

CHAPTER THREE

AVIATION DEMAND PROJECTIONS

Projecting aviation demand is a critical element in the overall master planning process. This process defines an airport's ability to accommodate aircraft and operations, thus determining the type, size, and timing of future airside and landside facility development. Projections of aviation demand through 2022 were prepared for based aircraft, the based aircraft fleet mix, and aircraft operations for Flagler County Airport.

This forecast analysis includes methodologies that consider historical aviation trends at the Airport and throughout the nation. Local historical data were collected from FAA Terminal Area Forecast (TAF) records, Airport records, and the 1997 Flagler County Master Plan Update. In addition, population data for the Daytona Beach Metropolitan Statistical Area (MSA) were used to track local trends and conditions that can impact general aviation demand levels. The Daytona Beach MSA includes Volusia and Flagler Counties. The base year for these forecasts is 2002, however, based on changing events during the course of this study, 2003 figures were included, as well as estimates for 2004 to present the most up-to-date data. Projections of aviation activity for the Airport were prepared for the near-term (2007), mid-term (2012), and long-term (2017 and 2022) timeframes.

This chapter discusses the findings and methodologies used to project based aircraft and operations for Flagler County Airport. Although these forecasts provide a meaningful guide to the future development of the Airport, it must be recognized that there are often short-term fluctuations in an airport's activity due to a variety of factors. The projections of aviation demand are documented in the following sections:

- Historic Aviation Activity
- General Aviation Trends
- Based Aircraft Projections
- Aircraft Operations Projections
- Summary

3.1 HISTORIC AVIATION ACTIVITY

In order to project airport-specific activity, it is useful to develop an understanding of the overall demand for aviation services. Two useful and readily available indications of aviation demand are based aircraft and operations. Based aircraft are those that are stored at an airport on a regular basis while an operation is defined as one takeoff or one landing conducted by an aircraft.

The number of based aircraft at Flagler County Airport has fluctuated greatly over the past 30 years. As shown in **Table 3-1**, the Airport reported 39 based aircraft in 1980 and experienced a sharp increase to 73 by 1990. According to the Federal Aviation Administration (FAA) Aviation Planning Office (APO) Terminal Area Forecast (TAF), the number of based aircraft at the Airport remained relatively steady through the 1990s, until experiencing a second surge to a total of 96 by 1997. Two years later, however, based aircraft numbers declined to levels similar to

those reported prior to 1990. Inventory work conducted for the Florida Aviation System Plan (FASP) confirmed this decrease from the 1997 level, showing that Flagler County Airport reported 69 based aircraft in 2002. TAF estimates for 2002 indicate a modest rebound in based aircraft for Flagler County Airport. These estimates likely reflect recent population and employment growth in the County.

While Airport Management estimates that 62 aircraft were based at the Airport in 2003, there are several developments underway at the Airport, including the Airpark Phase A and Flight Training Complex and a new 10,000-square foot conventional hangar The Ginn Company. Based on the anticipated activity of these new tenants, an additional 16 aircraft may be based at the Airport in 2004. Therefore, projections presented in this chapter were developed using 78 based aircraft.

**TABLE 3-1
 HISTORICAL AVIATION ACTIVITY**

Year	Total Operations	Based Aircraft
1970	24,000	13
1980	67,120	39
1990	155,110	73
1991	155,110	79
1992	160,110	77
1993	160,110	77
1994	160,110	72
1995	160,110	72
1996	190,110	79
1997	190,110	96
1998	190,110	96
1999	195,645	70
2000	201,180	70
2001	202,834	69
2002*	209,081	70
2003*	215,328	62 ^{1/}
2004E	215,300	78

Source: FAA-APO Terminal Area Forecast (TAF)

* Years Forecasted by TAF

^{1/} Estimate provided by Airport Management

E = Estimate; WSA/Airport Management estimate of based aircraft and operations reflects activity through December 2003.

