CHAPTER THREE
Forecasts of Aviation Activity

During 2008 in the United States and around the world, many industries were negatively affected by struggling economies and stock markets, bankruptcies, foreclosures, and record high fuel prices. Within the aviation industry, these factors led to a dramatic decline in general aviation (GA) activity as well as commercial airline travel, which had previously shown signs of recovery since the terrorist attacks on September 11, 2001. As large corporations experienced significant losses, such as those within the automobile and banking industries, the latter portion of 2008 saw an increased sell-off of corporate jet aircraft, with some executives opting for commercial airline travel as a cost savings measure. Still, there are tremendous benefits of corporate jet travel, particularly amongst organizations that value face-to-face interaction where executive time is highly valued, and the corporate jet industry supports thousands of important manufacturing, maintenance, and pilot jobs around the United States. Therefore, these types of recent circumstances which may negatively or positively influence future activity levels were examined in this Airport Master Plan Update (AMPU) for the St. Lucie County International Airport (FPR).

Forecasts are a vital component of the master planning process, and they are used throughout the remainder of this study to determine long-term facility requirements, development alternatives, and recommended improvements. According to **Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6**, *Airport Master Plans*, aviation forecasting "should consider socioeconomic data, demographics, disposable income, geographic attributes, and external factors such as fuel costs and local attitudes towards aviation."[1] Consideration of all these factors is necessary to accurately forecast future activity at FPR. For example, the United States economy is experiencing a decline, although at the same time, airports to the south of FPR (e.g., West Palm Beach International Airport (PBI) are more congested than ever which may shift some tenants, GA activity, and based aircraft to the north. Also, the fact that the airport property is part of a Foreign Trade Zone (FTZ #218) within St. Lucie County may allow for greater development opportunities and activity growth at FPR than many other GA airports within the Treasure Coast Region of Florida.

[1] *FAA AC 150/5070-6, Airport Master Plans.*

As mentioned in **Chapter 2**, *Inventory of Existing Conditions*, the forecast base year was 2008 since it represents the most recent full-year of activity at FPR. Typically the planning forecast is based upon a twenty-year period divided into short-term (2008-2013), mid-term (2014-2018), and long-term (2019-2028). In addition to a review of historical and forecast socioeconomic and activity characteristics, various aviation activity forecasts were presented in this chapter, including the following:

- Annual GA Operations (Local versus Itinerant)
- Annual Instrument Operations
- Annual Air Charter/Air Taxi Operations
- Based Aircraft Totals
- Based Aircraft Fleet Mix
- Annual Operational Fleet Mix
- Peak Period Operations
- Existing Critical Aircraft Determination

3.1 Needs and Benefits

Forecasts of future activity are a key component of a master planning study since every subsequent decision related to the purpose, size, design, and location of any structure or equipment relies on the estimated levels of activity. Failure to properly plan for the future can result in negative consequences to the capacity, activity, safety, and efficiency of the airport. Therefore, the forecast planning horizon term is twenty years in order to ensure the adequate facilities are in-place for the operator, the traveling public, and the surrounding community.

3.2 Forecasting Limitations

Forecasting future activity is a complex assessment based on a multitude of factors, both controllable and those beyond an airport's control. Forecasts of future activity are not to be construed with predictions of the future but rather an educated guess of future activity based upon a variety of predictors, mathematical formulae, assumptions, and subjective judgment.

The accuracy of the estimates decline as the planning term is extended, by unforeseen local or geo-political events, by unpredictable events involving natural disasters, or, more subtly, longer-term weather or climatological events. These caveats notwithstanding, the forecasts provided in this section utilize a variety of methodologies, which together constitute best practices in the industry.

3.3 Existing and Forecast Socioeconomic Characteristics

In determining the *Forecasts of Aviation Demand*, it is often the case that a correlation exists between local demographics (i.e., socioeconomic characteristics), such as population and employment, and past activity and/or based aircraft levels. For this study, historic and forecast demographic data was obtained from Woods & Poole Economics of Washington, D.C., which the FAA recognizes as an acceptable source of demographic forecasts according to their report, *Forecasting Aviation Activity by Airport (July 2001)*. The data obtained from Woods & Poole (*2008 State Profile – Florida*) includes historical data from 1970 and forecasts to 2040 for 121 different variables. "The strength of Woods & Poole's economic and demographic projections stems from the comprehensive historical county database and the integrated nature of the projection model. The projection for each county in the United States is done simultaneously so that changes in one county will affect growth or decline in other counties. For example, growth in employment and population in Houston will affect growth in other metropolitan areas, such as Cleveland. This reflects the flow of economic activity around the country as new industries emerge or relocate in growing areas and as people migrate, in part because of job opportunities. The county projections are developed within the framework of the United States projection made by Woods & Poole. The U.S. projection is the control total for the 2008 regional projections."[2]

Previous studies for St. Lucie County utilized demographic forecasts from the University of Florida Bureau of Economic and Business Research (BEBR). For example, the St. Lucie County Comprehensive Plan (revised January 2004) projects the county population to reach 375,845 by 2020 using 1990 BEBR forecasts; the October 2008 St. Lucie County Evaluation and Appraisal Report (EAR) projects the county population to reach 390,400 by 2020 using 2006 BEBR forecasts. At the time of this writing, the BEBR had not yet released demographic forecasts for 2008. Further, according to the Florida Legislature Office of Economic and Demographic Research, unlike previous years, much of the state experienced more outmigration than in-migration due to the weakened economic climate and housing market. This trend is expected to continue through mid-2001.[3] Subsequently, the 2008 Woods & Poole demographic forecasts provided up-to-date and FAA-recognized data for use in this AMPU study. The Woods & Poole data provides a more conservative growth projection for St. Lucie County considering current economic conditions, with the population expected to reach 360,096 by 2020.

[2] *Woods & Poole Economics, 2008 State Profile – Florida.*
[3] *Florida Legislature office of Economic and Demographic Research, February 18, 2009 Demographic Estimating Conference Executive Summary.*

3.3.1 Local Area Characteristics/Airport Service Area

Within the Treasure Coast Region of Florida, each of the four counties (St. Lucie, Indian River, Martin, and Okeechobee Counties) contains at least one airport that is included in the FAA's National Plan of Integrated Airport Systems (NPIAS), as previously shown in **Table 2-2**. A review of FPR's based aircraft owner addresses revealed that the majority of aircraft are registered to Fort Pierce or Port St. Lucie addresses (both cities located in St. Lucie County), with sporadic others registered in nearby counties. As such, it was determined that the socioeconomic characteristics of St. Lucie County, as provided by Woods & Poole, best represents FPR's service area, and could, therefore, be used in the *Forecasts of Aviation Demand* to identify historic and forecast conditions.

3.3.2 Population

In general, changes in population within an airport's service area may reasonably be expected to affect activity levels at the airport, although the degree to which population impacts aviation activity varies from airport to airport. As summarized in **Table 3-1**, historic population data illustrates that the population of St. Lucie County increased nearly 39 percent from 2000 to 2008 (i.e., approximately 70,000 new citizens), while at the same time the population of Florida increased nearly 16 percent and the United States increased nearly 8 percent. Much of the strong population growth in St. Lucie County has occurred in Port St. Lucie to the south of the airport, which "had the nation's fastest growth rate among large cities (100,000 or more population) between July 1, 2003 and July 1, 2004."[4] The residential boom in St. Lucie County coincided with decreasing interest rates in 2001. However, most new homeowners consisted of transplants from counties to the south (e.g., Broward and Palm Beach Counties) and continue to commute to jobs in those counties.[5] Subsequently, "this residential growth has not been met by job growth in the county necessitating many people to travel out of the area. This has spurred a distinct north-south commute. The growth has also not been met by new or upgraded infrastructure – the vast majority of the county lacks sidewalks, greenways, trails, and other amenities, but is experiencing heavy traffic congestion."[6] These types of factors are important when trying to determine if there is a correlation between population and airport activity; for example, recent studies suggest that much of St. Lucie County's growing residential population still has ties to areas to the south and also includes large numbers of retirees. Consequently, a correlation between population and airport activity may not be apparent. It can, however, be assumed that with the population of St. Lucie County projected to increase more than 56 percent between 2008 and 2028 (i.e., approximately 150,000 new citizens) that some increased activity should occur at

[4] *Port St. Lucie, Fla., is Fastest-Growing City, Census Bureau Says, The America's Intelligence Wire, June 30, 2005.*
[5] *Growth Slowdown Anticipated for Port St. Lucie, Fla., South Florida Sun-Sentinel, September 28, 2004.*
[6] *St. Lucie County Bicycle, Pedestrian, Greenways and Trails Master Plan.*

FPR perhaps beyond forecast aviation activity levels for the United States as a whole. Further, as mentioned in **Chapter 2**, *Inventory of Existing Conditions*, the Fort Pierce-Port St. Lucie Metropolitan Statistical Area (MSA) is projected to experience the second highest growth increase, 56.4 percent, between 2008 and 2028 in Florida behind the Naples-Marco Island MSA.

3.3.3 Employment

Major private sector employers in St. Lucie County include Liberty Medical Supply, Wal-Mart, Indian River State College, Publix Supermarkets, QVC, Lawnwood Regional Medical Center, Riverside National Bank, St. Lucie County Medical Center, National City Bank, and Tropicana.[7] Historical and forecast employment numbers are summarized in **Table 3-2**. As shown, from 2000 to 2008 the number of jobs in St. Lucie County grew by nearly 36,000 while at the same time the population grew by approximately 70,000. Over the next 20 years, approximately 50,000 jobs are forecast for the county while the population is expected to increase by over 150,000.

[7] *eflorida.com county profile – St. Lucie County.*

TABLE 3-1 TOTAL POPULATION				
Year	**United States**	**Florida**	**Fort Pierce-Port St. Lucie MSA**	**St. Lucie County**
1990	249,622,814	13,033,307	254,702	152,669
1991	252,980,941	13,369,798	263,143	158,173
1992	256,514,224	13,650,553	269,716	163,060
1993	259,918,588	13,927,185	277,235	167,735
1994	263,125,821	14,239,444	285,006	172,790
1995	266,278,393	14,537,875	290,527	176,229
1996	269,394,284	14,853,360	297,947	180,497
1997	272,646,925	15,186,304	304,912	184,633
1998	275,854,104	15,486,559	311,185	187,492
1999	279,040,168	15,759,421	316,323	190,349
2000	282,194,308	16,049,316	320,595	193,429
2001	285,112,030	16,348,628	326,943	197,790
2002	287,888,021	16,667,906	336,115	204,489
2003	290,447,644	16,959,251	347,311	212,736
2004	293,191,511	17,342,623	362,521	225,490
2005	295,895,897	17,736,027	376,328	237,851
2006	298,754,819	18,057,508	388,637	250,270
2007	301,621,157	18,251,243	400,121	260,939
2008	**304,579,417**	**18,573,921**	**411,333**	**268,691**
2009	307,577,894	18,898,835	422,520	276,419
2010	310,603,348	19,225,221	433,675	284,119
2011	313,626,654	19,551,328	444,760	291,767
2012	316,689,114	19,879,715	455,840	299,406
2013	**319,778,173**	**20,209,669**	**466,904**	**307,029**
2014	322,897,008	20,541,430	477,962	314,643
2015	326,038,477	20,874,564	489,006	322,244
2016	329,201,638	21,209,053	500,042	329,835
2017	332,387,230	21,544,966	511,072	337,419
2018	**335,582,900**	**21,881,531**	**522,084**	**344,987**
2019	338,796,192	22,219,237	533,088	352,547
2020	342,020,014	22,557,651	544,080	360,096
2021	345,256,449	22,896,924	555,063	367,636
2022	348,505,660	23,237,072	566,039	375,169
2023	351,758,848	23,577,518	576,999	382,689
2024	355,027,731	23,919,065	587,961	390,208
2025	358,302,480	24,261,052	598,911	397,717
2026	361,577,000	24,603,068	609,842	405,212
2027	364,861,093	24,945,791	620,770	412,702
2028	**368,146,748**	**25,288,672**	**631,683**	**420,181**
AAGR 2000-2008	0.96%	1.84%	3.16%	4.19%
Change 2000-2008	7.93%	15.73%	28.30%	38.91%
AAGR 2008-2028	0.95%	1.55%	2.17%	2.26%
Change 2008-2028	20.87%	36.15%	53.57%	56.38%
ST AAGR	0.98%	1.70%	2.57%	2.70%
MT AAGR	0.97%	1.60%	2.26%	2.36%
LT AAGR	0.93%	1.46%	1.92%	1.99%

Sources: Woods & Poole Economics, 2008 State Profile – Florida, The LPA Group Incorporated, 2009.

TABLE 3-2 TOTAL EMPLOYMENT				
Year	**United States**	**Florida**	**Fort Pierce-Port St. Lucie MSA**	**St. Lucie County**
1990	139,380,789	6,800,165	110,840	59,155
1991	138,605,941	6,774,853	109,687	59,105
1992	139,162,051	6,820,439	109,470	58,511
1993	141,779,349	7,061,120	112,271	59,849
1994	145,223,523	7,293,989	114,670	61,355
1995	148,982,796	7,554,304	118,608	62,464
1996	152,150,252	7,804,290	123,654	64,242
1997	155,608,200	8,068,144	127,375	65,736
1998	159,628,114	8,368,075	134,597	67,853
1999	162,955,412	8,656,378	139,416	69,047
2000	166,758,669	8,933,097	144,754	71,241
2001	167,014,580	9,112,067	150,598	74,004
2002	166,633,047	9,204,767	155,361	79,065
2003	167,553,448	9,411,408	163,532	84,305
2004	170,512,658	9,774,569	174,729	92,935
2005	174,176,362	10,185,201	186,365	98,440
2006	178,332,932	10,521,970	194,749	102,987
2007	180,481,565	10,692,379	198,649	105,089
2008	**182,657,692**	**10,865,522**	**202,526**	**107,161**
2009	184,859,674	11,041,345	206,469	109,273
2010	187,088,401	11,220,008	210,490	111,424
2011	189,343,706	11,401,455	214,583	113,618
2012	191,626,308	11,585,754	218,751	115,855
2013	**193,936,435**	**11,773,000**	**223,000**	**118,133**
2014	196,274,287	11,963,136	227,323	120,454
2015	198,640,326	12,156,339	231,732	122,823
2016	201,035,040	12,352,548	236,216	125,235
2017	203,458,519	12,551,832	240,784	127,693
2018	**205,911,006**	**12,754,277**	**245,438**	**130,199**
2019	208,393,381	12,959,955	250,184	132,760
2020	210,905,689	13,168,827	255,005	135,361
2021	213,448,068	13,380,982	259,930	138,020
2022	216,021,194	13,596,460	264,931	140,722
2023	218,625,284	13,815,376	270,030	143,479
2024	221,260,624	14,037,704	275,225	146,291
2025	223,927,959	14,263,485	280,513	149,155
2026	226,627,424	14,492,891	285,898	152,077
2027	229,359,400	14,725,867	291,388	155,054
2028	**232,124,218**	**14,962,531**	**296,973**	**158,085**
AAGR 2000-2008	1.14%	2.48%	4.29%	5.24%
Change 2000-2008	9.53%	21.63%	39.91%	50.42%
AAGR 2008-2028	1.21%	1.61%	1.93%	1.96%
Change 2008-2028	27.08%	37.71%	46.63%	47.52%
ST AAGR	1.21%	1.62%	1.94%	1.97%
MT AAGR	1.21%	1.61%	1.94%	1.96%
LT AAGR	1.21%	1.61%	1.92%	1.96%

Sources: Woods & Poole Economics, 2008 State Profile – Florida, The LPA Group Incorporated, 2009.

These trends are illustrative of the 'bedroom community' phenomenon described in the population section, where residents of Port St. Lucie are commuting to jobs in cities like West Palm Beach. Also, the median age of the county is forecast to increase from 39.92 in 2008 to 42.27 by 2028 which is indicative of the large existing retiree population and anticipated growth in retirement community development within the county. **Table 3-3** provides rankings of jobs and earnings by employment sector in St. Lucie County.

TABLE 3-3
ST. LUCIE COUNTY EMPLOYMENT RANKINGS

Employment Sector	2008 Jobs Ranking	2028 Jobs Raking	2008 Earnings Ranking	2028 Earnings Ranking
State/Local Government	1	3	1	1
Retail Trade	2	4	4	5
Health Care/Social Assistance	3	1	2	2
Construction	4	5	3	3
Administrative/Waste Services	5	2	10	7
Other, Except Public Admin.	6	8	11	9
Real Estate, Rental, and Lease	7	7	14	13
Accommodation/Food Services	8	10	12	12
Forestry/Fishing	9	12	13	14
Wholesale Trade	10	9	5	4
Professional/Technical Services	11	6	6	6
Finance/Insurance	12	11	7	8
Manufacturing	13	13	9	10
Transportation	14	14	8	11
Arts/Entertainment/Recreation	15	15	18	18
Farm	16	17	20	22
Information	17	16	16	17
Educational Services	18	18	21	21
Federal Civilian Government	19	19	15	15
Federal Military	20	20	19	19
Utilities	21	21	17	16
Mgmt. Companies/Enterprises	22	22	22	20
Mining	23	23	23	23

Sources: Woods & Poole Economics, 2008 State Profile – Florida, The LPA Group Incorporated, 2009.

