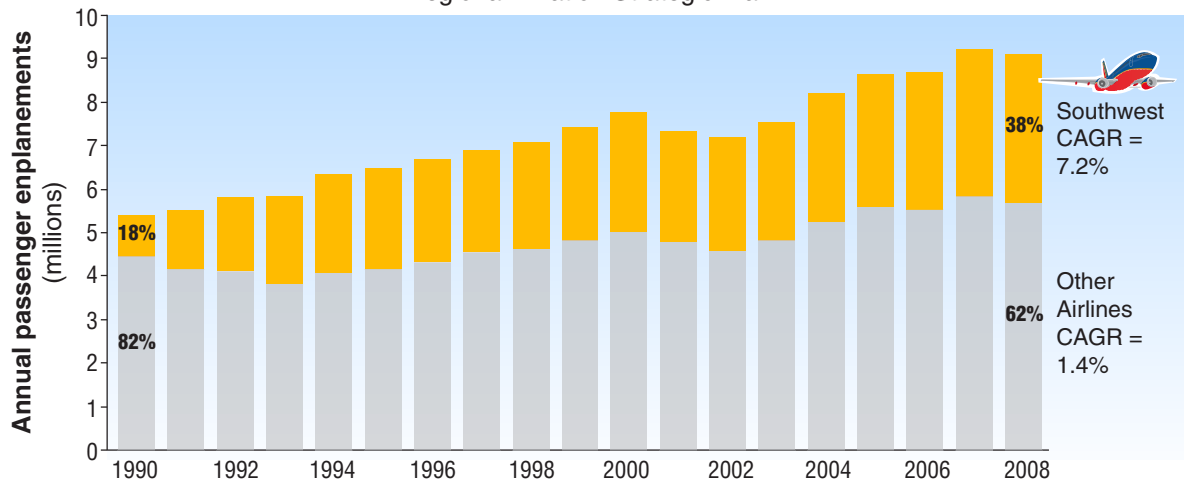
Source: Jacobs Consultancy, based on U.S. DOT Airline Origin and Destination Survey (DB1B), September 2009.

SAN660 F-0002

Figure 4-6

HISTORICAL AIRLINE MARKET SHARE AT SAN DIEGO INTERNATIONAL AIRPORT

Regional Aviation Strategic Plan



Note: CAGR = Compound Annual Growth Rate

Source: Jacobs Consultancy, based on OAG T100 Database, September 2009.

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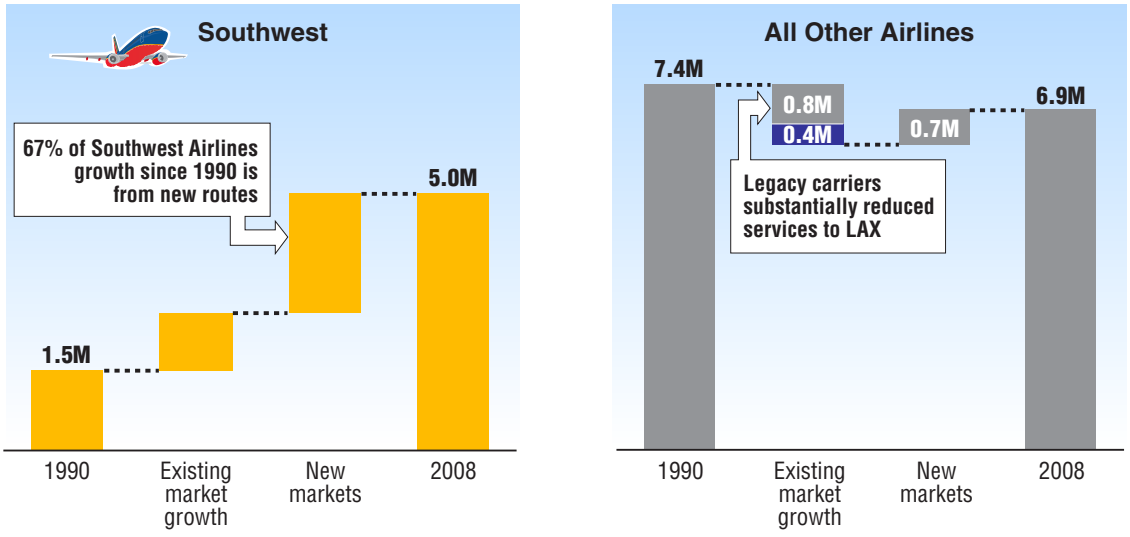
Southwest Airlines competes vigorously with other airlines at San Diego International. Southwest's growth at San Diego International has primarily been achieved by adding new routes versus adding capacity to existing routes. As presented on Figure 4-7, the seat capacity of Southwest at San Diego International grew from 1.5 to 5.0 million between 1990 and 2008, with 67% of that capacity provided on new routes. Alternatively, the seat capacity of all other carriers at San Diego International decreased from 7.4 to 6.9 million during the same period, with the other air carriers significantly reducing seat capacity to the Los Angeles market.

Figure 4-7

SEATS OFFERED ON SOUTHWEST VS. OTHER AIRLINES

Regional Aviation Strategic Plan



Source: Jacobs Consultancy, based on U.S. DOT Airline Origin and Destination Survey (DB1B) and OAG T100 Database, September 2009.

The strong growth of Southwest Airlines at San Diego International has facilitated the increase in affordable air service for San Diego residents and visitors. As one of nation's top leisure destinations, San Diego County has benefited immensely from this effect. On the other hand, Southwest Airlines' strong presence has discouraged carriers at San Diego International from adding services to international destinations because Southwest Airlines provides leisure domestic alternatives to international destinations. This has contributed to an increase in San Diego County residents and visitors choosing airports outside of San Diego County for international travel.

4.1.2.2 Los Angeles International Airport

Compared to San Diego International, LAX offers non-stop service to 50 more domestic and 53 more international destinations than San Diego International. With regard to Mexican destinations, in 2009, LAX offered non-stop service to 15 Mexican

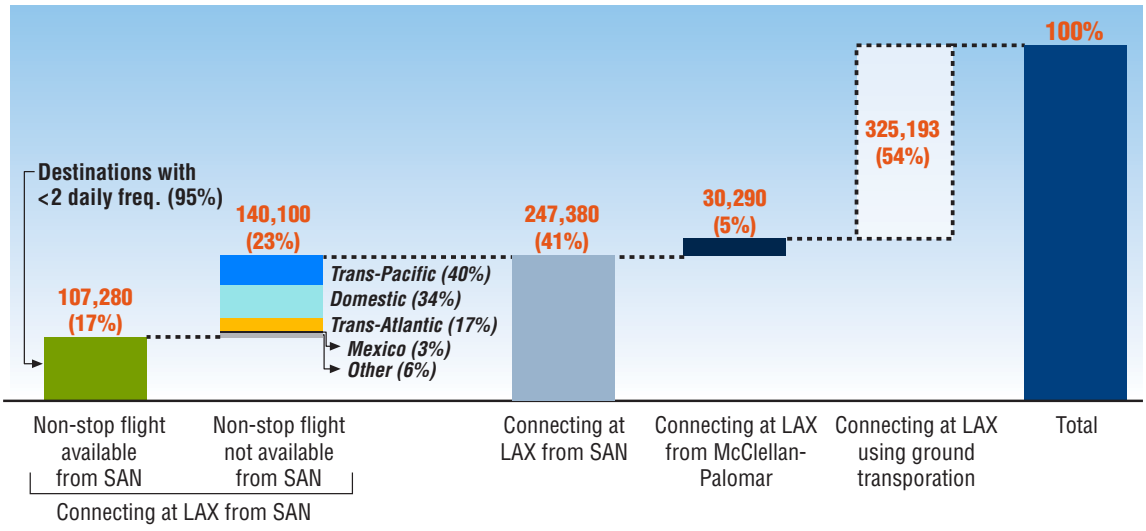
destinations with 31 non-stop flights per day. As a result, many San Diego County residents and visitors choose to connect at LAX based on the frequency of service or the number of destinations offered at that airport.

As shown on Figure 4-8, of the total San Diego County passengers connecting at LAX, approximately 41% (about 250,000 annual passengers) originate their travel at San Diego International, while approximately 54% (about 350,000 annual passengers) connect at LAX using ground transportation (e.g., train, car, bus, etc) to access the facility. Approximately 5% of LAX connecting passengers originate their travel at McClellan-Palomar, which currently only offers commercial service to LAX.

Figure 4-8

CONNECTING PATTERN OF SAN DIEGO COUNTY RESIDENT AND VISITOR USING LAX (2008)

Regional Aviation Strategic Plan



Sources: Jacobs Consultancy, based on U.S. DOT Airline Origin and Destination Survey (DB1B); AMDG, *2006 Air Passenger Survey Final Report, Los Angeles International Airport*, December 2001; September 2009.

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4.1.2.3 Tijuana Rodriguez International Airport

When traveling to Mexican destinations, many San Diego County residents choose to use Tijuana Rodriguez International. Compared to San Diego International which only offered service to one Mexican destination in 2009, Tijuana Rodriguez International offered nonstop service to 21 Mexican destinations with 50 non-stop flights per day. In 2009 Tijuana Rodriguez International initiated non-stop service to Tokyo.

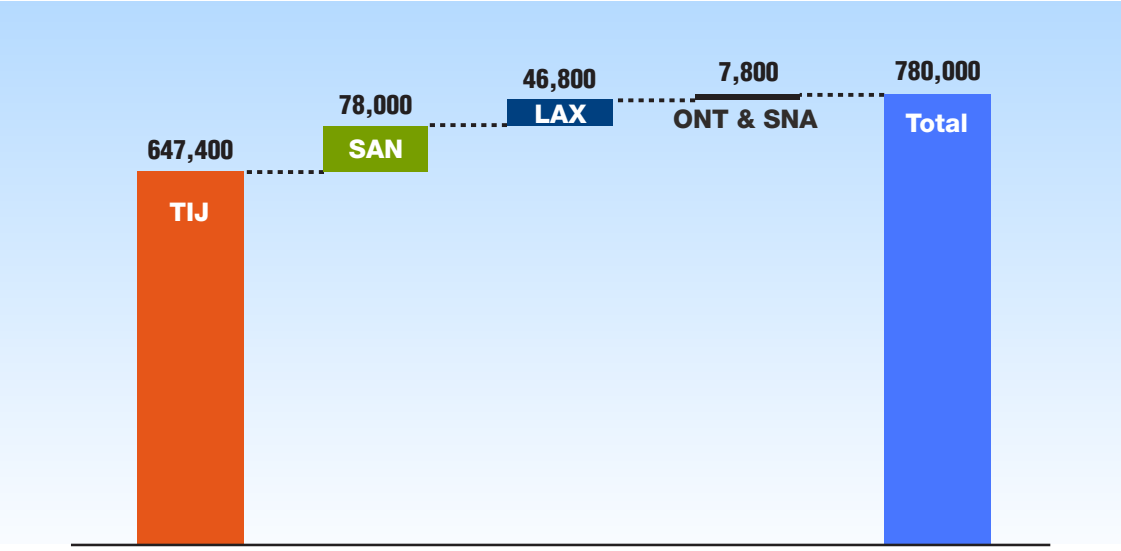
As shown on Figure 4-9, approximately 780,000 San Diego County residents traveled to Mexican destinations in 2006. Of this total, approximately 78,000 passengers originated their travel at San Diego International, representing 10% of the total departure bookings; approximately 46,800 passengers originated their travel at LAX;

approximately 7,800 passengers originated their travel at John Wayne/Orange County or Ontario airports. However, a total of 647,000 (or 83%) originated their travel at Tijuana Rodriguez International after crossing the U.S. - Mexico border.

Figure 4-9

ORIGINATING AIRPORTS FOR SAN DIEGO COUNTY RESIDENTS TRAVELING TO MEXICO (2006)

Regional Aviation Strategic Plan



Notes: Air traffic to Mexico from SAN in 2006 was approximately 78,000 passengers representing 10% of Market Information Data Transfer (MIDT) departure bookings.
Cross Border Terminal Study estimates 475,000 (±75,000) TIJ enplanements are San Diego County residents.
TIJ = Tijuana Rodriguez International Airport
ONT = Ontario International Airport
SNA = John Wayne Airport

Sources: Jacobs Consultancy, based on U.S. DOT; Infrastructure Management Group, *Cross Border Terminal Study, 2007*; OAG T100 data; September 2009.

SAN660 F-0007

For U.S. citizens crossing the border, significant ground access time is associated with using Tijuana Rodriguez International. Figure 4-10, shows the distribution of border crossings at San Ysidro, Tecate, and Otay Mesa, while Figure 4-11 summarizes the border crossing times associated with each. Notably, the time required to cross into Mexico from the U.S. is negligible at approximately 5 minutes for each crossing. However, the time required for vehicles to re-enter the U.S. is substantial, with the average varying from 15 minutes at Tecate to 55 minutes at Otay Mesa.

Figure 4-10

DISTRIBUTION OF BORDER CROSSINGS BY POINT OF ENTRY

Regional Aviation Strategic Plan

Source: U.S. Custom and Border Protection, *Volume of Traffic at U.S. Border Crossings*, 2008.

Figure 4-11

ESTIMATED TIME FOR BORDER CROSSINGS BY POINT OF ENTRY

Regional Aviation Strategic Plan

	Into Mexico	Into the United States	
		Vehicle	Pedestrian
San Ysidro	< 5 min	40 min	5 min
Otay Mesa	< 5 min	55 min	15 min
Tecate	< 5 min	15 min	N/A

Source: Jacobs Consultancy, based on Mexican Border Ports of Entry border wait time reported on U.S. Custom and Border Protection website on November 24, 2009 between 9 a.m. and 4 p.m., September 2009.

4.1.3 Aviation Industry Trends and Outlooks

The following summarizes RASP-applicable trends and generalized outlooks for the commercial airline, general aviation, and air cargo industries.

4.1.3.1 Commercial Airline Industry

Demand for air travel in the U.S. correlates strongly with fluctuations in the U.S. economy. The long-term trend in commercial airline activity is presented on

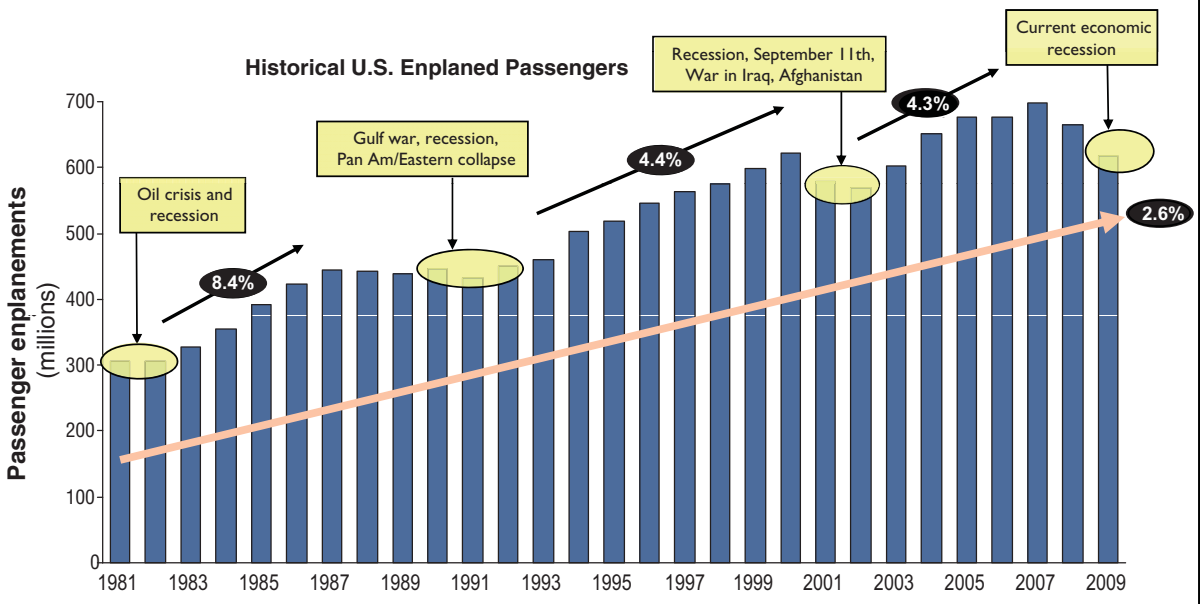
Figure 4-12. As presented, recessionary periods dating back to the 1970s and other external "shocks", such as the Arab Oil Embargo , Gulf Wars, and terrorist attacks, caused periodic downturns in aviation growth. However, as demonstrated on Figure 4-12, after each downturn, commercial airline demand has recovered quickly.

In the post-financial crisis environment, carriers have reduced capacity around 15% in an effort to maintain high fares and revenues. Notwithstanding these cuts, the industry was projected to lose billions of dollars in 2009. While 2009 third quarter financials improved, passenger growth and yields remain weak, and a recovery in demand was projected to be modest relative to prior recoveries.

Figure 4-12

HISTORICAL TREND IN COMMERCIAL AVIATION ACTIVITY

Regional Aviation Strategic Plan



Note: Year 2009 enplanement is estimated; Database reports only through the 3rd quarter of the year 2009.
Source: Jacobs Consultancy, based on OAG T100 Database, February 2010.

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4.1.3.2 General Aviation Activity

All industry forecasts predict declines in recreational general aviation and piston-type aircraft activity but increases in turbojet and helicopter activity associated with corporate aviation. Most corporate general aviation demand is associated with downtown San Diego, with San Diego International representing the ideal geographic location for this type of activity based on proximity and access to the corporate demand base.

As commercial passenger traffic increases and San Diego International becomes more congested, it is expected that increasing numbers of general aviation aircraft will be accommodated at other system airports. The system is well-equipped to accommodate all types of general aviation demand; therefore, it is assumed that there is sufficient overall capacity to accommodate demand over the planning horizon.

4.1.3.3 Air Cargo Activity

Approximately 90% of cargo handled at San Diego International is accommodated on integrated/express carriers and originates in or is destined for central San Diego. Similar to general aviation activity, San Diego International is the ideal geographic location for this type of activity based on its close proximity to the demand base. Moreover, integrated carriers employ vast distribution networks requiring a centralized airport location, with San Diego International again representing the ideal ground transportation base.

It should be noted that no system airport north of San Diego International can accommodate air cargo type aircraft; air cargo carriers are unwilling to operate from facilities south of San Diego International since such locations would increase delivery times to the primary demand base in central San Diego.

4.2 PREVIOUS ESTIMATES OF REGIONAL AVIATION CAPACITY

Numerous studies prepared in the past five years have documented that San Diego County will run out of commercial aviation capacity during the RASP planning horizon. A summary of key capacity findings from previous studies is provided in Table 4-1. Previous studies assumed passengers will still be able to access air service if and when San Diego International reaches capacity; however, the number of passengers or potential demand "lost" to San Diego International has not been quantified to date.

This "lost" demand or "suppressed demand" is defined as potential passengers who desire to travel via air service, but do not due to lack of available capacity and/or prohibitively high costs. Figure 4-13 presents the concept of suppressed demand at San Diego International. As shown, when passenger demand nears the capacity of the airport's airfield, growth in demand will subside due to increasing airfares and operational delays. Eventually, growth in demand will cease and stabilize (or remain flat) at the maximum level that can be accommodated by the airfield's capacity. Potential demand that cannot be accommodated – the difference between unconstrained and constrained demand – is defined as suppressed demand.

Table 4-1
SAN DIEGO INTERNATIONAL AIRPORT CAPACITY FINDINGS FROM PREVIOUS STUDIES
Regional Aviation Strategic Plan

Study	Year	Key capacity findings
Destination Lindbergh	2008	SAN's airfield will reach capacity between 2020 and 2025 likely resulting in airline market responses, including schedule changes and up-gauging to larger aircraft.
SAN PLAN: Southern California Airport Capacity	2008	LAX will reach its policy constrained limit of 78 million annual passengers as early as 2015. Orange County and Long Beach have reached legal constraints. Burbank may reach its capacity as early as 2025. SAN could experience severe congestion by 2020.
FAA: Capacity Needs in the National Airspace System	2007	SAN and the San Diego metropolitan area will need additional aviation capacity by 2025. NextGen improvements, planned Authority improvements, and multi-modal planning will be required.
San Diego International Airport Aviation Activity Forecasts	2004	SAN runway capacity will constrain growth between 2015 - 2022. SAN runway congestion will not allow further growth between 2021 - 2030. Without new investments, SAN may experience a cumulative loss of between 5 – 30M passengers over the forecast period.

4.3 BASELINE SCENARIO

The following summarizes the Baseline Scenario developed for the RASP. The Baseline Scenario is the "do-nothing" scenario with which all other alternatives were compared. The Baseline Scenario is primarily defined by the expected outcome of the capacity constraint at San Diego International. The Baseline Scenario incorporates (1) reasonably foreseeable "market-driven" reactions to address demand once San Diego International reaches capacity; (2) "approved" and funded improvements in the near-term horizon; and (3) capacity constraints at the greater Los Angeles metropolitan region airports. The Baseline Scenario does not include construction of major new facilities, policy options not currently in place, or artificial constraints on demand.

4.3.1 Facility and Policy Assumptions

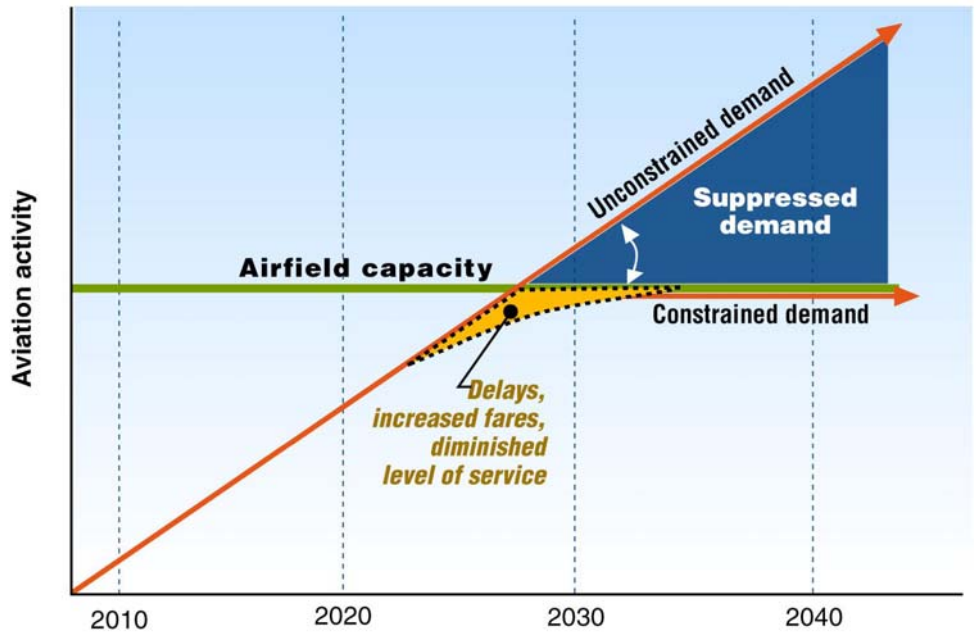
The Baseline Scenario includes the following Authority policies and planned near-term improvements:

- Accommodation of existing user groups at San Diego International, including commercial passenger and air cargo service and corporate general aviation

Figure 4-13

IMPACT OF AIRFIELD CAPACITY CONSTRAINT AT SAN DIEGO INTERNATIONAL AIRPORT

Regional Aviation Strategic Plan



- Continued nighttime departure curfew from 11:30 p.m. to 6:30 a.m.
- Implementation of the Terminal 2 West 10 gate addition in 2013 (ongoing project)
- *Destination Lindbergh* "Opening Day" recommendations for the Airport's north side, including: (1) an Intermodal Transit Center (ITC) sized to accommodate 400-600 thousand annual transit passengers; (2) SANDAG's transit ridership goal for 2015 of 6% of airport passengers, corresponding to the linkage to trolleys (Blue and Orange lines), COASTER, Amtrak, and the San Diego Metropolitan Transit System (MTS); (3) consolidated rental car facility and ground transportation plaza; and (4) dedicated on-airport roadway connecting the ITC and south side terminals via dedicated buses

The Baseline Scenario assumes that no new access roadway improvements or freeway ramps will be provided to facilitate access to San Diego International. However, the Scenario does include region-wide surface improvements per SANDAG's 2007 RTP – "Revenue Constrained Scenario". These improvements in 2010, 2020, and 2030 are depicted on Figures 4-14 through 4-16.

AIRPORT AND OPERATOR

- San Diego County Regional Airport Authority
- City of Oceanside
- City of San Diego
- County of San Diego
- Military
- Grupo Aeroportuario del Pacifico

PROPOSED IMPROVEMENT

- Future road improvement
- Addition to existing road
- New road construction
- New toll road construction
- Rail improvement

- County boundary
- International boundary

N

2 0 2 4

Graphic scale in miles

Note: All improvements reflect the Revenue Constrained Scenario.

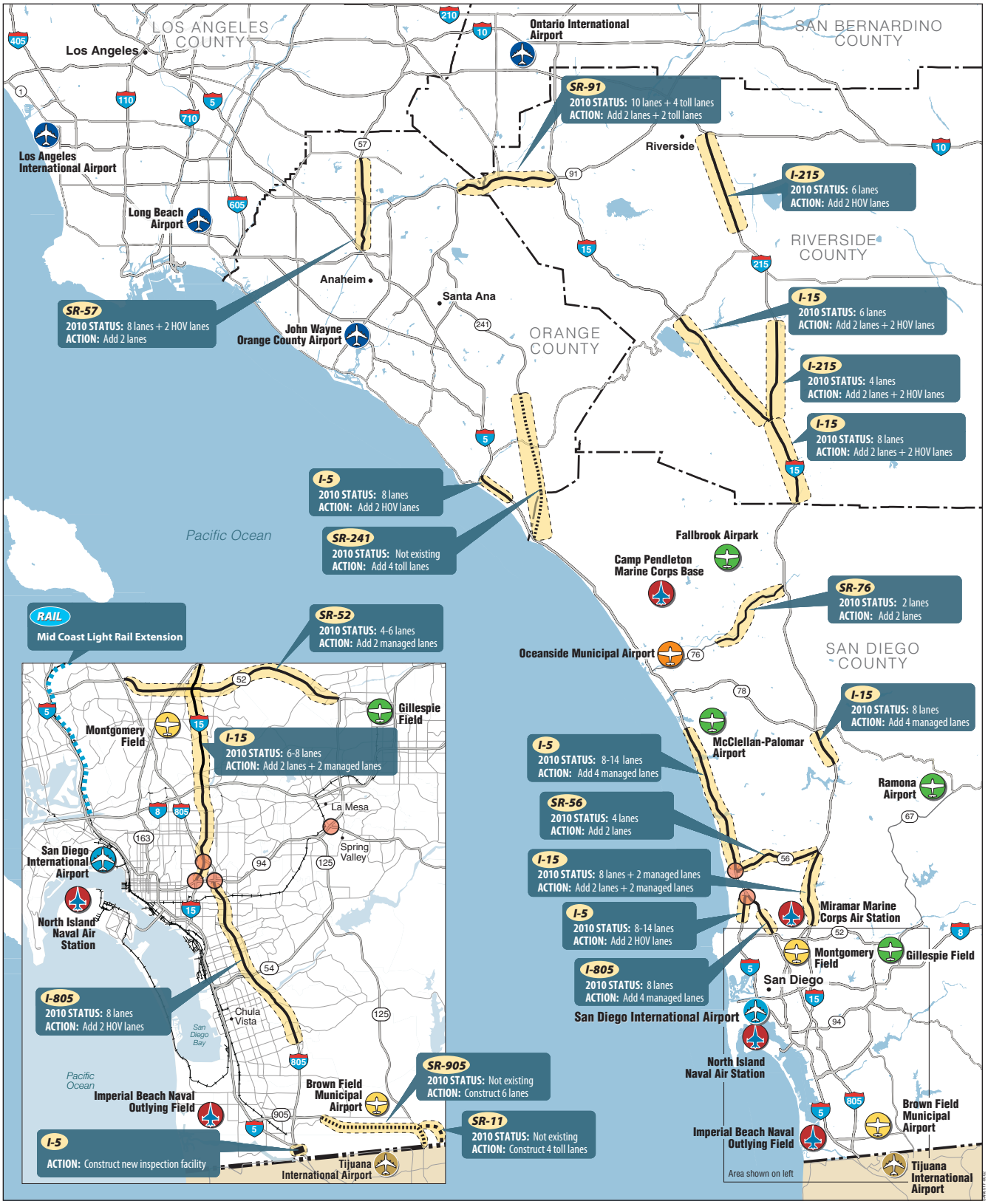
Source: SANDAG, *2030 San Diego Regional Transportation Plan*, November 2007.

Figure 4-14

REGIONAL TRANSPORTATION PLAN 2010 PROPOSED IMPROVEMENTS

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority
January 2011

JACOBS CONSULTANCY



AIRPORT AND OPERATOR

- San Diego County Regional Airport Authority
- City of Oceanside
- City of San Diego
- County of San Diego
- Military
- Grupo Aeroportuario del Pacifico
- Los Angeles area airports (multiple operators)

PROPOSED IMPROVEMENT

- Future road improvement
- Addition to existing road
- New road construction
- New toll road construction
- Interchange improvement
- Rail improvement

- County boundary
- International boundary

N

4.5 0 4.5 9

Graphic scale in miles

Note: All improvements within San Diego County reflect the Revenue Constrained Scenario.

Sources: SANDAG, *2030 San Diego Regional Transportation Plan*, November 2007, and Southern California Association of Governments, *2008 Regional Transportation Plan.*

Figure 4-15

REGIONAL TRANSPORTATION PLAN
2020 PROPOSED IMPROVEMENTS

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority
January 2011

JACOBS CONSULTANCY

AIRPORT AND OPERATOR

- San Diego County Regional Airport Authority
- City of Oceanside
- City of San Diego
- County of San Diego
- Military
- Grupo Aeroportuario del Pacifico
- Los Angeles area airports (multiple operators)

PROPOSED IMPROVEMENT

- Future road improvement
- Addition to existing road
- New road construction
- New toll road construction
- Interchange improvement
- Proposed high speed rail corridor
- County boundary
- International boundary

N

4.5 0 4.5 9

Graphic scale in miles

Note: All improvements within San Diego County reflect the Revenue Constrained Scenario.

Sources: SANDAG, *2030 San Diego Regional Transportation Plan*, November 2007, and Southern California Association of Governments, *2008 Regional Transportation Plan*.

Figure 4-16

REGIONAL TRANSPORTATION PLAN
2030 PROPOSED IMPROVEMENTS

Regional Aviation Strategic Plan
San Diego County Regional Airport Authority
January 2011

JACOBS CONSULTANCY

4.3.2 Cost Estimates and Implementation Timeline

Table 4-2 presents the cost estimates associated with the Baseline Scenario. The total cost to build facilities associated with the Baseline Scenario is approximately $535 million, with multiple agencies responsible for funding and implementing the various projects; not all are the responsibility of the Authority. Surface improvements per SANDAG's RTP "Revenue Constrained Scenario" are not included in the cost estimates; and costs associated with the Terminal 2 West Expansion are not included since the project is already funded.

Table 4-2

BASELINE SCENARIO — COST ESTIMATES AND POTENTIAL FUNDING SOURCES
Regional Aviation Strategic Plan

Component	Cost Estimate	Potential Funding Source	
Property Acquisition	$11 M	PFC/Bonds	Mix of agencies
Rail Improvements	$ 50 M	SANDAG/Bonds	
Intermodal Transportation Center	$ 39 M	PFC/Bonds	
Dedicated Roadway	$ 50 M	Bonds	SDCRAA
Consolidated Rental Car Facility	$300 M	CFC	
Auto Parking	$ 85 M	Private/Bonds	
TOTAL	**$535 M**		

Notes: Various agencies are reponsible for funding and implementing the above projects; not all are responsibility of the Authority. All cost from *Destination Lindbergh* include soft costs and contingency. Costs associated with Terminal 2 West Expansion are not included as the project is ongoing.

Source: Jacobsendaniels Associates, LLC., August 2010.

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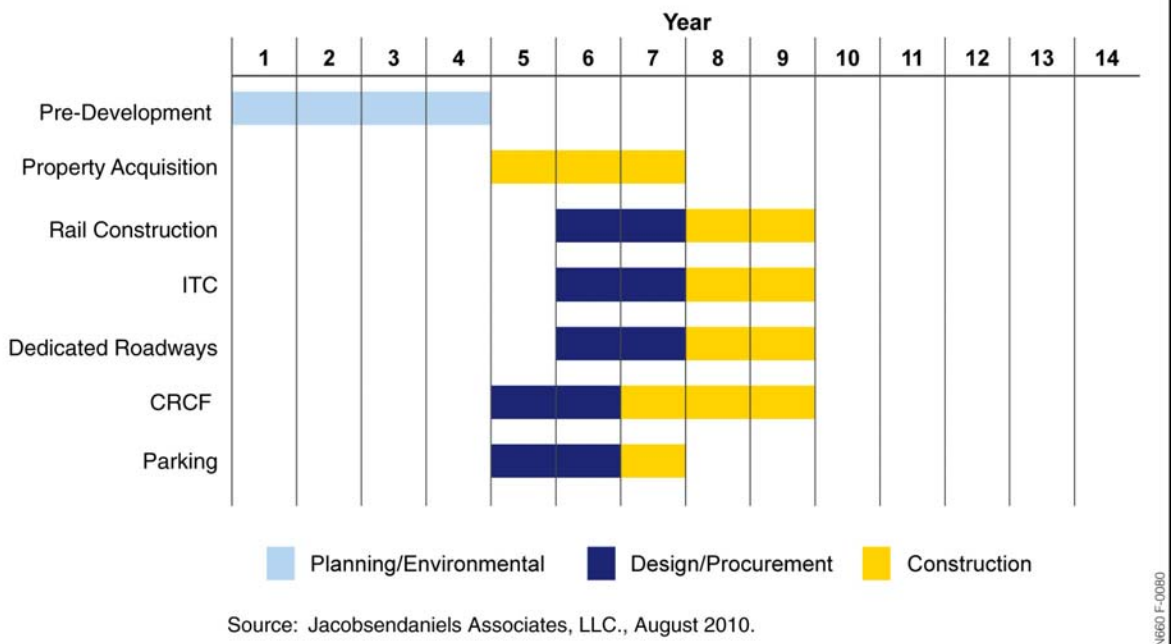
The implementation timeline associated with the Baseline Scenario is presented on Figure 4-17. As presented, the implementation of the various projects is estimated to take approximately ten years, and is assumed to begin around 2015.

Figure 4-17

BASELINE SCENARIO — IMPLEMENTATION SCHEDULE

Regional Aviation Strategic Plan



Source: Jacobsendaniels Associates, LLC., August 2010.

4.3.3 Market Reactions

As presented on Figure 4-18, capacity constraints at San Diego International will result in multiple "market reactions" over the long-term. It is widely recognized that San Diego International will reach its airfield capacity sometime between 2020 and 2030 at approximately 28 million annual passengers. Once this occurs, the airport's level of service is expected to decrease, resulting in increased operating delays (on the airfield and in the ground transportation network leading to the airport); and the price of air service will increase steeply. These consequences will result in the following:

- Accommodation of some San Diego demand at greater Los Angeles metropolitan region airports as well as Tijuana Rodriguez International, including increased bus service and volumes on the surface roadways
- Increased but limited commercial service at McClellan-Palomar via continued turboprop service (<30 seats) due to the airport's constrained runway length
- The potential for Federally-mandated slot controls at San Diego International

- Some limited up-gauging of commercial service aircraft at San Diego International and some international wide-body flights due to LAX capacity constraints and increasing drive times to the greater Los Angeles metropolitan region

Figure 4-18

BASELINE "DO-NOTHING" SCENARIO
Regional Aviation Strategic Plan

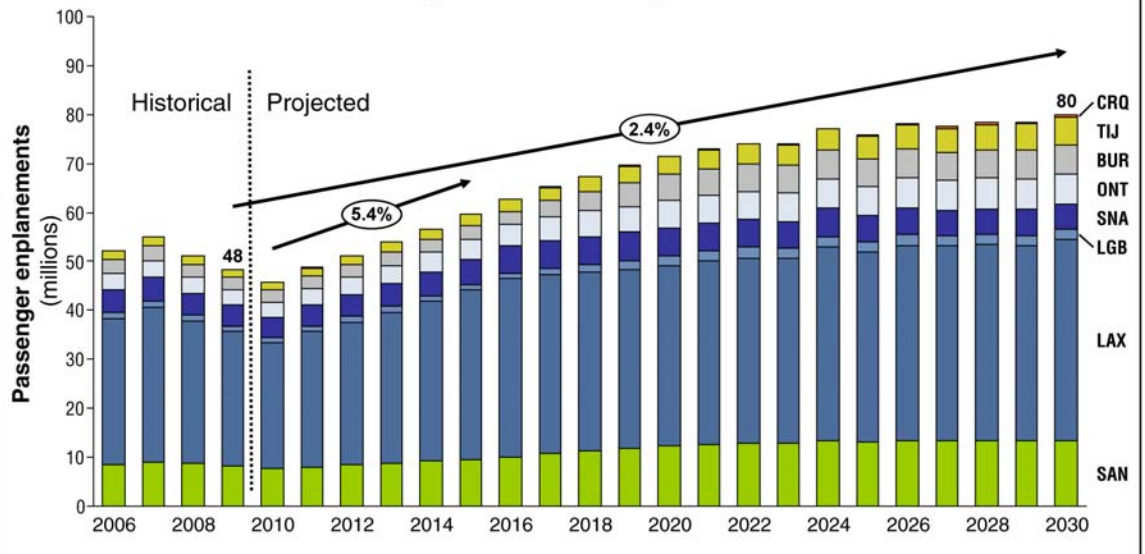
4.3.4 Baseline Findings

Figure 4-19 presents projected passenger enplanements for the RASP Study Area, which includes San Diego, Tijuana, and five airports in the greater Los Angeles mterpolitan region. As presented, annual enplaned passengers are projected to increase 50% between 2009 and 2030 from 48 to 80 million. Passenger demand is projected to recover following the current economic recession at a compound annual growth rate of 5.4% (2010 – 2015); the overall 20-year compound annual growth rate (2010 – 2020) is projected to be 2.4%. For San Diego International, passenger enplanements during the "recovery" period are projected to grow at a compound annual growth rate of 4.7%; while the airport's overall 20-year compound annual growth rate is projected to be 2.5%. As presented, Tijuana Rodriguez International is expected to experience the largest increase in passenger enplanements, increasing from 1.6 to 5.6 million enplanements between 2010 and 2030 at a compound annual growth rate of 6.4%.

Figure 4-19

BASELINE SCENARIO — PROJECTED PASSENGER ENPLANEMENTS AT SOUTHERN AND BAJA CALIFORNIA AIRPORTS

Regional Aviation Strategic Plan



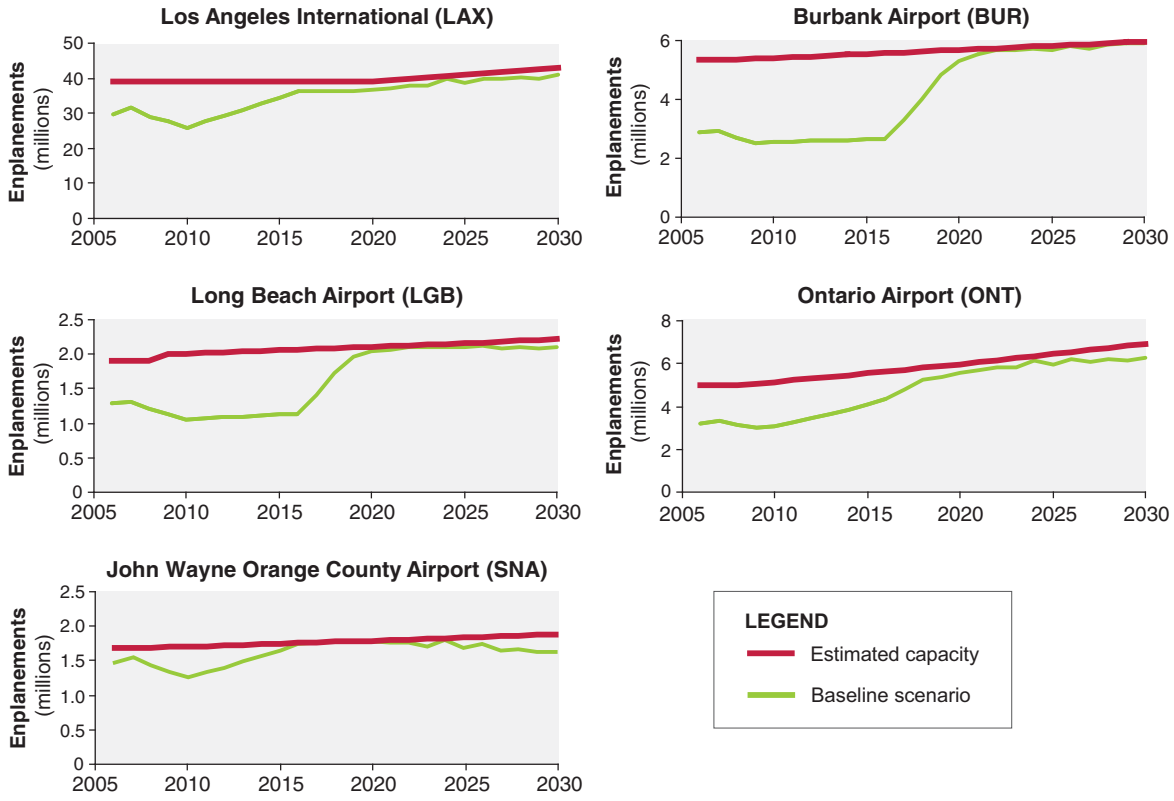
Notes: Passenger enplanements based on forecast demographic data from International Monetary Fund (IMF), LA Economic Development Corporation (LAEDC), and SANDAG.
Model calibrated to actual enplanements from 2006 to 2009; projections may be different from actual.
Results generally correspond to FAA TAF data for 2025.
SAN compound annual growth rate = 4.7% in the "recovery"; 2.5% for the forecast period.

The RASP demand model predicts that many Southern California airports will reach capacity during the RASP forecast period. As presented on Figure 4-20, LAX is projected to reach capacity sometime around 2015, which will result in significant increases in passenger enplanements at John Wayne/Orange County, Long Beach,

Figure 4-20

ANNUAL PASSENGER ENPLANEMENTS AT SOUTHERN CALIFORNIA AIRPORTS

Regional Aviation Strategic Plan



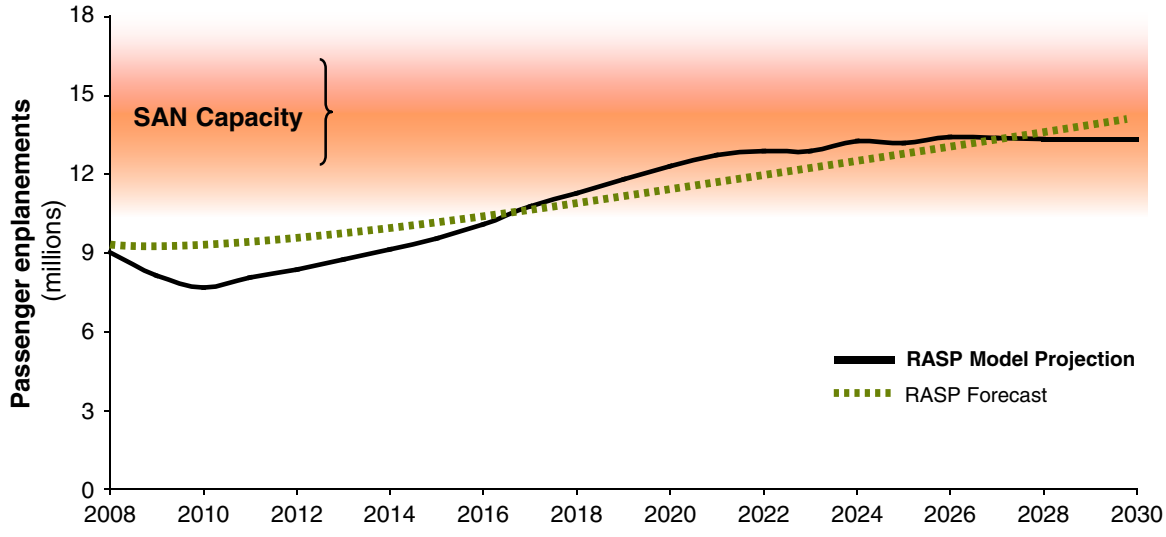
Ontario International, and Burbank. Furthermore, each of these airports is projected to reach its respective capacity between 2015 and 2020.

Historical and projected passenger enplanements in the Baseline Scenario for San Diego International are presented on Figure 4-21. As presented, the demand model indicates capacity constraints at San Diego International will begin between 2020 and 2025. The effect of this capacity constraint will be diminished levels of service, increased operating delays, and higher fares for air service. The demand model projects San Diego International will reach its airfield capacity earlier than previously forecasted (see Section 4.2), which is a result of model projections that incorporate numerous econometric variables and capacity constraints at RASP Study Area airports.

As presented on Figure 4-22, the econometric model predicts that San Diego County residents and visitors will increasingly use airports outside San Diego County beginning around 2020 as San Diego International nears capacity. McClellan-Palomar will attract additional passenger demand around 2025 (see Figure 4-19).

Figure 4-21

BASELINE SCENARIO — PROJECTED SAN DIEGO INTERNATIONAL ENPLANEMENTS
Regional Aviation Strategic Plan



Note: Model calibrated to actual enplanements from 2006 to 2009; projections may be different from actual.
Sources: RASP Forecast - Landrum & Brown, Inc., *Draft San Diego County Regional Aviation Strategic Plan Aviation Demand Forecasts*, December 2008.
RASP Model Projection - Jacobs Consultancy, August 2010.

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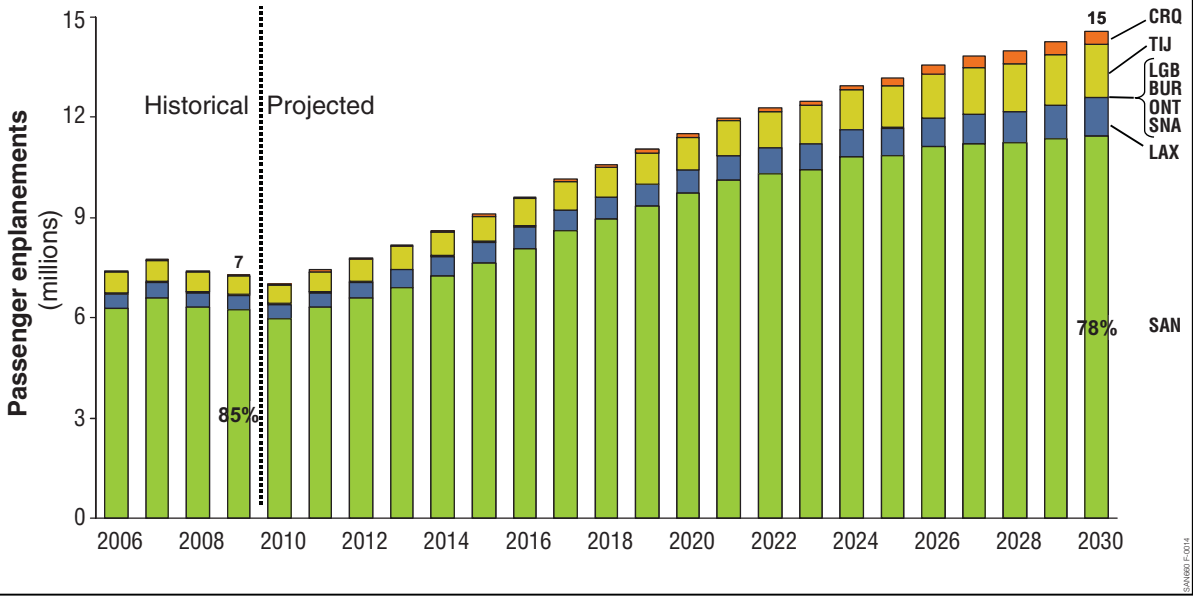
Figure 4-22

BASELINE SCENARIO — PROJECTED SAN DIEGO RESIDENT AND VISITOR ENPLANEMENTS DISTRIBUTION AT RASP STUDY AREA AIRPORTS
Regional Aviation Strategic Plan



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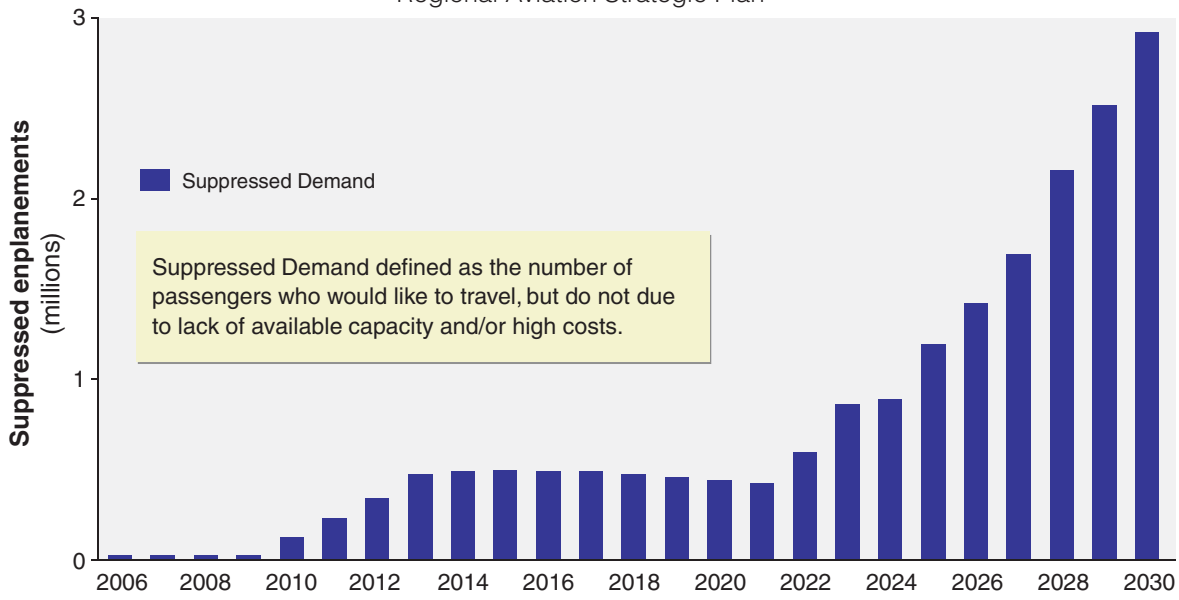
Tijuana Rodriguez International is projected to continue to experience strong growth driven by domestic Mexican traffic, and will continue to be the largest gateway for U.S.-Mexico traffic in the region.