During this time of fluctuations in based aircraft, operations have increased relatively steadily. The number of operations at the Airport has increased since 1980, when the Airport accommodated just over 67,000 operations. By 1990, operations at the Airport had increased over 130 percent, with reported operations surpassing 155,000. As shown in Table 3-1, the Airport continued to experience rapid growth through the 1990s, breaking 200,000 operations in

2000 and is estimated to surpass 215,000 operations by 2003. It is estimated that operations for 2004 will be consistent with 2003.

The consistent recent and historical growth in operations shown in Table 3-1 can be attributed to increases in based aircraft at Flagler County Airport as well as increases in based aircraft at other airports in the vicinity. Additionally, increases in operations can also be tied directly to several flight training schools that frequently conduct training exercises at the Airport.

3.2 GENERAL AVIATION TRENDS

To provide insight into understanding the factors that affect aviation-related activities at Flagler County Airport, a brief discussion of general aviation trends is helpful. Several key indicators measured annually by the FAA provide valuable information for understanding the national trends that may be affecting any particular airport throughout the national system of general aviation airports. These key indicators include: active general aviation aircraft, general aviation hours flown, and active pilots. Recent trends and growth forecasts for these indicators are shown in **Table 3-2**.

TABLE 3-2
FAA AEROSPACE FORECASTS
ACTIVE AIRCRAFT, HOURS FLOWN, ACTIVE PILOTS

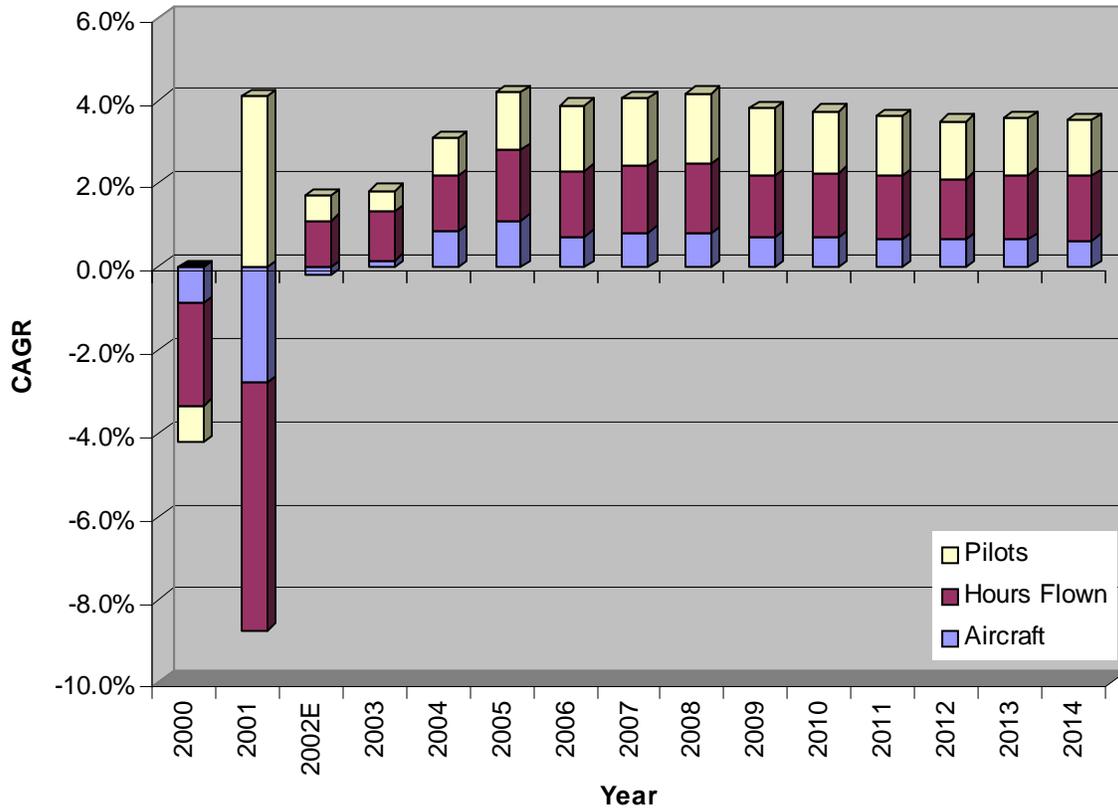
Year	Total Active Aircraft	CAGR	Total Hours Flown (000's)	CAGR	Total Active Pilots	CAGR
2000	217,533	-0.9%	30,973	-2.5%	631,629	-0.9%
2001	211,447	-2.8%	29,133	-5.9%	657,490	4.1%
2002E	211,040	-0.2%	29,455	1.1%	661,358	0.6%
2003	211,370	0.2%	29,795	1.2%	664,800	0.5%
2004	213,120	0.8%	30,200	1.4%	670,880	0.9%
2005	215,490	1.1%	30,710	1.7%	680,095	1.4%
2006	217,055	0.7%	31,195	1.6%	690,775	1.6%
2007	218,820	0.8%	31,695	1.6%	702,060	1.6%
2008	220,595	0.8%	32,220	1.7%	713,970	1.7%
2009	222,150	0.7%	32,700	1.5%	725,415	1.6%
2010	223,720	0.7%	33,205	1.5%	736,195	1.5%
2011	225,170	0.6%	33,718	1.5%	746,715	1.4%
2012	226,610	0.6%	34,215	1.5%	757,070	1.4%
2013	228,060	0.6%	34,750	1.6%	767,380	1.4%
2014	229,490	0.6%	35,290	1.6%	777,730	1.3%
Compound Annual Growth Rate (2000-2002E) - CAGR		-1.5%		-2.5%		2.3%
Compound Annual Growth Rate (2002E-2014) - CAGR		0.7%		1.5%		1.4%