While state and local government jobs currently rank highest in the county, health care jobs are expected to be the most prevalent employment sector by 2028. Professional and technical services jobs are also expected to dramatically increase by 2028, which is consistent with the county's initiatives and variety of incentive programs. Employment data was further examined specifically within the transportation sector as shown in **Table 3-4**.

TABLE 3-4
TRANSPORTATION EMPLOYMENT

Year	United States	Florida	Fort Pierce-Port St. Lucie MSA	St. Lucie County
1990	4,418,462	212,742	2,920	1,923
1991	4,423,857	214,862	2,893	1,870
1992	4,360,467	213,214	2,900	1,854
1993	4,510,504	224,939	3,097	2,019
1994	4,654,009	233,209	3,153	2,111
1995	4,765,149	241,934	3,268	2,197
1996	4,877,148	252,707	3,260	2,191
1997	4,984,481	259,611	3,275	2,220
1998	5,184,593	268,500	3,218	2,139
1999	5,344,830	280,996	3,341	2,137
2000	5,513,252	289,685	3,339	2,123
2001	5,475,692	290,780	3,426	2,166
2002	5,345,667	287,057	3,637	2,351
2003	5,296,566	285,056	2,627	1,510
2004	5,408,031	291,953	3,807	2,716
2005	5,587,769	306,007	4,388	3,150
2006	5,765,973	317,046	4,781	3,559
2007	5,829,905	321,389	4,823	3,590
2008	**5,894,083**	**325,760**	**4,865**	**3,621**
2009	5,958,752	330,179	4,905	3,651
2010	6,023,875	334,639	4,945	3,680
2011	6,089,520	339,150	4,985	3,710
2012	6,155,620	343,704	5,023	3,738
2013	**6,222,265**	**348,308**	**5,062**	**3,767**
2014	6,289,346	352,956	5,099	3,794
2015	6,356,879	357,648	5,137	3,822
2016	6,425,018	362,387	5,172	3,848
2017	6,493,544	367,180	5,208	3,874
2018	**6,562,577**	**372,019**	**5,243**	**3,900**
2019	6,632,140	376,901	5,277	3,925
2020	6,702,210	381,835	5,310	3,950
2021	6,772,746	386,819	5,342	3,973
2022	6,843,763	391,849	5,374	3,997
2023	6,915,329	396,925	5,404	4,019
2024	6,987,355	402,053	5,434	4,041
2025	7,059,938	407,234	5,463	4,062
2026	7,132,951	412,459	5,491	4,083
2027	7,206,515	417,734	5,519	4,103
2028	**7,280,521**	**423,065**	**5,545**	**4,122**
AAGR 2000-2008	0.84%	1.48%	4.82%	6.90%
Change 2000-2008	6.91%	12.45%	45.70%	70.56%
AAGR 2008-2028	1.06%	1.32%	0.66%	0.65%
Change 2008-2028	23.52%	29.87%	13.98%	13.84%
ST AAGR	1.09%	1.35%	0.80%	0.79%
MT AAGR	1.07%	1.33%	0.71%	0.70%
LT AAGR	1.04%	1.29%	0.56%	0.56%

Sources: Woods & Poole Economics, 2008 State Profile – Florida, The LPA Group Incorporated, 2009.

Over the past few years, transportation jobs in the county have experienced a number of fluctuations. Although since 2004, there has been a consistent increase and stabilization trend. This may be reflective of typical business cycles at FPR, and will subsequently be revisited in the activity forecast effort. Forecast job growth within the transportation sector in St. Lucie County is modest, particularly in comparison to the State of Florida and United States as a whole.

3.3.4 Income and Earnings

Per capita personal income (PCPI) specifically relates to the measure of wealth among a sample of population. Historic numbers indicate that PCPI grew at 3.43 percent between 2000 and 2008 in the United States, as shown in **Table 3-5**. The PCPI of the State of Florida and the Fort Pierce-Port St. Lucie MSA have grown at similar rates as the United States, and the same trend is forecast to continue through 2028. However, the historic and forecast PCPI of St. Lucie County is approximately 25 percent less than the other evaluation areas (e.g., approximately $30,000 in 2008 versus $40,000 for the United States). Various factors may contribute to St. Lucie County's comparatively low PCPI, including the large number of retirees, former agricultural base, the 'bedroom community' phenomenon, and the fact that many of the county's largest employment sectors rank low on earnings (e.g., administrative, real estate, accommodation/food services, and forestry) as evidenced in **Table 3-3**. Therefore, it is speculative to assume that PCPI has any direct correlation to aircraft activity at FPR. Although it may be reflective of the limited amount of non-residential development that has occurred in the county in recent years, since business development often results in PCPI increases, additional tax revenue, and high paying jobs.

TABLE 3-5
TOTAL PER CAPITA PERSONAL INCOME (2008 $)

Year	United States	Florida	Fort Pierce-Port St. Lucie MSA	St. Lucie County
1990	19,477	19,564	21,114	15,511
1991	19,892	19,780	21,061	15,652
1992	20,854	20,417	21,461	15,817
1993	21,346	21,050	21,886	16,306
1994	22,172	21,666	22,394	16,798
1995	23,076	22,691	24,020	17,871
1996	24,175	23,655	25,029	18,570
1997	25,334	24,502	26,095	19,232
1998	26,883	25,987	27,666	20,313
1999	27,939	26,894	28,695	20,930
2000	29,845	28,508	30,100	22,243
2001	30,574	29,277	31,173	22,941
2002	30,821	29,727	30,853	23,043
2003	31,504	30,330	31,232	23,403
2004	33,123	32,618	34,432	25,744
2005	34,757	34,798	36,086	26,575
2006	36,714	36,720	37,937	27,540
2007	37,743	37,656	38,127	27,766
2008	**39,097**	**38,891**	**39,044**	**28,565**
2009	40,612	40,331	40,243	29,519
2010	42,269	41,945	41,665	30,603
2011	44,068	43,726	43,292	31,814
2012	46,006	45,669	45,111	33,145
2013	**48,081**	**47,768**	**47,109**	**34,595**
2014	50,295	50,023	49,280	36,161
2015	52,653	52,438	51,626	37,848
2016	55,162	55,021	54,152	39,659
2017	57,830	57,781	56,868	41,603
2018	**60,671**	**60,731**	**59,787**	**43,689**
2019	63,694	63,885	62,922	45,926
2020	66,914	67,259	66,292	48,327
2021	70,343	70,866	69,911	50,901
2022	73,995	74,724	73,797	53,663
2023	77,890	78,854	77,973	56,626
2024	82,040	83,273	82,458	59,804
2025	86,469	88,007	87,280	63,217
2026	91,158	93,041	92,424	66,853
2027	96,118	98,387	97,903	70,722
2028	**101,368**	**104,066**	**103,739**	**74,839**
AAGR 2000-2008	3.43%	3.96%	3.31%	3.18%
Change 2000-2008	31.00%	36.42%	29.71%	28.42%
AAGR 2008-2028	4.88%	5.04%	5.01%	4.93%
Change 2008-2028	159.27%	167.58%	165.70%	162.00%
ST AAGR	4.22%	4.20%	3.83%	3.90%
MT AAGR	4.76%	4.92%	4.88%	4.78%
LT AAGR	5.27%	5.53%	5.67%	5.53%

Sources: Woods & Poole Economics, 2008 State Profile – Florida, The LPA Group Incorporated, 2009.

3.4 Historic and Current Activity

Historic trends are one of the primary considerations that can influence activity forecasts at an airport. By tracing these trends, it is possible to determine the impact that economic fluctuations, as well as changes in the aviation industry, have had on activity at the airport. The study of historic trends is particularly valuable at those airports having an active Air Traffic Control Tower (ATCT). Historic activity at FPR includes air taxi, GA, and military operations. However, GA operations have consistently represented the majority of airport operations. Also, in looking at historic based aircraft levels at FPR, as well as the based aircraft fleet mix, past development trends for aprons, hangars, and other landside facilities can be examined to see if airport users were adequately served. Further, reviews of based aircraft and development trends at nearby airports can also help pinpoint what may or may not be worthwhile investments for catering to local based aircraft owners. After reviewing historic operations and based aircraft levels, the establishment of current or baseline activity representing 2008 conditions was presented in this section.

3.4.1 Historic and Current Operations

Many elements compose the broad definition of general aviation (GA) activity. GA includes all segments of the aviation industry except those conducted by scheduled commercial air carriers and the U.S. military. Its activities include the training of new pilots, sightseeing, aerial photography, law enforcement, and medical flights, as well as business, corporate, and personal travel. GA operations are divided into the categories of local or itinerant. Local operations are those arrivals or departures performed by aircraft that remain in the airport traffic pattern, or those that occur within sight of the airport. This covers an area within a 20 nautical mile radius of the airfield. Local operations are most often associated with training activity and flight instruction. Itinerant operations are arrivals or departures other than local operations, performed by either based or transient aircraft that do not remain within the airport traffic pattern.

The FAA defines an operation as either a single aircraft landing or takeoff. Under this definition, touch-and-go training procedures are considered two operations (one arrival and one departure) and are deemed local operations. Itinerant GA operations are typically comprised of private, business/corporate, and air taxi (i.e., on-demand or for-hire service) flight activity. Additionally, itinerant activity may include law enforcement and medical flights. The FAA maintains historic operations data as part of their 2008 Terminal Area Forecast (TAF) shown in **Table 3-6**, which presents past activity levels from 1990 through 2008. It is noted that the TAF presents forecast operational data for 2008, thus actual 2008 activity levels were confirmed based upon data provided by airport and air traffic control personnel.

At FPR in 2007, the airport experienced approximately 120,000 operations, representing the second lowest year of overall activity since 1990 besides 2006. As can be seen between 2005 and 2006, 'local civil' or local GA traffic decreased over 50 percent. Much of the 'local civil' activity consists of flight training touch-and-go operations of which numerous cycles of landings and takeoffs can be flown by one aircraft in a short amount of time. According to the article, *Flight Schools' End to Eliminate 107 Jobs in St. Lucie*, Pan Am International Flight Academy left FPR in the summer of 2005 and relocated to Phoenix to avoid further hurricane related damages.[8] 2004 and 2005 were also busy hurricane seasons, with St. Lucie County being hit by Hurricanes Frances and Jeanne in 2004 and Hurricane Wilma in 2005. Occurring in the latter portion of 2004, the airport's preliminary damage claims from Hurricane Frances were estimated at $75 million to $100 million.[9] Consequently, these factors impacted activity levels at FPR across all sectors of flight shown in **Table 3-6**. These types of factors illustrate the uncertainty of forecasting, since they represent natural events or airport-specific business decisions that cannot necessarily be predicted in an AMPU study. Other events, such as the terrorist attacks on September 11, 2001, record high fuel prices, increased security measures, and rising insurance rates, have resulted in an overall decline in GA activity around the United States. However, activity was up at FPR in 2007, and overall activity increased by over 30,000 operations from 2007 to 2008. Thus, after a rebuilding effort from hurricane damage, the airport shows positive signs of recovery. New businesses are pushing significant investment into the airport as evidenced by the two new Fixed Base Operators (FBOs), Key Air and Volo Aviation, which both have large-scale development plans over the next several years. In discussions of current and forecast activity provided later in this chapter, operational data in **Table 3-6** was defined by aircraft type and other pertinent forecast variables. Recent and anticipated trends affecting aviation and *Forecasts of Aviation Demand* are presented in **Section 3.5**, *Factors and Opportunities Affecting Activity Levels*.

[8] *Flight Schools' End to Eliminate 107 Jobs in St. Lucie, Palm Beach Post, April 8, 2005.*
[9] *St Lucie County Assesses Damages, Palm Beach Post, September 5, 2004.*

TABLE 3-6
HISTORIC OPERATIONS

Year	Itinerant Air Carrier	Itinerant Air Taxi	Itinerant GA	Itinerant Military	Local Civil	Local Military	Total Airport Ops
1990	0	2,004	42,649	94	104,340	6	149,093
1991	0	3,052	58,022	159	115,602	29	176,864
1992	0	2,075	69,441	211	85,131	16	156,874
1993	0	2,307	81,490	165	89,328	4	173,294
1994	0	2,540	77,484	277	73,535	64	153,900
1995	20	2,350	75,886	94	71,554	2	149,906
1996	12	2,210	64,449	34	68,531	2	135,238
1997	4	1,545	72,554	359	69,614	0	144,076
1998	0	1,503	71,974	40	70,876	0	144,393
1999	0	1,477	80,166	133	73,656	29	155,461
2000	12	1,908	84,084	87	84,335	22	170,448
2001	1	2,037	108,564	143	82,290	50	193,085
2002	0	1,783	113,296	22	78,231	0	193,332
2003	0	1,334	104,059	97	78,188	38	183,716
2004	0	1,220	104,625	91	83,014	99	189,049
2005	0	742	89,749	59	72,477	0	163,027
2006	0	677	66,785	119	35,726	12	103,319
2007	0	780	73,050	172	46,112	17	120,131
2008	0	953	85,566	96	73,400	261	160,277

Note: 2008 activity levels provided by airport records.
Sources: FAA 2008 Terminal Area Forecast, airport records, The LPA Group Incorporated.

3.4.2 Historic and Current Based Aircraft

The FAA's 2008 TAF also includes historic based aircraft data for the airport, as shown in **Table 3-7**. Total based aircraft levels at FPR have not experienced the same cycle of increases and decreases as operations, although there was some variation year-to-year. Also, the high based aircraft number in 2008 partially accounts for seasonal peaks in based aircraft; specifically, there are several based aircraft owners that only spend a few months of the year in Florida. Per FAA guidelines, these aircraft are generally counted as a one-half of a based aircraft. While the overall number of based aircraft has been relatively stable, there has been a decline in single-engine aircraft and an increase in multi-engine and jet aircraft. Some of this change can be attributed to the loss of Pan Am International Flight Academy in 2005 and the additional of the airport's new FBOs. A large component of both Key Air and Volo Aviation's businesses include corporate charter and corporate aircraft management. It is the intent of both organizations to attract new multi-engine turboprops and corporate jets to FPR through large-scale hangar development. Future based aircraft growth is most highly anticipated within the jet and turboprop categories, particularly due to the limited availability of hangar space and high rents at airports to the south of FPR force aircraft owners to seek available facilities elsewhere.

TABLE 3-7 HISTORIC BASED AIRCRAFT						
Year	**Single-Engine**	**Multi-Engine**	**Jet**	**Helicopter**	**Total**	**Ops. Per Based AC**
1990	110	60	0	2	172	867
1991	123	44	0	1	168	1,053
1992	123	44	1	1	169	928
1993	123	44	1	1	169	1,025
1994	123	44	1	1	169	911
1995	96	29	3	1	131	1,144
1996	89	25	3	2	119	1,136
1997	89	25	3	2	119	1,211
1998	89	25	3	2	119	1,213
1999	100	40	5	2	147	1,058
2000	122	44	5	3	174	980
2001	115	45	5	5	170	1,136
2002	125	50	5	5	185	1,045
2003	128	51	5	5	189	972
2004	125	50	5	5	185	1,022
2005	125	50	5	5	185	881
2006	125	50	5	5	185	558
2007	125	50	5	5	185	649
2008	122	71	14	4	211	760

Note: 2008 numbers provided by validated inventory of the National Based Aircraft Inventory Program.
Sources: FAA 2008 Terminal Area Forecast, National Based Aircraft Inventory Program, The LPA Group Incorporated.

3.5 Factors and Opportunities Affecting Activity Levels

In reviewing the previous 20 years of activity at FPR, many developments and changes that have since occurred were not anticipated in any forecast at that time. As described throughout this chapter, evolution of technology and business practices has resulted in gradual changes, while economic events and natural disasters have also impacted demand. Although many of these factors cannot be forecast, they were considered in the evaluation and selection the preferred forecast for this AMPU study.

3.5.1 Natural Disasters

As previously mentioned, FPR was hit by Hurricane Frances and Jeanne in 2004 and Hurricane Wilma in 2005, with preliminary damage claims from Hurricane Frances estimated at $75 million to $100 million. Consequently, Pan Am International Flight Academy left FPR in the summer of 2005 and relocated to Phoenix to avoid further hurricane damage. Natural disasters such as hurricanes can have a major impact on airports; they can suspend service, cause significant damage, and subsequently result in the loss of revenues and businesses.

3.5.2 Terrorism/Security

As evidenced by the events of September 11, 2001, and the British bomb plot in 2006 with the proceeding liquids ban, terrorism and security issues are a current and serious threat to aviation demand. Before the recent economic recession at the end of 2008, commercial service demand had recovered to pre-9/11 demand. However, both 9/11 and the British bomb plot have impacted airport security procedures. The level and type of threats impacting commercial and general aviation is ever changing. Therefore, airport security is in a state of flux. Due in part to these events, the Transportation Security Administration (TSA) is also proposing stricter security measures for GA airports and aircraft operators which may affect future aviation demand.