As demand eventually nears overall regional aviation capacity, the number of "suppressed passengers" in San Diego County is also projected to increase. Therefore, suppressed demand is a key metric in comparing performance of various RASP scenarios. Figure 4-23 presents suppressed aviation passenger demand for San Diego County. As presented, suppressed passenger demand in the Baseline Scenario is projected to increase to about 3.0 million annual enplaned passengers by 2030.

Figure 4-23

BASELINE SCENARIO — SAN DIEGO COUNTY
SUPPRESSED AVIATION PASSENGER DEMAND
Regional Aviation Strategic Plan



Note: Suppressed demand presented above is relative to 2006; it is acknowledged that some suppressed demand already exists.

Chapter 5

ALTERNATIVE SCENARIOS

This chapter presents a summary of the alternative scenarios that were identified in consultation with the RASP Subcommittee and other stakeholders during the conduct of the RASP.

5.1 OVERVIEW OF ALTERNATIVE SCENARIOS

After an extensive process of considering all reasonable measures that could be taken to optimize the San Diego County Airport System (see Chapter 3), the following five families of scenarios were identified for further consideration. Each family is oriented toward optimizing a certain market or user type associated with the Airport System. Each family includes individual alternative scenarios, resulting in a total of 15 scenarios that were developed in detail for further evaluation.

1. **Commercial Passenger Optimization**
   - A. Full build-out of the ITC and north side terminal at San Diego International
   - B. Preserve San Diego International airfield capacity for commercial passenger service
   - C. Enhance commercial passenger service at McClellan-Palomar Airport
   - D. Introduce commercial passenger service at Brown Field Municipal Airport
   - E. Up-gauge San Diego International's Aircraft Fleet Mix – Narrow-body Fleet
   - F. Up-gauge San Diego International's Aircraft Fleet Mix – Increased Wide-body Fleet

2. **Enhanced Utilization of Tijuana**
   - A. Facilitate border crossings
   - B. Aviation passenger cross border facility
   - C. Cross border airport terminal

3. **California High Speed Rail**
   - A. Station at downtown San Diego
   - B. Station at San Diego International

4. **General Aviation Optimization**
   - A. Enhance McClellan-Palomar Airport for high-end/corporate general aviation
   - B. Enhance Brown Field Municipal Airport for high-end/corporate general aviation
   - C. Enhance Gillespie Field for mixed-use general aviation

5. **Air Cargo Optimization**
   - A. Introduce cargo service at Brown Field Municipal Airport

The RASP scenarios include hypothetical measures that could be taken to optimize markets and user types (e.g., preserve San Diego International's airfield for commercial passenger service) and planned measures (e.g., aviation passenger cross border facility at Tijuana Rodriguez International and California High Speed Rail) which, if implemented, would serve to optimize the Airport System. Several of the 15 scenarios are designed to measure the maximum possible effect of a particular theoretical action. For example, given current FAA regulations and requirements, scenarios intended to preserve San Diego International's airfield for commercial passenger service and eliminate all non-commercial services are practically impossible and inadvisable to implement in full. Nevertheless, the RASP Subcommittee and stakeholders believed there was value to estimate the impact of these measures so as to better understand the range of available options as well as the benefits and costs of attempting to address projected suppressed demand. Hence, scenarios should be viewed as providing useful information and evidence for policymakers, airport operators, and other stakeholders who will make decisions as to how best to meet the travel needs of San Diego County into the future.

For modeling purposes, all alternative scenarios assume the implementation of facilities and improvements identified in the Baseline Scenario (see Chapter 4), and that the baseline capacity of San Diego International is approximately 14.2 million annual enplanements.

The following sections present a detailed description and the evaluation factors associated with each alternative scenario.

5.2 COMMERCIAL PASSENGER OPTIMIZATION

The following describes the six scenarios intended to optimize commercial passenger (or airline) activity within the San Diego County Airport System.

5.2.1 Scenario 1A: Full Build-out of the ITC and North Side Terminal at San Diego International

This scenario maximizes the use of San Diego International for commercial passenger activity by expanding the Intermodal Transit Center (ITC) to accommodate between 1.2 and 1.8 million passengers. The full build-out of the ITC would include passenger processing facilities (e.g., ticketing, baggage claim, security screening), and an automated people mover (APM) connecting the ITC to concourses on the south side of the Airport.

Additional facility improvements associated with this scenario include the following:

- Property acquisitions
- Expansion of automobile parking facilities
- Expansion of the consolidated rental car facility (CONRAC)
- Modifications to the I-5 ramps

The total cost for Scenario 1A is estimated to be $1.2 billion and could be funded from a variety of sources, including bonds, private sources, Passenger Facility Charges (PFC), and rental car Customer Facility Charges (CFC). Funding of the non-aviation elements of the ITC requires careful consideration because airline funding support is unlikely given the costs and minimal effects on airfield capacity. A breakdown of the cost estimates, funding sources, and an implementation timeline is provided in Appendix C.

Key assumptions for Scenario 1A include:

- Ground access costs to San Diego International are assumed to decrease over the planning period due to higher transit ridership and improved access
- Ground access time to San Diego International is assumed to remain unchanged (the decrease in average ground access time due to roadway access improvements is offset by the increase in average ground access time due to higher transit ridership)

5.2.2 Scenario 1B: Preserve San Diego International's Airfield Capacity for Commercial Passenger Service

This scenario maximizes the use of San Diego International for commercial passenger activity by encouraging non-commercial and general aviation activity to use alternative facilities. This scenario would be implemented via leasing and pricing strategies and would require a "coordinated" FBO/general aviation policy between the Authority and the other airport sponsors in San Diego County.

To be implementable, Scenario 1B requires facilities at surrounding airports to be similar or with a higher level of service to facilities at San Diego International. The following specific facility improvements were assumed for modeling and cost estimating purposes:

- **Gillespie Field** – Construction of additional FBO/corporate hangars (El Cajon Development); resolve deviations from FAA design standards
- **Montgomery Field** – Construction of new FBO, corporate hangars
- **Brown Field** – Construction of a new FBO, corporate hangars, T-hangars, and helicopter FBO (phase 1 of proposed development)

The total cost for Scenario 1B is estimated to be $188 million and would be funded primarily from private sources. A breakdown of the cost estimates, funding sources, and an implementation timeline is provided in Appendix C.

Additional factors associated with Scenario 1B include potential legal scrutiny based on perceived access restrictions and the fact that there is no legal mechanism to require general aviation users to vacate San Diego International in lieu of reliever

airports. In addition, the runway lengths at Montgomery and Gillespie fields are not capable of handling the full range of many high-end corporate general aviation aircraft given range requirements.

Key assumptions for Scenario 1B include:

- All forecast general aviation operations at San Diego International are replaced with commercial aircraft operations
- San Diego International's capacity limit would increase from 14.2 to 15.9 million annual enplaned passengers*

5.2.3 Scenario 1C: Enhance Commercial Passenger Service at McClellan-Palomar

This scenario is intended to optimize regional commercial activity by providing facilities for multi-carrier passenger service at McClellan-Palomar. This scenario would be implemented through leasing and pricing strategies (e.g., strategies making McClellan-Palomar a more attractive option for commercial air service than San Diego International).

To be implementable, Scenario 1C requires the following new or enhanced facilities at McClellan-Palomar:

- 1,000-foot runway extension for a total length of 6,000 feet; requires a bridge foundation due to landfill location
- 8,000 sq ft passenger terminal expansion for a total of 27,000 sq ft
- 2,800 space automobile parking deck

The total cost for Scenario 1C is estimated to be $160 million and would be funded primarily from AIP, PFC, bonds, and/or private sources. A breakdown of the cost estimates, funding sources, and implementation timeline is provided in Appendix C.

Additional factors associated with Scenario 1C include the fact that no mainline jets could use the facility due to irresolvable FAA-required runway-taxiway separation criteria, and therefore, the fleet would remain restricted to regional jet (C-II) type aircraft. Extensive environmental review and approvals would also be required for the runway extension. Finally, most existing airlines at San Diego International are unlikely to split operations between San Diego International and McClellan-Palomar. Therefore, air service would likely be limited to new entrant airlines.

* Based on average seat capacity and load factors provided in the *Destination Lindbergh* report.

Key assumptions for Scenario 1C are as follows:

- Airport capacity would be increased from approximately 500 to 750 thousand annual passenger enplanements
- Non-stop/direct services would be offered to markets within a 1,500 mile radius
- Two subsets of air service "drivers" are considered: (1) McClellan-Palomar infrastructure enhancements where facility expansion attracts more activity; and (2) San Diego International capacity limits where the lack of capacity causes aviation activity to go elsewhere

5.2.4 Scenario 1D: Introduce Commercial Passenger Service at Brown Field Municipal Airport

This scenario maximizes regional commercial passenger activity by providing facilities for multi-carrier commercial service at Brown Field. Such a scenario would be implemented via leasing and pricing strategies (e.g., strategies making Brown Field a more attractive option for commercial air service than San Diego International).

To be implementable, Scenario 1D requires the following new or enhanced facilities at Brown Field:

- New passenger terminal building
- Access/entrance roadway improvements
- 2,800 automobile parking spaces
- Facilities for FAR Part 139 certification (e.g., security fencing, firefighting facilities)
- Various utility upgrades

The total cost for Scenario 1D is estimated to be $100 million and would be funded primarily from AIP and bonds. A breakdown of the cost estimates, funding sources, and an implementation timeline is provided in Appendix C.

Additional factors associated with Scenario 1D include the following:

- The airfield would not restrict the type of aircraft operating at the facility, but service would most likely be provided by regional jets (e.g., ≤70 seat aircraft)
- The proximity of Brown Field to two existing commercial service airports (San Diego and Tijuana Rodriguez International Airports) negatively impacts the viability of this scenario

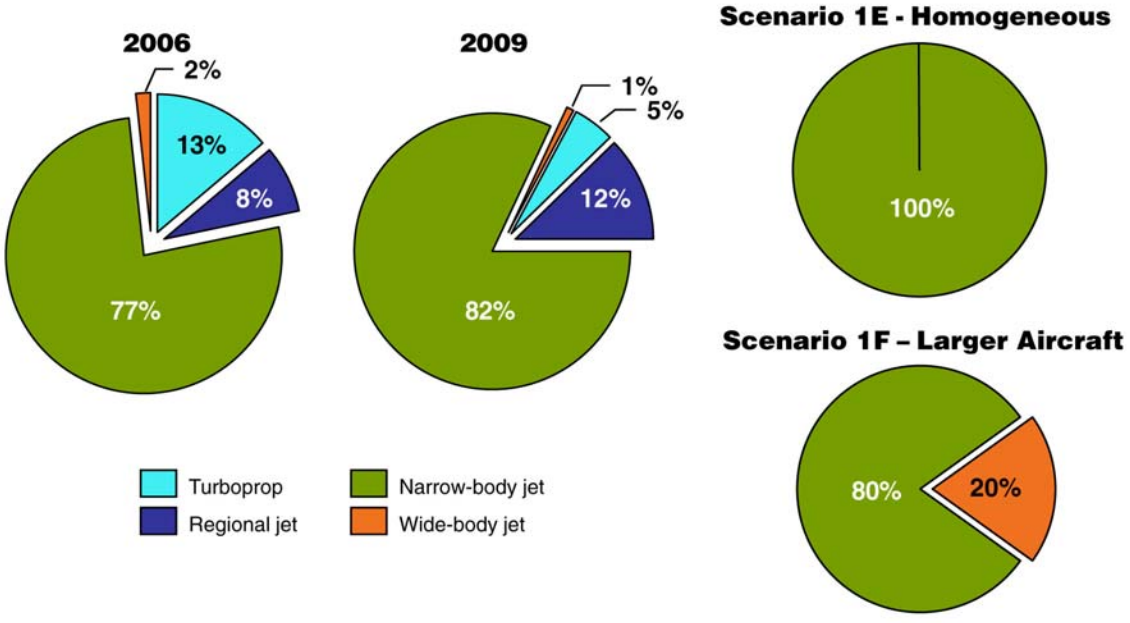
- The remote location in the southern portion of San Diego County is not desirable for commercial passenger operators
- Terrain and airspace complications hinder the implementation of precision approaches – necessary facilities for the initiation of commercial service
- There has been significant historic public and political opposition to the introduction of commercial service to Brown Field

5.2.5 Scenarios 1E/F: Up-gauge San Diego International's Aircraft Fleet Mix

These scenarios maximize the use of San Diego International for commercial passenger activity as follows:

- **Scenario 1E: Homogeneous Narrow-body Fleet** – Encourage air carriers to reduce the use of regional jet or smaller aircraft at San Diego International; aircraft operations would be replaced by narrow-body type aircraft with an average seat capacity of 140 seats
- **Scenario 1F: Increased Wide-body Fleet** – Encourage air carriers to deploy large capacity aircraft at San Diego International; assumes the future fleet mix would comprised of 737 aircraft (50%), 757 aircraft (30%), and 767 aircraft (20%), having an average seat capacity of 180 seats

Figure 5-1
SCENARIOS 1E/1F — SAN DIEGO INTERNATIONAL AIRPORT'S FLEET MIX
Regional Aviation Strategic Plan



Under either scenario, general aviation and air cargo operators would be encouraged to use alternative airports through modified airport rates and charges (see Scenario 1B). To be implementable, Scenarios 1E/F require improvements at the outlying airports, and therefore costs estimates are similar to Scenario 1B ($188 million).

The following summarizes the various constraints associated with implementing either Scenarios 1E/F:

- The Authority has no legal authority to dictate the type of aircraft operated by its users; in the absence of an explicit federal grant authority or federal management, access restrictions for a federally funded transportation facility are not allowed
- San Diego International's fleet mix is already favorable (nearly optimized) as the Airport has a relatively low proportion of regional jets and turboprops
- Market forces normally prevail; air carriers "right size" seat capacity based on the characteristics of their overall network, including destinations served, services, and demand

5.3 ENHANCED UTILIZATION OF TIJUANA

The following three scenarios optimize the utilization of Tijuana Rodriguez International Airport. For modeling purposes, the Baseline Scenario assumes the capacity of Tijuana Rodriguez International would increase from approximately 2.5 to 7.0 million annual passenger enplanements in response to market demands. Costs associated with these improvements are assumed to be incurred by GAP and are not included in the individual scenario costs estimates provided below.

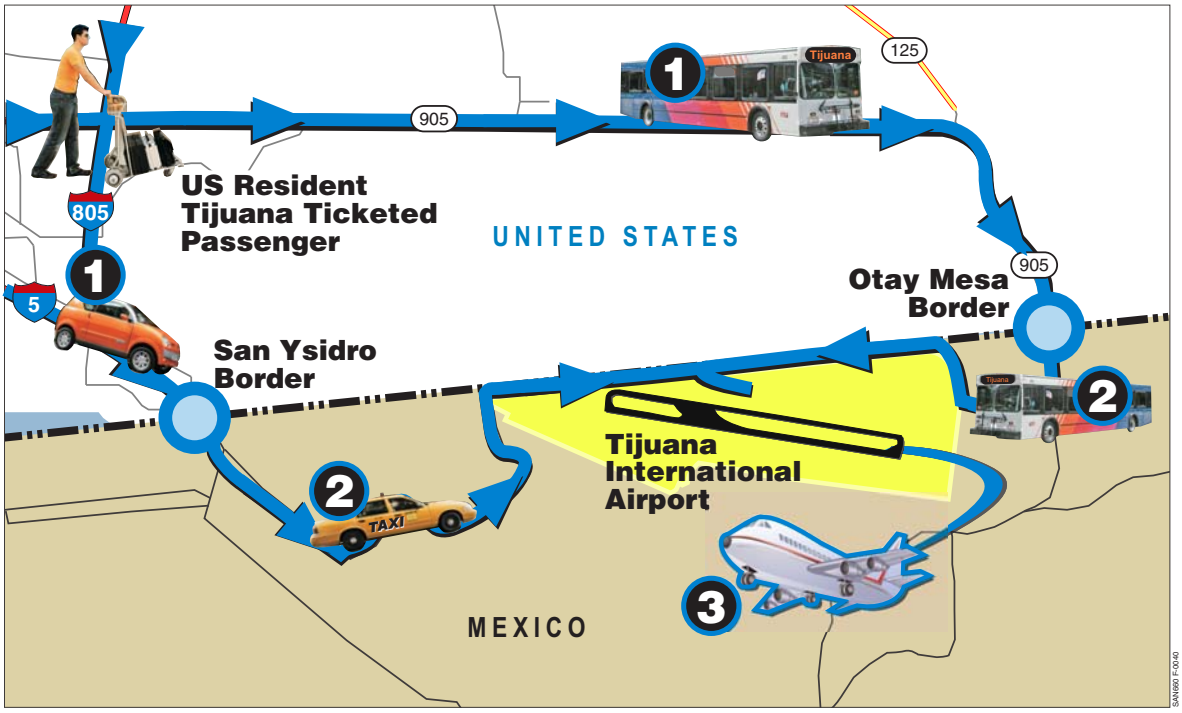
5.3.1 Scenario 2A: Facilitate Border Crossings

This scenario is intended to increase the use of Tijuana Rodriguez International for commercial passenger activity by improving the existing Otay Mesa and San Ysidro international border crossings. Scenario 2A is on Figure 5-2. Scenario 2A assumes the implementation of *Project Smart Border 2010*, which is a San Diego Regional Chamber of Commerce initiative to improve border crossing and access times, but does not propose any new border crossings.

Figure 5-2

CURRENT U.S. PASSENGER ACCESS TO TIJUANA AIRPORT

Regional Aviation Strategic Plan



Key assumptions for Scenario 2A are as follows:

- Border crossing times would be reduced by 40% from approximately 45 minutes*; border crossing costs would remain unchanged from the Baseline Scenario
- Increased shuttle and bus service to Tijuana from the greater Los Angeles metropolitan and San Diego regions
- Increases in air service to Mexican/international markets and limited increases in air service to U.S. markets
- Facility improvements at Tijuana Rodriguez International including upgraded terminal and concourses (i.e., improved and refurbished concessions, holdrooms, ticket counters, etc.); and a new airport bus terminal to accommodate additional passenger activity originating from a U.S. shuttle bus activity

* Border crossing time is a weighted average wait time computed based on total border crossings reported in 2008, and CBP Border Wait Time reported on U.S. Customs and Border Protection website on 11/24/2009 between 9 a.m. and 4 p.m.

The total cost for Scenario 2A is estimated to be $30 million and could be funded from a variety of sources, including airline fees, federal CBP, and private developers. A breakdown of the cost estimates and funding sources as well as an implementation timeline is provided in Appendix C.

Additional factors associated with Scenario 2B include the distance and time required to travel to Tijuana from downtown San Diego and northern San Diego County, and the myriad cultural factors associated with U.S. passengers entering Mexico (e.g., language barriers, security issues). Cooperation with GAP would be essential for scenario implementation.

5.3.2 Scenario 2B: Aviation Passenger Cross Border Facility

This scenario increases the use of Tijuana Rodriguez International for commercial passenger activity by offering a cross border facility (CBF), allowing U.S. ticketed passengers exclusive and convenient access into the airport. Scenario 2B is depicted in Figure 5-3. The CBF would operate similar to a new pedestrian port of entry and would include vehicle parking, customs/border control, and a landside "connection" or bridge into the airport. Ticketing, security screening, and baggage handling would remain on the Mexican side in the existing terminal building. A user fee to access the CBF would be applied to all users.

Scenario 2B assumes increases in air service to Mexican, international, and U.S. markets; all U.S. origin passengers will access Tijuana Rodriguez International via the CBF, and no U.S. passengers would continue to use existing border crossings to access the airport.

Specific facility improvements associated with this scenario include:

- Tijuana Rodriguez International – Upgraded terminal and concourses (e.g., improved and refurbished concessions, holdrooms, ticket counters)
- CBF – A 50,000 sq ft facility with a connecting bridge to Tijuana Rodriguez International; multimodal curbfront for private vehicles, buses, and taxis; and short- and long-term automobile parking
- Surface Access – Roadway improvements to Highway 905 (Otay Mesa Road) to maintain the level of service assumed in the Baseline Scenario

The total cost for Scenario 2B is estimated to be $165 million and would be funded from private sources. Implementation is assumed in 2012. A breakdown of the cost estimates, funding sources, and implementation timeline is provided in Appendix C.

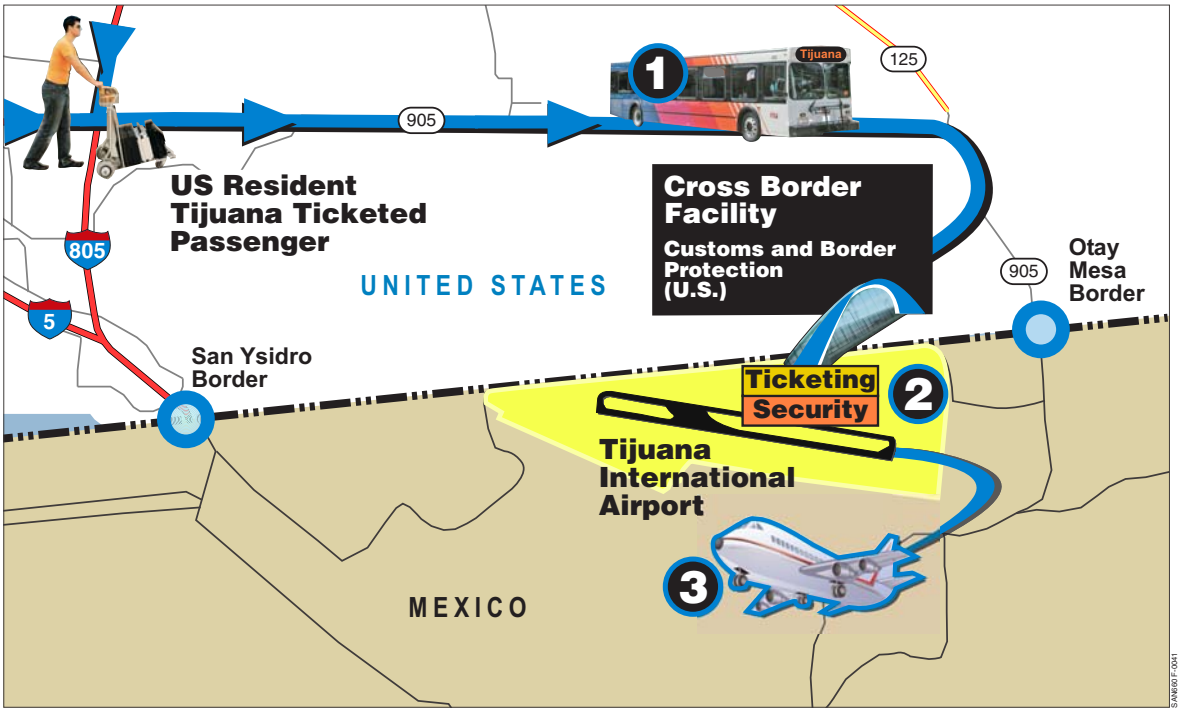
Additional factors associated with Scenario 2B include the distance and time required to travel to Tijuana from downtown San Diego and northern San Diego County, and the myriad cultural factors associated with U.S. passengers entering

Mexico (e.g., language barriers, security issues). Cooperation with GAP would be essential for scenario implementation.

Figure 5-3

AVIATION PASSENGER CROSS BORDER FACILITY

Regional Aviation Strategic Plan



5.3.3 Scenario 2C: Cross Border Airport Terminal

This scenario increases the use of Tijuana Rodriguez International for commercial passenger activity by offering a new passenger cross border terminal (CBT) on the U.S. side of the border to facilitate processing of U.S. passengers utilizing Tijuana Rodriguez International. Scenario 2C is depicted in Figure 5-4. Specifically, the CBT would include parking facilities and redundant Mexican/U.S. passenger processing facilities, such as ticketing, security screening, baggage handling, and customs border control. However, all flights to the U.S. would be considered "international" even if passengers are checked-in on the U.S. side in the CBT. A user fee to access the CBT would be applied to all users.

Similar to Scenario 2B, Scenario 2C also assumes increases in air service to Mexican, international, and U.S. markets; all U.S. origin passengers will access Tijuana Rodriguez International via the CBT and no U.S. passengers would continue to use existing border crossings to access the airport.

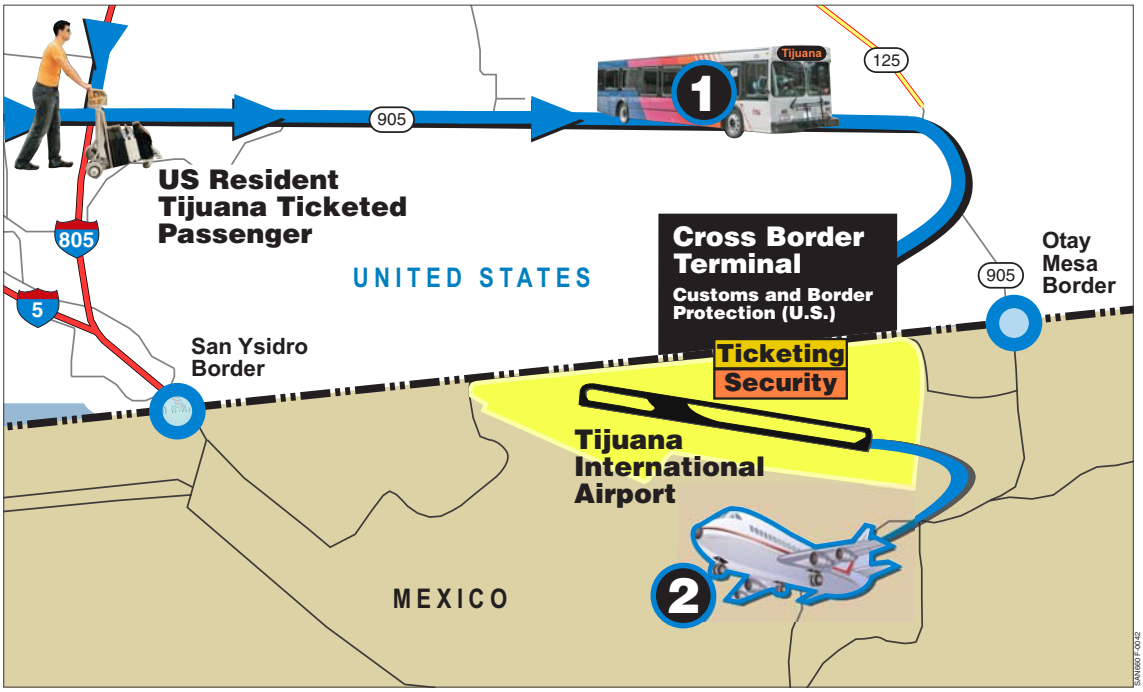
Specific facility improvements associated with this scenario include:

- Tijuana Rodriguez International – Upgraded terminal and concourses (i.e., improved and refurbished concessions, holdrooms, ticket counters, etc.); and the capacity of the airport is increased from 7.0 to 10.0 million annual enplanements
- CBT – A 125,000 sq ft terminal facility with a capacity of 3.0 million annual enplanements; multimodal curbfront for private vehicles, buses, and taxis; and short- and long-term automobile parking
- Surface Access – Roadway improvements to Highway 905 (Otay Mesa Road) to maintain the level of service assumed in the Baseline Scenario

Figure 5-4

CROSS BORDER AIRPORT TERMINAL

Regional Aviation Strategic Plan



The total cost for Scenario 2C is estimated to be $235 million and would be funded from private sources. Implementation is assumed in 2020. A breakdown of the cost estimates, funding sources, and implementation timeline is provided in Appendix C.

Additional factors for consideration include political and regulatory factors and the time required to travel to the border from downtown San Diego and northern San Diego County. Cooperation with GAP and between the U.S. and Mexican governments would be imperative.

5.4 CALIFORNIA HIGH SPEED RAIL

The proposed California HSR alignment is presented on Figure 5-5. Under current plans, the southern end of the HSR corridor will terminate in San Diego County, at either the downtown Santa Fe depot /train station or San Diego International Airport, and include stations at downtown Los Angeles Union Station and Ontario International Airport.

Figure 5-5

PROPOSED CALIFORNIA HIGH SPEED RAIL ALIGNMENT

Regional Aviation Strategic Plan

Source: California High Speed Rail Authority, 2010.

HSR can be used as an alternative or replacement for intra-California air travel (see Figure 5-6) or to access an airport within California (see Figure 5-7). Both "mode choices" are assessed in the RASP. Time and cost assumptions for the two mode choices are presented on Figure 5-8.

Figure 5-6

POTENTIAL USE OF HIGH SPEED RAIL AS AN ALTERNATIVE TO AIR TRAVEL

Regional Aviation Strategic Plan

Figure 5-7

HIGH SPEED RAIL FOR AIRPORT ACCESS

Regional Aviation Strategic Plan

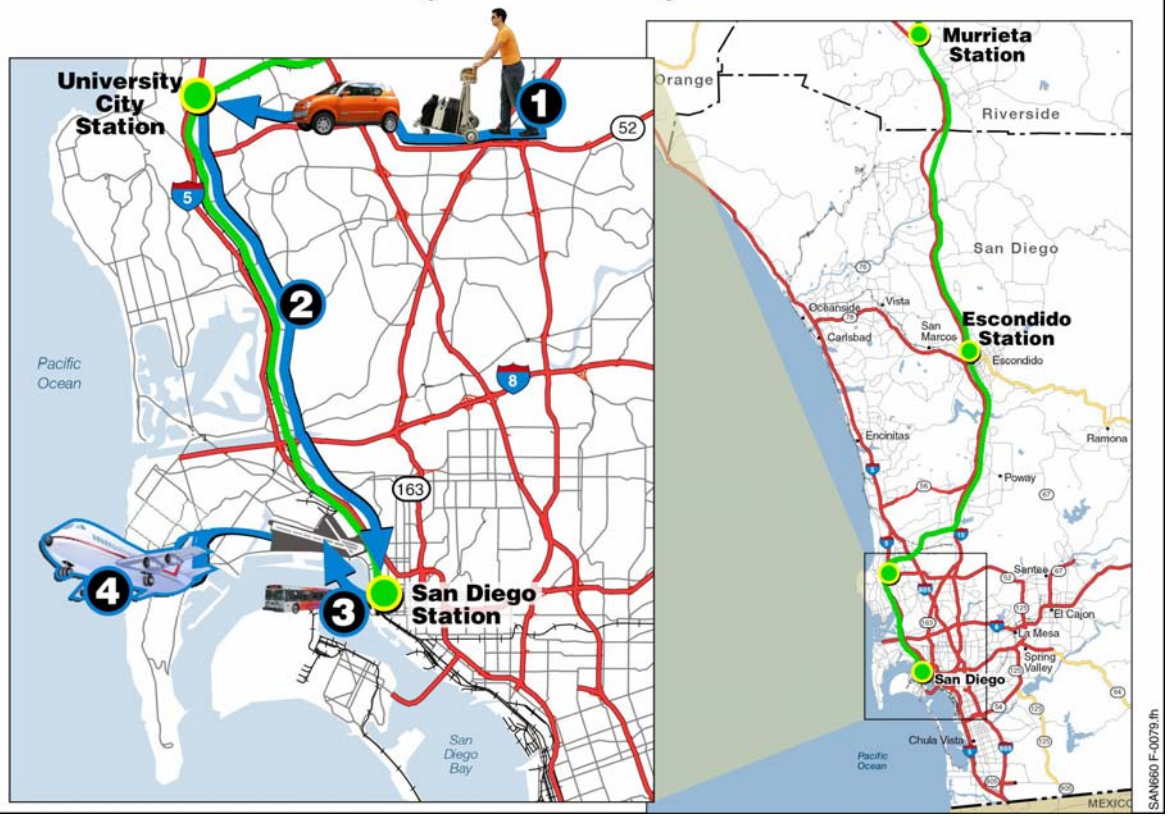


Figure 5-8

TIME AND COST ASSUMPTIONS FOR VARIOUS MODE CHOICES

Regional Aviation Strategic Plan

	Total Time	Total Cost
Air Only Trip (Baseline)	Time to get to airport + Air boarding time (75 min) + Flight time	Cost of driving to airport + Flight ticket cost model-driven
HSR Only Trip	Time to get to HSR station + HSR boarding time (15 min) + HSR travel time	Cost of driving to HSR station + HSR ticket cost
Mixed Mode Trip	Time to get to HSR station + HSR boarding time (15 min) + HSR travel time + Connection time (if any) + Air boarding time (75 min) + Flight time	Cost of driving to HSR station + HSR ticket cost + Connection cost (if any) + Flight ticket cost model-driven

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Red text source = SANDAG/SCAG
Green text source = California High Speed Rail Authority
Blue text = Official Airline Guide
Black text = RASP Model

The following describes the two scenarios assessed in the RASP. For modeling purposes, Phase 1 is estimated to commence service in 2019 (includes Los Angeles Union Station but not Ontario International) and Phase 2 (including Ontario International south to San Diego County) is estimated to start in 2027. The cost estimates and allocation of costs among funding sources is unknown, but is anticipated to be greater than $1.0 billion.

5.4.1 Scenario 3A: HSR Station at Downtown San Diego

This scenario assumes a downtown San Diego HSR terminus at the existing Santa Fe train Station, with ground access connections to the ITC at San Diego International. Options for connectivity between downtown and San Diego International include trolley service (existing trolley lines with new/additional trolleys during peak) and new bus routes (with new/additional buses).

Additionally, this scenario provides San Diego residents and visitors an alterative access to Ontario International Airport via HSR which is proposed to connect the San Diego region via the Inland Empire to the greater Los Angeles metropolitan area. A HSR station at Ontario Airport is assumed to be located within, or the vicinity of, the Airport terminal for optimal connection. Options for connectivity include direct pedestrian access, moving walk and/or airport shuttle.

The California HSR Authority's estimates and assumptions for the "83% Scenario" were adopted for the RASP and used to calibrate the Model. Key assumptions include:

- HSR fares assumed to be 83% of airfare costs
- HSR travel time between San Diego and San Francisco approximately four hours
- Passengers arrive at the HSR station 15 minutes prior to departure (as compared to 75 minutes for air travel)

Assumptions regarding connection times and fares are as follows:

- Downtown HSR station to San Diego International Airport terminal = 30 min connection time / $4
- Ontario International HSR station to the Ontario International Airport terminal = 10 min connection time / $0

5.4.2 Scenario 3B: HSR Station at San Diego International Airport

This scenario assumes a HSR station on the north side of San Diego International, adjacent or connected to the ITC. The HSR station would offer direct pedestrian access to the ITC, and include auto parking, CONRAC, and some passenger processing (see Scenario 1A).

The key assumptions as related to HSR fare, HSR travel times, opening years, pre-boarding times, and Ontario International connection times are the same as Scenario 3A. The assumption regarding connection times at San Diego is the following: ITC HSR station to the San Diego International Airport terminal = 10 min connection time / $0.

5.5 GENERAL AVIATION OPTIMIZATION

The following sections describe the general aviation scenarios intended to optimize the San Diego County Airport System by redistributing general aviation activity and based aircraft away from airports that are dedicated to commercial passenger service. Each scenario is based on the premise that facility improvements (e.g., implementation of an ILS, high-end FBO, new storage facilities) at certain airports may incentivize aircraft owners to relocate to or increase their utilization of the airport being improved.

A separate general aviation demand model (GA Model) was developed independently to evaluate the General Aviation Optimization scenarios. In general, the GA Model evaluates potential changes in general aviation aircraft operations at airports subject to improvements associated with the various scenarios. The Model was developed separately from the econometric demand model because general aviation operations are driven less by airline competitive forces and more principally

by factors such as the local economy, number of active pilots, aircraft hours flown, and airport facilities. Also, as opposed to commercial passenger activity, the region has sufficient capacity to accommodate future general aviation demand, and therefore, general aviation activity is not impacted by capacity constraints in San Diego County.

Operations in the GA Model were allocated among two "demand" types – corporate and non-corporate/recreational. Corporate operations are defined as operations associated with FAR Part 91 for "Business" and "Corporate" uses, and FAR Part 135 on-demand "Air Taxi" use. Remaining operations were classified as non-corporate. The number of aircraft operations for each "demand" type in San Diego County was determined based on the number of active aircraft in their relevant categories documented in materials published by General Aviation Manufacturers Association (GAMA). The total number of active aircraft is summarized in Table 5-1.

Table 5-1
NUMBER OF ACTIVE GENERAL AVIATION AIRCRAFT BY AIRCRAFT TYPE IN THE U.S. (2008)
Regional Aviation Strategic Plan

Aircraft Type	Corporate *(a)*	Non-corporate *(b)*	Total active
Jet	9,629	1,410	11,042
Turboprop	5,113	3,794	8,907
Multi-Engine Piston	7,106	10,409	17,515
Single-Engine Piston	15,882	129,617	145,499
Helicopter	2,189	7,689	9,878
Others			
Gliders	9	1,905	1,914
Lighter-Than-Air	44	3,694	3,738
Experimental	988	22,376	23,364
Light-Sport	58	6,753	6,811
Subtotal	1,099	34,728	35,827
Total	41,020	187,642	228,663

Note: Totals may not add due to rounding.

(a) Corporate aircraft include: FAR Part 91 Business, Corporate use, and FAR Part 135 Air Taxi use.

(b) Non-corporate aircraft include: FAR Part 91 Personal, Instructional, Aerial Apps, Aerial Obs, Aerial Other, External Load, Other Work, Sightsee, Air Med, Other; and FAR Part 135 Air Tours.

Source: General Aviation Manufacturers Association, *2009 General Aviation Statistical Databook & Industry Outlook,* Table 2.1.

The breakdown of corporate and non-corporate operations by aircraft type is summarized in Table 5-2.

5.5.1 Scenario 4A: Enhance McClellan-Palomar Airport for High-end / Corporate General Aviation

This scenario increases the use of McClellan-Palomar for high-end/corporate general aviation by providing the necessary airfield, aircraft basing, and other amenities in order to shift aviation activity from San Diego International to McClellan-Palomar. The scenario assumes that McClellan-Palomar would no longer accommodate commercial passenger activity and the existing terminal building would be converted into a high-end FBO facility. The scenario requires a 1,000-foot runway extension to the airport's existing single runway to accommodate a near full range of high-end general aviation aircraft.

Table 5-2
BREAKDOWN OF CORPORATE AND NON-CORPORATE OPERATIONS BY AIRCRAFT TYPE

Regional Aviation Strategic Plan

Aircraft type	Corporate	Non-corporate
Jet	93%	7%
Turboprop	73	27
Multi-Engine Piston	58	42
Single-Engine Piston	20	80
Helicopter	36	64
Other	6	94

Source: Jacobs Consultancy, based on *San Diego County Regional Aviation Strategic Plan, Aviation Demand Forecasts,* Landrum & Brown, Inc., December 2008.

This scenario would be implemented via leasing and pricing strategies; but would also require a "coordinated" FBO/general aviation policy between the Authority and the other airport sponsors in San Diego County.

Figure 5-9 summarizes the key assumptions for Scenario 4A associated with the potential shift in general aviation traffic from existing system airports to McClellan-Palomar based on the improvements and assumed policy and pricing strategies. As presented, McClellan-Palomar would experience a 2% and 21% increase in recreational and corporate general aviation activity, respectively. The assumptions were derived from stakeholder input and information gathered during the Strategic Assessment.

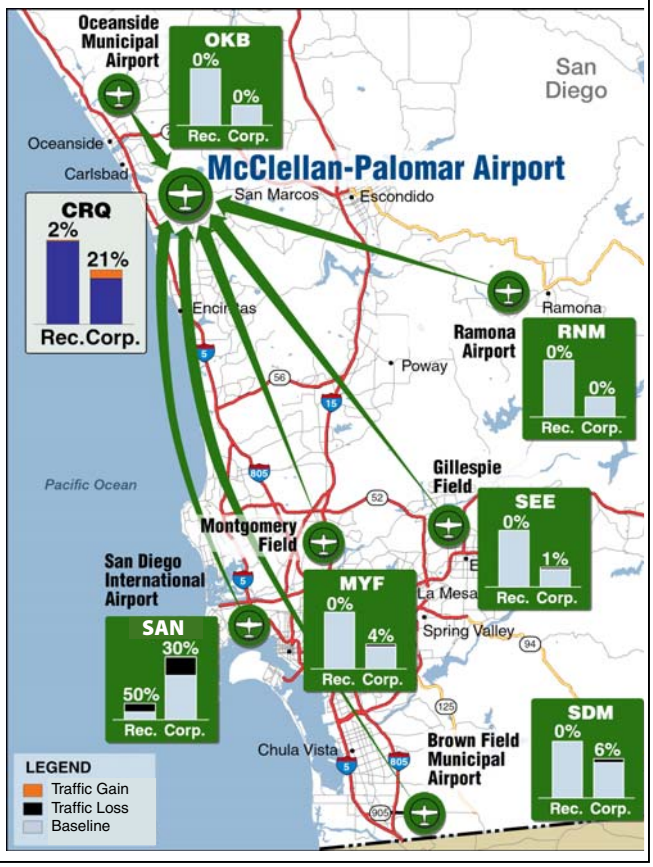
The total cost for Scenario 4A is estimated to be approximately $85 million and would be funded from a combination of federal grants, private sources, and user fees. A breakdown of the cost estimates, funding sources, and an implementation timeline is provided in Appendix C.

Additional factors associated with Scenario 4A include the implications and cost savings for San Diego County if the airport were to cease its FAR Part 139 certification. In addition, extensive environmental review and FAA and state approvals would be required for the runway extension.

Figure 5-9

POTENTIAL GENERAL AVIATION TRAFFIC SHIFT TO McCLELLAN-PALOMAR
Regional Aviation Strategic Plan

San Diego (SAN)	Substantial traffic shift due to high congestion at SAN; significant number of corporate operations would remain due to downtown proximity
Gillespie (SEE)	Some high-end GA traffic may shift due to FBO facility, increased runway length, and ILS
Montgomery Field (MYF)	Some corporate traffic may shift due to FBO facility and ILS
Oceanside (OKB)	No traffic shift since current demand at OKB would not benefit from ILS or longer runway
Brown Field (SDM)	Some corporate traffic may shift due to FBO facility and ILS; however shift likely to be low given 50 mile distance between SDM and CRQ
Ramona (RNM)	No traffic shift since current demand at RNM would not benefit from ILS or longer runway



5.5.2 Scenario 4B: Enhance Brown Field Municipal Airport for High-end / Corporate General Aviation

This scenario maximizes the use of Brown Field for high-end/corporate general aviation by providing the necessary facilities and amenities in order to shift aviation activity from San Diego International to Brown Field. This scenario is consistent with

a private developer's current plan and FAA approved ALP, and requires the construction of an additional FBO, corporate hangars, and T-hangars.

This scenario would be implemented via leasing and pricing strategies, but would also require a "coordinated" FBO/general aviation policy between the Authority and the other airport sponsors in San Diego County. It should be noted that the airport's existing runway length is adequate, but may require reconstruction for additional strength in the future.

Figure 5-10 summarizes the key assumptions for Scenario 4B associated with the potential shift in general aviation traffic from existing system airports to Brown Field based on the improvements and assumed policy and pricing strategies. As presented, Brown Field would experience a 2% increase in both recreational and corporate general aviation activity. The assumptions were derived from stakeholder input and information gathered during the Strategic Assessment.

The total cost for Scenario 4B is estimated to be approximately $65 million and would be funded from a combination of federal grants, private sources, and user fees. A breakdown of the cost estimates, funding sources, and an implementation timeline is provided in Appendix C.

Additional factors associated with Scenario 4B include the fact that planning for certain facilities is already underway and community and political support would be anticipated.

5.5.3 Scenario 4C: Enhance Gillespie Field for Mixed-use General Aviation

This scenario maximizes the use of Gillespie Field for both high-end/corporate and recreational general aviation by providing the necessary facilities and amenities in order to shift aviation activity from San Diego International to Gillespie Field. This scenario requires (1) implementation of "El Cajon Plaza", a planned 70-acre development including FBO site, indoor storage hangars, and tie-down space; (2) correction of existing airfield design standard deficiencies; and (3) utility upgrades and drainage improvements.

Such a scenario would be implemented by leasing and pricing strategies; it would also require a "coordinated" FBO/general aviation policy between the Authority and the other airport sponsors in San Diego County. It should be noted that the airport's longest runway could not reasonably be extended to a length sufficient for the full range of corporate jet operations.

Figure 5-11 summarizes the key assumptions for Scenario 4C associated with the potential shift in general aviation traffic from existing system airports to Gillespie Field based on the improvements and assumed policy and pricing strategies. As presented, Gillespie Field would experience 2% and 37% increases in recreational and corporate general aviation activity, respectively. The assumptions were derived

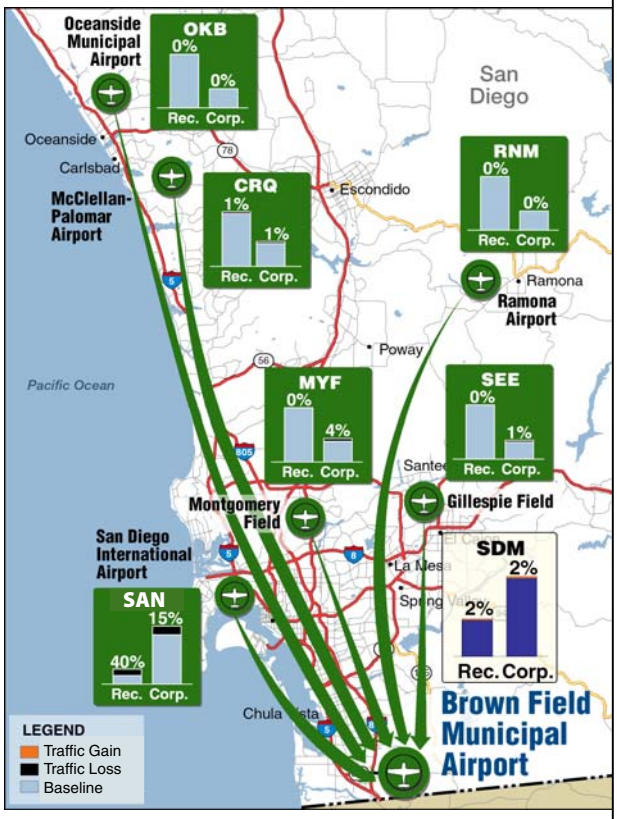
from key inventory data, stakeholder input, and information gathered during the Strategic Assessment.

Figure 5-10

POTENTIAL GENERAL AVIATION TRAFFIC SHIFT TO BROWN FIELD MUNICIPAL AIRPORT

Regional Aviation Strategic Plan

San Diego (SAN)	Substantial traffic shift due to high congestion at SAN; significant number of corporate operations would remain due to downtown proximity
Gillespie (SEE)	Some high-end GA traffic may shift due to FBO facility, increased runway length, and ILS
Montgomery Field (MYF)	Some corporate traffic may shift due to FBO facility and ILS
Oceanside (OKB)	No traffic shift since current demand at OKB would not benefit from ILS or longer runway
Brown Field (SDM)	Some corporate traffic may shift due to FBO facility and ILS; however shift likely to be low given 50 mile distance between SDM and CRQ
Ramona (RNM)	No traffic shift since current demand at RNM would not benefit from ILS or longer runway



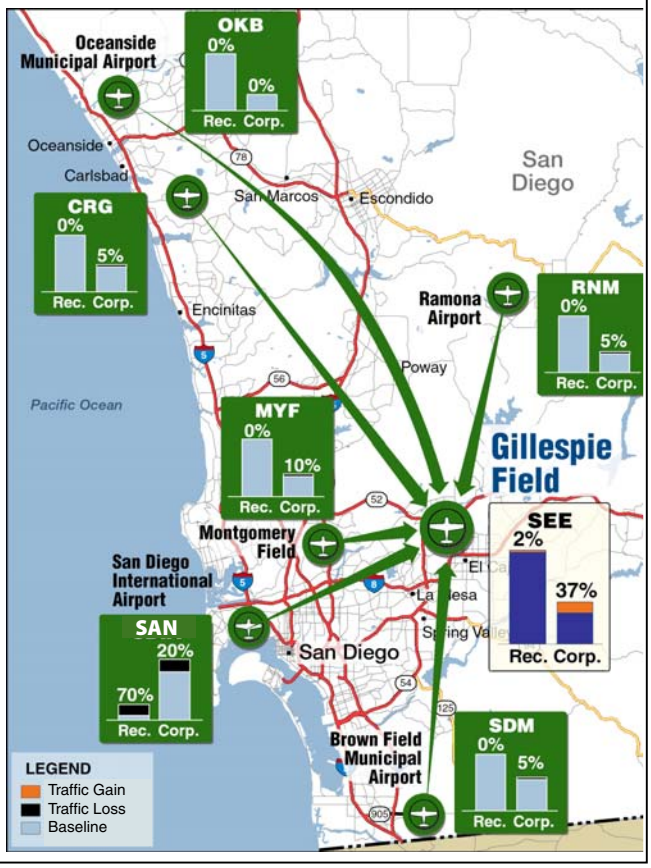
The total cost for Scenario 4C is estimated to be approximately $90 million and would be funded from a combination of federal grants, private sources, and user fees. A breakdown of the cost estimates and funding sources as well as an implementation timeline is provided in Appendix C.

