

# Appendices

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## Air Carrier and Commuter Airline Forecasts, Methodologies and Assumptions

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### BACKGROUND TO FORECASTS

The Sonoma County Airport has had a long history of regularly scheduled airline service, but has been without air carrier or commuter airline service since late 2001. Because of this condition none of the more traditional approaches<sup>1</sup> to projecting operational and passenger growth were regarded as being suited to the current situation. These historical circumstances warranted a more tailored approach to the forecasting of air carrier and commuter airline activities at the airport. As a result, it was concluded that a logical place to start would be to establish a future (2010) baseline condition based upon the possible outcome of Sonoma County's marketing efforts with prospective air service providers.<sup>2</sup> This baseline was then projected through 2030 for two alternative commercial air service demand scenarios, i.e., (1) a Moderate Growth scenario (based on projections of the FAA's "Aerospace Forecast Fiscal Years 2006-2017") and (2) a Low Growth scenario (based on growth rates derived from FAA "Terminal Area Forecast (TAF) Enplanement Data."<sup>3</sup> Each of these two scenarios were further broken down into two additional operational subsets reflecting a dominant "Scheduled Airline" fleet mix (up to 14 average daily departures [ADD]), and a "Commuter Airline" dominant fleet mix (up to 14 ADD) based on limitations published in the Sonoma County General Plan Air Transportation Element (ATE). The resultant forecasts are compared with ATE limits at the end of this report.

### AIR CARRIER AND COMMUTER AIRLINE FORECASTS

The two commercial air service scenarios, "moderate growth" and "low growth," each have two additional subsets for potential conditions after 2010. These are:

- Commuter airline service dominant
- Scheduled airline service dominant

The commuter airline dominant scenario assumes that scheduled commuter airlines, utilizing aircraft with an average capacity of 76 passenger seats, would use up to fourteen of the twenty-one average daily departure (ADD) slots/allocations allowed by the ATE. Scheduled air carrier airlines would use no more than seven ADD allocations (for a total of no more than 21 ADD).

The air carrier airline dominant scenario assumes that scheduled airlines, utilizing aircraft with an average seating capacity of 101 passenger seats, would use up to fourteen of the twenty-one ATE allocated ADD allocations. Commuter airlines would use no more than seven of the twenty-one allocations (for a total of 21 ADD).

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<sup>1</sup> Methodologies such as Time-Series Analysis (R<sup>2</sup>), Market Share of U.S. Domestic Enplanements, Enplanements Per Capita and Historical Growth Rate Projections did not lend themselves to this analysis due to the historically intermittent nature of air passenger service at the airport.

<sup>2</sup> On April 26, 2006, Sonoma County announced that Horizon Air would be providing non-stop air service between STS and Los Angeles and STS and Seattle using 74-seat Q400 high speed turboprop aircraft effective March 20, 2007.

<sup>3</sup> The FAA-based load factors and growth rates used in this forecast report were derived from data for airports of comparable size and operations, i.e., non-hub towered airports.

## 2010 Baseline Conditions

The baseline condition for the two commercial air service forecast scenarios begins with the assumptions that some degree of air service would begin in late 2006 or early 2007, and that by 2010 such service would be of sufficient maturity that future activity levels for passengers and operations could be projected on the basis of FAA-defined passenger load factors and operational growth rates. The 2010 baseline conditions consist of the following projected activity levels:

<b>TABLE 1. 2010 Baseline Scenario</b>		<b>Commuter Airlines Dominant</b>	<b>Scheduled Airlines Dominant</b>
<b>SCHEDULED AIRLINE(S)</b>	Average Daily Departures (ADD)	3.30	4.60
	Load Factor (101 seats X 75.6%)	76.36	76.36
	Enplaned Passengers Per Day	251.97	351.24
	Total Daily Air Carrier Passengers	503.95	702.48
	Total Annual Air Carrier Passengers	183,941.60	256,403.45
<b>COMMUTER AIRLINE(S)</b>	Average Daily Departures (ADD)	5.70	3.80
	Load Factor (76 seats X 69.0%)	52.44	52.44
	Enplaned Passengers Per Day	298.91	199.27
	Total Daily Commuter Passengers	597.82	398.54
	Total Annual Commuter Passengers	218,202.84	145,468.56
<b>TOTALS</b>	Average Daily Departures	9.00	8.40
	Annual Departures	3,285	3,066
	Annual Operations	6,570	6,132
	Daily Enplaned Passengers	551	551
	Annual Enplaned Passengers	201,072	200,936
	<b>Total Annual Passengers</b>	<b>402,144</b>	<b>401,872</b>

From the preceding table it can be seen that total average daily departures (ADD) for the two 2010 baseline scenarios range between 8.4 and 9.0 ADD.<sup>4</sup> This is well within the proposed ATE limit of 21.0 ADD by 2020. The next step was to develop growth projections for the two scenarios for the period 2010 through 2030 in five-year increments.

### Scheduled Air Carrier Airline Dominant Forecasts and Assumptions

The air carrier dominant forecast scenario assumes that the growth in commercial air service at STS between 2010 and 2030 would favor scheduled airline operations. Two forecast scenarios (Moderate Growth and Low Growth) were developed for the scheduled air carrier dominant scenario.<sup>5</sup>

#### Moderate Growth Scenario

The following table sets forth the assumptions derived for the moderate growth<sup>6</sup> scenario of the scheduled air carrier dominant forecast.

<sup>4</sup> For reference purposes the Horizon Air service to LAX and SEA-TAC beginning in March 2007 is the equivalent of 2.85 ADD.

<sup>5</sup> A "High Growth" scenario was not developed because it would be inconsistent with FAA projected load factors and growth rates for comparable airports (i.e., non-hub, towered airports).

