

## 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

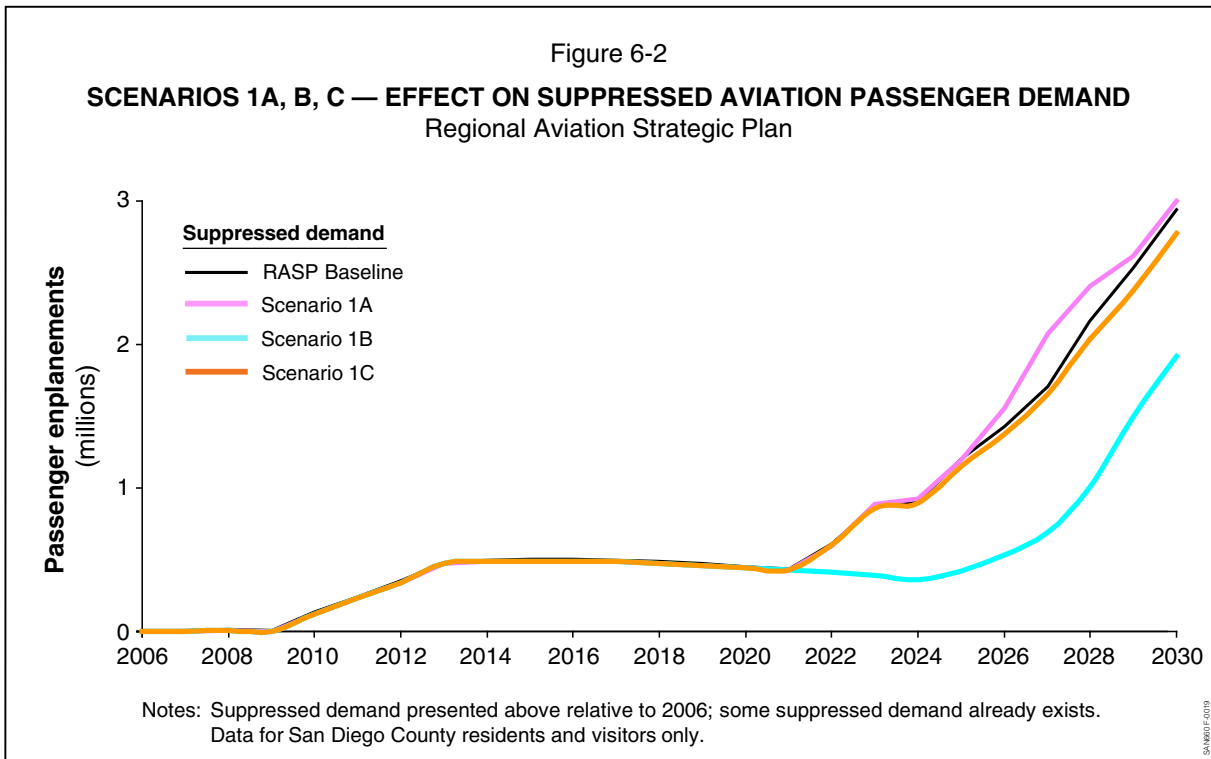
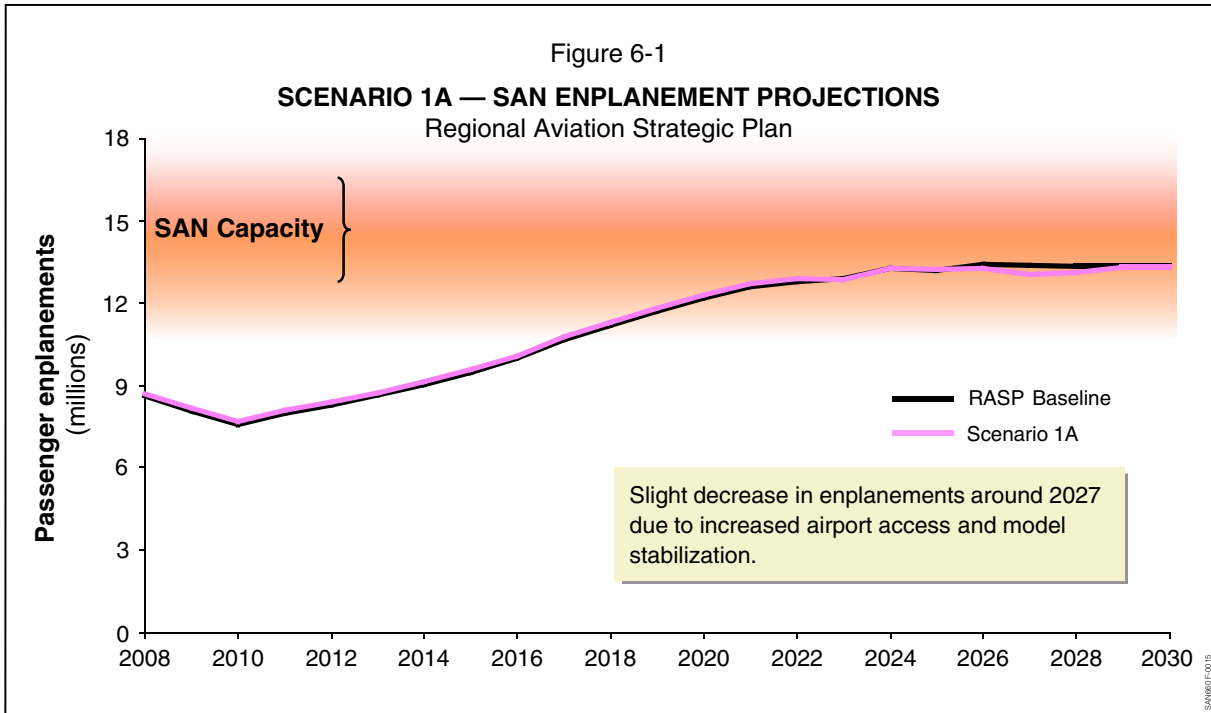
The following describes the findings related to the six scenarios intended to optimize commercial passenger (or airline) activity within San Diego County.

##### 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.



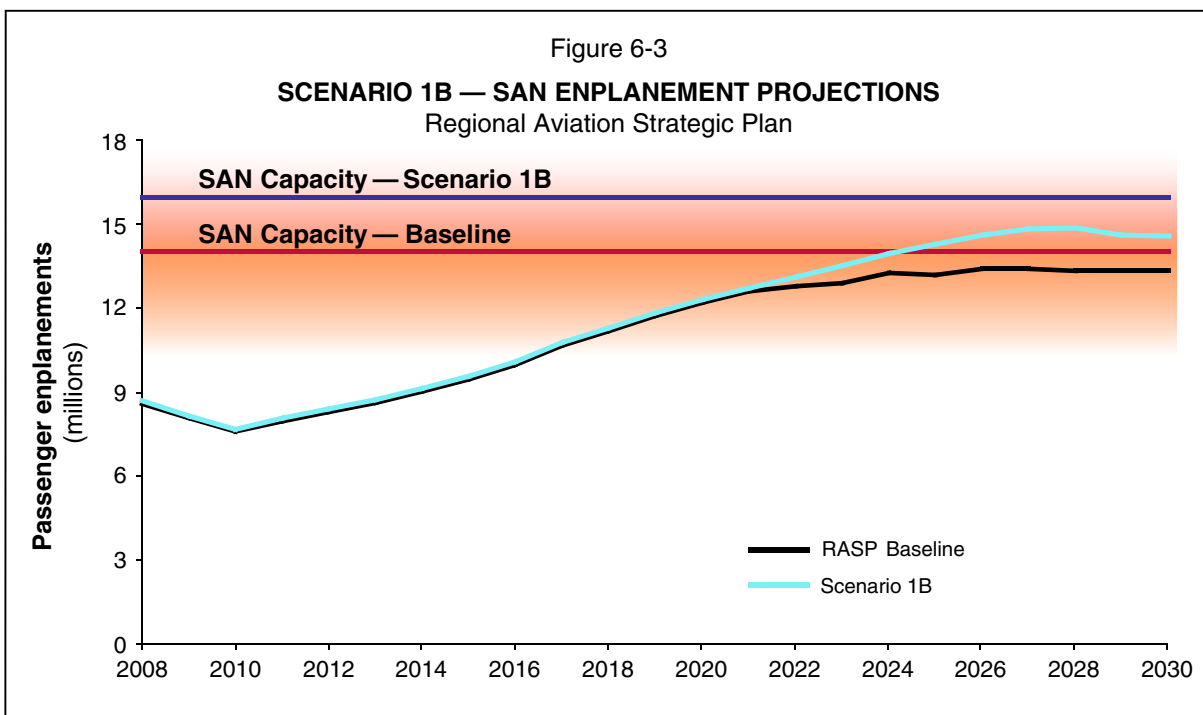
### 6.1.2 Scenario 1B: Preserve San Diego International’s Airfield Capacity for Commercial Passenger Service

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.