The TSA recently proposed a Large Aircraft Security Program (LASP) for operators of aircraft with maximum takeoff weights exceeding 12,500 pounds such as corporate jets. According to the TSA, the purpose of the LASP would be to enhance GA security by developing a comprehensive strategy to: "establish baseline standards of security for GA operations; ensure that flight crews have undergone a fingerprint-based criminal history records and terrorist name check; designate security coordinators; conduct watch list matching of passengers through TSA-approved watch list matching service provider; and check/validate property on board for unauthorized persons and accessible weapons."[10] The LASP proposal has been faced with extreme criticism within the aviation community, since the associated security standards would essentially place commercial standards onto GA and air charter operations. Further, charter operators argue that they are familiar with every passenger, and that the LASP proposal would significantly impact their business.[11] While the LASP proposal is still under review, it is anticipated that the opposition to the proposal will result in the TSA developing a revised plan for large aircraft security.

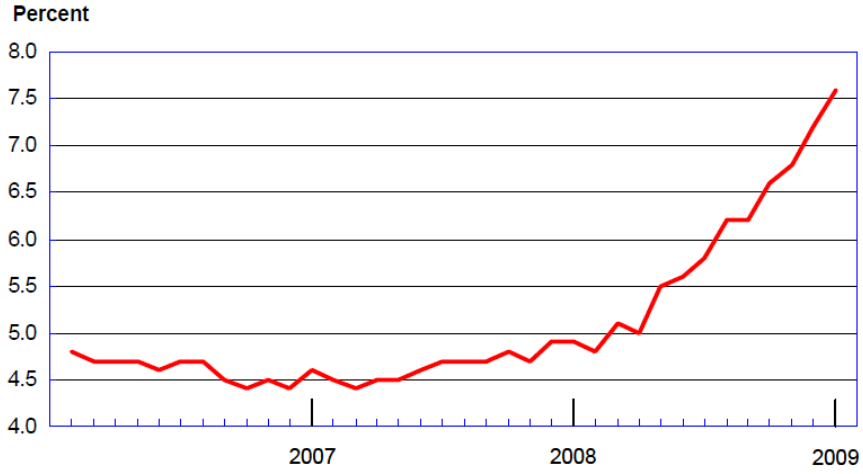
3.5.3 Economic Conditions

As mentioned earlier, in 2008 and the beginning of 2009, there was an overall decline in GA and commercial airline activity in the United States and around the world, which was caused by declining economies and stock markets, bankruptcies, foreclosures, and record high fuel prices. As shown in **Figure 3-1**, the unemployment rate in the United States grew to 7.6 percent in January 2009, and according to the Department of Labor (DOL), approximately 3.6 million jobs were been lost in the United States since the current recession began in December 2007.[12] Still, with talks of a major financial rescue plan from the federal

[10] *TSA Press Release, TSA Proposes Large Aircraft Security Program: Proposal to Achieve Comprehensive General Aviation Security, October 9, 2009.*
[11] *AOPA Online, TSA plan would cripple more than large aircraft operators, January 26, 2009.*
[12] *Source: United States Department of Labor, Bureau of Labor Statistics, February 2009.*

government, future aviation activity levels are uncertain. However, due to FPR's position close to busy airports in southeast Florida that do not have much remaining space for based aircraft storage , as well as previous activity trends witnessed at FPR, the airport may not be as negatively affected as other GA airports around the country.

Figure 3-1
Unemployment Rate, Seasonally Adjusted
February 2006-January 2009



Source: United States Department of Labor, Bureau of Labor Statistics, February 2009.

3.5.4 Aircraft Trends

In reviewing general aviation forecasts shown in the *FAA Aerospace Forecast Fiscal Years 2008-2025*, continued demand for business jets will expand at a more rapid pace than personal/sport use. It is further anticipated that the corporate side of general aviation will benefit from the introduction of very light jets (VLJs). Still corporate safety/security concerns combined with increased commercial aircraft flight delays continues to fuel fractional, corporate, and on-demand charter flights. Use of smaller corporate aircraft allows users greater flexibility and time efficiency since they can operate at an airport closer to their business location. The FAA predicts based upon data obtained from the General Aviation and Air Taxi Activity and Avionics Survey (GA Survey) that the active GA fleet will increase at an average annual rate of 1.4 percent over the 18 year forecast period. The more expensive and sophisticated turbine-powered jet fleet is projected to grow at an annual rate of 5.6 percent. FAA forecasts of GA aircraft and anticipated hours flown are provided in **Tables 3-14** and **3-15**.

Fractional ownership of an aircraft began approximately 15 years ago and was governed under Federal Aviation Regulations (FAR) Part 91. As of 2004, however, fractional ownership aircraft operate under FAR Part 91K requirements, which set more stringent

requirements including regulations concerning runway length requirements. Aircraft fractional ownership is defined as shared ownership of an aircraft by corporations, businesses and individuals who purchase a certain number of aircraft hours related to a specific aircraft (e.g., Cessna 560). Growth in fractional ownership according to both FAA and industry forecasts will continue to grow. Fractional ownership aircraft fly about 1,200 hours annually compared to approximately 350 hours for all business jets in all applications.[13]

VLJs, often referred to as microjets, are newly certified aircraft which are based upon a combination of new jet engine technology and sophisticated avionics equipment. VLJs typically hold between four to six passengers and can be used for trips of 500 nautical miles or less. The impetus of VLJs was to provide users the option of using smaller GA airports closer to the ultimate destination. These aircraft are Stage 4 noise certified, and during dry pavement and average temperatures can operate on shorter runways. According to FAA, growth in VLJs worldwide is expected to exceed 8,000 aircraft by 2025. It is anticipated that because of its lower costs, VLJs will eventually replace twin-piston and turboprop aircraft. However, demand for larger cabins and longer haul length will continue to drive demand for light, medium and heavy corporate jet aircraft in support of the global business community. Also, certification issues, as well as the current economic climate, are slowing the influx of VLJs into the nation's GA airports.

3.5.5 Airspace Modernization/NextGen

As described in **Chapter 2**, *Inventory of Existing Conditions*, in an effort to reduce congestion around the country, the FAA is evaluating the implementation of the Next Generation Air Transportation System (NextGen), which is a "plan to modernize the National Airspace System (NAS) through 2025. Through NextGen, the FAA is addressing the impact of air traffic growth while simultaneously improving safety, environmental impacts, and user access to the NAS."[14] As part of the plan, the FAA has already implemented upgrades to the southeast Florida airspace by publishing new Area Navigation (RNAV) paths (i.e., GPS-guided point-to-point paths) which allow for more efficient aircraft travel with reduced delay. These upgrades are the initial efforts of the NextGen plan, and the FAA intends to roll-out new technologies and airspace reconfigurations in the future. **Chapter 4**, *Demand Capacity/Facility Requirements*, further describes the anticipated effect NextGen's implementation will have on air traffic around FPR.

3.5.6 Potential for Commercial Airline Service

In April 2008, Port St. Lucie officials formed a committee to determine the need and viability of either developing a new commercial airport within the Treasure Coast region or upgrading

[13] *FAA Aerospace Forecast Fiscal Years 2008-2025, page 41*
[14] *FAA NextGen Fact Sheet, October 29, 2008.*

FPR to provide commercial service. The Treasure Coast region is one of only two regions in Florida without a commercial service airport. This issue of converting FPR to a commercial service airport was last evaluated in 2002, during the last master plan update. It was determined at that time for the airport to remain a general aviation facility.

However, in November 2007, DayJet, an on-demand air taxi operator, provided several services and flights at FPR before filing for bankruptcy and discontinuing service in September 2008. Still companies and population are migrating northward to St. Lucie County from South Florida as a result of continued congestion at West Palm Beach International (PBI), Ft. Lauderdale International (FLL) and Miami International (MIA) Airports.

Based upon these discussions, the viability of commercial service at FPR was evaluated as part of this Master Plan Update. As noted in several previous documents, commercial demand could be associated with local demand as well as potential passenger "leakage" from the South Florida market. However, in order to effectively pursue commercial service under FAR Part 139 certification, installation and development of several facilities would need to be pursued. These facilities are identified in **Chapter 4**, *Demand/Capacity and Facility Requirements*. However, because of the nature of commercial service in South Florida and limited historic information, accurate commercial operations and passenger demand could not be forecast. As a result, commercial demand was not included as part of this forecast analyses.

3.6 Regression Analyses and Socioeconomic Correlation

Often times, a correlation can be made between historic airport activity and historic socioeconomic characteristics, which were presented in earlier sections of this chapter. In order to test if such a correlation exists, regression analysis is used to determine if an independent variable (*X*) can be used to predict a dependent variable (*Y*). Some regression analyses provide strong correlations (e.g., a comparison of automobile insurance rates to population within a square mile). The increased traffic in higher populated areas results in an additional number of accidents, thefts, etc. and, therefore, causes insurance rates to increase. In this example, the population per square mile would be the independent variable, whereas the cost of insurance would be the dependent variable. The independent variable in aviation forecasting is typically a socioeconomic characteristic (e.g., population or employment), while the dependent variable is generally passenger enplanements, airport operations or based aircraft.

According to the FAA Report, *Forecasting Aviation Activity by Airport (July 2001)*, the ability of an independent variable to predict a dependent variable is measured by the 'Coefficient of Determination' or 'R-Squared' (R^2) regression statistic. "An R^2 of 0.0 indicates

that there is no statistical relationship between changes in the independent and dependent variables. R^2 values near 1.0 mean there is a very strong statistical relationship." [15] The R^2 value "measures the percent of the variation in *Y* [e.g., historic change in airport activity] that is explained by the variation in *X* [e.g., historic change in population]."[16] In aviation forecasting, an R^2 value of 90 percent or greater should be achieved for the independent variable (*X*) to be considered a confident predictor of the dependent variable (*Y*).

In the case of FPR, the independent variables (*X*) are comprised of total population, total employment, transportation employment, and total per capita personal income (PCPI) for St. Lucie County, and the dependent variables (*Y*) are the number of annual operations and based aircraft. The objective of the regression analyses was to determine if a correlation existed between historic socioeconomic variables and historic airport activity. If such a correlation were to exist (i.e., producing an R^2 value of 90 percent or greater), then it is likely that forecasts of the socioeconomic variables could be used to determine future airport activity. The regression analyses were performed for two separate time periods, between 1990 and 2008 and also between 2000 and 2008. By evaluating historical relationships over a long-term and short-term period, we can better understand the types of national, state, and local factors that have the potential to influence airport activity. The regression analyses for FPR produced the R^2 values in **Table 3-8**.

TABLE 3-8
REGRESSION ANALYSIS – SOCIOECONOMIC CHARACTERISTICS

Socioeconomic Variable (X Variable)	Operations (Y Variable)		Based Aircraft (Y Variable)	
	1990-2008	2000-2008	1990-2008	2000-2008
Total Population – R^2 Value	4.65%	50.00%	31.20%	51.87%
Total Employment – R^2 Value	3.35%	47.56%	39.30%	47.53%
Trans. Employment – R^2 Value	21.12%	55.16%	18.74%	22.75%
Total PCPI – R^2 Value	1.01%	48.56%	29.43%	43.75%

Source: The LPA Group Incorporated, January 2009.

As shown, none of the evaluated historic socioeconomic characteristic of St. Lucie County produced a good correlation (i.e., R^2 value of 90 percent or greater) with historic operations and based aircraft levels at FPR. In looking at historic operations (**Table 3-6**), there are several cycles of annual increases and decreases that can be explained by incoming or outgoing businesses, hurricane damage, and national economic conditions. Consequently, the general increase in population, employment, and PCPI over time does not correlate well with the cyclical aircraft operations levels. Further, St. Lucie County's transportation employment levels between 2000 and 2008 were shown to have the highest correlation with operations levels, producing an R^2 value of 55.16 percent. However, all regression analyses for operations produced a negative sloping trend line due to high variation and minimal

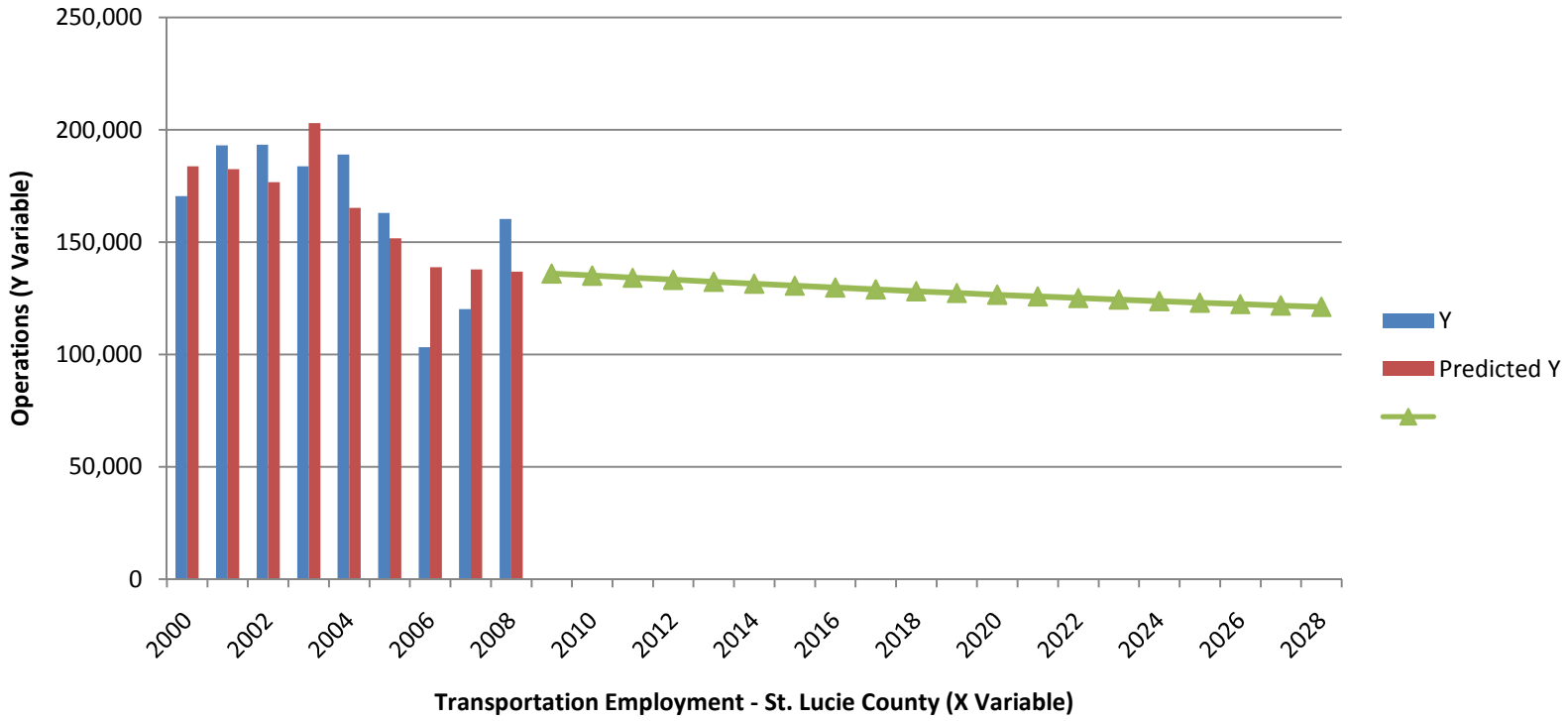
[15] *FAA Forecasting Aviation Activity by Airport, July 2001.*
[16] *Basic Statistics for Business and Economics, Third Edition, 2000.*

overall activity growth during the evaluation periods. Although not presented herein, this trend also occurred when regression was performed using socioeconomic data for the United States, State of Florida, and Fort Pierce-Port St. Lucie MSA. Subsequently, the use of regression analysis for predicting future operations at FPR would result in a negative growth forecast as shown in **Figure 3-2**, and may therefore be an ineffective method of evaluating future aviation demand. Specific factors, such as the construction of the new training Runway 10L-28R and large-scale development plans by the FBOs, are among the reasons why a negative growth forecast may not be realistic.

Similar to historic operations levels at FPR, historic based aircraft levels (**Table 3-7**) have experienced cycles of increases and decreases over the years. Consequently, the cyclical nature of based aircraft in earlier years (i.e., 1994 to 2000) resulted in the low R^2 regression values shown in **Table 3-8**, specifically because population, employment, and PCPI were generally increasing year-after-year – total population levels between 2000 and 2008 illustrated the highest correlation with based aircraft levels, producing an R^2 value of 51.87 percent. As depicted in **Figure 3-3**, the associated trend line formulas produced low growth scenarios, in addition to very low confidence/R^2 values, for predicting future based aircraft levels at FPR.