<sup>6</sup> The moderate growth scenario is based on FAA TAF load factors and projected growth rates from the FAA's "Aerospace Forecast Fiscal Years 2006-2017"

<b>(Moderate Growth Scenario)</b>		<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
<b>AIR CARRIER AIRLINE(S)</b>	Average Daily Departures (ADD)	5.38	6.17	7.22	8.44
	Annual Air Carrier Departures	1,962.61	2,252.05	2,635.30	3,080.60
	Annual Air Carrier Operations	3,925.21	4,504.10	5,270.60	6,161.20
	Boarding Load Factor (Based on 101 avg. seats X FAA LF growth rates)	76.86	77.27	77.57	77.97
	Enplaned Air Carrier Passengers Per Day	413.28	476.73	560.04	658.08
	Annual Enplaned Air Carrier Passengers	150,847.78	174,004.64	204,414.95	240,200.54
	Total Daily Air Carrier Passengers	826.56	953.45	1,120.08	1,316.17
	Total Annual Air Carrier Passengers	301,695.57	348,009.29	408,829.90	480,401.09
<b>COMMUTER AIRLINE(S)</b>	Average Daily Departures (ADD)	4.00	4.40	4.65	4.89
	Annual Commuter Departures	1,460.00	1,606.00	1,697.25	1,784.85
	Annual Commuter Operations	2,920.00	3,212.00	3,394.50	3,569.70
	Boarding Load Factor (Based on 76 avg. seats X FAA LF growth rates)	53.96	55.02	56.16	57.30
	Enplaned Commuter Passengers Per Day	215.84	242.11	261.16	280.22
	Annual Enplaned Commuter Passengers	78,781.60	88,368.54	95,324.35	102,279.04
	Total Daily Commuter Passengers	431.68	484.21	522.33	560.43
	Total Annual Commuter Passengers	157,563.2	176,737.09	190,648.70	204,558.09
<b>TOTALS</b>	Average Daily Departures	9.38	10.57	11.87	13.33
	Annual Departures	3,423	3,858	4,333	4,865
	Annual Operations	6,846	7,716	8,665	9,731
	Daily Enplaned Passengers	629	719	821	938
	Annual Enplaned Passengers	229,629	262,373	299,739	342,480
	Total Annual Passengers	459,259	524,746	599,479	684,959

From the above table it can be seen that the total average daily departures (ADD) through 2020 (10.57) are well within the proposed ATE 2020 limit of 21 ADD, as are the total annual operations (7,716 versus the draft 2020 ATE's 15,200). Similarly, 2020 commuter airline operations (3,212) are well under the ATE limit of 5,200, and 2020 air carrier operations (4,504) are also well under the ATE's 10,000 annual operations limit. Similarly, the 2020 air carrier passenger level of 348,009 would not exceed the ATE's limit of 523,000 annual passengers, but the 2020 commuter passengers (176,737) would exceed the ATE's current limit of 50,000 annual passengers. Although overall well within the ADD allocations for commercial air service, the size and load factors of the commuter airline aircraft anticipated to serve the airport in 2020 are considerably larger than those assumed in the ATE.<sup>7</sup>

**Low Growth Scenario**

The following table sets forth the assumptions derived for the low growth<sup>8</sup> scenario of the scheduled air carrier dominant forecast.

<sup>7</sup> The ATE's assumptions in this regard are not consistent with current airline industry trends.

<sup>8</sup> The low growth scenario is based on FAA TAF load factors and projected TAF growth rates through 2020, and extrapolated for 2025 and 2030.

<b>TABLE 3.</b>					
<b>Scheduled Air Carrier Dominant</b>					
<b>(Low Growth Scenario)</b>		<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
<b>AIR CARRIER</b>	Average Daily Departures (ADD)	5.24	5.75	6.36	6.95
	Annual Air Carrier Departures	1,912.60	2,098.75	2,321.40	2,536.75
	Annual Air Carrier Operations	3,825.20	4,197.50	4,642.80	5,073.50
	Boarding Load Factor (Based on 101 avg. seats X FAA LF growth rates)	76.86	77.27	77.57	77.97
	Enplaned Air Carrier Passengers Per Day	402.75	444.27	493.33	541.91
	Annual Enplaned Air Carrier Passengers	147,004.35	162,159.92	180,066.36	197,795.47
	Total Daily Air Carrier Passengers	805.50	888.55	986.66	1,083.81
	Total Annual Air Carrier Passengers	294,008.70	324,319.84	360,132.71	395,590.94
<b>COMMUTER AIRLINE(S)</b>	Average Daily Departures (ADD)	4.00	4.40	4.65	4.89
	Annual Commuter Departures	1,460.00	1,606.00	1,697.25	1,784.85
	Annual Commuter Operations	2,920.00	3,212.00	3,394.50	3,569.70
	Boarding Load Factor (Based on 76 avg. seats X FAA LF growth rates)	53.96	55.02	56.16	57.30
	Enplaned Commuter Passengers Per Day	215.84	242.11	261.16	280.22
	Annual Enplaned Commuter Passengers	78,781.60	88,368.54	95,324.35	102,279.04
	Total Daily Commuter Passengers	431.68	484.21	522.33	560.43
	Total Annual Commuter Passengers	157,563.20	176,737.09	190,648.70	204,558.09
<b>TOTALS</b>	Average Daily Departures	9.24	10.15	11.01	11.84
	Annual Departures	3,373	3,705	4,4019	4,322
	Annual Operations	6,746	7,410	8,037	8,643
	Daily Enplaned Passengers	619	686	754	822
	Annual Enplaned Passengers	225,786	250,528	275,391	300,075
	Total Annual Passengers	451,572	501,057	550,781	600,149