### **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:

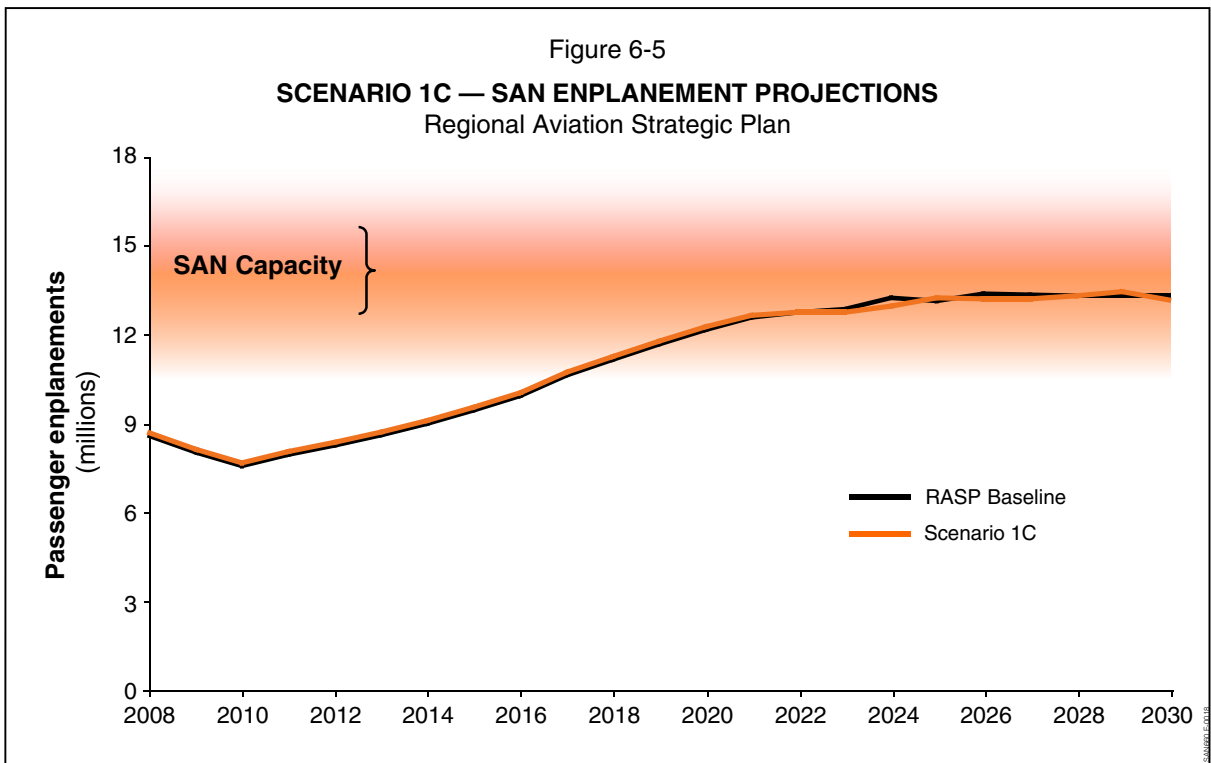
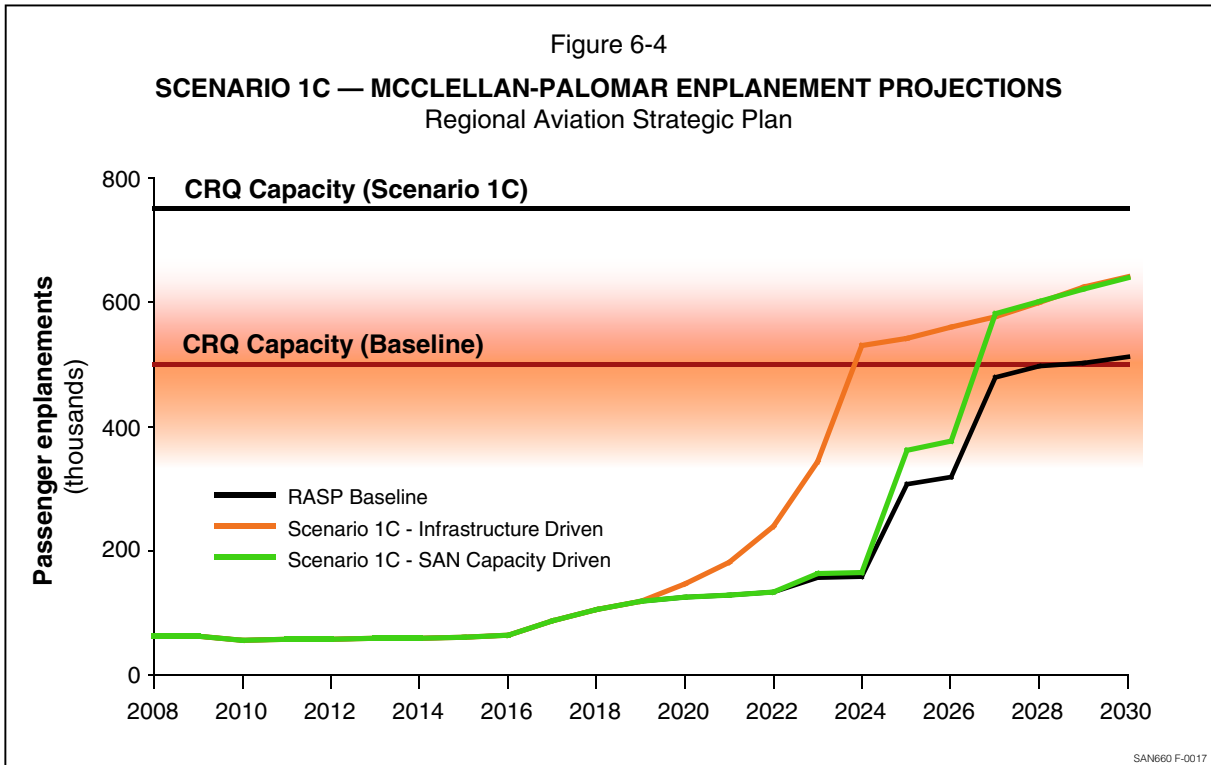
- Scenario 1C: San Diego International Capacity Driven – Growth in demand at McClellan-Palomar is primarily driven by capacity constraints at San Diego International
- Scenario 1C: Infrastructure Driven – Growth in demand at McClellan-Palomar is primarily driven by the facility improvements provided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



#### **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.

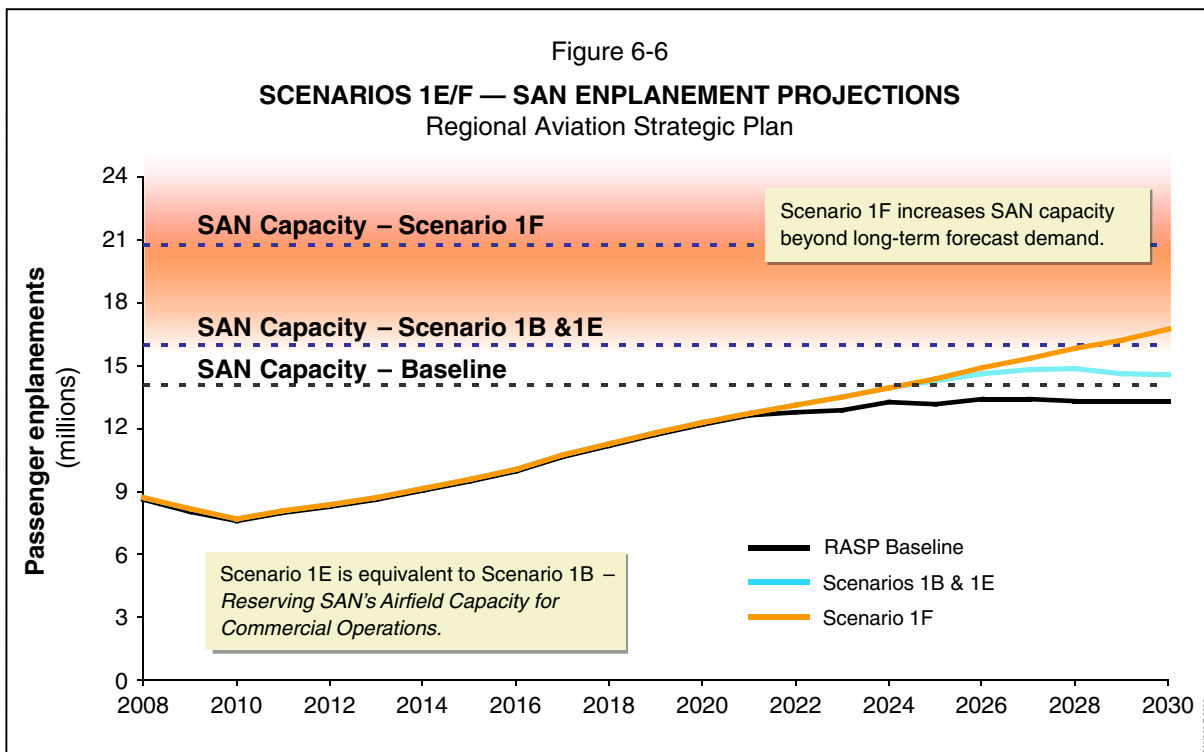
In summary, commercial service at Brown Field is highly unlikely without an instrument approach. Based on all the above, after consultation with the RASP Subcommittee and stakeholders, Scenario 1D was omitted from additional consideration in the RASP.

