Chapter 3: Aviation Activity Forecasts

3.1 INTRODUCTION

Activity forecasts are a critical component of the Master Plan. They are instrumental in determining the size and type of facilities that will need to be developed or expanded at PSP over the next twenty years. Separate annual forecasts were developed for scheduled domestic and international passenger, air cargo, air taxi, general aviation, and military activity. Forecasts were prepared for 2013, 2018, 2023, and 2028.

This report first discusses historical and anticipated socioeconomic activity in the Palm Springs area followed by a discussion of historical aviation activity and ongoing trends at PSP. Critical assumptions are then presented followed by the forecasts of domestic and international passengers. Forecasts of air cargo tonnage, air taxi, general aviation and military activity are then discussed. The chapter concludes with a summary of forecast annual activity and alternative forecast scenarios.

The assumptions in the following forecasts are based on input from Airport officials, consultant input, previous PSP studies, relevant literature, and professional experience. Forecasting, however, is not an exact science. Variations from forecast levels in the local and national economy and in the airline business environment may have a significant effect on the projections presented herein. The current environment is especially uncertain, since no one yet knows the true impact of the financial crisis and the extent of the recession and long-term growth going forward. Likewise, the cost of fuel – a key factor in determining aviation demand, has increased dramatically in volatility. Additional uncertainties occur towards the end of the forecast period, when new technologies and business strategies and changes in work and recreational practices may have an unpredictable impact on aviation activity. For these reasons, the forecasts should be periodically compared with actual Airport activity levels, and Airport plans and policies adjusted accordingly.

On March 19th, 2009, Palm Springs International Airport submitted a draft Forecast of Aviation Activity to the Los Angeles Federal Aviation Administration (FAA) Airport District Office (ADO). As a result of the difference in total operations and enplanements compared to the 2008 Terminal Area Forecast (TAF) of 28% in the 5-year forecast period and 33% in the 10-year forecast period, the Forecast was forwarded to FAA Headquarters for review. It should be noted that the 2009 Draft TAF estimate is closer to the PSP forecast with a percent difference in 2023 of less than 18% for enplanements and operations.

The FAA requested that the submitted forecast consider the current economic recession, which has impacted airports across the country as airlines have announced capacity reductions nation-wide. The Forecast document was revised to include text indicating a consideration of the current economic recession. Particularly, actual passenger activity may track below the projections through 2013. It was further recommended that the Airport closely monitor activity levels and adjust the phasing of planned improvements accordingly. This Forecast, however, is not expected to trigger any airfield capacity enhancement projects. The FAA provided final acceptance of the PSP *Aviation Activity Forecasts* on August 24, 2009.

3.2 SOCIOECONOMIC ANALYSIS

3.2-1 Introduction

The strength of the local and national economy and the cost of available services (air fares and fees) ultimately determine passenger and facility demand. Consequently, the development of an aviation activity forecast requires a clear understanding of local economic forces and trends. This section examines historical and projected income, employment, and population data for Riverside County and the Riverside-San Bernardino-Ontario Metropolitan Statistical Area (MSA).

When developing an aviation forecast, it is important to accurately define the catchment area, because defining it too narrowly would exclude regional economic activity that helps generate passenger traffic and defining it too broadly would inappropriately incorporate economic activity that does not generate passenger traffic for Palm Springs International Airport (PSP). For the purposes of this analysis, two alternative definitions are used. The PSP primary catchment area is defined as Riverside County and the PSP secondary catchment area is defined as the Riverside-San Bernardino-Ontario MSA.

This section examines historical and projected income, employment, and population data for Riverside County and the PSP catchment area. Projections of future population and employment levels are derived from projections prepared by the Southern California Association of Governments (SCAG). SCAG growth rates are applied to historical data to derive future levels of population and employment. Income levels are derived from projections prepared by Woods and Poole Economics (W&P). W&P per capita income growth rates are applied to historical data to derive future levels.

3.2-2 Population

Table 3-1 displays historic (1969-2006) population data for each of the catchment areas. Total population was approximately at 2.0 million for Riverside County and almost 4.0 million for the Riverside-San Bernardino-Ontario MSA in 2006. As shown, the population in Riverside County grew 4.01 percent annually between 1969 and 2006. The rate of growth has slowed somewhat over time; since 1990, the population has grown at a 3.11 percent annual rate. However, the current population growth rate in the Palm Springs area almost triples the US growth rate.

Population projections were prepared by applying SCAG growth rates to the most recent population base for Riverside County and the Riverside-San Bernardino-Ontario MSA, and W&P growth rates were applied to California and the United States. Accordingly, population for Riverside County is estimated to reach 3.27 million by 2028 (**Table 3-2**). Population for the MSA is expected to grow to almost 6.11 million over the same period. Growth rates through 2028 are expected to be slightly less than rates experienced through the 1990's for Riverside County and the MSA, but still higher than those for the nation. The MSA is expected to grow at a slightly slower rate than Riverside County.

3.2-3 Employment

Table 3-3 displays historic (1969-2006) employment data for Riverside County and the Riverside-San Bernardino-Ontario MSA. Employment growth in Riverside County (3.80 percent) outpaced that of the U.S. (1.46 percent). Riverside County has 860,027 jobs, and the MSA has 1.72 million jobs. Leisure and hospitality, agriculture, educational and health services, and professional and business services are the leading industries in the Palm Springs area. In line with the population forecasts, employment growth for Riverside County is estimated at 2.81 percent, annually, through 2028 (**Table 3-4**).

Table 3-1

Historical Population

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
1969	450,477	1,122,165	19,711,000	201,298,000
1970	460,682	1,143,539	20,023,181	203,798,722
1971	477,557	1,171,161	20,345,575	206,817,509
1972	493,221	1,189,476	20,584,794	209,274,882
1973	497,917	1,202,185	20,867,737	211,349,205
1974	515,875	1,229,743	21,172,548	213,333,635
1975	528,632	1,248,571	21,536,715	215,456,585
1976	548,029	1,282,517	21,934,505	217,553,859
1977	577,957	1,347,627	22,350,247	219,760,875
1978	611,852	1,435,733	22,838,960	222,098,244
1979	640,044	1,496,847	23,255,069	224,568,579
1980	669,473	1,572,429	23,800,800	227,224,719
1981	693,249	1,626,183	24,285,933	229,465,744
1982	719,842	1,686,602	24,820,007	231,664,432
1983	746,898	1,743,463	25,360,023	233,792,014
1984	783,202	1,811,019	25,844,397	235,824,907
1985	825,685	1,897,927	26,441,107	237,923,734
1986	871,209	1,995,378	27,102,238	240,132,831
1987	930,059	2,122,256	27,777,160	242,288,936
1988	995,977	2,267,166	28,464,250	244,499,004
1989	1,084,568	2,437,479	29,218,165	246,819,222
1990	1,193,156	2,630,471	29,959,515	249,622,814
1991	1,246,326	2,739,150	30,470,736	252,980,941
1992	1,286,364	2,821,341	30,974,659	256,514,224
1993	1,315,090	2,864,517	31,274,928	259,918,588
1994	1,346,651	2,905,505	31,484,435	263,125,821
1995	1,373,034	2,949,807	31,696,582	266,278,393
1996	1,393,732	2,990,316	32,018,834	269,394,284
1997	1,423,934	3,042,372	32,486,010	272,646,925
1998	1,461,916	3,108,220	32,987,675	275,854,104
1999	1,507,912	3,189,513	33,499,204	279,040,168
2000	1,559,431	3,278,271	34,004,051	282,194,308
2001	1,616,415	3,379,383	34,525,902	285,112,030
2002	1,686,415	3,490,698	34,963,856	287,888,021
2003	1,769,356	3,622,604	35,376,833	290,447,644
2004	1,853,393	3,760,531	35,721,991	293,191,511
2005	1,927,211	3,880,440	35,990,312	295,895,897
2006	2,007,206	3,994,711	36,249,872	298,754,819
Average Annual Growth				
1969-2006	4.01%	3.40%	1.62%	1.04%
1980-2006	4.15%	3.51%	1.57%	1.02%
1990-2006	3.11%	2.49%	1.13%	1.06%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table 3-2

Projected Population

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
	SCAG Projections		Woods & Poole Projections	
2000	N/A	N/A	34,008,499	282,216,952
2001	N/A	N/A	34,550,466	285,226,284
2002	N/A	N/A	35,024,517	288,125,973
2003	1,747,879	3,612,129	35,466,365	290,796,023
2004	1,837,316	3,754,584	35,841,254	293,638,158
2005	1,931,330	3,902,658	36,154,147	296,507,061
2006	1,989,945	4,001,908	36,457,549	299,398,484
2008	2,112,567	4,208,043	37,327,060	306,044,993
2013	2,399,083	4,701,241	39,303,363	321,059,943
2018	2,685,066	5,187,325	41,382,626	336,940,300
2023	2,974,384	5,670,317	43,539,597	353,465,106
2028	3,239,851	6,122,697	45,828,799	371,070,802
	SCAG Growth Rates Applied to BEA 2006 Base Year Data		Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data	
2006 (b)	2,007,206	3,994,711	36,249,872	298,754,819
2008	2,130,891	4,200,476	37,114,430	305,387,039
2013	2,419,892	4,692,787	39,079,475	320,369,709
2018	2,708,356	5,177,997	41,146,894	336,215,926
2023	3,000,184	5,660,121	43,291,577	352,705,205
2028	3,267,953	6,111,687	45,567,740	370,273,051
	Average Annual Growth			
2006-2028	2.24%	1.95%	1.05%	0.98%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.
(b) Table 3.1.

Sources: United States Department of Commerce, Bureau of Economic Analysis and Woods & Poole Economics, CEDDS 2007.

Table 3-3

Historical Employment

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
1969	167,296	410,506	9,032,870	91,057,200
1970	171,340	418,790	9,057,029	91,281,600
1971	174,895	422,980	9,036,239	91,586,400
1972	179,524	436,775	9,368,633	94,317,200
1973	190,960	458,353	9,844,104	98,432,500
1974	195,087	468,665	10,163,287	100,117,800
1975	199,073	473,347	10,286,544	98,906,600
1976	210,322	491,513	10,633,166	101,597,200
1977	226,672	524,096	11,119,486	105,049,200
1978	247,414	565,736	11,802,515	109,688,600
1979	259,889	596,922	12,462,209	113,289,100
1980	264,825	610,735	12,776,784	114,231,200
1981	267,470	620,236	12,969,433	115,304,000
1982	268,189	620,292	12,899,283	114,557,300
1983	280,890	647,463	13,218,709	116,056,700
1984	300,016	688,054	13,852,221	121,091,100
1985	321,877	740,046	14,359,249	124,509,700
1986	342,914	786,022	14,787,472	126,970,300
1987	364,331	834,805	15,394,351	130,400,400
1988	394,355	895,826	16,132,899	134,506,900
1989	423,888	955,511	16,550,106	137,199,800
1990	455,859	1,011,187	16,965,207	139,380,900
1991	473,229	1,045,761	16,869,884	138,605,800
1992	469,659	1,043,069	16,509,567	139,162,100
1993	477,269	1,046,911	16,483,694	141,779,400
1994	494,023	1,072,918	16,658,844	145,223,600
1995	513,371	1,107,339	17,058,764	148,982,800
1996	526,688	1,140,077	17,466,073	152,150,200
1997	549,175	1,175,876	17,786,862	155,608,200
1998	591,753	1,248,453	18,504,281	159,628,200
1999	629,146	1,322,683	19,024,298	162,955,300
2000	662,404	1,384,410	19,626,033	166,758,800
2001	688,835	1,428,463	19,715,866	167,014,700
2002	719,097	1,474,945	19,660,375	166,633,100
2003	747,567	1,524,386	19,780,956	167,553,500
2004	783,857	1,584,792	19,796,639	170,512,700
2005	820,172	1,651,355	20,035,297	174,176,400
2006	860,027	1,718,422	20,525,491	178,332,900
Average Annual Growth				
1969-2006	4.40%	3.84%	2.18%	1.78%
1980-2006	4.46%	3.91%	1.77%	1.66%
1990-2006	3.80%	3.17%	1.13%	1.46%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table 3-4

Projected Employment

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
	SCAG Projections		Woods & Poole Projections	
2000	N/A	N/A	19,626,032	166,758,782
2001	N/A	N/A	19,715,866	167,014,683
2002	N/A	N/A	19,660,377	166,633,089
2003	587,279	1,226,225	19,780,952	167,553,474
2004	617,995	1,288,786	20,101,447	170,512,658
2005	650,317	1,354,539	20,548,597	174,249,503
2006	675,263	1,399,576	20,916,388	176,969,936
2008	728,062	1,494,193	21,651,951	182,801,290
2013	858,546	1,720,165	23,490,767	197,379,998
2018	987,729	1,925,801	25,329,082	211,958,828
2023	1,116,367	2,129,279	27,166,772	226,537,961
2028	1,243,221	2,341,532	29,003,594	241,117,273
	SCAG Growth Rates Applied to BEA 2006 Base Year Data		Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data	
2006 (b)	860,027	1,718,422	20,525,491	178,332,900
2008	927,273	1,834,594	21,247,307	184,209,165
2013	1,093,460	2,112,046	23,051,759	198,900,154
2018	1,257,989	2,364,529	24,855,719	213,591,265
2023	1,421,825	2,614,362	26,659,064	228,282,682
2028	1,583,388	2,874,970	28,461,559	242,974,279
		Average Annual Growth		
2006-2028	2.81%	2.37%	1.50%	1.42%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.
(b) Table 3.3.

Source: United States Department of Commerce, Bureau of Economic Analysis.

3.2-4 Income

Table 3-5 shows historical (1969-2006) real personal income expressed in thousands of year 2007 dollars. Over the period, income has grown approximately 5.27 percent per year in Riverside County, compared to 3.05 percent per year in the U.S. Income in Riverside County grew significantly faster than in the MSA, California, or the United States.

Forecasts of the long-term impact of the current financial crisis on local and national economic growth are not yet available. Some recent assessments of 2009 GDP growth in the U.S. are as follows:

- OECD: 0.9 percent
- Economist Magazine (survey of economists): 1.0 percent
- U.S. Energy Information Administration: 1.4 percent
- Conference Board: 1.5 percent

Based on the above information, it is recommended that the 2009 income forecasts reflect a 1.25 percent decrease from 2008 levels. Afterwards, income growth would be assumed to resume at the originally projected rate. Post-2009 it is assumed that over the forecast period economic growth periods will offset economic downturns such as the one currently being experienced.

SCAG does not publish income projections; therefore future income was estimated by multiplying the SCAG population forecasts by the W&P per capita income forecasts. The results were then adjusted downwards by 3.51 percent, reflecting the anticipated 1.25 percent downturn plus the lost 2.26 percent growth that would have been expected absent the recession. Income in Riverside County is expected to grow more slowly (3.12 percent) through 2028 (**Table 3-6**) than it has in the past. This projected growth rate still exceeds the US projected growth rate (2.09 percent).

Table 3-7 displays historical per capita personal income (PCPI) from 1969 through 2006 expressed in 2007 dollars. Between 1969 and 2006, PCPI in Riverside County grew about 1.21 percent per year, from $18,658 to $29,463. PCPI in Riverside County was higher than that of the U.S. until 1989, and it has grown at a slower rate since then. PCPI in Riverside-San Bernardino-Ontario MSA has grown at a slightly higher rate over the same time period. W&P's PCPI projections are presented in **Table 3-8**. PCPI in Riverside County is expected to reach $35,543 (2007 dollars) by 2028, compared to $47,935 for the country. PCPI for Riverside County is expected to grow more slowly (0.86 percent) between 2006 and 2028.