From the above table it can be seen that the total average daily departures (ADD) through 2020 (10.15) are well within the proposed ATE 2020 limit of 21 ADD, as are the total annual operations (6,746 versus the draft 2020 ATE's 15,200). Similarly, 2020 commuter airline operations (3,212) are well under the ATE limit of 5,200, and 2020 air carrier operations (4,198) are also well under the ATE's 10,000 annual operations limit. Similarly, the 2020 air carrier passenger level of 324,320 would not exceed the ATE's limit of 523,000 annual passengers, but the 2020 commuter passengers (176,737) would exceed the ATE limit of 50,000 annual passengers. Although overall well within the ADD allocations for commercial air service, the size and load factors of the commuter airline aircraft anticipated to serve the airport in 2020 are considerably larger than those assumed in the ATE.<sup>9</sup>

### Commuter Airline Dominant Forecasts and Assumptions

This forecast scenario assumes that the growth in commercial air service between 2010 and 2030 will favor commuter airline operations. Two forecast scenarios (Moderate Growth and Low Growth) were developed for the commuter airline dominant scenario.

<sup>9</sup> The ATE's assumptions in this regard are not consistent with current airline industry trends.

**Moderate Growth Scenario**

The following table sets forth the assumptions derived for the moderate growth<sup>10</sup> scenario of the commuter airline dominant forecast. The following table sets forth the assumptions used in this scenario:

<b>(Moderate Growth Scenario)</b>		<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>
<b>AIR CARRIER AIRLINES</b>	Average Daily Departures (ADD)	3.55	4.10	4.65	4.90
	Annual Air Carrier Departures	1,295.75	1,496.50	1,697.25	1,788.50
	Annual Air Carrier Operations	2,591.50	2,993.00	3,394.50	3,577.00
	Boarding Load Factor (Based on 101 avg. seats X FAA LF growth rates)	76.86	77.27	77.57	77.97
	Enplaned Air Carrier Passengers Per Day	272.86	316.79	360.69	382.06
	Annual Enplaned Air Carrier Passengers	99,592.64	115,627.07	131,652.29	139,452.92
	Total Daily Air Carrier Passengers	545.71	602.67	659.33	681.48
	Total Annual Air Carrier Passengers	199,185.28	231,254.15	263,304.58	278,905.84
<b>COMMUTER AIRLINE(S)</b>	Average Daily Departures (ADD)	6.60	7.30	8.20	9.70
	Annual Commuter Departures	2,409.00	2,664.50	2,993.00	3,540.50
	Annual Commuter Operations	4,818.00	5,329.00	5,986.00	7,081.00
	Boarding Load Factor (Based on 76 avg. seats X FAA LF growth rates)	53.96	55.02	56.16	57.30
	Enplaned Commuter Passengers Per Day	356.14	401.68	460.54	555.85
	Annual Enplaned Commuter Passengers	129,989.64	146,611.45	168,098.85	202,884.81
	Total Daily Commuter Passengers	712.27	803.35	921.09	1,111.70
	Total Annual Commuter Passengers	259,979.28	293,222.90	336,197.7	405,769.62
<b>TOTALS</b>	Average Daily Departures	10.15	11.40	12.85	14.60
	Annual Departures	3,705	4,161	4,690	5,329
	Annual Operations	7,410	8,322	9,381	10,658
	Daily Enplaned Passengers	629	718	821	938
	Annual Enplaned Passengers	229,582	262,239	299,751	342,338
	Total Annual Passengers	459,165	524,477	599,502	684,675

The above table shows that the total average daily departures (ADD) for 2020 (11.40) are well within the proposed ATE limit of 21 ADD, as are the total annual operations (8,322 versus the draft ATE’s limit of 15,200). However, 2020 commuter airline operations (5,329) slightly exceed the 2020 ATE limit of 5,200 operations, while 2020 air carrier operations (2,993) are about 30 percent of the ATE’s 10,000 annual operations limit. The 2020 air carrier passenger level of 231,254 is well within the ATE limit of 523,000 passengers, while the 2020 commuter passengers (293,223) would clearly exceed the ATE’s limits of 50,000 passengers.<sup>11</sup>

**Low Growth Scenario**

The following table sets forth the assumptions derived for the low growth<sup>12</sup> scenario of the commuter airline dominant forecast:

<sup>10</sup> The moderate growth scenario is based on FAA TAF load factors and projected growth rates from the FAA’s “Aerospace Forecast Fiscal Years 2006-2017”  
<sup>11</sup> The ATE’s assumptions in this regard are not consistent with current airline industry trends.  
<sup>12</sup> The moderate growth scenario is based on FAA TAF load factors and projected growth rates from the FAA’s “Aerospace Forecast Fiscal Years 2006-2017”