Additional factors associated with Scenario 4C include the fact that planning for certain facilities is already underway and various federal and state environmental approvals would be required for a number of projects.

Figure 5-11

POTENTIAL GENERAL AVIATION TRAFFIC SHIFT TO GILLESPIE FIELD
Regional Aviation Strategic Plan

San Diego (SAN)	Moderate traffic shift due to high congestion at SAN; significant number of corporate operations would remain due to close proximity to downtown
McClellan-Palomar (CRQ)	Some high-end GA traffic shift expected for FBO facility.
Montgomery Field (MYF)	Some corporate traffic shift expected for FBO facility
Oceanside (OKB)	No traffic shift since the existing demand at OKB would not benefit from the enhancement at SEE
Brown Field (SDM)	Some corporate traffic shift expected due to FBO facility
Ramona (RNM)	Some corporate traffic shift expected due to FBO facility



5.6 AIR CARGO OPTIMIZATION

The following describes the single air cargo scenario intended to optimize the capacity of the Airport System by distributing air cargo activity away from airports dedicated to commercial passenger service. Note that this scenario applies only to all-cargo aircraft, since passenger aircraft carry air cargo in their more limited cargo holds.

5.6.1 Scenario 5A: Introduce Air Cargo Service at Brown Field Municipal Airport

This scenario is intended to maximize the use of Brown Field for air cargo activity by providing the necessary facilities and amenities in order to shift this type of user from San Diego International to Brown Field. This scenario requires the following:

- New cargo buildings and apron
- Upgrade airfield pavements for air cargo operations

- Improve access roads around the airport (a number of these improvements are already scheduled through SANDAG)

- Utility upgrades and drainage improvements

Such a scenario would be implemented by leasing and pricing strategies. It should be noted that the airport's existing runway length is adequate, but it may require reconstruction for additional strength in the future. The total cost for Scenario 5A is estimated to be approximately $235 million and would be funded from a combination of federal grants, private sources, and user fees. A breakdown of the cost estimates, funding sources, and implementation timeline is provided in Appendix C.

Based on conversations with the community and stakeholders, the following summarizes the various constraints associated with implementing Scenario 5A:

- Air cargo operators are unwilling to operate from facilities south of San Diego International due to increased distance from air cargo sorting infrastructure

- The majority of San Diego International air cargo is accommodated on integrated/express air cargo carriers (90%) and originates in or is destined for downtown San Diego

- There is a significant lack of cargo infrastructure (e.g., freight forwarders) located nearby Brown Field whereas this type of supporting infrastructure is already in place near San Diego International

- Significant public and political opposition would be anticipated; prior initiatives to upgrade Brown Field for air cargo activity were abandoned based on such opposition

Chapter 6

ALTERNATIVE SCENARIO FINDINGS

This chapter summarizes the findings for each alternative scenarios assessed in the RASP. A description of each alternative scenario is presented in Chapter 5.

6.1 COMMERCIAL PASSENGER OPTIMIZATION SCENARIOS

The following describes the findings related to the six scenarios intended to optimize commercial passenger (or airline) activity within San Diego County.

6.1.1 Scenario 1A: Full Build-out of the ITC and North Side Terminal at San Diego International

Scenario 1A maximizes the use of San Diego International for commercial passenger activity by expanding the ITC to accommodate between 1.2 and 1.8 million passengers. The full build-out of the ITC would include passenger processing facilities (ticketing, baggage claim, security screening, etc.), and an automated people mover (APM) connecting the ITC to the concourses on the south side of the Airport.

Projected annual passenger enplanements at San Diego International under Scenario 1A are presented on Figure 6-1. As presented, projected enplanements under Scenario 1A are virtually the same as for the Baseline Scenario. The slight decrease in enplanements around 2027 is attributable to over-crowding at San Diego International since airport access would be enhanced based on the *Destination Lindbergh* concept (i.e., additional surface transportation options, including a connection platform for the green trolley line and I-5 off-ramp north). Improved surface access would lead to increased congestion, and therefore, the airport would be temporarily less attractive. Demand is projected to stabilize beyond 2029.

Scenario 1A does not reduce use of San Diego International by any user type, nor provide additional airfield facilities. Therefore, the full build-out of the ITC has no impact on the airport's capacity constraints (the intent of the project is to enhance level of service, rather than to increase San Diego International's capacity). As presented on Figure 6-2, Scenario 1A does not reduce the projected suppressed demand associated with the Baseline Scenario.

Figure 6-1

SCENARIO 1A — SAN ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan

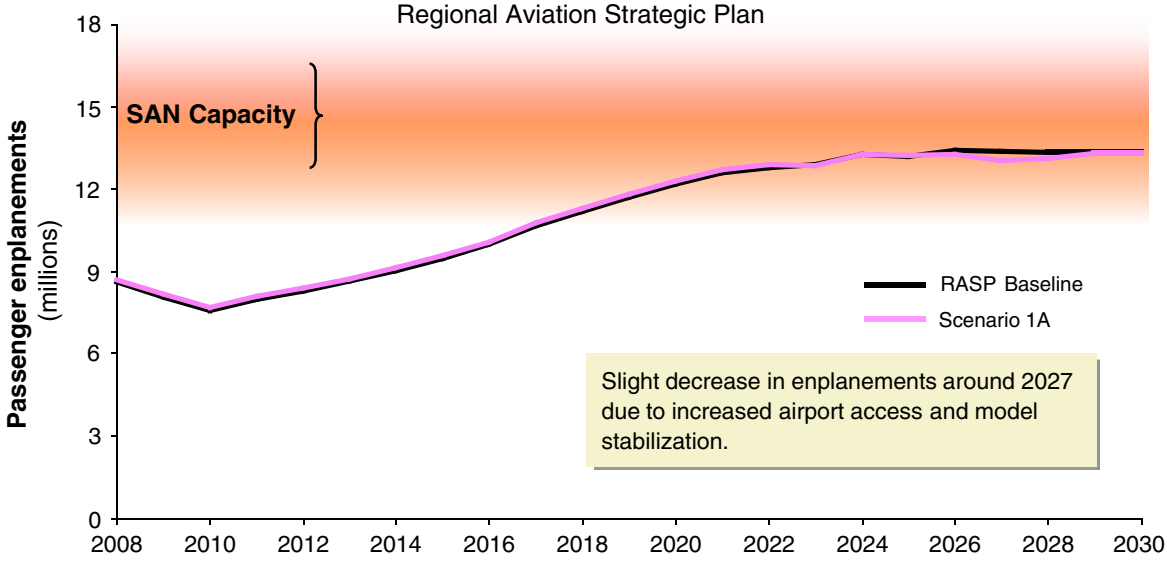
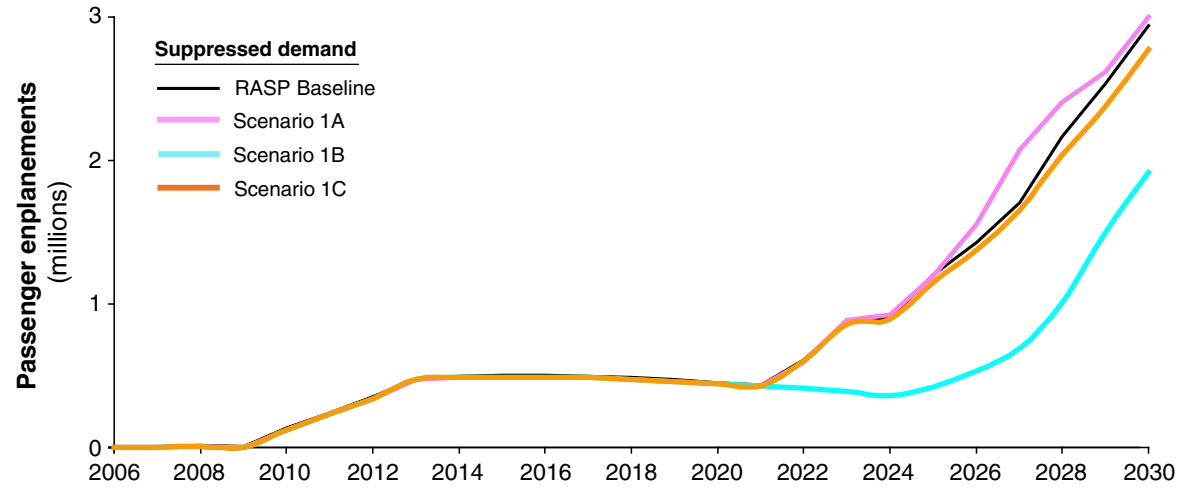


Figure 6-2

SCENARIOS 1A, B, C — EFFECT ON SUPPRESSED AVIATION PASSENGER DEMAND

Regional Aviation Strategic Plan



Notes: Suppressed demand presented above relative to 2006; some suppressed demand already exists.
Data for San Diego County residents and visitors only.

6.1.2 Scenario 1B: Preserve San Diego International's Airfield Capacity for Commercial Passenger Service

Scenario 1B maximizes the use of San Diego International for commercial passenger activity by encouraging non-commercial and general aviation activity to use alternative facilities.

It is assumed under Scenario 1B that (1) reductions in non-commercial and general aviation activity would be replaced by commercial service aircraft operations; (2) the airport fleet mix would become more homogeneous with an increasing percentage of air carrier narrow-body type aircraft; and (3) non-commercial activity would be accommodated at other system airports. A more homogeneous fleet mix has the effect of increasing San Diego International's theoretical airfield capacity from approximately 14.0 to 15.9 million annual passenger enplanements.

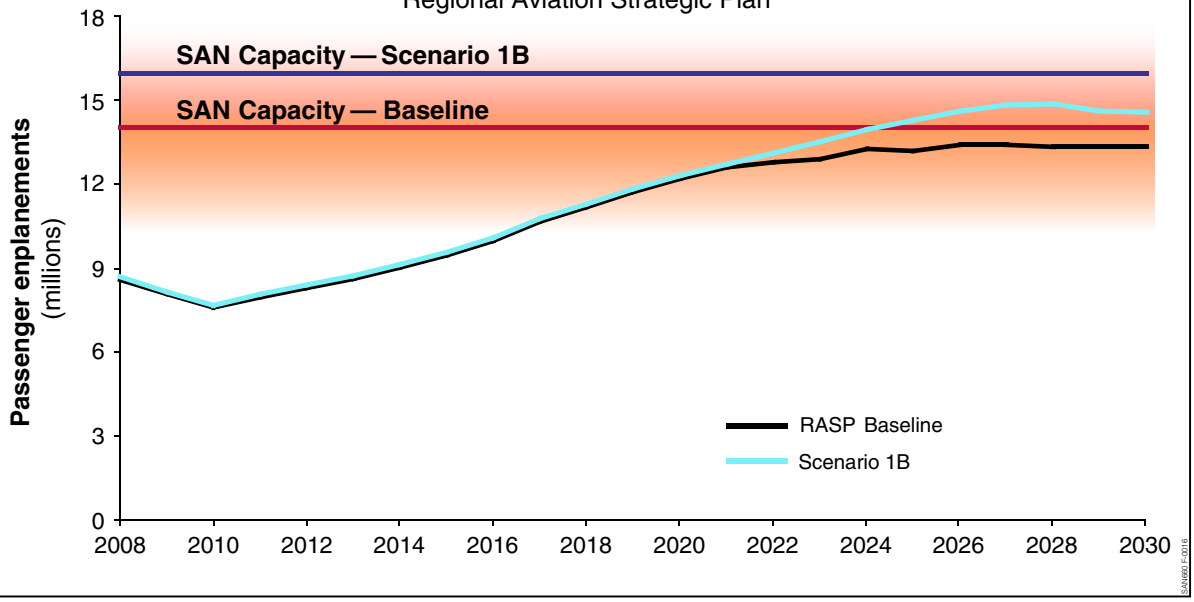
Projected annual passenger enplanements at San Diego International under Scenario 1B are presented on Figure 6-3. As presented, the increase in theoretical capacity results in an increase in projected passenger enplanements over the Baseline Scenario between 2020 and 2028.

As presented on Figure 6-2, Scenario 1B reduces the projected suppressed demand associated with the Baseline Scenario beginning around 2020. Therefore, removing general aviation and air cargo operations would delay the capacity constraints at San Diego International by approximately five years, from approximately 2025 to 2030.

Figure 6-3

SCENARIO 1B — SAN ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan



6.1.3 Scenario 1C: Enhance Commercial Passenger Service at McClellan-Palomar

Scenario 1C is intended to maximize regional commercial passenger activity by providing facilities for multi-carrier commercial service at McClellan-Palomar. It is assumed under Scenario 1C that additional terminal and parking facilities at McClellan-Palomar would increase the Airport's capacity from approximately 500,000 to 750,000 annual passenger enplanements.

Two modeling alternates, or subsets, of Scenario 1C, were assessed:

- Scenario 1C: San Diego International Capacity Driven – Growth in demand at McClellan-Palomar is primarily driven by capacity constraints at San Diego International
- Scenario 1C: Infrastructure Driven – Growth in demand at McClellan-Palomar is primarily driven by the facility improvements provided at McClellan-Palomar

Projected annual passenger enplanements at McClellan-Palomar under the Baseline Scenario and two modeling alternates are presented on Figure 6-4. As presented, annual passenger enplanements under the Baseline Scenario increase substantially around 2024, which corresponds to the period when San Diego International is anticipated to reach its airfield capacity. Additional findings are as follows:

- Scenario 1C: San Diego International Capacity Driven – Projected enplanements follow, but then increase beyond the Baseline Scenario beginning in 2024.
- Scenario 1C: Infrastructure Driven – Projected enplanements increase above the Baseline Scenario around 2020.

Projected enplanements under both alternates are similar beginning in 2027, reflecting the fact that demand at McClellan-Palomar is highly affected by when San Diego International reaches capacity.

Projected annual passenger enplanements at San Diego International under Scenario 1C are presented on Figure 6-5. As presented, projected enplanements under Scenario 1C are virtually the same as projected for the Baseline Scenario. Increased commercial passenger service at McClellan-Palomar does not alleviate capacity constraints at San Diego International, primarily because the additional demand that can be accommodated at McClellan-Palomar only accounts for 5% of San Diego International's total traffic and the number of destinations offered at McClellan-Palomar is much more limited compared to San Diego International. As presented on Figure 6-2, Scenario 1C does not reduce the projected suppressed demand associated with the Baseline Scenario.

Figure 6-4

SCENARIO 1C — MCCLELLAN-PALOMAR ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan

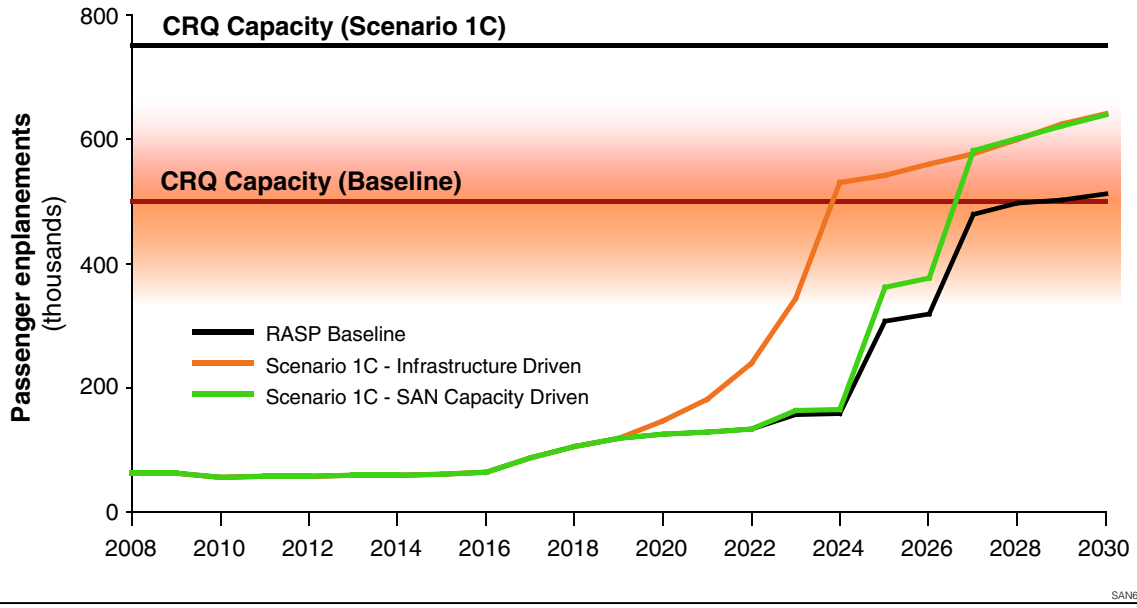
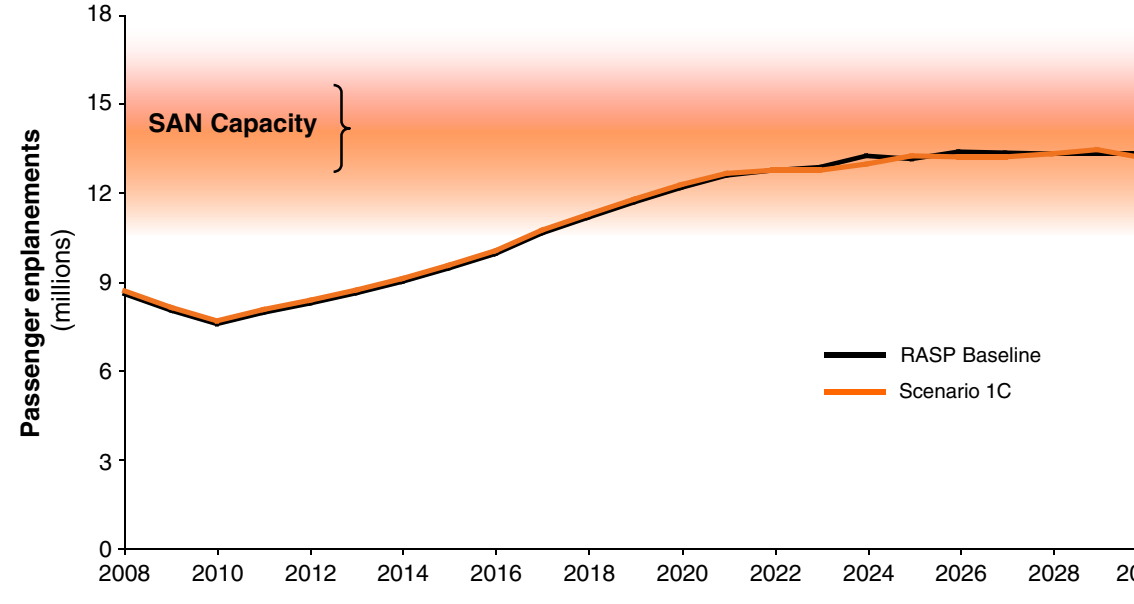


Figure 6-5

SCENARIO 1C — SAN ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan



6.1.4 Scenario 1D: Introduce Commercial Passenger Service at Brown Field Municipal Airport

Scenario 1D maximizes regional commercial passenger activity by providing facilities for multi-carrier commercial service at Brown Field. As discussed in Chapter 5, implementation of a precision instrument approach at Brown Field is necessary for the initiation of commercial service.

However, per two FAA determinations (letters to the City of San Diego in 2009 and 2010, provided in Appendix A) provided as part of the RASP planning process, it was determined that precision instrument approaches are infeasible at Brown Field due to terrain and airspace complications. Specifically:

- A precision instrument approach into Runway 26R is infeasible because extremely high terrain is situated to the north and east, and the international border with Mexico is located 1.5 miles south of the airport.

- A precision instrument approach into Runway 8L is infeasible because rapidly rising terrain is located to the northeast; and the international border with Mexico restricts development of a missed approach procedure.

In summary, commercial service at Brown Field is highly unlikely without an instrument approach. Based on all the above, after consultation with the RASP Subcommittee and stakeholders, Scenario 1D was omitted from additional consideration in the RASP.

6.1.5 Scenarios 1E/F: Up-gauge San Diego International's Aircraft Fleet Mix

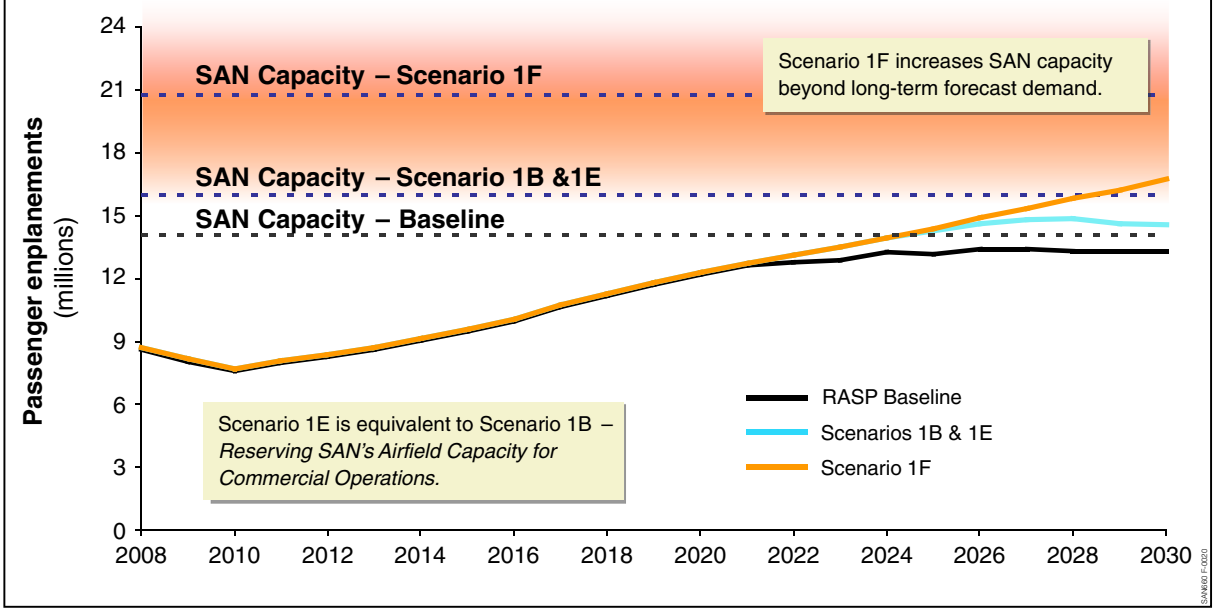
Scenarios 1E/F maximize the use of San Diego International for commercial passenger activity. It is assumed under Scenarios 1E/F that (1) reductions in non-commercial and general aviation activity would be replaced by commercial service aircraft operations; and (2) the airport's fleet mix would become more homogeneous with an increasing percentage of air carrier narrow-body type aircraft.

As presented on Figure 6-6, the change in the fleet mix under Scenario 1E has the effect of increasing San Diego International's theoretical airfield capacity from approximately 14.0 to 16.0 million annual passenger enplanements. Similarly, the change in fleet mix under Scenario 1F would increase the theoretical airfield capacity to 19.5 million annual passenger enplanements.

Projected annual passenger enplanements at San Diego International under both Scenarios 1E/F increase over the Baseline Scenario beginning around 2020. The growth in projected enplanements under Scenario 1E begins to slow around 2026 as the scenarios reach the airfield's capacity. The growth in projected enplanements under Scenario 1F does not taper off and this scenario has the capability to accommodate demand at San Diego International through the forecast period. As explained in Chapter 5, however, there are a number of obstacles to implementing these scenarios.

Figure 6-6

SCENARIOS 1E/F — SAN ENPLANEMENT PROJECTIONS
Regional Aviation Strategic Plan



6.2 ENHANCED UTILIZATION OF TIJUANA SCENARIOS

The following describes the findings related to the three scenarios intended to optimize the utilization of Tijuana Rodriguez International Airport. For modeling purposes, the Baseline Scenario assumes the airport's capacity would be increased from approximately 2.5 to 7.0 million annual passenger enplanements, with the costs incurred by Grupo Aeroportuario del Pacifico (GAP).

6.2.1 Scenario 2A: Facilitate Border Crossings

Scenario 2A maximizes the use of Tijuana Rodriguez International for commercial passenger activity by improving border crossing and offering additional means of accessing the airport via the existing Otay Mesa and San Ysidro border crossings.

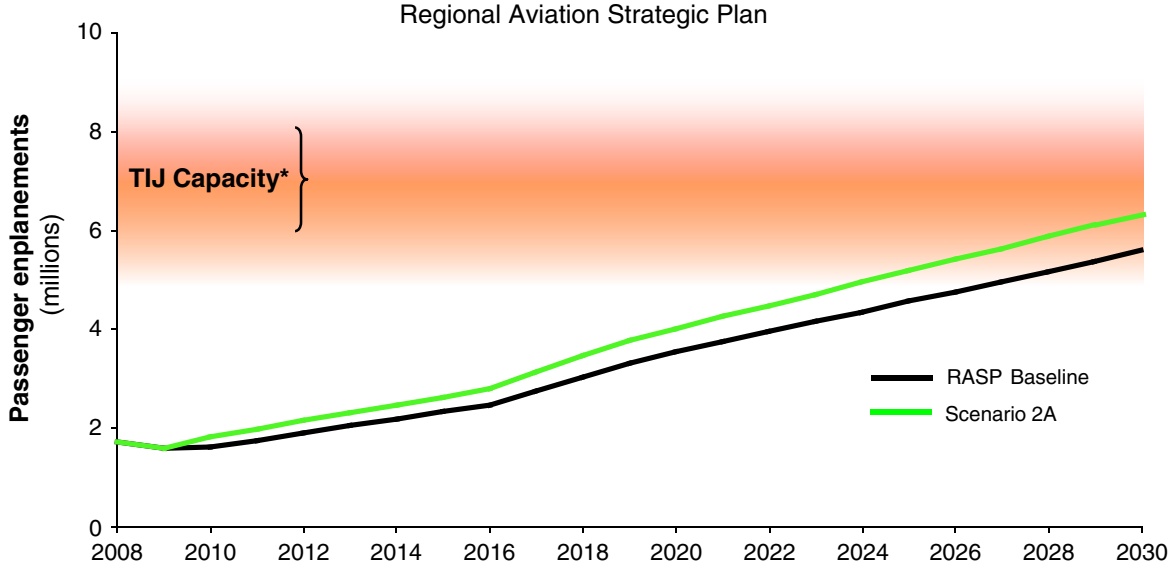
Projected annual passenger enplanements at Tijuana Rodriguez International and San Diego International under Scenario 2A are presented on Figures 6-7 and 6-8, respectively. As compared to the Baseline Scenario, border improvements are projected to result in more passengers using Tijuana Rodriguez International, but fewer passengers using San Diego International. The decrease in San Diego International enplanements is a result of region-wide competitive changes in airfares and services, as passengers are projected to choose other regional airports in addition to Tijuana due to region-wide competitive changes in price and service. This reflects the fact that as airports across Southern California become congested, actions at one airport to increase capacity cascade across the regional airports in ways best depicted by the Model.

As presented on Figure 6-9, the increased usage of Tijuana Rodriguez only marginally alleviates the mid-term capacity constraint at San Diego International.

Figure 6-7

SCENARIO 2A — TIJUANA RODRIGUEZ ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan



Note: The capacity of TIJ is assumed to increase as part of the Baseline Scenario from approximately 2.5M annual enplanements toapproximately 7M annual enplanements. The costs to increase capacity are assumed will be incurred by GAP, and are not included in the RASP costs estimates.

Figure 6-8

SCENARIO 2A — SAN ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan

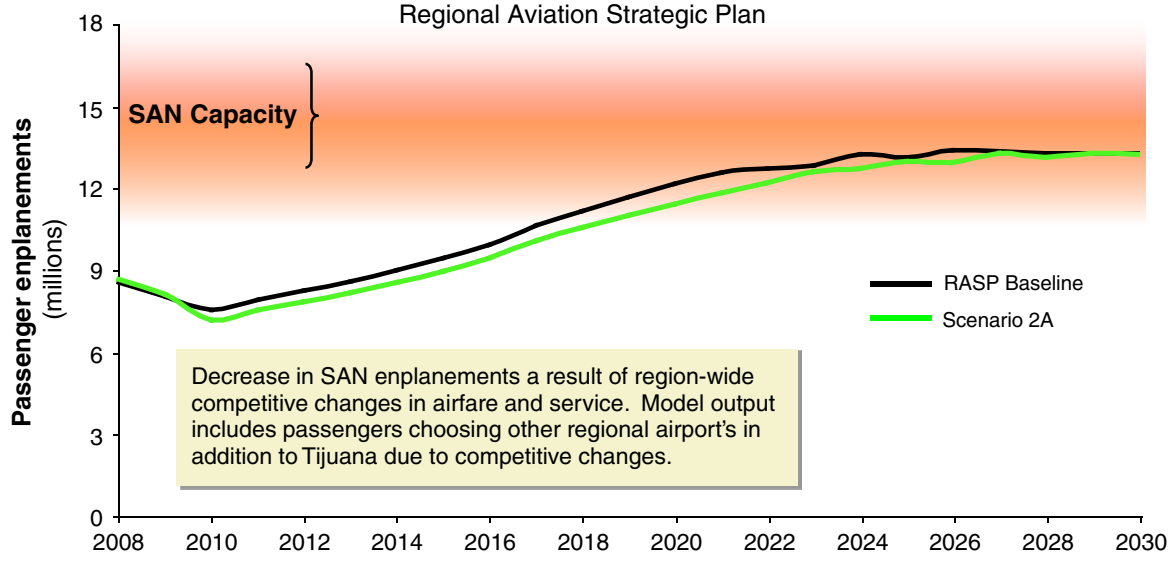
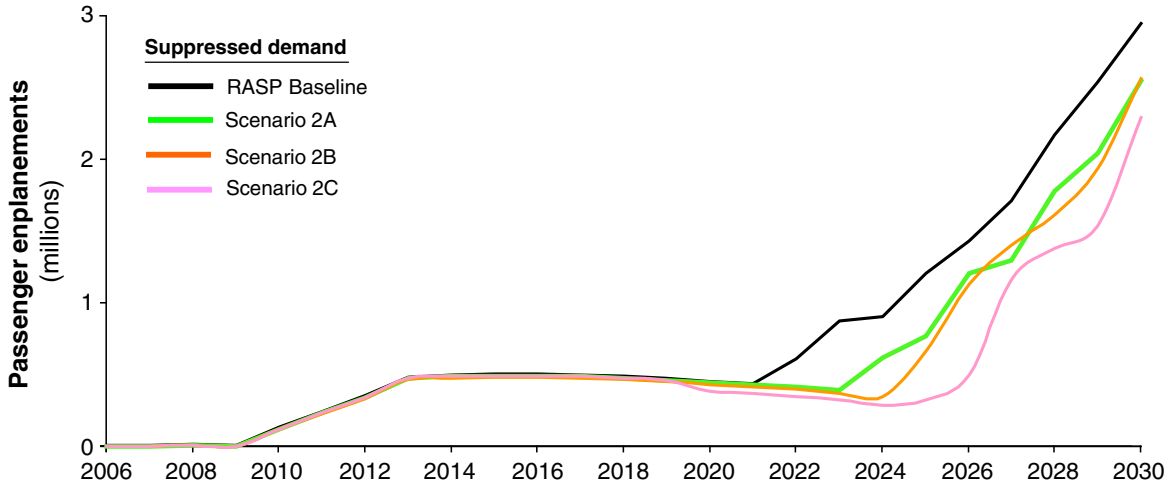


Figure 6-9

SCENARIOS 2A, B, C — EFFECT ON SUPPRESSED AVIATION PASSENGER DEMAND
Regional Aviation Strategic Plan



Notes: Suppressed demand presented above relative to 2006; some suppressed demand already exists.
Data for San Diego County residents and visitors only.

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6.2.2 Scenario 2B: Aviation Passenger Cross Border Facility

Scenario 2B maximizes the use of Tijuana Rodriguez International for commercial passenger activity by offering a cross border facility (CBF) allowing U.S. ticketed passengers exclusive and convenient access to Tijuana Rodriguez International.

Projected annual passenger enplanements at Tijuana Rodriguez International and San Diego International under Scenario 2B are presented on Figures 6-10 and 6-11, respectively. As compared to the Baseline Scenario, the CBF is projected to result in a 30% increase in the number of passengers using Tijuana Rodriguez International. Projected enplanements at San Diego International are reduced over the Baseline Scenario, but the CBF only marginally alleviates the mid-term capacity constraint. Similar to Scenario 2A, the decrease in enplanements at San Diego International is a result of interactive regional competitive changes in airfares and services.

Additional Model findings regarding Scenario 2B are summarized below:

- As presented on Figures 6-12, the CBF does not materially affect passenger choice of airport for domestic travel. This is due to the fact that U.S. travel from Tijuana, notwithstanding any form of cross border terminal, is international travel, requiring customs clearance for Mexico departing and U.S. arriving passengers.

Figure 6-10

SCENARIO 2B — SAN ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan

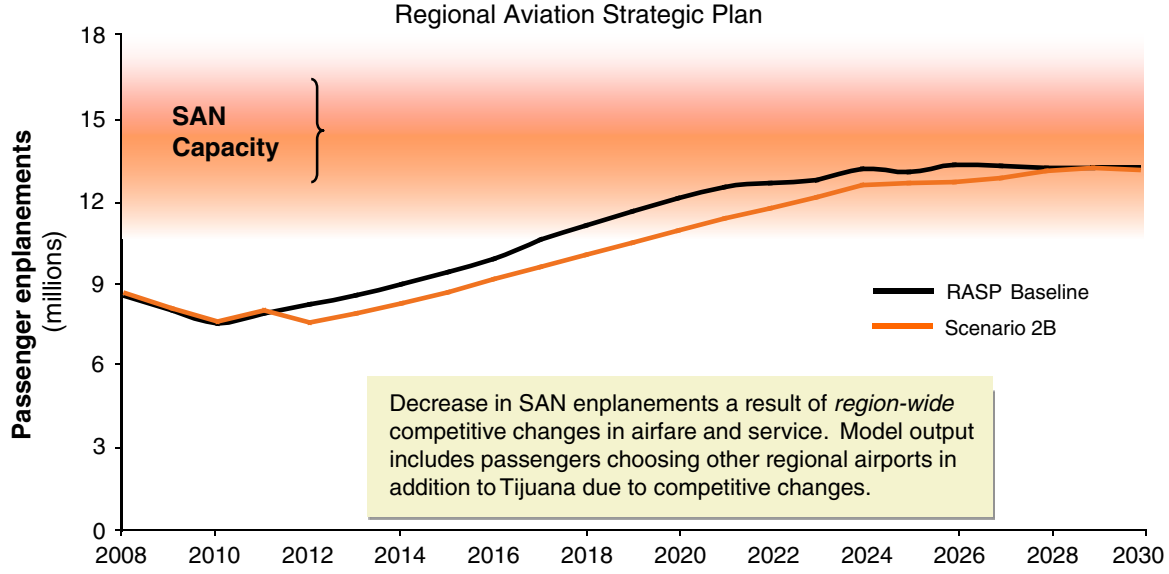
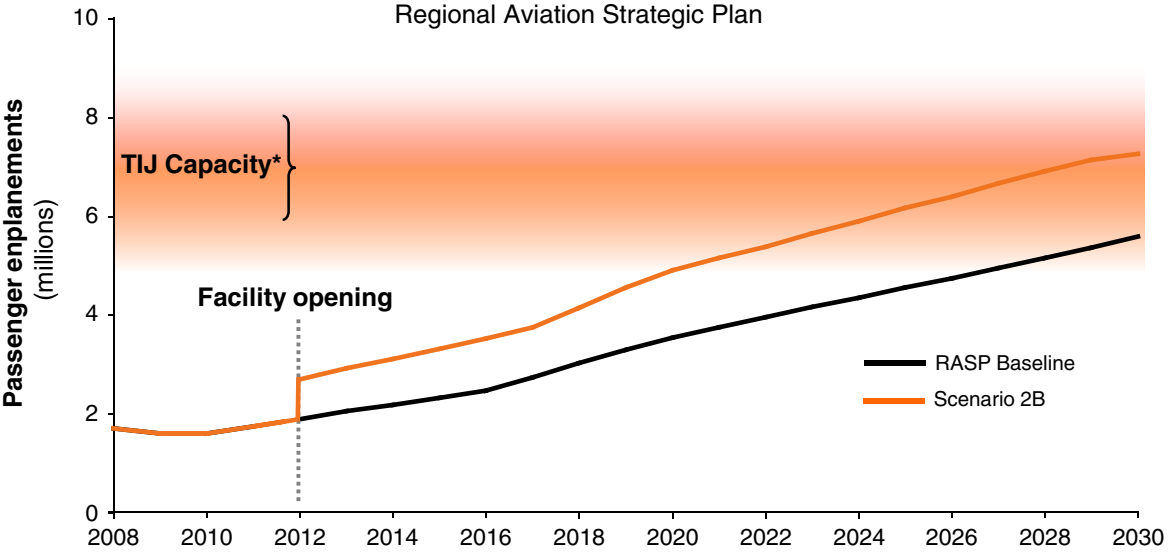


Figure 6-11

SCENARIO 2B — TIJUANA RODRIGUEZ ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan

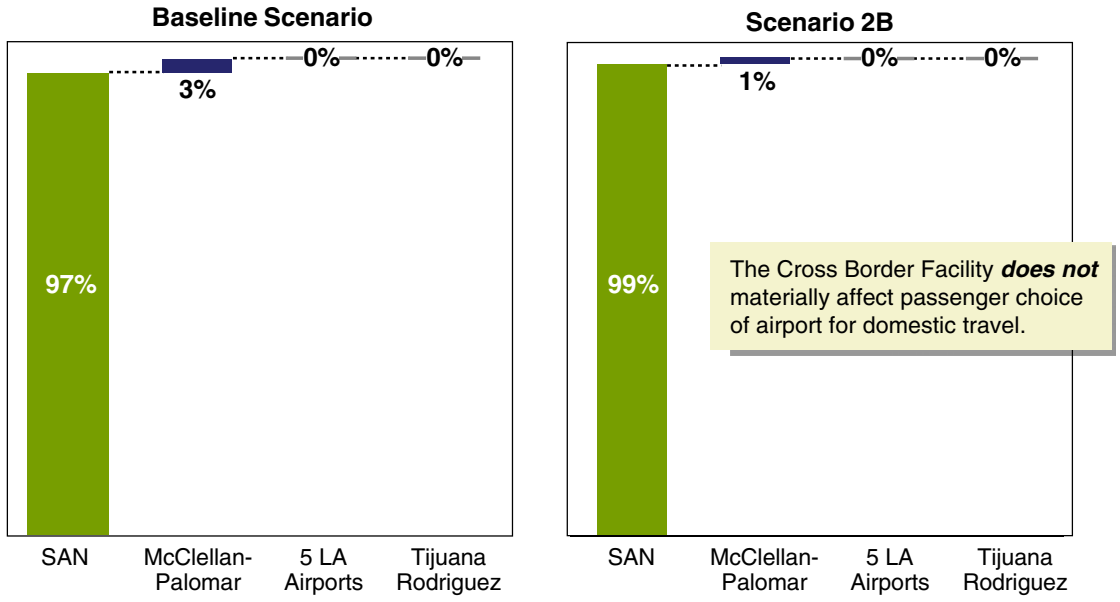


Note: The capacity of TIJ is assumed to increase as part of the Baseline Scenario from approximately 2.5M annual enplanements to approximately 7M annual enplanements. The costs to increase capacity are assumed will be incurred by GAP, and are not included in the RASP costs estimates.

Figure 6-12

SCENARIO 2B — EFFECT ON DOMESTIC AIRPORT CHOICE

Regional Aviation Strategic Plan



- As presented on Figure 6-13, the improvements in airport access represented by the CBF do affect passenger choice of airport for international travel. Use of Tijuana Rodriguez International for international travel increases from 2% to 11% of San Diego County residents and visitors.

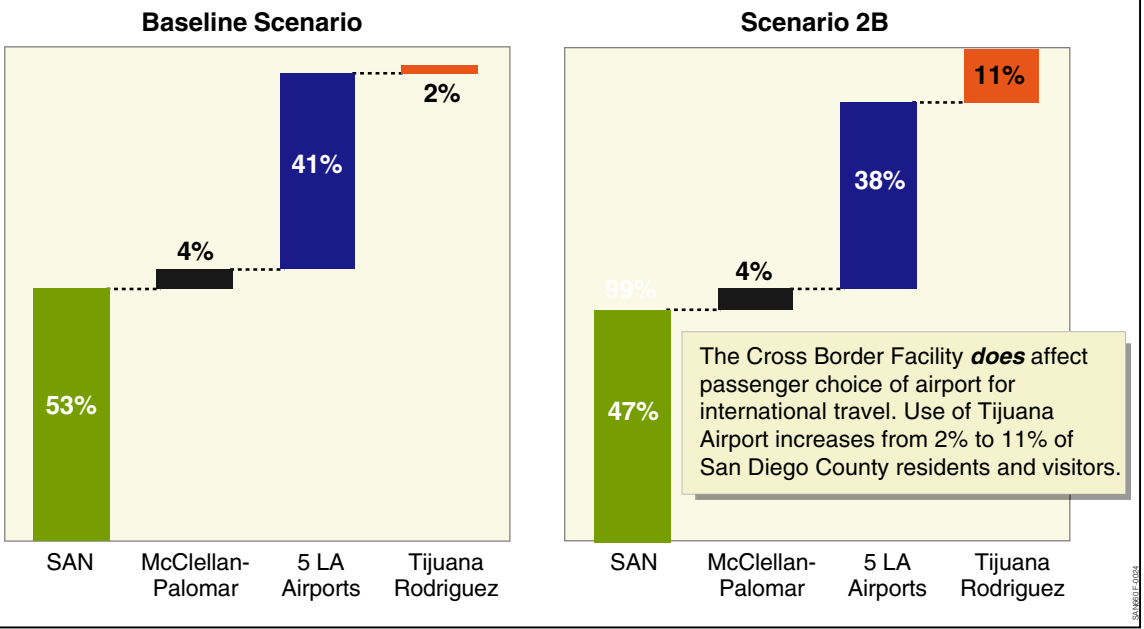
- The CBF attracts more passengers from the greater Los Angeles (LA) metropolitan region than San Diego County. This is primarily attributable to the larger service area of the LA metropolitan region and capacity constraints at LA metropolitan region airports. In addition, the use of Tijuana Rodriguez International by San Diego County residents and visitors is expected to increase over the RASP study period with or without the introduction of CBF given its proximity and capacity constraints at San Diego International.

As presented on Figure 6-9, implementation of the CBF under Scenario 2B alleviates suppressed demand by approximately two years.

Figure 6-13

SCENARIO 2B — EFFECT ON INTERNATIONAL AIRPORT CHOICE

Regional Aviation Strategic Plan



6.2.3 Scenario 2C: Cross Border Airport Terminal

Scenario 2C maximizes the use of Tijuana Rodriguez International for commercial passenger activity by offering a new passenger cross border terminal (CBT) on the U.S. side of the border to facilitate processing of U.S. passengers utilizing Tijuana Rodriguez International.

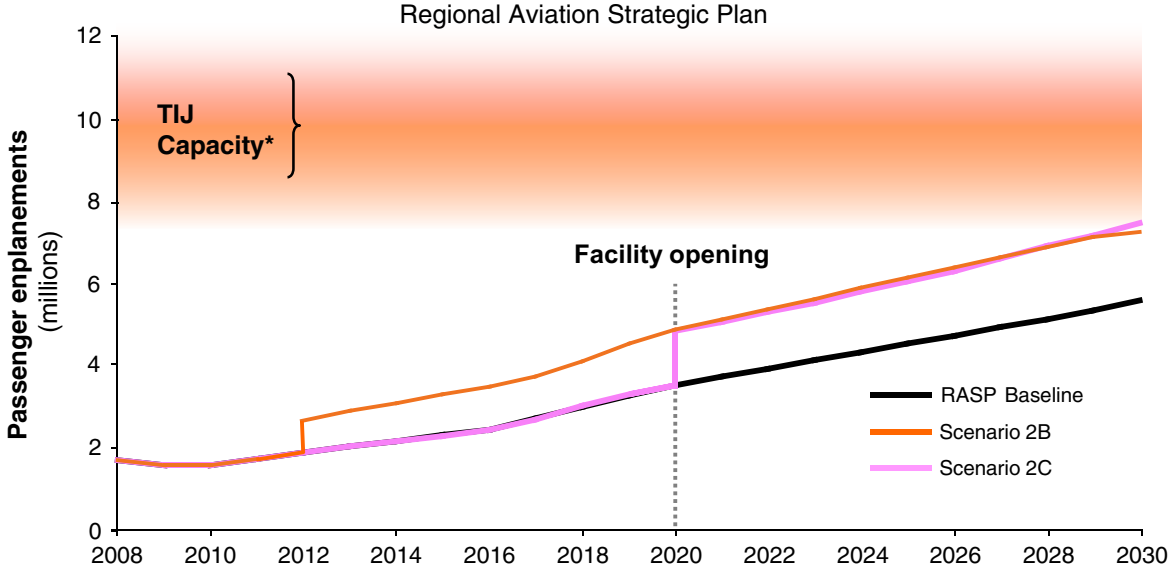
Projected annual passenger enplanements at Tijuana Rodriguez International and San Diego International under Scenario 2B are presented on Figures 6-14 and 6-15, respectively. As compared to the Scenario 2B, the CBT is projected to only marginally affect the number of passengers using Tijuana Rodriguez International. Projected enplanements at San Diego International are reduced over the Baseline Scenario, but the CBT only marginally alleviates the mid-term capacity constraint. Similar to Scenario 2A, the decrease in enplanements at San Diego International is a result of interactive regional competitive changes in airfares and services.

As presented on Figure 6-9, implementation of the CBT under Scenario 2B only alleviates suppressed demand by approximately two years, which is similar to the impact of Scenarios 2A and 2B.

Figure 6-14

SCENARIO 2C — TIJUANA RODRIGUEZ ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan

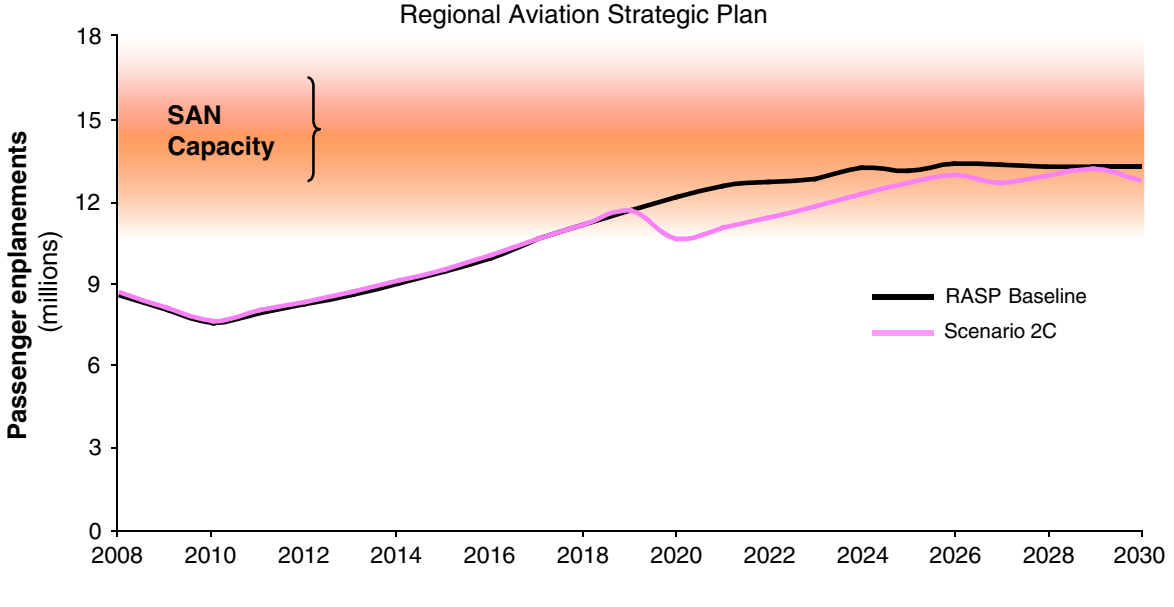


Note: The capacity of TIJ is assumed to increase to 10M annual enplanements as a result of the additional terminal facilities (Scenario 2 C only). Scenario 2B shown for comparison purposes only and modeled assuming the capacity of TIJ is 7M annual enplanements.

Figure 6-15

SCENARIO 2C — SAN ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan



6.3 CALIFORNIA HIGH SPEED RAIL SCENARIOS

The following describes the findings related to the two scenarios assessed in the RASP regarding California High Speed Rail (HSR). Because of the interactive effects

of capacity constraints within the region, the marginal impact of HSR is evident after implementation of Phase 1 in 2019, and increases following implementation of Phase 2 in 2027. It should be noted, therefore, that the true long-term impact of HSR on the region could not be precisely determined as results were evaluated for only three years, with effects being observed only between 2027 and 2030.

6.3.1 Scenario 3A: HSR Station at Downtown San Diego

Scenario 3A assumes a downtown San Diego HSR terminus at the existing Santa Fe Station, with ground access connections to the ITC at San Diego International. The RASP makes no assumptions about the costs of providing an off-airport HSR station at Santa Fe, including the potential cost of providing downtown parking spaces.