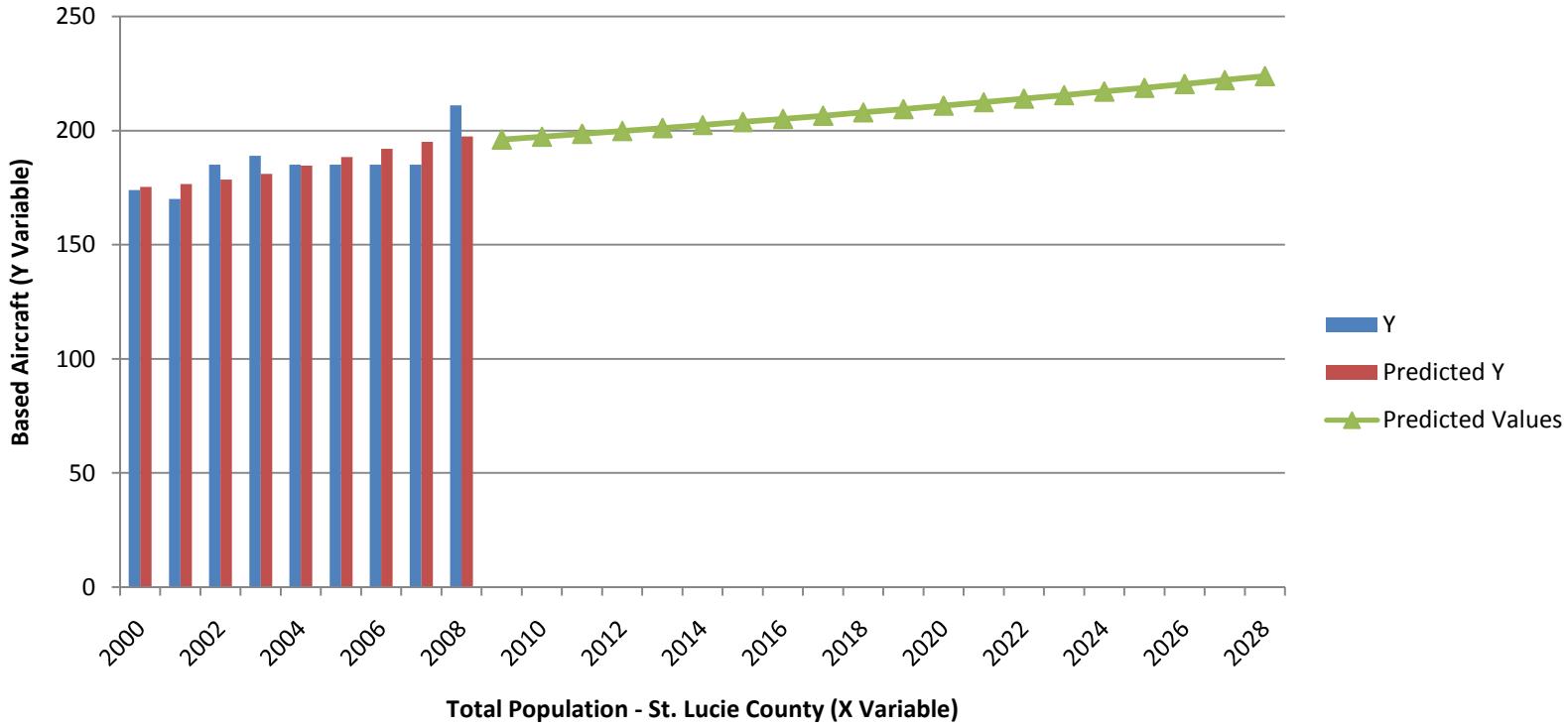
It is noted that regression analysis often produces more confident results for commercial airports than GA airports. Specifically, a correlation can often be seen between historic population and historic commercial passenger enplanements (i.e., the number of passengers that fly in a year). Therefore, the results of the regression analyses for FPR are not uncommon of GA airports.

Figure 3-2
Regression Analysis
Transportation Employment to Operations (2000-2008)



Source: The LPA Group Incorporated, 2009.

Figure 3-3
Regression Analysis
Total Population to Based Aircraft (2000-2008)



Source: The LPA Group Incorporated, 2009.

3.7 Previous Forecasting Efforts

As previously described in **Section 3.5**, *Factors and Opportunities Affecting Activity Levels*, several factors and trends may negatively or positively affect future activity levels at FPR. Therefore, it is important to consider previous forecasting efforts to determine if they are consistent with current airport activity levels and anticipated trends. The following forecasting efforts are evaluated in this section:

- 2008 FAA Terminal Area Forecast (TAF)
- 2002 Airport Master Plan Update (AMPU)
- 2005 FAR Part 150 Noise Study Update
- 2004 Florida Aviation System Plan (FASP), updated March 2007
- FAA Aerospace Forecasts (2008-2025)

3.7.1 2008 FAA Terminal Area Forecast (TAF)

Every year, the FAA prepares detailed Terminal Area Forecasts (TAF) for airports included in the National Plan of Integrated Airport Systems (NPIAS). Typically, the TAF projects airport operations and based aircraft, as well as passenger enplanements for commercial service airports, over a 17 to 20-year planning period. In developing the TAF, the FAA's methodologies involve regression analysis of national economic indicators and industry trends, though the forecast typically lacks an in-depth analysis of specific airport issues in its composition. As described later in this chapter, the TAF is used by FAA as a benchmark in evaluating detailed airport forecasts. FPR's TAF for operations is shown in **Table 3-9** and for based aircraft in **Table 3-10**. The TAF for based aircraft has been adjusted to reflect actual based aircraft counts in 2008.

The FAA projects operations to grow at an average annual growth rate (AAGR) of 1.32 percent between 2008 and 2025, whereas based aircraft are projected to increase at an AAGR of 2.4 percent during that same period. Therefore, as shown in **Table 3-10**, the number of operations per based aircraft (OPBA) is expected to decrease throughout the forecast period. This is consistent with recent aviation trends, where aircraft are flying longer distances with fewer stopovers to maximize fuel efficiency. It is also important to note that the FAA TAF does not forecast Itinerant Air Taxi or Military operations above the base year (2008) operations primarily due to limited data and trends within the industry.

TABLE 3-9
FAA TAF OPERATIONS FORECAST

Year	Itinerant Air Carrier	Itinerant Air Taxi	Itinerant GA	Itinerant Military	Local Civil	Local Military	Total Airport Ops
2008	0	953	85,566	96	73,400	261	160,277
2009	0	953	86,456	96	74,613	261	162,380
2010	0	953	87,356	96	75,846	261	164,512
2011	0	953	88,265	96	77,099	261	166,674
2012	0	953	89,183	96	78,373	261	168,866
2013	0	953	90,110	96	79,668	261	171,089
2014	0	953	91,048	96	80,985	261	173,343
2015	0	953	91,995	96	82,323	261	175,628
2016	0	953	92,952	96	83,683	261	177,945
2017	0	953	93,919	96	85,066	261	180,295
2018	0	953	94,896	96	86,471	261	182,677
2019	0	953	95,883	96	87,900	261	185,093
2020	0	953	96,880	96	89,353	261	187,543
2021	0	953	97,888	96	90,829	261	190,027
2022	0	953	98,906	96	92,330	261	192,547
2023	0	953	99,935	96	93,855	261	195,101
2024	0	953	100,975	96	95,406	261	197,691
2025	0	953	102,025	96	96,983	261	200,318
AAGR 2008-2025	0.00%	0.00%	1.04%	0.00%	1.65%	0.00%	1.32%
Change 2008-2025	0.00%	0.00%	19.24%	0.00%	32.13%	0.00%	24.98%
ST AAGR	0.00%	0.00%	1.04%	0.00%	1.65%	0.00%	1.31%
MT AAGR	0.00%	0.00%	1.04%	0.00%	1.65%	0.00%	1.32%
LT AAGR	0.00%	0.00%	1.04%	0.00%	1.65%	0.00%	1.33%

Note: 2008 operations numbers from actual airport count. All other years adjusted based on TAF growth rates.
Sources: FAA 2008 Terminal Area Forecast, The LPA Group Incorporated, 2009.

TABLE 3-10
FAA TAF BASED AIRCRAFT FORECAST

Year	Single	Jet	Multi	Helicopter	Other	Total Based Aircraft	Ops Per Based Aircraft
2008	122	14	71	4	0	211	760
2009	125	14	73	4	0	216	752
2010	128	14	75	4	0	221	744
2011	131	15	77	4	0	227	736
2012	134	15	78	4	0	232	728
2013	137	15	80	4	0	237	720
2014	141	15	82	4	0	243	713
2015	144	16	85	5	0	249	705
2016	148	16	87	5	0	255	698
2017	151	16	89	5	0	261	691
2018	155	17	91	5	0	267	683
2019	159	17	93	5	0	274	676
2020	162	17	96	5	0	280	669
2021	166	17	98	5	0	287	662
2022	170	18	101	5	0	294	655
2023	174	18	103	5	0	301	648
2024	179	18	106	5	0	308	641
2025	183	19	109	5	0	316	635
AAGR 2008-2025	2.41%	1.71%	2.53%	1.71%	0.00%	2.40%	
Change 2008-2025	50.00%	33.33%	52.94%	33.33%	0.00%	49.57%	
ST AAGR	2.41%	1.71%	2.53%	1.71%	0.00%	2.39%	
MT AAGR	2.41%	1.71%	2.53%	1.71%	0.00%	2.40%	
LT AAGR	2.41%	1.71%	2.53%	1.71%	0.00%	2.40%	

Note: 2008 based aircraft numbers from actual airport count. All other years adjusted based on TAF growth rates.
Sources: FAA 2008 Terminal Area Forecast, The LPA Group Incorporated, 2009.

3.7.2 2002 Airport Master Plan Update (AMPU)

The 2002 Airport Master Plan Update (AMPU), prepared by Hoyle, Tanner, & Associates, Inc., provided recommendations for FPR through the year 2020. The FAA-approved operations and based aircraft forecasts from the 2002 study are shown in **Table 3-11**. The 2002 AMPU selected an operations forecast based on regression of historic population and airport activity. Per the request of the Master Plan Study Group (MPSG) at the time, this produced an operations forecast with an average annual growth rate (AAGR) of approximately 2.5 percent during the mid-term and long-term planning periods. The preferred based aircraft forecast from the 2002 AMPU was also based on the same regression methodology. As previously shown in **Table 3-1**, current population projections for St. Lucie County through 2028 represent AAGRs of 2.70 percent in the short-term, 2.36 percent in the mid-term, and 1.99 percent in the long-term, consistent with past population projections. Therefore, the operations and based aircraft growth rates from the 2002 AMPU may produce realistic forecasts for FPR.

TABLE 3-11
2002 MASTER PLAN UPDATE FORECASTS

Operations Forecast		
Year	**Population**	**Operations**
2001	195,605	181,031
2005	216,080	241,040
2010	244,718	272,715
2020	313,865	349,097
AAGR 2001-2020	2.52%	3.52%
Change 2001-2020	60.46%	92.84%
ST AAGR	2.52%	7.42%
MT AAGR	2.52%	2.50%
LT AAGR	2.52%	2.50%
Based Aircraft		
Year	**Population**	**Operations**
2001	195,605	181
2005	216,080	241
2010	244,718	272
2020	313,865	348
AAGR 2001-2020	2.52%	3.50%
Change 2001-2020	60.46%	92.27%
ST AAGR	2.52%	7.42%
MT AAGR	2.52%	2.45%
LT AAGR	2.52%	2.49%

Sources: 2002 FPR Master Plan Update.

3.7.3 2005 FAR Part 150 Noise Study Update

The 2005 Federal Aviation Regulations (FAR) Part 150 Noise Study Update, prepared by the MEA Group, Inc., provided FAA-approved operations forecasts through 2010 and recommended noise abatement measures for FPR. Forecasts of based aircraft are not required in a Noise Study. As shown in **Table 3-12**, the Noise Study forecasts were based on earlier forecasts developed as part of the 2001 Environmental Assessment (EA) associated with training Runway 10L-28R (formerly 9L/27R), which used the FAA's TAF and added a 10 percent growth factor to account for potential growth. Consequently, in reviewing the Noise Study forecasts, which show an AAGR associated with aircraft operations of 4.29 percent between 2003 and 2010 (under the 'revised total' column), there does not appear to be any resemblance to recent and current activity levels at FPR. Although at the time the Noise Study forecasts were derived, such a high growth rate could have reasonably been expected due to the presence of Pan Am International Flight Academy, site plan approvals for industrial development, and the overall economic climate. Therefore, this high growth factor should be considered in the operations forecast since it accounts for potential cycles of quick growth that may occur.

TABLE 3-12
2002 FAR PART 150 NOISE STUDY UPDATE FORECASTS

Year	Itinerant Ops			Local Ops		Total Ops	Night Ops	Revised Total	Avg. Annual Day
	Air Taxi	GA	Mil	GA	Mil				
2003	1,329	103,639	92	78,197	12	183,269	8,808	192,077	526
2004	1,334	124,862	97	93,691	38	220,022	9,681	229,703	629
2005	1,334	128,005	97	96,025	38	225,499	9,922	235,421	645
2009	1,334	137,821	97	103,309	38	242,599	10,674	253,273	694
2010	1,334	140,275	97	105,131	38	246,875	10,863	257,738	706
AAGR 2003-2010	0.05%	4.42%	0.76%	4.32%	17.90%	4.35%	3.04%	4.29%	4.29%
Change 2003-2010	0.38%	35.35%	5.43%	34.44%	216.67%	34.71%	23.33%	34.18%	34.18%
AAGR 2005-2010	0.00%	1.85%	0.00%	1.83%	0.00%	1.83%	1.83%	1.83%	1.83%

Sources: 2005 FPR Noise Study Update.

3.7.4 2004 Florida Aviation System Plan (FASP)

The Florida Aviation System Plan (FASP) is the result of an ongoing project performed in conjunction with the Florida Department of Transportation (FDOT) and the FAA to continually monitor and evaluate the progress of aviation in the State of Florida. The process is ongoing with various parts and phases, such as forecast and facility requirements, are periodically updated. The most recent FASP Forecast for FPR has a base year of 2004 and extends to year 2024 as shown in **Table 3-13**. With an average annual growth rate of 1.45 percent for activity over the twenty-year forecast period (i.e., an increase of approximately 65,000 annual operations by 2024), the FASP forecast illustrates a modest growth scenario for FPR. Further, the FASP notes airport tenants' plans to develop new hangars and also the

construction of new training Runway 10L/28R (formerly referred to as 9L-27R) as factors contributing to growth at FPR.

TABLE 3-13
FASP FORECASTS

Year	Based Aircraft	Operations
2004	256	195,309
2009	283	209,886
2014	312	225,550
2024	380	260,473
AAGR 2004-2024	1.99%	1.45%
Change 2004-2024	48.44%	33.36%
ST AAGR	2.03%	1.45%
MT AAGR	1.97%	1.45%
LT AAGR	1.99%	1.45%

Source: Florida Aviation System Plan.

3.7.5 FAA Aerospace Forecasts (2008-2025)

The FAA also publishes its national Aerospace Forecasts annually in March. This forecast provides a 17-year projection of aviation activity at the national level, taking into account global and national economic activity and aviation industry trends in aircraft manufacturing, advanced technology, and the operational characteristics of general aviation, commercial, and charter sectors of aviation. The FAA Aerospace Forecasts include projected growth rates for the GA hours flown (**Table 3-14**), which may be applied to determine future airport operations. The FAA Aerospace Forecasts also provides projected growth rates for the active GA fleet (**Table 3-15**), which may be applied to determine future based aircraft fleet mix levels. Unlike the specific TAF for FPR, the FAA Aerospace Forecasts is a national forecast and, therefore, shows greater operational growth than based aircraft. This is another national trend that was incorporated into the forecast effort.

TABLE 3-14 FAA AEROSPACE GROWTH FORECAST ACTIVE GENERAL AVIATION AND AIR TAXI HOURS FLOWN									
Period	Piston		Turbine		Rotor	Experimental	Sport	Other	Total
	Single	Multi	Turboprop	Jet*					
AAGR 2000-07	-4.1%	-4.1%	1.4%	6.9%	6.7%	-0.5%	N/A	-7.6%	-1.2%
AAGR 2007-10	-0.5%	-1.5%	1.4%	12.2%	4.9%	2.7%	30.1%	1.2%	2.8%
AAGR 2010-20	0.9%	-1.8%	1.2%	8.1%	3.0%	2.7%	11.1%	0.3%	3.1%
AAGR 2007-25	1.0%	-1.2%	1.2%	7.7%	3.1%	2.5%	12.1%	0.5%	3.0%
*Note: *Jet aircraft growth includes very light jets.* *Source: FAA Aerospace Forecast 2008-2025, Table 28, March 2008.*									

TABLE 3-15 FAA AEROSPACE GROWTH FORECAST ACTIVE GENERAL AVIATION AND AIR TAXI AIRCRAFT FLEET									
Period	Piston		Turbine		Rotor	Experimental	Sport	Other	Total
	Single	Multi	Turboprop	Jet					
AAGR 2000-07	-0.5%	-1.8%	5.2%	6.7%	4.4%	2.3%	N/A	-0.7%	0.5%
AAGR 2007-10	-0.1%	-0.9%	1.5%	8.9%	5.3%	3.2%	27.5%	0.7%	1.4%
AAGR 2010-20	0.4%	-0.9%	1.7%	5.8%	3.0%	2.2%	9.0%	-0.2%	1.4%
AAGR 2007-25	0.5%	-0.9%	1.6%	5.6%	3.1%	2.2%	9.9%	0.0%	1.4%
Source: FAA Aerospace Forecast, 2008-2025, Table 27, March 2008.									