Table 3-5

Historical Income (thousands of 2007 dollars)

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
1969	8,404,958	19,765,820	415,704,154	3,595,945,683
1970	8,956,409	20,975,904	428,255,465	3,701,394,541
1971	9,384,295	21,790,130	436,849,425	3,829,696,567
1972	10,155,964	23,528,309	462,790,415	4,069,275,741
1973	10,892,767	24,926,271	484,918,476	4,322,338,141
1974	11,066,977	25,367,883	491,510,267	4,313,994,853
1975	11,597,029	26,523,256	502,146,157	4,349,788,043
1976	12,584,540	28,634,808	531,896,245	4,553,883,964
1977	13,445,441	30,422,168	557,424,637	4,735,790,233
1978	14,691,345	32,996,799	594,934,673	4,979,217,312
1979	15,396,487	34,634,585	624,905,487	5,132,538,070
1980	16,086,441	36,122,625	642,348,057	5,189,851,497
1981	17,048,162	38,081,646	663,397,388	5,350,513,762
1982	17,523,920	38,903,668	671,104,675	5,431,987,813
1983	18,566,528	40,998,623	695,277,143	5,556,236,637
1984	20,513,796	44,825,938	750,227,442	5,945,488,754
1985	22,266,998	48,676,306	787,686,723	6,169,140,160
1986	24,238,295	52,614,944	821,232,849	6,359,840,607
1987	25,971,781	56,354,287	854,076,726	6,522,042,689
1988	28,153,542	60,175,425	889,509,411	6,756,552,552
1989	30,669,607	64,704,122	918,928,702	6,983,965,753
1990	32,607,717	68,555,466	947,058,594	7,102,891,197
1991	32,151,289	67,832,577	934,288,862	7,094,202,541
1992	32,643,172	68,802,350	954,617,955	7,330,034,813
1993	32,793,504	68,743,233	948,139,717	7,430,920,889
1994	33,133,357	69,244,353	958,250,449	7,652,454,765
1995	33,659,051	70,096,928	983,429,271	7,890,929,888
1996	34,652,883	71,675,041	1,018,841,083	8,187,058,361
1997	36,221,621	74,768,693	1,063,884,387	8,539,476,373
1998	39,319,335	80,395,693	1,146,883,187	9,086,403,073
1999	41,084,385	83,646,750	1,204,306,775	9,396,192,747
2000	43,529,953	87,950,362	1,298,129,127	9,904,443,245
2001	46,046,269	92,618,569	1,307,744,752	10,041,010,992
2002	47,714,220	95,576,701	1,303,553,288	10,077,635,186
2003	50,141,387	99,647,634	1,321,979,867	10,190,505,245
2004	52,982,707	104,976,123	1,373,527,379	10,536,441,805
2005	56,015,119	109,675,233	1,420,906,896	10,838,535,953
2006	59,138,390	114,443,028	1,473,097,681	11,248,257,992
Average Annual Growth				
1969-2006	5.27%	4.73%	3.39%	3.05%
1980-2006	4.94%	4.36%	3.12%	2.91%
1990-2006	3.56%	3.06%	2.63%	2.74%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table 3-6

Projected Income

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
		Woods & Poole Projections (000's 2004 dollars)		
2000	N/A	N/A	1,196,282,961	9,127,178,445
2001	N/A	N/A	1,205,120,254	9,253,025,879
2002	N/A	N/A	1,201,270,884	9,286,876,362
2003	45,339,981	91,047,324	1,218,234,171	9,390,966,767
2004	48,433,495	96,511,592	1,268,063,567	9,716,486,648
2005	51,000,631	100,973,470	1,298,006,186	9,935,062,093
2006	52,210,198	104,873,988	1,290,852,437	10,143,620,638
2008	56,198,513	111,710,913	1,350,231,741	10,590,074,893
2013	66,852,847	130,417,118	1,512,786,442	11,816,611,202
2018	78,768,774	151,106,111	1,697,466,818	13,214,112,302
2023	92,156,509	174,005,740	1,905,889,769	14,793,380,268
2028	106,276,519	198,409,657	2,142,385,931	16,588,446,539
		Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data		
2006 (b)	59,138,390	114,443,028	1,473,097,681	11,248,257,992
2008	63,655,946	121,903,776	1,540,860,279	11,743,330,986
2013	75,724,090	142,316,795	1,726,364,791	13,103,436,744
2018	89,221,237	164,893,519	1,937,118,728	14,653,125,310
2023	104,385,498	189,882,584	2,174,967,268	16,404,375,100
2028	120,379,206	216,513,193	2,444,852,452	18,394,923,569
		Average Annual Growth		
2006-2028	3.28%	2.94%	2.33%	2.26%
		Income Estimated by Multiplying Population Forecasts by Adjusted Per Capita Income Forecasts (c)		
2006 (b)	59,138,390	114,443,028	1,473,097,681	11,248,257,992
2008	63,655,946	121,903,776	1,540,860,279	11,743,330,986
2013	73,065,482	137,320,176	1,665,753,612	12,643,386,382
2018	86,088,756	159,104,250	1,869,108,161	14,138,666,719
2023	100,720,613	183,215,970	2,098,606,043	15,828,431,639
2028	116,152,795	208,911,602	2,359,015,791	17,749,093,668
		Average Annual Growth		
2006-2028	3.12%	2.77%	2.16%	2.09%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.
(b) Table 3.5.
(c) Population forecasts in Table 2 multiplied by Per Capita Income Forecasts in Table 3.8.

Source: United States Department of Commerce, Bureau of Economic Analysis.

Table 3-7

Historical Per Capita Income (2007 dollars)

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
1969	18,658	17,614	21,090	17,864
1970	19,442	18,343	21,388	18,162
1971	19,651	18,606	21,471	18,517
1972	20,591	19,780	22,482	19,445
1973	21,877	20,734	23,238	20,451
1974	21,453	20,629	23,215	20,222
1975	21,938	21,243	23,316	20,189
1976	22,963	22,327	24,249	20,932
1977	23,264	22,575	24,940	21,550
1978	24,011	22,983	26,049	22,419
1979	24,055	23,138	26,872	22,855
1980	24,029	22,972	26,989	22,840
1981	24,592	23,418	27,316	23,317
1982	24,344	23,066	27,039	23,448
1983	24,858	23,516	27,416	23,766
1984	26,192	24,752	29,029	25,211
1985	26,968	25,647	29,790	25,929
1986	27,821	26,368	30,301	26,485
1987	27,925	26,554	30,747	26,918
1988	28,267	26,542	31,250	27,634
1989	28,278	26,546	31,451	28,296
1990	27,329	26,062	31,611	28,454
1991	25,797	24,764	30,662	28,042
1992	25,376	24,386	30,819	28,576
1993	24,936	23,998	30,316	28,589
1994	24,604	23,832	30,436	29,083
1995	24,514	23,763	31,026	29,634
1996	24,863	23,969	31,820	30,391
1997	25,438	24,576	32,749	31,321
1998	26,896	25,866	34,767	32,939
1999	27,246	26,226	35,950	33,673
2000	27,914	26,828	38,176	35,098
2001	28,487	27,407	37,877	35,218
2002	28,293	27,380	37,283	35,005
2003	28,339	27,507	37,369	35,086
2004	28,587	27,915	38,450	35,937
2005	29,065	28,264	39,480	36,630
2006	29,463	28,649	40,637	37,650
Average Annual Growth				
1969-2006	1.21%	1.29%	1.74%	1.98%
1980-2006	0.76%	0.82%	1.53%	1.87%
1990-2006	0.44%	0.56%	1.49%	1.66%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.

Sources: Tables 3.1 and 3.5 and HNTB analysis.

Table 3-8

Projected Per Capita Income (2004 Dollars)

Year	Riverside County	Riverside-San Bernardino-Ontario (MSA) (a)	California	United States
		Woods & Poole Projections (b)		
2000	25,713	24,715	35,176	32,341
2001	26,178	25,229	34,880	32,441
2002	25,945	25,135	34,298	32,232
2003	25,940	25,206	34,349	32,294
2004	26,361	25,705	35,380	33,090
2005	26,407	25,873	35,902	33,507
2006	26,237	26,206	35,407	33,880
2008	26,602	26,547	36,173	34,603
2013	27,866	27,741	38,490	36,805
2018	29,336	29,130	41,019	39,218
2023	30,983	30,687	43,774	41,852
2028	32,803	32,406	46,748	44,704
		Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data		
2006	29,463	28,649	40,637	37,650
2008	29,873	29,021	41,516	38,454
2013	31,292	30,327	44,176	40,901
2018	32,943	31,845	47,078	43,582
2023	34,793	33,547	50,240	46,510
2028	36,836	35,426	53,653	49,679
		Average Annual Growth		
2006-2028	1.02%	0.97%	1.27%	1.27%
		Woods & Poole Growth Rates Applied to BEA 2006 Base Year Data and Adjusted for Recession (c)		
2006	29,463	28,649	40,637	37,650
2008	29,873	29,021	41,516	38,454
2013	30,194	29,262	42,625	39,465
2018	31,786	30,727	45,425	42,052
2023	33,571	32,370	48,476	44,877
2028	35,543	34,182	51,769	47,935
		Average Annual Growth		
2006-2028	0.86%	0.81%	1.11%	1.10%

(a) Metropolitan Statistical Area (MSA) includes Riverside County and San Bernardino County.
(b) Income divided by population.
(c) Post-2008 projections adjusted downward by 3.51% to account for estimated lost growth due to financial crisis and recession.

Sources: Tables 3.2 and 3.6 and HNTB analysis.

3.3 HISTORICAL AVIATION ACTIVITY AT PSP

3.3-1 Introduction

This section describes historical and current aviation activity and trends at PSP. This information provides the basis for developing the forecasts. Included are discussions of historical passenger traffic, along with trends in air fares and fleet mix. Historical air cargo and aircraft operations are also described.

3.3-2 Historical Passenger Activity

Table 3-9 shows total passenger enplanements, domestic origin-destination (O&D) traffic, and fares and yields at PSP from 1990 to 2008. Passenger traffic at PSP consists of two major components, the resident Origination and Destination (O&D) passenger traffic and the visitor traffic. Resident O&D traffic for PSP, which is delineated as being initiated from base, consists of travelers whose initial origination point and final destination point in their itinerary is PSP. Visiting passengers, delineated as initiated from another city, have itineraries with PSP as their initial destination point and final origination point. The two categories are subject to differing economic factors. Therefore, the two components were separated to forecast the potential O&D passenger traffic that PSP will generate in the future

Passenger enplanements have grown at about 2.97 percent per year since 1990. Average growth rates for enplanements dipped slightly after the September 2001 terrorist attacks. However, enplanement levels have increased steadily since 2003 for both mainline and other carriers, although the financial crisis that began during 2008 and into 2009 will likely lower enplanement levels in the near term, then begin to rebound back into a growth posture. Historical enplanements are broken by major airline in **Appendix A**.

Domestic O&D traffic has grown at a slower rate than enplanements, with 2.85 percent growth since 1990 compared to 2.97 percent. Resident O&D traffic is driving overall O&D growth with a 3.88 percent growth since 1990, while visitor O&D traffic is growing more slowly at 2.51 percent. This is likely because the Palm Springs area and Riverside County have grown at a faster rate than the nation as measured by population, income and employment. Therefore, demand has risen faster for resident O&D than visitor O&D in the PSP market. Fares at PSP have decreased in real terms until 2005, when they have since increased slightly likely because of higher industry fuel costs.

As shown, there has been a significant increase in the average passenger trip length. The result is that the real yields (revenue per passenger mile) have decreased throughout the period. Fares and yields are also shown with taxes and fees included, since these are the costs faced by passengers when purchasing air travel services.

Table 3-10 shows fares and yields at PSP and compares them to fares and yields at seven competing airports: Bob Hope Airport (BUR), Los Angeles International Airport (LAX), Long Beach Airport (LGB), Ontario International Airport (ONT), Palmdale Regional Airport (PMD), San Bernardino International Airport (SBD), and John Wayne Airport (SNA). PSP's main competitors in the area are ONT and LAX. Fares and yields at ONT and LAX are lower than at PSP, and were declining until recently. Average fares at ONT have been lower than those at PSP since 1990. Fares at LAX were lower than PSP until about

2000, and have been about the same ever since. From a pricing standpoint, ONT has a competitive advantage since Southwest Airlines is a major service provider there.

3.3-3 Air Cargo

Table 3-11 shows enplaned and deplaned air cargo (freight and mail) at PSP from 1990 through 2007. Historically, PSP has only had domestic air cargo, and does not have any committed air cargo facilities. Total freight and mail has declined 16.63 percent since 1990, due to stricter security regulations for passenger carriers, the large presence of cargo handlers at ONT, and the limited amount of airfreight being generated out of this area,

Table 3-9

Historical Passenger Enplanements, Originations, and Yield

	Enplanements (a)			Domestic O&D Passengers			Average Real Fare		Average Real Yield	
Year	Mainline Carriers	Other Carriers	Total	Total (b)	Resident (Initiated from Base) (b)	Visitor (Initiated from Reference) (b)	w/o Taxes & Fees (c)	w/ Taxes & Fees (d)	w/o Taxes & Fees (c)	w/ Taxes & Fees (d)
1990	438,277	18,735	457,012	781,090	189,380	580,780	$ 260.23	$ 281.49	20.20	21.85
1991	407,886	18,981	426,867	737,020	178,400	547,590	$ 240.41	$ 264.45	18.34	20.18
1992	421,553	18,995	440,548	740,550	180,920	548,350	$ 233.41	$ 261.09	16.90	18.90
1993	399,409	27,006	426,415	726,250	184,500	532,240	$ 242.71	$ 271.96	18.27	20.47
1994	445,844	40,800	486,644	755,800	190,380	553,230	$ 226.63	$ 256.09	15.40	17.40
1995	452,898	18,764	471,662	806,140	205,150	588,690	$ 213.29	$ 241.02	15.45	17.46
1996	517,980	41,638	559,618	947,440	251,740	683,240	$ 209.88	$ 223.31	15.85	16.87
1997	577,060	10,025	587,085	1,079,100	279,550	784,510	$ 198.35	$ 220.60	15.54	17.28
1998	625,794	3,679	629,473	1,075,940	255,770	804,170	$ 201.54	$ 227.80	14.89	16.83
1999	631,588	3,072	634,660	1,092,760	276,660	803,300	$ 199.04	$ 224.61	15.25	17.20
2000	640,581	1,877	642,458	1,115,660	282,880	821,920	$ 197.62	$ 222.85	15.21	17.15
2001	587,846	1,604	589,450	1,018,630	257,320	753,370	$ 185.58	$ 210.75	14.11	16.02
2002	556,028	-	556,028	973,580	256,160	709,490	$ 175.17	$ 205.94	13.00	15.29
2003	623,849	2,560	626,409	1,118,190	306,200	802,880	$ 158.82	$ 186.48	11.86	13.93
2004	683,630	3,531	687,161	1,214,720	345,190	859,380	$ 155.54	$ 184.23	11.52	13.65
2005	693,692	19,787	713,479	1,256,950	366,560	879,430	$ 164.78	$ 193.92	12.00	14.13
2006	720,165	44,944	765,109	1,326,990	385,360	929,880	$ 178.15	$ 208.15	12.83	14.99
2007	737,492	68,054	805,546	1,346,930	391,080	943,970	$ 171.17	$ 200.20	12.59	14.73
2008 (e)	681,972	92,084	774,056	1,294,276	375,792	907,069	n/a	n/a	n/a	n/a
					Average Annual Growth					
1990-2000	3.87%	-20.55%	3.46%	3.63%	4.09%	3.53%	-2.71%	-2.31%	-2.80%	-2.40%
1990-2008	2.49%	9.25%	2.97%	2.85%	3.88%	2.51%	-2.43%	-1.98%	-2.74%	-2.30%

(a) 1990-2007 from Palm Springs International Airport Aviation Activity reports. Includes domestic and international enplanements.

(b) USDOT Origin-Destination Survey as compiled by Data Base Products, Inc. In some instances resident and visitor status cannot be distinguished so the sum of the two categories is less than the total.

(c) USDOT Origin-Destination Survey as compiled by Data Base Products, Inc. Converted to 2007 prices. Does not include ticket taxes, PFCs or security fees.

(d) Includes ticket taxes, PFCs and security fees.

(e) Enplanement and deplanement data are actual. O&D are estimated assuming same ratio of O&D passenger to enplanements as in 2007.

Sources: As noted and HNTB analysis.