Projected annual passenger enplanements at San Diego International under Scenario 3A are presented on Figure 6-16. There is no significant change in projected passenger enplanements over the Baseline Scenario between 2020 and 2030. Using the California HSR assumptions presented on Figure 6-17, approximately 25% of San Diego County residents and visitors are projected to switch to HSR for trips to Northern California under Scenario 3A compared to existing airport choices.

Figure 6-16

SCENARIOS 3A/3B — SAN ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan

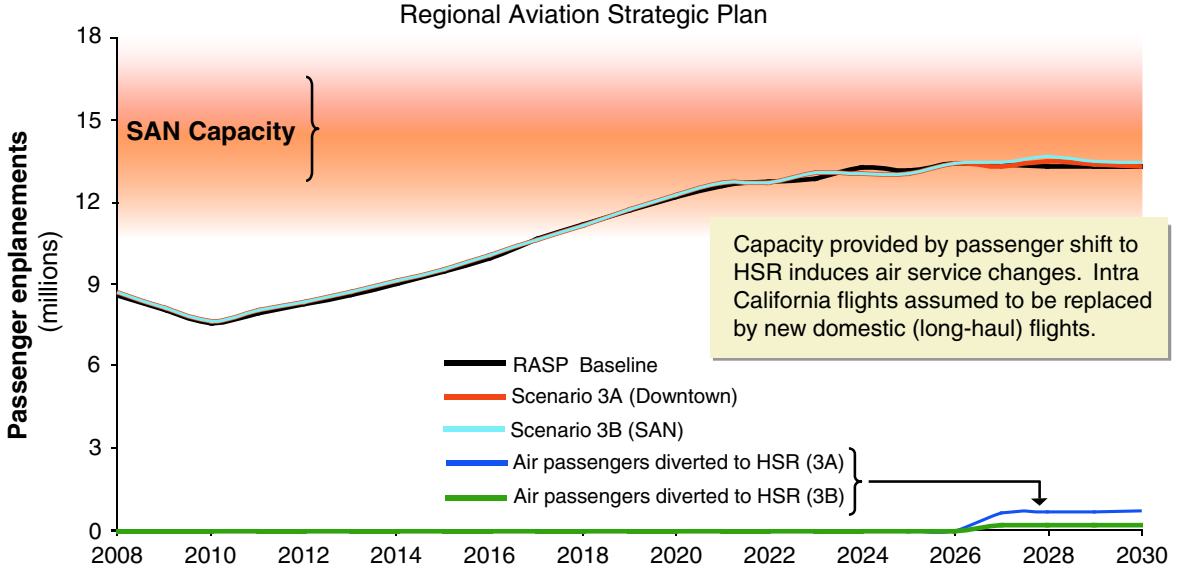
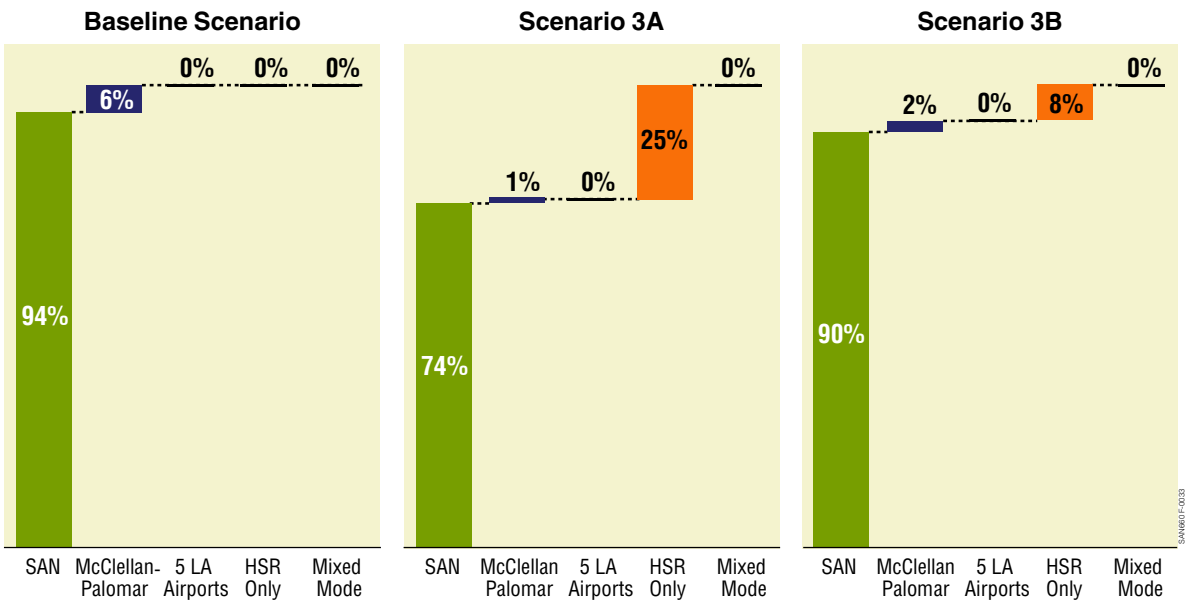


Figure 6-17

AIRPORT CHOICE FOR NORTHERN CALIFORNIA TRIPS
SAN DIEGO RESIDENTS AND VISITORS IN 2030
Regional Aviation Strategic Plan



As presented on Figure 6-18, Scenario 3A reduced the projected suppressed demand associated with the Baseline Scenario beginning in 2027, when the Inland Empire and San Diego HSR alignments are introduced. Diverting a portion of aviation operations to HSR, per the assumptions under Scenario 3A, would delay San Diego International capacity constraints by approximately 5 years.

6.3.2 Scenario 3B: HSR Station at San Diego International Airport

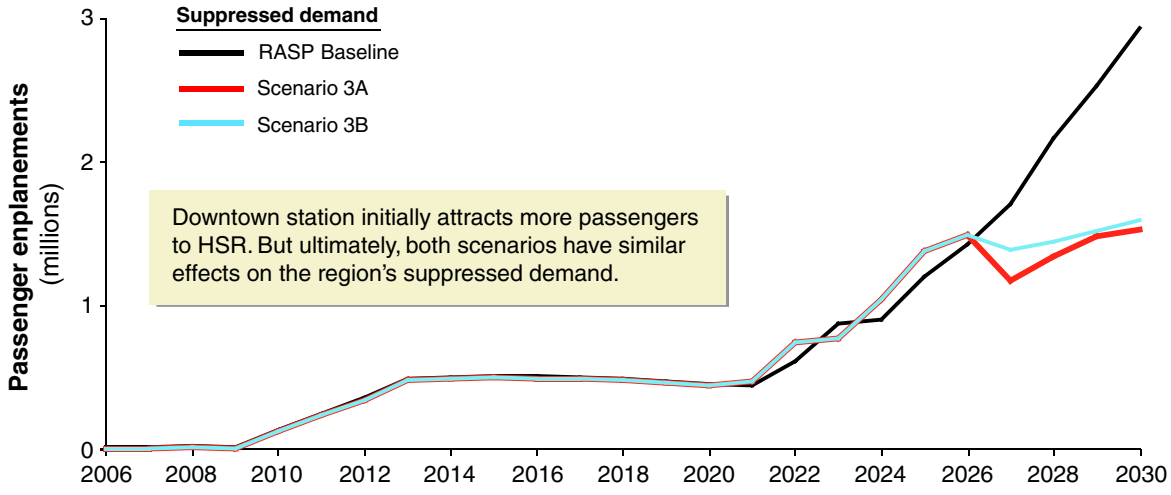
Scenario 3B assumes a HSR station on the north side of San Diego International, adjacent or connected to the ITC. The HSR station would offer direct pedestrian access to the ITC, and include auto parking, CONRAC, and passenger processing. Projected annual passenger enplanements at San Diego International under Scenario 3B are presented on Figure 6-16. As presented, there is no significant change in projected passenger enplanements over the Baseline Scenario between 2020 and 2030.

As presented on Figure 6-17, approximately 16% less San Diego County residents and visitors are projected to switch to HSR for trips to Northern California as compared to Scenario 3A. It is important to note that the evaluation did not include airport access links to the ITC as the decision regarding the San Diego alignment has yet to be made. Scenario 3A's air-rail diversion estimates were provided by the California HSR Authority, which did not model the alignment at the ITC (Scenario 3B).

As presented on Figure 6-18, Scenario 3B reduced the projected suppressed aviation passenger demand beginning in 2027, when the Inland Empire and San Diego sections of HSR are introduced. Per the assumptions under Scenario 3B, the capacity constraint in San Diego County would be delayed by approximately five years.

Figure 6-18

SCENARIOS 3A/3B — EFFECT ON SUPPRESSED AVIATION PASSENGER DEMAND
Regional Aviation Strategic Plan



Notes: Suppressed demand presented above relative to 2006; some suppressed demand already exists.
Data for San Diego County residents and visitors only.

Based on the degree of uncertainty surrounding the timing of HSR, as well as the time and cost of accessing and using the service, the best estimate is that between 8% and 25% of existing demand for aviation would be diverted to rail. The eventual diversion will depend on operation schedule, speed of train, and fare, as well as the degree of integration (if any) with San Diego International, and the surface transportation connections available at the station and at downtown.

6.4 GENERAL AVIATION OPTIMIZATION SCENARIOS

The following describes the findings for the three general aviation scenarios intended to optimize the capacity of the San Diego County Airport System by distributing general aviation activity and based aircraft away from airports that are, or could be, dedicated to commercial passenger service.

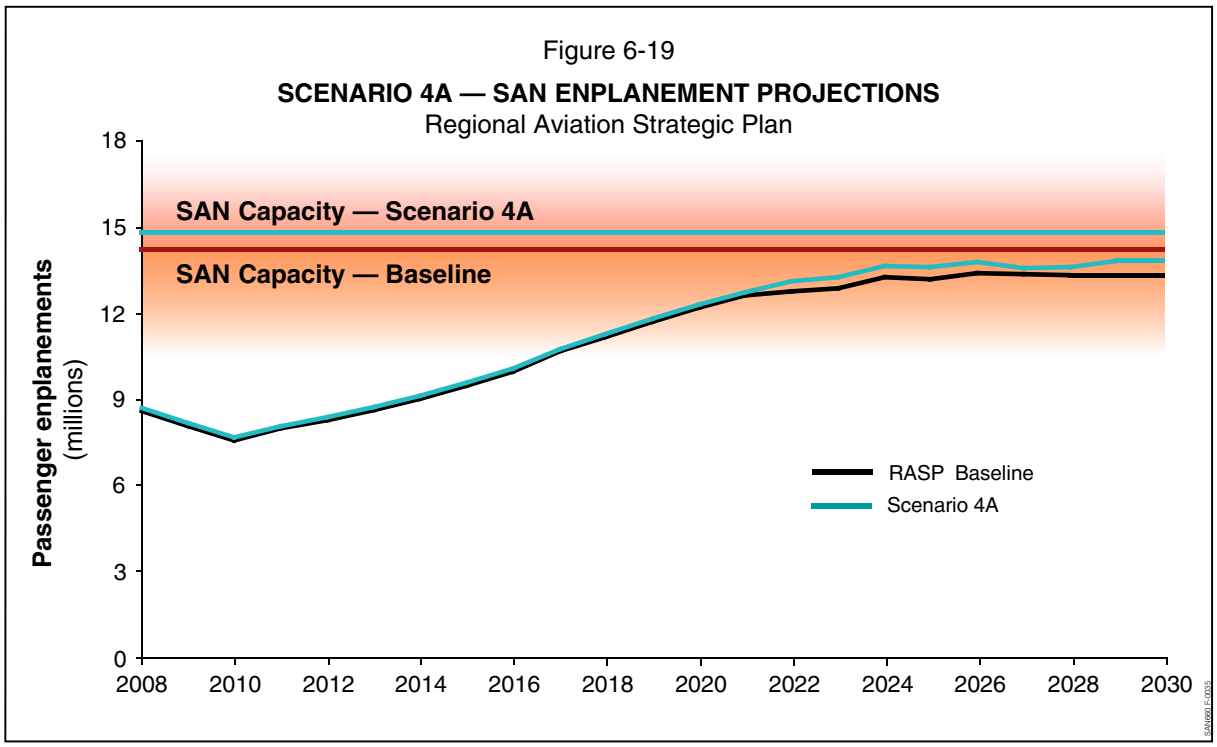
It is assumed under each scenario described below that (1) reductions in general aviation activity at San Diego International would be replaced by commercial service aircraft operations; (2) the airport's fleet mix would become more homogeneous with an increasing percentage of air carrier narrow-body type aircraft; and (3) general aviation users would be accommodated at other system airports. The reduction in general aviation activity has the effect of increasing San Diego International's

theoretical airfield capacity from approximately 14.0 to around 14.5-14.8 million annual passenger enplanements.

6.4.1 Scenario 4A: Enhance McClellan-Palomar Airport for High-end/ Corporate General Aviation

Scenario 4A maximizes the use of McClellan-Palomar for high-end/corporate general aviation by providing the necessary airfield, basing, and other amenities in order to shift activity from San Diego International to McClellan-Palomar. Projected annual passenger enplanements at San Diego International under Scenario 4A are presented on Figure 6-19. The increase in theoretical capacity results in increased passenger enplanements over the Baseline between 2020 and 2028.

Figure 6-19



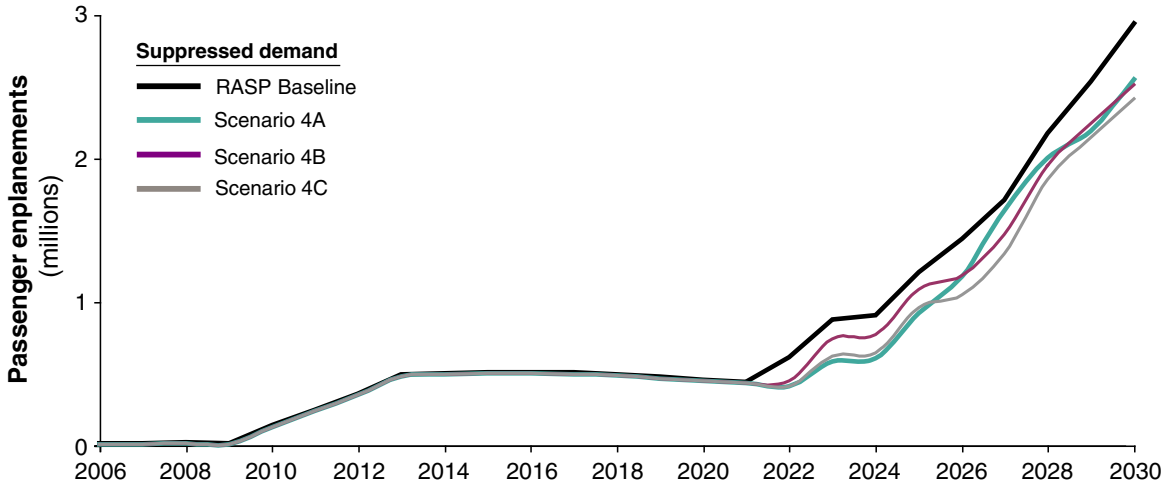
As presented on Figure 6-20, Scenario 4A reduces the projected suppressed demand associated with the Baseline Scenario beginning around 2020. Therefore, redistributing general aviation operations per the assumptions under Scenario 4A would delay the capacity constraint at San Diego International by approximately two years.

6.4.2 Scenario 4B: Enhance Brown Field Municipal Airport for High-end/Corporate General Aviation

Scenario 4B is intended to maximize the use of Brown Field for high-end/corporate general aviation by providing the necessary facilities and amenities in order to shift aviation activity from San Diego International to Brown Field.

Figure 6-20

SCENARIOS 4A, B, C — EFFECT ON SUPPRESSED AVIATION PASSENGER DEMAND
Regional Aviation Strategic Plan



Notes: Suppressed demand presented above relative to 2006; some suppressed demand already exists.
Data for San Diego County residents and visitors only.

Projected annual passenger enplanements at San Diego International under Scenario 4B are presented on Figure 6-21. The increase in theoretical capacity results in an increase in passenger enplanements over the Baseline between 2020 and 2028.

As presented on Figure 6-20, Scenario 4B reduces the projected suppressed demand associated with the Baseline Scenario beginning around 2020. Therefore, redistributing general aviation operations per the assumptions under Scenario 4B would delay the capacity constraint at San Diego International by about two years.

6.4.3 Scenario 4C: Enhance Gillespie Field for Mixed-use General Aviation

Scenario 4C is intended to maximize the use of Gillespie Field for both high-end/corporate and recreational general aviation by providing the necessary facilities and amenities in order to shift aviation activity from San Diego International to Gillespie Field. Projected annual passenger enplanements at San Diego International under Scenario 4C are presented on Figure 6-22. As presented, the increase in theoretical capacity results in an increase in projected passenger enplanements over the Baseline Scenario between 2020 and 2028.

As presented on Figure 6-20, Scenario 4C reduces the projected suppressed demand associated with the Baseline Scenario beginning around 2020. Therefore, redistributing general aviation operations per the assumptions under Scenario 4C would delay the capacity constraint at San Diego International by about two years.

Figure 6-21

SCENARIO 4B — SAN ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan

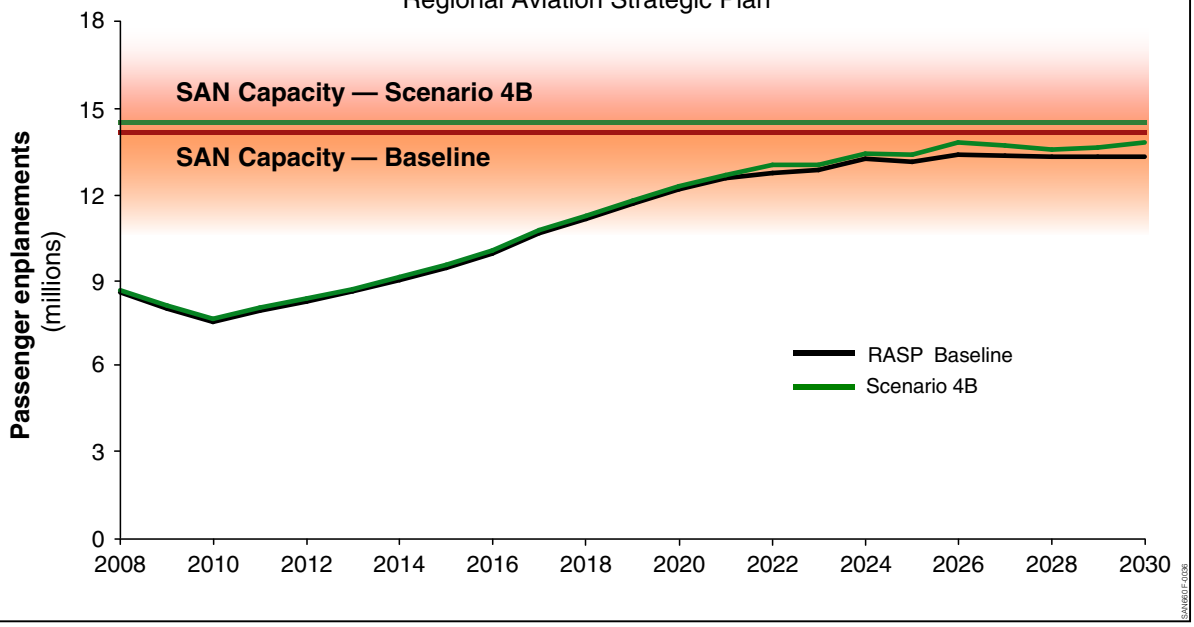
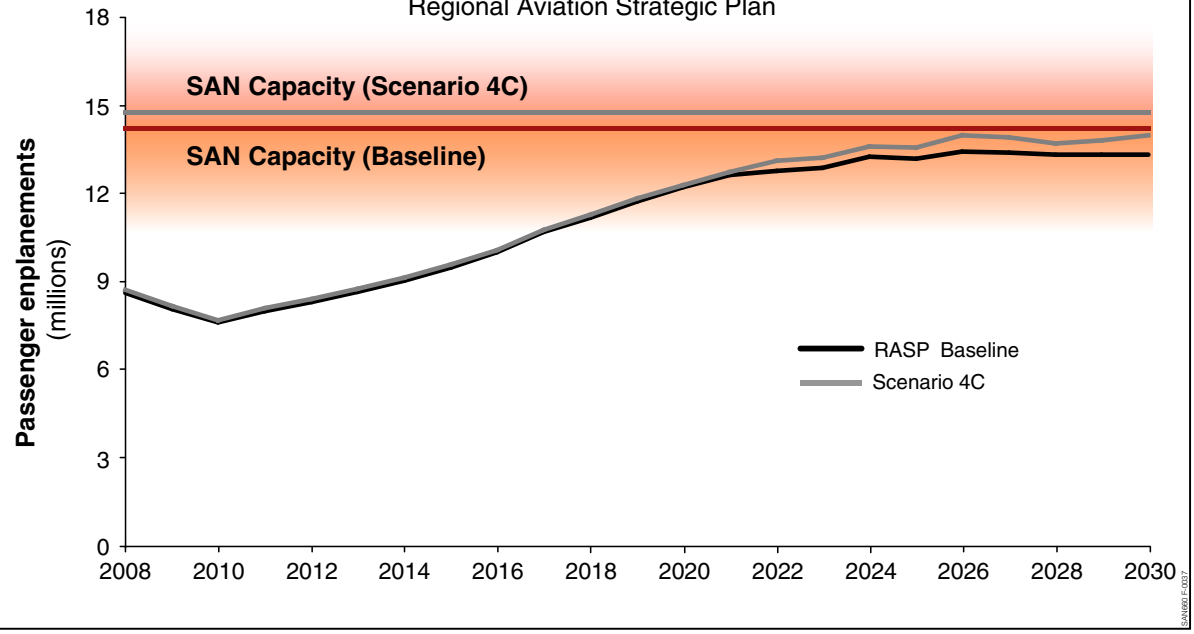


Figure 6-22

SCENARIO 4C — SAN ENPLANEMENT PROJECTIONS

Regional Aviation Strategic Plan



6.5 AIR CARGO OPTIMIZATION SCENARIOS

Only one air cargo optimization scenario was identified for consideration in the RASP. Scenario 5A: Introduce Air Cargo Service at Brown Field Municipal Airport, is intended to maximize the use of Brown Field for cargo by providing the facilities and amenities in order to shift this type of user from San Diego International to Brown Field.

It was determined during the RASP process that this scenario is "fatally flawed" for the following reasons, and would not be considered further in the RASP.

- FAA determinations (letters to the City of San Diego in 2009 and 2010, provided in Appendix A) provided as part of the RASP process state precision instrument approaches are infeasible at Brown Field due to terrain and airspace complications.
- Air cargo carriers are unwilling to operate from facilities south of San Diego International due to increased distance from air cargo sorting infrastructure.
- Significant local public and political opposition would be anticipated.

6.6 SUMMARY OF FINDINGS

An evaluation matrix that provides a basis for comparing the relative costs and benefits of the scenarios evaluated in the study is presented in Figure 6-23. Benefits are measured as the additional projected demand that could be accommodated over the Baseline Scenario in 2030.

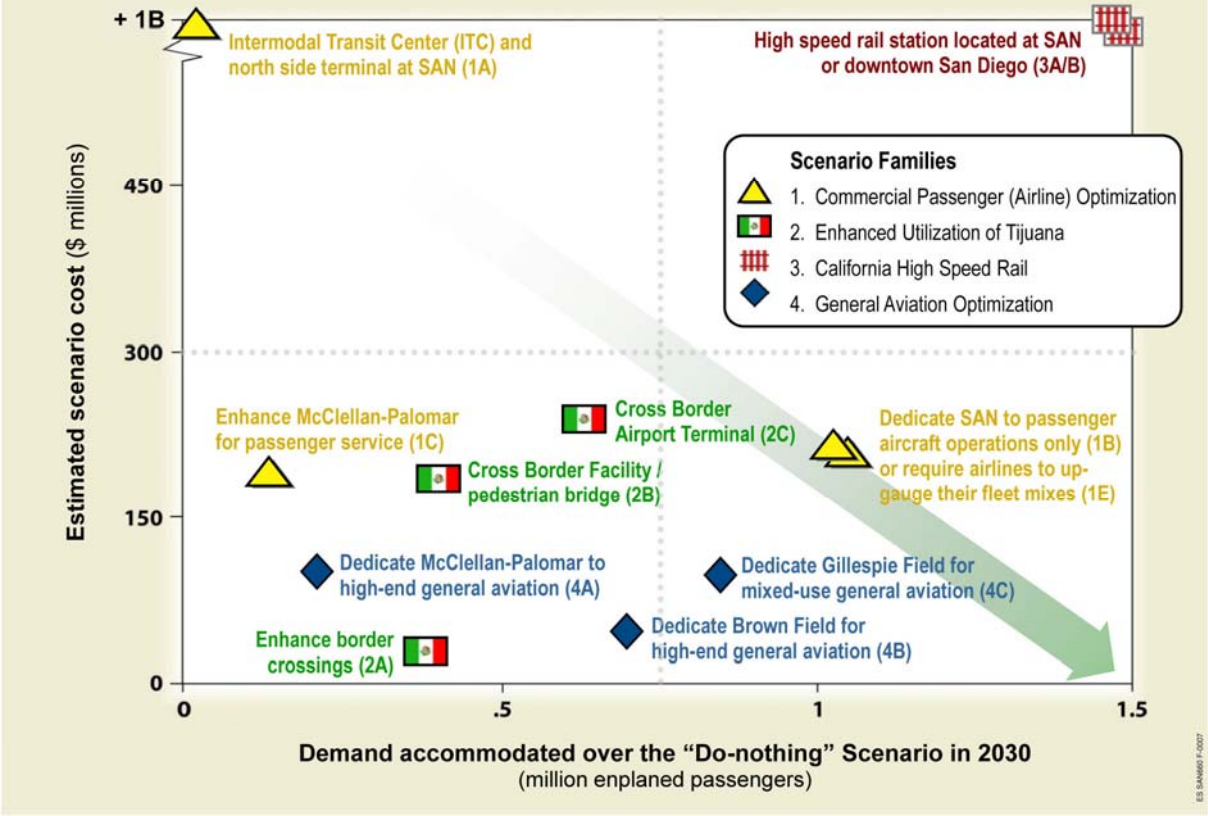
Additional findings are summarized below:

1. Scenario 1A: Full build-out of the ITC and north side terminal at SDIA has little effect on suppressed demand relative to the Baseline Scenario although the scenario provides regional access and other benefits not captured by the RASP analyses.
2. Scenario 1C: Enhanced commercial passenger service at McClellan-Palomar has little effect on suppressed demand relative to Baseline because the maximum capacity of the airport represents only a small portion of the total projected suppressed demand in 2030.

Figure 6-23

SUMMARY OF FINDINGS

Regional Aviation Strategic Plan



3. Up-gauging the fleet mix at San Diego International (Scenarios 1E and F) provides the same relative benefits to the region as Scenario 1B: Reserving San Diego International's Capacity for Commercial Passenger Service. San Diego International's fleet mix is already favorable (nearly optimized) as the Airport is projected to have a relatively low proportion of regional jets and turboprops. Although Scenarios 1B, 1E, and 1F provided the best demand performance relative to the HSR scenarios, implementation of these scenarios would require extensive coordination among the Authority, City of San Diego, County of San Diego, and users and would be difficult and impractical.

4. Tijuana scenarios have a less than expected effect on suppressed demand relative to the Baseline Scenario. This may be attributed to the following: (1) significant portions of demand accommodated at Tijuana Rodriguez International prior to 2030 are generated in the greater Los Angeles metropolitan region; and (2) by 2030, many San Diego residents and visitors are projected to use Tijuana Rodriguez International for international trips with or without the Cross Border Facility/Terminal.

5. Improved accessibility to Tijuana Rodriguez International via Scenarios 2A and 2B attracts approximately 30% additional passengers to that airport, but this only marginally alleviates the mid-term capacity constraint at San Diego International. There does not appear to be any benefit to expanding a Cross Border Facility into a Cross Border Terminal.

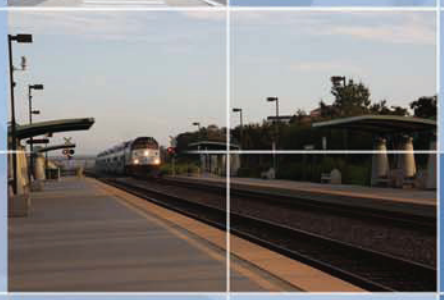
6. California HSR Scenarios 3A and B perform similarly with regard to accommodating demand; while a downtown San Diego HSR station shows higher air-rail diversion than a station at SDIA, the overall benefits to the region are similar. Both scenarios could play a role to alleviate the region's aviation capacity problems by accommodating suppressed demand relative to the Baseline, and these benefits may increase beyond 2030.

7. Approximately 25% of San Diego County residents and visitors are projected to switch to HSR for trips to Northern California versus existing airport choices – San Diego International and McClellan Palomar; however, mixed mode (utilizing HSR to access an airport) does not attract significant passengers because it is quicker and more cost effective to drive directly to the closest airport.

8. General aviation optimization scenarios (4A, 4B, and 4C) have similar costs and provide nearly the same, but nominal, impact on demand relative to the Baseline.

FINAL

San Diego Airport Multimodal Accessibility Plan



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HNTB

March 2012

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Acronyms

ADT	Average Daily Traffic
Airport Authority	San Diego County Regional Airport Authority
AMAP	Airport Multimodal Accessibility Plan
BRT	Bus Rapid Transit
CHSRA	California High-Speed Rail Authority
Caltrans	California Department of Transportation
CBF	Cross Border Facility
CBT	Cross-Border Terminal
CONRAC	Consolidated Rental Car Facility
CPUC	California Public Utilities Commission
ETC	Escondido Transit Center
FAA	Federal Aviation Administration
FTA	Federal Transit Administration
HOV	High-Occupancy Vehicle
HSR	California High-Speed Rail
HST	High-Speed Train
HUD	U.S. Department of Housing and Urban Development
I	Interstate
ITC	Intermodal Transportation Center
LRT	Light Rail Transit
LAX	Los Angeles International Airport
LOS	Level of Service
MCRD	Marine Corps Recruit Depot
MOU	Memorandum of Understanding
MTS	San Diego Metropolitan Transit System
NCTD	North County Transit District
NPIAS	National Plan of Integrated Airport Systems
P3s	Public/Private Partnerships
POE	Port of Entry
RASP	Regional Aviation Strategic Plan
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SANDAG	San Diego Association of Governments
SB	Senate Bill
SDIA	San Diego International Airport
SOCAL ICG	Southern California High-Speed Rail Inland Corridor Group

SR	State Route
SWG	Stakeholder Working Group
TGR	Trip Generation Rate
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIGER	Transportation Investment Generating Economic Recovery
TIJ	Tijuana Rodriguez International Airport
U.S.	United States
USDOT	United States Department of Transportation

Executive Summary

Introduction

Airports help to link local, regional, statewide, national, and global economic activities and are essential features of comprehensive local transportation systems, including streets, highways, rail transit, transit over water (e.g. cargo ships), and mass transit. Because of the significant regional consequences of airport development and operations, it is important that the future development of major airport facilities in San Diego County be addressed in the context of a regional decision making process that has regional representation.

In enacting Senate Bill 10 (SB 10) in 2007 (California Legislature, 2007), the intent of the Legislature was to:

1. Promote long-range planning for airports in local general plans
2. Advance regional transportation strategies
3. Explore mechanisms for regional cooperation
4. Ensure consistency between the planning documents prepared or approved by the San Diego County Regional Airport Authority (Airport Authority) and the San Diego Association of Governments (SANDAG).

These goals are accomplished by the main planning provisions of SB 10, which are the development of a Regional Aviation Strategic Plan (RASP) and an Airport Multimodal Accessibility Plan (AMAP). The Airport Authority, as lead for the RASP, analyzed scenarios to improve the performance of the regional airport system. SANDAG is the lead for the AMAP, which develops a multimodal strategy to improve surface transportation access to these airports. The overarching goal of the RASP and AMAP is to maximize the efficiency and effectiveness of existing and planned aviation facilities by using all modal infrastructures.

Currently, ground access to the region's airports is primarily roadway- and automobile-focused. As a result, aviation demand puts pressures on already crowded freeways and roadways, further limiting their ability to efficiently serve the region. The AMAP develops ground access improvement alternatives at San Diego regional airports as identified in the RASP. These alternatives include roadway and highway modifications, reconfiguration of existing and development of new transit services and facilities, and new express bus service for direct connections to San Diego International Airport (SDIA), McClellan-Palomar Airport, and the future Cross Border Facility (CBF). The AMAP incorporates the advanced planning for the Airport Intermodal Transportation Center (ITC) at SDIA and future high-speed train (HST) service at both the ITC and the CBF.

Background

San Diego County, with more than 3 million residents, is the second most populous county in California and accounts for 8 percent of the state's population. In the Tijuana, Baja California region, there are over 1.6 million residents (INEGI 2010). Each year, more than 11.5 million air passengers within San Diego County primarily use one of three airports certified for commercial airline service (Airport Authority, 2011) –SDIA with 9.2 million enplanements, Tijuana Rodriguez International Airport (TIJ) with 2.3 million enplanements, or McClellan-Palomar Airport with 47,000 enplanements. The San Diego County public-use airport system includes a total of 12 airports in San Diego County and TIJ in Tijuana, Mexico (Figure ES.1). TIJ was included in the RASP because it serves passengers from the entire Southern California region. The AMAP also includes TIJ with regards to the proposed Cross-Border Facility (CBF)/Cross Border Terminal (CBT) on the U.S. side that would facilitate processing of U.S. passengers utilizing TIJ.

One requirement of SB 10 of 2007 was a memorandum of understanding (MOU) between the Airport Authority and SANDAG to work cooperatively on multimodal airport planning in the region and specifically on the RASP and AMAP. Through this MOU, approved in June 2009 by both agencies, SANDAG outlined the major components of the AMAP:

1. The identification of multimodal transportation investments that will improve surface transportation access to the airports in San Diego County, other counties, and Mexico if appropriate
2. A program of investments and the anticipated schedule for the development of the projects that comprise the program
3. A financial element that estimates for the period of the plan the amount of funding that can be expected, the likely revenue sources from which the funding will be derived, and the program of investments supported by the expected revenue.

The AMAP furthers the utility and successful implementation of the RASP objectives through the identification of multimodal transportation investments that will improve surface transportation access to the airports in San Diego County and to other counties, if appropriate.

Stakeholder and Public Outreach

The AMAP stakeholder working group (SWG) was established to provide input on the development of the proposed ground access transportation improvements. The SWG met over a 15-month period, between March 2010 and June 2011, reviewing RASP modeling results and the development of the proposed surface transportation improvements at each regional airport evaluated in the RASP study.

During this planning process, joint presentations were held on various dates by SANDAG and the Airport Authority to their respective boards. The SWG included the following agencies:

- SANDAG
- Airport Authority
- California Department of Transportation (Caltrans)
- San Diego Metropolitan Transit System (MTS)
- North County Transit District (NCTD)

The proposed ground access alternatives were discussed with the SWG at monthly coordination meetings. Additional meetings were held with various local agencies including the County of San Diego, City of San Diego, City of Carlsbad, City of El Cajon, Otay-Tijuana Venture LLC, MTS and NCTD.

Staff participated in Open Houses organized by the Airport Authority in September 2010 and January 2011 to both present the draft findings from both the RASP and AMAP and staff informational booths on both plans.

The SANDAG Board of Directors released the draft plan for a 60-day public comment period on June 24, 2011. The draft report was also made available on the SANDAG website during this time. Several presentations were made during this time including to SANDAG's Regional Planning Technical Working Group and Cities/County Transportation Advisory Committee, Regional Chamber of Commerce Transportation Committee, and County of San Diego, Airports staff.

2050 Regional Transportation Plan

The 2050 Regional Transportation Plan (RTP) is the long-range transportation blueprint for major transportation modes in the San Diego region. Since SANDAG updates the RTP every four years, the schedule for the RASP and AMAP were driven by the schedule for developing and finalizing the current RTP, the 2050 RTP. The 2050 RTP was finalized by the SANDAG Board of Directors in October 2011 and major findings from both the RASP and the draft AMAP report were included.

Summary of Findings

The ground access improvements included in the AMAP were developed in conjunction with the findings identified in the RASP. The RASP included a strategic assessment of the San Diego County Airport System, which identified the regional airports that could be considered for service role changes to optimize the region's aviation infrastructure. These regional airports were then evaluated in the AMAP for ground access improvements.

Following the completion of the RASP Strategic Assessment, airports that were determined to have physical, operational, environmental, or other significant constraints that hindered their ability to meet the long-term needs of the region were dropped from further study in the RASP and the AMAP. Those airports included the following:

- Oceanside
- Fallbrook
- Borrego Valley
- Ocotillo
- Agua Caliente
- Jacumba

Both the RASP and AMAP continued further evaluation of the following airports:

- McClellan-Palomar
- Gillespie Field
- Brown Field
- SDIA
- TIJ
- Montgomery Field
- Ramona

As the RASP progressed, Montgomery Field and the Ramona Airport were not included in the family of scenarios which were identified to optimize the regional airport system. These two airports were eventually discovered to be among those that had physical, operational, environmental or other constraints. Scenarios for Brown Field were found to be infeasible because of a number of factors, including terrain and airspace complications, reluctance of passenger airlines to "split operations" with SDIA, distance from demand base, and lack of facilities for air cargo carriers.

Based on these findings, the AMAP then evaluated potential ground access improvements at the airports found to be candidates for future expansion. During the AMAP planning process, interim findings from the RASP such as aviation modeling results, were shared with the SWG to assess and refine the initial ground access improvements. The major findings of the RASP and AMAP are summarized below for both short-term (2020) and long-term (2035) time frames.

SDIA Short-term (2020)

The RASP results indicated that the full north side build-out of the SDIA would have no effect on projected enplanements relative to the baseline scenario because it would not provide airfield capacity improvements.

However, there are other reasons for full build-out of the north side terminal complex as well as construction of the Phase 1 Airport ITC, including regional intermodal transportation connections, alternatives to driving alone to the airport, and congestion relief. The advanced planning and preliminary design for the Airport ITC is currently under way and will include connections from the north side airport development to trolley, commuter rail, and local and regional buses. Connections from the north side improvements, including the Airport ITC, would be via shuttle bus on a dedicated on-airport Terminal Link Roadway around the east end of the runway. Sassafras Street would provide access into the north side airport facilities, with existing access routes from the airport. These ITC ground access improvements are included in the AMAP and are also consistent with *Destination Lindbergh* (Airport Authority, 2009), which provides the long-range strategy to optimize the efficiency of SDIA's facilities and functions.

The AMAP also includes three potential express bus service routes to SDIA. These services may provide connections to Inland North County, McClellan-Palomar Airport, and the CBF.

SDIA Mid-to-Long-term (2035)

The AMAP study calls for the full build-out of the Airport ITC which builds upon the Phase 1 scenario, and will include a high-speed train station and direct connector ramps from Interstate 5 (I-5). A potential people mover would replace the shuttle bus connection between the north and south sides of the airport. In the long-term, all passenger access and processing could occur on the north side of the airport property, and direct ground access from North Harbor Drive would cease.

The RASP evaluated two HST alignments and both would offer passengers a ground transportation alternative to air-travel between cities and airports within California. The study found that diverting a portion of intrastate commercial passenger operations from Northern California to HST, would delay SDIA capacity constraints (expected to occur between 2020 and 2025) by approximately 5 years. This would alleviate the region's aviation capacity and accommodate suppressed demand. It should be noted that the true long-term impact of HSTs on the region could not be precisely determined because results were evaluated for only 3 years, with effects being observed only between 2027 (when the California High-Speed Rail Authority [CHSRA] expects to be running service to San Diego) and 2030.

Based on the degree of uncertainty surrounding the timing of HST, as well as the time and cost of accessing and using the service, the best estimate is that between 8 percent and 25 percent of the region's aviation demand to northern California would be diverted to rail (Airport Authority, 2011).

The eventual diversion will depend on the schedule of operations, average train speeds, and fares, as well as the degree of integration with SDIA and the surface transportation connections.

Cross Border Facility Short-term (2020)

The CBF is a privately-funded venture by the Otay-Tijuana Venture, LLC that will provide a pedestrian bridge for ticketed passengers to cross the U.S.-Mexico border to the TIJ terminal.

The RASP forecasts a 30 percent increase in the number of passengers using TIJ with the introduction of the CBF, but the CBF would only marginally alleviate the short-term capacity constraint at the SDIA. This is because U.S. travel from Tijuana, notwithstanding any form of a cross border terminal, is international travel, requiring customs clearance for Mexico-departing and U.S.-arriving passengers. The RASP also found that the CBF would attract more passengers from the Los Angeles region than from San Diego County. This is primarily attributable to the larger service area of the Los Angeles region and capacity constraints at Los Angeles region airports. In addition, the use of TIJ by San Diego County residents and visitors is expected to increase over the RASP study period with or without the introduction of the CBF given its proximity and the capacity constraints at SDIA.

The AMAP reviewed a number of ground access improvements to the CBF during the short-term phase. These include future local bus routes between Otay Mesa Port of Entry (POE) and the CBF, additional arterial widening projects consistent with the draft Otay Mesa Community Plan update under development by the City of San Diego planning staff, and additional improvements to the interchange between State Route 905 (SR 905) and Britannia Boulevard. The additional demand generated by the CBF would require roadway improvements in the vicinity of the proposed facility to accommodate increased ADT on surrounding arterials. All of the roadway improvements included in the AMAP provide better access to and from the CBF by allowing the arterials and ramps to operate at an acceptable LOS D or better.

Express bus service (or "FlyAway" service that provides a one seat ride directly to the terminal) from the Airport ITC, North County Inland, and the H Street trolley station located in the City of Chula Vista also are possible.

Cross Border Facility/Cross Border Terminal Mid-to-Long-term (2035)

The RASP also evaluated increasing the use of TIJ for commercial passenger activity by offering a new passenger Cross Border Terminal (CBT) on the U.S. side of the border to facilitate processing of U.S. passengers utilizing TIJ. The CBT would function as a full-service terminal, allowing passengers to purchase tickets and check-in luggage for TIJ-originating flights on the U.S. side of the border.

The future CBF would provide access to flights and increased international destinations not offered at SDIA. The RASP includes an evaluation of the CBF as a future CBT, but for purposes of the proposed ground access improvements, the AMAP evaluates this as one facility.

The AMAP incorporates the recommendations included in the SANDAG feasibility study which evaluated the feasibility of extending current and future rail services to the CBF/CBT. For the long-term build-out of the facility, the state's future HST system would be extended to the CBF/CBT. The SANDAG feasibility study identified the I-5 corridor as potentially feasible to extend the HST system from its terminus in downtown San Diego or the Airport ITC, to the CBF/CBT and the Otay Mesa POE (SANDAG, 2010a). This extension is included in the 2050 RTP Unconstrained Network (SANDAG, 2011).

McClellan-Palomar Airport

The RASP evaluated enhanced commercial passenger service at McClellan-Palomar Airport driven by either capacity constraints at SDIA or facility improvements at McClellan-Palomar Airport. Increased commercial passenger service at McClellan-Palomar Airport would not alleviate capacity constraints at SDIA primarily because the additional demand that can be accommodated at McClellan-Palomar Airport only would account for 5 percent of SDIA's total traffic and because the number of destinations offered at McClellan-Palomar Airport is limited. The RASP also evaluated the use of McClellan-Palomar Airport for high-end/corporate general aviation and estimated that this would delay the capacity constraint at SDIA by approximately 2 years.

The AMAP ground access improvement alternatives included additional lanes on Palomar Airport Road, widening of arterial streets, and an additional entrance to the McClellan-Palomar Airport for better transit and vehicular access directly to the terminal. Proposals to be carried forward include the arterial roadway and transit improvements including express bus service to and from SDIA via the I-5 corridor. NCTD Route 445 would be modified to provide direct service to the airport terminal and would provide connectivity to COASTER service at the Carlsbad Poinsettia Station.

Gillespie Field

The RASP evaluated maximizing the use of Gillespie Field for both high-end/corporate and recreational general aviation by providing the necessary facilities and amenities in order to shift aviation activity from SDIA to Gillespie Field. The RASP estimated that redistributing general aviation operations per the assumptions under this scenario would delay the capacity constraint at SDIA by approximately 2 years.

General aviation is traditionally a difficult market for transit to serve in an efficient and cost effective manner. That said, to provide better connectivity to Gillespie Field, AMAP improvements include the completion of the Bradley Avenue/SR 67 interchange to facilitate better access to the airport and enhanced transit connections at the Gillespie Field trolley station. Additional coordination and input with the City of El Cajon, County of San Diego, and MTS will be required to refine these concepts

Summary of Cost Estimates

Following development of the ground access improvements, preliminary, planning-level capital and operational cost estimates were developed for the roadway and transit improvements for the airports carried forward as part of the AMAP and RASP study process. Total planning level capital costs by airport include the following as shown in Table ES-1

Table ES-1 Summary of Preliminary Costs

Airport	Constrained Cost	Unconstrained Cost	Notes
SDIA	$1.6 billion	-	Does not include HST and I-5 Direct Connectors
CBF/CBT	17.3 million	$3.6 billion	Unconstrained cost includes future HST/Commuter Rail Extension
McClellan-Palomar Airport	$19.5 million	-	-
Gillespie Field	$30.2 million	$0.8 million	Constrained cost includes Bradley Avenue/SR 67 interchange improvement

The AMAP also identified five different express bus service routes with a total capital cost of $25.5 million and annual operating costs of $33.5 million.

A more detailed description of the capital and operational cost estimates for the ground access improvements identified in the AMAP is included in Chapter 4 of this report.

Implementation Strategies

Completion of the RASP and AMAP has showcased the benefits of collaboration between SANDAG, the Airport Authority, and regional stakeholders. Aviation planning and airport ground access have been incorporated into the 2050 RTP at a level above and beyond previous plans. Further collaboration is warranted both in terms of future updates to the RASP and RTP, but also to identify

the necessary steps toward successful implementation of the ground access improvements identified in the AMAP.

Additional steps following completion of the AMAP include continued collaboration with staff from the Cities of San Diego, Carlsbad, and El Cajon, as well as the airport owners to assess the feasibility of incorporating ground access improvements in local plans, airport layout and master plans, and coordination with other planning efforts. Any AMAP recommendations on airport property would be subject to federal approval processes.

Implementation of the AMAP findings will be dependent on funding and policy changes which are needed to further the goals of SB 10. The reauthorization of the surface transportation program, SAFETEA-LU (Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users), has been deferred until at least April 2012 and there is little agreement on how to raise federal funds to address the current funding shortfall in the Highway Trust Fund. Compounding this problem is the current economic condition and its impact on state funding for transportation. It is unlikely that any additional state funds will be accessible until the national, state, regional and local economies improve. As a result, there appear to be few federal or state funding options to implement the proposed ground access improvements in the short term.

That said, several strategies could be explored for funding opportunities with the goal of leveraging local funding with state, federal and private dollars. These sources are listed below and discussed in detail in Chapter 5.

Federal Sources

- Potential Intermodal Airport Funding Pilot Program
- Federal Livability Initiative
- Transportation Investment Generating Economic Recovery
- FTA Funds
- Complete Streets
- Environmental and Natural Resources Grants
- TIFIA Loan

State Sources

- Intermodal Connectivity Funding
- High Speed Rail Funding
- CPUC Grade Separation Funding
- CTC Prop. 1B Grade Crossing Funds

- Caltrans Transportation Planning Grant Program

Local and Regional Sources

- Restructured Local Bus Service to Serve Airport

Private Sources

- Private Shuttles to Airports
- Joint Development around stations
- Establishment of Assessment Districts
- Public/Private Partnerships

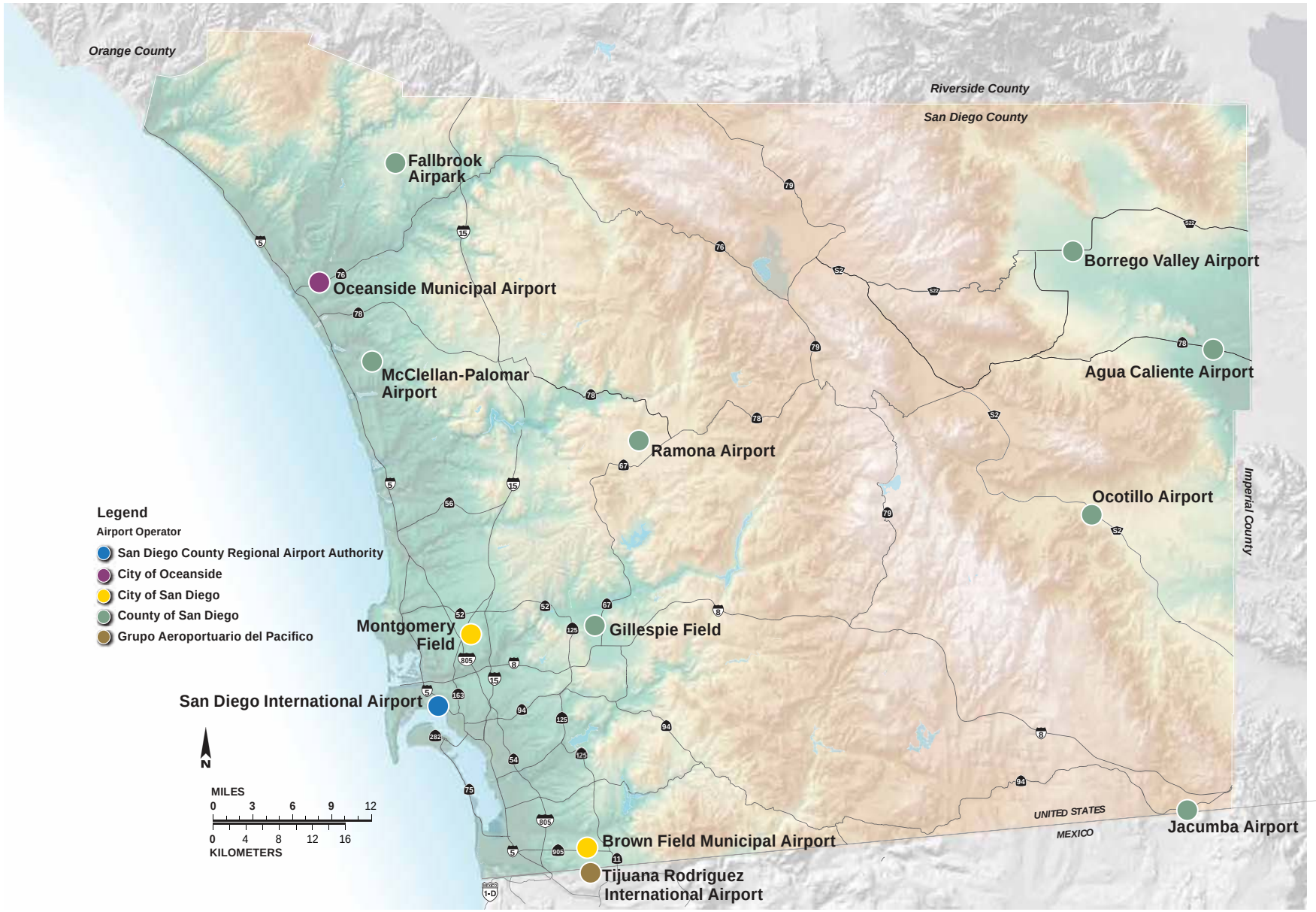

FIGURE ES.1
San Diego Region Airports
Airport Multimodal Accessibility Plan

Source: SANDAG 2011

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1 Purpose and Need

San Diego County, with more than 3 million residents, is the second most populous county in California and accounts for 8 percent of the state's population. In the Tijuana, Baja California region there are over 1.6 million residents. Each year, more than 11.5 million air passengers use one of three airports certified for commercial airline service (Airport Authority, 2011) – San Diego International Airport (SDIA) with 9.2 million enplanements, Tijuana Rodriguez International Airport (TIJ) with 2.3 million enplanements, or McClellan-Palomar Airport with 47,000 enplanements.