3.8 Applied Forecasts

The preparation of forecasts for GA airports can often be more complex, and at the same time more uncertain, than preparing forecasts for a commercial service airport. As mentioned earlier, commercial activity tends to have a strong correlation with historic population or employment growth within a region, whereas general aviation activity may have no obvious link to these socioeconomic characteristics. Consequently, to determine realistic GA forecasts, it is necessary to take an in-depth look at the available airport property, tenant expansion plans, location within the country, and community growth plans. Various forecasting methods are presented in this chapter, some of which are based on national, state, and local trends including the following:

- **Growth rates of forecast socioeconomic characteristics** – forecasts of St. Lucie County's total population, total employment, transportation employment, and PCPI were used to determine AAGRs for the short (2008-2013), mid (2014-2018), and long-term (2019-2028) planning periods. In this section, the associated AAGRs are applied to existing airport activity to determine forecast activity levels through 2028.

- **Regression analyses of historic socioeconomic characteristics and airport activity** – regression analyses were conducted to identify whether a correlation existed between St. Lucie County's historic socioeconomic characteristics and historic airport activity. Although no confident correlation could be identified (i.e., R^2 value of 90 percent or greater), the historic socioeconomic characteristics which produced the highest R^2 values were identified as *Transportation Employment (2000-2008)* for operations and *Total Operations (2000-2008)* for based aircraft. In this section, the AAGRs associated with the identified trend line formulae are applied to existing airport activity to determine forecast activity levels through 2028.
- **Growth rates of previous forecast efforts for FPR** – the AAGRs from previous forecasting efforts, including the 2008 FAA TAF, 2002 AMPU, 2005 Noise Study Update, 2004 FASP, and 2008-2025 FAA Aerospace Forecasts were used to determine forecast airport activity.
- **Average operations per based aircraft** – the selected operations forecast was divided by the '2008 Operations Per Based Aircraft' value of 760 (shown in **Table 3-7**) to forecast based aircraft levels.

As described in the sections below, ten different forecasting methods were utilized to determine future operations and based aircraft at FPR. Although some methods have their strengths and weaknesses, such as a low statistical confidence or previous miscalculation (i.e., previous forecast not coming to fruition), it is unfair to assume that one method would provide a more likely outcome than another. Based on the review of historic airport activity, it appears that FPR's year-over-year activity has been most significantly influenced by unexpected local factors like hurricane damage and business loss. Therefore, three different forecasting scenarios are presented in this section – Low Growth, Medium Growth, and High Growth. However, only one forecast is selected as the Preferred Forecast, which is used to determine long-term requirements and development alternatives for the airport.

3.8.1 Forecast Operations

Table 3-16 summarizes the ten different forecasting methods for operations at FPR, and also presents a 'Composite Forecast' representing the average of the ten methods – the blue rows are forecasts with lower end values than the 'Composite Forecast' and the green rows are forecasts with higher end values than the 'Composite Forecast'. This information is also graphically depicted in **Figure 3-4**. The 'Composite Forecast' produces a median growth projection for FPR operations, increasing operations by 2.11 percent annually or nearly 79,000 over the twenty-year period, and it also incorporates national, state, and local trends. As previously shown in **Table 3-6**, the 'Composite Forecast' in 2028 only exceeds operations levels in 2002 (i.e., the busiest recorded year at FPR) by approximately 37,000. Further, it produces an end forecast lower than the 2002 Master Plan Update (349,097 by 2020), 2005 Noise Study Update (257,738 by 2010), and FASP (260,473 by 2024), and only slightly higher

than the 2008 TAF (189,258 by 2025). As such, the 'Composite Forecast' has been selected as the 'Medium Growth' forecast for operations at FPR.

In looking at the forecasting methods that produced end values higher and lower than the 'Composite Forecast,' only a few methods appear to show much variation from the 'Composite Forecast'. Subsequently, the 'High Growth' forecast was derived by averaging all forecast methods shown in green in **Table 3-16**, and the 'Low Growth' forecast was derived by averaging all forecast methods shown in blue. All three forecasting scenarios are summarized in **Table 3-17** and graphically depicted in **Figure 3-5**.

TABLE 3-16 LEGEND
SUMMARY OF OPERATIONS FORECASTING METHODS

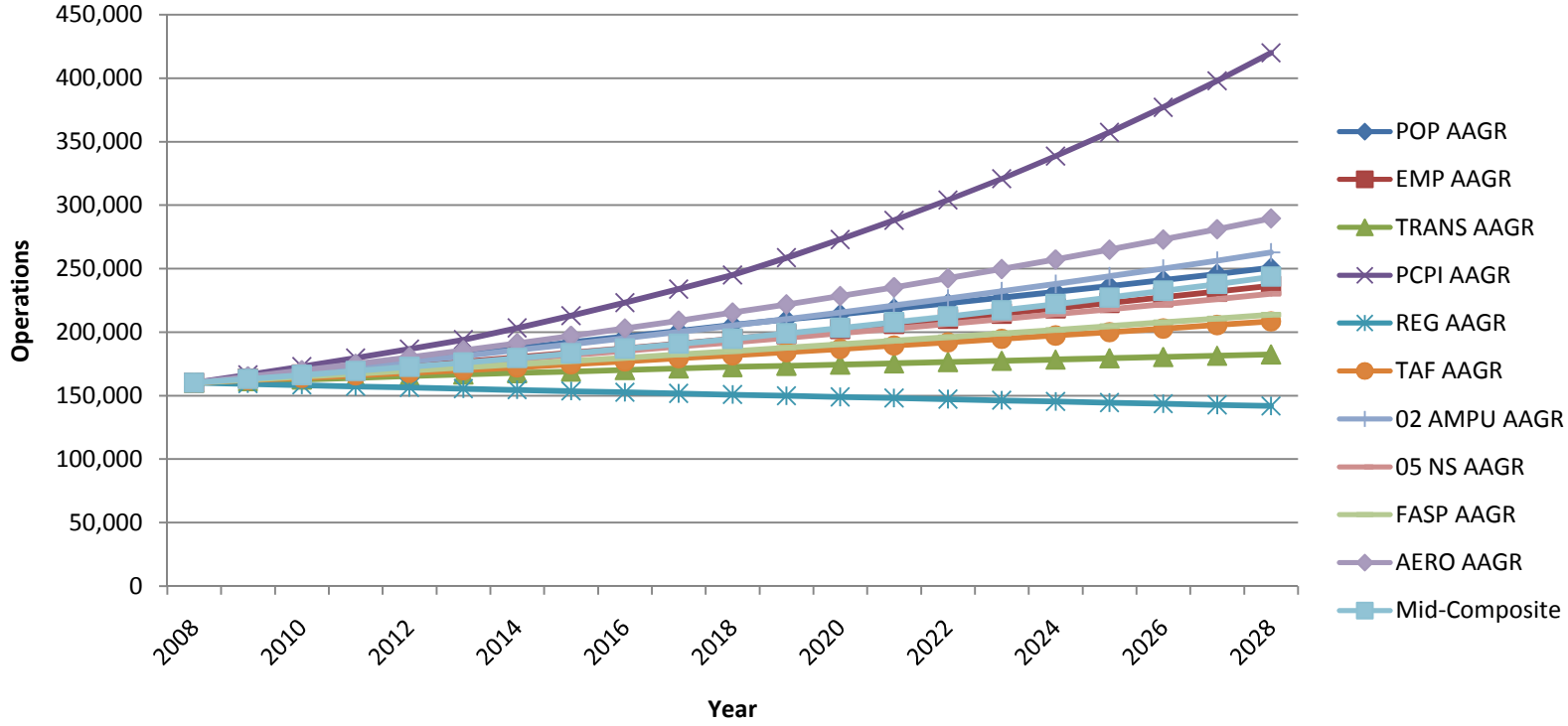
Forecast Methodology	Table Abbreviation
St. Lucie Population Average Annual Growth Rate (AAGR)	POP AAGR
St. Lucie County Employment AAGR	EMP AAGR
St. Lucie County Transportation Employment	TRANS AAGR
Personal Per Capita Income AAGR	PCPI AAGR
Transportation Employment Regression Analysis 2000-2008	REG AAGR
2008 FPR Terminal Area Forecast AAGR	TAF AAGR
2002 Airport Master Plan Forecast AAGR	02 AMPU AAGR
2005 FPR Noise Study AAGR	05 NS AAGR
2004 Florida Aviation System Plan FPR AAGR	FASP AAGR
2008-25 FAA Aerospace Forecasts AAGR	AERO AAGR
Composite (Average) of All Ten Forecast Methods	Mid-Composite

TABLE 3-16
SUMMARY OF OPERATIONS FORECASTING METHODS

Year	POP AAGR	EMP AAGR	TRANS AAGR	PCPI AAGR	REG AAGR	TAF AAGR	02 AMPU AAGR	05 NS AAGR	FASP AAGR	AERO AAGR	Mid-Composite
2008	**160,277**	**160,277**	**160,277**	**160,277**	**160,277**	**160,277**	**160,277**	**160,277**	**160,277**	**160,277**	**160,277**
2009	164,610	163,432	161,549	166,536	159,304	162,195	164,284	163,207	162,601	165,085	163,280
2010	169,060	166,650	162,831	173,039	158,336	164,137	168,391	166,190	164,959	170,038	166,363
2011	173,631	169,931	164,124	179,795	157,375	166,102	172,601	169,228	167,351	175,139	169,528
2012	178,325	173,276	165,426	186,816	156,419	168,090	176,916	172,321	169,778	180,393	172,776
2013	**183,146**	**176,687**	**166,739**	**194,111**	**155,469**	**170,102**	**181,339**	**175,471**	**172,239**	**185,805**	**176,111**
2014	187,466	180,158	167,901	203,386	154,525	172,389	185,872	178,678	174,737	191,379	179,649
2015	191,888	183,696	169,070	213,105	153,587	174,707	190,519	181,944	177,270	197,120	183,291
2016	196,414	187,304	170,247	223,288	152,654	177,056	195,282	185,270	179,841	203,034	187,039
2017	201,046	190,983	171,433	233,958	151,727	179,437	200,164	188,656	182,448	209,125	190,898
2018	**205,788**	**194,734**	**172,626**	**245,137**	**150,806**	**181,850**	**205,169**	**192,105**	**185,094**	**215,399**	**194,871**
2019	209,886	198,550	173,585	258,693	149,890	184,356	210,298	195,616	187,778	221,861	199,051
2020	214,066	202,441	174,548	272,998	148,980	186,896	215,555	199,192	190,500	228,517	203,369
2021	218,329	206,408	175,517	288,095	148,075	189,471	220,944	202,833	193,263	235,372	207,831
2022	222,676	210,453	176,492	304,026	147,176	192,082	226,468	206,540	196,065	242,433	212,441
2023	227,111	214,577	177,472	320,839	146,283	194,728	232,130	210,315	198,908	249,706	217,207
2024	231,633	218,782	178,457	338,581	145,394	197,411	237,933	214,160	201,792	257,198	222,134
2025	236,246	223,070	179,448	357,304	144,511	200,131	243,882	218,074	204,718	264,913	227,230
2026	240,950	227,441	180,444	377,063	143,634	202,889	249,979	222,060	207,686	272,861	232,501
2027	245,749	231,898	181,446	397,914	142,762	205,684	256,228	226,119	210,698	281,047	237,954
2028	**250,642**	**236,442**	**182,453**	**419,918**	**141,895**	**208,518**	**262,634**	**230,252**	**213,753**	**289,478**	**243,599**
AAGR 2008-2028	2.26%	1.96%	0.65%	4.93%	-0.61%	1.32%	2.50%	1.83%	1.45%	3.00%	2.12%
Change 2008-2028	56.38%	47.52%	13.84%	162.00%	-11.47%	30.10%	63.86%	43.66%	33.36%	80.61%	51.99%
ST AAGR	2.70%	1.97%	0.79%	3.90%	-0.61%	1.20%	2.50%	1.83%	1.45%	3.00%	1.90%
MT AAGR	2.36%	1.96%	0.70%	4.78%	-0.61%	1.34%	2.50%	1.83%	1.45%	3.00%	2.05%
LT AAGR	1.99%	1.96%	0.56%	5.53%	-0.61%	1.38%	2.50%	1.83%	1.45%	3.00%	2.26%
Forecast Type	Local	Local	Local	Local	Local	National	Local	Local	National	State	All

Source: The LPA Group Incorporated, January 2009.
(1) Since the FAA TAF only forecasts operations to 2025, the growth rates from the TAF were used to project future operations, representing an adjusted forecast.

Figure 3-4
Summary of Operations Forecasting Methods



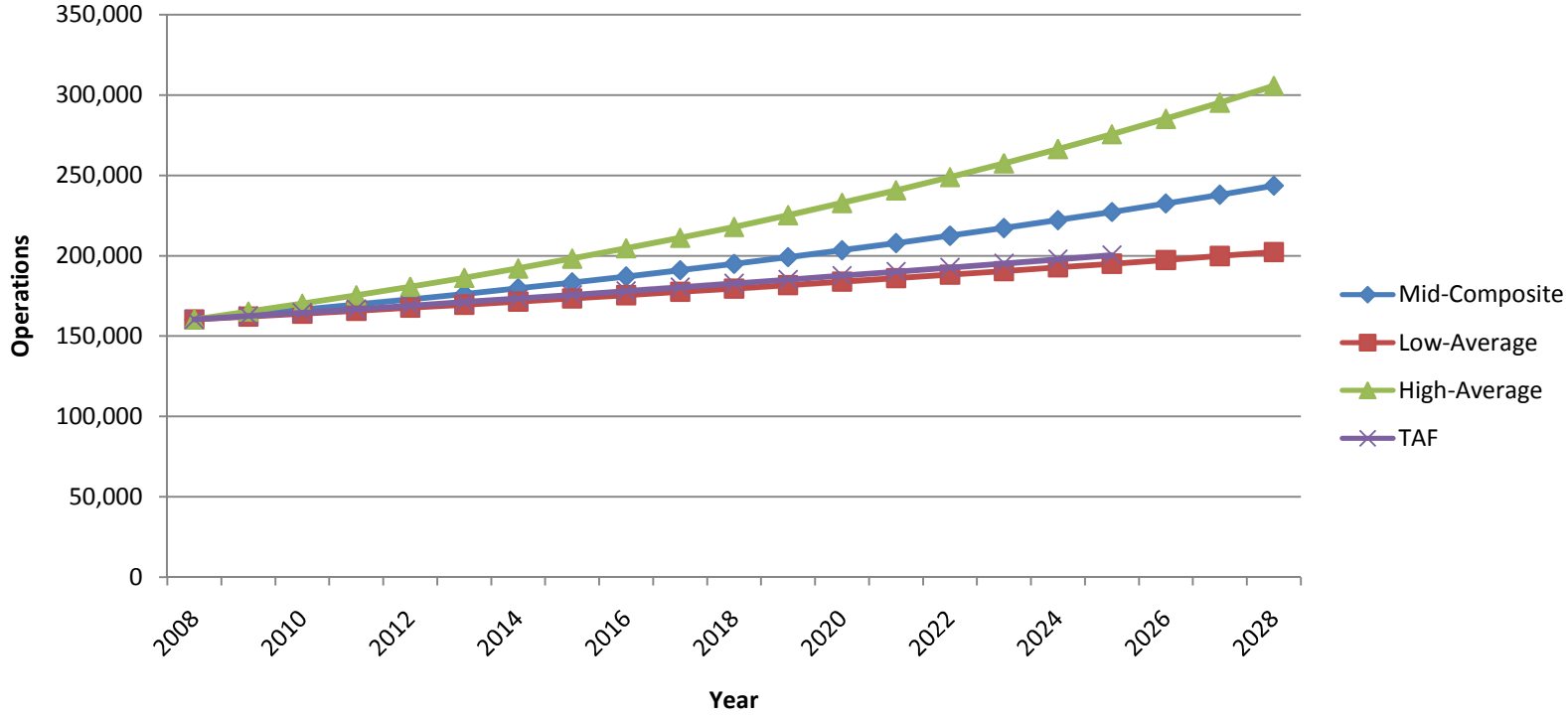
Source: The LPA Group Incorporated, 2009.