Table 3-10

Comparison of Air Fares and Yields at PSP, BUR, LAX, LGB, ONT, PMD, SBD, and SNA
(2007 Prices)

Year	Average Fare (w/ Taxes & Fees) (a)								Average Yield (w/ Taxes & Fees) (a)							
	PSP	BUR	LAX	LGB	ONT	PMD	SBD	SNA	PSP	BUR	LAX	LGB	ONT	PMD	SBD	SNA
1990	$ 281.49	$ 145.55	$ 250.70	$ 205.27	$ 195.68	$ 211.72	$ -	$ 246.42	21.85	27.43	16.66	22.23	19.31	24.37	-	23.18
1991	$ 264.45	$ 118.24	$ 230.89	$ 155.46	$ 170.58	$ 247.13	$ -	$ 221.68	20.18	23.70	15.83	19.99	17.68	23.63	-	20.04
1992	$ 261.09	$ 117.86	$ 217.60	$ 168.97	$ 163.24	$ 299.35	$ -	$ 222.11	18.90	22.47	14.82	19.69	16.22	23.26	-	18.72
1993	$ 271.96	$ 112.67	$ 228.57	$ 178.14	$ 165.04	$ 295.71	$ -	$ 233.74	20.47	21.88	16.10	21.09	17.57	23.29	-	19.85
1994	$ 256.09	$ 103.42	$ 210.84	$ 150.66	$ 150.42	$ 301.38	$ -	$ 208.32	17.40	20.22	15.06	18.68	16.78	19.67	-	18.38
1995	$ 241.02	$ 102.31	$ 200.88	$ 140.85	$ 145.25	$ 150.64	$ -	$ 200.29	17.46	19.85	14.77	21.06	16.20	24.22	-	18.37
1996	$ 223.31	$ 103.59	$ 187.08	$ 115.98	$ 137.55	$ 139.02	$ -	$ 190.28	16.87	19.75	13.79	17.95	15.08	22.50	-	18.03
1997	$ 220.60	$ 107.84	$ 197.92	$ 134.30	$ 141.81	$ 248.50	$ -	$ 189.87	17.28	21.15	14.13	13.66	15.43	19.20	-	17.88
1998	$ 227.80	$ 109.69	$ 208.53	$ 182.65	$ 149.23	$ 303.01	$ 37.02	$ 206.35	16.83	21.45	14.64	17.28	16.05	23.23	7.87	19.10
1999	$ 224.61	$ 114.39	$ 206.54	$ 205.00	$ 153.31	$ -	$ 42.14	$ 206.21	17.20	22.19	14.50	18.75	16.16	-	8.95	18.64
2000	$ 222.85	$ 119.62	$ 216.51	$ 199.80	$ 157.98	$ -	$ -	$ 213.82	17.15	22.42	14.88	17.56	16.21	-	-	19.12
2001	$ 210.75	$ 113.98	$ 197.60	$ 192.57	$ 145.08	$ -	$ -	$ 192.15	16.02	20.31	13.18	14.29	14.43	-	-	16.80
2002	$ 205.94	$ 117.44	$ 193.91	$ 182.21	$ 141.43	$ -	$ -	$ 172.65	15.29	19.02	12.54	10.76	13.52	-	-	15.09
2003	$ 186.48	$ 120.25	$ 188.00	$ 156.30	$ 140.40	$ -	$ -	$ 165.39	13.93	19.03	12.07	9.87	13.35	-	-	14.06
2004	$ 184.23	$ 120.76	$ 176.07	$ 146.46	$ 139.93	$ 118.04	$ -	$ 157.79	13.65	18.86	11.12	8.89	13.24	60.23	-	13.65
2005	$ 193.92	$ 129.36	$ 183.01	$ 148.89	$ 146.27	$ 115.10	$ -	$ 162.54	14.13	17.48	11.63	9.29	13.54	57.05	-	14.39
2006	$ 208.15	$ 140.20	$ 194.30	$ 156.80	$ 156.48	$ 111.78	$ -	$ 173.59	14.99	17.40	12.28	10.81	14.59	57.03	-	15.36
2007	$ 200.20	$ 135.93	$ 194.81	$ 152.56	$ 154.65	$ 169.35	$ -	$ 168.41	14.73	16.69	12.46	10.95	14.52	16.93	-	14.92
Average Annual Growth																
1990-2000	-2.31%	-1.94%	-1.46%	-0.27%	-2.12%	-	-	-1.41%	-2.40%	-2.00%	-1.12%	-2.33%	-1.73%	-	-	-1.91%
1990-2007	-1.98%	-0.40%	-1.47%	-1.73%	-1.37%	-1.30%	-	-2.21%	-2.30%	-2.88%	-1.69%	-4.08%	-1.66%	-2.12%	-	-2.56%

(a) Includes tickets taxes, PFCs and security fees.

Sources: USDOT Origin-Destination Survey as compiled by Data Base Products and HNTB analysis.

Table 3-11

History of Air Cargo at PSP
(Pounds)

Year	Domestic Air Freight		
	Enplaned	Deplaned	Total
1990	310,286	533,845	844,131
1991	270,291	454,441	724,732
1992	230,442	427,692	658,134
1993	226,277	399,758	626,035
1994	195,746	398,140	593,886
1995	134,391	313,940	448,331
1996	153,082	326,961	480,043
1997	135,772	330,048	465,820
1998	120,023	275,817	395,840
1999	82,189	180,855	263,044
2000	89,600	198,725	288,325
2001	74,811	128,021	202,832
2002	40,889	122,250	163,139
2003	43,944	182,879	226,823
2004	38,798	169,461	208,259
2005	35,052	114,112	149,164
2006	12,824	41,449	54,273
2007	18,850	19,490	38,340
Average Annual Growth			
1990-2000	-11.68%	-9.41%	-10.19%
1990-2007	-15.19%	-17.69%	-16.63%

Sources:1990-2007 from Palm Springs International Airport Aviation Activity reports.

3.3-4 Aircraft Operations

Table 3-12 shows aircraft operations at PSP since 1990. Over the period, air carrier operations decreased until the mid-1990s, increased until 2001 until a slight dip occurred, then increased again until 2008 where it leveled off. Air taxi operations, which in this instance include regional carriers, have generally decreased since 1994, with an average annual decrease of 2.09 percent since 1990. General aviation operations decreased until the mid-1990's, then increased until 2002 and have declined since. Military operations fluctuated dramatically over the same period. Total aircraft operations decreased from 116,242 in 1990 to 72,876 in 2008, an average annual decrease of 2.56 percent.

3.3-5 Monthly and Daily Distributions

Table 3-13 shows the monthly distribution of passenger enplanements and deplanements for 2007. The seasonal distribution of activity at PSP is much more pronounced than at most other airports, with winter activity exceeding summer activity by a factor of two or three. Palm Springs is a warm weather destination, which explains why the highest levels of enplanements and deplanements are during the winter months from November through April. **Table 3-14** shows the monthly distribution of operations during 2007. Comparatively, the peak month for both enplanements and deplanements was March with 115,392 enplanements and 115,437 deplanements in 2007.

The peak month for air carrier, air taxi, and general aviation operations occurred in March, which corresponds to the peak month for passenger enplanements and deplanements. The peak month for military operations is April. Although a minute percentage of overall operations, military operations are not as seasonally sensitive as the categories in regard to operations. The average day during the peak month is Thursday, although the number of operations per day during the week varies by approximately 10%. **Table 3-15** shows the scheduled aircraft arrivals and departures by hour for a weekday in March, 2008. The busiest time of day at PSP occurs in the late morning for both arrivals and departures. The peak hour for arrivals is between 10:50 and 11:50 AM and departures is between 11:15 and 12:15 PM, with the total peak hour being the same as arrivals. Seat arrivals and departures are the same for the corresponding categories.

Table 3-12

Historical Aircraft Operations at PSP

Year	Air Carrier	Air Taxi	General Aviation	Military	Total
1990	12,270	30,890	71,432	1,650	116,242
1991	9,436	29,016	56,835	1,522	96,809
1992	7,833	32,822	50,777	2,222	93,654
1993	6,901	34,153	48,983	1,063	91,100
1994	7,339	35,367	54,498	928	98,132
1995	6,992	34,091	56,113	1,254	98,450
1996	8,744	30,700	50,392	749	90,585
1997	7,739	28,497	52,951	293	89,480
1998	8,653	29,025	54,562	940	93,180
1999	8,358	30,527	63,520	1,547	103,952
2000	9,580	26,206	59,287	1,030	96,103
2001	8,245	27,995	61,588	730	98,558
2002	9,060	23,518	71,011	866	104,455
2003	8,261	26,067	57,763	977	93,068
2004	8,761	25,427	60,084	897	95,169
2005	9,766	23,312	58,820	955	92,853
2006	10,287	24,959	58,073	1,259	94,578
2007	11,520	24,371	47,476	1,310	84,677
2008	11,331	21,137	39,181	1,227	72,876
Average Annual Growth					
1990-2000	-2.44%	-1.63%	-1.85%	-4.60%	-1.88%
1990-2007	-0.44%	-2.09%	-3.28%	-1.63%	-2.56%

Sources: 1990-2008 from Palm Springs International Airport Aviation Activity reports.

Table 3-13

Monthly Distribution of Passenger Enplanements and Deplanements (2007)

Month	Enplanements	Deplanements	Total	% of Yearly Enp.	% of Yearly Dep.	% of Yearly Total
January	84,749	87,835	172,584	10.5%	10.9%	10.7%
February	91,204	94,945	186,149	11.3%	11.8%	11.6%
March	115,392	115,437	230,829	14.3%	14.3%	14.3%
April	96,244	84,920	181,164	11.9%	10.5%	11.2%
May	62,765	56,511	119,276	7.8%	7.0%	7.4%
June	41,159	40,093	81,252	5.1%	5.0%	5.0%
July	36,120	34,372	70,492	4.5%	4.3%	4.4%
August	36,039	37,121	73,160	4.5%	4.6%	4.5%
September	37,324	39,596	76,920	4.6%	4.9%	4.8%
October	54,878	58,331	113,209	6.8%	7.2%	7.0%
November	77,783	80,362	158,145	9.7%	10.0%	9.8%
December	71,889	75,874	147,763	8.9%	9.4%	9.2%
Total	805,546	805,397	1,610,943			
Peak Month						
March	115,392	115,437	230,829	14.3%	14.3%	14.3%

Sources: Sources: 2007 from Palm Springs International Airport Aviation Activity report.

Table 3-14

Monthly Distribution of Operations (2007)

Month	AC	AT	AC & AT	GA	MIL	Total	% of Yearly AC	% of Yearly AT	% of Yearly AC&AT	% of Yearly GA	% of Yearly MIL	% of Yearly Total
January	1,413	2,418	3,831	4,581	81	8,493	12.3%	9.9%	10.7%	9.6%	6.2%	10.0%
February	1,439	2,337	3,776	4,494	190	8,460	12.5%	9.6%	10.5%	9.5%	14.5%	10.0%
March	1,723	2,748	4,471	6,066	63	10,600	15.0%	11.3%	12.5%	12.8%	4.8%	12.5%
April	1,263	2,474	3,737	5,091	208	9,036	11.0%	10.2%	10.4%	10.7%	15.9%	10.7%
May	762	2,123	2,885	4,845	100	7,830	6.6%	8.7%	8.0%	10.2%	7.6%	9.2%
June	333	1,708	2,041	3,669	84	5,794	2.9%	7.0%	5.7%	7.7%	6.4%	6.8%
July	379	1,629	2,008	2,733	117	4,858	3.3%	6.7%	5.6%	5.8%	8.9%	5.7%
August	320	1,578	1,898	2,601	86	4,585	2.8%	6.5%	5.3%	5.5%	6.6%	5.4%
September	533	1,464	1,997	2,585	73	4,655	4.6%	6.0%	5.6%	5.4%	5.6%	5.5%
October	742	1,780	2,522	3,600	127	6,249	6.4%	7.3%	7.0%	7.6%	9.7%	7.4%
November	1,237	2,147	3,384	3,902	108	7,394	10.7%	8.8%	9.4%	8.2%	8.2%	8.7%
December	1,376	1,965	3,341	3,309	73	6,723	11.9%	8.1%	9.3%	7.0%	5.6%	7.9%
Total	11,520	24,371	35,891	47,476	1,310	84,677						
Peak Month												
March	1,723	2,748	4,471	6,066		10,600	15.0%	11.3%	12.5%	12.8%		12.5%
April					208						15.9%	

Sources: Sources: 2007 from Palm Springs International Airport Aviation Activity report.

Table 3-15

Scheduled Passenger Aircraft Arri vals and Departures by Hour
Weekday in March 2008

	Aircraft Arrivals and Departures			Seat Arrivals and Departures		
Hour	Arrivals	Departures	Total	Arrivals	Departures	Total
0000-0559	1	1	2	50	30	80
0600-0659		6	6		468	468
0700-0759		5	5		304	304
0800-0859	2	1	3	80	140	220
0900-0959	1	2	3	172	80	252
1000-1059	7	3	10	607	252	859
1100-1159	8	8	16	586	697	1283
1200-1259	5	6	11	500	460	960
1300-1359	3	5	8	236	586	822
1400-1459	2	3	5	262	224	486
1500-1559	5	3	8	394	294	688
1600-1659	3	4	7	280	310	590
1700-1759	5	3	8	408	224	632
1800-1859	0	4	4	0	378	378
1900-1959	6	1	7	496	136	632
2000-2059	2	1	3	190	30	220
2100-2159	2	1	3	80	50	130
2200-2259	3		3	244		244
2300-2359	2		2	80		80
Total	57	57	114	4665	4663	9328
Peak	8	8	16	607	697	1283
Peak 60 Minutes	9	9	17	820	884	1286
Peak Time	1050-1150	1115-1215	1050-1150	1050-1150	1115-1215	1050-1150

Sources: Official Airline Guide as compiled by BACK Aviation Solutions and HNTB analysis

3.3-6 Assumptions

This section describes the general forecast assumptions that were applied in this forecast. More detailed assumptions specific to a particular activity category are described in the sections pertaining to those categories. The major assumptions are described below.

3.3-7 Unconstrained Forecasts

The activity forecasts contained herein are physically unconstrained. For the purposes of this study, "physically unconstrained" means that there are sufficient airport airfield, terminal, and landside facilities at PSP to accommodate all commercial aviation activity dictated by demand. It is assumed that destination airports will be developed sufficiently to accommodate demand from the Palm Springs area.

3.3-8 Regulatory Assumptions

This forecast assumes there will not be a return to any airline regulation which was in place prior to 1979. This means airlines will add or change fares and increase or decrease service depending on market conditions. The forecast also assumes there will not be any airport-specific regulatory constraints, such as noise restrictions.

3.3-9 Other Regional Airports

The other airports in the area are Bob Hope Airport (BUR), Los Angeles International (LAX), Long Beach Airport (LGB), Ontario International Airport (ONT), Palmdale Airport (PMD), San Bernardino International Airport (SBD), and John Wayne Airport (SNA). Currently PSP is served mainly by legacy carriers and their alliance groups, and it is assumed that they will be the primary providers of air service at PSP. While scheduled service may be introduced or reintroduced to PMD and SBD, it is assumed the service levels will not be sufficient to materially affect demand at PSP. All of the regional airports in the region are assumed to serve their current roles, with no new commercial passenger airports added in Southern California.

3.3-10 Economic Assumptions

Demographic and economic growth in the region is assumed to be consistent with the projections contained in **Section 3.2** including the adjustments for the current recession.

3.3-11 Assumptions for Tourism and Other Developments in the Coachella Valley

The Coachella valley is a popular tourist destination, and the current investment of billions of dollars into the tourist economy with more hotel rooms and resort destinations is assumed to continue. Consequently, it is assumed that there will be sufficient visitor accommodations to accommodate demand.

3.3-12 Future Security Environment

Security issues related to air travel have changed, and will continue to change, as new security procedures and technology are incorporated to improve airport security. Events that may affect traveler confidence in airport security or air travel security cannot be predicted. It is assumed that there will be no terrorist attacks during the forecast period that will affect confidence in the aviation system to the same extent as 9/11. It is also assumed that the Transportation Security Administration (TSA) and associated security costs and requirements will continue through the forecast period.

3.3-13 International Political Environment

No major international conflicts that would disrupt aviation in the Palm Springs area are assumed. Likewise, no major trade wars or embargoes that would restrict the international flow of commerce and travel are assumed.

3.3-14 Fuel Assumptions

Fuel Prices have risen precipitously in the last year, much higher than the FAA's fiscal 2008-2025 Aerospace Forecast, before dropping after the financial crisis that occurred during the 2nd half of 2008. Most airlines hedged their fuel prices during the high price period, and thus, they have not been able to take immediate advantage of the drop in fuel prices.

The U.S. Department of Energy (DOE) recently updated its forecasts of oil and jet fuel prices to incorporate the latest trends. The revised forecasts show a short-term decline in fuel prices reflecting the reduced demand during the recession but show an substantial increase in the long-run. After 2015, fuel costs are expected to be more than 50 percent higher than had been projected last year (see **Table 3-16**). It is assumed that future fuel prices will rise in accordance with the DOE projections.

3.3-15 Fares and Yield

Fares and Yields (airline revenue per passenger mile) are very sensitive to fuel prices. With the spike in oil prices last year they rose higher than expected, but may well fall now that fuel costs and demand have declined. Updated FAA forecasts incorporating the revised fuel price projections were not yet available at the time of this forecasting. Therefore an adjustment was made to the existing FAA yield forecasts to incorporate the revised DOE price estimates (see **Table 3-16**).