In addition, ten airports provide general aviation and air cargo services, and together, make up the region's public-use airport system (Figure 1.1).

Currently, ground access to the region's airports is primarily roadway- and automobile-focused. Public transportation options are limited. Because of the focus on roadway infrastructure, aviation demand puts pressures on already crowded freeways and roadways, further limiting their ability to efficiently serve the region. For example, the level of service (LOS) along major arterials serving SDIA is at LOS D or higher during certain times of the year when air travel is at its peak. Offering additional choices to airline passengers can potentially alleviate some of this congestion. For example, the Airport ITC could increase the mode share for transit to SDIA from the current 1 percent to up to 13 percent at full build out.

The Airport Multimodal Accessibility Plan (AMAP) develops ground access improvement alternatives at San Diego regional airports as identified in the Regional Aviation Strategic Plan (RASP). These alternatives include roadway and highway modifications, reconfiguration of existing and development of new transit services and facilities, and new express bus service for direct connections to SDIA, McClellan-Palomar Airport, and the future Cross Border Facility (CBF) from the region's major travel corridors. The AMAP also incorporates the advanced planning for the Airport Intermodal Transportation Center (ITC) at SDIA and future high-speed train (HST) service at both the ITC and the CBF.

One requirement of Senate Bill 10 (SB 10) of 2007 was a memorandum of understanding (MOU) between the San Diego County Regional Airport Authority (Airport Authority) and the San Diego Association of Governments (SANDAG) to work cooperatively on multimodal airport planning in the region and specifically on the RASP and AMAP. Through this MOU, approved in June 2009 by both agencies, SANDAG outlined the major components of the AMAP:

1. The identification of multimodal transportation investments that will improve surface transportation access to the airports in San Diego County, other counties, and Mexico if appropriate
2. A program of investments and the anticipated schedule for the development of the projects that comprise the program
3. A financial element that estimates for the period of the plan the amount of funding that can be expected, the likely revenue sources from which the funding will be derived, and the program of investments supported by the expected revenue

The AMAP furthers the utility and successful implementation of the RASP objectives through the identification of multimodal transportation investments that will improve surface transportation access to the airports in San Diego County and to other counties, if appropriate.

1.1 Relationship to Regional Aviation Strategic Plan

As a result, the AMAP is part of a two-pronged process completed by SANDAG and the Airport Authority. The Airport Authority is the lead for the RASP, which identified workable strategies to improve the performance of the regional airport system. SANDAG is the lead for the AMAP, which develops a multimodal strategy to improve surface transportation to airports. The development of the RASP and AMAP will be a coordinated process between the Airport Authority and SANDAG (Figure 1.2).

1.2 Relationship to 2050 Regional Transportation Plan

The Regional Transportation Plan (RTP) is the long-range blueprint for major transportation modes in the San Diego region and is the first step in designing, securing funding, and ultimately building transportation projects. SANDAG is required by federal law to update the RTP every 4 years. The current plan, the 2050 RTP, was adopted by the SANDAG Board of Directors in October 2011. The 2050 RTP looked at the region between now and 2050 and phases transportation improvements by 2018, 2020, 2030, 2035, 2040, and 2050. The major findings from the RASP and AMAP, as required by SB 10 and the interagency MOU, were included in the final 2050 RTP.

While the 2050 RTP outlines phases to 2050, the AMAP follows the timeline of the RASP in addressing improvements through 2035. Because aviation facilities and technologies are difficult to plan for beyond 25 years, the RASP forecasts and airport improvements extend to 2035. While SANDAG consulted the draft 2050 transit and roadway networks for potential inclusion in this plan, ground access findings in this report are discussed for 2020 and 2035.

According to analyses by the Airport Authority, capacity constraints are likely at SDIA beyond 2030. This will result in the inability of the region to accommodate all demand, potential service disruptions and higher air fares. Although new aircraft will be deployed in the future (with designs like the Boeing 787 Dreamliner) that may have greater range for nonstop flights to international destinations from SDIA, no aircraft technologies now under development will increase the daily operation capacity of SDIA.

The RASP identified a series of measures that could accommodate additional demand up to 2030; several of these options, including high-speed rail, could also accommodate additional demand in the 2030 to 2050 timeframe. High speed rail is predicted to accommodate additional passenger demand for intrastate and intercity travel to Northern California. Airport Authority analyses noted that even including all these options, however, the region will likely face an inability to meet all commercial passenger demand within this timeframe.

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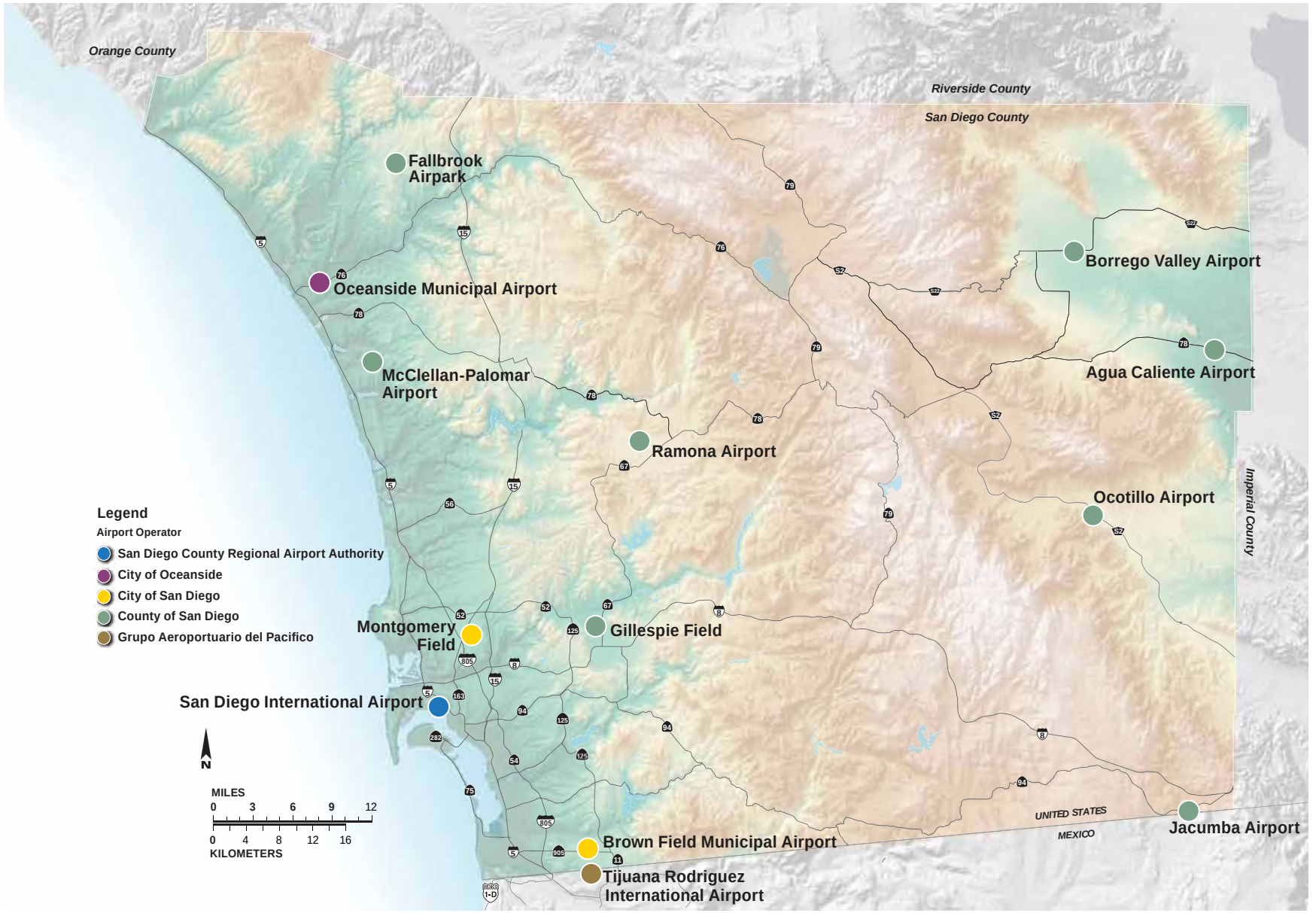

FIGURE 1.1
San Diego Region Airports
Airport Multimodal Accessibility Plan

Source: SANDAG 2011

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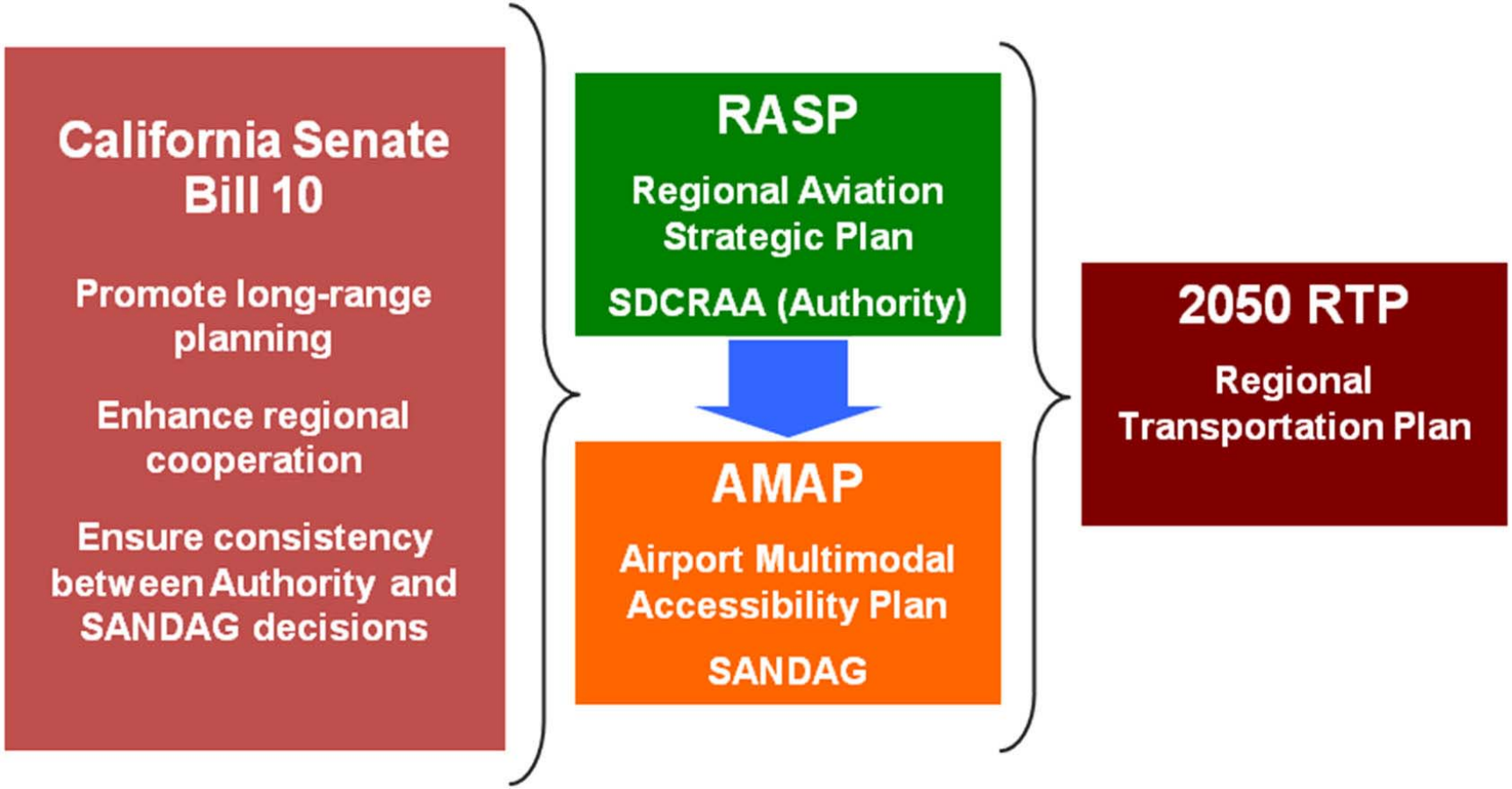

FIGURE 1.2
Coordinated RASP and AMAP Development Process
Airport Multimodal Accessibility Plan

Source: Airport Authority 2011

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2 AMAP Study Process and Approach

The purpose of this plan was to develop ground access transportation improvements at specific airports in the San Diego region, based on the RASP analysis and findings. Ground access alternatives were developed to coincide with the various scenarios developed as part of the RASP study. The AMAP ground transportation improvements included roadway and highway modifications, reconfiguration of existing and planned transit facilities, new express bus service and modifications to existing or proposed local bus service.

The AMAP study process, in addition to being completed in conjunction with the RASP, included a review of both air and landside planning studies and efforts.

2.1 Planning Studies Reviewed and Considered

The development of proposed ground access improvements for the AMAP included a review of existing planning documents related to airport improvements, as well as other local planned transportation modes, to gain an understanding of future airport, transportation and land-use improvements. Relevant plans are described below, along with important elements of the plans that were used to develop the ground access alternatives evaluated in this study.

2.1.1 Destination Lindbergh

The goal of *Destination Lindbergh* (Airport Authority, 2009) was to provide a fundamental, long-range strategy to optimize the efficiency of SDIA's facilities and functions. The plan envisions the ultimate build-out configuration of SDIA, evaluates and plans to minimize airport-related traffic impacts to adjacent communities, and improves intermodal access to SDIA.

Design features described in the study were included as potential ground access improvements as part of the AMAP study. These include HST terminus and new Interstate 5 (I-5) direct connectors, and the Airport ITC located north of the existing airport between Pacific Highway and I-5. The ITC was studied in the *SANDAG Airport Intermodal Transit Center (ITC) – Phase I Final Report* (SANDAG, 2010b), which is described below.

2.1.2 SANDAG Airport Intermodal Transit Center (ITC) – Phase I Final Report

The purpose of the *SANDAG Airport Intermodal Transit Center (ITC) – Phase I Final Report* (SANDAG, 2010b) was to verify the feasibility of and refine the concepts proposed by *Destination*

Lindbergh (Airport Authority, 2009) for the ITC facility. Phased alternatives were developed as part of the study that connects the ITC facility to existing and planned airport facilities. Plans for a trolley, bus, commuter rail and HST connection with SDIA were included as ground access improvements in the AMAP.

2.1.3 2050 Regional Transportation Plan

The *2050 Regional Transportation Plan* (SANDAG, 2011), contains an integrated set of public policies, strategies, and investments to maintain, manage, and improve the transportation system in the region through the year 2050. Ground access improvements proposed in the AMAP study were designed to be consistent with planned 2050 highway and transit networks. For example, interchange improvements programmed in the 2050 RTP were considered as potential ground access routes. Both the RASP and draft AMAP were completed ahead of schedule in order for major findings to be incorporated into the final 2050 RTP.

2.1.4 Airport Planning Documents

The following airport planning documents were reviewed for planned land use and future improvements to airport facilities:

- The San Diego International Airport Master Plan (Airport Authority, 2008a)
- Cross Border Terminal Presidential Permit and associated technical reports (Otay-Tijuana Venture, L.L.C., 2009)
- Brown Field Municipal Airport Master Plan Update (Brown Field, 2010)
- Gillespie Field Land Use Compatibility Plan (Gillespie Field, 1974)
- McClellan-Palomar Airport Land Use Compatibility Plan (McClellan-Palomar Airport, 2010)
- San Diego International Airport – Airport Transit Plan (Airport Authority, 2008b)

Improvements proposed for the AMAP study were developed to be consistent with elements of these airport planning documents.

2.1.5 Community Planning Documents

The following community general plans were reviewed for existing and planned land use, and planned transportation circulation elements:

- City of Carlsbad General Plan (City of Carlsbad, 2004)
- City of El Cajon General Plan (City of El Cajon, 2001)
- Downtown Community Plan (Centre City Development Corporation, 2006)

- Midway/Pacific Highway Corridor Community Plan (City of San Diego, 1991)
- Otay Mesa Community Plan (City of San Diego, 2010)

Ground access improvements proposed in the AMAP study were developed to be consistent with elements of these community and general plans.

2.1.6 San Diego High-Speed Train Feasibility Studies

SANDAG conducted the *San Diego High-Speed Train Feasibility Studies* (SANDAG, January 2010) to examine the feasibility of extending the HST from a proposed terminus in downtown San Diego or Airport ITC to the United States (U.S.)-Mexico border with direct access to TIJ. In addition, the *San Diego High-Speed Train Feasibility Studies* also evaluated the development of a high-speed commuter rail service that would extend from southwest Riverside County to the U.S.-Mexico international border along the Los Angeles to San Diego via the Inland Empire HST corridor. SANDAG and the California High-Speed Rail Authority (CHSRA) are currently coordinating efforts to assess the feasibility of operating commuter rail service alongside the HST system.

The AMAP assumes an HST/commuter rail station as part of the proposed ground access improvements at the CBF.

2.1.7 Preliminary Alternatives Analysis Report: Los Angeles to San Diego via the Inland Empire Section (CHSRA)

SANDAG is working closely with the CHSRA, the state agency responsible for planning, designing, building, and operating a statewide HST system connecting major metropolitan areas including San Diego. San Diego is connected to this system through the Los Angeles to San Diego via the Inland Empire HST section, which is currently in the Alternatives Analysis phase of the project level environmental document. This work is guided by the Southern California High-Speed Rail Inland Corridor Group (SOCAL ICG), of which SANDAG is a member.

The southern portion of the Los Angeles to San Diego via the Inland Empire HST section will provide connections at the future Airport ITC and Ontario International Airport and is included in AMAP.

2.2 Public and Stakeholder Outreach

The AMAP stakeholder working group (SWG) was established to provide input on the development of the proposed ground transportation improvements. The SWG met over a 15-month period from

March 2010 to June 2011 reviewing RASP modeling results and the development of the proposed ground transportation improvements at each aviation facility and included the following agencies:

- SANDAG
- Airport Authority
- California Department of Transportation (Caltrans)
- San Diego Metropolitan Transit System (MTS)
- North County Transit District (NCTD)

2.2.1 Progress Updates and Presentations

Progress updates and presentations were given to the respective boards and stakeholders by SANDAG and the Airport Authority (Table 2.1).

Staff participated in Open Houses organized by the Airport Authority in September 2010 and January 2011 to both present the draft findings from both the RASP and AMAP and staff informational booths on both plans.

2.2.2 Public Comment Period

The SANDAG Board of Directors released the draft AMAP report for a 60-day public comment period on June 24, 2011. The intention was to provide an opportunity to the public and stakeholders for comment in time to make changes to the final 2050 RTP. In addition, a number of stakeholder comments were received and addressed in the revised draft document. The draft report was provided on the SANDAG webpage along with other information on AMAP and a link to the RASP final report. Public comments received during the comment period are included in Appendix A.

Table 2.1 Summary of Stakeholder Meetings

Date	Meeting Participants	Purpose
March 19, 2010	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to SANDAG Transportation Committee
April 26, 2010	• SANDAG • Airport Authority • MTS • NCTD • Caltrans District 11	– Brainstorming potential ground access improvements
June 8, 2010	• SANDAG • Airport Authority • Caltrans District 11 • MTS	– Project Initiation – Overview of ongoing RASP and 2030 RTP planning efforts as basis for AMAP study
August 18, 2010	• SANDAG • Airport Authority • Caltrans District 11 • MTS	– Overview of AMAP, RASP, and Draft 2050 RTP studies. Review of preliminary ground access improvements
September 8, 2010	• SANDAG • Airport Authority • Caltrans District 11 • MTS	– Overview of AMAP, RASP, and Draft 2050 RTP studies. Review of recommended ground access improvements
October 21, 2010	• SANDAG • City of San Diego Planning Department	– AMAP overview and discussion of potential ground access improvements within Otay Mesa Community Planning area
October 28, 2010	• SANDAG • City of Carlsbad Transportation Department	– AMAP overview and discussion of potential ground access improvements within McClellan-Palomar Airport and local roadways
November 30, 2010	• SANDAG • Airport Authority • Caltrans District 11 • MTS	– Overview of RASP modeling results and Draft 2050 RTP scenarios. AMAP overview of ground access improvements
January 5, 2011	• SANDAG • Airport Authority • Otay-Tijuana Venture LLC (CBF)	– AMAP and CBF overview and discuss potential ground access improvements in Cross Border Terminal (CBT) project area
January 11, 2011	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to Airport Authority RASP Board Committee
January 21, 2011	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to SANDAG Transportation Committee
February 16, 2011	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to City of San Diego Rules Committee
March 2, 2011	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to County of San Diego Board of Supervisors
April 13, 2011	• Transit/Roadway Committee (Airport Authority)	– Review draft AMAP improvements

Table 2.1 Summary of Stakeholder Meetings

Date	Meeting Participants	Purpose
June 17, 2011	• SANDAG Transportation Committee	– Review draft AMAP plan and recommend public release to the Board of Directors
June 24, 2011	• SANDAG Board of Directors	– Release the draft AMAP report for a 60-day public comment period.
July 11, 2011	• SANDAG Cities/County Transportation Advisory Committee	– Overview of the draft plan, request for comments.
August 11, 2011	• SANDAG Regional Planning Technical Working Group	– Overview of the draft plan, request for comments.
August 23, 2011	• Regional Chamber of Commerce Transportation Committee	– Overview of the draft plan, request for comments.
December 19, 2011	• County Airports staff	– Overview of the specific recommendations at McClellan-Palomar Airport
January 19, 2012	• Palomar Advisory Committee	– Overview of the specific recommendations at McClellan-Palomar Airport
January 30, 2012	• County Airports staff	– Overview of the specific recommendations at Gillespie Field
March 16, 2012	• SANDAG Transportation Committee	– Overview of specific recommendations, recommend approval to Board
March 23, 2012	• SANDAG Board of Directors	– Overview; consideration of final approval

2.2.2 Public Workshops

Joint public workshops on the preliminary findings of the RASP and AMAP studies were presented to the public at four public workshops held on the following dates:

- September 14, 2010, at SDIA
- September 16, 2010, at McClellan-Palomar Airport
- September 22, 2010, at Gillespie Field
- September 30, 2010, at South County Economic Development Council

A final joint public workshop was held on January 26, 2011, to present the final results of the RASP study as well as to provide an update on the AMAP study. Information regarding these public workshops is included in Appendix A.

2.3 Development of Ground Access Improvements

The airport improvements discussed as part of the RASP study were used to develop the ground access improvements proposed by the AMAP. Increased enplanements and operations from the RASP were used to generate future airport-demand based traffic volumes for key roadways providing access to regional airports. These traffic volumes were compared to expected baseline traffic volumes along the same key roadways to develop the proposed ground access improvements necessary to accommodate the forecasted airport-related traffic volumes. The proposed ground access improvements would provide multimodal access to the various airports. Ground access concepts were presented to the AMAP stakeholder working group as they were developed. Based on stakeholder input, these concepts were further defined throughout the study process. Lastly, the proposed transit improvements were modeled by SANDAG to evaluate their ridership potential and benefits associated with the proposed ground access improvements (Appendix B).

Freeway, arterial and transit improvements were proposed at airports or related airport facilities based on the increase in enplanement numbers and operations at the airports listed in the RASP study, which included:

- SDIA
- TIJ
- McClellan-Palomar Airport
- Gillespie Field

Roadway improvements were developed by converting the airport operation or enplanement numbers to estimated Average Daily Traffic (ADT) volumes to measure the expected increase in traffic for each potential airport ground access scenario. A trip generation rate (TGR) of 2.001 was used to calculate the ADT. The arterial roadway lane requirements were proposed to operate at LOS D or better, based on the City of San Diego Traffic Impact Study Manual (City of San Diego, 1998), which is also applicable to other jurisdictions such as the City of Carlsbad and the City of El Cajon.

Transit improvements were developed by initially reviewing the existing 2030 RTP and the Draft 2050 RTP, and community and general plans for the airports and areas surrounding the airports. The initial improvements were then presented to and discussed with SANDAG, MTS, NCTD, and City of San Diego and City of Carlsbad staff.

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3 Airport Authority Regional Aviation Strategic Plan

The RASP for San Diego County was prepared by the Airport Authority to assess the long-range capabilities of all public-use airports in San Diego County with the goal of improving the overall performance of the regional airport system. The RASP study was defined to identify the airport infrastructure needed to meet future aviation demand in the San Diego region.

3.1 Airports within and Near the Study Area

This section provides information on existing airport facilities within San Diego County and TIJ to the south, as well as airports to the north in the greater Los Angeles area.

3.1.1 Greater San Diego Regional Airport System (including Tijuana)

The San Diego County public-use airport system includes a total of 12 airports in San Diego County and TIJ in Tijuana, Mexico. Of the 13 regional airports, three provide commercial air service: SDIA, McClellan-Palomar Airport, and TIJ. These three commercial airports are part of the broader airport system that combines with 10 other city or county airports. In addition to commercial air service, SDIA, McClellan-Palomar Airport, and TIJ accommodate general aviation and corporate services. Airports designated as Federal Aviation Administration (FAA) Relievers, which accommodate general aviation and corporate services, include Brown Field Municipal Airport, Gillespie Field, Montgomery Field, and Ramona Airport. The remaining six county airports accommodate general aviation only (Oceanside Municipal Airport, Fallbrook Airpark, Borrego Valley Airport) or are not designated in FAA's National Plan of Integrated Airport Systems (NPIAS) (Ocotillo Airport, Agua Caliente Airport, Jacumba Airport).

3.1.2 Airports outside the San Diego Region

A number of airports are located outside of San Diego County and region, most notably are those to the north: Los Angeles International Airport (LAX), Ontario International Airport, John Wayne Airport, Long Beach Airport, and Bob Hope Burbank Airport. All five airports provide domestic commercial airline service, with international destinations being provided by LAX and Ontario International Airport. In addition, Palmdale Municipal Airport and Van Nuys Municipal Airport provide limited commercial airline service, while Hawthorn Municipal Airport, Santa Monica Municipal Airport, and Torrance Municipal Airport serve commuter and general aviation aircraft.

3.2 Strategic Assessment

A strategic assessment of the San Diego County Airport System was conducted to identify airports that could be considered for service role changes to optimize the region's aviation infrastructure. Each regional airport was assessed for current or existing strengths and weaknesses, as well as its potential to accommodate future aviation demand. Items assessed included but were not limited to location, proximity to demand base, airport and land side infrastructure, physical and built environment constraints, available land, proximity to existing and planned mass transportation facilities, existing airspace constraints, and community acceptance.

Based on the results of the strategic assessment, each regional airport was grouped into one of three categories that defined its ability to accommodate future service role changes to accommodate future demand and support the optimization of the regional airport system:

Airports That *Should* Be Considered For Additional Uses/Opportunities – Defined as airports that are in proximity to the demand base, possess adequate or potentially adequate facilities, and have sufficient land area or infrastructure for development opportunities.

- McClellan-Palomar
- Gillespie Field
- Brown Field

Airports That *May Be* Considered For Additional Uses/Opportunities – Defined as airports that possess the same characteristics as the group above, but that also have significant physical or environmental barriers to future development, thereby prohibiting their potential use.

- SDIA
- TIJ
- Montgomery Field
- Ramona

Airports That *Should Not Be* Considered For Additional Uses/Opportunities – Defined as airports that are too far from the demand base, lack sufficient infrastructure or facilities, include community opposition, and/or lack available land for development.

- Oceanside
- Fallbrook
- Borrego Valley
- Ocotillo
- Agua Caliente
- Jacumba

Following the completion of the RASP Strategic Assessment, airports that were determined to have physical, operational, environmental, or other significant constraints that hindered their ability to meet the long-term needs of the region were dropped from further study in the RASP and the AMAP. Both the RASP and AMAP continued further evaluation of the following airports:

- McClellan-Palomar
- Gillespie Field
- Brown Field
- SDIA
- TIJ
- Montgomery Field
- Ramona

Ground access improvements were developed early in the RASP and AMAP process for Montgomery Field, Brown Field, and Ramona Airport. As the RASP progressed, Montgomery Field and Ramona Airport were not included in the family of scenarios which were identified to optimize the regional airport system. These two airports were among those that had physical, operational, environmental or other constraints that hindered their ability to meet the long-term needs of the region. As a result, the ground access improvements to these airports were dropped from further study. Similarly, ground access improvements for Brown Field were developed, but as the RASP progressed it was found that all airport-related scenarios for Brown Field were fatally flawed because of a number of factors, including terrain and airspace complications, reluctance of passenger airlines to "split operations" with SDIA, distance from demand base, and lack of facilities for air cargo carriers. Appendix C contains additional information on the early ground access concepts developed for Montgomery Field, Ramona Airport, and Brown Field.

3.3 Alternative RASP Scenarios

After an extensive process of considering reasonable measures that could be taken to optimize the San Diego County Airport System, five families of improvements were identified for analysis. Each family is oriented toward optimizing a certain market or user type associated with the San Diego County Airport System and each includes individual alternatives resulting in a set of 15 scenarios developed for detailed evaluation. A discussion of the five families of improvements is provided below.

1. Commercial Passenger Optimization: Scenarios addressed capacity limitations at SDIA by developing future facilities, enhancing/introducing airline service at other regional airports, reserving capacity for airline passenger operations, and adjusting the size of aircraft serving the airport.

- Scenario 1A – Full Build-Out of the Airport ITC and North Side Terminal at SDIA
- Scenario 1B – Preserve SDIA's Airfield Capacity for Commercial Passenger Service
- Scenario 1C – Enhance Commercial Passenger Service at McClellan-Palomar
- Scenario 1D – Introduce Commercial Passenger Service at Brown Field Municipal Airport
- Scenario 1E/F – Up-Gauge SDIA's Aircraft Fleet Mix

2. Enhanced Utilization of Tijuana: Scenarios focus on improving access to TIJ to facilitate the accommodation of future regional passenger demand through improvements to the existing San Ysidro and Otay Mesa border crossings, construction of the proposed CBF on the U.S. side with direct pedestrian access to TIJ, and construction of the Cross Border Terminal (CBT) on the U.S. side where complete passenger processing services would be available for TIJ passengers.

- Scenario 2A – Facilitate Border Crossings
- Scenario 2B – Aviation Passenger CBF
- Scenario 2C – CBT

3. California High-Speed Train (HST): Alternatives analyzed the potential for HST service to offer passengers an alternative ground transportation solution to cities and airports within California.

- Scenario 3A – HST station at Santa Fe Depot, ground access connections to the Airport ITC
- Scenario 3B – HST station at the Airport ITC

4. General Aviation Optimization: Scenarios addressed enhanced services at other airports to accommodate high end general aviation aircraft (typically corporate users) to provide an attractive alternative to using SDIA.

- Scenario 4A – Enhance McClellan-Palomar Airport for High-End/Corporate General Aviation Services
- Scenario 4B – Enhance Brown Field Municipal Airport for High-End/Corporate General Aviation Services
- Scenario 4C – Enhance Gillespie Field for Mixed-Use General Aviation

5. Air Cargo Optimization: Alternative locations for air cargo could remove air cargo flights from SDIA, preserving airfield capacity for commercial passenger airlines.

- Scenario 5A – Maximize use of Brown Field Municipal Airport for air cargo activities

2030 Baseline Scenario: The RASP study developed a number of scenarios to evaluate in terms of demand and cost. A 2030 baseline scenario was developed against which all other alternatives were

compared. The Baseline Scenario does not include major new facilities not currently planned, policy options not currently in place, or artificial constraints on demand.

3.4 Summary of RASP Findings by Airport

The discussion below provides an overview of the RASP findings for airports that were found to be candidates for enhanced aviation services and analysis of the HST alternatives.

3.4.1 San Diego International Airport

RASP results indicate that the full build-out of the north side terminal at SDIA would have no effect on projected enplanements relative to the baseline scenario because it would not provide airfield capacity improvements. However, there are other reasons for full build-out of the north side terminal as well as construction of the opening day Airport ITC (2015), including regional intermodal transportation connections, alternatives to driving alone to the airport, and congestion relief.

3.4.2 Cross Border Facility/Cross Border Terminal

The RASP projected a 30 percent increase in the number of passengers using TIJ with the introduction of the CBF, but the CBF would provide only a marginal alleviation of the projected mid-term capacity constraints. This is because U.S. travel from Tijuana, notwithstanding any form of CBF, is international travel requiring customs clearance for Mexico-departing and U.S.-arriving passengers. The RASP also evaluated increasing the use of TIJ for commercial passenger activity by offering a new passenger CBT on the U.S. side of the border to facilitate processing of U.S. passengers utilizing TIJ. The study found that the CBT was also projected to only marginally increase the number of passengers using TIJ.

3.4.3 McClellan-Palomar Airport

The RASP evaluated enhanced commercial passenger service at McClellan-Palomar Airport driven by either capacity constraints at SDIA or facility improvements at McClellan-Palomar Airport. Increased commercial passenger service at McClellan-Palomar Airport would not alleviate capacity constraints at SDIA primarily because the additional demand that can be accommodated at McClellan-Palomar Airport accounts for only five percent of SDIA's total traffic, and because the number of destinations offered at McClellan-Palomar Airport is limited. The RASP also evaluated the use of McClellan-Palomar Airport for high-end/corporate general aviation and estimated that this would delay the capacity constraint at SDIA by approximately two years.

3.4.4 Gillespie Field

The RASP evaluated maximizing the use of Gillespie Field for both high-end/corporate and recreational general aviation by providing the necessary facilities and amenities in order to shift aviation activity from SDIA to Gillespie Field. The increase in theoretical capacity results in an increase in projected passenger enplanements over the baseline scenario between 2020 and 2028. The study estimated that redistributing general aviation operations per the assumptions under this scenario would delay the capacity constraint at SDIA by approximately two years.

3.4.5 High Speed Train

The RASP evaluated two HST alignments which would offer passengers an alternative ground transportation solution to cities and airports within California. The study found that diverting a portion of aviation operations to HST, per the assumptions in both alignments, would delay SDIA capacity constraints by approximately five years. It should be noted that the true long-term impact of HSTs on the region could not be precisely determined as results were evaluated for only three years, with effects being observed only between 2027 (when the HST is expects to be running service to San Diego) and 2030.

Additional details on the RASP alternatives and findings are included in the *Regional Aviation Strategic Plan* (Airport Authority, 2011) at www.sdrasp.com.

4 Multimodal Ground Access Improvements

The following discussion includes an overview of the existing facilities and operations at SDIA, TIJ, McClellan-Palomar Airport and Gillespie Field (Figure 4.1), as well as a discussion of existing land use, existing and future ground access conditions, alternatives considered, and associated analysis, and finally the recommended ground access improvements.

The RASP process defined SDIA and TIJ as airports that are in proximity to the demand base, possess adequate or potentially adequate facilities, but that have significant physical or environmental barriers to future development. McClellan-Palomar Airport and Gillespie Field were defined as airports that possess the same characteristics as SDIA and TIJ, but that have sufficient land area or infrastructure for development opportunities. The above noted RASP designations helped guide the alternatives considered and recommended as part of the AMAP.

All federally obligated airports such as those commercial and general aviation facilities in the San Diego region are required to keep up to date Airport Layout Plans, which show the airport boundaries, location and type of existing and proposed airport facilities and structures, and the location of existing and proposed non-aviation facilities. These plans and updates are subject to FAA approval as a requirement to receive federal aviation funds. Any AMAP ground access recommendations on airport property would be subject to this process and will be advanced by working with stakeholders including the Airport Authority, County of San Diego, City of San Diego, other airport owners, and the FAA.

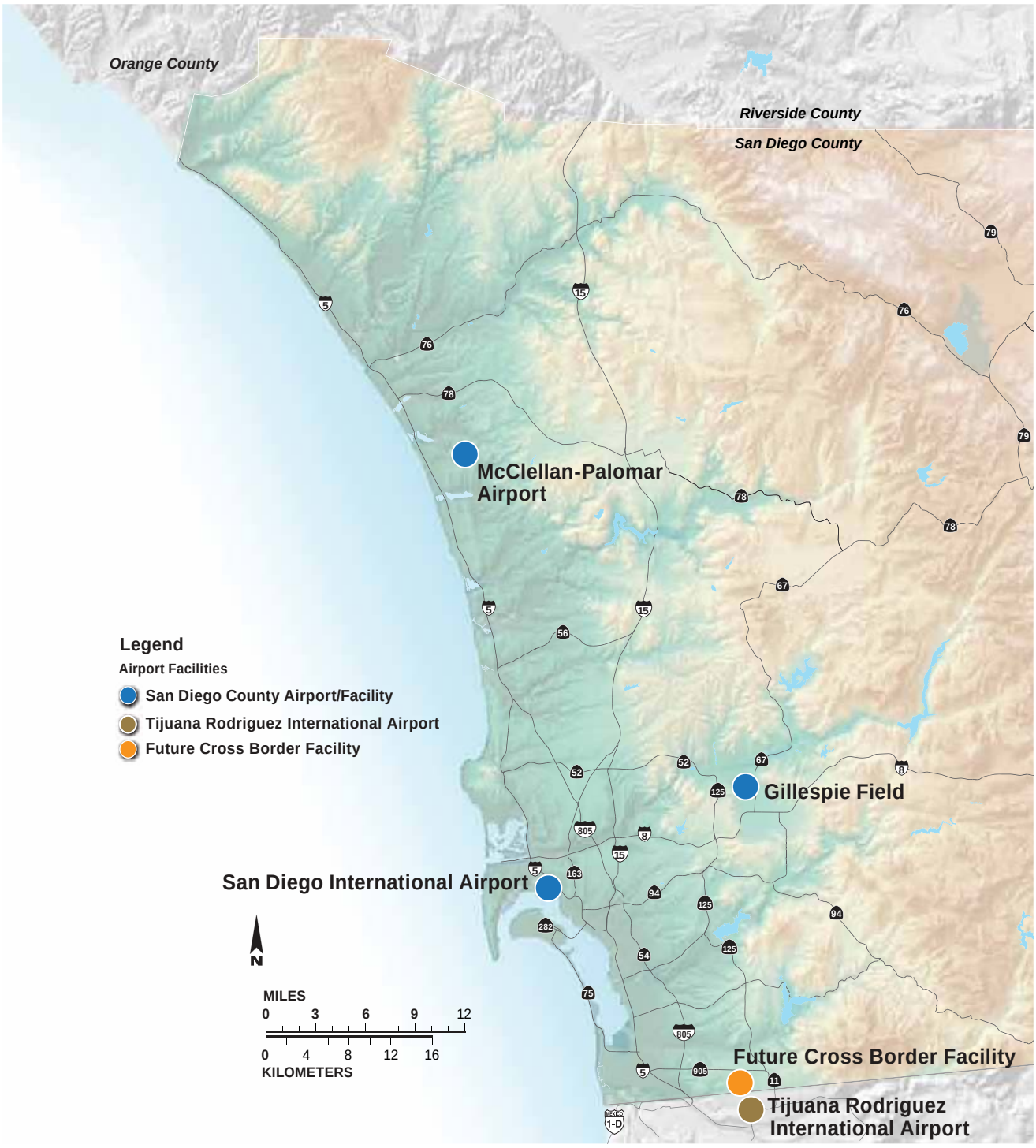


FIGURE 4.1
Airport Facilities Recommended for Multimodal Access Improvements
Airport Multimodal Accessibility Plan

Source: SANDAG 2011

4.1 San Diego International Airport

SDIA is the primary airport serving San Diego County. Located on 661 acres between San Diego Harbor and I-5, the airport is land-constrained and has the smallest footprint of any major U.S. metropolitan airport. SDIA is the busiest single-runway commercial service airport in the United States and is served by 16 passenger airlines and four air cargo carriers, with non-stop service to 46 destinations in the United States, Canada, Mexico, and London, UK. The airport has one paved runway that is 9,401 feet in length with 41 gates in Terminals 1 and 2 and four gates at the Commuter Terminal.

The RASP projected that annual aircraft operations will increase from nearly 230,000 in 2007 to approximately 300,000 between 2021 and 2030. Annual passengers could grow from 9.2 million annual passengers in 2007 to a projected demand of approximately 28 million annual passengers in 2030.

4.1.1 Surrounding and Adjacent Land Uses

SDIA is located approximately three miles from the central business district in downtown San Diego and approximately 20 miles north of the U.S.-Mexico border (Figure 4.1). SDIA is located northwest of downtown San Diego, along the northern edge of San Diego Bay within the City of San Diego, adjacent to the Marine Corps Recruit Depot (MCRD). There are three planning communities immediately adjacent to SDIA which include Peninsula, Midway/Pacific Highway Corridor, and Centre

City. The Peninsula community planning area is a highly urbanized area with a number of residential neighborhoods and established commercial areas, a liberal arts college (Point Loma Nazarene University), regional recreational resources (Sunset Cliffs, Shelter Island, and Cabrillo National Monument) and military property controlled by the Navy. The Midway/Pacific Highway Corridor community planning area is primarily an urbanized commercial area with a few residential areas. Industrial areas are located mainly along Pacific Highway. The Centre City community planning area is a highly urbanized area located downtown San Diego and includes eight different neighborhoods (Gaslamp, East Village, Columbia, Marina, Cortez, Little Italy, Horton Plaza, and Core). This community includes a mix of residential, retail, office, entertainment, hotels, and light industrial. Academic institutions are also located downtown San Diego.

The surrounding land use (Figure 4.2) primarily consists of military, industrial and commercial with residences located northwest of the airport in Point Loma, east of I-5, and in downtown San Diego. Additional business and retail centers as well as residential areas are located within the vicinity of the airport.

4.1.2 Existing Ground Access and Conditions

SDIA is uniquely situated in the San Diego urban area, which makes it an important element of the area's transportation network and overall LOS. Access to the airport is primarily auto-oriented with 56 percent of air passengers using a private auto, 18 percent using a rental car, 13 percent by taxi, and 12 percent by shared-ride vans. Furthermore, 66 percent of auto traffic comes from interstate highways and 34 percent from local streets. Primary access is from North Harbor Drive and I-5, with connections to State Route 163 (SR 163), and Interstate 8 (I-8) and Interstate 15 (I-15). Many of the roadways currently operate at LOS D, including North Harbor Drive, Grape Street and Hawthorn Street.

Transit options are limited at SDIA, resulting in only one percent of the trips to the airport served by public transportation. Bus Route 992 provides 15-minute service from Terminals 1 and 2 and the Commuter Terminal, to and from downtown San Diego, with connections to the MTS Trolley, numerous bus routes, and COASTER and Amtrak passenger rail services. Bus Route 923 serves Terminal 1 from the Point Loma area with hourly service on Saturdays only. Existing ground access associated with SDIA is shown in Figure 4.3.

4.1.3 Future Ground Access Conditions

As envisioned in the *Destination Lindbergh* and Airport ITC studies, future direct access to SDIA will be via I-5 and Pacific Highway with all access to the gates from the future north side terminal and the Airport ITC. By the year 2030, passenger numbers at SDIA are projected to increase by 60 percent to 28.2 million passengers per year (Airport Authority, 2009). This increase in airside operations will result in additional traffic demand on the access roadways. Relocation of access to the north side as well as proposed improvements summarized in *Destination Lindbergh* and the ITC Reports will help alleviate the increased demand. Without the improvements recommended in *Destination Lindbergh*, traffic in the surrounding arterials would increase as shown in Table 4.1.

Table 4.1 2008 and 2030 Traffic Data for Major Access Roads to SDIA

Access Route	Road Segment	2008 LOS[1]	2008 ADT[1]	2030 ADT[2]	% Increase in ADT 2008 to 2030
Harbor Drive	Rental Road to Laurel Street	F	80,000	107,000	+ 25
Grape Street	Kettner Boulevard to I-5	F	30,000	42,000	+29
Hawthorne Street	Kettner Boulevard to I-5	F	27,500	42,000	+35
India Street	Sassafras Street to Washington Street	F	21,000	29,000	+28
Laurel Street	Pacific Highway to Kettner Boulevard	D	23,300	34,500	+32
Pacific Highway	Laurel Street to Palm Avenue	A	19,000	25,000	+ 24

[1] Destination Lindbergh (Airport Authority, 2009)
[2] Baseline Scenario. Destination Lindbergh (Airport Authority, 2009)

4.1.4 Improvements Considered but Not Carried Forward

Several ground access improvements were considered for SDIA as part of the AMAP analysis but were dismissed based on input from the AMAP stakeholder working group or based on modeling results from the RASP. Alternative considered but not carried forward are described below.

Feeder Service from Santa Fe Depot in Downtown San Diego

As a ground access improvement to coincide with the RASP Scenario 3A (High-Speed Rail Station at Downtown San Diego with no stop at SDIA) a direct feeder service was proposed to travel from the

Downtown San Diego HSR Station to SDIA. After input from the AMAP stakeholder working group and MTS, this improvement was dropped due to its overlapping service with the MTS Trolley Blue Line.

Bus Rapid Transit Route between SDIA and McClellan–Palomar Airport

A bus rapid transit (BRT) route connecting SDIA to McClellan-Palomar Airport was initially considered. The route would travel along I-5 and El Camino Real taking advantage of the proposed Direct Access Ramps at Manchester Avenue. The same BRT route would serve the SPRINTER Rail Station at El Camino Real. This BRT route was eliminated from consideration after the proposed BRT service along El Camino Real was removed from the Draft 2050 RTP.

4.1.5 Recommended Improvements

SANDAG, the Airport Authority, and the City of San Diego completed *Destination Lindbergh* in 2009. That effort provided a vision for multimodal transportation improvements that SANDAG's current ITC advanced planning studies and the Airport Authority's upcoming SDIA Airport Master Plan update can build from in terms of specific improvements. As shown in Table 4.1, arterial improvements, in addition to the Airport ITC, will also need to be addressed. There are also improvements identified in *Destination Lindbergh* that are currently underway including a consolidated rental car facility and express bus services, both of which are discussed below. These improvements were reviewed by the AMAP stakeholder working group, and are included as recommended improvements in the AMAP.

Major Infrastructure Improvements

The Airport ITC will be located west of I-5, south of Washington Street, east of Pacific Highway, and north of Sassafras Street (Figure 4-4), and adjacent to the proposed northside airport terminal complex. The facility will be designed to provide direct connections to the airport terminal for regional transit services (COASTER, Trolley, and local bus services), Amtrak intercity rail services, as well as terminus station for the planned HST system.

Since 2009, SANDAG efforts have focused on an advanced planning study to assess site design options for the Airport ITC and outline of a Phase I Airport ITC improvement plan. This planning study has been closely coordinated with the Airport Authority's work effort for Phase I on-airport improvements, which include development of a Consolidated Car Rental Facility (CONRAC) on the northside of the airport and operation of an on-airport shuttle connection between the CONRAC facility and the existing southside terminal and gates. The City of San Diego also is participating in both work efforts.

One scenario for the Airport ITC facility is designed to coordinate with the Airport Authority's first phase efforts on northside airport improvements. . The consolidated Airport ITC station could serve trolley and bus services, and potentially commuter and intercity rail services that would be connected to the CONRAC and on-airport shuttle by an elevated pedestrian walkway over Pacific Highway (Figure 4.4 and Figure 4.5). Identifying the specific local bus and future bus rapid transit connections that will serve the ITC will be part of SANDAG's next phase of planning. *Destination Lindbergh* estimated the short-term Airport ITC facilities could accommodate four to six percent of airport passengers.