TABLE 3-17
LOW, MEDIUM, AND HIGH OPERATIONS FORECASTS

Year	Low/Average	Medium/Composite	High/Average
2008	**160,277**	**160,277**	**160,277**
2009	162,048	163,280	165,129
2010	163,851	166,363	170,132
2011	165,685	169,528	175,292
2012	167,552	172,776	180,613
2013	**169,451**	**176,111**	**186,100**
2014	171,398	179,649	192,026
2015	173,379	183,291	198,158
2016	175,395	187,039	204,505
2017	177,447	190,898	211,073
2018	**179,536**	**194,871**	**217,873**
2019	181,629	199,051	225,185
2020	183,760	203,369	232,784
2021	185,928	207,831	240,685
2022	188,135	212,441	248,901
2023	190,380	217,207	257,446
2024	192,666	222,134	266,336
2025	194,992	227,230	275,586
2026	197,359	232,501	285,213
2027	199,768	237,954	295,234
2028	**202,219**	**243,599**	**305,668**
AAGR 2008-2028	1.17%	2.12%	3.28%
Change 2008-2028	26.17%	51.99%	90.71%
ST AAGR	1.12%	1.90%	3.03%
MT AAGR	1.16%	2.05%	3.20%
LT AAGR	1.20%	2.26%	3.44%
Forecast Type	All	All	National/Local
Selected Forecast	No	Yes	No

Source: The LPA Group Incorporated, 2009.

Figure 3-5
Low, Medium, and High Operations Forecasts



Source: The LPA Group Incorporated, 2009.

FAA Terminal Area Forecast (TAF) / Airport Forecast Comparison

According to the FAA Memorandum, *Review and Approval of Aviation Forecasts June 2008*, "When reviewing a sponsor's forecast, FAA must ensure that the forecast is based on reasonable planning assumptions, uses current data, and is developed using appropriate forecasting methods." The FAA also reviews forecasts for consistency with the Terminal Area Forecast (TAF), with consistency defined as follows: "Forecasts differ by less than 10 percent in the five-year forecast period, and 15 percent in the ten-year forecast period."[17] As shown in **Table 3-18**, the 'Low Growth' and 'Medium Growth' forecasts are consistent with the TAF, per the above definition, whereas the 'High Growth' forecast is not consistent with the TAF in the ten-year forecast period. Further, operations levels in the 'Low Growth' forecast are less than the TAF in all years. Since the 'Medium Growth' forecast represents a composite of numerous forecasting methods inclusive national, state, and local trends, and also illustrates a reasonable expectation of future activity at FPR, it was selected as the preferred operations forecast for the airport. This will be used throughout this chapter to calculate subsequent/derivative operations forecasts (peak hour, operations by aircraft type, etc.), and serves as the baseline for determining the twenty-year facility requirements and development recommendations for FPR.

[17] *FAA Memorandum, Review and Approval of Aviation Forecasts June 2008.*

TABLE 3-18 OPERATIONS FORECASTS COMPARISION TO FAA TAF							
Year	**FAA TAF (Adjusted)**	**Low/Average**	**Deviation From TAF**	**Medium/Composite SELECTED**	**Deviation From TAF**	**High/Average**	**Deviation From TAF**
2008	**160,277**	**160,277**	**0.00%**	**160,277**	**0.00%**	**160,277**	**0.00%**
10% Deviation Acceptable in a Five-Year Period							
2009	162,380	162,048	-0.20%	163,280	0.55%	165,129	1.90%
2010	164,512	163,851	-0.40%	166,363	1.13%	170,132	3.82%
2011	166,674	165,685	-0.59%	169,528	1.71%	175,292	5.76%
2012	168,866	167,552	-0.78%	172,776	2.32%	180,613	7.73%
2013	**171,089**	**169,451**	**-0.96%**	**176,111**	**2.94%**	**186,100**	**9.73%**
15% Deviation Acceptable in a Ten-Year Period							
2014	173,343	171,398	-1.12%	179,649	3.64%	192,026	11.90%
2015	175,628	173,379	-1.28%	183,291	4.36%	198,158	14.11%
2016	177,945	175,395	-1.43%	187,039	5.11%	204,505	16.36%
2017	180,295	177,447	-1.58%	190,898	5.88%	211,073	18.65%
2018	**182,677**	**179,536**	**-1.72%**	**194,871**	**6.67%**	**217,873**	**20.99%**
No FAA Requirement for Last Ten Years							
2019	185,093	181,629	-1.87%	199,051	7.54%	225,185	23.53%
2020	187,543	183,760	-2.02%	203,369	8.44%	232,784	26.14%
2021	190,027	185,928	-2.16%	207,831	9.37%	240,685	28.82%
2022	192,547	188,135	-2.29%	212,441	10.33%	248,901	31.56%
2023	195,101	190,380	-2.42%	217,207	11.33%	257,446	34.38%
2024	197,691	192,666	-2.54%	222,134	12.36%	266,336	37.27%
2025	200,318	194,992	-2.66%	227,230	13.43%	275,586	40.23%
2026	N/A	197,359	N/A	232,501	N/A	285,213	N/A
2027	N/A	199,768	N/A	237,954	N/A	295,234	N/A
2028	**N/A**	**202,219**	**N/A**	**243,599**	**N/A**	**305,668**	**N/A**
Source: The LPA Group Incorporated, 2009.							

Instrument Operations Forecast

Although included in the total operations forecast, a separate forecast for Instrument Flight Rules (IFR) operations was also analyzed in this section. This analysis was important since it supports the development of adequate facilities pertaining to aircraft operations under Instrument Meteorological Conditions (IMC), such as the capability of existing approaches to the runways and ground based navigational equipment. The *FAA Aerospace Forecasts Fiscal Years 2008-2025* predicts general aviation instrument operations to grow at an AAGR of 2.1 percent through 2025. The anticipated growth in the number of general aviation instrument operations is primarily associated with the introduction of VLJs, as well as improved navigation associated with NextGen and RNAV implementation. An analysis of historic ATCT data from 2005 to 2008 revealed fluctuations in instrument operations growth at FPR varying from a 11 percent reduction to an increase of 8 percent. However IFR operations have generally been approximately 16 percent of total operations in all years. Therefore, growth in IFR operations from 2009 to 2028 used the FAA Aerospace Forecast growth rate of

2.1 percent as shown in **Table 3-19**, which is consistent with the annual growth in total airport operations of 2.12 percent.

TABLE 3-19
INSTRUMENT OPERATIONS FORECAST

Year	Preferred Operations Forecast	Instrument Operations	Percent of Operations	Year-Over-Year Change
2005	163,027	25,263	15.50%	
2006	103,319	22,479	21.76%	-11.02%
2007	120,131	22,467	18.70%	-0.05%
2008	**160,277**	**24,261**	**15.14%**	**7.99%**
2009	163,280	24,770	15.17%	2.10%
2010	166,363	25,291	15.20%	2.10%
2011	169,528	25,822	15.23%	2.10%
2012	172,776	26,364	15.26%	2.10%
2013	**176,111**	**26,918**	**15.28%**	**2.10%**
2014	179,649	27,483	15.30%	2.10%
2015	183,291	28,060	15.31%	2.10%
2016	187,039	28,649	15.32%	2.10%
2017	190,898	29,251	15.32%	2.10%
2018	**194,871**	**29,865**	**15.33%**	**2.10%**
2019	199,051	30,492	15.32%	2.10%
2020	203,369	31,133	15.31%	2.10%
2021	207,831	31,787	15.29%	2.10%
2022	212,441	32,454	15.28%	2.10%
2023	217,207	33,136	15.26%	2.10%
2024	222,134	33,831	15.23%	2.10%
2025	227,230	34,542	15.20%	2.10%
2026	232,501	35,267	15.17%	2.10%
2027	237,954	36,008	15.13%	2.10%
2028	**243,599**	**36,764**	**15.09%**	**2.10%**

Source: The LPA Group Incorporated, January 2009.
**Instrument operations count provided by ATCT.*

Local / Itinerant Operations Forecast

The preferred operations forecast shown in **Table 3-18** is further refined by local and itinerant activity in **Table 3-20**. A historic analysis of the TAF data from 1990 to 2008 revealed that activity at FPR has been as high as 70 percent local in 1990 to as low as 35 percent in 2006 (i.e., following the departure of Pan Am International Flight Academy in 2005). The TAF forecasts show a slight increase in the percent of local operations year-over-year through 2025. This is consistent with expected operations at FPR, particularly due to the recent construction of training runway 10L-28R (9L-27R) which is used predominately for local touch-and-go operations.

At the same time, itinerant operations are also expected to grow each year associated primarily with corporate aircraft operations, and itinerant operations should continue to comprise the majority of FPR's operations. As shown in **Table 3-20**, the forecast split in local and itinerant operations from the TAF was utilized in the forecasts for FPR.

TABLE 3-20
LOCAL / ITINERANT OPERATIONS FORECAST

Year	Preferred Operations Forecast	Local Operations	TAF Local Split	Itinerant Operations	TAF Itinerant Split
2008	**160,277**	**73,662**	**45.96%**	**86,616**	**54.04%**
2009	163,280	75,290	46.11%	87,991	53.89%
2010	166,363	76,963	46.26%	89,400	53.74%
2011	169,528	78,685	46.41%	90,843	53.59%
2012	172,776	80,455	46.57%	92,321	53.43%
2013	**176,111**	**82,276**	**46.72%**	**93,835**	**53.28%**
2014	179,649	84,202	46.87%	95,448	53.13%
2015	183,291	86,187	47.02%	97,104	52.98%
2016	187,039	88,234	47.17%	98,805	52.83%
2017	190,898	90,345	47.33%	100,553	52.67%
2018	**194,871**	**92,522**	**47.48%**	**102,349**	**52.52%**
2019	199,051	94,809	47.63%	104,242	52.37%
2020	203,369	97,176	47.78%	106,194	52.22%
2021	207,831	99,624	47.94%	108,207	52.06%
2022	212,441	102,158	48.09%	110,283	51.91%
2023	217,207	104,780	48.24%	112,427	51.76%
2024	222,134	107,496	48.39%	114,638	51.61%
2025	227,230	110,308	48.54%	116,922	51.46%
2026	232,501	112,867	48.54%	119,634	51.46%
2027	237,954	115,514	48.54%	122,440	51.46%
2028	**243,599**	**118,254**	**48.54%**	**125,345**	**51.46%**

Source: The LPA Group Incorporated, 2009.

Operations by Flight Type

The local and itinerant operations shown in **Table 3-20** can be further defined by flight type, including air taxi (i.e., on-demand or for-hire service), general and corporate aviation, and military as presented in **Table 3-21**. As previously mentioned earlier, DayJet operated for a short time at FPR, which was a "Per-Seat, On-Demand" air carrier service that used very light jet (VLJ) aircraft, until ultimately discontinuing service in September 2008.

Still VLJs are expected to make air taxi service more affordable, subsequently increasing the potential for growth in air taxi operations at FPR. Further, both Key Air and Volo Aviation maintain large corporate aircraft fleets for charter (including King Airs, Learjets, Hawkers, Challengers, Gulfstreams, and Globals), and both FBOs are expecting to see increases in air taxi operations, especially once they have additional time to establish themselves within the southeast Florida market.

According to the FAA National Plan of Integrated Airport Systems (NPIAS) 2009-2013, air taxi operations are forecast to grow at an AAGR of 2.7 percent from 2007 through 2025. Therefore, this growth rate was applied to baseline 2008 air taxi operations at FPR to determine forecast activity through 2028.

Further, military operations, primarily associated with the US Navy training aircraft from the Bahamas and limited US Coast Guard operations, are not expected to significantly increase or decrease during the planning period. Since available data related to military operations is limited and based upon "mission", military operations were kept constant to be consistent with the FAA's TAF. The remaining values from the local/itinerant operations forecast in **Table 3-20** above were then applied to 'itinerant GA' and 'local civil' operations.

TABLE 3-21
OPERATIONS BY FLIGHT TYPE

Year	Itinerant Air Taxi	Itinerant GA	Itinerant Military	Local Civil	Local Military	Total Airport Ops
2008	**953**	**85,566**	**96**	**73,400**	**261**	**160,277**
2009	978	86,916	96	75,028	261	163,280
2010	1,005	88,298	96	76,702	261	166,363
2011	1,032	89,714	96	78,424	261	169,528
2012	1,060	91,165	96	80,194	261	172,776
2013	**1,088**	**92,650**	**96**	**82,014**	**261**	**176,111**
2014	1,118	94,233	96	83,941	261	179,649
2015	1,148	95,859	96	85,926	261	183,291
2016	1,179	97,529	96	87,973	261	187,039
2017	1,211	99,246	96	90,084	261	190,898
2018	**1,244**	**101,009**	**96**	**92,261**	**261**	**194,871**
2019	1,277	102,868	96	94,548	261	199,051
2020	1,312	104,785	96	96,915	261	203,369
2021	1,347	106,763	96	99,363	261	207,831
2022	1,383	108,804	96	101,897	261	212,441
2023	1,421	110,909	96	104,519	261	217,207
2024	1,459	113,083	96	107,235	261	222,134
2025	1,499	115,327	96	110,047	261	227,230
2026	1,539	117,999	96	112,605	261	232,501
2027	1,581	120,763	96	115,253	261	237,954
2028	**1,623**	**123,625**	**96**	**117,993**	**261**	**243,599**
AAGR 2008-2028	2.70%	1.86%	0.00%	2.40%	0.00%	2.12%
Change 2008-2028	70.38%	44.48%	0.00%	60.75%	0.00%	51.99%

Source: The LPA Group Incorporated, 2009.

3.8.2 Forecast Based Aircraft

Table 3-22 summarizes the ten different forecasting methods for based aircraft at FPR, and also presents a 'Composite Forecast' representing the average of the ten methods – the blue rows are forecasts with lower end values than the 'Composite Forecast' and the green rows

are forecasts with higher end values than the 'Composite Forecast'. This information is also graphically depicted in **Figure 3-6**. Note that the growth rates from the 2005 Noise Study are not applied to based aircraft since that study did not include a based aircraft forecast; alternatively, a forecast was included based on historic numbers of based aircraft per operation. Operations per based aircraft (OPBA) forecast , as determined above, was divided by the "2008 Operations Per Based Aircraft" value of 760 (shown in **Table 3-7**) to forecast based aircraft levels.

The 'Composite Forecast' produces a median growth projection for FPR based aircraft, increasing based aircraft by 2.22 percent annually or 116 aircraft over the twenty-year period, and also incorporates national, state, and local trends. In looking at the forecasting methods that produced end values higher and lower than the 'Composite Forecast,' only a few methods appear to show much variation from the 'Composite Forecast.' Like the operations forecasts, the 'High Growth' based aircraft forecast was derived by averaging all forecast methods shown in green in **Table 3-22**, and the 'Low Growth' forecast was derived by averaging all forecast methods shown in blue. All three forecasting scenarios are summarized in **Table 3-23** and graphically depicted in **Figure 3-7**.