3.3-16 Environmental Factors

No major changes in the physical environment are assumed. It is assumed that global climate changes will not be sufficient enough to force restrictions on the burning of hydrocarbons or major fuel tax increases within the forecast period.

3.3-17 Long Term Developments in Aircraft Design

New aircraft during the forecast period are assumed to reflect improvements in current technology rather than radical changes in design. The next generation of narrow-body aircraft may exhibit moderate increases in wing-span, continuing an ongoing trend.

3.3-18 General Aviation

It is recommended that GA forecast assumptions at PSP mirror the national trends for GA outlined in the FAA's fiscal 2008-2025 Aerospace Forecast with an adjustment for the revised DOE fuel price forecast. Under this scenario it is assumed that business/corporate activity in the GA sector will continue to increase at a faster pace than the personal/sport use over the forecast period. This emphasis on the corporate side will have the effect of increasing demand for very light jets (VLJ's). The FAA's forecast reflects an industry belief that relatively inexpensive twin engine VLJ's will be able to, at some point, facilitate an expansion of on-demand air taxi business service.

Table 3-16

Impact of Jet Fuel Prices on Cost of Air Travel

Year	Jet Fuel Costs (cents per gallon) 2008 DOE Forecast (a)	2009 DOE Forecast (b)	Difference (percent)	Jet Fuel Costs per Revenue Passenger Mile (cents) (c) 2008 DOE Forecast	2009 DOE Forecast	Difference	Difference Adjusted for Fuel Efficiency (d)	FAA Undajusted Yield (e)	FAA Adjusted Yield (f)
2006	205.8	205.8	0.0%	3.99	3.99	0.00		13.53	13.53
2007	208.2	217.3	4.4%	4.08	4.08	0.00		13.35	13.35
2008	218.4	297.5	36.2%	4.28	5.59	1.31		13.45	13.45
2009	225.8	197.4	-12.6%	4.43	3.71	-0.72	-0.71		
2010	218.8	203.5	-7.0%	4.29	3.82	-0.47	-0.46		
2011	215.1	225.7	4.9%	4.22	4.24	0.02	0.02		
2012	204.3	245.5	20.1%	4.00	4.61	0.60	0.58		
2013	195.4	255.0	30.5%	3.83	4.79	0.96	0.91	12.89	13.81
2014	190.7	277.5	45.5%	3.74	5.21	1.47	1.39		
2015	182.6	286.2	56.7%	3.58	5.37	1.80	1.67		
2018						1.88	1.70	12.38	14.08
2020	184.2	295.5	60.5%	3.61	5.55	1.94	1.72		
2023						1.93	1.66	11.87	13.53
2025	196.3	307.2	56.5%	3.85	5.77	1.92	1.62		
2028						1.99	1.63	11.37	13.00
2030	213.3	331.3	55.3%	4.18	6.22	2.04	1.64		
Compounded Average Annual Growth Rate									
2008-2030	-0.1%	0.5%		-0.1%	0.5%	2.0%			
2008-2028								-0.8%	-0.2%

(a) US Department of Energy, Energy Information Administration, Annual Energy Outlook 2008.
(b) US Department of Energy, Energy Information Administration, Annual Energy Outlook 2009, early release.
(c) Jet fuel costs per passenger mile for 2006 and 2007 from Air Transport Association. Assumed to increase at same rate as DOE forecasts for jet fuel.
(d) Difference in jet fuel costs per passenger mile adjusted downward based on estimated 1 percent per year increase in fuel efficiency.
(e) Table 3.17.
(f) Unadjusted FAA yield forecast with differcence in jet fuel cost per RPM adjusted for fuel efficiency added.

Souces: As noted and HNTB analysis.

3.4 DOMESTIC SCHEDULED PASSENGER SERVICE FORECAST

3.4-1 Introduction

This section describes the domestic passenger forecast for PSP. This section includes a discussion of assumptions and data sources, the methodology for the passenger originations forecast, and the assumptions used to determine potential new markets. This section also includes a discussion of the projections of enplanements, load factor, new markets served, seat departures, and aircraft operations.

3.4-2 Methodology, Assumptions, and Data Sources

Following is a summary of the methodology used in the domestic passenger forecast:

1. Determine drivers of passenger activity in the Palm Springs Coachella Valley area.
2. Project future domestic passenger originations at PSP using regression analysis.
3. Estimate future ratio of enplanements to originations.
4. Project enplanements.
5. Project load factors.
6. Project scheduled seat departures.
7. Forecast new domestic non-stop markets.
8. Estimate the most likely way that airlines would accommodate the seat departure forecast in terms of aircraft type and frequency of service.
9. Convert the outbound passenger forecast to enplanements using PSP enplanement data.
10. Convert the scheduled aircraft departure forecast to actual departures using historical departure completion data.

The methodology will be described in greater detail below.

The following data sources were used in the analysis:

- Historical and projected information on population, employment were obtained from the Southern California Association of Governments (SCAG) for Riverside County. Historical and projected information on population, employment and real income for the United States were obtained from the Regional Economic Information System (REIS) developed by the Bureau of Economic Analysis (BEA) in the U.S. Department of Commerce.
- The USDOT OD1A domestic O&D data base was used to obtain yield (airline revenue per passenger mile) and distance and historical originating traffic.
- The USDOT T-100 data base was used to obtain outbound passengers on a market-by-market basis.
- Official Airline Guide (OAG) information on scheduled operations was used to determine existing scheduled service and historical non-stop service.

- The OAG, JP Fleet Airline-Fleets International, and individual airline websites were used to determine aircraft seat configurations for each airline.
- JP Fleet Airline-Fleets International and other industry publications were used to identify information on airline fleet orders.

3.4-3 Yield and Fare Projections

Since passenger originations are local, they are sensitive to local economic factors such as population, employment, and income, and also to airline factors such as air carrier service levels and fares. Therefore, the critical assumptions for this analysis include the use of the growth rates in Section 3.2 for socioeconomic data and on assumptions regarding future yield (revenue per passenger mile) and fare levels.

Table 3-17 presents historical and projected fares and yields for PSP and potential competing airports in the Southern California area. **Appendix B** provides more detailed data for PSP and the competing Southern California airports. Real yield (constant 2007 dollars) at PSP was assumed to change at the FAA national-projected rate after adjustment.[11] Projected real fares were calculated from the FAA's projections of real yield (weighted average air carrier and regional carrier yields) and average trip distance and include estimated taxes and fees.[12] Since the FAA projects average trip distance to increase, real fares are projected to continue to increase after 2015 in contrast to real yield which is expected to decline after 2015.

Yields and fares at PSP are currently higher than the U.S. average. It is anticipated that the higher-cost structure of most carriers operating at PSP, and the smaller average aircraft size, will inhibit yields and fares from falling at a faster rate than the national average. As shown in **Table 3-17**, real fares (including taxes and fees) at PSP are projected to increase to $230.79 by 2028.

[11] (FAA Aerospace Forecasts: Fiscal Years 2008-2025). See Table 3-16 for adjustment

[12] It was assumed that taxes and fees, as a proportion (%) of total fare, would remain at their 2008 levels over the forecast period.

Table 3-17

Projected Fares at PSP, BUR, LAX, LGB, ONT, PMD, SBD, and SNA
(2007 Prices)

	Average Fare (w/ Taxes & Fees) (a)								FAA Forecasts (b)											
									US Yield				US Trip Length			US Average Fare (e)				US Enplanements		
Year	PSP	BUR	LAX	LGB	ONT	PMD	SBD	SNA	Mainline	Regional	Average (c)	Adjusted (d)	Mainline	Regional	Average (c)	Mainline	Regional	Average (f)	Adjusted (g)	Mainline	Regional	Total
1990	$ 281.49	$ 145.55	$ 250.70	$ 205.27	$ 195.68	$ 211.72	$ -	$ 246.42														
1991	$ 264.45	$ 118.24	$ 230.89	$ 155.46	$ 170.58	$ 247.13	$ -	$ 221.68														
1992	$ 261.09	$ 117.86	$ 217.60	$ 168.97	$ 163.24	$ 299.35	$ -	$ 222.11														
1993	$ 271.96	$ 112.67	$ 228.57	$ 178.14	$ 165.04	$ 295.71	$ -	$ 233.74														
1994	$ 256.09	$ 103.42	$ 210.84	$ 150.66	$ 150.42	$ 301.38	$ -	$ 208.32														
1995	$ 241.02	$ 102.31	$ 200.88	$ 140.85	$ 145.25	$ 150.64	$ -	$ 200.29														
1996	$ 223.31	$ 103.59	$ 187.08	$ 115.98	$ 137.55	$ 139.02	$ -	$ 190.28														
1997	$ 220.60	$ 107.84	$ 197.92	$ 134.30	$ 141.81	$ 248.50	$ -	$ 189.87														
1998	$ 227.80	$ 109.69	$ 208.53	$ 182.65	$ 149.23	$ 303.01	$ 37.02	$ 206.35														
1999	$ 224.61	$ 114.39	$ 206.54	$ 205.00	$ 153.31	$ -	$ 42.14	$ 206.21														
2000	$ 222.85	$ 119.62	$ 216.51	$ 199.80	$ 157.98	$ -	$ -	$ 213.82	16.87	36.41	17.74		872.6	286.5	799.7	$147.21	$104.31	$141.88		561.50	79.70	641.20
2001	$ 210.75	$ 113.98	$ 197.60	$ 192.57	$ 145.08	$ -	$ -	$ 192.15	15.76	36.87	16.77		886.7	302.1	811.6	$139.74	$111.38	$136.10		545.40	80.40	625.80
2002	$ 205.94	$ 117.44	$ 193.91	$ 182.21	$ 141.43	$ -	$ -	$ 172.65	13.91	31.55	15.02		911.8	336.3	823.1	$126.83	$106.10	$123.64		486.50	88.60	575.10
2003	$ 186.48	$ 120.25	$ 188.00	$ 156.30	$ 140.40	$ -	$ -	$ 165.39	13.54	28.86	14.76		939.1	373.9	838.1	$127.15	$107.91	$123.72		482.80	105.00	587.80
2004	$ 184.23	$ 120.76	$ 176.07	$ 146.46	$ 139.93	$ 118.04	$ -	$ 157.79	12.62	26.28	13.93		972.0	410.9	859.6	$122.67	$107.98	$119.73		502.60	125.90	628.50
2005	$ 193.92	$ 129.36	$ 183.01	$ 148.89	$ 146.27	$ 115.10	$ -	$ 162.54	12.06	20.87	13.03		981.5	434.7	861.9	$118.37	$90.72	$112.32		523.00	146.40	669.40
2006	$ 208.15	$ 140.20	$ 194.30	$ 156.80	$ 156.48	$ 111.78	$ -	$ 173.59	12.62	20.34	13.53		995.4	450.4	871.3	$125.62	$91.61	$117.88		516.30	152.20	668.50
2007	$ 200.20	$ 135.93	$ 194.81	$ 152.56	$ 154.65	$ 169.35	$ -	$ 168.41	12.45	20.12	13.35		992.8	450.9	870.4	$123.60	$90.72	$116.18		533.80	155.70	689.50
2008	$ 200.96	$ 136.44	$ 195.57	$ 153.14	$ 156.49	$ 169.99	$ -	$ 169.05	12.51	20.37	13.45	13.45	989.1	455.3	867.2	$123.74	$92.74	$116.66	$116.66	537.30	159.00	696.30
2013	$ 210.71	$ 142.99	$ 205.21	$ 160.61	$ 164.00	$ 178.24	$ -	$ 177.25	12.06	18.09	12.89	13.81	1,006.4	516.2	889.5	$121.37	$93.38	$114.70	$122.81	618.80	193.80	812.60
2018	$ 223.43	$ 151.53	$ 217.80	$ 170.37	$ 173.80	$ 189.00	$ -	$ 187.94	11.66	16.28	12.38	14.08	1,047.1	577.0	929.2	$122.09	$93.94	$115.03	$130.85	699.40	234.10	933.50
2023	$ 226.99	$ 153.93	$ 221.32	$ 173.10	$ 176.54	$ 192.01	$ -	$ 190.94	11.27	14.80	11.87	13.53	1,106.7	637.9	983.8	$124.73	$94.41	$116.78	$133.09	783.40	278.40	1,061.80
2028	$ 230.79	$ 156.48	$ 225.08	$ 176.01	$ 179.47	$ 195.22	$ -	$ 194.13	10.89	13.45	11.37	13.00	1,169.7	705.2	1,042.5	$127.42	$94.89	$118.50	$135.49	877.49	331.08	1,208.57

(a) Historical data from Table 10 and Appendix B. Future fares projected to increase at FAA forecast rate adjusted for changes in jet fuel price forecasts. Assumes taxes and fees remain constant in real prices.
(b) FAA forecast data from FAA Aerospace Forecasts: Fiscal Years 2008-2025.
(c) Average weighted by number of enplanements in each category.
(d) Adjusted yield forecast from Table 3.16.
(e) Estimated by multiplying yield by trip length.
(f) Average weighted by number of enplanements in each category.
(g) Estimated by adjusting original fare estimate by ratio of adjusted yield to original yield.

Sources: USDOT Origin-Destination Survey as compiled by Data Base Products and HNTB analysis.

3.4-4 Passenger Originations Forecast

This section presents the forecast of domestic passenger originations. It includes a discussion of the projection of total domestic PSP originations, and the distribution of projected originations by resident and visitor.

Passenger originations were projected using regression analysis. Regression analysis is a statistical method of generating an equation (or model) which best explains the historical relationship among selected variables, such as O&D passengers and real income. If it is assumed that the model that best explains historical activity will continue to hold into the future, this equation can be used as a forecasting equation. Using historical (1990-2006) data, several passenger origination forecasting models were tested. The potential driving factors tested included socioeconomic variables, aviation industry variables, and instrument variables (also called dummy variables). The socioeconomic variables included population, employment, income, and per capita income for the two service area definitions (see Section 3.2). The aviation industry variables included fares and yields at PSP and competing airports in Southern California. Instrument variables representing the first Gulf War, the presence or absence of scheduled service by low-fare carriers, and the September 11 attacks and ensuing industry recovery were also tested. The model was tested in both linear and logarithmic formulations. Separate equations were prepared for resident and non-resident (visitor) originations.

Several of the resident and visitor equations that were calculated showed strong correlations with passenger originations.

The model that produced the best results for resident originations, from both a theoretical and statistical standpoint, was a logarithmic formulation, which specified PSP resident originations as a function of real income in Riverside County, average fares at PSP (including taxes and fees) and average yields at Ontario as independent variables. Also included were instrument variables representing low-fare service by Air 21 in 1996 and 1997, the 9/11 attacks in 2001 and a partial recovery in 2005. The regression equation took the following form:

$$BASE = (10^{-0.59977}) \times INCR^{1.04796} \times FAREPSP^{-1.24983} \times YIELDO^{0.82377} \times DA21^{0.0696} \times D2001^{-.06812} \times D2005^{0.4342}$$

Where:

BASE = domestic resident originations
INCR = income in Riverside County (thousands of 2007 dollars)
FAREPSP = PSP air fare adjusted for taxes and fees in 2007 dollars
YIELDO = ONT yield adjusted for taxes and fees in 2007 dollars
DA21 = dummy variable representing service by a low-fare carrier (Air 21) in 1996 and 1997.
D2001 = Dummy variable for 9/11 impacts in 2001 and after.
D2005 = Dummy variable for 9/11 partial recovery in 2005 and after.

R^2 = .993
F-statistic = 249.00
Durbin-Watson = 2.50

t-statistics:
- Intercept = -0.34
- INCR = 6.08
- FAREPSP = -3.94
- YIELDO = 3.03
- DA21 = 5.46
- D2001 = -3.91
- D2005 = 2.72

The county income variable represents the size of the market, and the PSP fare variable represents the cost of the service. The ONT yield variable represents the cost of competing service. Since the forecasting model has a logarithmic formulation, each of the exponents associated with the input variables is an elasticity. With small changes in the input variables, the forecasting model can be interpreted as indicating that every 1.0 percent increase in county income will increase resident originations by approximately 1.05 percent, that every 1.0 percent decrease in PSP fares will increase originations by approximately 1.25 percent, and that every 1.0 percent decrease in ONT yields will decrease PSP resident passengers by 0.82 percent.