		2015	2020	2025	2030
<b>AIR CARRIER AIRLINES</b>	Average Daily Departures (ADD)	3.45	3.90	4.25	4.37
	Annual Air Carrier Departures	1,259.25	1,423.50	1,551.25	1,595.05
	Annual Air Carrier Operations	2,518.50	2,847.00	3,102.50	3,190.10
	Boarding Load Factor (Based on 101 avg. seats X FAA LF growth rates)	76.86	77.27	77.57	77.97
	Enplaned Air Carrier Passengers Per Day	265.17	301.33	329.66	340.74
	Annual Enplaned Air Carrier Passengers	96,787.21	109,986.73	120,327.36	124,369.24
	Total Daily Air Carrier Passengers	530.34	602.67	659.33	681.48
	Total Annual Air Carrier Passengers	193,574.43	219,973.46	240,654.72	248,738.48
<b>COMMUTER AIRLINE(S)</b>	Average Daily Departures (ADD)	6.55	7.00	7.55	8.40
	Annual Commuter Departures	2,390.75	2,555.00	2,755.75	3,066.00
	Annual Commuter Operations	4,781.50	5,110.00	5,511.50	6,132.00
	Boarding Load Factor (Based on 76 avg. seats X FAA LF growth rates)	53.96	55.02	56.16	57.30
	Enplaned Commuter Passengers Per Day	353.43	385.17	424.04	481.35
	Annual Enplaned Commuter Passengers	129,004.87	140,586.32	154,773.94	175,694.06
	Total Daily Commuter Passengers	706.88	770.34	848.08	962.71
	Total Annual Commuter Passengers	258,009.74	281,172.64	309,547.89	351,388.13
<b>TOTALS</b>	Average Daily Departures	10.00	10.90	11.80	12.77
	Annual Departures	3,650	3,979	4,307	4,661
	Annual Operations	7,300	7,957	8,614	9,322
	Daily Enplaned Passengers	619	687	754	822
	Annual Enplaned Passengers	225,792	250,573	275,101	300,063
	Total Annual Passengers	451,584	501,146	550,203	600,127

The above table shows that the total average daily departures (ADD) for 2020 (10.90) are well within the proposed ATE limit of 21 ADD, as are the total annual operations (7,957 versus the draft ATE's limit of 15,200). 2020 commuter airline operations (5,110) are slightly under the 2020 ATE limit of 5,200 operations, while 2020 air carrier operations (2,847) are about 28.5 percent of the ATE's 10,000 annual operations limit. The 2020 air carrier passenger level of 219,973 is well within the ATE limit of 523,000 passengers, while the 2020 commuter passengers (281,173) would clearly exceed the ATE's limits of 50,000 passengers.<sup>13</sup>

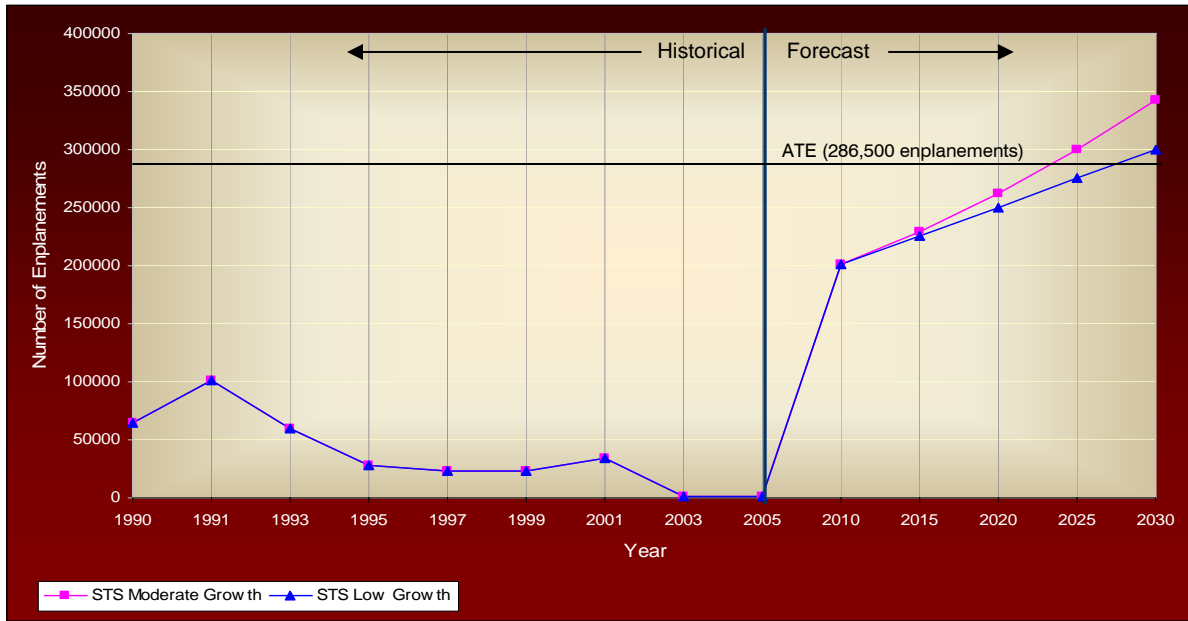
Table 6 presents a summary of the preceding enplanements forecasts.

Scenario	2010	2015	2020	2025	2030
Moderate Growth: Air Carrier Dominant	200,936	229,629	262,373	299,739	342,480
Moderate Growth: Commuter Dominant	201,072	229,582	262,239	299,751	342,338
Low Growth: Air Carrier Dominant	200,936	225,786	250,528	275,391	300,075
Low Growth: Commuter Dominant	201,072	225,792	250,573	275,101	300,063

<sup>13</sup> The ATE's assumptions in this regard are not consistent with current airline industry trends.

Figure 1 is a graphical representation of the historical enplanements and forecast low growth and moderate growth enplanements projections for STS.<sup>14</sup> As can be seen from the figure, neither the moderate growth scenario nor the low growth scenario would exceed the County’s proposed ATE 2020 annual enplanement limit of 286,500. The moderate growth scenario could exceed 286,500 annual enplanements around 2023 and the low growth scenario could exceed this level a little later, around 2027.

**FIGURE 1.**  
**STS Annual Enplanements**



## FORECAST EVALUATION

An effective technique used in evaluating demand forecasts is that of the outside view, also known as reference-class forecasting.<sup>15</sup> This technique removes any built-in bias toward the outcome of a project by ignoring the details of the project at hand, as it involves no attempt at forecasting the events that would influence the project's future course. Instead, it examines the experiences of a class of similar projects, lays out a rough distribution of outcomes for this reference class, and then positions the subject project in that distribution. This process typically involves five steps:<sup>16</sup>

1. Select a reference class.
2. Assess the distribution of outcomes.
3. Make an intuitive prediction of your project's position in the distribution.
4. Assess the reliability of your prediction.
5. Correct the intuitive estimate.