TABLE 3-22 LEGEND
SUMMARY OF BASED AIRCRAFT FORECASTING METHODS

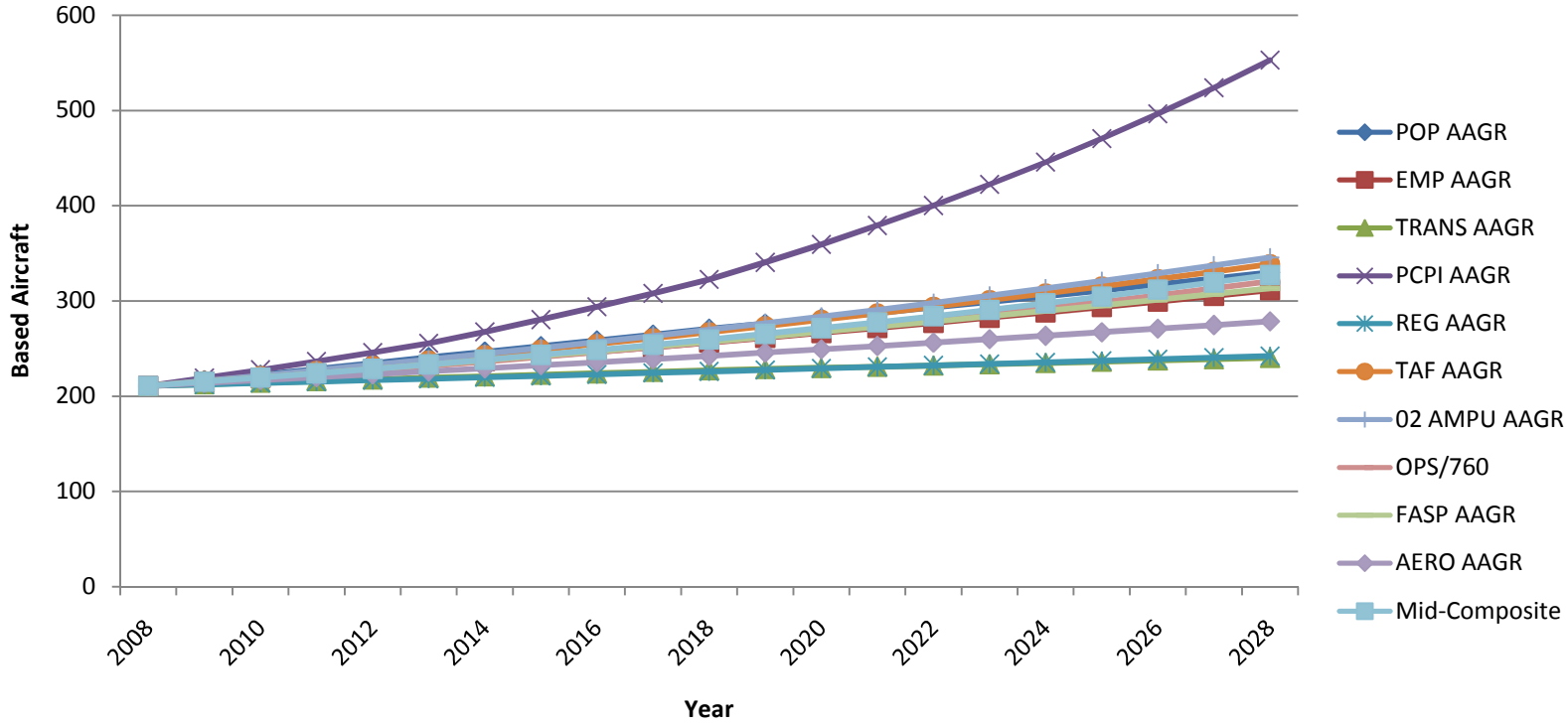
Forecast Methodology	Table Abbreviation
St. Lucie Population Average Annual Growth Rate (AAGR)	POP AAGR
St. Lucie County Employment AAGR	EMP AAGR
St. Lucie County Transportation Employment	TRANS AAGR
Personal Per Capita Income AAGR	PCPI AAGR
Total Operations Regression Analysis 2000-2008	REG AAGR
2008 FPR Terminal Area Forecast AAGR	TAF AAGR
2002 Airport Master Plan Forecast AAGR	02 AMPU AAGR
Operations per Based Aircraft Based upon 2008 Data	OPS/811
2004 Florida Aviation System Plan FPR AAGR	FASP AAGR
2008-25 FAA Aerospace Forecasts AAGR	AERO AAGR
Composite (Average) of All Ten Forecast Methods	Mid-Composite

TABLE 3-22
SUMMARY OF BASED AIRCRAFT FORECASTING METHODS

Year	POP AAGR	EMP AAGR	TRANS AAGR	PCPI AAGR	REG AAGR	TAF AAGR	02 AMPU AAGR	OPS/ 760	FASP AAGR	AERO AAGR	Mid-Composite
2008	**211**	**211**	**211**	**211**	**211**	**211**	**211**	**211**	**211**	**211**	**211**
2009	217	215	213	219	212	216	216	215	215	214	215
2010	223	219	214	228	214	221	222	219	220	217	220
2011	229	224	216	237	215	227	227	223	224	220	224
2012	235	228	218	246	217	232	233	227	229	223	229
2013	**241**	**233**	**220**	**256**	**218**	**237**	**239**	**232**	**233**	**226**	**233**
2014	247	237	221	268	220	243	245	237	238	229	238
2015	253	242	223	281	221	249	251	241	243	233	244
2016	259	247	224	294	223	255	257	246	247	236	249
2017	265	251	226	308	225	261	264	251	252	239	254
2018	**271**	**256**	**227**	**323**	**226**	**267**	**270**	**257**	**257**	**242**	**260**
2019	276	261	229	341	228	274	277	262	262	246	266
2020	282	267	230	359	229	280	284	268	267	249	272
2021	287	272	231	379	231	287	291	274	273	253	278
2022	293	277	232	400	232	294	298	280	278	256	284
2023	299	282	234	422	234	301	306	286	284	260	291
2024	305	288	235	446	236	308	313	292	289	264	298
2025	311	294	236	470	237	315	321	299	295	267	305
2026	317	299	238	496	239	323	329	306	301	271	312
2027	324	305	239	524	241	331	337	313	307	275	320
2028	**330**	**311**	**240**	**553**	**242**	**339**	**346**	**321**	**313**	**279**	**327**
AAGR 2008-2028	2.26%	1.96%	0.65%	4.93%	0.69%	2.39%	2.50%	2.12%	1.99%	1.40%	2.22%
Change 2008-2028	56.38%	47.52%	13.84%	162.00%	14.84%	60.50%	63.86%	51.99%	48.44%	32.06%	55.14%
ST AAGR	2.70%	1.97%	0.79%	3.90%	0.69%	2.39%	2.50%	1.90%	2.03%	1.40%	2.04%
MT AAGR	2.36%	1.96%	0.70%	4.78%	0.69%	2.39%	2.50%	2.05%	1.97%	1.40%	2.15%
LT AAGR	1.99%	1.96%	0.56%	5.53%	0.69%	2.39%	2.50%	2.26%	1.99%	1.40%	2.34%
Forecast Type	Local	Local	Local	Local	Local	National	Local	Local	State	National	All

Source: The LPA Group Incorporated, January 2009.
(1) Since the FAA TAF only forecasts operations to 2025, the growth rates from the TAF were used to project future operations, representing an adjusted forecast. Further 2008 based aircraft value was adjusted to reflect actual counts from the airport.

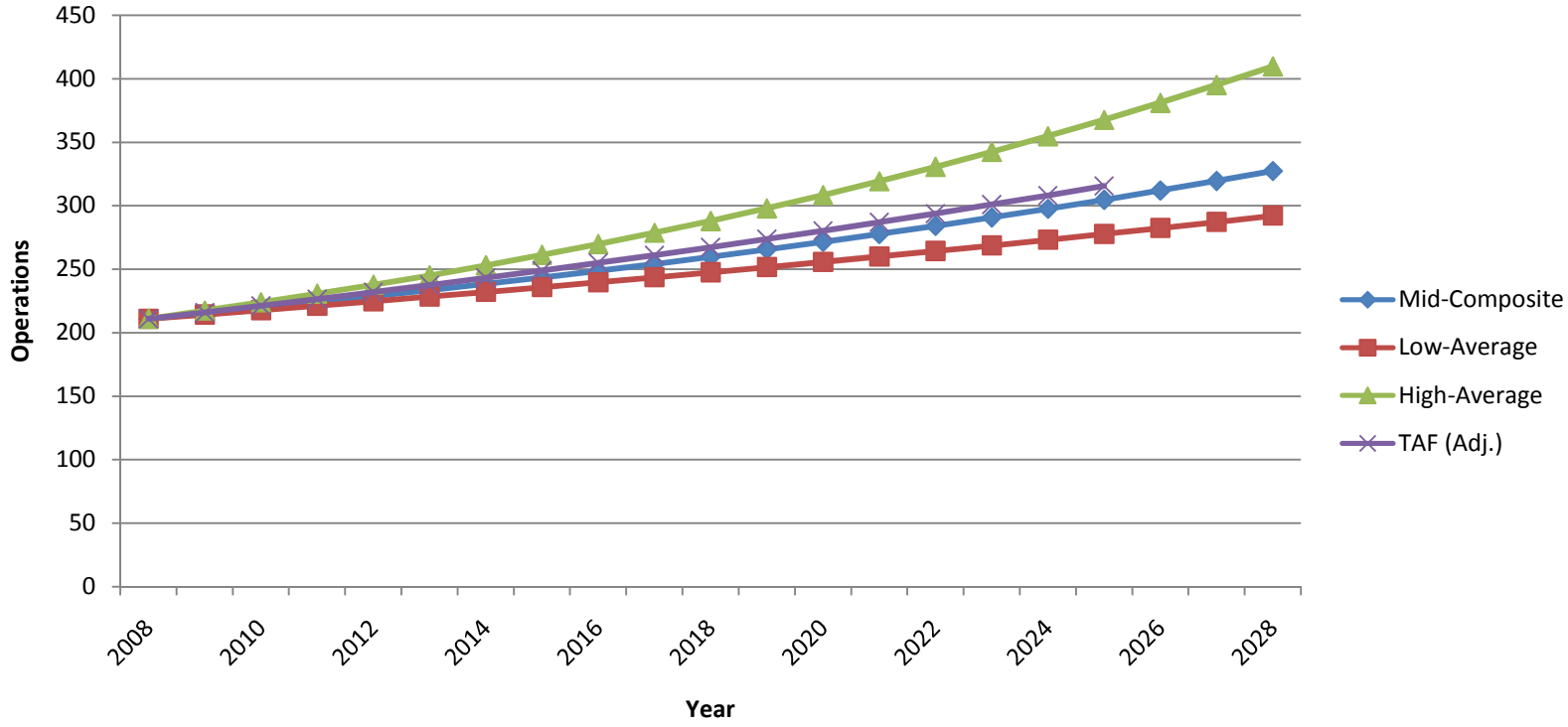
Figure 3-6
Summary of Based Aircraft Forecasting Methods



Source: The LPA Group Incorporated, 2009.

TABLE 3-23 LOW, MEDIUM, AND HIGH BASED AIRCRAFT FORECASTS			
Year	**Low/Average**	**Medium/Composite**	**High/Average**
2008	**211**	**211**	**211**
2009	214	215	217
2010	218	220	224
2011	221	224	231
2012	225	229	238
2013	**228**	**233**	**245**
2014	232	238	253
2015	236	244	261
2016	240	249	270
2017	244	254	279
2018	**248**	**260**	**288**
2019	252	266	298
2020	256	272	308
2021	260	278	319
2022	264	284	331
2023	269	291	342
2024	273	298	355
2025	278	305	367
2026	282	312	381
2027	287	320	395
2028	**292**	**327**	**410**
AAGR 2008-2028	1.64%	2.22%	3.37%
Change 2008-2028	38.45%	55.14%	94.08%
ST AAGR	1.60%	2.04%	3.04%
MT AAGR	1.62%	2.15%	3.27%
LT AAGR	1.67%	2.34%	3.59%
Forecast Type	All	All	Local, National
Selected Forecast	No	Yes	No
Source: The LPA Group Incorporated, January 2009.			

Figure 3-7
Low, Medium, and High Based Aircraft Forecasts



Source: The LPA Group Incorporated, 2009.

FAA Terminal Area Forecast (TAF) / Airport Forecast Comparison

Like operations forecasts, the FAA also reviews based aircraft forecasts for consistency with the TAF, with consistency defined as follows: "Forecasts differ by less than 10 percent in the five-year forecast period, and 15 percent in the ten-year forecast period."[18] As shown in **Table 3-24**, all three based aircraft forecasts are consistent with the TAF, per the above definition. However, based on the FAA Aerospace Forecasts which show the highest growth in based aircraft occurring in the corporate turbine aircraft category (i.e., turboprops and jets), with minimal growth expected for pistons, it was determined that the 'Medium Growth' forecast was most consistent with anticipated trends, and has been selected as the preferred based aircraft forecast for FPR.

TABLE 3-24
BASED AIRCRAFT FORECASTS COMPARISION TO FAA TAF

Year	FAA TAF (Adjusted)	Low/ Average	Deviation From TAF	Medium/Composite SELECTED	Deviation From TAF	High/ Average	Deviation From TAF
2008	**211**	**211**	**0.00%**	**211**	**0.00%**	**211**	**0.00%**
10% Deviation Acceptable in a Five-Year Period							
2009	216	214	-0.78%	215	-0.36%	217	0.63%
2010	221	218	-1.55%	220	-0.71%	224	1.26%
2011	227	221	-2.31%	224	-1.05%	231	1.91%
2012	232	225	-3.06%	229	-1.37%	238	2.56%
2013	**237**	**228**	**-3.80%**	**233**	**-1.69%**	**245**	**3.21%**
15% Deviation Acceptable in a Ten-Year Period							
2014	243	232	-4.54%	238	-1.95%	253	4.07%
2015	249	236	-5.26%	244	-2.20%	261	4.95%
2016	255	240	-5.98%	249	-2.43%	270	5.84%
2017	261	244	-6.69%	254	-2.65%	279	6.76%
2018	**267**	**248**	**-7.38%**	**260**	**-2.86%**	**288**	**7.69%**
No FAA Requirement for Last Ten Years							
2019	274	252	-8.08%	266	-3.01%	298	8.83%
2020	280	256	-8.76%	272	-3.13%	308	9.99%
2021	287	260	-9.43%	278	-3.24%	319	11.20%
2022	294	264	-10.08%	284	-3.32%	331	12.45%
2023	301	269	-10.73%	291	-3.39%	342	13.74%
2024	308	273	-11.36%	298	-3.43%	355	15.07%
2025	316	278	-11.99%	305	-3.46%	367	16.44%
2026	N/A	282	N/A	312	N/A	381	N/A
2027	N/A	287	N/A	320	N/A	395	N/A
2028	**N/A**	**292**	**N/A**	**327**	**N/A**	**410**	**N/A**

Source: The LPA Group Incorporated, 2009.

[18] *FAA Memorandum, Review and Approval of Aviation Forecasts June 2008.*

Based Aircraft Fleet Mix

Aside from determining the number of based aircraft, it is also vital to identify the aircraft fleet mix at the airport, both in terms of based aircraft and aircraft operations. Understanding the future fleet mix allows the airport to develop facilities to accommodate various types of aircraft that are forecast to operate at the airport. The future fleet mix data was derived primarily from the active general aviation fleet forecasts from the *FAA Aerospace Forecasts Fiscal Years 2008-2025* previously presented in **Table 3-15**. As shown in **Table 3-25**, the annual growth rates from the Aerospace Forecasts were applied to existing turboprop, jet, and helicopter based aircraft levels at FPR to determine the forecasts through 2028.

Multi-engine piston aircraft were held stable throughout the forecast period, and single-engine piston aircraft were calculated as the remainder of total based aircraft. Of key importance to this forecast is the anticipated growth in jet and single-engine piston aircraft at FPR. Specifically, it is anticipated that FPR will attract new jet aircraft as available space and high rents at other airports to the south (e.g., PBI) continue to drive demand for aircraft storage at FPR. Both FBOs are anticipating this growth in the short-term, and subsequently have plans for significant hangar development targeted towards corporate aircraft. Therefore, the forecast increase in based jets from 11 to 36 is consistent with FAA growth projections and trends within southeast Florida.

High growth is also expected for based single-engine pistons. With the recent construction of training Runway 10L-27R (former 9L-27R), the airport is in a prime position to attract a new flight school, aircraft manufacturer/sales center, etc., which typically attract large numbers of piston-powered aircraft. This anticipated trend is consistent with the forecast increase in percent of local/training operations to total airport operations as previously shown in **Table 3-20** (i.e., increase from 45.13 percent of total operations in 2008 to 47.71 percent by 2028).

The operations fleet mix forecast is presented in **Table 3-26**. Since the ATCT does not record all operations by aircraft type, the baseline 2008 activity levels were determined as follows:

- Helicopter Operations – There are currently four based helicopters at FPR. It was assumed that each helicopter conducts two landings and two takeoffs every day, resulting 5,840 total helicopter operations at FPR in 2008. [**4 Helicopters x 2 Takeoffs x 2 Landings = 16 Operations per Day x 365 = 5,840 Operations per Year**].
- Jet Operations – the FAA records filed flight plans within their Enhanced Traffic Management System Counts (ETMSC) database. According to the ETMSC database, **3,375** jet operations were flown at FPR in 2008.

- Single-Engine Piston Operations – The 2005 Noise Study indicated that 72.5 percent of total airport operations were conducted by single-engine piston aircraft. [**160,277 Total Operations X 72.5 % = 116,200 Single-Engine Piston Operations**].
- Multi-Engine Piston and Turboprop Operations – Calculated as the remainder of the operations above, and split by based aircraft distribution. For example, after subtracting the number of operations for helicopters, jets, and single-engine pistons from total operations, there are 34,862 operations remaining. There is a combined total of 71 based multi-engine piston and turboprop aircraft at FPR, of which approximately 83.1 percent are multi-engines and 16.9 percent are turboprops. Therefore, total multi-engine operations in 2008 were estimated at 28,962 and turboprop operations were estimated at 5,900. [**34,862 Remaining Operations X 83.1% = 28,962 Multi-Engine Piston Operations; 34,862 Remaining Operations X 16.9% = 5,900 Turboprop Operations**].

The future operations by fleet mix data was derived primarily from the active general aviation hours flown forecasts provided in *FAA Aerospace Forecasts Fiscal Years 2008-2025* as previously presented in **Table 3-14**. As shown in **Table 3-26**, the annual growth rates from the Aerospace Forecasts were applied to existing multi-engine piston, turboprop, jet, and helicopter operations levels at FPR to determine the forecasts through 2028. Single-engine piston aircraft were calculated as the remainder of total operations. Consistent with the based aircraft fleet mix forecasts, jet operations are projected to grow at the fastest annual rate of 8.49 percent throughout the twenty-year period.