#### **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.



## 6.2 ENHANCED UTILIZATION OF TIJUANA SCENARIOS

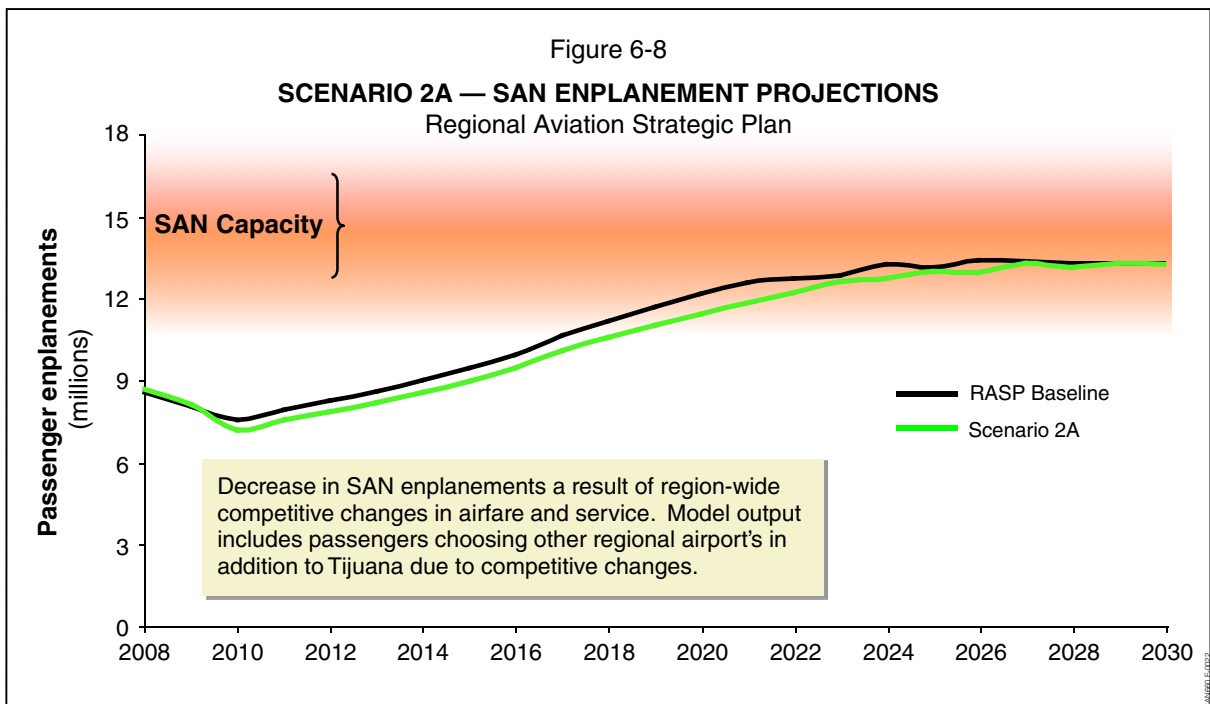
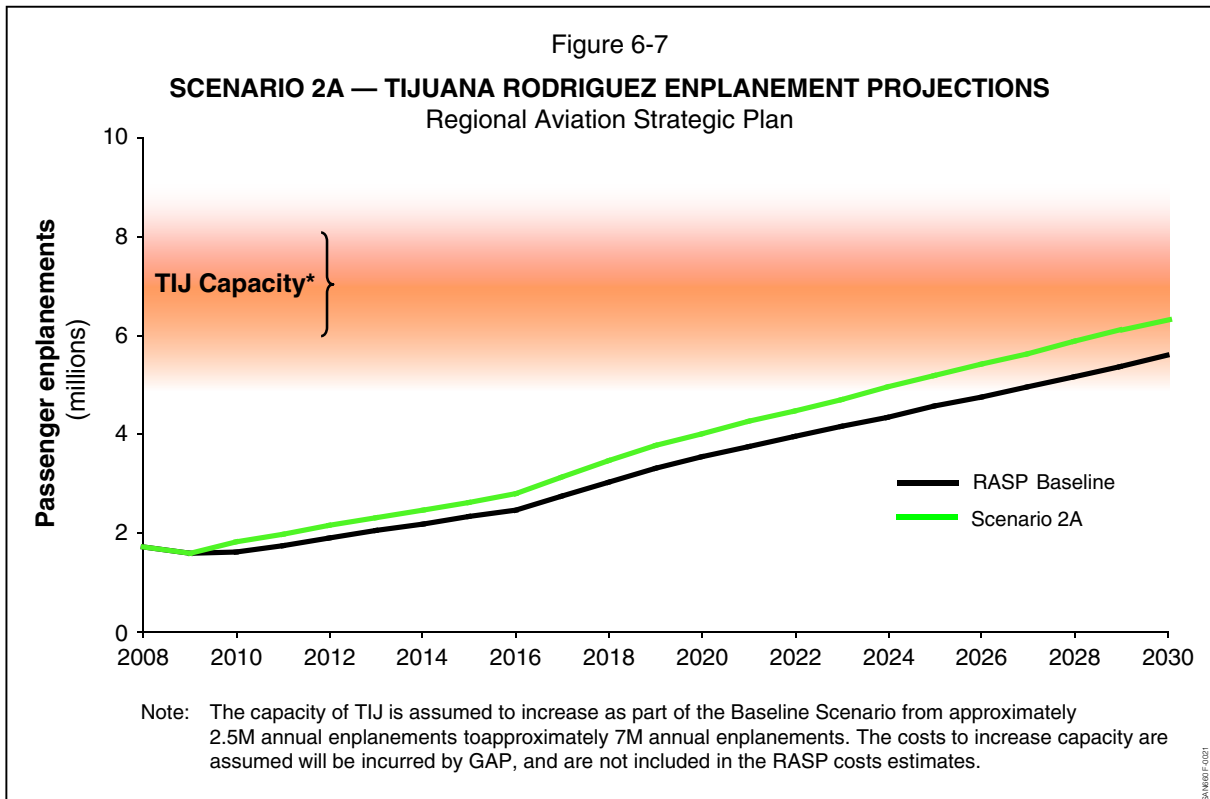
The following describes the findings related to the three scenarios intended to optimize the utilization of Tijuana Rodriguez International Airport. For modeling purposes, the Baseline Scenario assumes the airport’s capacity would be increased from approximately 2.5 to 7.0 million annual passenger enplanements,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

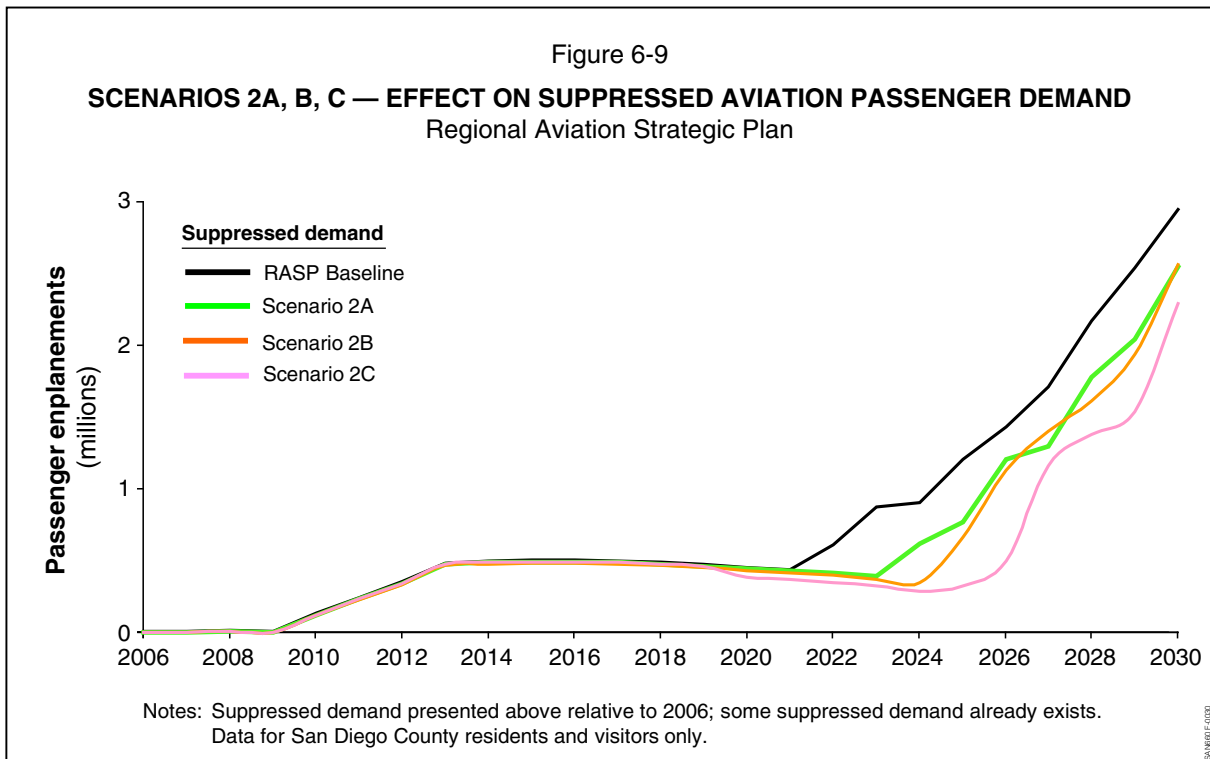
### 6.2.1 Scenario 2A: Facilitate Border Crossings

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.