The model that produced the best results for non-resident originations was a logarithmic formulation, which specified PSP visitor originations as a function of real income in the United States, average fares at PSP (including taxes and fees) and average fares at Ontario as independent variables. Also included were instrument variables representing low-fare service by Air 21 in 1996 and 1997, and the 9/11 attacks in 2001. The regression equation took the following form:

$$REF = (10^{-5.68242}) \times INCU^{1.1882} \times FAREPSP^{-0.86612} \times FAREO^{0.81135} \times DA21^{0.04914} \times D2001^{-.07456}$$

Where:
- REF = domestic non-resident originations
- INCU = income in United States (thousands of 2007 dollars)
- FAREPSP = PSP air fare adjusted for taxes and fees in 2007 dollars
- FAREO = ONT air fare adjusted for taxes and fees in 2007 dollars
- DA21 = dummy variable representing service by a low-fare carrier (Air 21) in 1996 and 1997.
- D2001 = Dummy variable for 9/11 impacts in 2001 and after.

R^2 = .973
F-statistic = 79.27
Durbin-Watson = 1.99
t-statistics:
- Intercept = -2.53
- INCU = 6.58
- FAREPSP = -2.85
- FAREO = 4.01
- DA21 = 3.02
- D2001 = -4.46

Projections of the input variables are necessary to use the forecasting equation. Specifically, income projections were obtained from **Table 3-5** and fare and yield projections from **Table 3-17** and **Appendix B**.

In 2008, the twin impacts of the fuel price spike and financial crisis led airlines to reduce capacity at PSP and elsewhere in the nation, well below the levels that would normally be dictated by demand. Initial indications are that there will be additional reductions in capacity in 2009. At this time there are no indications that airlines are willing or able to acquire the aircraft needed to restore the capacity cuts and add to growth in the short term. For this reason, a lag period was assumed before new air service would allow passenger activity to return to levels dictated by the demand equations. It was conservatively assumed that the lag would not be eliminated until 2018.

Table 3-18 shows the forecasts of scheduled passenger originations using the equations presented above. As shown, total scheduled PSP originations are projected to rise from 1.3 million in 2008 to 2.3 million in 2028, an average annual increase of 2.86 percent. This growth rate is about the same as that experienced since 1990 (2.85 percent). Very little change is projected in the distribution of originating passengers between residents and visitors.

There are several assumptions implicit in the passenger origination forecasts:

- The historical relationship between originations, income, and fares will continue throughout the forecast period. Forces that could disrupt this relationship, such as a return to regulation, severe congestion at destination airports, or the wide-scale use of teleconferencing as a travel alternative, could alter this relationship.
- New airline alliances, should they develop, will likely be restricted to code-sharing and joint frequent flyer programs, and will not change the level of airline competition at the Airport.
- Fuel prices will gradually increase over the forecast period, but after 2015 real yields will resume their decline as a result of more efficient aircraft biofuel alternatives, and more productive airline labor and management.
- Real income in Riverside County and the U.S. will grow at the rates projected in **Table 3-6**.
- The population's distribution of income through the forecast period will be similar to what it is today.
- As a percentage of income, taxes and medical expenses, which are the principal budget items over which households have little control, will not increase sufficiently to affect household or business budgets devoted to air travel.

Table 3-18

Forecast of Domestic Origin/Destination Traffic from Base and Reference at PSP

Year	Real Income ($000s) (a)		Average Fare (w/ Taxes & Fees) (b)		ONT Real Yield w/ Fees (c)	Domestic O&D Passengers Initiated from Base (d)	Domestic O&D Passengers Initiated from Reference (d)	Total O&D Passengers
	Riverside County	United States	PSP	ONT				
1990	$32,607,717	$7,102,891,197	$ 281.49	$ 195.68	$ 19.31	189,380	580,780	781,090
1991	$32,151,289	$7,094,202,541	$ 264.45	$ 170.58	$ 17.68	178,400	547,590	737,020
1992	$32,643,172	$7,330,034,813	$ 261.09	$ 163.24	$ 16.22	180,920	548,350	740,550
1993	$32,793,504	$7,430,920,889	$ 271.96	$ 165.04	$ 17.57	184,500	532,240	726,250
1994	$33,133,357	$7,652,454,765	$ 256.09	$ 150.42	$ 16.78	190,380	553,230	755,800
1995	$33,659,051	$7,890,929,888	$ 241.02	$ 145.25	$ 16.20	205,150	588,690	806,140
1996	$34,652,883	$8,187,058,361	$ 223.31	$ 137.55	$ 15.08	251,740	683,240	947,440
1997	$36,221,621	$8,539,476,373	$ 220.60	$ 141.81	$ 15.43	279,550	784,510	1,079,100
1998	$39,319,335	$9,086,403,073	$ 227.80	$ 149.23	$ 16.05	255,770	804,170	1,075,940
1999	$41,084,385	$9,396,192,747	$ 224.61	$ 153.31	$ 16.16	276,660	803,300	1,092,760
2000	$43,529,953	$9,904,443,245	$ 222.85	$ 157.98	$ 16.21	282,880	821,920	1,115,660
2001	$46,046,269	$10,041,010,992	$ 210.75	$ 145.08	$ 14.43	257,320	753,370	1,018,630
2002	$47,714,220	$10,077,635,186	$ 205.94	$ 141.43	$ 13.52	256,160	709,490	973,580
2003	$50,141,387	$10,190,505,245	$ 186.48	$ 140.40	$ 13.35	306,200	802,880	1,118,190
2004	$52,982,707	$10,536,441,805	$ 184.23	$ 139.93	$ 13.24	345,190	859,380	1,214,720
2005	$56,015,119	$10,838,535,953	$ 193.92	$ 146.27	$ 13.54	366,560	879,430	1,256,950
2006	$59,138,390	$11,248,257,992	$ 208.15	$ 156.48	$ 14.59	385,360	929,880	1,326,990
2007	n/a	n/a	$ 200.20	$ 154.65	$ 14.52	391,080	943,970	1,346,930
2008	$63,655,946	$11,743,330,986	n/a	n/a	n/a	375,792	907,069	1,294,276
2013	$73,065,482	$12,643,386,382	$ 210.71	$ 164.00	$ 15.07	449,037	1,029,995	1,492,193
2018	$86,088,756	$14,138,666,719	$ 223.43	$ 173.80	$ 15.29	537,745	1,220,555	1,773,947
2023	$100,720,613	$15,828,431,639	$ 226.99	$ 176.54	$ 14.67	600,650	1,394,392	2,012,795
2028	$116,152,795	$17,749,093,668	$ 230.79	$ 179.47	$ 14.07	660,166	1,596,005	2,276,248
				Average Annual Growth Rate				
(2006-2028)	3.12%	2.09%	0.47%	0.62%	-0.16%	2.48%	2.49%	2.48%
(2008-2028)						2.86%	2.87%	2.86%

(a) Table 3.5 and Table 3.6.
(b) Table 3.17.
(c) Appendix B.
(d) See text for forecasting equation.

Sources: As noted and HNTB analysis.

3.4-5 Projected Domestic Passenger Enplanements

Table 3-19 shows the projection of domestic passenger enplanements at PSP. There is very little connecting activity at the Airport so most domestic enplanements consist of originations. The existing (2007-2008) ratio of domestic enplanements to domestic O&D passengers was assumed to hold into the future. As shown in **Table 3-19**, domestic enplanements are projected to increase from 0.7 million in 2008 to almost 1.3 million in 2028, an average annual increase of 2.93 percent.

3.4-6 Load Factor and Seat Departure Forecast

Table 3-20 provides the forecasts of domestic load factor and scheduled passenger aircraft seat departures.

Over the past several years, the airline industry has experienced a significant increase in the average boarding load factor on both domestic and international flights. The load factor average has increased dramatically, from an average in the mid- to upper-50 percent range in the early 1980s to close to 80 percent nationally in 2008. This growth has been fueled by a strong economy, coupled with strong travel demand and actions by the airlines earlier in the 1990s to remove capacity from their systems and to use sophisticated yield management procedures. Since national load factors have recently been at historically high levels, the FAA does not project them to go significantly higher. Domestic load factors at PSP are assumed to increase at the same rate as in the U.S.

Annual scheduled seat departures for 2014 were estimated by dividing the projections of enplaned passengers by the load factor projections.

Table 3-19

Forecast of Domestic Passenger Enplanements

Year	Domestic O&D Passengers (a)	Ratio of Enplanements to O&D (b)	Domestic Enplanements (c)
2007	1,346,930	0.56	755,831
2008	1,294,276	0.55 (d)	706,701 (e)
2013	1,492,193	0.55	826,057
2018	1,773,947	0.55	982,031
2023	2,012,795	0.55	1,114,254
2028	2,276,248	0.55	1,260,098
Average Annual Growth Rate			
(2008-2028)	2.86%	0.07%	2.93%

(a) Table 3.18.
(b) Ratio of domestic enplanements to O&D passengers. Assumed to remain constant at 2007-2008 average.
(c) Table 3.9 for historical data. O&D multiplied by ratio of enplanements to O&D for forecast.

Sources: As noted and HNTB analysis.

Table 3-20

Forecast of Domestic Load Factor and Scheduled Seat Departures

Year	Enplanements (a)	Load Factor		Scheduled Seat Departures (d)
		U.S. (b)	PSP (c)	
2007	755,831	79.8%	74.7%	1,012,183
2008	706,701	79.8%	74.6%	946,811
2013	826,057	80.6%	75.4%	1,095,734
2018	982,031	80.7%	75.5%	1,301,015
2023	1,114,254	81.3%	76.0%	1,465,292
2028	1,260,098	82.1%	76.7%	1,641,936

(a) Table 3.19.

(b) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025. Value for 2028 extrapolated from 2023-2025 growth rate.

(c) Existing 2008 load factor calculated by dividing enplanements by scheduled seat departures. Future load factors assumed to increase at FAA projected rate from 2008 levels.

(d) Seat departures for 2007 and 2008 from Official Airline Guide. Projected 2013 to 2028 seat departures estimated by dividing projected enplanements by projected PSP load factor.

Sources: As noted and HNTB analysis.

3.4-7 New Non-Stop Markets

Translating the enplanement forecast into an aircraft operations forecast requires an assessment of the future fleet mix, and the future fleet in turn is, in part, dependent on the markets that will be served. Separate analyses were performed for airline hubs and non-airline hubs.

Candidate airline hubs for non-stop air carrier service were determined by identifying the current thresholds of total revenue (passengers multiplied by average fare) that justified non-stop service to each hub. A market's total revenue includes revenue from both originating and potential connecting passengers and is therefore a better measure of the market's value to an airline than just originating revenue. At each candidate airline hub the calculation was performed for spoke markets at distances that corresponded to PSP's distance from that hub. Thresholds are lower for nearby markets than more distant markets because service can be offered with smaller aircraft and because there is less competition from connecting hubs between the two markets. Thresholds of revenue necessary to justify non-stop service were estimated using the average of revenue in the smallest market with non-stop service and the largest market without non-stop service in the comparable range that corresponded to PSP. These thresholds are in large part determined by aircraft capabilities. For example, there is a big jump in the threshold above 1200 miles because that is beyond the capability of most regional jets. Therefore, these more distant markets would need to be large enough to justify mainline aircraft. For the purpose of this analysis, non-stop service was defined as at least 125 non-stop departures per year, which corresponds to five flights a week for six months a year.

A similar approach was used to estimate the revenue threshold for potential non-hub markets in the Western U.S. The estimated service thresholds for both hub and non-hub markets are presented in **Table 3-21**.

Table 3-22 shows the projection of the most probable new non-stop hub markets for PSP. Based on the analysis, airline revenue at PSP would grow sufficiently to exceed the service threshold for ATL between 2013 and 2018 and IAH between 2018 and 2023. PSP had seasonal non-stop service from each hub for a period in the past. If PSP were to grow significantly faster than projected, it would generate non-stop service from additional hubs, such as JFK, DTW, EWR and CLT. With the exception of the world's two largest hubs – ORD and ATL – the threshold for non-stop service at hubs east of the Mississippi increases substantially because PSP is too distant to be accessible with smaller regional aircraft.

Table 3-23 shows the projection of the most probable new non-hub markets for PSP. Based on the analysis, non-stop service to Reno would be established by 2023. With slightly more rapid growth, service to Boise and Spokane could also be established.

Note that the threshold analyses are intended to estimate the likelihood of *regular* non-stop service to the markets identified in **Tables 3-22** and **Table 3-23**. Less frequent service to additional markets is not precluded by the analysis. This could include service during the peak three months in winter, or alternatively on a weekend basis, to markets such as New York, Washington, Detroit, Charlotte, Philadelphia and Boston, as well as Boise and Spokane.

Table 3-24 shows the estimated distribution of scheduled seat departures among current non-stop markets and estimated new non-stop markets.

Table 3-21

Gross Airline Revenue Thresholds for Non-Stop Service by Airline Hub for Markets at Distances Comparable to PSP

Airport	Hub Airline	PSP Distance	Comparable Range		Served Markets (a)		UnServed Markets (b)		Revenue Threshold for Non-Stop Service (c)	
			Low	High	Min Rev	Max Rank	Max Rev	Min Rank		
Airline Hub Airports										
LAX	UA	110	-	200	IYK - $393,800	2	AZA - $994,800	4	$	694,300
PHX	US	261	200	400	CDC - $64,200	2	ROW - $477,100	3	$	270,650
SFO	UA	421	300	500	CEC - $209,000	2	OTH - $612,200	3	$	410,600
SLC	DL	541	400	600	LWS - $1,097,000	2	FLG - $788,700	2	$	942,850
DEN	UA	776	700	900	MSO - $5,531,700	2	GRK - $3,704,900	2	$	4,618,300
PDX	AS	873	800	1,000	SBA - $7,333,500	1	ASE - $4,505,500	2	$	5,919,500
SEA	AS	987	900	1,100	SBA - $7,333,500	3	ASE - $4,505,500	2	$	5,919,500
DFW	AA	1126	1,000	1,200	FNT - $7,018,700	2	CAK - $8,555,400	2	$	7,787,050
IAH	CO	1269	1,200	1,400	ORF - $27,661,200	2	BIL - $7,575,900	2	$	17,618,550
MSP	DL	1454	1,400	1,600	PSP - $11,860,500	2	EUG - $6,010,400	2	$	8,935,450
STL	AA	1493	1,400	1,600	LAS - $216,673,500	1	RNO - $28,081,300	3	$	122,377,400
MEM	DL	1513	1,500	2,000	SAN - $122,169,400	13	PDX - $86,081,700	1	$	104,125,550
ORD	AA, UA	1652	1,500	2,000	PSP - $11,860,500	1	FAT - $10,295,900	3	$	11,078,200
CVG	DL	1800	1,500	2,000	SNA - $66,876,500	1	SMF - $64,423,900	2	$	65,650,200
ATL	DL	1840	1,500	2,000	STT - $11,364,900	1	GEG - $22,187,400	2	$	16,776,150
DTW	DL	1886	1,500	2,000	SJU - $52,106,300	1	TUS - $30,287,600	4	$	41,196,950
CLE	CO	1957	1,500	2,000	SLC - $80,131,300	1	PDX - $86,081,700	1	$	83,106,500
CLT	US	2021	1,500	2,000	STT - $11,364,900	1	PDX - $86,081,700	1	$	48,723,300
IAD	UA	2188	2,000	2,500	SMF - $64,423,900	3	ANC - $38,070,300	3	$	51,247,100
MIA	AA	2232	2,000	2,500	LAS - $216,673,500	2	RNO - $28,081,300	6	$	122,377,400
PHL	US	2303	2,000	2,500	PDX - $86,081,700	2	SMF - $64,423,900	2	$	75,252,800
EWR	CO	2358	2,000	2,500	TUS - $30,287,600	1	SMF - $64,423,900	1	$	47,355,750
JFK	B6	2378	2,000	2,500	TUS - $30,287,600	2	RNO - $28,081,300	2	$	29,184,450
BOS	B6	2517	2,000	2,500	SLC - $80,131,300	1	ANC - $38,070,300	2	$	59,100,800
Regional Non-Hub Airports										
					SMF- $64,423,850		RNO - $28,081,308		$	46,252,579

(a) Smallest revenue market in comparable distance band served by at least 250 annual non-stop departures from airline hub.

(b) Largest revenue market in comparable distance band serviced by less the 250 annual non-stop departures from airline hub.

(c) Average of smallest revenue market with non-stop service and largest revenue market without non-stop service.

Sources: As noted and HNTB analysis.