As population and employment continue to grow within St. Lucie County and southeast Florida, this presents a realistic jet operations forecast, particularly in earlier years when the FBOs intend to develop new hangar facilities for corporate aircraft storage. Single-engine piston operations are also projected to increase at a high rate, primarily because of the anticipated growth in flight training activity from the recent development of Runway 10L-27R (9L-27R). While flight training/local operations in multi-engine piston aircraft is expected to continue, a decrease in activity is expected for itinerant multi-engine piston aircraft.

TABLE 3-25
BASED AIRCRAFT FLEET MIX FORECAST

Year	Single-Engine		Multi-Engine		Turboprop		Jet		Helicopter		Total	
	Aircraft	% Total	Aircraft	% Total	Aircraft	% Total	Aircraft	% Total	Aircraft	% Total	Aircraft	% Total
2008	**122**	**57.82%**	**59**	**27.96%**	**12**	**5.69%**	**14**	**6.64%**	**4**	**1.90%**	**211**	**100.00%**
2009	125	57.89%	59	27.41%	12	5.66%	15	7.08%	4	1.96%	215	100.00%
2010	127	57.93%	59	26.86%	12	5.63%	17	7.56%	4	2.02%	220	100.00%
2011	130	58.19%	59	26.32%	13	5.61%	18	7.84%	5	2.04%	224	100.00%
2012	134	58.44%	59	25.79%	13	5.59%	19	8.13%	5	2.06%	229	100.00%
2013	**137**	**58.67%**	**59**	**25.27%**	**13**	**5.57%**	**20**	**8.42%**	**5**	**2.08%**	**233**	**100.00%**
2014	140	58.90%	59	24.75%	13	5.54%	21	8.72%	5	2.09%	238	100.00%
2015	144	59.12%	59	24.23%	13	5.52%	22	9.03%	5	2.11%	244	100.00%
2016	148	59.31%	59	23.72%	14	5.49%	23	9.35%	5	2.13%	249	100.00%
2017	151	59.50%	59	23.21%	14	5.46%	25	9.68%	5	2.15%	254	100.00%
2018	**155**	**59.66%**	**59**	**22.72%**	**14**	**5.44%**	**26**	**10.02%**	**6**	**2.17%**	**260**	**100.00%**
2019	159	59.83%	59	22.22%	14	5.41%	28	10.36%	6	2.18%	266	100.00%
2020	163	59.98%	59	21.73%	15	5.37%	29	10.72%	6	2.20%	272	100.00%
2021	167	60.12%	59	21.24%	15	5.34%	31	11.08%	6	2.21%	278	100.00%
2022	171	60.24%	59	20.76%	15	5.31%	33	11.45%	6	2.23%	284	100.00%
2023	175	60.35%	59	20.29%	15	5.28%	34	11.84%	7	2.24%	291	100.00%
2024	180	60.44%	59	19.82%	16	5.24%	36	12.23%	7	2.26%	298	100.00%
2025	184	60.52%	59	19.36%	16	5.20%	39	12.64%	7	2.27%	305	100.00%
2026	189	60.58%	59	18.91%	16	5.17%	41	13.05%	7	2.29%	312	100.00%
2027	194	60.63%	59	18.46%	16	5.13%	43	13.48%	7	2.30%	320	100.00%
2028	**199**	**60.66%**	**59**	**18.02%**	**17**	**5.09%**	**46**	**13.91%**	**8**	**2.31%**	**327**	**100.00%**
AAGR 2008-2028	2.47%		0.00%		1.66%		6.08%		3.24%		2.22%	
Change 2008-2028	62.76%		0.00%		38.87%		225.34%		89.21%		55.14%	
FAA Aerospace AAGR 2007-2010	N/A-Remainder		N/A-Stable		1.50%		8.90%		5.30%		N/A	
FAA Aerospace AAGR 2010-2020	N/A-Remainder		N/A-Stable		1.70%		5.80%		3.00%		N/A	

Source: The LPA Group Incorporated, January 2009.

TABLE 3-26
OPERATIONS FLEET MIX FORECAST

Year	Single-Engine		Multi-Engine		Turboprop		Jet		Helicopter		Total	
	Aircraft	% Total	Aircraft	% Total	Aircraft	% Total	Aircraft	% Total	Aircraft	% Total	Aircraft	% Total
2008	**116,201**	**72.50%**	**28,962**	**18.07%**	**5,900**	**3.68%**	**3,375**	**2.11%**	**5,840**	**3.64%**	**160,277**	**100.00%**
2009	118,845	72.79%	28,539	17.48%	5,984	3.67%	3,785	2.32%	6,126	3.75%	163,280	100.00%
2010	121,497	73.03%	28,123	16.90%	6,070	3.65%	4,246	2.55%	6,427	3.86%	166,363	100.00%
2011	124,568	73.48%	27,608	16.29%	6,142	3.62%	4,589	2.71%	6,621	3.91%	169,528	100.00%
2012	127,679	73.90%	27,102	15.69%	6,214	3.60%	4,960	2.87%	6,820	3.95%	172,776	100.00%
2013	**130,831**	**74.29%**	**26,606**	**15.11%**	**6,287**	**3.57%**	**5,361**	**3.04%**	**7,026**	**3.99%**	**176,111**	**100.00%**
2014	134,137	74.67%	26,118	14.54%	6,361	3.54%	5,795	3.23%	7,238	4.03%	179,649	100.00%
2015	137,495	75.01%	25,640	13.99%	6,436	3.51%	6,263	3.42%	7,456	4.07%	183,291	100.00%
2016	140,906	75.33%	25,170	13.46%	6,512	3.48%	6,770	3.62%	7,681	4.11%	187,039	100.00%
2017	144,370	75.63%	24,709	12.94%	6,589	3.45%	7,317	3.83%	7,913	4.14%	190,898	100.00%
2018	**147,887**	**75.89%**	**24,257**	**12.45%**	**6,667**	**3.42%**	**7,909**	**4.06%**	**8,151**	**4.18%**	**194,871**	**100.00%**
2019	151,548	76.14%	23,812	11.96%	6,745	3.39%	8,549	4.29%	8,397	4.22%	199,051	100.00%
2020	155,279	76.35%	23,376	11.49%	6,825	3.36%	9,240	4.54%	8,650	4.25%	203,369	100.00%
2021	159,080	76.54%	22,948	11.04%	6,905	3.32%	9,987	4.81%	8,911	4.29%	207,831	100.00%
2022	162,953	76.70%	22,528	10.60%	6,986	3.29%	10,795	5.08%	9,180	4.32%	212,441	100.00%
2023	166,899	76.84%	22,115	10.18%	7,069	3.25%	11,668	5.37%	9,457	4.35%	217,207	100.00%
2024	170,919	76.94%	21,710	9.77%	7,152	3.22%	12,611	5.68%	9,742	4.39%	222,134	100.00%
2025	175,015	77.02%	21,312	9.38%	7,236	3.18%	13,631	6.00%	10,035	4.42%	227,230	100.00%
2026	179,186	77.07%	20,922	9.00%	7,322	3.15%	14,733	6.34%	10,338	4.45%	232,501	100.00%
2027	183,434	77.09%	20,539	8.63%	7,408	3.11%	15,924	6.69%	10,650	4.48%	237,954	100.00%
2028	**187,758**	**77.08%**	**20,162**	**8.28%**	**7,495**	**3.08%**	**17,212**	**7.07%**	**10,971**	**4.50%**	**243,599**	**100.00%**
AAGR 2008-2028	2.43%		-1.79%		1.20%		8.49%		3.20%		2.12%	
Change 2008-2028	61.58%		-30.38%		27.05%		409.99%		87.86%		51.99%	
FAA Aerospace AAGR 2007-2010	N/A-Remainder		-1.50%		1.40%		12.20%		4.90%		N/A	
FAA Aerospace AAGR 2010-2020	N/A-Remainder		-1.80%		1.20%		8.10%		3.00%		N/A	

Source: The LPA Group Incorporated, January 2009.

Critical Aircraft

Determination of the critical aircraft is fundamental in developing an airport's design criteria in addition to identification of the airport reference code (ARC). According to *Airport Improvement Program Handbook*, **Order 5100.38C** – June 28, 2005, Pages 56-57, FAA Order 5090.3C, Field Formulation of NPIAS, and **FAA AC 150/5325-4B**, *Runway Length Requirements for Airport Design*, 'More than one critical aircraft (most demanding) may control the design of any specific airport's different facility features, such as runway length, strength of paved areas, or lateral separations in airfield layout. In some cases there may be more than one critical aircraft. For instance, pavement strength and layout are frequently dependent upon different aircraft. Section 3.4: Airport dimensional standards (such as runway length, width, separation standards, surface gradients, etc.) should be selected which are appropriate for the critical aircraft that will make substantial use of the airport in the planning period. Substantial use means either 500 or more itinerant operations or scheduled service. The critical aircraft may be a single aircraft or a composite of the most demanding characteristics of several aircraft. The critical aircraft (or composite aircraft) is used to identify the appropriate ARC for airport design criteria as contained in **AC 150/5300-13**.' Further, the critical aircraft reference code is that which represents the lowest maximum allowable crosswind.

According to FPR Air Traffic Control records, 2007 FAA approved Airport Layout Plan, and information provided by existing tenants identified that the existing critical aircraft at FPR as the Gulfstream II, ARC C-III. However, based upon growth of high-tech businesses within Treasure Coast Region as well as continued growth in both fractional ownership and corporate demand for long-range jet aircraft, it is anticipated that a more demanding airplane or family of airplanes may become the critical aircraft which would drive short (five-years) and long-term facility requirements. Identification of the future critical aircraft or family of aircraft is analyzed in detail within **Chapter 4**, *Demand/Capacity and Facility Requirements*.

3.9 Peak Hour Forecasts

Annual projections generally provide a good overview of the activity at an airport, but may not reflect operational characteristics of a facility. As such, peak forecasts are developed based on the fact that annual demand is typically not equally distributed throughout the entire year. In many cases, facility requirements are not driven by annual demand, but rather by capacity shortfalls and delays experienced during peak times.

Peak month operations were determined by evaluating historic monthly activity that was recorded by the FAA Air Traffic Activity System (ATADS) database. An analysis of the activity between the years 2000 and 2008 revealed that March has most commonly been the

busiest month for activity at FPR. Once the busy month for each year was determined, the operations performed were divided by the annual operations in order to establish a percentage of busy month operations. The percentage of each year was then averaged in order to develop a peak month operations percentage factor of 10.42 percent as shown in **Table 3-27**.

TABLE 3-27
PEAK ACTIVITY MONTHS

Year	Peak Month	% Operations
2000	May	10.41%
2001	July	9.57%
2002	March	9.94%
2003	October	9.66%
2004	April	11.09%
2005	April	12.45%
2006	March	10.48%
2007	November	9.92%
2008	March	10.28%
Average		10.42%

Source: FAA Air Traffic Activity System, January 2009.

This percentage was then multiplied by the number of forecast operations in order to develop the peak month operations for the forecast years. Further, in review of ATADS data for the top 25 peak activity days at FPR in 2008, it was determined that, on average, peak day operations equaled approximately 0.43 percent of annual activity, referred to as the average day peak month (ADPM). Peak hour calculations are usually comprised of 10 to 20 percent of the average day peak month operations. For this analysis, 15 percent of the average day peak month traffic was used to generate peak hour traffic due to the amount of training activity including touch-and-go operations. The results of these calculations for both historic and forecast years are shown in **Table 3-28**.

TABLE 3-28
PEAK HOUR OPERATIONS BREAKDOWN

Year	Total Operations	Peak Month	ADPM	Peak Hour	% Itinerant	Itinerant Peak Hour Operations	% Local	Local Peak Hour Operations
2008	160,277	16,704	691	104	54.04%	56	45.96%	48
2009	163,280	17,017	704	106	53.89%	57	46.11%	49
2010	166,363	17,338	717	108	53.74%	58	46.26%	50
2011	169,528	17,668	731	110	53.59%	59	46.41%	51
2012	172,776	18,006	745	112	53.43%	60	46.57%	52
2013	176,111	18,354	759	114	53.28%	61	46.72%	53
2014	179,649	18,723	775	116	53.13%	62	46.87%	54
2015	183,291	19,102	790	119	52.98%	63	47.02%	56
2016	187,039	19,493	806	121	52.83%	64	47.17%	57
2017	190,898	19,895	823	123	52.67%	65	47.33%	58
2018	194,871	20,309	840	126	52.52%	66	47.48%	60
2019	199,051	20,745	858	129	52.37%	67	47.63%	61
2020	203,369	21,195	877	132	52.22%	69	47.78%	63
2021	207,831	21,660	896	134	52.06%	70	47.94%	64
2022	212,441	22,140	916	137	51.91%	71	48.09%	66
2023	217,207	22,637	937	140	51.76%	73	48.24%	68
2024	222,134	23,150	958	144	51.61%	74	48.39%	70
2025	227,230	23,681	980	147	51.46%	76	48.54%	71
2026	232,501	24,231	1,002	150	51.46%	77	48.54%	73
2027	237,954	24,799	1,026	154	51.46%	79	48.54%	75
2028	243,599	25,387	1,050	158	51.46%	81	48.54%	76
AAGR 2008-2028	2.12%	2.12%	2.12%	2.12%		1.87%		2.40%
Change 2008-2028	51.99%	51.99%	51.99%	51.99%		44.71%		60.54%

3.10 Summary

In summary, the data and methods used to forecast aviation demand for FPR are consistent with those used by the FAA and other airports located within the State of Florida. The forecasts presented in this study, as shown in **Table 3-29**, are considered to accurately reflect the activity anticipated at FPR through 2028, provided that facilities necessary to accommodate this demand are made available. Overall, the current activity at FPR is expected to show moderate growth throughout the forecast period.

TABLE 3-29
AIRPORT PLANNING FORECASTS
FORECAST LEVELS AND GROWTH RATES

St. Lucie County International Airport, Fort Pierce, Florida
Base Year: 2008
Source: The LPA Group Incorporate, 2009

							Average Annual Compound Growth Rates				
	Base Yr. Level	**Base Yr. + 1yr.**	**Base Yr. + 5yrs.**	**Base Yr. + 10yrs.**	**Base Yr. + 15yrs.**	**Base Yr. + 20yrs.**	**Base yr. to +1**	**Base yr. to +5**	**Base yr. to +10**	**Base yr. to +15**	**Base yr. to +20**
OPERATIONS											
Itinerant Operations:											
Air Carrier	0	0	0	0	0	0	NA	NA	NA	NA	NA
Air Taxi	953	978	1,088	1,244	1,421	1,623	2.70%	2.70%	2.70%	2.70%	2.70%
GA	85,566	86,916	92,650	101,009	110,909	123,625	1.58%	1.60%	1.67%	1.74%	1.86%
Military	96	96	96	96	96	96	0.00%	0.00%	0.00%	0.00%	0.00%
Total Itinerant Operations	86,616	87,991	93,835	102,349	112,427	125,345	1.59%	1.61%	1.68%	1.75%	1.87%
Local Operations:											
GA	73,400	75,028	82,014	92,261	104,519	117,993	2.22%	2.24%	2.31%	2.38%	2.40%
Military	261	261	261	261	261	261	0.00%	0.00%	0.00%	0.00%	0.00%
Total Local Operations	73,662	75,290	82,276	92,522	104,780	118,254	2.21%	2.24%	2.31%	2.38%	2.40%
TOTAL OPERATIONS	**160,277**	**163,280**	**176,111**	**194,871**	**217,207**	**243,599**	**1.87%**	**1.90%**	**1.97%**	**2.05%**	**2.12%**
Instrument Operations	24,261	24,770	26,918	29,865	33,136	36,764	2.10%	2.10%	2.10%	2.10%	2.10%
Peak Hour Operations	104	106	114	126	140	158	1.87%	1.90%	1.97%	2.05%	2.12%
BASED AIRCRAFT											
Single-Engine Piston	122	125	137	155	175	199	2.16%	2.34%	2.42%	2.45%	2.47%
Multi-Engine Piston	59	59	59	59	59	59	0.00%	0.00%	0.00%	0.00%	0.00%
Turboprop	12	12	13	14	15	17	1.50%	1.60%	1.64%	1.65%	1.66%
Jet	14	15	20	26	34	46	8.94%	7.02%	6.39%	6.18%	6.08%
Helicopter	4	4	5	6	7	8	5.28%	3.91%	3.46%	3.31%	3.24%
TOTAL BASED AIRCRAFT	**211**	**215**	**233**	**260**	**291**	**327**	**2.03%**	**2.04%**	**2.10%**	**2.16%**	**2.22%**
OPERATIONAL FACTORS											
Total GA Operations Per Based Aircraft (OPBA)	760	758	754	750	747	744	-0.15%	-0.14%	-0.12%	-0.11%	-0.10%
Local GA Operations Per Based Aircraft	349	350	352	356	360	361	0.18%	0.19%	0.20%	0.21%	0.17%