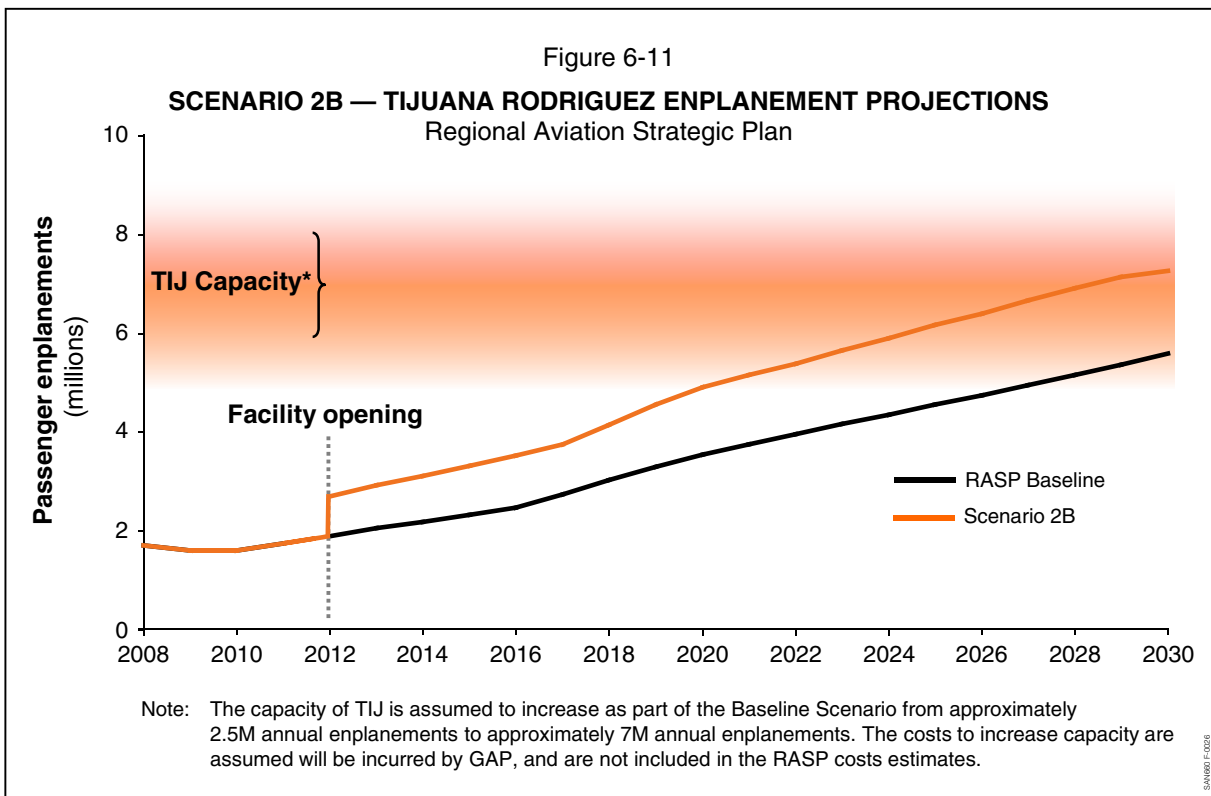
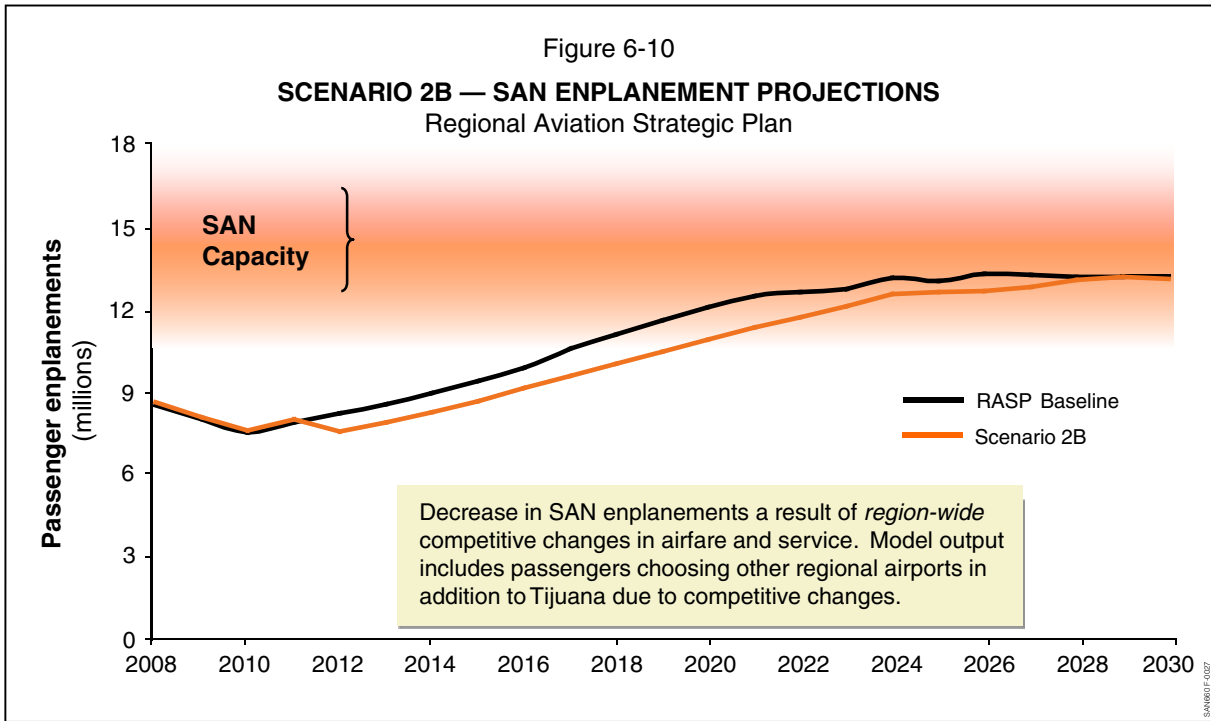
### 6.2.2 Scenario 2B: Aviation Passenger Cross Border Facility

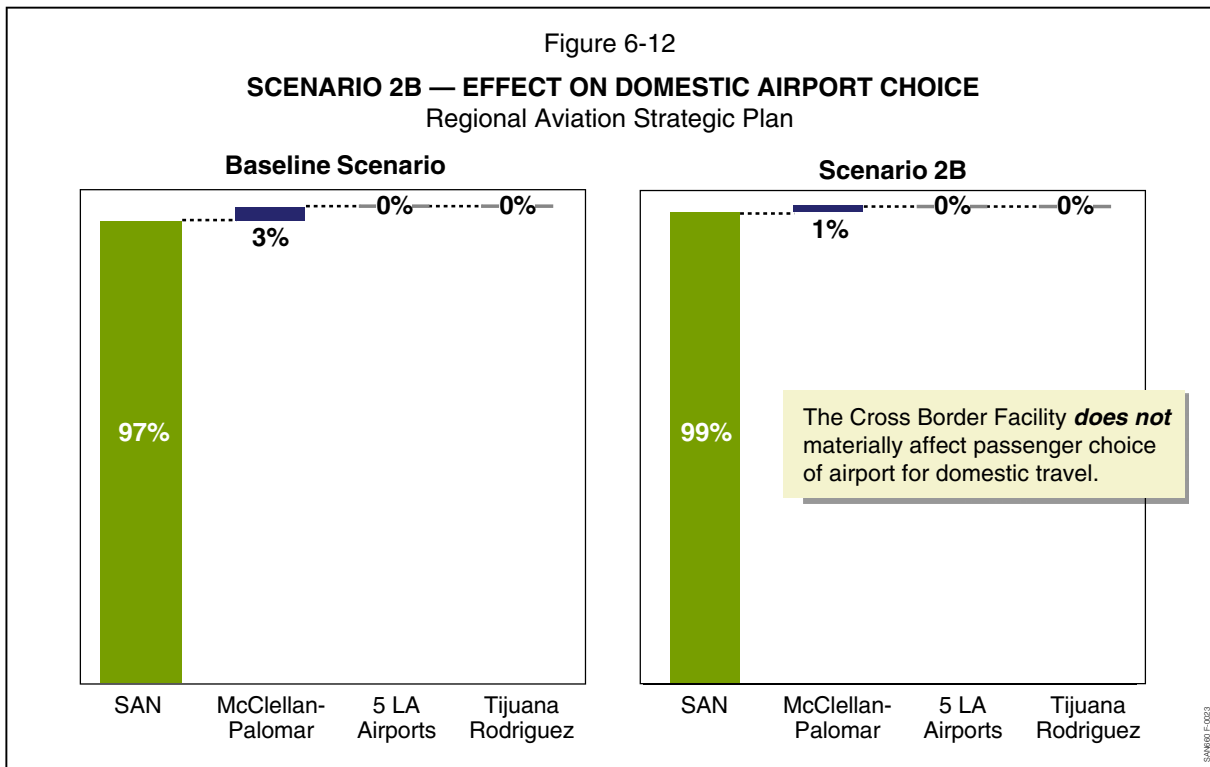
Scenario 2B maximizes the use of Tijuana Rodriguez International for commercial passenger activity by offering a cross border facility (CBF) allowing U.S. ticketed passengers exclusive and convenient access to Tijuana Rodriguez International.