In the second scenario, the Airport ITC facility would be expanded to include the proposed southern terminus station for the HST system. In addition, conceptual design is currently underway on direct connector ramps from I-5 to Pacific Highway and potential rail grade separations as part of this second scenario. All passengers, whether arriving by train, trolley, bus, shuttle or private vehicles, would access SDIA through the north terminal. *Destination Lindbergh* envisioned all passenger processing occurring in the north terminal, including security screening and baggage claim. All passengers would then board an automated people mover to travel to the concourses on the south side. North Harbor Drive would no longer provide passenger access to these terminal facilities. Transit mode share of SDIA trips was forecast to increase to 13 percent.

Roadway Access Improvements

The AMAP does not propose any new roadway access improvements outside of those proposed in *Destination Lindbergh.*

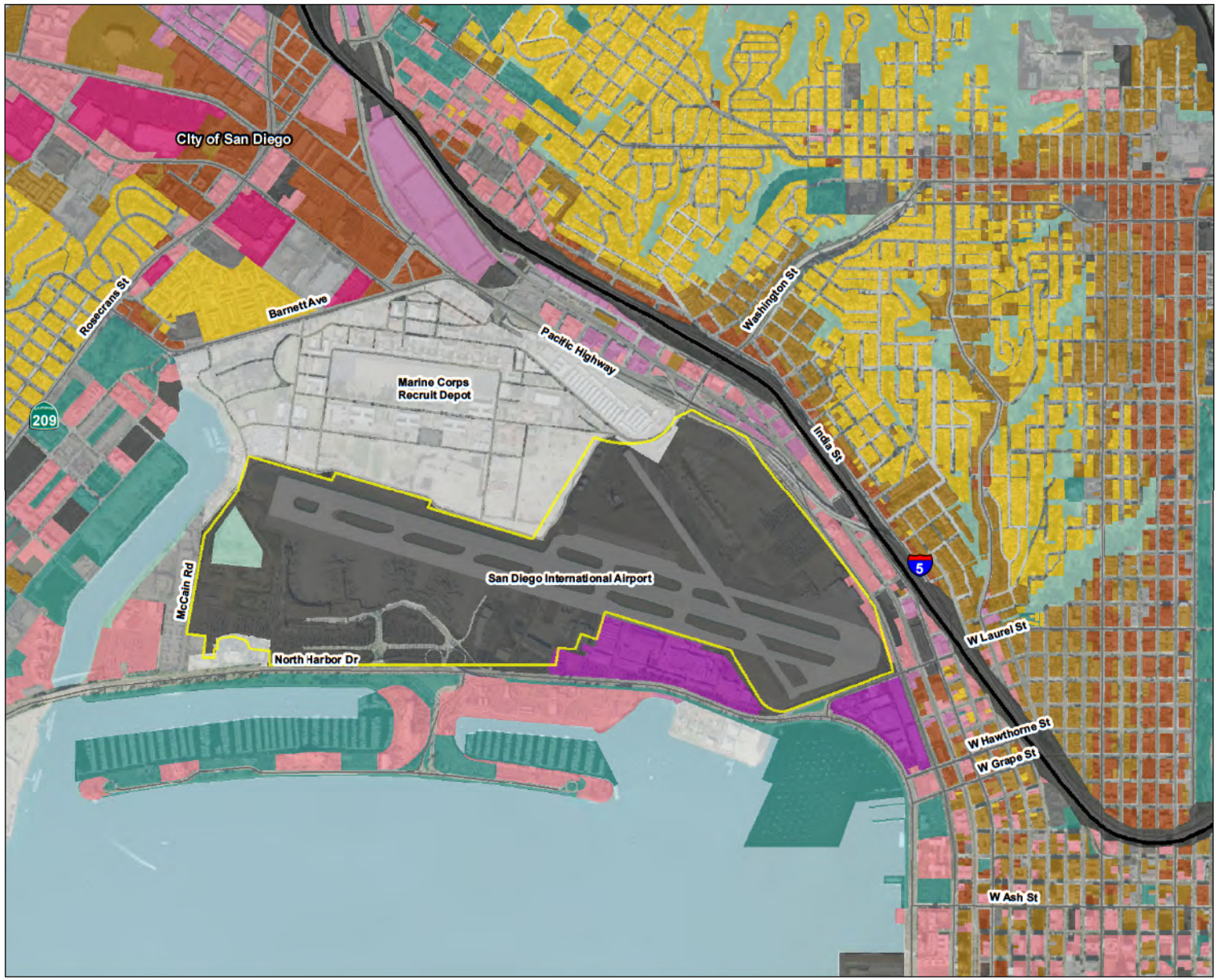
Transit Access Improvements

The 2050 RTP identifies the Airport ITC as a regional activity center with multimodal connections to a variety of transportation services. These include local and regional transit services, limited stop express bus and express trolley services. In addition, three express bus service routes were evaluated for service to and from the Airport ITC/SDIA. From this planning-level analysis as well as more detailed analysis by the Airport Authority, the 2050 RTP includes express bus services to SDIA from the I-5 and I-15 corridors. Section 4.5.1 of this report describes these routes in greater detail.

HST Los Angeles to San Diego Section Terminus at ITC

The RASP found that diverting a portion of aviation operations to HST service would delay by about five years the time when SDIA capacity becomes constrained. It should be noted that the true long-term impact of high-speed trains on the region could not be precisely determined. This is because results were evaluated for only three years, with effects being observed only between 2027, when

the CHSRA expects to be running service to San Diego, and 2030. Based on the degree of uncertainty surrounding the timing of HST, as well as the time and cost of accessing and using the service, the best estimate is that between 8 percent and 25 percent of the region's aviation demand to northern California would be diverted to high-speed trains.



LEGEND

- Freeways
- Major Roads
- Airport Property Line

Existing Land Use

RESIDENTIAL
- Single Family Residential
- Multi-Family Residential
- Mixed Use

COMMERCIAL AND OFFICE
- Shopping Centers
- *Commercial and Office*

INDUSTRIAL
- Heavy Industry
- Light Industry

PUBLIC FACILITIES AND UTILITIES
- Transportation, Communications, Utilities
- Education
- Institutions
- Military

PARKS AND RECREATION
- Recreation
- Open Space Parks

OTHER
- Water

Source: SANDAG, 2009
Airport Boundary – RASP, January 2011

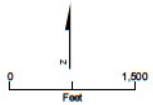


FIGURE 4.2
San Diego International Airport
Surrounding Land Use
Airport Multimodal Accessibility Plan

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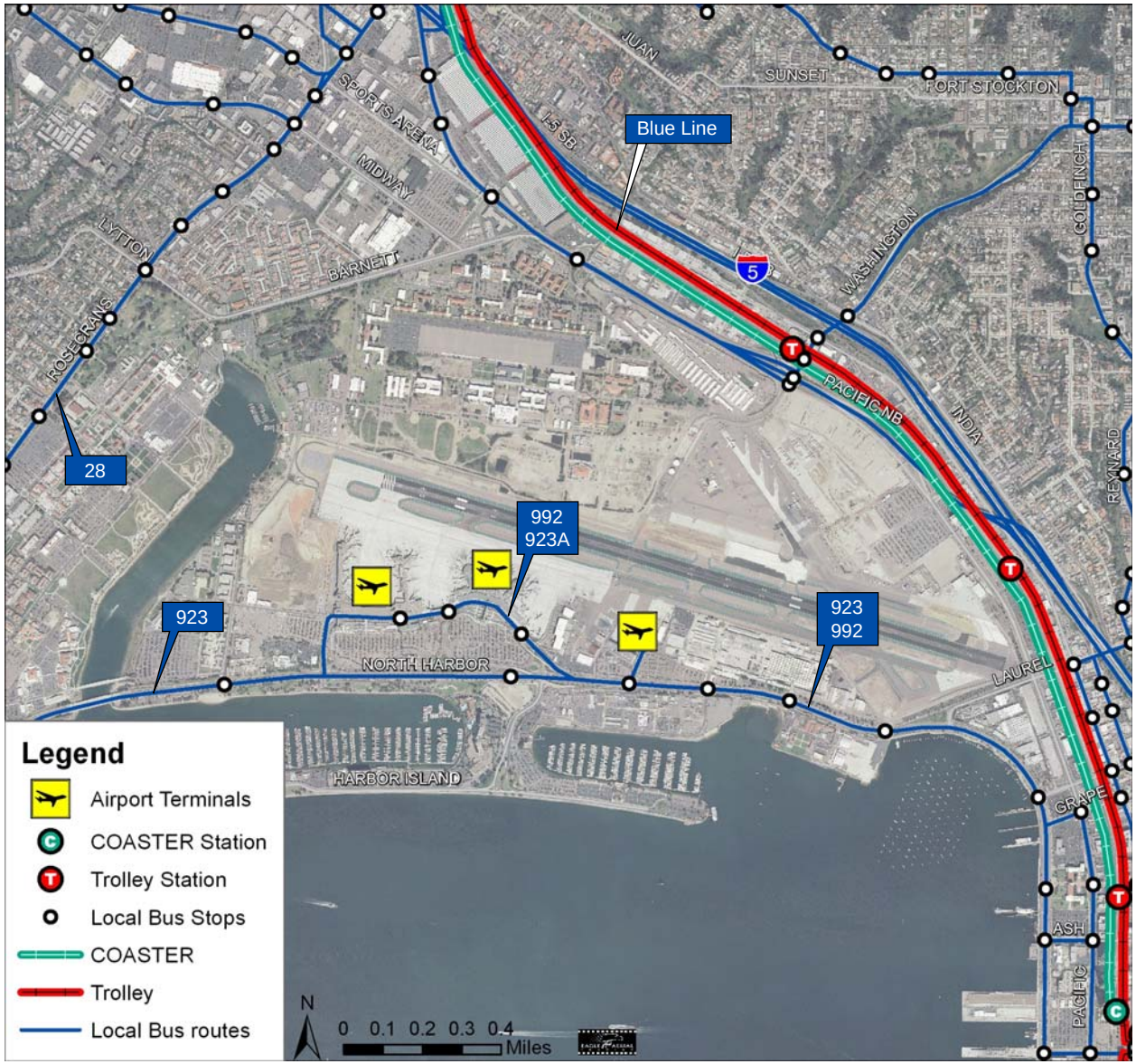

FIGURE 4.3
San Diego International Airport
Existing Ground Access
Airport Multimodal Accessibility Plan

Source: SANDAG 2011, MTS 2009

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LEGEND

- High Speed Train
- Trolley
- Heavy Rail
- Freeways
- Major Roads
- Airport Property Line

Recommended Improvements

- Airport Intermodal Transportation Center (ITC)
- Pedestrian Bridge
- Trolley and Heavy Rail Grade Separations
- Express Bus Service from McClellan-Palomar Airport and Manchester Park-n-Ride
- Express Bus Service from Escondido Transit Center and Mira Mesa Transit Station
- Express Bus Service to Cross Border Facility
- Conceptual I-5 Direct Access Ramps

Source: SANDAG, 2008
Airport Boundary – RASP, January 2011

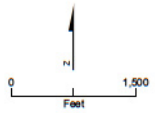

FIGURE 4.4
San Diego International Airport
Transit and Roadway Improvements
Airport Multimodal Accessibility Plan

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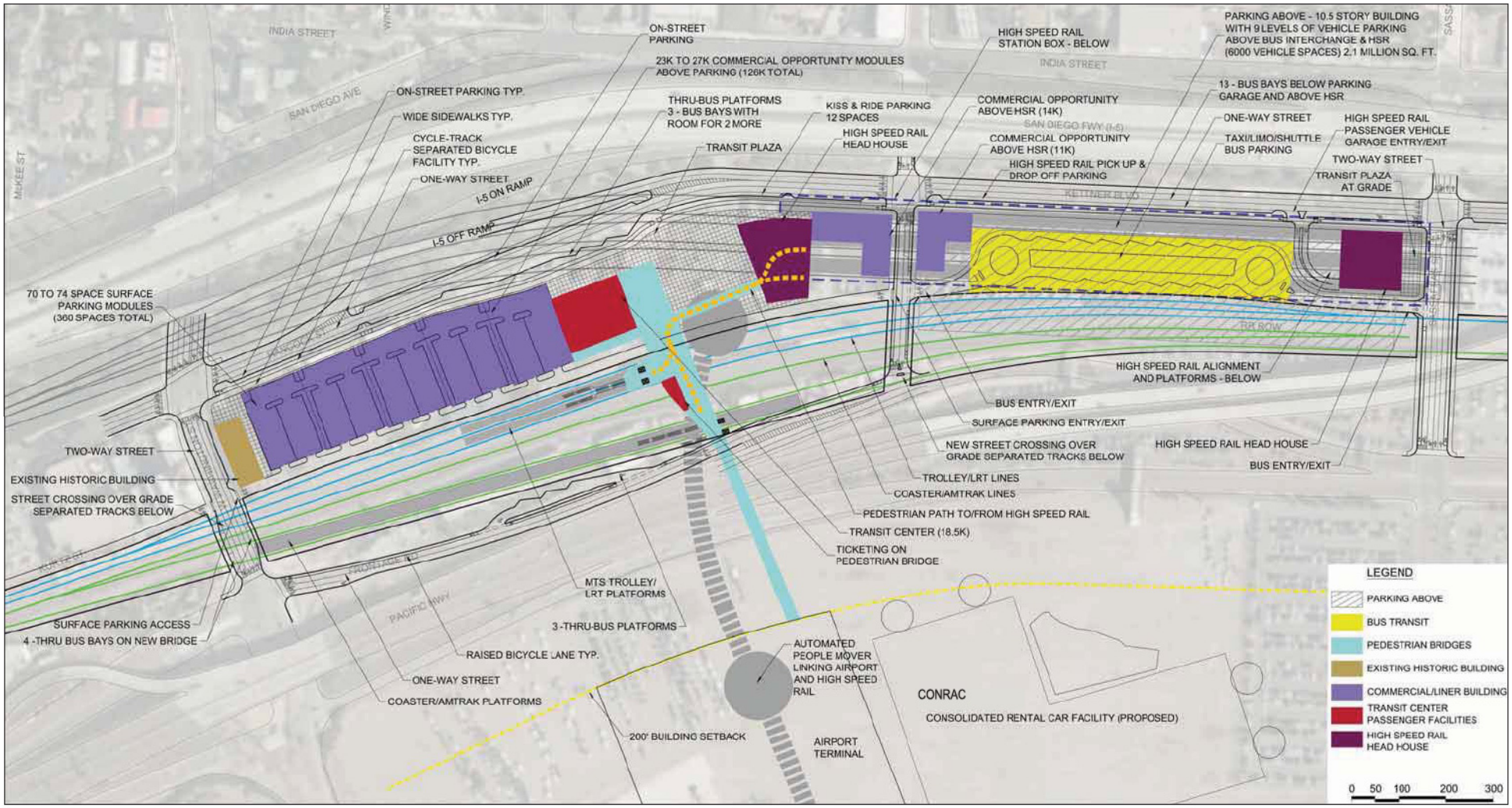

FIGURE 4.5
Proposed ITC Site Plan - Preferred Alternative (HSR Concept A)
Airport Multimodal Accessibility Plan

Source: SANDAG Airport Intermodal Transit Center (ITC), December 2010
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4.2 Cross Border Facility -Tijuana Rodriguez International Airport

The Tijuana Rodriguez International Airport is the fifth busiest airport in Mexico. In 2006, approximately 3.8 million passengers flew out of TIJ. This airport is a part of the Grupo Aeroportuario del Pacifico, a holding group that controls 12 international airports in central and northern Mexico. The airport has one runway with two terminals for commercial/passenger aviation and military aviation with some general aviation. Five airlines provide service to various destinations in Mexico (Grupo Aeroportuario del Pacifico, 2011). In addition, Aeromexico also provides direct international service to China and Japan.

The Department of State issued a Presidential Permit, effective August 3, 2010 (Otay-Tijuana Venture, L.L.C., 2009), authorizing Otay-Tijuana Venture L.L.C. to construct, operate, and maintain a Cross Border Facility (CBF). The CBF will serve as a connection to TIJ from the U.S. side of the U.S.-Mexico border with the facility straddling the border directly adjacent to the TIJ terminal. Passengers will be able to park on the U.S. side and walk across the border using a pedestrian bridge which will serve as a dedicated Port of Entry (POE). Construction of the CBF is scheduled to start late 2012 and be completed by the end of 2013 The CBF would be designed to serve up to 2 million passengers annually (Otay-Tijuana Venture, L.L.C., 2009).

The key benefit of the CBF is to provide potential passengers the ability to bypass the delays at the existing POEs at San Ysidro and Otay Mesa to access TIJ. The CBF would improve accessibility to passengers in the San Diego region. A secondary benefit of the planned CBF is the potential reduction in vehicle traffic crossing the border to TIJ, helping to relieve congestion at SDIA. The future CBF would provide access to flights and increased international destinations not offered at SDIA. This facility could ultimately become an airport terminal, with ticketing and baggage facilities for enplaning passengers from the United States that are departing from TIJ. The RASP includes an evaluation of the CBF as a future CBT, but for purposes of the proposed ground access improvements, the AMAP evaluates this as one facility.

4.2.1 Surrounding and Adjacent Land Uses

The future CBF would be located in the City of San Diego community of Otay Mesa west of the Otay Mesa POE, approximately 22 miles southeast of downtown San Diego (Figure 4.1). The surrounding land use (Figure 4.6) primarily consists of industrial, institutional, and vacant/undeveloped areas with some commercial use. Two major freeway corridors, State Route 905 (SR 905) and State Route 125 (SR 125) provide access to the future CBF. The City of San Diego is currently updating the Otay Mesa Community Plan. Future land uses in proximity to the CBF include a mixed-use urban village, commercial uses supporting business and international trade, technology, and light industrial uses.

4.2.2 Existing Ground Access Conditions

Existing access to TIJ from the U.S. is currently through the San Ysidro and Otay Mesa POEs. Passengers can drive across the international border to access TIJ or take transit to the POEs and walk across the border into Mexico and take a taxi, shuttle, or bus to TIJ. Transit passengers can access the San Ysidro POE via bus routes 929 and 932, or the MTS Trolley Blue Line. The Otay Mesa POE can be accessed via local bus route 905. Average weekday peak wait times for northbound passengers returning by vehicle to the U.S. from the TIJ are 43 minutes at Otay Mesa POE and 58 minutes at San Ysidro POE (Caltrans, 2008).

Primary access to the CBF would be via Siempre Viva Road. Siempre Viva Road can be accessed from SR 905 using Heritage Road, Britannia Boulevard or La Media Road. SR 905 can be reached from the west via I-5 and Interstate 805 (I-805), and from the east via SR 125. Traffic volumes on arterials in the vicinity of the CBF are currently low, because the area is not fully developed. Existing ground access associated with the future CBF is shown in Figure 4.7.

ADT for the arterials providing access to the CBF would more than double by the year 2030 as a result of traffic generated by the CBF. As an example, the ADT along Britannia Boulevard would increase to approximately 35,000 from the current 14,640.

4.2.3 Future Ground Access Conditions

Several improvements to the roadway infrastructure in the vicinity of the CBF are included in the Otay Mesa Community Plan. These improvements are intended to improve access to the CBF and include widening of Siempre Viva Road and Britannia Boulevard to 6-lane arterials. In addition to these arterial projects, two new freeways are proposed in the area. SR 905 is a new 6-lane freeway with local interchanges at Caliente Avenue, Heritage Road, Britannia Boulevard and La Media Road. State Route 11

(SR 11) will be a new 4-lane toll facility extending east from SR 125 to the proposed East Otay Mesa POE scheduled to open in 2015.

Primary access to the CBF will be via Siempre Viva Road, Britannia Boulevard, and La Media Road. Future traffic volumes at key segments of these arterials are listed in Table 4.2 (City of San Diego, 2011). Based on data from the 2010 Presidential Permit, by 2030 the CBF may serve as many as 6.3 million passengers per year. Key arterials would show ADT of as much as 49,000 with the highest volumes forecast for Britannia Boulevard and Siempre Viva Road by 2025.

Table 4.2 2030 Average Daily Traffic for Arterials in the Vicinity of the CBF

Arterial	From	To	2025 ADT[1] (thousands)
Siempre Viva Road	Cactus Road	Britannia Boulevard	8
Siempre Viva Road	Britannia Boulevard	CBF	34
Britannia Boulevard	SR 905	Airway Road	47
Britannia Boulevard	Airway Road	Siempre Viva Road	49
La Media Road	SR 905	Airway Road	27
La Media Road	Airway Road	Siempre Viva Road	19

[1.] Otay-Tijuana Cross Border Facility Recirculated Draft Environmental Document, City of San Diego, 2011.

4.2.4 Improvements Considered but Not Carried Forward

Several ground access improvements considered for the CBF and TIJ by the AMAP stakeholder working group were dismissed based on input from the group or on modeling results from the RASP. Below is a summary of these improvements.

Redirect Proposed Rapid Bus Route from Siempre Viva Road to the CBF

The proposed alignment for Rapid Bus Route 905 was modified to travel along Siempre Viva Road with a stop at the CBF. Route 905 connects to the MTS Trolley System via the Iris Avenue Trolley Station and to the proposed 2050 RTP BRT Routes, which will stop near the Otay Mesa POE.

After meeting with both City of San Diego Planning and MTS staff, this improvement was eliminated due to the desire for the rapid bus route to travel along Airway Road as called for in the updated Otay Mesa Community Plan.

High-Occupancy Vehicle (HOV) lanes and Direct HOV connectors at I-805 and SR 125 Connection to SR 905

High-occupancy vehicle (HOV) lanes along SR 905 between I-805 and SR 125 were considered to provide system connectivity to the regional HOV network to allow HOV and BRT access directly to the CBF from the proposed managed lanes along I-805 and the SR 125 Toll lanes. In addition to the HOV lanes, HOV direct connectors were considered at the following locations:

- South to east and west to north at the SR 905/I-805 Interchange
- East to north and south to west at the SR 905/SR 125 Interchange
- East to south and north to west to and from the CBF
- West to south and north to east to and from the CBF

After consultation with the AMAP stakeholder working group and consideration of the forecasted LOS along SR 905 these improvements were eliminated from consideration.

Extend Light Rail Transit (LRT) service from San Ysidro POE to Otay Mesa POE

One option considered included extending the light rail transit (LRT) system from the San Ysidro POE to the Otay Mesa POE with a stop at the CBF. This option would provide a connection between the Blue Line at San Ysidro and a proposed LRT line (Route 564) that was to travel from Chula Vista to the Otay Mesa POE along the SR 125 corridor.

This alternative was eliminated from consideration in favor of extending the HST system to the CBF.

4.2.5 Recommended Improvements

A number of ground access improvements for the CBF were proposed in the Otay Mesa Community Plan and the Presidential Permit for the CBF. These improvements were evaluated in terms of providing regional access to the CBF and reviewed by the SWG, and are included as recommended improvements in the AMAP (Figure 4.8).

Major Infrastructure Improvements

The CBF would include a pedestrian POE that would allow U.S. air passengers direct access to TIJ. The opening day facility will include a parking structure, customs and border protection, and traveler services. The proposed CBF will generate approximately 35,000 ADT in 2030 based on information from the 2010 Presidential Permit Application. Of the traffic generated by the CBF, it was assumed that 60 percent of the traffic would access the CBF from the SR 905/Britannia Boulevard Interchange and 40 percent via the SR

905/La Media Road Interchange. The ultimate configuration is proposed as a fully-functional airport terminal with ticketing and customs available on the U.S. side.

Roadway Access Improvements

The additional demand generated by the CBF would require roadway improvements in the vicinity of the proposed facility to accommodate increased ADT on surrounding arterials (Figure 4.8). All of the roadway improvements listed below would provide better access to and from the CBF by allowing the arterials and ramps to operate at an acceptable LOS D or better. These would include:

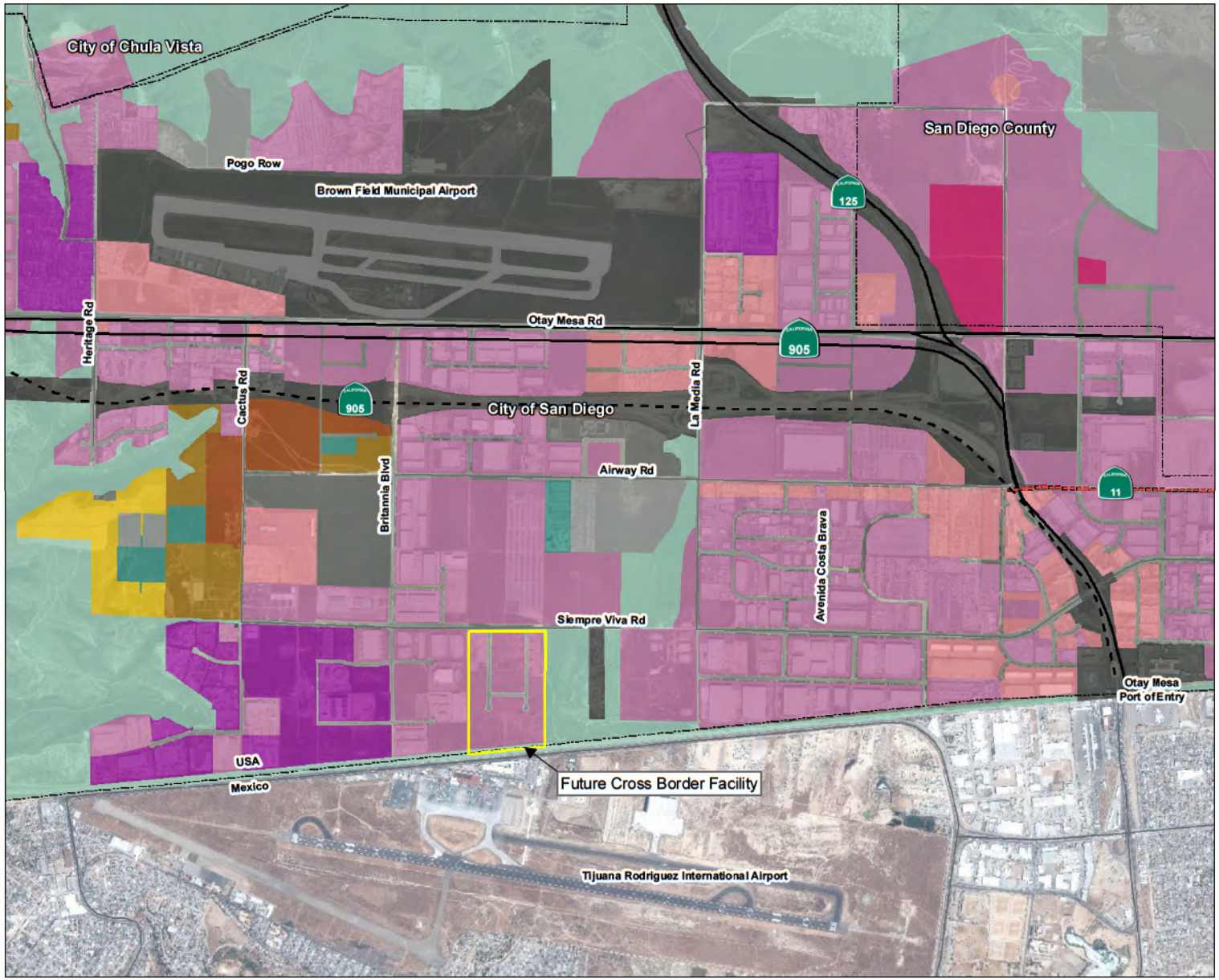
- Widening of Siempre Viva Road from 4 to 6 lanes between Britannia Boulevard and Avenida Costa Brava.
- Widening of Britannia Boulevard from 4 to 6 lanes between Siempre Viva Road and SR 905.
- Addition of a lane to the westbound ramps at the SR 905/Britannia Boulevard Interchange.
- Addition of a lane to the eastbound entrance ramp at the SR 905/Britannia Boulevard Interchange.

Transit Access Improvements

A transit stop at the CBF and modifications to the future MTS Route 661 are recommended to provide improved transit service to the CBF. The route would be diverted south to provide a stop at the CBF, which would provide access to and from the Otay Mesa area. This would provide connectivity to the MTS Trolley system at the Iris Avenue Station to the west and to the proposed BRT service at the Otay Mesa POE to the east. As with other rapid bus routes in the 2050 RTP, transit priority measures would be in place along key congested segments of the route.

Extension of HST/Commuter Rail from Downtown San Diego to the Otay Mesa POE

The *San Diego High Speed Train (HST) Feasibility Studies* (SANDAG, 2010a) analyzed the feasibility of extending the HST system from downtown San Diego or Airport ITC to the U.S.-Mexico border along with a local commuter rail service that would share the same right-of-way. The alignment parallels the I-5 corridor from downtown San Diego to the San Ysidro POE, then runs parallel to the U.S./Mexico border along Siempre Viva Road. This would provide connectivity from downtown San Diego or the Airport ITC to the CBF. Due to the project cost and because this extension is not currently included in the State's HST system, this project is included in the unconstrained scenario of the 2050 RTP.



VICINITY MAP

LEGEND

- Freeways
- Proposed SR 11
- Future SR 905, Under Construction
- Major Roads
- City Boundary
- Cross Border Facility Property Line

Existing Land Use

RESIDENTIAL
- Single Family Residential
- Multi-Family Residential
- Mixed Use

COMMERCIAL AND OFFICE
- Shopping Centers
- Commercial and Office

INDUSTRIAL
- Heavy Industry
- Light Industry
- Extractive Industry

PUBLIC FACILITIES AND UTILITIES
- Transportation, Communications, Utilities
- Education
- Institutions

PARKS AND RECREATION
- Recreation
- Open Space Parks

Source: SANDAG, 2009

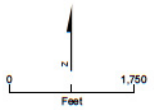


FIGURE 4.6
Future Cross Border Facility Surrounding Land Use
Airport Multimodal Accessibility Plan

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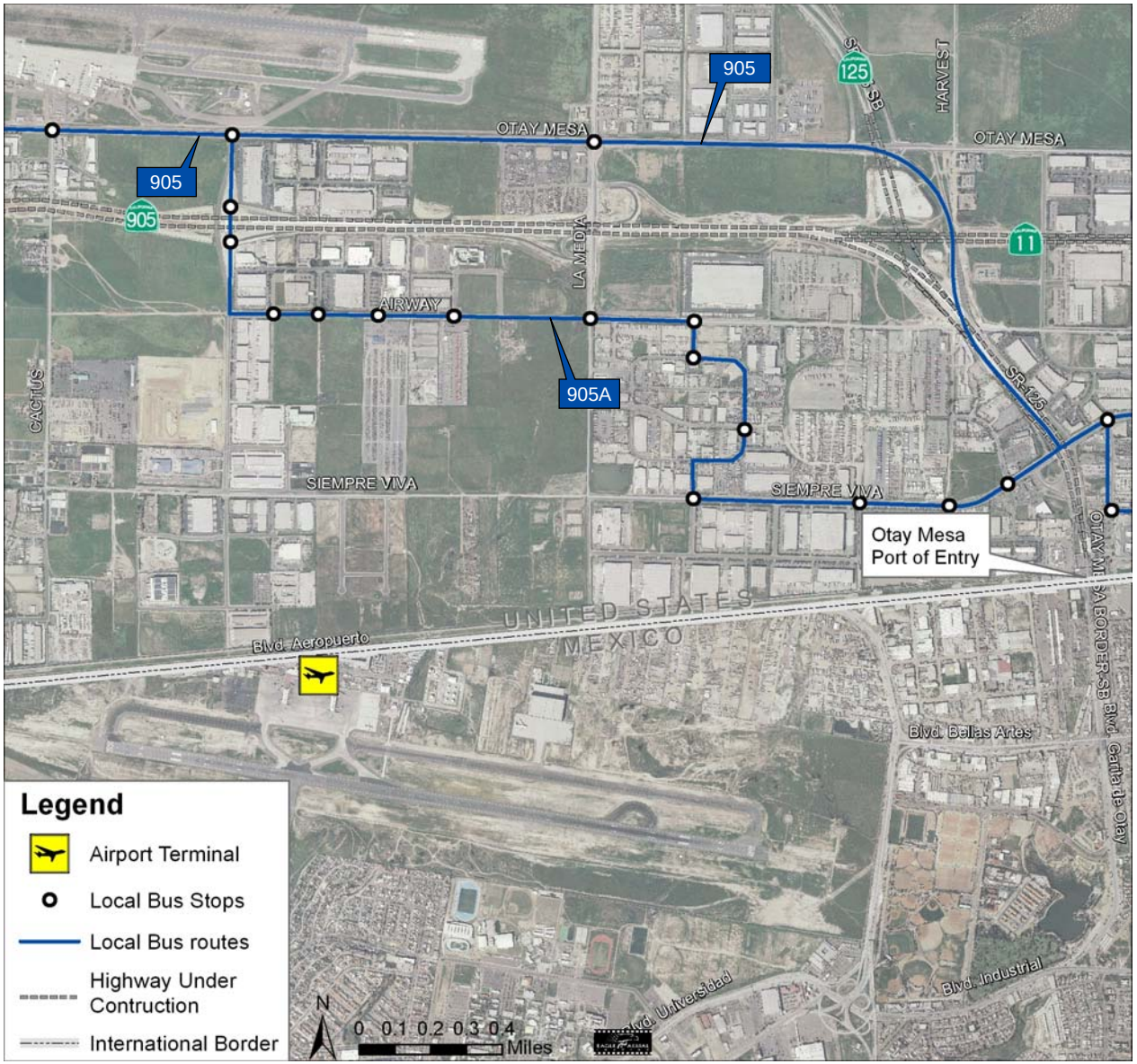

FIGURE 4.7
Future Cross Border Facility
Existing Ground Access
Airport Multimodal Accessibility Plan

Source: SANDAG 2011, MTS 2009

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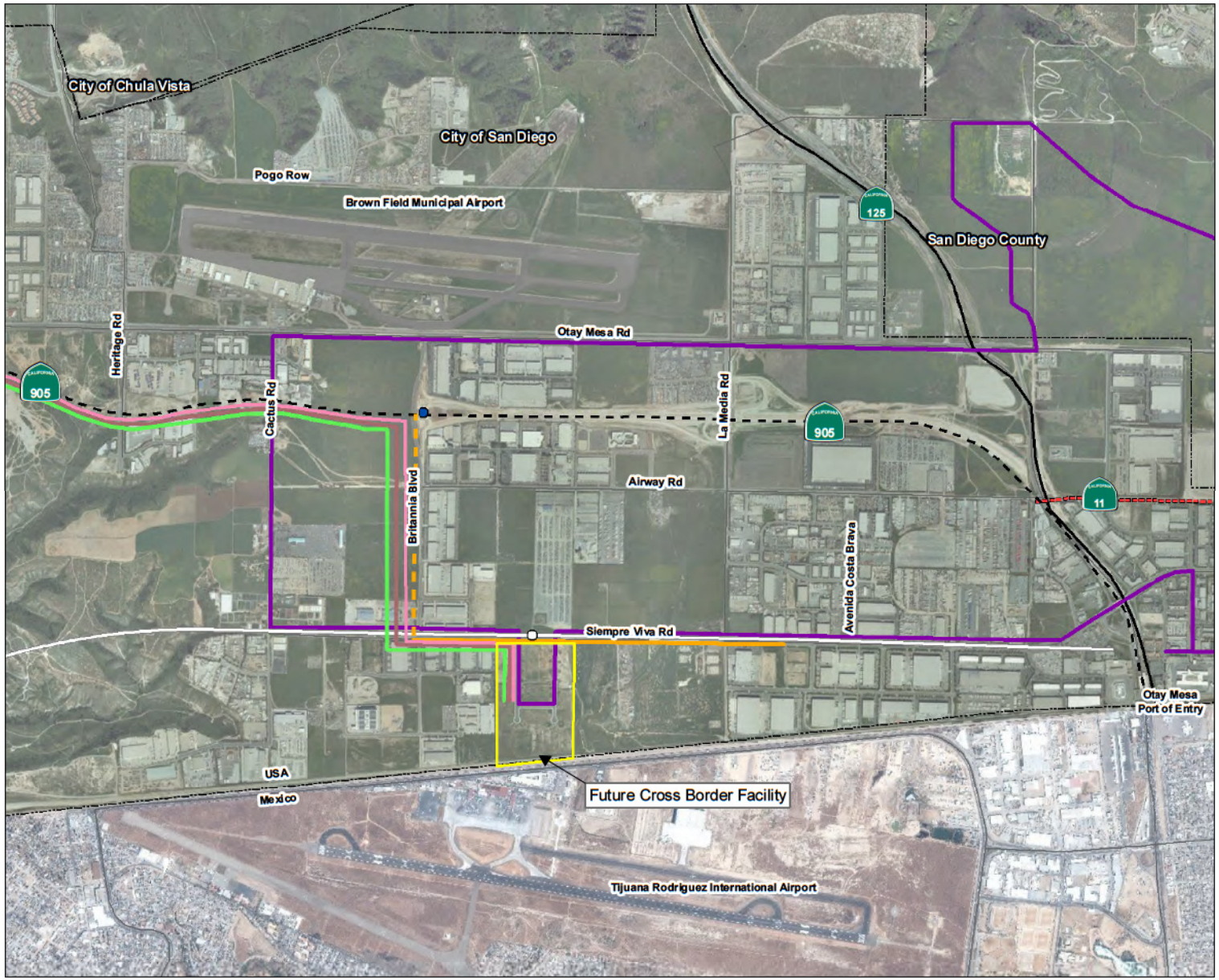

LEGEND

- Freeways
- Proposed SR 11
- Future SR 905, Under Construction
- Major Roads
- City Boundary
- Cross Border Facility Property Line

Recommended Improvements

- Increase capacity of ramps at SR 905/Britannia Blvd Interchange
- Widen Siempre Viva Rd to 6 lanes
- Widen Britannia Blvd to 6 lanes from SR 905 to Siempre Viva Rd
- Modify Proposed Local Bus Route 661
- High Speed Train - Extension from Downtown San Diego to Otay Mesa
- High Speed Train Station
- Express Bus Service from H St Trolley Station
- Express Bus Service from Airport Intermodal Transportation Center
- Express Bus Service from Escondido and Mira Mesa Transit Stations

0 1,750 Feet

FIGURE 4.8
Cross Border Facility Transit and Roadway Improvements
Airport Multimodal Accessibility Plan

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4.3 McClellan-Palomar Airport

McClellan-Palomar Airport is owned by the County of San Diego and is located in north county San Diego east of the I-5 freeway in the City of Carlsbad. Classified as a public use primary commercial airport, 274 aircraft are based at the airport, and United Express flies round trip service to LAX from this location. In 2010, 132,077 annual aircraft operations were reported for the airport. The airport's single runway is 4,897 feet in length, and airport facilities include a recently renovated terminal with passenger and baggage screening areas, a passenger lobby and boarding lounge, and access to the terminal from three new parking lots via a new elevator and walkway. The airport is an important part of the community, contributing $108 million per year to the local economy.

4.3.1 Surrounding and Adjacent Land Uses

McClellan-Palomar Airport is located along the north side of Palomar Airport Road and west of El Camino Real. The surrounding land use (Figure 4.9) primarily consists of industrial, commercial, and institutional with a planned community (Bressie Ranch) located southeast of the airport and other residential areas in the vicinity. The Carlsbad Oaks North Conservation Area is located east of the runway and office parks located to the north and south of the airport. A golf course is located to the west of the airport, with some areas of vacant/undeveloped land surrounding the airport.

4.3.2 Existing Ground Access Conditions

The main access to the McClellan-Palomar Airport is from Palomar Airport Road. Faraday Avenue and Poinsettia Lane are east-west corridors located to the north and south of the airport respectively. College Boulevard provides local access to Palomar Airport Road from the west and El Camino Real provides local access to Palomar Airport Road from the east. Camino Vida Roble connects Palomar Airport Road to Owens Avenue. Airport parking is located at the end of Owens Avenue and is accessible from the front of the terminal via an access road and pedestrian bridge. In addition, rental cars, taxi cabs, and shuttle services provide access to McClellan-Palomar Airport. I-5 is located approximately 3 miles west of the airport and has a local interchange at Palomar Airport Road.

The nearest COASTER station is the Carlsbad-Poinsettia Station located approximately 2.5 miles southwest of the airport on Avenida Encinas, west of I-5 and north of Poinsettia Lane. Bus Route 321 and Route 445 connect with this COASTER station and include stops at the entrance to the airport at Yarrow Drive and Palomar Airport Road. In addition, Route 309 includes a stop at Yarrow Drive as it travels along Palomar Airport Road. Existing ground access associated with McClellan-Palomar Airport is shown in Figure 4.10.

The most congested segment of Palomar Airport Road is between I-5 and Hidden Valley Road with an ADT of approximately 58,000. Existing ADT for other segments of Palomar Airport Road are shown in Table 4.3.

4.3.3 Future Ground Access Conditions

SANDAG Series 11 Growth Forecasts indicate that by 2030, traffic volumes along Palomar Airport Road will increase by as much as 18 percent in some segments. Table 4.3 summarizes the forecasted ADT volumes at key segments along Palomar Airport Road. Based on data from the RASP (Scenario 1C), operations at McClellan-Palomar Airport may increase from 57,000 enplanements per year to 641,355 enplanements per year. Using a trip generation rate of 2.001, this increase in operations would add an additional 7,032 ADT to Palomar Airport Road. That volume would be in addition to the forecasted volumes for Palomar Airport Road. Based on reviewing existing and forecasted traffic data along Palomar Airport Road, it is assumed that 60 percent of the vehicular traffic would access the McClellan-Palomar Airport from the west and the remaining 40 percent from the east.

Table 4.3 Existing and 2030 Average Daily Traffic for Palomar Airport Road

Arterial	From	To	Exist ADT (thousands)	2030 ADT[1] (thousands)
Palomar Airport Road	I-5	Paseo Del Norte	58	63
Palomar Airport Road	Paseo Del Norte	Armada Drive	53	58
Palomar Airport Road	Armada Drive	Hidden Valley Road	44	51
Palomar Airport Road	Camino Vida Roble	Yarrow Drive	30	33
Palomar Airport Road	Yarrow Drive	El Camino Real	33	40

1. SANDAG 2010.

4.3.4 Improvements Considered but Not Carried Forward

Several ground access improvements were considered for the McClellan-Palomar Airport as part of the AMAP analysis, but dismissed based on input from the SWG or based on modeling results from the RASP.

Realign Proposed Rapid Bus Route to stop at the McClellan-Palomar Airport

Two options for modifying the proposed Rapid Bus Route 440 to provide a stop at McClellan-Palomar Airport were considered:

- Constructing a bus stop along Palomar Airport Road just south of the airport visitor parking. This would include a pedestrian bridge over Palomar Airport Road for eastbound bus patrons.
- Diverting the proposed route from Palomar Airport Road to provide a stop at the McClellan-Palomar Airport Terminal.

These two options were dropped from consideration based on NCTD staff comments on taking the route off to serve the terminal and the decision not to include in the 2050 RTP.

Changes to Local Bus Service

This option included realigning the local bus (Route 321) to serve the McClellan-Palomar Airport Terminal. The route would start at the proposed Cannon Road direct access ramps to I-5 and travel along Paseo del Norte Road and Palomar Airport Road, and access the terminal via a new entrance at Owens Avenue, then join its original route at Palomar Airport Road. The headway for the bus route would also be increased to provide more frequent service. This option was eliminated from consideration after discussion with the AMAP stakeholder working group. An option to improve access from McClellan-Palomar Airport to the Carlsbad-Poinsettia station was considered to be more feasible.

Improvements to the Palomar Airport Road/I-5 Interchange

Based on traffic generated by the increased operations at the McClellan-Palomar Airport, widening of the ramps at the Palomar Airport Road/I-5 interchange was initially considered. This interchange improvement was developed using forecast volumes from the SANDAG Series 10: 2030 Regional Growth Forecast. This ground access improvement was eliminated from consideration after updating the volumes using the SANDAG Series 11: 2050 Regional Growth Forecast, which resulted in lower traffic volumes on the freeway ramps.

4.3.5 Recommended Improvements

Based on the enplanement projections for the McClellan-Palomar Airport under the RASP Scenario 1C, traffic demand would increase. To accommodate this increase in traffic, several roadway and transit improvements are recommended to provide additional multimodal access to the airport (Figure 4.11). These improvements are proposed to be located on airport property and therefore, subject to federal approval processes.

Major Infrastructure Improvements

No major infrastructure improvements are recommended.

Roadway Access Improvements

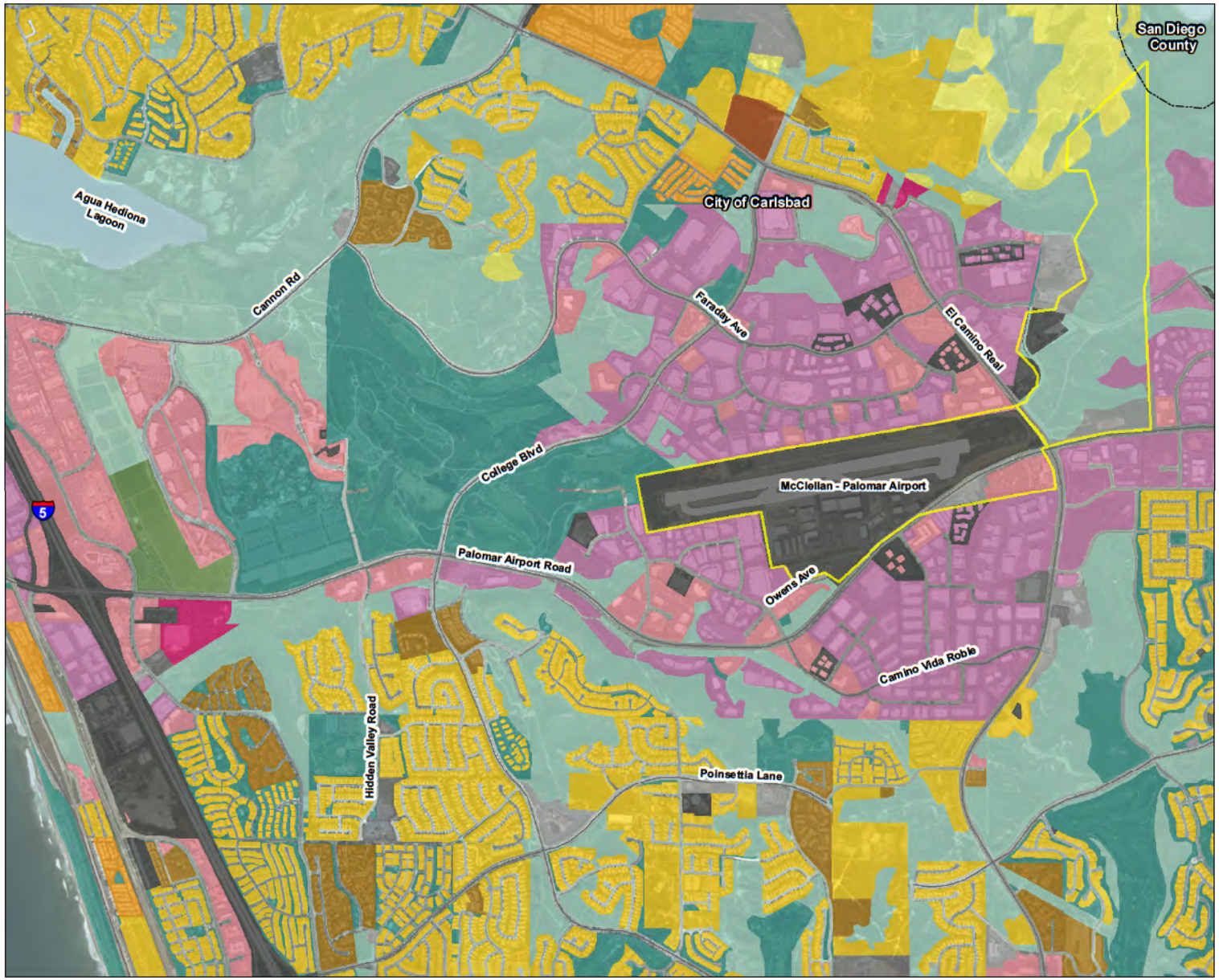
Based on the increased traffic generated by the McClellan-Palomar Airport under the RASP Scenario 1C, these roadway improvements are recommended to provide direct access to the airport and acceptable traffic operations along Palomar Airport Road:

- Widen Palomar Airport Road from 6 to 8 lanes between I-5 and Hidden Valley Road. Widening of Palomar Airport road would increase capacity and allow operation at LOS D, an acceptable level. A major element of this improvement would be the placement of retaining walls along both sides of Palomar Airport Road.

- Construct additional entrance to the airport terminal at Owens Avenue. This new access point would require construction of turning lanes and new traffic signalization at the Owens Ave/Camino Vida Roble intersection. It would also include the extension of Owens Avenue to connect with the existing access road that connects the airport terminal to visitor parking facilities from located southwest of the terminal and just north of Palomar Airport Road. This additional entrance and roadway extension would provide more direct access to and from the terminal for transit and other airport traffic. Upon discussion with the County of San Diego, the additional entrance is recommended in the unconstrained plan and additional analysis will be needed on traffic flows and travel times.

Transit Access Improvements

NCTD Route 445 could be modified to serve the airport terminal for more direct access to the terminal. This route modification would provide connectivity to COASTER service at the Carlsbad Poinsettia Station. A bus stop would be located near the terminal building.