Table 3-22

Forecast of New Domestic Non-Stop Markets at PSP

			2007	2013	2018	2023	2028
PSP Domestic O&D (a)			1,346,930	1,492,193	1,773,947	2,012,795	2,276,248
PSP Average Fares (b)			$ 171.17	$ 180.95	$ 192.78	$ 196.09	$ 199.62
PSP Airline Outbound Passenger Revenue (c)			$ 11,860,500	$ 13,500,289	$ 17,099,102	$ 19,734,587	$ 22,719,513
Potential Market	Revenue Threshold (d)						
Hub Airports							
LAX	$	694,300	Existing	Existing	Existing	Existing	Existing
PHX	$	270,650	Existing	Existing	Existing	Existing	Existing
SFO	$	410,600	Existing	Existing	Existing	Existing	Existing
SLC	$	942,850	Existing	Existing	Existing	Existing	Existing
DEN	$	4,618,300	Existing	Existing	Existing	Existing	Existing
PDX	$	5,919,500	Existing	Existing	Existing	Existing	Existing
SEA	$	5,919,500	Existing	Existing	Existing	Existing	Existing
DFW	$	7,787,050	Existing	Existing	Existing	Existing	Existing
IAH	$	17,618,550	Existing			New	New
MSP	$	8,935,450	Existing	Existing	Existing	Existing	Existing
STL	$	122,377,400					
MEM	$	104,125,550					
ORD	$	11,078,200	Existing	Existing	Existing	Existing	Existing
CVG	$	65,650,200					
ATL	$	16,776,150			New	New	New
DTW	$	41,196,950					
CLE	$	83,106,500					
CLT	$	48,723,300					
IAD	$	51,247,100					
MIA	$	122,377,400					
PHL	$	75,252,800					
EWR	$	47,355,750					
JFK	$	29,184,450					
BOS	$	59,100,800					

(a) Table 3.19.
(b) Table B.1 in Appendix B. Fares not including taxes and fees.
(c) Passenger O&D traffic multiplied by average fare and divided by two to represent outbound passenger revenue.
(d) Table 3.21.

Sources: As noted and HNTB analysis.

Table 3-23

Forecast of New Domestic Non-Hub Non-Stop Markets at PSP

		2007	2013	2018	2023	2028
PSP Domestic O&D (a)		1,346,930	1,492,193	1,773,947	2,012,795	2,276,248
PSP Average Fares (b)		$ 171.17	$ 180.95	$ 192.78	$ 196.09	$ 199.62
PSP Airline Outbound Passenger Revenue (c)		$ 11,860,500	$ 13,500,289	$ 17,099,102	$ 19,734,587	$ 22,719,513
Projected Gross Airline Revenue at Non -Hub Airports (d)						
	Revenue Threshold (e)					
SMF	$ 46,252,579	$ 64,423,850	$ 73,330,855	$ 92,878,885	$ 107,194,308	$ 123,407,822
RNO	$ 46,252,579	$ 28,081,308	$ 31,963,727	$ 40,484,395	$ 46,724,255	$ 53,791,462
GEG	$ 46,252,579	$ 22,187,365	$ 25,254,909	$ 31,987,187	$ 36,917,372	$ 42,501,254
BOI	$ 46,252,579	$ 20,125,506	$ 22,907,985	$ 29,014,636	$ 33,486,662	$ 38,551,637
Projected Non-Stop Service (f)						
SMF	Existing	Existing	Existing	Existing	Existing	Existing
RNO					New	New
GEG						
BOI						

(a) Table 3.19.
(b) Table B.1 in Appendix B. Fares not including taxes and fees.
(c) Passenger O&D traffic multiplied by average fare and divided by two to represent outbound passenger revenue.
(d) Assumed to increase at same rate as PSP airline revenue.
(e) Table 3.21.
(f) Non-stop service assumed when and if markets exceed revenue threshold.

Sources: As noted and HNTB analysis.

Table 3-24

Forecast of Scheduled Domestic Seat Departures by Market

	2007	2008	2013	2018	2023	2028
Projected Seat Departures (a)	1,012,183	946,811	1,095,734	1,301,015	1,465,292	1,641,936
Existing Markets (b)						
BLI	6,000	15,300	17,707	21,024	23,678	26,533
DEN	74,794	67,972	80,061	93,466	101,465	113,696
DFW	128,660	153,440	180,729	210,991	229,046	256,658
LAS	47,857	39,997	46,288	54,960	61,900	69,362
LAX	100,560	78,080	91,966	107,366	116,553	130,604
MSP	46,380	41,800	49,234	57,478	62,397	69,919
ORD	80,620	62,694	73,844	86,209	93,586	104,868
PDX	38,672	30,106	35,460	41,398	44,940	50,358
PHX	102,306	94,358	111,140	129,749	140,852	157,832
SEA	110,080	103,006	121,326	141,641	153,761	172,297
SFO	169,172	166,244	195,810	228,598	248,159	278,075
SJC	4,060	8,050	9,316	11,062	12,458	13,960
SLC	50,620	45,170	53,203	62,112	67,427	75,556
SMF	26,942	25,620	29,650	35,204	39,650	44,430
New Markets (c)						
ATL	15,360	-		19,757	21,448	24,033
IAH	10,100	14,974			22,352	25,047
RNO					25,620	28,709
Total	1,012,183	946,811	1,095,735	1,301,015	1,465,292	1,641,936

(a) Table 3.20.
(b) Assumed to increase at same rate as total domestic seat departures with prorated downward adjustment among hub markets to ensure that sum of seat departures does not exceed projection in Table 3.20.
(c) Based on historical service or most similar existing market.

Sources: As noted and HNTB analysis.

3.4-8 Air Service Projections

The seat departure projections in **Table 3-24** were translated into projections of scheduled aircraft flights for each market using a set of assumptions regarding airline strategies and available equipment. The service projections are guided by the general assumptions outlined in Section 3.4. Additional, more detailed air service assumptions were developed, as listed below:

- No radical changes in airline strategy for how to serve and compete in markets is assumed.
- The current pattern of airline dominance at other airport hubs and non-hubs is assumed to remain substantially in place.
- No significant additional airline consolidation, aside from Delta's acquisition of Northwest Airlines, is assumed.
- As projected by the FAA and Boeing, airlines will continue to emphasize frequency when adding service to meet demand. This means that domestic service will be provided principally by narrow-body air carrier aircraft and regional jets.
- Relaxation of legacy carrier scope clauses will allow their code-sharing regional partners to add regional jets, as necessary, to meet demand.
- Future fleet additions beyond those presently announced by the airlines are assumed to be consistent with current announced fleet expansion plans and existing acquisitions.
- The smaller older Embraer 120 and Saab 340 turboprop aircraft are assumed to be gradually retired and replaced by newer larger turboprops such as the Bombardier Q400 and the ATR 42-600 series.
- No attempt is made to forecast aircraft types not currently in the planning or development stages.
- No supersonic, hypersonic, or tilt-rotor aircraft are projected because of poor operating economies and potential noise impacts.

Using the above assumptions for guidance, air service scenarios were developed for each market in each forecast year. The scenarios were developed so that the selected aircraft types and frequencies in combination matched the annual seat departure projections for that market. Factors considered in each market included historical service patterns, current dominant carriers, aircraft in place and on order, length of haul, and announced plans of current carriers and new entrants. Individual market scenarios are presented in **Appendix C**.

3.4-9 Domestic Passenger Aircraft Operations Forecast

Table 3-25 presents the forecast of scheduled aircraft departures. The fleet mix was summarized from the individual airline and aircraft estimates in **Appendix C** and then adjusted by the 2007 ratio of completed departures to scheduled departures.

Table 3-25

Domestic Scheduled Passenger Operations Forecast

Year	2007	2008	2013	2018	2023	2028
Scheduled Departures (a)	13,873	12,653	13,874	15,554	16,488	17,486
Completed Departures (b)	14,035	12,801	14,036	15,736	16,681	17,690
Ratio (c)	1.012	1.012	1.012	1.012	1.012	1.012
Completed Operations (d)	28,070	25,602	28,072	31,472	33,362	35,380

(a) Appendix C.

(b) 2007 data from USDOT T100 date base. Future years estimated by multiplying scheduled departures by ratio of completed departures to scheduled departures.

(c) Ratio in 2007 calculated by dividing completed operations by scheduled operations. Assumed to remain constant in future.

(d) Completed departures multiplied by 2.

Sources: As noted and HNTB analysis.

3.5 INTERNATIONAL SCHEDULED PASSENGER FORECAST

This section discusses the international passenger forecasts, including assumptions, methodologies, and results.

3.5-1 Methodology, Assumptions, and Data Sources

The methodology used to develop the international passenger forecasts was essentially a top-down approach. The forecast approach that was used to estimate domestic passenger traffic was not suitable for the international passenger forecast for several reasons. First, O&D data for passengers flying their entire itinerary on foreign-flag carriers is not available; therefore, the historical record is incomplete. Second, many of the international markets are still being developed, so insufficient historical data exists from which to establish trends. These constraints tend to obscure the relationship between traditional drivers of demand, such as income and yield, and international passenger traffic.

A top-down approach provides an opportunity to exploit the research and analysis into international travel conducted by the FAA. The FAA has much greater resources available to investigate the factors driving international demand, and is able to incorporate the findings into their forecasts. The selected top-down approach can be summarized as follows:

1. Identify forecast of U.S. international passenger traffic.
2. Estimate future PSP share of U.S. international passenger traffic.
3. Estimate future load factor and seat departures.
4. Estimate future non-stop markets.
5. Estimate the most probable way that airlines would accommodate the seat departure forecast in terms of aircraft type and scheduled frequency.
6. Convert the scheduled aircraft departure forecast to actual departures using historical departure completion data.

The methodology will be described in greater detail in subsequent sections of this report.

The following data sources were used in the analysis:

1. FAA international passenger and load factor projections.
2. USDOT International Schedule T-100 data base.
3. OAG information on scheduled operations, which was used to identify existing scheduled service.
4. The OAG, and JP Airline-Fleets International guide, which were used to identify aircraft seat configurations for each airline.
5. JP Airline-Fleets International and other industry publications, which were used to gather information on airline fleet orders.

3.5-2 International Passenger Enplanement Forecast

Table 3-26 presents the forecast of international passenger enplanements at PSP. The PSP share of international activity has fluctuated significantly as airlines have added and withdrawn service. The overall long-term trend however, has been for the PSP share of U.S. international traffic to increase at a very slight rate. The increase in U.S. share was applied to the FAA's most recent forecast of international passenger traffic to arrive at a forecast of international passenger enplanements.

As shown, PSP international passenger enplanements are projected to increase to 165,871 by 2028, an average annual increase of almost 4.4 percent.

Table 3-26

Forecast of International Passenger Enplanements

Year	U.S. International Passengers (a)	Ratio of PSP to U.S. Int. Pax (b)	PSP International Enplanements (c)
1990	n/a	n/a	17,480
1991	n/a	n/a	18,423
1992	n/a	n/a	24,047
1993	93,400,000	0.00025	23,131
1994	97,700,000	0.00023	22,355
1995	104,700,000	0.00019	19,492
1996	113,200,000	0.00022	24,341
1997	121,600,000	0.00011	13,489
1998	126,700,000	0.00004	5,373
1999	131,400,000	0.00018	24,020
2000	140,600,000	0.00015	21,168
2001	127,900,000	0.00010	13,024
2002	120,100,000	0.00006	6,860
2003	120,800,000	0.00004	5,163
2004	133,900,000	0.00004	4,731
2005	139,000,000	0.00019	26,671
2006	143,000,000	0.00029	42,074
2007	147,100,000	0.00034	49,715
2008	155,200,000	0.00043	67,355
2013	200,700,000	0.00044	87,844
2018	250,300,000	0.00044	110,479
2023	306,100,000	0.00045	136,241
2028	369,600,000	0.00045	165,871
Average Annual Growth Rate			
(2008-2028)	4.22%	0.16%	4.38%

(a) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025.

(b) Historical ratio calculated by dividing US enplanements by PSP international enplanements. Projected ratio assumed to continue to increase at 1990-2007 historical rates.

(c) Data from 1990-2006 estimated based on US DOT T100 data. Data for 2007 and 2008 from Airport records.

Sources: As noted and HNTB analysis.

3.5-3 Projected Load Factor and Seat Departures

Table 3-27 provides the forecasts of international load factor and scheduled passenger aircraft seat departures. After 2008, the international load factor was assumed to change at the same rate as the FAA forecast of international load factor for the United States. International annual scheduled seat departures were estimated by dividing the passenger enplanement forecast by the load factor.

3.5-4 Projected New Non-Stop Markets

Passenger originations and market-specific airline revenue data are not available for foreign-flag carriers. Consequently, the threshold analysis used to estimate new non-stop domestic markets could not be duplicated for international markets.

The likely evolution of international service at PSP was estimated by examining international service at larger, but otherwise similar, markets to PSP. Although Phoenix (PHX) is much larger than Palm Springs, it is similar with regard to its geographic location, climate, and market attractions. Based on PHX's current international service patterns, it appears that the most likely candidate for new international non-stop service at PSP would be Toronto. Although Toronto is considered the most likely international market for regular non-stop service, less frequent service from other markets is not precluded. These markets could include Winnipeg and Montreal in Canada, Mexico City and Guadalajara in Mexico, and even overseas markets such as Tokyo, London, or Paris. In some of these instances, Customs and/or runway facilities would need to be added or expanded to accommodate the demand.

Table 3-28 shows the estimated distribution of scheduled seat departures for scheduled international markets.

Table 3-27

Forecast of International Load Factor and Scheduled Seat Departures

Year	Enplanements (a)	Load Factor		Scheduled Seat Departures (d)
		U.S. (b)	PSP (c)	
2007	49,715	80.2%	75.8%	65,557
2008	67,355	80.6%	79.6%	84,651
2013	87,844	81.1%	80.1%	109,721
2018	110,479	81.4%	80.4%	137,484
2023	136,241	81.8%	80.8%	168,714
2028	165,871	82.1%	81.0%	204,780

(a) Table 3.26.

(b) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025.

(c) Existing 2008 load factor calculated by dividing enplanements by scheduled seat departures. Future load factors assumed to increase at FAA projected rate from 2008 levels.

(d) Seat departures for 2007 and 2008 from Official Airline Guide. Projected 2013 to 2028 seat departures estimated by dividing projected enplanements by projected PSP load factor.

Sources: As noted and HNTB analysis.

Table 3-28

Forecast of Scheduled International Seat Departures by Market

	2007	2008	2013	2018	2023	2028
Projected Seat Departures (a)	65,557	84,651	109,721	137,484	168,714	204,780
Existing Markets (b)						
YEG	8,160	12,738	16,510	18,771	23,235	28,202
YVR	24,108	27,094	35,118	39,927	49,421	59,986
YYC	33,289	44,819	58,092	66,048	81,752	99,229
New Markets (c)						
YYZ				12,738	14,306	17,364
Total	65,557	84,651	109,721	137,484	168,714	204,780

(a) Table 3.27.
(b) Assumed to increase at same rate as total international seat departures with prorated downward adjustment among markets to ensure that sum of seat departures does not exceed projection in Table 3.27.
(c) Based on historical service or most similar existing market.

Sources: As noted and HNTB analysis.

3.5-5 Air Service Projections and Aircraft Operations Forecast

The procedure used to allocate international passenger activity to airlines and aircraft equipment was similar to that used for the domestic air service projections. The following assumptions were used to guide the process:

- Annual aircraft departures and aircraft types were projected to be consistent with the annual international seat departure forecast in **Table 3-28**.
- No radical changes in airline strategy for how to serve and compete in markets is assumed.
- The current pattern of airline dominance at other airport hubs and gateways is assumed to remain in place.
- Sufficient airport expansion in at international destinations is anticipated to accommodate market demand.
- Future fleet additions beyond those presently announced by the airlines are assumed to be consistent with current announced fleet expansion plans and existing acquisitions.

The fleet mix estimates for each market are outlined in detail in **Appendix C**.

Table 3-29 shows the forecast of international passenger aircraft operations. Total annual operations among international scheduled passenger carriers are projected to increase from 1,210 in 2008 to 2,698 in 2028, an average annual increase of 4.1 percent.

Table 3-29

Scheduled International Passenger Operations Forecast

Year	2007	2008	2013	2018	2023	2028
Scheduled Departures (a)	510	652	830	1,040	1,231	1,455
Completed Departures (b)	473	605	770	965	1,142	1,349
Ratio (c)	0.927	0.927	0.927	0.927	0.927	0.927
Completed Operations (d)	946	1,210	1,540	1,930	2,284	2,698

(a) Appendix C.
(b) 2007 data from USDOT T100 date base. Future years estimated by multiplying scheduled departures by ratio of completed departures to scheduled departures.
(c) Ratio in 2007 calculated by dividing completed operations by scheduled operations. Assumed to remain constant in future.
(d) Completed departures multiplied by 2.

Sources: As noted and HNTB analysis.