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:

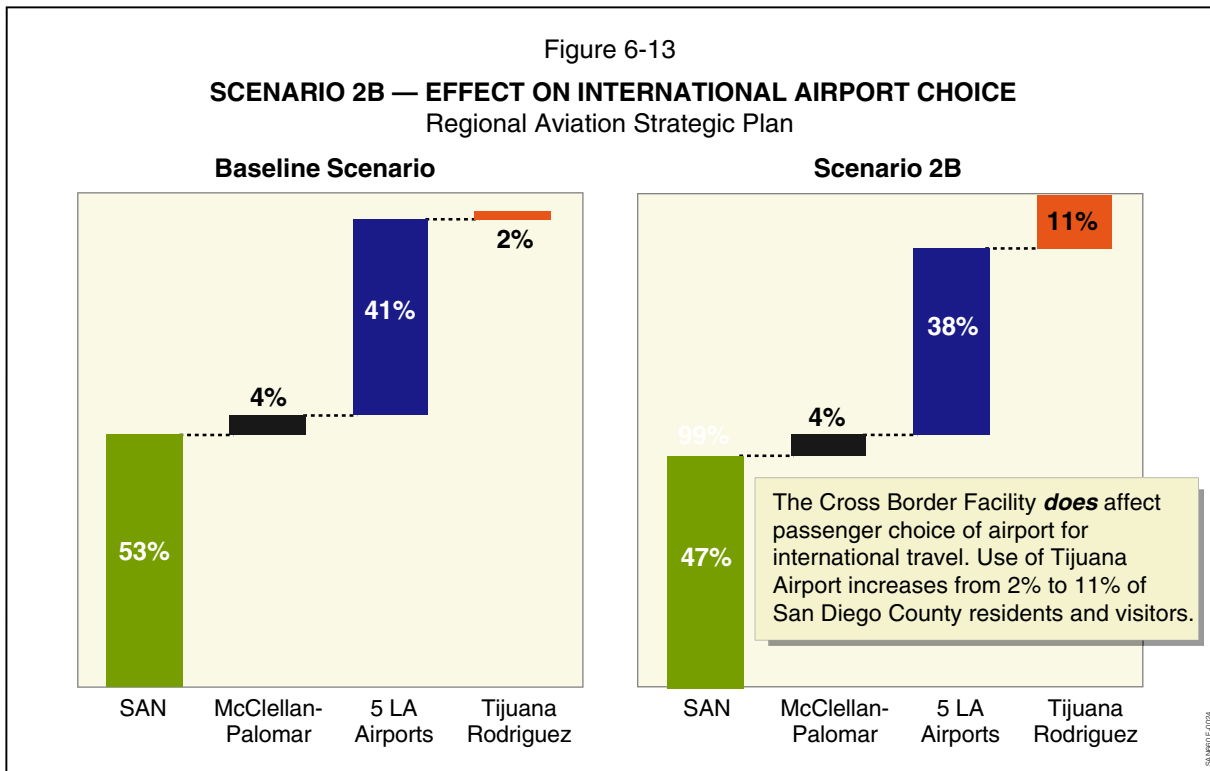
- As presented on Figures 6-12, the CBF does not materially affect passenger choice of airport for domestic travel. This is due to the fact that U.S. travel from Tijuana, notwithstanding any form of cross border terminal, is international travel, requiring customs clearance for Mexico departing and U.S.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





- 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.

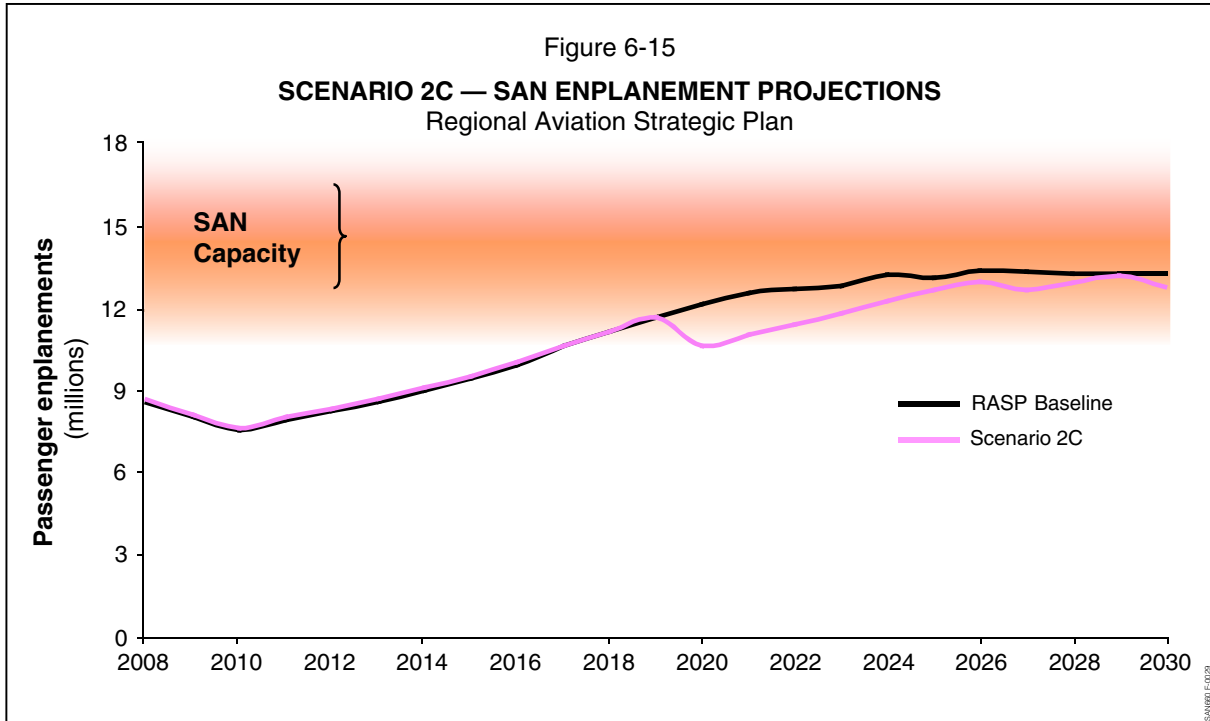
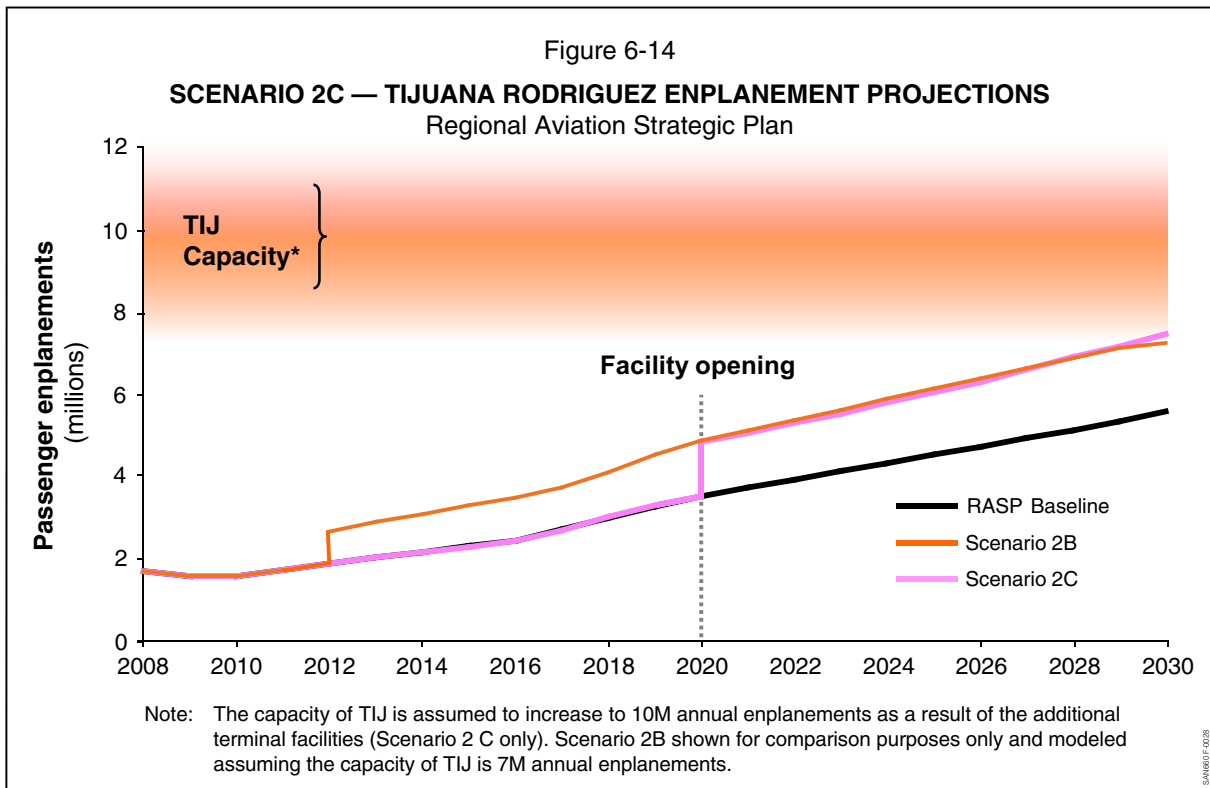


### 6.2.3 Scenario 2C: Cross Border Airport Terminal

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.