### Reference Class

To determine the appropriate reference class to evaluate the STS air carrier and commuter airline forecasts, it was first necessary to see where STS would rank among other comparable airports in

<sup>14</sup> Only the moderate growth and low growth scenarios are depicted because any differences between the air carrier dominant and commuter airline dominant enplanement figures within these two scenarios are minor.

<sup>15</sup> Harvard Business Review, "Delusions of Success: How Optimism Undermines Executives' Decisions," Vol. 81, No. 7, July 2003.

<sup>16</sup> Daniel Kahneman and Amos Tversky, "Intuitive Predictions: Biases and Corrective Procedures," TIMS Studies in Management Science, Volume 12 (1979).



the region. Table 7 compares seventeen certificated air carrier airports in Northern and Central California with STS in terms of numbers of runways, the longest runway at each airport, and the number of boarding (enplaned) passengers at each airport for calendar year (CY) 2004.<sup>17</sup>

The national ranking for each airport in terms of annual enplaned passengers for CY 2004 is also indicated. For purposes of comparison, Sonoma County's General Plan Air Transportation Element (ATE) 2005 limit of 286,500 passenger enplanements is used to mark STS's anticipated place in the reference class. In this case, had the ATE expectations been realized, STS would have fallen well below the 2004 enplanement levels for the Fresno Yosemite International Airport (FAT) and the Santa Barbara Municipal Airport (SBA) and above the 2004 enplanement levels for the Monterey Peninsula Airport (MRY) and the San Luis Obispo County Regional Airport (SBP).

<b>Airport Name (3-Letter Identifier)</b>	<b>Number of Runways (*)</b>	<b>Longest Runway (ft.)</b>	<b>CY 2004 Enplaned Passengers (FAA)<sup>2</sup></b>	<b>National Ranking (2004)</b>
San Francisco International (SFO)	4	11,870	15,605,822	13
Oakland International (OAK)	4, (1)	10,000	6,923,690	31
San Jose International (SJC)	3, (2)	11,000	5,269,849	37
Sacramento International (SMF)	2	8,601	4,795,970	41
Fresno Yosemite International (FAT)	2	9,222	538,394	115
Santa Barbara Municipal (SBA)	3, (1)	6,052	417,285	128
<b>Charles M. Schulz-Sonoma County (STS)<sup>1</sup></b>	<b>2, (1)</b>	<b>5,115</b>	<b>(286,500)</b>	<b>N/A</b>
Monterey Peninsula (MRY)	2, (1)	7,616	183,785	181
San Luis Obispo County Regional (SBP)	2, (1)	6,100 (2007)	158,107	191
Bakersfield Meadows Field (BFL)	2, (1)	10,857	118,046	205
Arcata-Eureka (ACV)	2, (1)	6,000	96,289	213
Redding Municipal (RDD)	2	7,003	60,978	248
Santa Maria Public (SMX)	2, (1)	6,304	38,082	290
Stockton Metropolitan (SCK)	2, (1)	10,650	20,636	DNA
Modesto City-County (MOD)	2, (1)	5,911	19,798	333
Chico Municipal (CIC)	2, (1)	6,724	17,561	345
Crescent City (CEC)	2	5,002	12,472	371
Merced Municipal (MCE)	1	5,903	6,144	447

<sup>1</sup> 2005 enplaned passenger limit per County General Plan Air Transportation Element (ATE) for comparison purposes only. STS had no scheduled airline or commuter passengers in 2004.

<sup>2</sup> Historical enplanements per Federal Aviation Administration "Primary Airport Enplanements Activity Summary (CY 2004)"

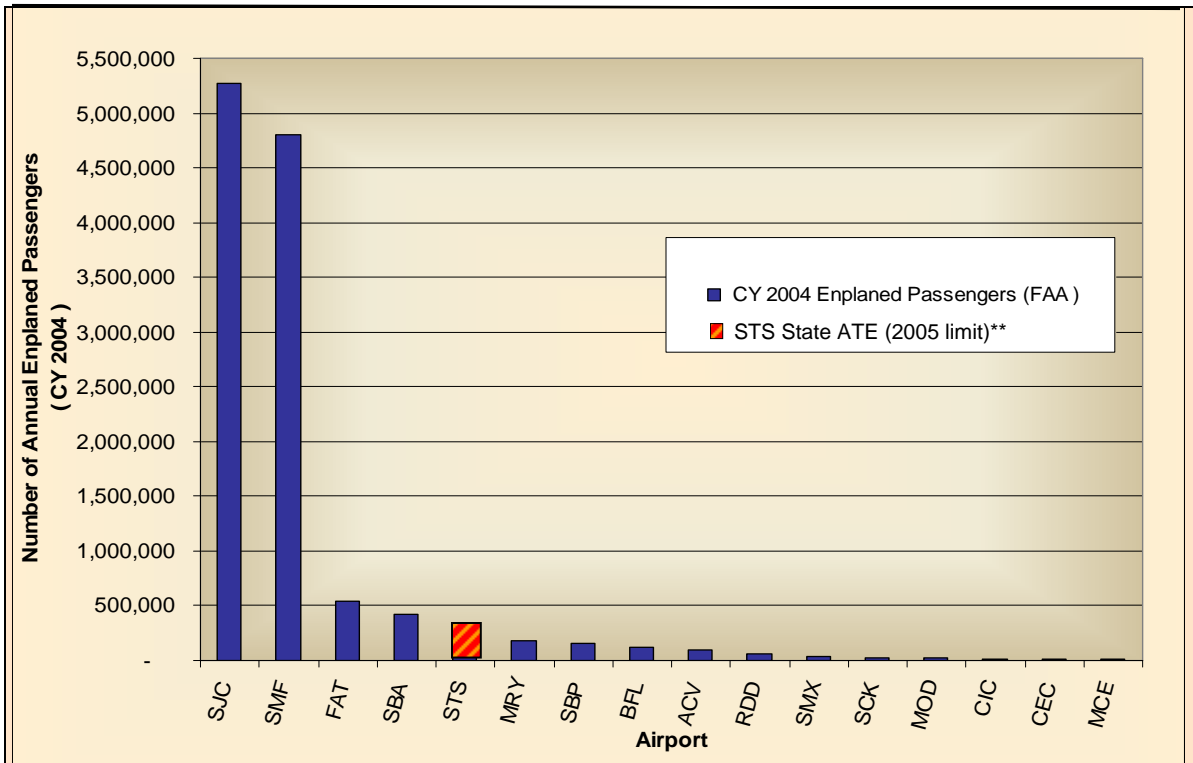
(\*) Number of air carrier runways, if all runways not usable by air carriers.