3.6 SUMMARY OF PASSENGER ACTIVITY

Table 3-30 combines the domestic and international passenger forecasts and provides peak hour forecasts.

As noted in Section 3.3, PSP experiences a much more profound seasonal distribution of passenger and aircraft activity than most airports. In general, resident travel is fairly evenly distributed throughout the year, whereas visitor travel peaks strongly in winter. Since the two categories are expected to grow at almost equal rates (see **Table 3-18**) no major change in seasonality is anticipated. Therefore, peak month activity, as a percentage of annual activity, is expected to remain unchanged.

Peak hour activity, as a percentage of daily activity is also assumed to remain constant. Peak spreading can, and probably will, occur at some point in the future at PSP. At this point, however, several markets are not served during the peak hour, and new non-stop markets are expected to be added. Therefore, under an unconstrained scenario, there is still an opportunity for growth during the peak hour. If the necessary gate facilities were not available, growth would either spread to off-peak hours or be inhibited.

Peak hour enplanements are projected to increase from 840 in 2008 to 1,483 in 2028, and similar increases are anticipated with peak hour deplanements, passengers, and aircraft operations.

Table 3-30

Peak Passenger Activity
(Peak Hour defined as Peak 60 Minutes)

Year	2007	2008	2013	2018	2023	2028
Passenger Enplanements						
Annual Enplanements						
Domestic (a)	755,831	706,701	826,057	982,031	1,114,254	1,260,098
International (b)	49,715	67,355	87,844	110,479	136,241	165,871
Total	805,546	774,056	913,900	1,092,510	1,250,495	1,425,969
Peak Month Enplanements (c)	115,392	115,678	130,913	156,499	179,130	204,266
Average Day Peak Month Enplanements (d)	3,722	3,732	4,223	5,048	5,778	6,589
Peak Hour Enplanements (e)		840	951	1,136	1,301	1,483
Peak Hour Deplanements (e)		779	882	1,054	1,206	1,376
Peak Hour Passengers (e)		1222	1,383	1,653	1,892	2,158
Passenger Aircraft Operations						
Annual Aircraft Departures						
Domestic (f)	14,035	12,801	14,036	15,736	16,681	17,690
International (g)	473	605	770	965	1,142	1,349
Total	14,508	13,406	14,806	16,701	17,823	19,039
Peak Month Departures (h)	1,807	1,727	1,844	2,080	2,220	2,372
Average Day Peak Month Aircraft Departures (d)	58	56	59	67	72	77
Peak Hour Aircraft Departures (i)		9	10	11	12	12
Peak Hour Aircraft Arrivals (i)		9	10	11	12	12
Peak Hour Aircraft Operations (i)		17	18	20	22	23

(a) Table 3.20.
(b) Table 3.26.
(c) Current peak month enplanements from Table 3.13. Future peak month share of annual enplanements assumed to remain constant.
(d) Peak month divided by 31 days.
(e) Current peak hour passenger activity based on seat departures/arrivals in Table 3.15 and 95 percent load factor. Future share of average day peak month assumed to remain constant.
(f) Table 3.25.
(g) Table 3.29.
(h) Current peak month operations from Table 3.14. Future peak month share of annual operations assumed to remain constant.
(i) Current peak hour operations activity based on aircraft departures/arrivals in Table 3.15. Future share of average day peak month assumed to remain constant.

Sources: As noted and HNTB analysis.

3.7 AIR CARGO FORECAST

Until recently, air cargo was one of the most rapidly growing areas of aviation activity, primarily because of new innovative services such as overnight door-to-door delivery and, to some extent, strong economic growth in the U.S and abroad in recent years. The spike in fuel prices and economic recession has slowed air cargo recently, causing a diversion to other less expensive transportation modes, trucking for domestic cargo and waterborne shipping for international cargo. This section reviews the air cargo forecast for PSP, beginning with the assumptions, methods, and data used in the forecast and ending with a discussion of the forecast results.

Air cargo differs from passenger traffic because the potential service area is much more extensive. While passengers may balk at driving more than an hour to an airport, shippers and freight forwarders routinely truck freight 500 miles or more to an airport offering the best rates and service. Consequently, there is less certainty as to whether an airport is capturing its true air cargo potential. Highly variable growth, a rapidly changing operating environment, competing airports with major cargo operations, and fluid markets make air cargo less predictable than passenger traffic at PSP.

Generally, air cargo is either carried in the belly of passenger aircraft or by all-cargo carriers such as FedEx, and UPS. Until recently, nearly all international cargo and most domestic and international mail were carried by passenger aircraft. However, in response to the September 11th terrorist attacks, the FAA issued a new security directive to strengthen security standards for transporting cargo on passenger flights. This directive has caused a significant shift in air cargo activity from passenger carriers to all-cargo carriers. Since all air cargo at PSP is carried in only passenger bellies, this has resulted in a significant decline in total air cargo at the Airport.

3.7-1 Methodology and Data Sources

This section provides a brief overview of the air cargo forecasting methodology, including descriptions of the data sources.

A top-down approach was used to project air cargo activity, for many of the same reasons that this approach was used for the international passenger activity forecasts. A bottom-up approach based on local historical data was not possible because there is no data on true air cargo originating tonnage as opposed to transfer tonnage. Therefore, it is not possible to assess the relationship between local economic factors and local air cargo demand. Likewise, it is not possible to assess the "leakage" that may be occurring from the PSP air cargo catchment area to other airports that have a broader range of air cargo services, such as Ontario.

A top-down approach provides an opportunity to apply findings researched by the FAA, Boeing, and Airbus. The selected top-down approach can be briefly summarized as follows:

- Develop consensus forecast of U.S. domestic air cargo flows.
- Adjust the cargo forecasts for local factors.
- Project future enplaning and deplaning domestic cargo tonnage for PSP.

Historical data and industry forecasts for the air cargo volume forecast were compiled from a variety of sources. Those sources include the Airport, the USDOT's Schedule T-100 Airport Activity Statistics, the FAA, Boeing, Airbus, and other industry publications.

As noted in Section 3.3, some carriers have ceased distinguishing between air mail and air freight when reporting their statistics. Consequently, the forecast contained herein combines freight and mail into a single air cargo category.

3.7-2 Industry Forecasts

Table 3-31 presents a comparison of projected domestic and North American air cargo forecast growth rates developed by the FAA, and by Boeing and Airbus. Each forecast has been converted to an index in which 2007 activity levels equal 100 to facilitate comparison. A consensus forecast was developed for domestic air cargo using the average of the forecast indexes from the three organizations. The forecasts were interpolated where necessary.

3.7-3 Air Cargo Tonnage Forecasts

Table 3-32 presents projected air cargo tonnage for PSP. The historical trends in the share of domestic US tonnage accounted for by PSP were examined. As noted earlier, cargo flows at PSP have fallen dramatically as a result of increased security restrictions, the transfer of many mail contracts from passenger carriers to FedEx, and the use of smaller aircraft with less cargo capacity. The decline in the PSP share of U.S. cargo activity appears to have leveled off since 2006, so the effect of these factors may now be fully incorporated. Therefore, the PSP share of U.S. cargo was assumed to remain constant in the future.

As shown in **Table 3-32**, air cargo is projected to increase from 53,949 pounds in 2008 to 111,812 pounds in 2028, an average annual increase of 3.7 percent. Although air cargo at PSP is projected to increase aggressively, lift capacity on the passenger carriers is projected to be more than sufficient to accommodate that growth. Therefore, all cargo at PSP is projected to continue to be carried in the bellies of passenger aircraft.

Table 3-31

Industry Forecasts of Air Cargo Tonnage

	2007	2008	2009	2010	2013	2018	2023	2028
Domestic								
FAA								
RTMs (millions) (a)	15821.4	16263.8	16973.5	17638.0	19431.5	22424.8	25411.9	28696.7
Index	100	103	107	111	123	142	161	181
Boeing (b)								
Index	100	105	110	115	133	169	215	273
Airbus (c)								
Index	100	104	109	113	128	157	193	237
Average (d)	100	104	109	113	128	156	190	231

(a) Revenue Ton Miles (RTMs) from FAA Aerospace Forecast: Fiscal Years 2008-2025. Value for 2028 is found using the growth rate between 2023 and 2025
(b) Boeing, Current Market Outlook: 2007-2027.
(c) Airbus, Global Market Forecast: 2007-2026.
(d) Average of FAA, Boeing and Airbus indexes.

Sources: As noted and HNTB analysis.

Table 3-32

Projected Air Cargo (Pounds)

Year	US RTMs (a)	Index (b)	PSP Pounds (c)	PSP Share (d)
1993	10374.1		626,035	0.0302
1994	11323.3		593,886	0.0262
1995	12,415.7		448,331	0.0181
1996	12,781.7		480,043	0.0188
1997	13,454.1		465,820	0.0173
1998	13,828.1		395,840	0.0143
1999	13,974.9		263,044	0.0094
2000	14,698.7		288,325	0.0098
2001	13,937.9		202,832	0.0073
2002	12,967.4		163,139	0.0063
2003	14,972.4		226,823	0.0076
2004	16,340.9		208,259	0.0064
2005	16,089.6		149,164	0.0046
2006	15,710.5		54,273	0.0017
2007	15,821.4	100	38,340	0.0012
2008	16,263.0	104	53,949	0.0017
2013	20,254.7	128	62,081	0.0015
2018	24,693.1	156	75,685	0.0015
2023	29,994.6	190	91,935	0.0015
2028	36,479.6	231	111,812	0.0015

(a) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025 for historical data. Assumed to increase in accordance with index in future. Domestic Revenue Ton Miles in millions.

(b) Table 3.31.

(c) Historical data from Table 3.11. Future cargo weight assumed to grow at same rate as index adjusted by change in PSP share.

(d) Historical share calculated by converting PSP pounds to RTM's and dividing by US RTMs. Projected share assumed to remain at 2006-2008 levels.

Sources: As noted and HNTB analysis.

3.8 AIR TAXI, GENERAL AVIATION, AND MILITARY FORECAST

This section discusses the forecasts of air taxi which includes for-hire and other non-scheduled commercial aircraft operations, general aviation, and military activity.

3.8-1 Air Taxi and Other

The category of air taxi and other includes operations by non-scheduled charter operators and air taxi operators which have not been included in the categories discussed thus far—scheduled and charter passenger, air cargo, and GA and military, which will be discussed later in this section. These additional operators primarily consist of true air taxi operators. Non-revenue commercial operations that are not included in the US DOT's T-100 data base are also included in this category.

Air taxi and other operations are not included in the Airport statistics or OAG schedules and are only intermittently included in the USDOT statistics. In their tower statistics, the FAA classifies most of these operations as air taxi, although some are counted as air carrier.[13] The total number of aircraft operations in this category at PSP is estimated as the difference between the FAA Tower count of combined air carrier and air taxi operations and the official airport count of all commercial operations. Using this definition, the air taxi and other category accounted for 6,809 operations in 2007 (see **Table 3-33**). The principal source of information on the breakdown of the air taxi and other category is one-year sample of radar data using the FAA's ETMSC data base. Most of these operations consist of jet aircraft, such as Cessna Citations and Learjets.

Historical data on these operations is scant, so it is difficult to perform any type of statistical analysis on this activity category. Non-scheduled operations tend to be more variable and unpredictable than scheduled operations. The FAA includes air taxi activity with regional carrier activity when forecasting. The air taxi and other category also share some characteristics of GA, specifically in terms of the type of aircraft used.

The principal functions of the air taxi and other category—on-demand transfer of time-sensitive documents and executive personnel—have become increasingly important in today's economy, where speed and flexibility are critical. This suggests that the future air taxi industry is poised for significant growth. Innovative air taxi initiatives based on very light jets, if they are realized, would also spur growth. Conversely, the growth in electronic check transfers will likely cause a significant reduction in the number of check transfer flights.

Acknowledging the lack of historical data and considering potentially contradictory trends in future activity, it was assumed that future PSP air taxi operations would grow at the same rate as the FAA forecast of general aviation and air taxi hours flown.

Each category of air taxi aircraft operation (jet, turboprop, piston) was assumed to grow at the same rate as FAA forecast of hours flown in that category. The results were then adjusted on a prorated basis to

[13] Note that the FAA Tower Counts also include scheduled commuter operations in the air taxi category.

sum to the original forecast of air taxi aircraft operations. The result, as shown in **Table 3-34**, is an increase in jet operations at the expense of turboprop and piston operations. Most of the operators in the air taxi and other category fly jets. New air taxi initiatives are assumed to use microjets. Consequently, it is reasonable to expect that the new growth in this category will consist of jet aircraft. Air taxi and other operations are projected to increase from 5,330 in 2008 to 8,642 in 2028.

Table 3-33

Estimate of True Air Taxi and Other Operations: 2007

	Departures	Operations
Airport Data (a)		
Air Carrier		11,520
Air Taxi		24,371
Subtotal		35,891
US DOT T-100 data (b)		
Scheduled Passenger Carrier	14,508	29,016
Charter Carrier	33	66
All-Cargo Carrier	-	-
	231,243	29,082
Estimated True Air Taxi Operations (c)		6,809

(a) Table 3.12.
(b) USDOT T100 data as compiled by DataBase Products, Inc.
(c) Airport count of commercial operations less USDOT count of scheduled passenger carrier, charter carrier, and all-cargo carrier operations.

Sources: As noted and HNTB analysis.

Table 3-34

Forecast of True Air Taxi

	2007	2008	2013	2018	2023	2028
FAA GA and Air Taxi Hours Flown (thousands) (a)	27,866	28,446	33,459	38,954	44,763	51,133
Adjustment for Increased Fuel Prices (b)			0.892	0.822	0.835	0.860
Adjusted FAA GA and Air Taxi Towered Operations (c)			29,848	32,001	37,357	43,976
Ratio of PSP Air Taxi Operations to FAA Hours Flown (d)	0.2443	0.1965	0.1965	0.1965	0.1965	0.1965
PSP Air Taxi Operations (e)	6,809	5,590	5,865	6,289	7,341	8,642
Helicopter	2	2	1	1	1	1
Single Engine Piston (f)	8	6	4	3	3	3
Twin Engine Piston (f)	23	17	9	6	6	6
Turboprop (f)	310	235	153	123	119	122
Jet (f)	6,466	5,330	5,698	6,156	7,212	8,510

(a) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025.

(b) FAA forecast adjusted to reflect DOE increase in projected fuel prices. See text for details.

(c) FAA forecast multiplied by adjustment factor for increased fuel prices.

(d) Ratio of PSP true air taxi operations to FAA GA and air taxi hours flown. Assumed to remain constant.

(e) FAA forecast of GA and air taxi hours flown multiplied by ratio of true PSP air taxi operations to FAA GA and air taxi hours flown.

(f) Operations in each category obtained from FAA's ETMSC data base. Operations assumed to increase at same rate as FAA forecast of hours flown in that category and then adjusted proportionately to sum to forecast of total PSP air taxi operations

Sources: As noted and HNTB analysis.

3.8-2 General Aviation

Over most of the past two decades, general aviation operations at PSP have been fluctuating upwards and downwards with no discernible long-term trend. There was a decline, however, in 2007 and 2008 with the spike in fuel prices followed by the recession. Factors that will affect future demand for general aviation include aircraft acquisition costs, future fuel prices and other operating costs, the continuing trend from sport/personal use to business/corporate use, and the potential new niches opened up by very light jets. Issues specific to PSP include competition from other airports, such as the Jacqueline Cochrane Regional Airport. The GA forecast includes both based aircraft and aircraft operations.

Table 3-35 shows the forecast of based aircraft for PSP. The existing number of based aircraft is based on information provided by the Airport. Future based aircraft were based on the trend in the historical PSP share of the U.S. general aviation fleet, and an assumption that the trend would continue into the future. The estimated future share was applied to the FAA's projection of the national fleet with an adjustment for the adverse impact of higher fuel prices (see **Table 3-16**).

The based aircraft in each GA aircraft category were assumed to grow at the same rate as FAA forecast of active general aviation aircraft in that category. The results were then adjusted on a prorated basis to sum to the original forecast of GA based aircraft.

Table 3-36 shows the recent history of general aviation operations at PSP and compares it to the FAA count of GA and air taxi hours flown in the US. As shown, PSP GA activity, as a share of the United States, has been stable until 2007 and 2008. Since 2001, US GA activity (hours flown) has been relatively constant. In early 2008, the FAA predicted that GA will begin to grow again in the near future based on the following assumptions:

- Moderate sustained economic growth;
- No dramatic changes in the GA regulatory environment; and
- Increased growth in the fractional ownership market, which brings new owners and operators into business aviation.