### 6.3 CALIFORNIA HIGH SPEED RAIL SCENARIOS

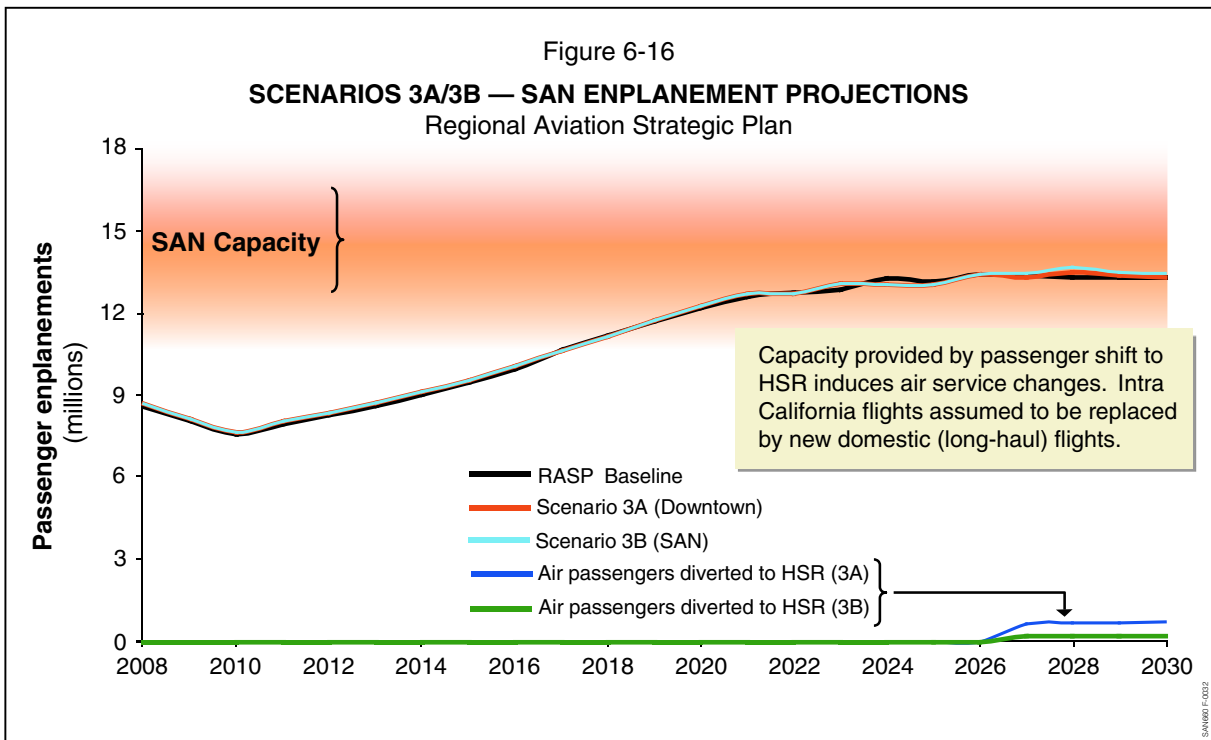
The following describes the findings related to the two scenarios assessed in the RASP regarding California High Speed Rail (HSR). Because of the interactive effects

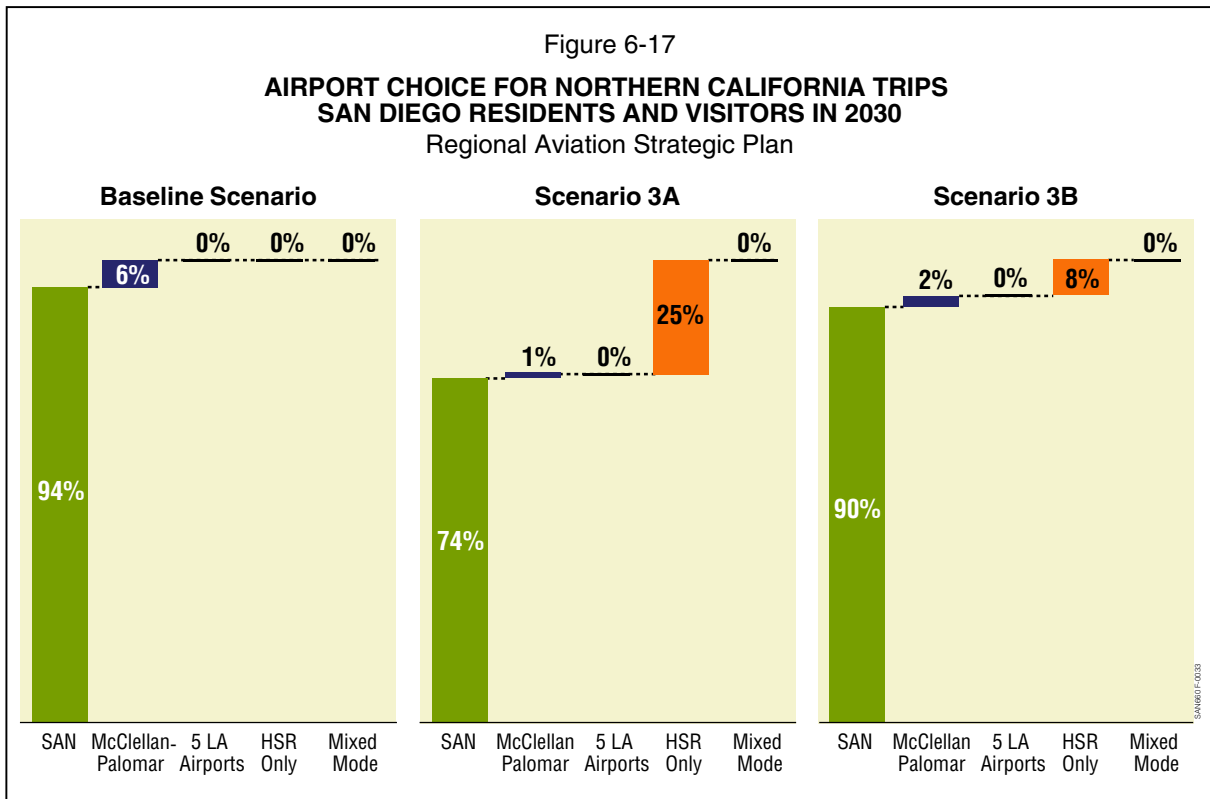
of capacity constraints within the region, the marginal impact of HSR is evident after implementation of Phase 1 in 2019, and increases following implementation of Phase 2 in 2027. It should be noted, therefore, that the true long-term impact of HSR on the region could not be precisely determined as 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.