These data are also shown graphically in Figure 2.<sup>18</sup> On the basis of this information, it was determined that STS was closest to the reference class represented by the Monterey Peninsula Airport (MRY) and the San Luis Obispo County Regional Airport (SBP) (see Figure 2 below).

<sup>17</sup> 2005 enplaned passenger limit per County General Plan Air Transportation Element (ATE) for comparison purposes only. STS had no scheduled airline or commuter passengers in 2004.

<sup>18</sup> Note that SFO and OAK have been removed from Figure 2 due to graphical limitations.

**FIGURE 2.**  
**Northern and Central California Air Carrier Airports\***



\* SFO (15.6 million annual enplanements) and OAK (6.9 million enplanements) omitted due to graphical limitations

\*\* 2005 ATE limit (286,500 annual passenger enplanements)

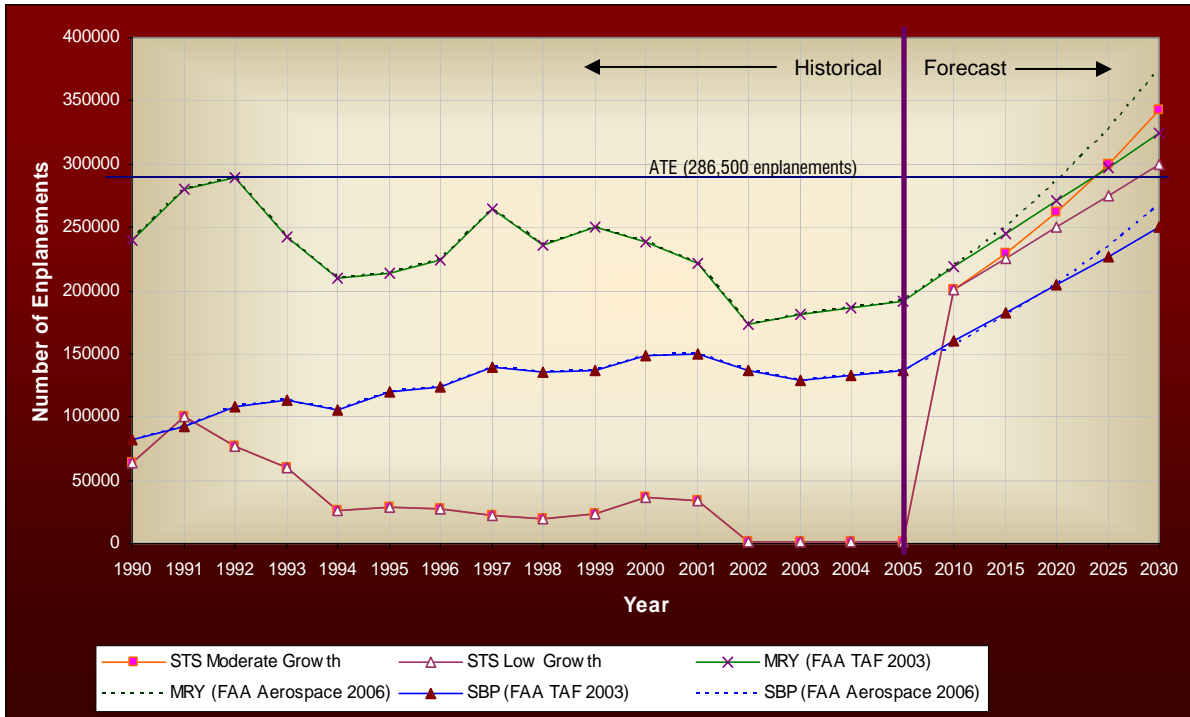
For purposes of this analysis, the selected reference class consists of enplanement data and forecasts for the Monterey and San Luis Obispo County airports. These two 14 CFR Part 139 certificated airports have comparable catchment area populations, numbers of airlines, and markets served to those projected for the Sonoma County Airport. Both airports are non-hub towered airports similar to STS.

### Distribution of Outcomes

The following graph (Figure 3) depicts historical and forecast enplanement data for the two reference class airports as derived from FAA Terminal Area Forecasts from 1990 to 2020.<sup>19</sup> The graph also shows the same data for the two STS commercial air service scenarios. As can be seen from the historical section of the graph, there was no consistent growth pattern for enplanements at the three airports between 1990 and 2005. Both the Monterey Peninsula Airport and the Sonoma County Airport experienced declining passenger enplanements during this period, while the San Luis Obispo Airport experienced steady growth through 2000 and a small decline between 2000 and 2005.