LEGEND

- Freeways
- Major Roads
- City Boundary
- Airport Property Line

Existing Land Use

RESIDENTIAL
- Spaced Rural Residential
- Single Family Residential
- Mobile Homes
- Multi-Family Residential
- Mixed Use

COMMERCIAL AND OFFICE
- Shopping Centers
- Commercial and Office

INDUSTRIAL
- Light Industry

PUBLIC FACILITIES AND UTILITIES
- Transportation, Communications, Utilities
- Education
- Institutions
- Military

PARKS AND RECREATION
- Recreation
- Open Space Parks

AGRICULTURE
- Intensive Agriculture

OTHER
- Water

Source: SANDAG, 2009
Airport Boundary – RASP, January 2011

0 1,750 Feet

FIGURE 4.9
McClellan-Palomar Airport Surrounding Land Use
Airport Multimodal Accessibility Plan

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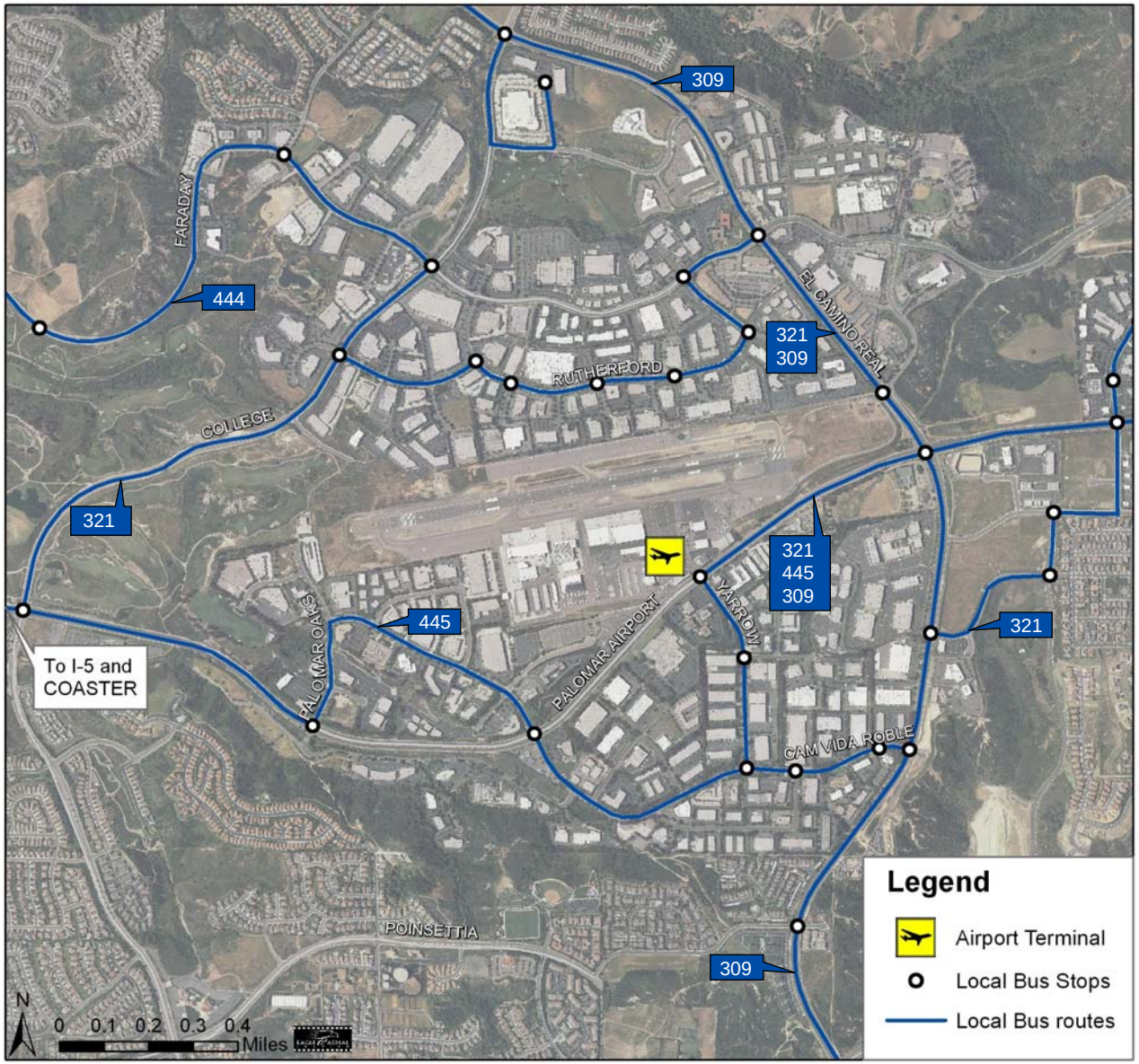

FIGURE 4.10
McClellan-Palomar Airport
Existing Ground Access
Airport Multimodal Accessibility Plan

Source: SANDAG 2011, MTS 2009

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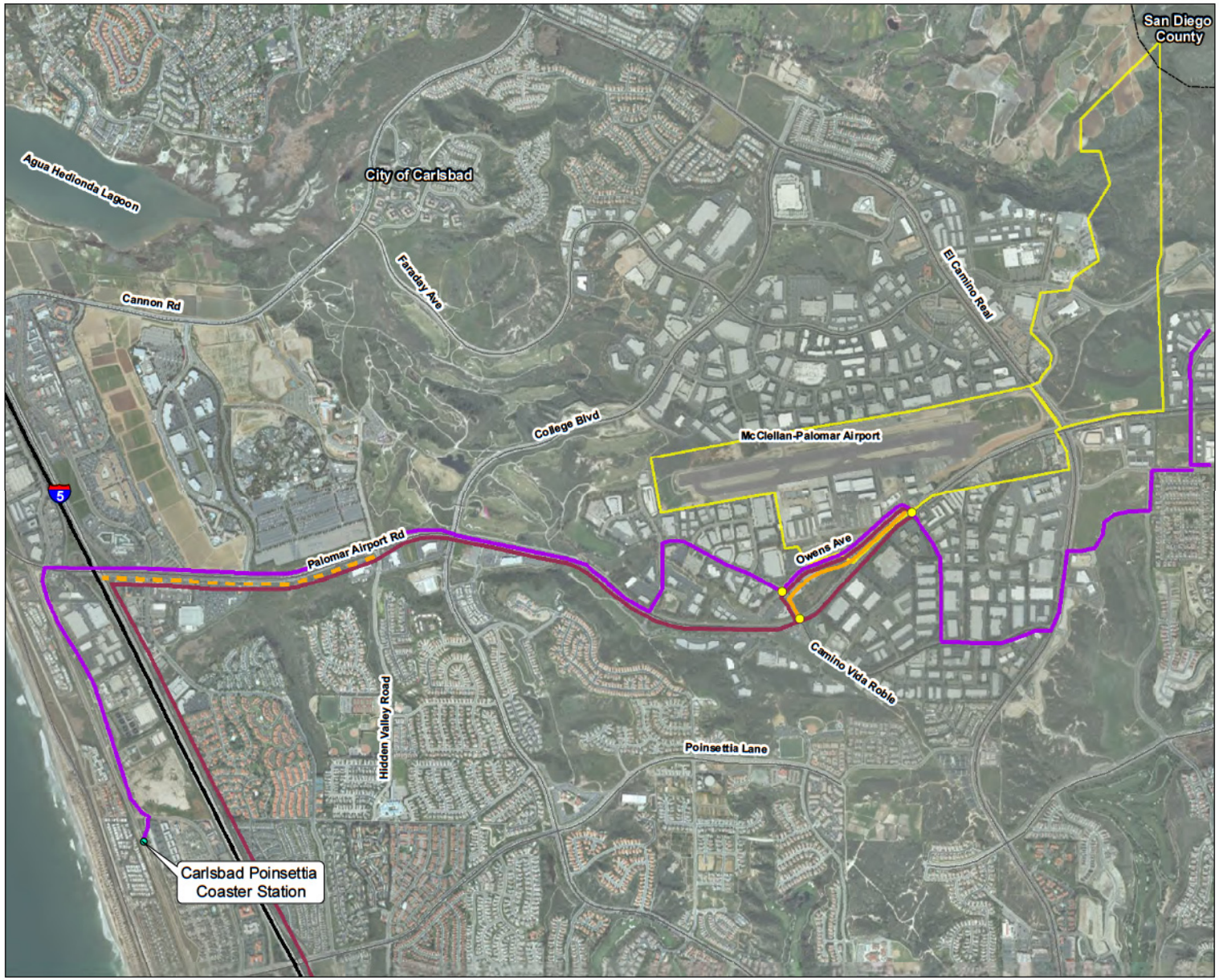

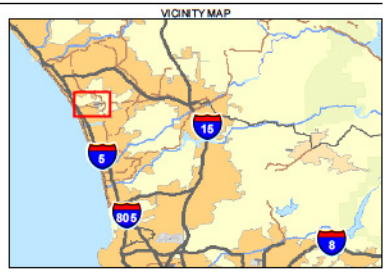

LEGEND

- Freeways
- Major Roads
- City Boundary
- Airport Property Line

Recommended Improvements

- Widen Palomar Airport Rd from 6 to 8 lanes
- Airport entrance at Owens Ave
- Intersection Improvement
- Modify local bus route 445 to serve airport terminal and Carlsbad Poinsettia Station
- Express Bus Service to San Diego International Airport

Source: Airport Boundary – RASP, January 2011

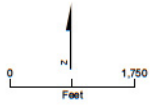

FIGURE 4.11
McClellan-Palomar Transit and Roadway Improvements
Airport Multimodal Accessibility Plan

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4.4 Gillespie Field

Gillespie Field is owned and operated by the County of San Diego and is located in the City of El Cajon, approximately 10 miles northeast of downtown San Diego (Figure 4.1). The airport's property encompasses approximately 775 acres and is home to more than 900 based aircraft. Gillespie Field serves the general aviation community with three paved runways. Operations at the airport numbered 209,345 in 2010 (County of San Diego, 2011). In addition to the runways, tower, and a terminal, Gillespie Field supports many airport-related businesses including two business parks which provide more than 2,000 jobs in the City of El Cajon and a $40 million boost to the local economy.

4.4.1 Surrounding and Adjacent Land Uses

Gillespie Field is located along the north side of West Bradley Avenue, west of North Magnolia Avenue, south of Prospect Avenue, and east of Cuyamaca Street. The surrounding land use primarily consists of industrial and residential with some mobile home parks, commercial, and vacant/undeveloped areas located north and east of the airport (Figure 4.12). Schools are located within the vicinity of the airport.

Three major freeway corridors, I-8, State Route 67 (SR 67), and the recently opened portion of State Route 52 (SR 52), surround the airport.

4.4.2 Existing Ground Access Conditions

There are a number of roadways that provide access to Gillespie Field; however, the primary access is via Marshall Avenue which is accessed from the south by West Bradley Avenue and from the north via Cuyamaca Street. Gillespie Field is approximately 0.25 mile west of SR 67 and 0.25 mile south of SR 52. From SR 52, Gillespie Field can be accessed using Cuyamaca Street. From SR 67, access is via West Bradley Avenue, where current traffic operations are LOS F at the SR 67 interchange.

Trolley service to the Gillespie Field Trolley stop, located over a half-mile from the main airport entrance, is provided by both the Green and the Orange Trolley Lines. The Orange line provides service to downtown San Diego and the Green Line provides service to Old Town and connections to the Blue Line at Old Town. Existing ground access associated with Gillespie Field is shown in Figure 4-13.

4.4.3 Future Ground Access Conditions

Forecast volumes for arterials that provide access to Gillespie Field are shown in Table 4.4. The increase in general aviation operations and Gillespie Field per the RASP Scenario 4C produces approximately 1,165 ADT.

Table 4.4 2030 Average Daily Traffic for Arterials Providing Access to Gillespie Field

Arterial	From	To	2030 ADT[1] (thousands)
Cuyamaca Street	SR 52	Marshall Avenue	36
Cuyamaca Street	Bradley Avenue	Billy Mitchell Drive	19
Marshall Avenue	Bradley Avenue	Billy Mitchell Drive	16
Marshall Avenue	Billy Mitchell Drive	Cuyamaca Street	11
Bradley Avenue	Marshall Avenue	N. Magnolia Avenue	17
Bradley Avenue	N. Magnolia Avenue	SR 67	18

1. SANDAG 2010.

In March 2011, SR 52 was extended as a 4-lane freeway from SR 125 east to SR 67. A local interchange at Cuyamaca Street was included in this project and provides access to Gillespie Field from SR 52.

The existing Bradley Avenue/SR 67 interchange is proposed to be reconstructed to improve the existing traffic congestion, operations and access to the surrounding community (County of San Diego, 2007). This project includes the following improvements:

- Bradley Avenue overcrossing widened from 2 lanes to 6 lanes, including 2 turn lanes.
- Bradley Avenue widened to 4 lanes between Graves Avenue and Mollison Avenue.
- Southbound and northbound ramps widened to accommodate turning movements.

The existing traffic conditions along Bradley Avenue at both northbound and southbound ramps are LOS F but with the proposed improvements, these facilities are expected to operate at LOS B. Although the projected aviation growth of Gillespie Field is not expected to be a major contributor to the congestion projected at the interchange, the interchange improvements will aid access to Gillespie Field from the SR 67 corridor.

4.4.4 Improvements Considered but Not Carried Forward

General aviation is traditionally a difficult market for transit to service efficiently. Additional transit improvements were evaluated but upon further discussion with the County of San Diego, were eliminated from further study:

- Relocate Gillespie Field Trolley Station. This improvement would relocate the existing Gillespie Field Trolley Station and its parking facility closer to the main entrance of Gillespie Field. The proposed station would be on the existing LRT alignment along a tangent section just south and west of the Gillespie Field entrance on Marshall Avenue. Upon more detailed evaluation, the location identified as the relocation site was already identified for future development by the County of San Diego.

4.4.5 Recommended Improvements

The anticipated changes in general aviation operations at Gillespie Field would require the following roadway and transit improvements to provide enhanced multimodal access to the airport.

Major Infrastructure Improvements

No major infrastructure improvements are recommended.

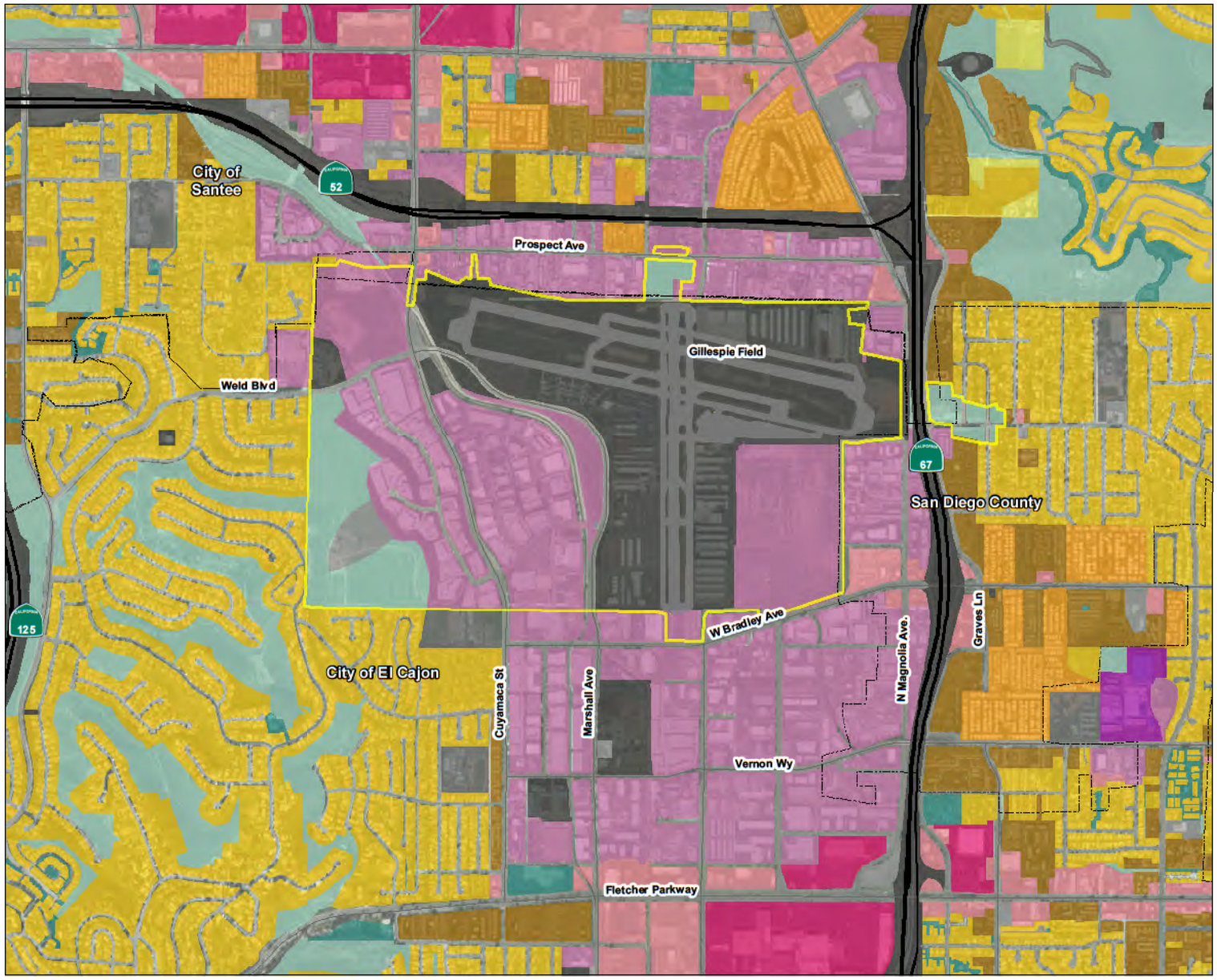
Roadway Access Improvements

Improvements to the Bradley Avenue/SR 67 interchange as described previously are recommended.

Transit Access Improvements

Better local and regional transit connections to the existing trolley station are recommended:

- Modify BRT Routes 90, 870, and/or 890. The BRT Routes (RTP Routes 90, 870 and/or 890) that are proposed to travel along Cuyamaca Street would be modified to provide more direct service to Gillespie Field by changing the routing to North Marshall Avenue from Cuyamaca Street between the El Cajon Transit Center and Cuyamaca Street, with a direct connection at the Gillespie Field Trolley Station.



VICINITY MAP

LEGEND

- Freeways
- Major Roads
- City Boundary
- Airport Property Line

Existing Land Use

RESIDENTIAL
- Spaced Rural Residential
- Single Family Residential
- Mobile Homes
- Multi-Family Residential

COMMERCIAL AND OFFICE
- Shopping Centers
- Commercial and Office

INDUSTRIAL
- Heavy Industry
- Light Industry

PUBLIC FACILITIES AND UTILITIES
- Transportation, Communications, Utilities
- Education
- Institutions

PARKS AND RECREATION
- Recreation
- Open Space Parks

Source: SANDAG, 2009
Airport Boundary – RASP, January 2011

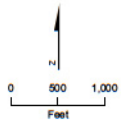


FIGURE 4.12
Gillespie Field
Surrounding Land Use
Airport Multimodal Accessibility Plan

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FIGURE 4.13
Gillespie Field
Existing Ground Access
Airport Multimodal Accessibility Plan

Source: SANDAG 2011, MTS 2009

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VICINITY MAP

LEGEND

- Trolley
- Freeways
- Major Roads
- City Boundary
- Airport Property Line
- Trolley Station

Recommended Improvements

- BRT Transit Station
- Modify Proposed BRT Routes
- Modify Bradley Ave / SR 67 Interchange

Source: Airport Boundary – RASP, January 2011

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Feet

FIGURE 4.14
Gillespie Field Transit and Roadway Improvements
Airport Multimodal Accessibility Plan

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4.5 Express Bus Service to Regional Airports

It is not uncommon for direct bus services to be offered from remote terminal/parking lots and the airport from a distance of over 10 miles away as a way to address traffic congestion and parking demand constraints at the airport. Services range from an express bus service linking a parking facility directly to the airport to remote terminal facilities at the Park-n Ride lots where airline passengers can check in for flights and check luggage. For example, Los Angeles World Airports, which operates LAX, offers four non-stop express bus or FlyAway services to LAX from Los Angeles Union Station, Van Nuys, Irvine, and Westwood. Boston's Logan Express service provides direct transit service from Braintree, Framingham, Woburn, and Peabody. The LAX Flyaway and Boston's Logan Express are the only remove terminal services at commercial airports in the U.S. operated by the airport operator. Some other express bus services such as the Marin Airporter at San Francisco International Airport are operated by private companies. Airport express bus services commonly offer other amenities such as onboard Wi-Fi, luggage assistance, and car detailing/light maintenance at the parking location as a way to increase ridership. As long as these types of services are point-to-point for the benefit of airline passengers, the use of airport funds may be possible to subsidize service costs. However, the FAA would need to review and approve any contribution of airport revenues for these services.

The Airport Authority's SDIA Airport Transit Plan, Phase II, cites the following considerations for a successful airport express bus service:

- Service is provided 7 days per week.
- Maximum headways are 30 minutes.
- Remote terminal is located a minimum of 10 miles or 30 minutes from the airport.
- Non-stop service, or for longer routes a maximum of one stop, is required for consideration for FAA funding.
- Sufficient secured parking and visible location.
- Passenger amenities.

The AMAP evaluated the potential to provide remote terminal/express bus services to SDIA, CBF and McClellan-Palomar Airports following these criteria and consistency with the Airport Authority's Airport Transportation Plan (Figure 4.15). It should be noted that the location of the remote terminal parking lot is crucial to the success of the service and the identified express bus service listed below require further study to determine passenger catchment areas, station locations, expected demand, and appropriate turn-around and stop times, and hours of service. The Airport Authority recently

completed the SDIA Airport Transit Plan, Phase II report, which provides study results for remote terminal locations along the I-5, I-15, I-8 and I-805 corridors. This report focuses on feasibility analysis of recommended airport transit improvement measures identified in the Airport Transit Plan including Remote Parking/Terminal with express bus service. Development of the report was coordinated with members of the Airport Transit/Roadway Committee which includes representatives from the local and regional transportation agencies. The analysis concluded that the I-5 and I-15 corridors were the most promising for remote terminal service with either non-stop service from a location near the I-56 interchange or one-stop service with an additional remote terminal/parking location in the City of Carlsbad along the I-5 corridor or City of Escondido along the I-15 corridor.

4.5.1 SDIA

Three express bus service routes are recommended for service to and from SDIA. These services also provide connections to McClellan-Palomar Airport and the CBF.

- I-5 express bus service: This route originates at McClellan-Palomar Airport and was assumed to make one stop before terminating at the Airport ITC. In the near term the mid-point stop is in the I-5/State Route 56 (SR 56) area and for the long-term, a stop at the Manchester Park-n-Ride should be evaluated. Service was assumed to be every 30 minutes daily, roughly between 4:30 a.m. and 1:00 a.m.

- I-15 Corridor express bus service: The route originates at the Escondido Transit Center (ETC) and would make one stop at the Mira Mesa Transit Center, taking advantage of the future Direct Access Ramp, before terminating at the Airport ITC. Service was assumed to be every 30 minutes daily between roughly 4:30 a.m. and 1:00 a.m. One consideration for this route is parking availability at ETC, as this is already an important regional transit connection for SPRINTER light rail, local bus, and future I-15 BRT service.

- CBF express bus service from the Airport ITC: This route originates at the Airport ITC and proceeds directly to the CBF via I-5, SR 94, and I-805. Service was assumed to be every 30 minutes between approximately 4:30 a.m. and 1:00 a.m.

Through a planning level evaluation of the ridership forecast for these routes, the I-5 and I-15 express bus services to SDIA were included in the 2050 RTP (Appendix B).

4.5.2 Cross Border Facility

Express bus service to the CBF would be provided from several key locations in the San Diego region. These locations were determined through coordination with SANDAG, MTS, and the Airport Authority and taking into account projected population densities and connectivity to the region's transportation system. In addition to the express bus service to and from the Airport ITC discussed above, two other express bus routes are proposed to provide service to the CBF.

- I-15 Corridor express bus service: The route originates at the ETC and makes one stop at the Mira Mesa Transit Center before terminating at the CBF. Service was assumed to be every 30 minutes daily. As noted above, parking availability at ETC should be explored further, as this is already an important regional transit connection for SPRINTER light rail, local bus, and future I-15 BRT service.

- H Street Trolley Station (Chula Vista): This route would travel non-stop on I-5 and SR 905 from the H Street Trolley Station to the CBF. Service was assumed to be every 30 minutes daily. This service recommendation should be further studied for feasibility, in terms of passenger catchment area and distance; as route may be too short to effectively draw passengers.

Through a planning level evaluation of the ridership forecast for these routes, the I-15 express bus service to the CBF was included in the 2050 RTP (Appendix B).

4.5.3 McClellan-Palomar Airport

No express bus service routes are proposed for McClellan-Palomar Airport as part of the AMAP. As noted above it would serve as remote parking for the I-5 express bus to SDIA.

4.5.4 Gillespie Field

No express bus service routes are proposed for Gillespie Field as part of the AMAP.

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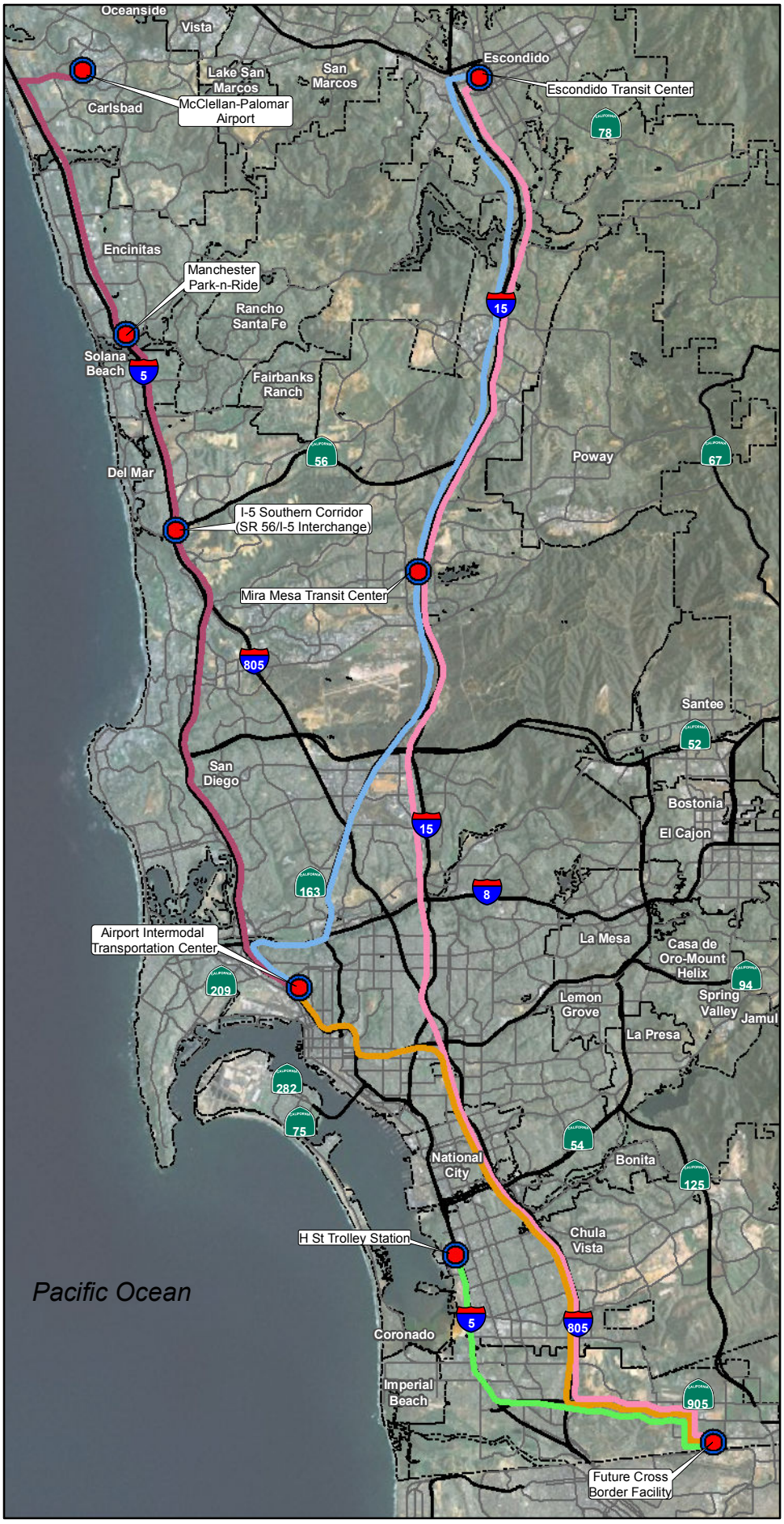

LEGEND

- Freeways
- Major Roads
- City Boundary

Recommended Improvements (Project Number)

San Diego International Airport Express Bus Service

- From McClellan-Palomar Airport and Manchester Park-n-Ride (1)
- From Escondido Transit Center and Mira Mesa Transit Station (2)
- From Cross Border Facility (3)
- Express Bus Service Stops

Cross Border Facility Express Bus Service

- From Airport Intermodal Transportation Center (3)
- From Escondido and Mira Mesa Transit Stations (4)
- From H St Trolley Station (5)
- Express Bus Service Stops

N

0 2.75 5.5

Miles

FIGURE 4.15
San Diego International Airport and Cross Border Facility Express Bus Service
Airport Multimodal Accessibility Plan

4.6 Cost Estimates

Conceptual, planning level cost estimates for both capital and operating costs were developed to help inform and evaluate the various AMAP roadway and transit ground access improvements. The following discussion provides information on the development of costs and assumptions.

4.6.1 Capital Cost Estimates

Capital costs for the improvements at the SDIA were obtained from the *SANDAG Intermodal Transit Center (ITC)-Phase 1 Final Report* (SANDAG, 2010), and by consultation with SANDAG staff. Preliminary, planning-level capital costs estimates for the proposed ground access improvements at other airports were developed using costs from similar regional roadway and transit projects (Table 4.5). Projects used as reference when developing the planning-level unit costs for the AMAP projects included the following:

SANDAG Green Line Extension: The costs for demolition and reconstruction of the station platforms and shelters from the Gaslamp Quarter Trolley station reconstruction were used to determine the costs for the Gillespie Field Trolley Station.

SANDAG SR 15 Mid-City BRT: This project includes freeway widening, ramp improvements and BRT stations along SR 15. Unit costs from this project were used to determine conceptual level costs for BRT stations, ramp improvements and pedestrian crossings for AMAP efforts.

SANDAG I-15 Mira Mesa DAR and Transit Station: This project includes the construction of direct access ramps, arterial widening and a new transit station with parking. Unit costs from this project were used to help determine AMAP proposed transit and arterial improvement costs.

All capital costs include a 35 percent contingency to account for the limited level of analysis and detail for these planning level estimates. Additional information and detail on the individual capital cost estimates is included in Appendix D. Appendix D also contains information regarding the potential phasing of the proposed projects as assumed in the 2050 RTP.

4.6.2 Operating Cost Estimates

Preliminary, planning-level operations costs were estimated for express bus and local transit service operations. Service costs were based on current MTS 2011 cost per mile rates, providing a

conservative estimate for operations. Headways for the express bus services to/from the Airport ITC were developed for 30 minute headways from approximately 4:30 a.m. to 1:00 a.m., again providing a conservative estimate for planning-level operations purposes. Headways to/from the CBF at TIJ were estimated for daily 30 minute service, with no break in service to account for TIJ's round-the-clock operations, unlike SDIA that has prohibitions to take-offs between 11:30 p.m. and 6:30 a.m. Detailed operational cost estimates and additional assumptions can be found in Appendix D.

Conceptual, planning-level capital and annual operating costs for the proposed roadway and transit ground access improvements to the Airport ITC, CBF, McClellan-Palomar Airport and Gillespie Field are summarized as follows:

Table 4.5 Summary of Preliminary Planning-Level Capital and Operating Cost Estimates (2011 dollars)

Project	Capital Costs ($ Millions)	Annual Operational Cost ($ Millions)
San Diego International Airport		
Airport ITC with Pedestrian Bridge	$164.0	n/a
Trolley Rail Grade Separation	$551.6	n/a
Heavy Rail Grade Separation	$850.0	n/a
High-Speed Train Station	TBD	-
Direct Connector Ramps from I-5	TBD	n/a
Cross Border Facility		
Modify SR 905/Britannia Boulevard Interchange	$9.3	n/a
Widen Siempre Viva Road	$5.2	n/a
Widen Britannia Boulevard	$2.5	n/a
Modify Local Bus Route 661	$0.3	$0.1
HST Service with CBF Station	$3,557.0	n/a
McClellan-Palomar Airport		
Widen Palomar Airport Road	$15.7	n/a
Additional airport access at Owens Avenue and improvements to the Owens Avenue/Camino Vida Roble intersection	$3.5	n/a
Modification of Local Route 445	$0.3	$0.2
Gillespie Field		
Construct BRT Station at Gillespie Field Trolley Station	$0.6	n/a

Table 4.5 Summary of Preliminary Planning-Level Capital and Operating Cost Estimates (2011 dollars)

Project	Capital Costs ($ Millions)	Annual Operational Cost ($ Millions)
Modification of proposed BRT Routes	No net capital or operational cost increase	n/a
Modification of Bradley Avenue/SR 67 Interchange	$30.0	n/a
Express Bus Service		
I-5 Express Bus Service to SDIA from McClellan-Palomar Airport and the Manchester Park-n-Ride/I-5/SR 56 location	$7.6	$5.5
I-15 Express Bus Service to SDIA from Escondido and the Mira Mesa Transit Station	$7.6	$5.3
Express Bus Service between ITC and CBF	$5.4	$3.9
I-15 Express Bus Service to CBF from Escondido and the Mira Mesa Transit Stations	$8.6	$8.6
H Street Trolley to/from CBF	$4.3	$2.2

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5 Implementation Strategies and Summary

The AMAP develops a multimodal strategy to improve surface transportation access to the airports identified in the RASP for future enhancements. Currently, ground access to the region's airports is primarily roadway and auto focused. Improvements focus on providing public transportation or direct express bus service options in addition to minor arterial and roadway improvements in order to meet the future demand associated with these aviation improvements.

The AMAP has been completed in close cooperation with the Airport Authority and the development of the RASP. SANDAG focused on ground access improvements to airports which were identified by the RASP as candidates for future enhancements rather than identifying potential improvements to all airports in the region. Aviation forecasts developed as part of the RASP were used in the ADT analysis that provided the basis for the evaluation of the AMAP ground access improvements.

Major findings from both the RASP and AMAP are also compatible with the 2050 RTP in terms of the systems development section and transportation networks.

5.1 Summary of Findings

In 2009, the Airport Authority initiated the development of the RASP, beginning with a strategic assessment of each of the 12 public use airports in San Diego County as well as Tijuana International Airport. Next, detailed alternatives analysis was completed on 15 service scenarios and through this analysis, the RASP identified four facilities for future enhancements: SDIA, CBF/CBT, McClellan-Palomar, and Gillespie Field. In addition, the Airport Authority analyzed the potential for high-speed train service to alleviate airport demand at SDIA. The RASP was finalized in March 2011 by the Airport Authority Board of Directors and is available at www.sdrasp.com.

SANDAG initiated the AMAP in 2010 and began by evaluating a range of ground access alternatives to the subset of airports that had been identified by the Airport Authority through the Strategic Assessment as candidates for enhancements. These facilities were SDIA, CBF/CBT, McClellan-Palomar, Gillespie Field, Montgomery Field, Brown Field, and Ramona Airport. Through additional analysis by the Airport Authority, the latter three airports were subsequently dropped from further evaluation.

For SDIA, the AMAP focuses on the Airport ITC as the major ground access improvement, which is closely coordinated with the work of the Airport Authority on the north side airport development. Bus, trolley, commuter and intercity rail, and future high-speed train service will be accommodated at

this facility. Direct connector ramps from I-5 will be designed and incorporated to serve the facility. For the short-term, express bus service from the I-5 and I-15 corridors is also evaluated.

For the CBF, the AMAP focuses on transit and arterial improvements and express bus services in the near term. The feasibility of extending the HST system from the Airport ITC to the U.S. - Mexico border is evaluated as a future phase.

For McClellan-Palomar Airport, the AMAP focuses on direct transit shuttle service between the airport terminal and the Poinsettia COASTER commuter rail station, with service increases matched to increases in COASTER service between now and 2035. Arterial improvements to facilitate more direct access to the terminal are also analyzed. Any improvements on airport property would need to be coordinated through the airport layout plan and future plans by the County of San Diego.

The RASP recommends enhancements to general aviation at Gillespie Field, an activity that is traditionally difficult to be served by public transportation. Therefore, only minor roadway improvements are called for in the AMAP. The future Bradley Avenue/SR 67 interchange improvement will also facilitate access. Future transit improvements including the realignment of future Bus Rapid Transit services are evaluated.

5.2 Implementation Strategies

Regional Collaboration

Completion of the RASP and AMAP has showcased the benefits of collaboration between SANDAG, the Airport Authority, and regional stakeholders. Aviation planning and airport ground access has been incorporated into the 2050 RTP at a level above and beyond previous plans. Further collaboration is warranted both in terms of future updates to the RASP and RTP, but also to identify the necessary steps toward successful implementation of the ground access improvements identified in the AMAP.

Encourage Incorporation into Local Plans

SANDAG supports continued collaboration at the local level in terms of working with staff from the Cities of San Diego, Carlsbad, and El Cajon, as well as the airport owners to assess the feasibility of incorporating ground access improvements in local plans, airport layout and master plans, and coordination with other planning efforts.

SANDAG will continue to monitor these local projects through our Intergovernmental Review Program which oversees the review of local environmental documents and monitors current and future

development plans for potential impacts on the regional transportation network and will comment regarding particular ground access improvements through this process.

Financial Strategies

The total capital cost of ground access improvements identified in the AMAP is $1.65 billion for the Revenue Constrained Plan and $3.6 billion for the Revenue Unconstrained Plan. The annual operational cost is $25.5 million for the 2020 phase. These improvements have been included in the 2050 RTP either as a separate transit improvement receiving dedicated funding such as the express bus services or included in local transportation networks.

Implementation of the AMAP findings will be dependent on funding and policy changes which are needed to further the goals of SB 10. The reauthorization of the surface transportation program, SAFETEA-LU, has been deferred until at least April 2012 and there is little agreement on how to raise federal funds to address the current funding shortfall in the Highway Trust Fund. Compounding this problem is the current economic state and its impact on state funding for transportation. It is unlikely that any additional state funds will be accessible until the national, state, regional and local economies improve. As a result, there appear to be few federal or state funding options to implement the proposed ground access improvements in the short term.

That said, the following strategies could be explored for funding opportunities with the goal of leveraging local funding with state, federal and private dollars:

Federal Sources

- Potential Intermodal Airport Funding Pilot Program: Explore the potential of a federal pilot program in the surface transportation reauthorization bill between FAA, Federal Transit Administration, Federal Highway Administration, and Federal Railroad Administration to fund intermodal projects to serve airports. This pilot could include nontraditional sources of funding for ground access improvements. One example is the ITC in which a number of transportation modes will converge to also serve SDIA. SANDAG will also work with other Metropolitan Planning Organizations in California to coordinate statewide support of this concept.
- Federal Livability Initiative: There are new and continuing funding sources that relate to the Federal Livability Initiative. In June 2009, the Partnership for Sustainable Communities was formed by the U.S. Department of Housing and Urban Development (HUD), the U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA) Up to $25.7 million was made available for alternatives analysis for transit projects in 2010. The funds were distributed in support of the Department of Transportation's Livability Initiative.

- Transportation Investment Generating Economic Recovery (TIGER) The TIGER Discretionary Grant Program was included in the American Recovery and Reinvestment Act to spur a national competition for innovative, multimodal, and multi-jurisdictional transportation projects that promise significant economic and environmental benefits to an entire metropolitan area, a region, or the nation. In February 2010, USDOT selected 51 projects to be funded with the $1.5 billion allocated in the Recovery Act, including improvements to roads, bridges, rail, ports, and transit and intermodal facilities. There is currently a call for application for a fourth round of TIGER funding.
- FTA Funds: There are a variety of traditional discretionary Federal Transit Administration Funds that could be pursued as part of this program, such as New Starts (light rail, heavy rail), Small Starts (Bus Rapid Transit) and Very Small Starts (trolleys and streetcars).
- Complete Streets: The federal "Complete Streets" program may have funding to enhance the roadway network, and non-motorized (bicycle and pedestrian) components of the capital program. Caltrans has adopted a Complete Streets policy and program as well.
- Environmental and Natural Resources Grants: There are a variety of non-traditional funding sources for transit projects that target the environmental mitigation components of a project.
- TIFIA Loan: Consider a federal Transportation Infrastructure Finance and Innovation Act (TIFIA) loan. The strategic goal of the TIFIA program is to leverage limited Federal resources and stimulate capital investment in transportation infrastructure by providing credit rather than grants to projects of critical importance to the nation's transportation system. Although there is limited TIFIA budget authority currently, this financing technique should be considered once the Reauthorization bill is approved. This loan would be paid back with local or regional funds. The most successful projects for this program would be the larger, regionally significant ones.

State Sources

- Intermodal Connectivity Funding: Review Statewide Transportation Funding Program for options to incorporate a directed funding source for intermodal connectivity projects at regional airports.
- High Speed Rail Funding: Continue to support the CHSRA efforts to secure state and federal funding for the Los Angeles to San Diego via Inland Empire HST corridor. Also pursue cooperative funding opportunities with the CHSRA related to intermodal connectivity and station development along the HST corridor. In addition to state and federal HSR funding, there is a private funding component in the CHSRA business plan that should be considered.
- CPUC Grade Separation Funding: Consider California Public Utilities Commission (CPUC) Section 190 Grade Separation funding for the grade separations in the proposed plan. Although not a large program at $15 million per year, it can help leverage other local funding.

- CTC Prop. 1B Grade Crossing Funds: Although there is no new Proposition 1B funding, the California Transportation Commission is soliciting projects to replace the projects in the current programs that have stalled due to lack of local match. One program that may be of interest is the Proposition 1B Highway-Railroad Crossing Safety Account.
- Caltrans Transportation Planning Grant Program: These funds are available for planning projects that improve mobility and lead to the planning, programming, and implementation of transportation improvement projects. In 2010, SANDAG received a planning grant for initial planning studies for the Airport ITC through this program.

Local and Regional Sources

- Restructured Local Bus Service to Serve Airport: Encourage MTS and NCTD to incorporate local bus service to airports in their service plans and capital improvement plans. Assist by identifying potential funding sources and to further define the capital and operating plans.

Private Sources

- Private Shuttles to Airports: Explore models from other transit systems whereby larger employers within the service area provide private shuttle service to the airports either directly or via transit stations adjacent to the airports.
- Joint Development: Analyze the potential for Joint Development around transit stations, along transit corridors and along the perimeter of the airport to help fund transit service and roadway improvements.
- Assessment Districts: Explore the implementation of an assessment district on the adjacent development whereby a rate would be charged based on value of airport access via transit and roadway improvements. The funds generated could be financed to provide funding for the improvements.
- Public/Private Partnerships (P3s): P3s are a viable consideration for the larger capital plan projects. P3s provide a new delivery alternative and potential private investment.

5.3 Project Refinements

While the AMAP provides planning-level cost estimates and project concepts, additional work is needed in order to complete the planning, design, and ultimately construction and implementation of these ground access improvements:

Express Bus Services

- Support Airport Authority's efforts to implement express bus service to SDIA by continuing to participate on the Authority's stakeholder working groups to refine route alignments and service plans. Support the Authority's requests for funding as needed.
- Provide AMAP analysis to the Otay-Tijuana Venture LLC on future express bus services from the Airport ITC and I-15 Corridor to the CBF.

High-Speed Train Service

- Work with CHSRA and southern California regional partners on HST connection to San Diego, including the continued analysis of Air-Rail Connectivity in order to alleviate airport demand at SDIA.
- Work with the Cities of San Diego and Escondido on HST station area planning efforts as requested.

San Diego International Airport

- Secure funding and complete the planning and design of the Airport ITC including traffic analysis, engineering and design of the initial transit station including pedestrian bridge and continue to work with agency stakeholders on this initial phase.
- Work with CHSRA and Caltrans on the engineering and final design of the HST station and Direct Connector Ramps from I-5.

Cross Border Facility

- Work with MTS and Otay-Tijuana Venture LLC to provide the necessary infrastructure to support local transit service to the facility on opening day.
- Continue to support efforts by the City of San Diego to update the Otay Mesa Community Plan, including the necessary arterial improvements to support the CBF.
- Reassess the feasibility of extending the HST network from the Airport ITC to the CBF and the potential to include the project in the Revenue Constrained 2014 RTP.

McClellan-Palomar Airport

- Work with the City of Carlsbad and County of San Diego Airports, Airport Authority, FAA, and NCTD to continue to refine arterial and transit improvements to the terminal.
- Continue to construct capital improvements on the coastal rail corridor in order to facilitate additional COASTER commuter rail service. Support NCTD efforts to increase local bus services including a shuttle connection to the airport.

Gillespie Field

- Support efforts to secure funds for construction of the Bradley Avenue/SR 67 interchange project.

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Appendix A
Public and Stakeholder Outreach

Airport Multimodal Access Plan
Public Workshop Materials

Joint public workshops on the preliminary findings of the Regional Aviation Strategic Plan and the Airport Multimodal Access Plan studies were presented to the public at four public workshops held on the following dates.

- September 14, 2010 at SDIA
- September 16, 2010 at McClellan-Palomar Airport
- September 22, 2010 at Gillespie Field
- September 30, 2010 at South County Economic Development Council
- January 26, 2011 at SDIA

Materials presented at the Public Workshops included the following:

1. San Diego International Airport Transit and Roadway Improvements
2. Cross Border Facility Transit Improvements
3. Cross Border Facility Roadway Improvements
4. McClellan-Palomar Transit and Roadway Improvements
5. Gillespie Field Transit and Roadway Improvements
6. Express Bus Service to/from SDIA and CBF
7. 2050 RTP Fact Sheet (English and Spanish) – available at *www.sandag.org*
8. 2050 RTP Comment Cards
9. General SANDAG Fact Sheet (English and Spanish) – available at *www.sandag.org*
10. AMAP Fact Sheet (included)
11. AMAP Comment Form (included)

Summary of Stakeholder Meetings

Date	Meeting Participants	Purpose
March 19, 2010	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to SANDAG Transportation Committee
April 26, 2010	• SANDAG • Airport Authority • MTS • NCTD • Caltrans District 11	– Brainstorming potential ground access improvements
June 8, 2010	• SANDAG • Airport Authority • Caltrans District 11 • MTS	– Project Initiation – Overview of ongoing RASP and 2030 RTP planning efforts as basis for AMAP study
August 18, 2010	• SANDAG • Airport Authority • Caltrans District 11 • MTS	– Overview of AMAP, RASP, and Draft 2050 RTP studies. Review of preliminary ground access improvements
September 8, 2010	• SANDAG • Airport Authority • Caltrans District 11 • MTS	– Overview of AMAP, RASP, and Draft 2050 RTP studies. Review of recommended ground access improvements
October 21, 2010	• SANDAG • City of San Diego Planning Department	– AMAP overview and discussion of potential ground access improvements within Otay Mesa Community Planning area
October 28, 2010	• SANDAG • City of Carlsbad Transportation Department	– AMAP overview and discussion of potential ground access improvements within McClellan-Palomar Airport and local roadways
November 30, 2010	• SANDAG • Airport Authority • Caltrans District 11 • MTS	– Overview of RASP modeling results and Draft 2050 RTP scenarios. AMAP overview of ground access improvements
January 5, 2011	• SANDAG • Airport Authority • Otay-Tijuana Venture LLC (CBF)	– AMAP and CBF overview and discuss potential ground access improvements in Cross Border Terminal (CBT) project area
January 11, 2011	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to Airport Authority RASP Board Committee
January 21, 2011	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to SANDAG Transportation Committee
February 16, 2011	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to City of San Diego Rules Committee
March 2, 2011	• SANDAG • Airport Authority	– Joint Update on RASP/AMAP to County of San Diego Board of Supervisors

Summary of Stakeholder Meetings

Date	Meeting Participants	Purpose
April 13, 2011	• Transit/Roadway Committee (Airport Authority)	– Review draft AMAP improvements
June 17, 2011	• SANDAG Transportation Committee	– Review draft AMAP plan and recommend public release to the Board of Directors
June 24, 2011	• SANDAG Board of Directors	– Release the draft AMAP report for a 60-day public comment period.
July 11, 2011	• SANDAG Cities/County Transportation Advisory Committee	– Overview of the draft plan, request for comments.
August 11, 2011	• SANDAG Regional Planning Technical Working Group	– Overview of the draft plan, request for comments.
August 23, 2011	• Regional Chamber of Commerce Transportation Committee	– Overview of the draft plan, request for comments.
December 19, 2011	• County Airports staff	– Overview of the specific recommendations at McClellan-Palomar Airport
January 19, 2012	• Palomar Advisory Committee	– Overview of the specific recommendations at McClellan-Palomar Airport
January 30, 2012	• County Airports staff	– Overview of the specific recommendations at Gillespie Field
March 16, 2012	• SANDAG Transportation Committee	– Overview of specific recommendations, recommend to Board they approve
March 23, 2012	• SANDAG Board of Directors	– Overview; consideration of final approval

Draft Airport Multimodal Accessibility Plan Public Comments and Responses

June 24, 2011 through August 24, 2011

Date	Individual/ Organization	Name	Comment	Response
08/15/2011	Individual	Joyce Hassell	Looking over the information, it is not clear how trains will be able to get to the airport. I like to take the Coaster but the public bus is not on time nor has room for luggage. At least while construction is going on, provide an airport shuttle so people can be encouraged to take public transportation to the airport.	The COASTER will stop at the future Airport Intermodal Transportation Center adjacent to the north side of the airport. A shuttle bus in the near term and possibly a people mover in the future will be available to connect passengers between the ITC and airport terminals.
08/11/2011	Individual	Doug McKennon	I would like to offer another proposal. Add a people mover automatic circular loop that would connect Old Town, Santa Fe Train/trolley area and all three current terminals at the airport. That way you have a feeder system coming from the north to Old Town and another feeder system coming from the south from San Diego/Mexico to Santa Fe Train/trolley area. If necessary, future terminals could easily be connected. Parking structures could be added to Old Town and the Santa Fe Train/trolley area for cars to park without taking up space at the Airport.	Dedicated systems such as your suggestion were not evaluated as part of this effort due mainly to their expense and lack of flexibility. Rather, improvements that take advantage of the region's past transportation investments were identified. For example, an Airport Intermodal Transportation Center adjacent to the existing rail corridor is identified as the rail improvement for San Diego International Airport. Service by both existing commuter and intercity rail services is an option, as are connections from local bus and future Bus Rapid Transit, as well as future high-speed passenger rail. With a robust transit hub, the need for parking would be minimized.