The FAA's prediction was based on the DOE's more optimistic 2008 fuel price forecast. An adjustment was made to the FAA's forecast based on the DOE's revised less optimistic 2009 fuel price forecast and price elasticity factors included in the FAA's Benefit-Cost Analysis Guidance.[14] The projected change in the PSP share was then applied to the adjusted FAA forecast of hours flown.

As shown in **Table 3-36**, based on the trend between 1997 and 2007, the share of US GA activity accounted for by PSP operations is projected to increase slightly from the 2008 level. Total GA operations at PSP are therefore forecast to increase from 39,181 in 2008 to 60,863 in 2028, an average annual increase of 2.2 percent.

[14] FAA Airport Benefit-Cost Analysis Guidance, December 15, 1999.

Similarly to the air taxi forecast, operations in each GA aircraft category were assumed to grow at the same rate as FAA forecast of hours flown in that category. The results were then adjusted on a prorated basis to sum to the original forecast of GA aircraft operations. The result, as shown in **Table 3-37**, is a rapid increase in jet operations, while turboprop and twin-engine piston operations decrease.

Table 3-35

Forecast of General Aviation Based Aircraft by Type

	2007	2008	2013	2018	2023	2028
General Aviation Fleet (a)						
Single Engine Piston (b)	91	88	84	83	83	85
Twin Engine Piston (b)	13	15	15	14	14	14
Turboprop (c)	0	5	5	6	6	6
Helicopter (d)	1	1	1	2	3	3
Jet (b)	11	5	18	21	24	27
Other (b)	0	1	3	5	6	8
TOTAL	116	115	126	131	136	143

(a) Existing Based Aircraft Count Provided by PSP.

(b) Derived through trend projection of relative proportion of PSP (2008 TAF) to total U.S. (2008 TAF) based aircraft and applied to 2008 FAA Aerospace Forecast for total U.S. based aircraft with adjustment for change in DOE fuel price projections.

(c) Due to lack of turbine/turboprop statistics in 2008 FAA Terminal Area Forecast (2008 TAF), PSP turbine projections are based solely on 2008 FAA Aerospace Forecast growth projections for turboprop aircraft.
(d) Due to lack of consistant data and robust sample, based helicopter projections assumed to remain constant with one additional aircraft introduced in 2014 and 2020.

Sources: As noted and HNTB analysis.

Table 3-36

Forecast of General Aviation Operations

Year	FAA GA and Air Taxi Hours Flown (a)	Adjustment Factor (b)	Adjusted Hours Flown (c)	Ratio of PSP GA Operations to FAA Hours Flown (d)	PSP GA Operations (e)
1995	26,612			2.109	56,113
1996	26,909			1.873	50,392
1997	27,713			1.911	52,951
1998	28,100			1.942	54,562
1999	31,230			2.034	63,520
2000	30,219			1.962	59,287
2001	27,016			2.280	61,588
2002	27,039			2.626	71,011
2003	27,315			2.115	57,763
2004	28,111			2.137	60,084
2005	27,078			2.172	58,820
2006	27,705			2.096	58,073
2007	27,866			1.704	47,476
2008	28,446			1.377	39,181
2013	33,459	0.892	29,848	1.379	41,161
2018	38,954	0.822	32,001	1.381	44,184
2023	44,763	0.835	37,357	1.382	51,640
2028	51,133	0.860	43,976	1.384	60,863

(a) FAA, FAA Aerospace Forecasts: Fiscal Years 2008-2025. Value for 2028 extrapolated from growth rate bewtween 2023 and 2025.

(b) FAA forecast adjusted to reflect DOE increase in projected fuel prices. See text for details.

(c) FAA forecast multiplied by adjustment factor for increased fuel prices.

(d) Historical ratio of GA operations at PSP to US GA and Air Taxi Hours Flown. Assumed to continue to change at historical 1995-2007 rates and applied to 2008 base level.

(e) Historial GA operations from Table 3.12. Future GA operations estimated by multiplying FAA forecast of GA and Air Taxi hours flown by ratio of PSP GA operations to FAA hours flown.

Sources: As noted and HNTB analysis.

Table 3-37

Forecast of General Aviation Operations by Type

	2007	2008	2013	2018	2023	2028
General Aviation Operations (a)	47,476	39,181	41,161	44,184	51,640	60,863
Single Engine Piston (b)	33,211	26,923	24,945	24,719	27,551	31,795
Twin Engine Piston (b)	5,108	4,106	3,412	2,888	2,938	3,120
Turboprop (b)	1,003	829	838	822	878	935
Helicopter	346	298	341	366	417	472
Jet (b) (c)	7,808	7,025	11,625	15,388	19,856	24,541

(a) Table 3.35.

(b) Operations in each category obtained from FAA's ETMSC data base. Remaining VFR operations that don't appear in ETMSC data based assumed to be distributed in proportion to piston powered based aircraft. Operations assumed to increase at same rate as FAA forecast of hours flown in that category and then adjusted proportionately to sum to forecast of total PSP general aviation operation

(c) Existing jet operations by type obtained from a one-week sample of radar data using FAA's ETMSC data base. Future mix based on published information on aircraft orders, production status, and age.

Sources: As noted and HNTB analysis.

3.8-3 Military

Military operations are related to national and international political and institutional factors rather than local economic conditions. Military operations at PSP have fluctuated substantially during most of the past eighteen years. Due to the uncertainties enumerated above and consistent with national forecasts, military operations are assumed to remain constant at 2008 levels throughout the forecast period. However, future national defense actions or policy decisions could increase or decrease future military operations. **Table 3-38** shows the forecast of military aircraft operations.

Table 3-38

Forecast of Military Operations

Year	Military Operations (a)
1990	1,650
1991	1,522
1992	2,222
1993	1,063
1994	928
1995	1,254
1996	749
1997	293
1998	940
1999	1,547
2000	1,030
2001	730
2002	866
2003	977
2004	897
2005	955
2006	1,259
2007	1,310
2008	1,227
2013	1,227
2018	1,227
2023	1,227
2028	1,227

(a) Historical data from Table 3.12. Future military operations assumed to remain constant.

Sources: As noted and HNTB analysis.

3.9 SUMMARY

This section summarizes the passenger and aircraft operation forecasts and provides a comparison with the FAA's Terminal Area Forecast (TAF) for PSP. **Table 3-39** provides a summary of the passenger, aircraft operation, and based aircraft forecasts.

Total domestic and international enplanements are forecast to increase from just under 0.8 million in 2008 to 1.4 million in 2028, an average annual increase of 3.1 percent. International enplanements are projected to grow more quickly than domestic enplanements.

Total aircraft operations are estimated to increase from 72,876 in 2008 to 108,875 in 2028, an average annual increase of 2.0 percent. The international passenger and air taxi operation categories are projected to grow the most rapidly, while general aviation and military aircraft operations are projected to grow more slowly.

A comparison of the PSP forecasts with the FAA's latest TAF is provided in **Table 3-40**. The enplanement numbers used in this forecast are not completely consistent with those used in the TAF since the Airport counted 2 percent more enplanements in Fiscal Year 2008. The difference is most likely attributable to non-revenue passengers which are not included in the TAF numbers. Passenger enplanements by 2013 are 34 percent higher in this Master Plan forecast than in the TAF. The differences in the passenger forecasts are attributable to the following factors:

- The difference in the count of base year numbers.
- The FAA's anticipated 16 percent decline in passengers at PSP between FY 2008 and FY 2009.
- The FAA used the Riverside-San Bernardino Ontario MSA as a catchment area. The MSA is projected to grow more slowly than Riverside County, which is the catchment area used in the Master Plan.
- The FAA used forecasts from Global Insight, which are more conservative than the SCAG and Woods & Poole economic forecasts used in the Master Plan forecast.

Since most commercial operations are accounted for by passenger aircraft, the difference between the Master Plan and TAF forecast is similar to the difference between the passenger forecasts. The Master Plan and TAF aircraft forecasts of total operations are more similar. Within the first ten years, the difference is about 10 percent, expanding to 23 percent by 2028.

The Master Plan forecasts may appear aggressive when compared with the TAF. It should be noted, however, that the projected passenger growth rates (approximately 3 percent per year) are consistent with those that have been realized in the past (1990-2008). The forecasts assume that PSP will maintain its current role and no major changes, such as overseas service or daily flights to East Coast hubs, are assumed. It is also noteworthy that operations are not projected to exceed 100,000 until after 2023, despite the fact that PSP has achieved these levels several times in the past, most recently in 2002.

Since the forecasts were completed in early 2009, the economic recession has proven worse than originally anticipated. Many airlines have therefore announced an additional round of capacity reductions in their

systems. The deeper recession and additional capacity cuts may delay the anticipated economic and air service recovery and, as a result, it may be that actual passenger activity will track below the projections for 2013. It is therefore recommended that the Airport closely monitor activity levels and adjust the phasing of planned improvements accordingly.

3.10 FORECAST SCENARIOS

The assumptions used in developing the forecasts are likely to vary over the forecast period, and the variations could be material. One way to explore the impact of these variations is to develop alternative scenarios in which the impact on the forecast of a variation in a critical assumption is evaluated. The base case forecast provides the basis for determining what additional facilities will be required at the Airport through 2028. The Airport must be able to respond to a range of contingencies that could occur, taking into account economic and cost changes, technological changes, and changes in the policies of individual airlines. The recommended development program must be flexible enough to accommodate these contingencies.

To address these potential changes, four alternative forecast scenarios were selected with the assistance of Airport staff. Much of the background information used to develop the scenarios is provided in previous sections. The four scenarios are:

Scenario 1 – High Economic Growth. This scenario assumes a rapid economic recovery from the current economic recession, and that local and national income would then continue to grow at a rate 50 percent greater than under the baseline forecast. The increased economic growth would boost passenger, cargo and general aviation activity. As detailed in Table D.1 total enplanements would rise slowly to 1.7 million by 2028, an average annual increase of 4.1 percent. Total operations would increase slightly more slowly to 128,664 in 2028, an average annual rate of 2.9 percent per year.

Scenario 2 – Low Economic Growth. This scenario assumes that current recession will be deep and prolonged and that the recovery will be sluggish. As result, regional and national income would grow at a rate 50 percent lower than under the baseline forecast. As detailed in Table D.2, total enplanements would rise slowly to 1.1 million by 2028, an average annual increase of 1.6 percent. Total operations would increase more slowly to 89,276 in 2028, an average annual rate of 1.0 percent per year.

Scenario 3 – High Airport Competition. The High Airport Competition Scenario assumes that improvements in non-stop service and decreases in fares at competing airports, notably Ontario International Airport, increase leakage of passenger demand from PSP. The scenario assumes that fares and yields (revenue per passenger mile) at ONT decline to levels matching the lowest of any airport in southern California. As a result, the price differential between PSP and ONT becomes much greater than it is currently, and leakage from PSP to ONT increases. Table D.3 shows that in this scenario, passenger enplanements would increase more slowly to 1.1 million by 2028, an average annual increase of 2.0 percent. Lower fares at ONT would have minimal impact on air taxi and general aviation activity at PSP, so the reduction in operations from the baseline is less than under Scenario 2. Under Scenario 3, aircraft operations are projected to grow to 101,423 by 2028, a 1.7 percent increase.

Scenario 4 – Low Airport Competition. Scenario 4 assumes that decreases in service and increased fares at competing airports will allow PSP to retain more of the demand originating within its service area. Specifically, fare and yield levels at ONT are assumed to increase until they are the same as at PSP. As shown in Table D.4, total enplanements are projected to increase at an average annual rate of 3.8 percent to 1.6 million by 2028 and total operations are projected to increase at an annual 2.3 percent rate to 114,605 by 2028. Again, fare levels at ONT would have very little impact on PSP air taxi and general aviation activity.

Table 3-41 summarizes the alternative scenarios and provides a comparison with the Base Case. **Appendix D** provides a more detailed forecast breakdown of all scenarios.

Table 3-39

Summary of Forecast

	2007	2008	2013	2018	2023	2028	Compounded Average Annual Growth (CAGR)
Annual Enplanements							
Domestic (a)	755,831	706,701	826,057	982,031	1,114,254	1,260,098	2.9%
International (b)	49,715	67,355	87,844	110,479	136,241	165,871	4.6%
Total	805,546	774,056	913,900	1,092,510	1,250,495	1,425,969	3.1%
5 Year incremental CAGR			3.4%	3.6%	2.7%	2.7%	
International as Percent of Total	6.2%	8.7%	9.6%	10.1%	10.9%	11.6%	
Annual Aircraft Operations							
Domestic Passenger (c)	28,070	25,602	28,072	31,472	33,362	35,380	1.6%
International Passenger (d)	946	1,210	1,540	1,930	2,284	2,698	4.1%
Passenger Charter (e)	66	66	66	66	66	66	0.0%
True Air Taxi (f)	6,809	5,590	5,865	6,289	7,341	8,642	2.2%
Commercial Subtotal	35,891	32,468	35,543	39,757	43,053	46,786	1.8%
General Aviation (g)	47,476	39,181	41,161	44,184	51,640	60,863	2.2%
Military (h)	1,310	1,227	1,227	1,227	1,227	1,227	0.0%
Total	84,677	72,876	77,932	85,168	95,920	108,875	2.0%
5 Year incremental CAGR			1.4%	1.8%	2.4%	2.6%	
Based Aircraft (i)	116	115	126	131	136	143	1.1%

(a) Table 3.20.
(b) Table 3.26.
(c) Table 3.25.
(d) Table 3.29.
(e) Assumed to remain constant.
(f) Table 3.34.
(g) Table 3.37.
(h) Table 3.38.
(i) Table 3.35.

Sources: As noted and HNTB analysis.

Table 3-40

Comparison with FAA Terminal Area Forecast

	2007	2008	2013	2018	2023	2028
Annual Enplanements						
Master Plan (a)	805,546	774,056	913,900	1,092,510	1,250,495	1,425,969
TAF (b)	800,829	778,160	713,226	817,653	939,429	1,061,205
Percentage Difference	0.6%	-0.5%	28.1%	33.6%	33.1%	34.4%
5 Year incremental CAGR						
Master Plan			3.4%	3.6%	2.7%	2.7%
TAF			-1.7%	2.8%	2.8%	2.5%
Commercial Operations						
Master Plan (a)	35,891	32,468	35,543	39,757	43,053	46,786
TAF (b)	35,882	33,586	29,297	31,747	34,402	37,057
Percentage Difference	0.0%	-3.3%	21.3%	25.2%	25.1%	26.3%
5 Year incremental CAGR						
Master Plan			1.8%	2.3%	1.6%	1.7%
TAF			-2.7%	1.6%	1.6%	1.5%
Total Operations						
Master Plan (a)	84,677	72,876	77,932	85,168	95,920	108,875
TAF (b)	90,353	75,159	72,056	77,292	82,822	88,352
Percentage Difference	-6.3%	-3.0%	8.2%	10.2%	15.8%	23.2%
5 Year incremental CAGR						
Master Plan			1.4%	1.8%	2.4%	2.6%
TAF			-0.8%	1.4%	1.4%	1.3%

(a) Table 3.39.
(b) FAA, Terminal Area Forecast, 2008.

Sources: As noted and HNTB analysis.

Table 3-41

Summary of Forecast Scenarios

	2007	2008	2013	2018	2023	2028	Compounded Average Annual Growth (CAGR)
Annual Enplanements							
Base Case	805,546	774,056	913,900	1,092,510	1,250,495	1,425,969	3.1%
Scenario 1: High Economic Growth	805,546	774,056	958,386	1,212,147	1,453,844	1,723,715	4.1%
Scenario 2: Low Economic Growth	805,546	774,056	869,630	974,225	1,050,625	1,134,902	1.9%
Scenario 3: High Airport Competition	805,546	774,056	761,437	876,956	1,005,002	1,146,902	2.0%
Scenario 4: Low Airport Competition	805,546	774,056	1,044,968	1,248,384	1,428,684	1,630,017	3.8%
Annual Aircraft Operations							
Base Case	84,677	72,876	77,932	85,168	95,920	108,875	2.0%
Scenario 1: High Economic Growth	84,677	72,876	81,065	93,139	109,387	128,664	2.9%
Scenario 2: Low Economic Growth	84,677	72,876	74,804	77,236	82,555	89,276	1.0%
Scenario 3: High Airport Competition	84,677	72,876	72,990	78,576	88,922	101,423	1.7%
Scenario 4: Low Airport Competition	84,677	72,876	82,386	90,162	101,254	114,605	2.3%

Sources: Tables D.1 through D.4 and HNTB analysis.