<sup>19</sup> Federal Aviation Administration, "Terminal Area Forecast Summary, Fiscal Years 2004-2020." March 2005. The TAF growth rates for the two airports were projected through 2030 for purposes of this analysis.

**FIGURE 3.**  
**Annual Enplanements Comparison**



The FAA TAF and Aerospace forecasts project a consistent rate of enplanements growth for the two reference class airports from 2005 through 2020, and these growth rates have been carried forward through 2030. The Sonoma County Airport is projected to experience strong resurgent growth between 2005 and 2010, and then taper off with enplanement growth rates comparable to the two other airports.

**Prediction of Project Position**

From Figure 3 it can be seen that the STS moderate growth and low growth scenarios are situated about halfway between the curves for the Monterey Peninsula Airport and the San Luis Obispo County Airport. The two STS enplanement scenarios are within the range established by the two reference class airports and have comparable rates of growth for future conditions. Of the two STS forecast scenarios, the moderate growth scenario is most closely aligned with that of the Monterey Peninsula Airport as projected from the FAA aerospace forecasts, while the STS low growth scenario remains close to the curve defined by the FAA’s TAF forecast for MRY.

**Reliability Assessment**

No two airports are exactly alike, and one should not expect the forecasts for one airport to conform exactly to those of another. The forecast information depicted on the above graph for Sonoma County Airport places the two enplanement scenarios within the range of forecasts established for the two other comparable air carrier airports.

## Corrections

Given that the two STS enplanement forecast scenarios fall within the range defined by the two reference class airports, and given that the projected growth rates are roughly comparable, no further modifications or corrections to the forecasts appear warranted.

The relationship between the General Plan Air Transportation Element and these forecasts is discussed below.

### 1992 General Plan Air Transportation Element

The 1992 ATE was based on the assumption that “demand for only a part, about 40 percent, of the air passenger travel to and from Sonoma County is projected to be served by commuter and scheduled airline operations at the Sonoma County Airport.”<sup>20</sup> Hence, ATE Section 5.5 (Commercial Air Passenger Services) provides that there will be two components to commercial air passenger services at STS: (1) commuter airlines; and (2) scheduled airlines.

**Commuter Airline Service.** According to the 1992 ATE, commuter airlines should be able to provide Sonoma County air passengers with convenient connections to major airline service points in the Bay Area. This service was considered to be important in that it was to accommodate future aviation demand to and from the County, and provide a time-saving alternative to surface transportation on the Highway 101 corridor to SFO and OAK.<sup>21</sup> The ATE projected that annual commuter airline passengers would reach 50,000 by 2005.<sup>22</sup> The ATE’s underlying assumption in this case was that commuter airlines would be operating up to 14 flights per day by twin-engine turboprop-type aircraft averaging fifteen passenger seats at a 65 percent average load factor.<sup>23</sup> The ATE acknowledges that fewer operations would be required to carry the same number of passengers using larger aircraft or higher load factors.

**Scheduled Airline Service.** The 1992 ATE anticipated that scheduled airline service at STS would consist of passenger service to one or more major air passenger markets outside the Bay Area. The most likely points for such service were thought to be in Southern California. The ATE projected that scheduled airline passengers would reach 523,000 by 2005.<sup>24</sup> The ATE’s underlying assumption in this case was that air carrier airlines could be operating up to 15 flights per day by jet aircraft averaging eighty passenger seats at a 66 percent average load factor.<sup>25</sup>

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<sup>20</sup> Section 3.1.

<sup>21</sup> The ATE defines a Commuter Airline as an airline engaged “in regularly scheduled air service, carrying persons or property on intrastate routes.” The ATE does not classify Commuter Airlines on the basis of aircraft size (i.e., numbers of seats). Hence, Regional Jets with a capacity of 70-100 passengers flown by Certificated Commuter Air Carriers (14 CFR 135) on interstate routes would be counted as Scheduled Airline Service under the ATE, while larger Certificated Air Carrier (14 CFR 121) aircraft with up to 150 seats flown on intrastate routes would be classified as a Commuter Air Carrier. This discrepancy and the fact that commuter airline connections to Bay Area air carrier airports (i.e., SFO, OAK, and SJC) from STS are no longer considered practicable due to capacity, policy and environmental constraints at these airports, require that the ATE be updated to reflect these considerations.

<sup>22</sup> Without actually saying so, the ATE implies that another 75,000 annual commuter passengers would be making surface trips to Bay Area commercial service airports.

<sup>23</sup> Current commuter airline industry practices have virtually eliminated 15-passenger seat aircraft and load factors are projected to be in the range of 70% and higher.

<sup>24</sup> The ATE indirectly assumed that another 784,500 air carrier passengers would be making surface trips to Bay Area airports. The combined total of Sonoma County area air passengers anticipated to make surface vehicle trips to Bay Area commercial service airports by 2005 was 859,500 out of a potential 1.43 million total passengers.

<sup>25</sup> Current scheduled airline industry practices are toward larger aircraft (i.e., more seats) and higher load factors.

However, because of air quality considerations, the ATE was adjusted to accommodate no more than 14 air carrier flights per day.<sup>26</sup>

**1992 ATE Goals and Objectives.** Based on the above classes of service and passenger forecasts, the 1992 ATE set as its goal the “establishment and maintenance of commuter and scheduled airline services at the Sonoma County Airport and to provide for the production of adequate airport facilities to serve passengers which is safe, efficient, and compatible with the surrounding community” (Goal AT-5).