Draft Airport Multimodal Accessibility Plan Public Comments and Responses

June 24, 2011 through August 24, 2011

Date	Individual / Organization	Name	Comment	Response
08/12/2011	Individual	Robert G. Baker	Unless you provide for direct access for cars from Interstate 5 to the terminals I consider the airport access totally unacceptable. Every major airport I have visited has direct freeway access. Access on the city street system is far too time consuming and inefficient. Any funds available to spend on trolley or bus access should be diverted to improving automobile access to the terminals. The problem with all modes of access on the north side is that passengers have to heft luggage onto a shuttle and off the shuttle to the terminal entrance. Even carry-on that is rolled is a hassle. Presently one gets dropped off at the entrance and rolls to the selected gate. I suggest a ramp off of Pacific Highway that curves around to the main terminal without using any surface streets. Multi-modal could use the same ramp.	Direct access from Interstate 5 is included in the draft report, however, not with direct access to the existing terminals but to the Airport Intermodal Transportation Center, consistent with the San Diego County Regional Airport Authority's *Destination Lindbergh* plan.
08/18/2011	Individual	Walter Brewer	Question # 1), Do you agree the principal objective for airport ground access is to provide the large majority of passengers with the most direct fast convenient access possible to aircraft at gates? (Compatible with efficient flight operations of course.) I suggest San Diego International airport is one of the country's most convenient and fast for the large majority of passengers. There is direct access to convenient parking, and a short walk to three conveniently separated terminals. (Construction periods ignored of course.)Bus, taxis, and vans provide virtually curbside service to terminals. Question 2), Why does the Airport Multimodal Access Plan eliminate this and raise the following: a), Complicating access by all autos, taxis, and vans to a single terminal across the airport, requiring a transfer by another mode back to where terminals are now? b), Multimodal Old Town Transit Center handles about 12,000 passenger movements daily at a fraction of the proposed facilities' complexities and cost. Extrapolating from the current about 1 percent, do you project mass transit use to approach OTTC capability? c), For the modes of mass transit listed, and expected volume, why is an expensive multimodal facility and pedestrian bridge needed? d), Have you considered an express bus from OTTC to SDIA, possible with modes additions at OTTC as an alternative to the multimodal transit center? If not, why not?	We agree, however, it is a regional priority to design transportation systems in the future that offer competitive choices among all modes seeking to access a major regional facility such as SDIA. The draft AMAP builds upon past studies that call for a multimodal approach with direct access ramps from Interstate 5, an Airport Intermodal Transportation Center with access from the region's commuter, intercity, and future high-speed rail lines, and convenient bus connections. One such report, *Destination Lindbergh*, estimated as much as 13 percent mode share for public transportation. Part of the future planning for the Airport ITC will be the study of potential local bus connections as you suggest.

Draft Airport Multimodal Accessibility Plan Public Comments and Responses

June 24, 2011 through August 24, 2011

Date	Individual / Organization	Name	Comment	Response
			Question # 3), Why is the terminal for the proposed California High Speed Rail located at the airport? a), The large majority of HSR users would seem to come from more central locations in the region, and have very little interaction with air travel at SDIA. Please show HSR user projections that may say otherwise. b), Wouldn't one of several other more central locations for HSR that also have direct transfer connection so the mass transit network be more useful? Question 4), The RASP states; full build out of the ITC and north side terminal has no effect on suppressed demand which limits SDIA effectiveness by 2025 or so. As the Agency responsible for access, has a comparison been made with a Plan to provided improved access to the current expanded terminals by routing the planned ramp from Interstate-5 directly to the current terminal locations? In addition to relief of Harbor Dr. traffic, and help develop property to the south, with added parking, including rentals, this would preserve current simple convenient air passenger access. a), if so, has a cost estimate for this option been prepared? How does it compare with AMAP as proposed? b), If not, what are the quantitative reasons for rejection? c), Has a Plan like this been described and discussed with stakeholders and the public; at least as an option to AMAP? d), Recognizing insufficient land for a taxiway on the north side of the runway a small terminal might be desired if air passenger volume approaches extreme estimates... Assuming care in choosing flight schedules from the north side terminal, what numerical impact on daily flight operations would be expected? Question 5), This planning timescale reaches to 2050 at least. In that period extended versions of the automated personal "podcars" now operating at Heathrow airport in England could deliver passengers directly to airport terminals, or possibly gate areas; security needs recognized. This also would reduce need for current access modes, traffic on Harbor Dr. and in addition reduce parking needs. In multiple community locations, pod access terminals would be in high volume use areas, including those with mass transit access.	The California High-Speed Rail Authority has studied two alternative terminus locations for high-speed trains in the San Diego region - Qualcomm Stadium and the Santa Fe Depot. Engineering and service reasons are cited in the Authority's Alternatives Analysis report, released in March 2011, for why these locations should be dropped from further study. Impacts of daily flight operations were not part of the AMAP scope of work. The planning horizon for AMAP is 2030/2035, consistent with the RASP, and therefore, future technologies such as podcars were not evaluated as part of this scope of work. However, future Regional Transportation Plans, as was the case with the 2008 and 2011 RTPs, will complete an evaluation of future transportation technologies.

Draft Airport Multimodal Accessibility Plan Public Comments and Responses

June 24, 2011 through August 24, 2011

Date	Individual/ Organization	Name	Comment	Response
			a), Has a Plan to evaluate and phase in this form of access been prepared? b), If not what are reasons for not doing so? c), What additional information and authorizations are needed to install and operate at least one demonstration facility?	
08/12/2011	Individual	Leah Patti Martin	Thank you for receiving our comments regarding the Airport Multimodal Accessibility Plan. I have a suggestion that addresses two safety issues: a Lindbergh Freeway connecting 8 at Hotel Circle with the proposed transportation center on the north side of Lindbergh Field. The safety issues are avoiding commuter gridlock on 5/PCH and permitting faster evacuations in case of fires along 15. The proposed Lindbergh Freeway allows faster commute times for taxis, ambulances, and city buses by separating the airport bound traffic on 8 west from the other westbound traffic headed towards Sea World, UCSD, or Del Mar. The Sunset Cove Stage is already a security risk without PCH "carmaggedon." If some of the traffic could be directed over PCH and Washington Street, north and east, PCH and 5 wouldn't be the only escape routes. Putting on/off ramps near UCSD Medical Center would be useful. The dollar value of safety is not easily calculated. A toll could be charged those who are parking at the airport to offset some of the cost. Tolls encourage people-who-want-to-save-money to use public transportation without holding up the creation of jobs. Qualcomm Stadium will still be an attraction of some sort, even if we do build a new Charger Stadium down-town. The traffic won't diminish even with increased use of public transportation because population will increase and tourism. I hear SANDAG is considering spending $345 million SR-125. I think it would be smarter to lease the SR-125 to another private company. Let them take in the tolls, pay the fifty toll-taker salaries and pensions, and make a profit. SANDAG will still have the $345 million, the lease payments, and TransNet.	Improved connectivity from Interstate 5 to an Airport Intermodal Transportation Center adjacent to the airport is included in the draft plan. The study did not evaluate additional freeway improvements beyond those called for in the 2050 RTP, which includes I-8 operational improvements.

Appendix B
AMAP Modeling Results

AMAP Modeling Results

Background

SANDAG has produced transportation forecasts since 1981. The SANDAG forecasts are used by policymakers and the general public, as well as by public and private agencies throughout the region. For example, SANDAG uses the forecasts to develop the Regional Transportation Plan (RTP), the Regional Comprehensive Plan (RCP), and the Air Quality Conformity Plan. Local jurisdictions use the forecasts for general plan updates and capital facilities planning, including environmental impact reports (EIR), as well as for local transportation planning. The SANDAG transportation model provides an analytical platform so that different alternatives and inputs can be evaluated in an iterative and controlled environment. SANDAG uses an enhanced four-step transportation model. Four-step models have been the standard in transportation modeling since the late 1950s, and they are used by nearly every Metropolitan Planning Organization (MPO) in the United States for the development of transportation plans, corridor studies, Federal Transit Administration New Starts proposals, and air quality analyses.

For assisting in evaluating the proposed transportation improvements in the AMAP, the SANDAG transportation model was used both to identify future travel patterns and transit ridership forecasts. The report identifies the average daily traffic associated with the particular roadway facility in 2030, based in part on the aviation forecasts generated through the RASP. Table B-1 shows the initial transit ridership forecasts that were generated for both the modified local transit routes and the proposed express bus services discussed in the plan and completed for the 2050 RTP.

Table B-1
RIDERSHIP FORECASTS FOR PROPOSED BUS IMPROVEMENTS
(Average Daily Weekday Riders Before/After AMAP Improvements)

Description	*2050 (RTP)*	*2050 (RTP with AMAP)*
Express Bus to Airports[1]:		
H St Trolley Station to CBF	-	8
SDIA / Airport ITC to CBF	-	104
Escondido to CBF via I-15	-	967
Escondido to SDIA / Airport ITC via I-15	-	829
McClellan Palomar to SDIA / Airport ITC via I-5	-	409
Local Bus:		
McClellan Palomar to Poinsettia COASTER Station[2]	333	1,082
CBF to Otay Mesa and Iris Avenue Trolley[2]	2,317	9,222
BRT From El Cajon Gillespie Field Trolley Station to UTC	985	978
BRT From El Cajon to Gillespie Field Trolley Station to Sorrento Mesa	1,364	1,458

[1] $8 one way fare and $8 daily parking charge assumed.
[2] Increases in ridership not solely attributable to airport riders.
– not available; route not included prior to AMAP.

Overall, the express bus services from both the I-5 and I-15 corridors performed fairly well. The express routes from both the H Street Trolley Station and SDIA/Airport ITC to the CBF compete with other transit modes with lower fares such as the San Diego Trolley, and therefore, did not perform as well. For the modifications proposed to the local bus services, increases were forecast for the McClellan-Palomar and CBF routes, although not all of this increase can be attributable solely to airport passengers as route changes were beneficial to riders overall. The proposed modifications to the BRT services to more closely serve Gillespie Field were mixed, with ridership on one route decreasing and slightly increasing on the other. Further analysis of these changes is warranted.

While the modeling effort provided another planning tool to assist in the ground access recommendations made in the report, the San Diego County Regional Airport Authority has completed more extensive analysis of both air passenger demand volume and passenger density per acre for the express bus services proposed for service directly to SDIA. Using both sets of information, the recommended services are the I-15 to SDIA, I-5 to SDIA, and I-15 to CBF express bus routes. These corridors were included in the 2050 RTP as a result.

Context

It is important to note that SANDAG's transportation model is a regional model and as such has proved very accurate over the years in terms of overall highway travel and transit ridership forecasts. When measuring specific trips such as transit ridership to airports, there are several assumptions that SANDAG's 4-step regional model does not adequately address such as the various parking choices available around the airport, the availability of mode choices such as shuttles and taxis, and the lack of current transit options that can be used to calibrate the transit mode choice for airport trips.

Appendix C
Ground Access Alternatives/Improvements at Airports Not Carried Forward

Ground Access Alternatives/Improvements at Airports Not Carried Forward

At the early stages of the AMAP, preliminary ground access improvements were developed for the following airports that were eventually dropped from consideration from the RASP and AMAP process:

- Brown Field Municipal Airport
- Montgomery Field
- Ramona Airport

These airports were determined to have physical, operational, environmental, or other significant constraints that hindered their ability to meet the long-term needs of the region were dropped from further study in the RASP. Initial evaluation of the ground access improvements considered for these airports which was completed prior to these facilities being dropped from further study, is summarized below.

Brown Field

Several ground access improvements were considered for Brown Field Municipal Airport early in the project development. These improvements were to coincide with RASP Scenarios 1D, 4B and 5A. All improvements to Brown Field Municipal Airport were eventually dropped from the RASP due to its location, potential for public opposition and the infeasibility of precision instrument approaches. The roadway and transit improvements considered in the early part of the AMAP study process are summarized below:

Realign Proposed Rapid Bus Route 638

The proposed Rapid Bus Route was to be realigned to continue easterly on Otay Mesa Road as opposed to traveling south on Heritage Road. There would be a stop along Otay Mesa Road with a pedestrian overcrossing providing access to Brown Field Municipal Airport.

Increase the Service on local MTS Route 905

Increasing the service frequency on the local bus route 905 was evaluated as a way to provide more frequent service between a proposed LRT station near SR 125 and Otay Mesa Road and the terminal.

Construct Additional Entrance

An additional entrance to Brown Field Municipal Airport was considered at Britannia Boulevard. This additional entrance would provide more direct access to and from Brown Field. It also would be consistent with the Brown Field Airport Master Plan.

Widening of Heritage Road and La Media Road

Both Heritage Road and La Media Road were to be widened from 2 to 4 lanes between Otay Mesa Road and Pogo Row. These roadway improvements would provide better access to the proposed industrial development to the north of Brown Field Municipal Airport.

Improvements to Pogo Row

Pogo Row which runs east and west just north of Brown Field Municipal Airport was to be realigned and extended to connect Heritage Road and La Media Road. This widening was proposed to improve circulation around Brown Field Municipal Airport and provide access to the proposed improvements industrial to the north of Brown Field Municipal Airport.

Montgomery Field

Early in the development of the RASP and the AMAP, construction of northbound ramps along Aero Drive at either SR 163 or I-805 was considered. As with other airports in the San Diego region, runway length, the ability to lengthen the runways, as well as political and or public opposition, restrict commercial use of Montgomery Field. Additionally, the capacity for general aviation use also surpasses demand. For these reasons no major improvements were identified at Montgomery Field that warranted ground access improvements, therefore the identified ground access improvements were dropped from further study.

Ramona Airport

Early in the development of both the RASP and AMAP, ground access improvements discussed for the Ramona Airport that included both roadway and transit access changes. Ramona Airport is primarily reached via an undivided, two-lane road (Montecito) – the two ground access improvements under consideration were as follows:

- Widen Montecito Road to four lanes
- Extend local rural bus service from Ramona Station to the Ramona Airport.

The Ramona Airport is not located near a population/economic base to provide commercial service. Additionally, the general aviation capacity exceeds the demand. For these reasons, no significant improvements to the Ramona Airport were identified in the RASP. Similarly, after review of the RASP and

consultation with the AMAP stakeholder working group, no ground access improvements were carried forward in the AMAP.

Appendix D
Preliminary Capital and Operating Cost Estimates and Phasing

Preliminary Capital and Operating Cost Estimates and Project Phasing

Conceptual, planning level cost estimates for both capital and operating costs were developed to help inform and evaluate the various AMAP roadway and transit ground access improvements. The following discussion provides information on the development of costs and assumptions.

Capital Cost Estimates

Preliminary, planning-level capital costs estimates for the various ground access improvements were developed using costs from similar regional roadway and transit projects, including the following:

SANDAG Green Line Extension: The costs for demolition and reconstruction of the station platforms and shelters from the Gaslamp Quarter Trolley station reconstruction were used to determine the costs for the Gillespie Field Trolley Station.

SANDAG SR 15 Mid-City BRT: This project includes freeway widening, ramp improvements and BRT stations along SR 15. Unit costs from this project were used to determine conceptual level costs for BRT stations, ramp improvements and pedestrian crossings for AMAP efforts.

SANDAG SR 15 Mira Mesa DAR and Transit Station: This project includes the construction of direct access ramps, arterial widening and a new transit station with parking. Unit costs from this project were used to help determine AMAP proposed transit and arterial improvement costs.

All capital costs include a 35 percent contingency to account for the limited level of analysis and detail for these planning level estimates. Planning level cost estimate sheets for the proposed projects are provided immediately following the cost estimate summary table for each airport.

Transit Costs:

Preliminary-level transit operating costs were estimated using a current cost per mile price and anticipated route distance.

Direct Service Cost Estimate Assumptions:

- 30 minute headways.
    - Intermodal Transportation Center service between 4:30AM and 1:00AM.
    - Cross Border Facility service provided 24 hours per day. 60 minute headways between 12:00AM and 4:00AM.
- Based on maximum service (serving 100% of aircraft seats). This represents bus service during all currently scheduled arrival and departure flights.
- Operating cost per mile based on MTS FY11 rate.

- Average travel time based on an estimated 35 MPH average speed.
- 5 minute turnaround times at each stop (minimum).
- Buses purchased.
- One extra bus per route.

Local Transit Service Cost Estimate Assumptions:

- Operational costs only include additional distance added to the proposed route.
- No additional buses needed.
- Operational cost per mile based on MTS FY11 rate.
    - Route 445
        - 20 minute headways during peak hours.
        - 60 minute headways during off-peak hours.
        - No nighttime service.
    - Route 661
        - 10 minute headways during peak hours.
        - 10 minute headways during off-peak hours.
        - 30 minute headways during nighttime service.

Organization of Cost Estimate Information

The following cost data covering the AMAP capital and operational costs are included in this appendix.

- *AMAP Project Costs*: Summarizes the capital and operational costs for ground access improvements at each airport facility.
- *Preliminary Cost Summary Sheets*: Individual cost data sheets for roadway ground access improvements at the CBT, the McClellan-Palomar Airport and Gillespie Field.
- *AMAP Estimated Express Bus Service Costs*: Summarizes the conceptual operating costs for the proposed express bus service routes.
- *AMAP Estimated Bus Route Modifications Costs*: Summarizes the added conceptual operating costs for the proposed modified bus routes 445 and 661.

AMAP Project Costs (2010 Dollars)

San Diego International Airport Transit and Roadway Improvements

PROJECT	DESCRIPTION	Major Features	COST ($ millions)	ANNUAL TRANSIT OPERATION COST ($ millions)	RTP Phase [1]	APPLICABLE RASP SCENARIO
1	Airport Intermodal Transportation Center with Pedestrian Bridge					
	1) Opening Day Scenario	Intermodal Transportation Center with Commuter Rail, BRT, local bus and roadway access to SAN	$164.0 [2]		2020	1A and 3B
	2) High Speed Train	Addition of High Speed Train facilities & services	TBD	TBD	2035	1A and 3B
2	Trolley Rail Grade Separation	LRT Grade Separation from just north of Noelle St to the Middletown Trolley Station	$551.6 [2]		2035	1A and 3B
3	Heavy Rail Grade Separation	Rail grade separation to accommodate both LRT and heavy rail from Witherby St to Laurel St	$850.0 [2]		2035	1A and 3B
4	Conceptual I-5 Direct Access Ramps	Direct access ramps from northbound and southbound Interstate 5	TBD		2035	1A and 3B

1. 2050 Regional Transportation Plan(RTP) Revenue Phases. "2020" and "2035" are phases of the draft constrained plan. Improvements in the draft unconstrained plan are labeled accordingly.
2. Costs from SANDAG AIRPORT INTERMODAL TRANSIT CENTER (ITC)-PHASE 1 FINAL REPORT 2010.
3. Includes 35% construction contingency cost.

AMAP Project Costs (2010 Dollars)

Cross Border Facility (CBF) Transit and Roadway Improvements

PROJECT	DESCRIPTION	Major Features	COST ($ millions)	ANNUAL TRANSIT OPERATION COST ($ millions)	RTP Phase [1]	APPLICABLE RASP SCENARIO
1	Increase SR 905/Britannia Interchange Capacity	Add a single lane to both westbound ramps and the eastbound entrance ramp, construct retaining walls along widened ramps	$9.3 [4]		2035	2B and 2C
2	Widening of Siempre Viva Road from 4 to 6 lanes and construction of new roadway between CBF and La Media Rd [2]	Widening of Siempre Viva Road, construction of new roadway, signal modifications at CBF entrance	$5.2 [4]		2035	2B and 2C
3	Widening of Britannia from SR 905 to Siempre Viva Rd [2]	Widening of Britannia from 4 to 6 lanes	$2.5 [4]		2035	2B and 2C
4	Modify proposed local bus route (RTP Route 661)	Modify local bus route to provide access to the CBF (10 minute peak and off peak headway, 30 minute night service headway)	$0.3 [4]	$0.1	2020	2B and 2C
5,6	High Speed Train (HST) service with CBF station	HST with commuter rail overlay along I-5 Corridor frc	$3,557.0 [3]		Unconstrained	2B and 2C

1. 2050 Regional Transportation Plan(RTP) Revenue Phases. "2020" and "2035" are phases of the draft constrained plan. Improvements in the draft unconstrained plan are labeled accordingly.

2. OTAY MESA PUBLIC FACILITIES FINANCING PLAN 2007

3. SAN DIEGO HIGH-SPEED TRAIN (HST) FEASIBILITY STUDIES, SANDAG 2010

4. Includes 35% construction contingency cost

AMAP Project Costs (2010 Dollars)

McClellan-Palomar Airport Transit and Roadway Improvements

PROJECT	DESCRIPTION	Major Features	COST ($ millions)	ANNUAL TRANSIT OPERATION COST (millions)	RTP Phase [1]	APPLICABLE RASP SCENARIO[4]
1	Widen Palomar Airport Road from 6 to 8 thru lanes between I-5 and Hidden Valley Rd.	Construct 1 thru lane in each direction and maintain current turn and bicycle lane configuration, construct retaining walls along Palomar Airport Rd	$15.7 [2]		2020	1C and 4A
2	Additional airport access at Owens Avenue and improvements to the Owens Ave/Camino Vida Roble intersection.	Construct new access road along existing parking, widen Owens Ave and Camino Vida Roble to accommodate turn lanes, signalize Owens Ave/Camino Vida Roble intersection and construct retaining walls	$3.5 [2]		2020	1C and 4A
3	Modification of Route 445 to provide service to the terminal and the Carlsbad Poinsettia Train Station.	Operational modifications to future Route 445 (20 minute peak headway , 60 minute off-peak headway, no night service)	$0.25 [2]	$0.23 [3]	2020	1C and 4A

1. 2050 Regional Transportatin Plan(RTP) Revenue Phases. "2020" and "2035" are phases of the draft constrained plan. Improvements in the draft unconstrained plan are labeled accordingly.
2. Includes 35% construction contingency cost
3. Additional cost for route modification
4. AMAP improvements based on RASP scenario 1C.

AMAP Project Costs (2010 Dollars)

Gillespie Field Transit and Roadway Improvements

PROJECT	DESCRIPTION	Major Features	COST ($ millions)	ANNUAL TRANSIT OPERATION COST (millions)	RTP Phase [1]	APPLICABLE RASP SCENARIO
1	Relocate Trolley Station	New trolley station across from airport entrance along Marshall Ave to replace the existing Gillespie Field Trolley Station, parking lot and pedestrian bridge over Forrester Creek Channel	$6.4 [3]		Unconstrained	4C
2	Bus Rapid Transit (BRT) Station	BRT Station with access to future trolley station	$0.6 [3]		Unconstrained	4C
3	Intersection Improvements	Signalization of the airport entrance along Marshall Avenue	$0.2 [3]		2035	4C
4	Modification of proposed BRT Routes [2]	Divert proposed BRT (RTP Routes 90, 870 and/or 890) from Cuyamaca St to travel along Marshall Ave between W. Bradley Ave and Weld Blvd.			Unconstrained	4C
5	Modification of Bradley Ave/SR 67 Interchange	Widen the Bradley Overcrossing from 2 to 6 lanes (including turn lanes), widen Bradley Ave from 2 thru lanes to 4 thru lanes from Graves to Mollison Ave, reconstruct southbound and northbound ramps	$30 [4]		2020	4C

1. 2050 Regional Transportation Plan(RTP) Revenue Phases. "2020" and "2035" are phases of the draft constrained plan. Improvements in the draft unconstrained plan are labeled accordingly.

2. No net, capital or operational cost increase.

3. Includes 35% construction contingency cost

4. 2007 Bradley Ave/SR 67 Project Report

Widen Britannia Blvd to 6 Lanes
Roadway Improvements for CBF access
Preliminary Design - Cost Opinion Summary

2010 Dollars

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY		UNIT PRICE	TOTAL
1	**PAVEMENT REMOVAL**	sq.yd	2,400		$7.63	$19,000
2	**PAVEMENT**					
	Mainline	sq.yd			$177.00	$0
	Ramp	sq.yd			$53.0	$0
	Arterial	sq.yd	17100		$37.0	$633,000
					Subtotal Pavement Costs	$652,000
3	**EARTHWORK**	L.S.	12	% of Items 1-2	N/A	$79,000
4	**DRAINAGE**	L.S.	15	% of Items 1-2	N/A	$98,000
5	**EROSION CONTROL**	L.S.	2	% of Items 1-2	N/A	$14,000
6	**TRAFFIC CONTROL**	L.S.	25	% of Items 1-2	N/A	$163,000
7	**LIGHTING**	L.S.	6	% of Items 1-2	N/A	$40,000
8	**SIGNING/MARKINGS**	L.S.	6	% of Items 1-2	N/A	$40,000
9	**TYPICAL UTILITIES**	L.S.	15	% of Items 1-2	N/A	$98,000
10	**INCIDENTAL**	L.S.	20	% of Items 1-2	N/A	$131,000
11	**LANDSCAPING**	L.S.	10	% of Items 1-2	N/A	$66,000
12	**BICYCLE FACILITIES**	L.S.	2	% of Items 1-2	N/A	$14,000
13	**TRAFFIC SIGNALS**	E.A.	0		$200,000	$0
TOTAL ROADWAY ITEMS COST (Items 1-13)						**$1,395,000**
14	**RETAINING WALL**					
	MSE	sq. ft			$133.00	$0
	Tangent Pile	sq. ft			$239.00	$0
					Subtotal Retaining Wall	$0
15	**RETAINING WALL INCIDENTALS**	L.S.	15	% of Retaining Wall	N/A	$0
TOTAL RETAINING WALL COSTS (Items 14-15)						**$0**
TOTAL ROADWAY & RETAINING WALL COSTS (Items 1-15)						**$1,395,000**
16	**STRUCTURES**					
	Bridge Removal	sq. ft			$27.00	$0
	New Bridge	sq. ft			$212.00	$0
	Rehabilitation	sq. ft			$106.00	$0
	Bridge Widening	sq. ft			$212.00	$0
					Subtotal Structure Costs	$0
17	**STRUCTURAL INCIDENTAL**	L.S.	15	% of Structures	N/A	$0
TOTAL STRUCTURE COSTS (Items 16-17)						**$0**
18	**RAILROAD RELOCATION**	MILE		0	$2,120,000.00	$0
19	**CONTINGENCY**	L.S.	35%	% of items 1-18	N/A	$ 489,000
TOTAL CONSTRUCTION COSTS (Items 1-19)						**$1,884,000**
20	**ENGINEERING**					
	Preliminary Design & PSE	L.S.	12	% Items 1-19	N/A	$227,000
	Environmental Mitigation	L.S.	10	% Items 1-19	N/A	$189,000
	Final Engineering	L.S.	10	% Items 1-19	N/A	$189,000
TOTAL ENGINEERING COSTS						**$605,000**
TOTAL PROJECT COST						**$ 2,500,000**

Widen Siempre Viva Rd to 6 Lanes
Roadway Improvements for CBF access
Preliminary Design - Cost Opinion Summary

2010 Dollars

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY		UNIT PRICE	TOTAL
1	**PAVEMENT REMOVAL**	sq.yd			$7.63	$0
2	**PAVEMENT**					
	Mainline	sq.yd			$177.00	$0
	Ramp	sq.yd			$53.0	$0
	Arterial	sq.yd	34000		$37.0	$1,258,000
					Subtotal Pavement Costs	$1,258,000
3	**EARTHWORK**	L.S.	12	% of Items 1-2	N/A	$151,000
4	**DRAINAGE**	L.S.	15	% of Items 1-2	N/A	$189,000
5	**EROSION CONTROL**	L.S.	2	% of Items 1-2	N/A	$26,000
6	**TRAFFIC CONTROL**	L.S.	25	% of Items 1-2	N/A	$315,000
7	**LIGHTING**	L.S.	6	% of Items 1-2	N/A	$76,000
8	**SIGNING/MARKINGS**	L.S.	6	% of Items 1-2	N/A	$76,000
9	**TYPICAL UTILITIES**	L.S.	15	% of Items 1-2	N/A	$189,000
10	**INCIDENTAL**	L.S.	20	% of Items 1-2	N/A	$252,000
11	**LANDSCAPING**	L.S.	10	% of Items 1-2	N/A	$126,000
12	**BICYCLE FACILITIES**	L.S.	2	% of Items 1-2	N/A	$26,000
13	**TRAFFIC SIGNALS**	E.A.	1		$200,000	$200,000
TOTAL ROADWAY ITEMS COST (Items 1-13)						**$2,884,000**
14	**RETAINING WALL**					
	MSE	sq. ft	0		$133.00	$0
	Tangent Pile	sq. ft			$239.00	$0
					Subtotal Retaining Wall	$0
15	**RETAINING WALL INCIDENTALS**	L.S.	15	% of Retaining Wall	N/A	$0
TOTAL RETAINING WALL COSTS (Items 14-15)						**$0**
TOTAL ROADWAY & RETAINING WALLCOSTS (Items 1-15)						**$2,884,000**
16	**STRUCTURES**					
	Bridge Removal	sq. ft			$27.00	$0
	New Bridge	sq. ft			$212.00	$0
	Bridge Rehabilitation	sq. ft			$106.00	$0
	Bridge Widening	sq. ft			$212.00	$0
					Subtotal Structure Costs	$0
17	**STRUCTURAL INCIDENTAL**	L.S.	15	% of Structures	N/A	$0
TOTAL STRUCTURE COSTS (Items 16-17)						**$0**
18	**RAILROAD RELOCATION**	MILE			$2,120,000.00	$0
19	**CONTINGENCY**	L.S.	35%	% of items 1-18	N/A	$ 1,010,000
TOTAL CONSTRUCTION COSTS (Items 1-19)						**$3,894,000**
20	**ENGINEERING**					
	Preliminary Design & PSE	L.S.	12	% Items 1-19	N/A	$468,000
	Environmental Mitigation	L.S.	10	% Items 1-19	N/A	$390,000
	Final Engineering	L.S.	10	% Items 1-19	N/A	$390,000
TOTAL ENGINEERING COSTS						**$1,248,000**
TOTAL PROJECT COST						**$5,200,000**

Increase Capacity of Ramps at SR 905/Britannia Blvd Interchange
Widening of both EB ramps and the WB entrance ramp
Preliminary Design - Cost Opinion Summary

2010 Dollars

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY		UNIT PRICE	TOTAL
1	**PAVEMENT REMOVAL**	sq.yd	3,600		$7.63	$28,000
2	**PAVEMENT**					$0
	Mainline	sq.yd			$177.00	$0
	Ramp	sq.yd	5,400		$53.0	$287,000
	Arterial	sq.yd			$37.0	$0
					Subtotal Pavement Costs	$315,000
3	**EARTHWORK**	L.S.	12	% of Items 1-2	N/A	$38,000
4	**DRAINAGE**	L.S.	15	% of Items 1-2	N/A	$48,000
5	**EROSION CONTROL**	L.S.	2	% of Items 1-2	N/A	$7,000
6	**TRAFFIC CONTROL**	L.S.	25	% of Items 1-2	N/A	$79,000
7	**LIGHTING**	L.S.	6	% of Items 1-2	N/A	$19,000
8	**SIGNING/MARKINGS**	L.S.	6	% of Items 1-2	N/A	$19,000
9	**TYPICAL UTILITIES**	L.S.	15	% of Items 1-2	N/A	$48,000
10	**INCIDENTAL**	L.S.	20	% of Items 1-2	N/A	$63,000
11	**LANDSCAPING**	L.S.	10	% of Items 1-2	N/A	$32,000
12	**BICYCLE FACILITIES**	L.S.	2	% of Items 1-2	N/A	$7,000
13	**TRAFFIC SIGNALS**	E.A.	0		$200,000	$0
TOTAL ROADWAY ITEMS COST (Items 1-13)						**$675,000**
14	**RETAINING WALL**					
	MSE	sq. ft	0		$133.00	$0
	Caltrans Standard Ret Wall (Spread Footing)	LF	5,240		$750.00	$3,930,000
					Subtotal Retaining Wall	$3,930,000
15	**RETAINING WALL INCIDENTALS**	L.S.	15	% of Retaining Wall	N/A	$590,000
TOTAL RETAINING WALL COSTS (Items 14-15)						**$4,520,000**
TOTAL ROADWAY & RETAINING WALLCOSTS (Items 1-15)						**$5,195,000**
16	**STRUCTURES**					
	Bridge Removal	sq. ft			$27.00	$0
	New Bridge	sq. ft			$212.00	$0
	Bridge Rehabilitation	sq. ft			$106.00	$0
	Bridge Widening	sq. ft			$212.00	$0
					Subtotal Structure Costs	$0
17	**STRUCTURAL INCIDENTAL**	L.S.	15	% of Structures	N/A	$0
TOTAL STRUCTURE COSTS (Items 16-17)						**$0**
18	**RAILROAD RELOCATION**	MILE			$2,120,000.00	$0
19	**CONTINGENCY**	L.S.	35%	% of items 1-18	N/A	$ 1,819,000
TOTAL CONSTRUCTION COSTS (Items 1-19)						**$7,014,000**
20	**ENGINEERING**					
	Preliminary Design & PSE	L.S.	12	% Items 1-19	N/A	$842,000
	Environmental Mitigation	L.S.	10	% Items 1-19	N/A	$702,000
	Final Engineering	L.S.	10	% Items 1-19	N/A	$702,000
TOTAL ENGINEERING COSTS						**$2,246,000**
TOTAL PROJECT COST						**$9,300,000**

Palomar Airport Road Widening
Add 1 lane in each direction from I-5 to Hidden Valley Road
Preliminary Design - Cost Opinion Summary

2010 Dollars

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY		UNIT PRICE	TOTAL
1	**PAVEMENT REMOVAL**	sq.yd	14,200		$7.63	$109,000
2	**PAVEMENT**					
	Mainline	sq.yd			$177.00	$0
	Ramp	sq.yd	0		$53.0	$0
	Arterial	sq.yd	33,800		$37.0	$1,251,000
					Subtotal Pavement Costs	$1,360,000
3	**EARTHWORK**	L.S.	12	% of Items 1-2	N/A	$164,000
4	**DRAINAGE**	L.S.	15	% of Items 1-2	N/A	$204,000
5	**EROSION CONTROL**	L.S.	2	% of Items 1-2	N/A	$28,000
6	**TRAFFIC CONTROL**	L.S.	25	% of Items 1-2	N/A	$340,000
7	**LIGHTING**	L.S.	6	% of Items 1-2	N/A	$82,000
8	**SIGNING/MARKINGS**	L.S.	6	% of Items 1-2	N/A	$82,000
9	**TYPICAL UTILITIES**	L.S.	15	% of Items 1-2	N/A	$204,000
10	**INCIDENTAL**	L.S.	20	% of Items 1-2	N/A	$272,000
11	**LANDSCAPING**	L.S.	10	% of Items 1-2	N/A	$136,000
12	**BICYCLE FACILITIES**	L.S.	2	% of Items 1-2	N/A	$28,000
13	**TRAFFIC SIGNALS**	E.A.	0		$200,000	$0
TOTAL ROADWAY ITEMS COST (Items 1-13)						**$2,900,000**
14	**RETAINING WALL**					
	MSE	sq. ft	0		$133.00	$0
	Caltrans Standard Ret Wall (Spread Footing)	LF	6,795		$750.00	$5,097,000
					Subtotal Retaining Wall	$5,097,000
15	**RETAINING WALL INCIDENTALS**	L.S.	15	% of Retaining Wall	N/A	$765,000
TOTAL RETAINING WALL COSTS (Items 14-15)						**$5,862,000**
TOTAL ROADWAY & RETAINING WALL COSTS (Items 1-15)						**$8,762,000**
16	**STRUCTURES**					
	Bridge Removal	sq. ft			$27.00	$0
	New Bridge	sq. ft			$212.00	$0
	Rehabilitation	sq. ft			$106.00	$0
	Bridge Widening	sq. ft			$212.00	$0
					Subtotal Structure Costs	$0
17	**STRUCTURAL INCIDENTAL**	L.S.	15	% of Structures	N/A	$0
TOTAL STRUCTURE COSTS (Items 16-17)						**$0**
18	**RAILROAD RELOCATION**	MILE		0	$2,000,000.00	$0
19	**CONTINGENCY**	L.S.	35	% of items 1-18	N/A	$ 3,067,000
TOTAL CONSTRUCTION COSTS (Items 1-19)						**$11,829,000**
20	**ENGINEERING**					
	Preliminary Design & PSE	L.S.	12	% Items 1-19	N/A	$1,420,000
	Environmental Mitigation	L.S.	10	% Items 1-19	N/A	$1,183,000
	Final Engineering	L.S.	10	% Items 1-19	N/A	$1,183,000
TOTAL ENGINEERING COSTS						**$3,786,000**
TOTAL PROJECT COST						**$ 15,700,000**

Aircraft road widening and connection with Owens Ave
New access to McClellan-Palomar airport terminal from Owens Ave
Preliminary Design - Cost Opinion Summary

2010 Dollars

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	**PAVEMENT REMOVAL**	sq.yd	10,300	$7.63	$79,000
2	**PAVEMENT**				
	Mainline	sq.yd		$177.00	$0
	Ramp	sq.yd		$53.0	$0
	Arterial	sq.yd	13,000	$37.0	$481,000
				Subtotal Pavement Costs	$560,000
3	**EARTHWORK**	L.S.	12 % of Items 1-2	N/A	$68,000
4	**DRAINAGE**	L.S.	15 % of Items 1-2	N/A	$84,000
5	**EROSION CONTROL**	L.S.	2 % of Items 1-2	N/A	$12,000
6	**TRAFFIC CONTROL**	L.S.	25 % of Items 1-2	N/A	$140,000
7	**LIGHTING**	L.S.	6 % of Items 1-2	N/A	$34,000
8	**SIGNING/MARKINGS**	L.S.	6 % of Items 1-2	N/A	$34,000
9	**TYPICAL UTILITIES**	L.S.	15 % of Items 1-2	N/A	$84,000
10	**INCIDENTAL**	L.S.	20 % of Items 1-2	N/A	$112,000
11	**LANDSCAPING**	L.S.	10 % of Items 1-2	N/A	$56,000
12	**BICYCLE FACILITIES**	L.S.	2 % of Items 1-2	N/A	$12,000
13	**TRAFFIC SIGNALS**	E.A.	1	$200,000	$200,000
TOTAL ROADWAY ITEMS COST (Items 1-13)					**$1,396,000**
14	**RETAINING WALL**				
	MSE	sq. ft	0	$133.00	$0
	Caltrans Standard Ret Wall (Spread Footing)	LF	560	$750.00	$420,000
				Subtotal Retaining Wall	$420,000
15	**RETAINING WALL INCIDENTALS**	L.S.	15 % of Retaining Wall	N/A	$63,000
TOTAL RETAINING WALL COSTS (Items 14-15)					**$483,000**
TOTAL ROADWAY & RETAINING WALLCOSTS (Items 1-15)					**$1,879,000**
16	**STRUCTURES**				
	Bus Shelter	E.A.	1	$50,000.00	$50,000
	New Bridge	sq. ft		$212.00	$0
	Bridge Rehabilitation	sq. ft		$106.00	$0
	Bridge Widening	sq. ft		$212.00	$0
				Subtotal Structure Costs	$50,000
17	**STRUCTURAL INCIDENTAL**	L.S.	15 % of Structures	N/A	$8,000
TOTAL STRUCTURE COSTS (Items 16-17)					**$58,000**
18	**RAILROAD RELOCATION**	MILE		$2,000,000.00	$0
19	**CONTINGENCY**	L.S.	35 % of items 1-18	N/A	$ 678,000
TOTAL CONSTRUCTION COSTS (Items 1-19)					**$2,615,000**
20	**ENGINEERING**				
	Preliminary Design & PSE	L.S.	12 % Items 1-19	N/A	$314,000
	Environmental Mitigation	L.S.	10 % Items 1-19	N/A	$262,000
	Final Engineering	L.S.	10 % Items 1-19	N/A	$262,000
TOTAL ENGINEERING COSTS					**$838,000**
TOTAL PROJECT COST					**$ 3,500,000**

Gillespie Field
New Trolley Station and Parking
Preliminary Design - Cost Opinion Summary

2010 Dollars

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY		UNIT PRICE	TOTAL
1	**PAVEMENT REMOVAL**	sq.yd	10,100		$7.63	$78,000
2	**PAVEMENT**					
	Mainline	sq.yd			$177.00	$0
	Ramp	sq.yd			$53.0	$0
	Arterial	sq.yd	9400		$37.0	$348,000
					Subtotal Pavement Costs	$426,000
3	**EARTHWORK**	L.S.	12	% of Items 1-2	N/A	$52,000
4	**DRAINAGE**	L.S.	15	% of Items 1-2	N/A	$64,000
5	**EROSION CONTROL**	L.S.	2	% of Items 1-2	N/A	$9,000
6	**TRAFFIC CONTROL**	L.S.	25	% of Items 1-2	N/A	$107,000
7	**LIGHTING**	L.S.	6	% of Items 1-2	N/A	$26,000
8	**SIGNING/MARKINGS**	L.S.	6	% of Items 1-2	N/A	$26,000
9	**TYPICAL UTILITIES**	L.S.	15	% of Items 1-2	N/A	$64,000
10	**INCIDENTAL**	L.S.	20	% of Items 1-2	N/A	$86,000
11	**LANDSCAPING**	L.S.	10	% of Items 1-2	N/A	$43,000
12	**BICYCLE FACILITIES**	L.S.	2	% of Items 1-2	N/A	$9,000
13	**TRAFFIC SIGNALS**	E.A.	1		$200,000	$200,000
TOTAL ROADWAY ITEMS COST (Items 1-13)						**$1,112,000**
14	**RETAINING WALL**					
	MSE	sq. ft			$133.00	$0
	Tangent Pile	sq. ft			$239.00	$0
					Subtotal Retaining Wall	$0
15	**RETAINING WALL INCIDENTALS**	L.S.	15	% of Retaining Wall	N/A	$0
TOTAL RETAINING WALL COSTS (Items 14-15)						**$0**
TOTAL ROADWAY & RETAINING WALL COSTS (Items 1-15)						**$1,112,000**
16	**STRUCTURES**					
	Bridge Removal	sq. ft			$27.00	$0
	New Bridge	sq. ft	1,722		$223.00	$385,000
	Rehabilitation	sq. ft			$106.00	$0
	Bridge Widening	sq. ft			$212.00	$0
					Subtotal Structure Costs	$385,000
17	**STRUCTURAL INCIDENTAL**	L.S.	15	% of Structures	N/A	$58,000
TOTAL STRUCTURE COSTS (Items 16-17)						**$443,000**
18	**RAILROAD RELOCATION**	MILE		0	$2,120,000.00	$0
19	**NEW TROLLEY STATION**	LS	0	1	$2,000,000.00	$2,000,000
20	**CONTINGENCY**	L.S.	35%	% of items 1-18	N/A	$ 1,245,000
TOTAL CONSTRUCTION COSTS (Items 1-19)						**$4,800,000**
21	**ENGINEERING**					
	Preliminary Design & PSE	L.S.	12	% Items 1-19	N/A	$576,000
	Environmental Mitigation	L.S.	10	% Items 1-19	N/A	$480,000
	Final Engineering	L.S.	10	% Items 1-19	N/A	$480,000
TOTAL ENGINEERING COSTS						**$1,536,000**
TOTAL PROJECT COST						**$ 6,400,000**

Gillespie Field
BRT along Marshall Ave
Preliminary Design - Cost Opinion Summary

2010 Dollars

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY		UNIT PRICE	TOTAL
1	**PAVEMENT REMOVAL**	sq.yd	200		$7.63	$2,000
2	**PAVEMENT**					
	Mainline	sq.yd			$177.00	$0
	Ramp	sq.yd			$53.0	$0
	Arterial	sq.yd	700		$37.0	$26,000
					Subtotal Pavement Costs	$28,000
3	**EARTHWORK**	L.S.	12	% of Items 1-2	N/A	$4,000
4	**DRAINAGE**	L.S.	15	% of Items 1-2	N/A	$5,000
5	**EROSION CONTROL**	L.S.	2	% of Items 1-2	N/A	$1,000
6	**TRAFFIC CONTROL**	L.S.	25	% of Items 1-2	N/A	$7,000
7	**LIGHTING**	L.S.	6	% of Items 1-2	N/A	$2,000
8	**SIGNING/MARKINGS**	L.S.	6	% of Items 1-2	N/A	$2,000
9	**TYPICAL UTILITIES**	L.S.	15	% of Items 1-2	N/A	$5,000
10	**INCIDENTAL**	L.S.	20	% of Items 1-2	N/A	$6,000
11	**LANDSCAPING**	L.S.	10	% of Items 1-2	N/A	$3,000
12	**BICYCLE FACILITIES**	L.S.	2	% of Items 1-2	N/A	$1,000
13	**TRAFFIC SIGNALS**	E.A.	1		$200,000	$200,000
TOTAL ROADWAY ITEMS COST (Items 1-13)						**$264,000**
14	**RETAINING WALL**					
	MSE	sq. ft			$133.00	$0
	Tangent Pile	sq. ft			$239.00	$0
					Subtotal Retaining Wall	$0
15	**RETAINING WALL INCIDENTALS**	L.S.	15	% of Retaining Wall	N/A	$0
TOTAL RETAINING WALL COSTS (Items 14-15)						**$0**
TOTAL ROADWAY & RETAINING WALL COSTS (Items 1-15)						**$264,000**
16	**STRUCTURES**					
	Bridge Removal	sq. ft			$27.00	$0
	New Bridge	sq. ft	0		$212.00	$0
	Rehabilitation	sq. ft	0		$106.00	$0
	Bus Shelters	E.A.	2		$25,000.00	$50,000
					Subtotal Structure Costs	$50,000
17	**STRUCTURAL INCIDENTAL**	L.S.	15	% of Structures	N/A	$8,000
TOTAL STRUCTURE COSTS (Items 16-17)						**$58,000**
18	**RAILROAD RELOCATION**	MILE		0	$2,120,000.00	$0
19	**NEW TROLLEY STATION**	LS	0	0	$2,000,000.00	$0
20	**CONTINGENCY**	L.S.	35%	% of items 1-18	N/A	112700
TOTAL CONSTRUCTION COSTS (Items 1-19)						**$434,700**
21	**ENGINEERING**					
	Preliminary Design & PSE	L.S.	12	% Items 1-19	N/A	$53,000
	Environmental Mitigation	L.S.	10	% Items 1-19	N/A	$44,000
	Final Engineering	L.S.	10	% Items 1-19	N/A	$44,000
TOTAL ENGINEERING COSTS						**$141,000**
TOTAL PROJECT COST						**$ 600,000**

AMAP Estimated Express Bus Service Costs (2011 Dollars)

San Diego International Airport Express Bus Service

Routes	Distance	Average Travel Time	Bus Hours of Operation		Trips Per Day (One-Way)	Operating Cost (Per Mile)	Bus Operating Cost (Per Year)	Number of Buses	Bus Purchase Price (EA)	Initial Bus Capital Cost[1]
I-5 - McClellan-Palomar and SR 56/Manchester Park-n-Ride	33	62	3:50 AM	1:40 AM	80	$5.66	**$5,500,000**	7	$800,000	**$7,560,000**
I-15 - Escondido and Mira Mesa Transit Stations	32	60	3:00 AM	2:00 AM	80	$5.66	**$5,300,000**	7	$800,000	**$7,560,000**
Cross Border Facility	23	39	3:50 AM	1:40 AM	80	$5.66	**$3,900,000**	5	$800,000	**$5,400,000**

1. Includes 35% contingency.

Cross Border Facility Express Bus Service

Routes	Distance	Average Travel Time	Bus Hours of Operation	Trips Per Day (One-Way)	Operating Cost (Per Mile)	Bus Operating Cost (Per Year)	Number of Buses	Bus Purchase Price (EA)	Initial Bus Capital Cost[1]
I-15 Route - Escondido and Mira Mesa Transit Stations	47	86	24 Hour Service	88	$5.66	**$8,600,000**	8	$800,000	**$8,640,000**
H Street Trolley Station	12	21	24 Hour Service	88	$5.66	**$2,200,000**	4	$800,000	**$4,320,000**

1. Includes 35% contingency.

AMAP Estimated Bus Route Modification Costs

Modification of Proposed Bus Route 445 and 661 Estimated Operational Costs

Routes	Additional Distance	Average Travel Time	Peak Hour Trips (6-9AM and 3-6PM)	Off-Peak Hour Trips (9AM-3PM and 6-10PM)	Nighttime Trips (10PM-6AM)	Total Trips Per Day (one-way)	Operating Cost (Per Mile)	Bus Operating Cost (Per Year)
Modification of Route 445	1	7	36	20	0	56	$5.60	**$120,000**
Modification of Proposed RTP Route 661	0.25	3	72	40	32	144	$5.60	**$80,000**