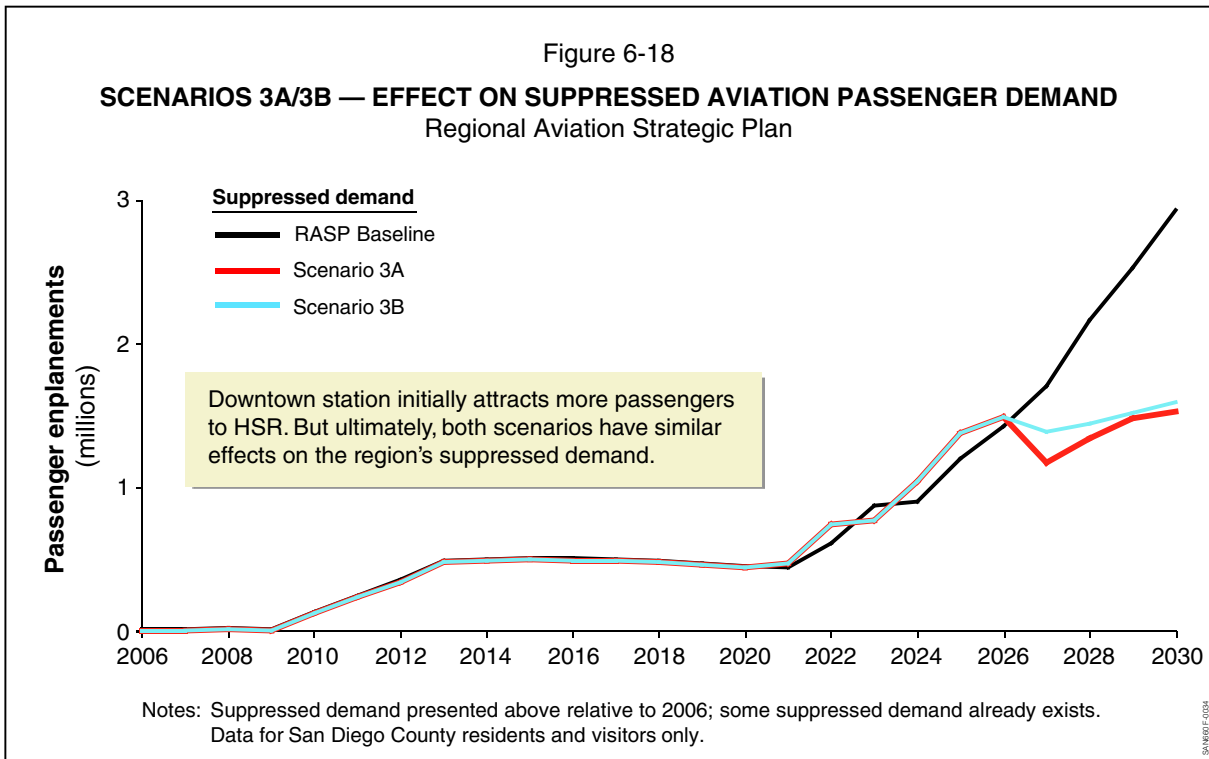
As presented on Figure 6-18, Scenario 3A reduced the projected suppressed demand associated with the Baseline Scenario beginning in 2027, when the Inland Empire and San Diego HSR alignments are introduced. Diverting a portion of aviation operations to HSR, per the assumptions under Scenario 3A, would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



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

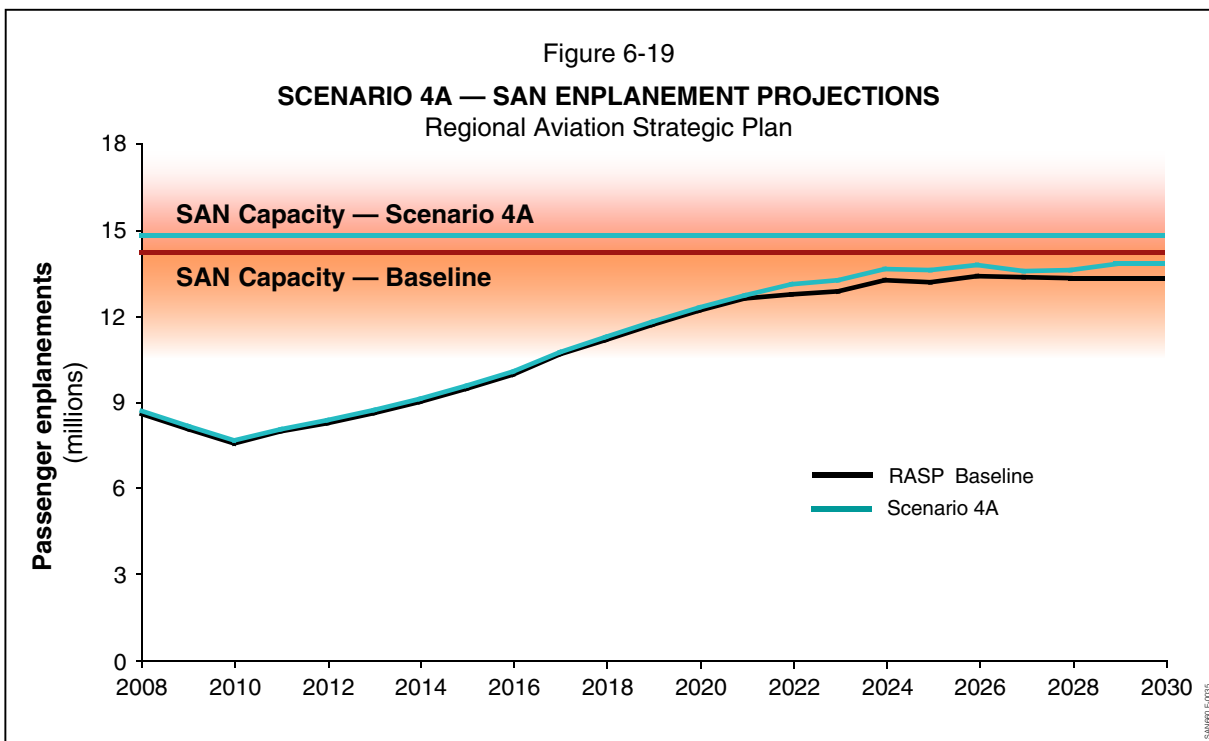
The following describes the findings for the three general aviation scenarios intended to optimize the capacity of the San Diego County Airport System by distributing general aviation activity and based aircraft away from airports that are, or could be, dedicated to commercial passenger service.

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**

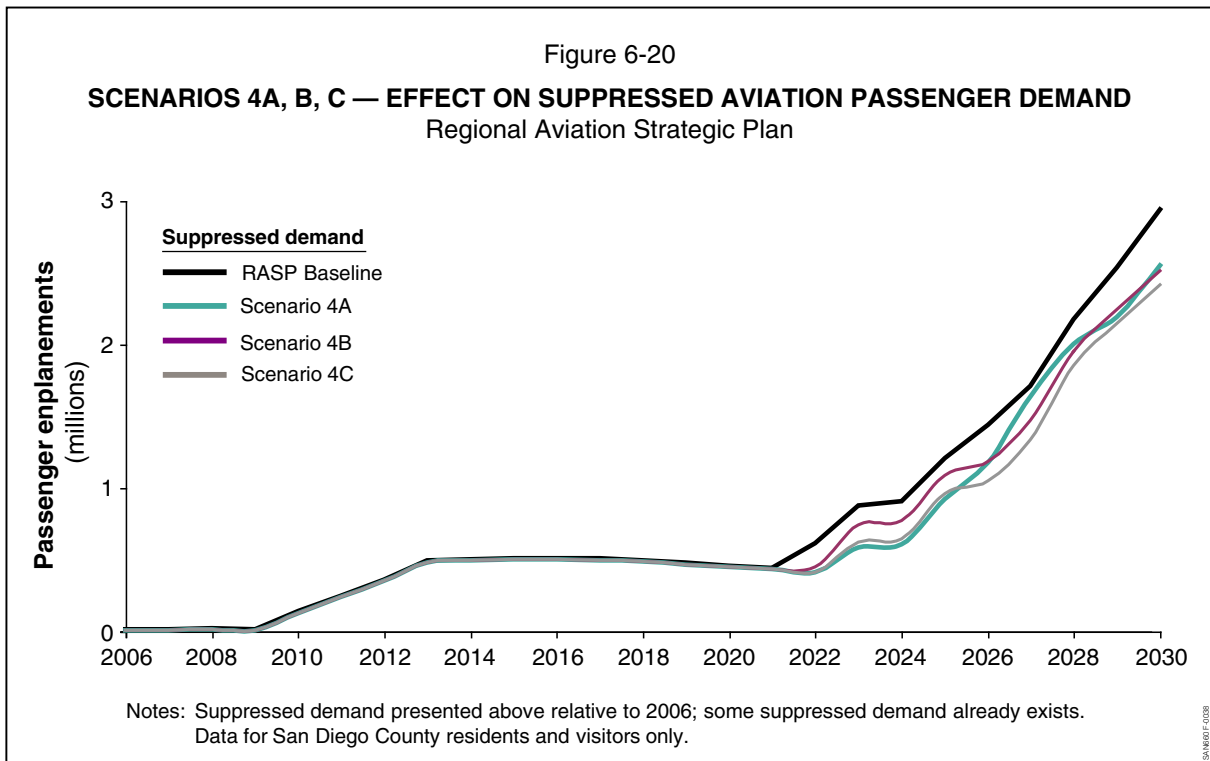
Scenario 4A maximizes the use of McClellan-Palomar for high-end/corporate general aviation by providing the necessary airfield, basing, and other amenities in order to shift activity from San Diego International to McClellan-Palomar. Projected annual passenger enplanements at San Diego International 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.



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.