***Objective AT-5.1***

*Provided for commercial air services, including scheduled and commuter airlines at the Sonoma County Airport not to exceed 573,000 annual passengers or 15,200 annual operations by 2005.*

***Objective AT-5.2***

*Provided a balance between scheduled and commuter airline services, not to exceed 21 departure slots per day, as follow:*

*Slots 1-8 reserved for scheduled air carriers, but may be used by commuters. The slots are revocable and subject to reallocation upon application by a scheduled air carrier to initiate or increase exiting service.*

*Slots 9-14 reserved for commuter air carriers, but may be used by scheduled air carriers.*

*Slots 15-21 reserved exclusively for commuter air carriers.*

*Scheduled air carriers may not use more than 14 of the 21 daily departure slots.*

The 1992 ATE also incorporated several policies designed to achieve its commercial air passenger services goals and objectives. Notable among these are that the runway length is limited to the existing length of the longest runway (approximately 5,000 feet), and that any proposed improvement projects to accommodate air passenger services must be consistent with 15,200 annual air carrier operations and 573,000 annual passengers.<sup>27</sup> A review of the ATE policies is also required when average daily passenger enplanements reach 650 over a period of one year (474,500 annual passengers).<sup>28</sup>

**Sonoma County General Plan 2020 Air Transportation Element (Draft)**

Sonoma County is currently in the process of updating the County General Plan (“Sonoma County General Plan 2020”) to provide policy guidelines for the unincorporated areas of the county to direct growth and development to the year 2020. Included in the General Plan update process is an updated General Plan Air Transportation Element. A review of the Public Hearing Draft 2020 Air Transportation Element (undated) indicates that virtually all of the commuter and scheduled airline service assumptions, and goals and objectives used in the 1992 ATE have been carried forward with the exception of the 2005 date, which has been updated to 2020. However, the Public Hearing Draft ATE now includes the following policy guidelines:

<sup>26</sup> ATE Objective 5.2.

<sup>27</sup> The less than optimal length of the primary runway at STS has been cited as an issue by a number of prospective scheduled air carriers interviewed by the County. The desired runway length is 6,000 feet.

<sup>28</sup> Objective ATE-5.3.

**Policy AT-5a:** *Revise, update and maintain the Sonoma County Airport Master Plan to accommodate 15,200 annual operations by commuter and scheduled airlines by 2020. The Master Plan shall provide for commercial air carrier services not to exceed a total of 21 departures per day with scheduled air carriers utilizing no more than 14 of the 21 departures.*

**Policy AT-5b:** *Commercial air carrier services at the Sonoma County Airport shall not exceed a total of 21 departures per day. Each of the 21 departures shall constitute a departure slot. The 21 departure slots shall be allocated between commuter and scheduled air carriers as follows:*

- (1) Slots 1-8 are reserved for scheduled air carriers; may be used by commuter air carriers, but use is revocable and subject to reallocation upon application by a scheduled air carrier to initiate or increase service.*
- (2) Slots 9-14 are reserved for commuter carriers, but may be used by scheduled air carriers.*
- (3) Slots 15-21 are reserved exclusively for commuter air carriers.*
- (4) At no time shall scheduled air carriers utilize more than 14 of the 21 departure slots.*

**Policy AT-5c:** *Runway length at the Sonoma County Airport for the existing and any new runway which may be constructed shall be limited to no longer than the present length of approximately 5,000 feet. Existing runways will not be substantially strengthened except as needed to perform necessary or routine maintenance. Operations by commercial air carriers shall be limited to those aircraft types that may safely and efficiently operate within this facility constraint and which do not exceed an operating weight of 95,000 pounds.*

**Policy AT-5d:** *Any air carrier initiating or expanding commuter or scheduled airline passenger service or commercial freight service at the Sonoma County Airport shall be required to enter into a license, lease, or operating agreement with the County of Sonoma. Licenses, leases and operating agreements shall implement and be required to conform to the policy directives of the General Plan. Licenses, leases and operation agreements shall include provisions for slot reallocation.*

**Policy AT-5e:** *Any proposed improvement projects to accommodate air passenger services shall be consistent with the year 2020 projections of 15,200 annual operations and 573,000 annual passengers.*

**Policy AT-5f:** *A review by the Board of Supervisors shall occur at such a time that the "review threshold" of 650 enplaned passengers per day averaged over a one year period (474,500 annual passengers) is reached. The review anticipated by this section is not intended to require an amendment to the Air Transportation Element nor is it intended to require review of this element in its entirety; rather it is intended to trigger Board consideration of the impacts and infrastructure of the Sonoma County Airport as it relates to its immediate environs.*

## **NEXT STEPS**

This report describes the methodologies and assumptions used to forecast a range of potential air carrier and commuter airline activities at the Sonoma County Airport. The next step should be to adopt the forecasts as the master plan's official commercial air service forecast. Secondly, because the currently adopted ATE had projected certain activity levels for 2005 based on aircraft fleet mix and boarding load factors developed in 1992 and since then many things have changed in the airline industry, the ATA must be amended. For example, the 15-passenger commuter airliners and 50-passenger regional jets used as the bases for the ATE projections will not likely ever see substantial service at the Sonoma County Airport.

Similarly, the definition of a commuter airliner set forth in the ATE is not consistent with current terminology. The ATE classifies any commercial aircraft used in scheduled intrastate service as a commuter airline. This means that any aircraft, including those with as many as 150 passenger seats and capable of using the airport, used in intrastate service would be classified as a commuter airline. This definition also needs to be reevaluated.

For reasons of consistency, the assumptions developed in the Sonoma County Airport Master Plan Update and the 2020 Sonoma County General Plan Update must be the same. The ATE should be thoroughly reviewed to ensure that any assumptions or other information projected to the year 2020 are consistent with the operational realities of the airport and current airline trends.