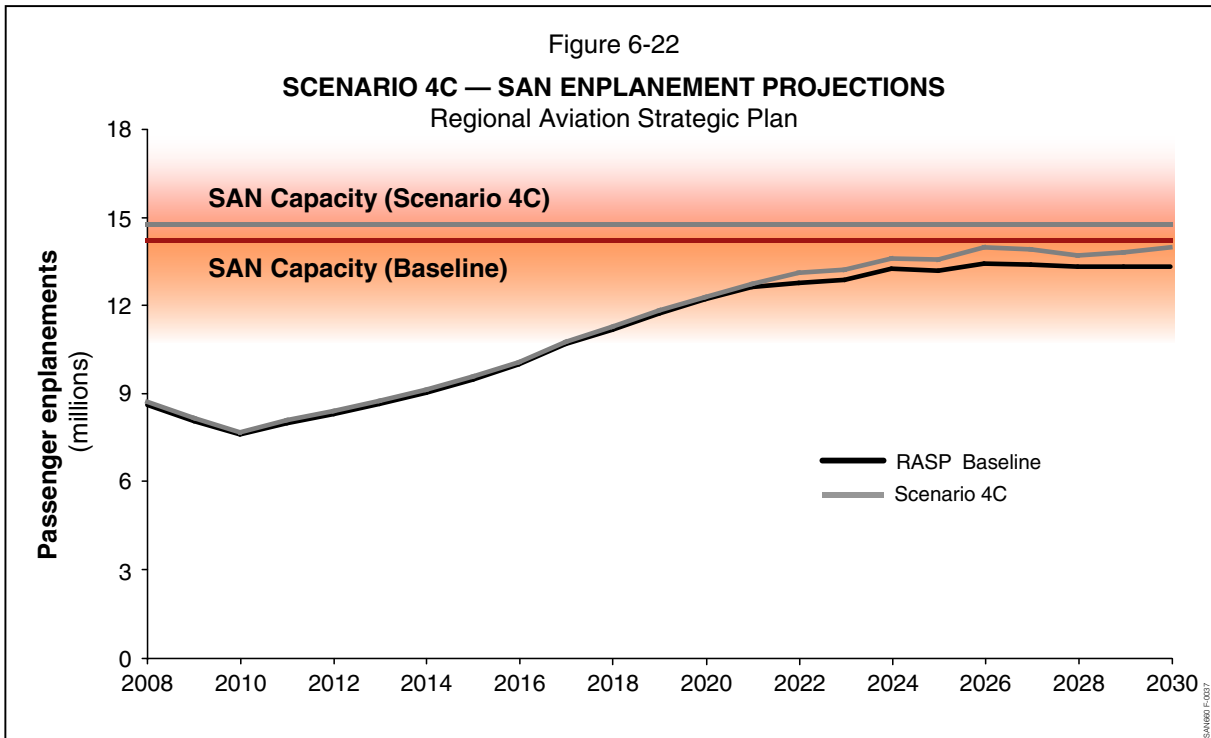
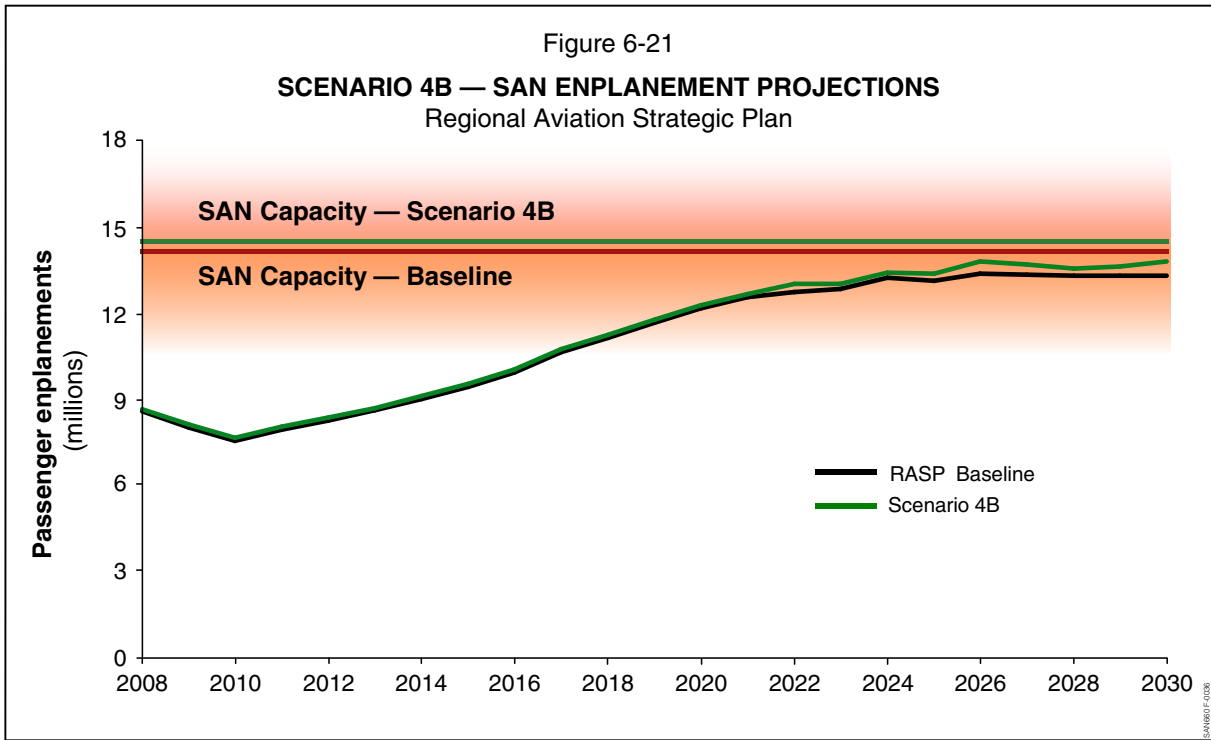
Projected annual passenger enplanements at San Diego International under Scenario 4B are presented on Figure 6-21. The increase in theoretical capacity results in an increase in passenger enplanements over the Baseline between 2020 and 2028.

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.



## **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.

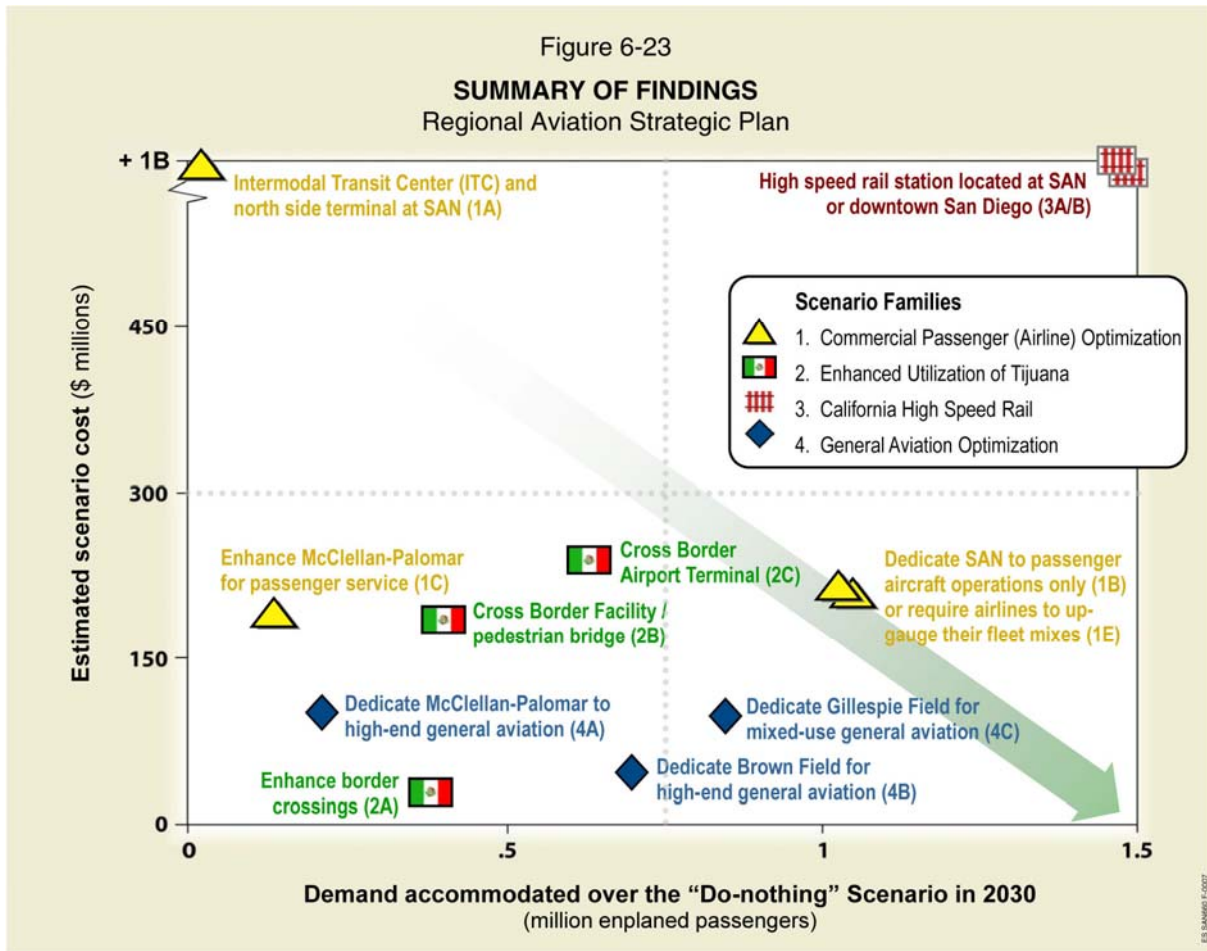
- FAA determinations (letters to the City of San Diego in 2009 and 2010, provided in Appendix A) provided as part of the RASP process state precision instrument approaches are infeasible at Brown Field due to terrain and airspace complications.
- Air cargo carriers are unwilling to operate from facilities 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.



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.