Source: FAA Aerospace Forecasts, Fiscal Years 2003-2014
 E = Estimate

The FAA annually tracks the number of active general aviation aircraft in the U.S. Active aircraft are those aircraft that are currently registered and fly at least one hour during the year. By tracking this information, the FAA is able to identify trends in the total number of active aircraft, as well as the types of aircraft operating in the active fleet. Any changes in the number of active aircraft in the national fleet are generally anticipated to be reflected in similar changes to based aircraft in local fleets throughout the country. As shown in Table 3-2, the total active aircraft fleet is forecast to experience an average annual growth rate of 0.7 percent between 2002 and 2014. There was decline during 2000 and 2002. It should be noted that one of the most significant trends identified by the FAA in these forecasts is the relatively strong growth anticipated in active general aviation jet aircraft. This trend illustrates a movement in the general aviation community towards higher-performing, more demanding aircraft. Growth in general aviation jet aircraft is expected to outpace growth in all other segments of the general aviation aircraft fleet, with an annual growth rate of 4.0% percent through 2014.

The FAA also records the total hours flown by type of aircraft in the active general aviation fleet. As shown in Table 3-2 and **Exhibit 3-1**, the total hours flown declined in 2000 and 2001. This decrease occurred primarily in the segments of single and multi-engine aircraft. Increases in jet hours flown, while steady, could not offset the significant decreases in single-engine hours flown. A sign of an expected economic turnaround, the total hours flown are forecast to experience an average annual growth rate of 1.5 percent between 2002 and 2014.

**EXHIBIT 3-1
 FAA AERSOPACE FORECASTS
 ACTIVE AIRCRAFT, HOURS FLOWN, ACTIVE PILOTS**



Source: FAA Aerospace Forecasts, Fiscal Years 2003-2014

Of particular interest is the increase in active pilots between 2000 and 2001, when the active pilot population grew by over 25,800 pilots. The majority of this increase occurred in the private and commercial certificate segments, where the combined increases accounted for more than 26,100 pilots. During this period, segments such as student, rotorcraft and glider pilots experienced declines. The most significant decline occurred in the student pilot segment, where a decline of nearly 4,700 pilots was recorded. The previously published FAA forecast did not predict this event.

As depicted in Exhibit 3-1, the FAA’s forecasts between 2002 and 2014 anticipate a recovery in the population of student pilots. This steady increase is anticipated at an annual rate of 2.1 percent, and is due in large part to industry initiatives that are intended to increase the number of student pilots.

Summary of General Aviation Trends

The nature of general aviation activity is illustrated in the data presented in this overview, and can be characterized as undergoing significant change. Historically, general aviation activity and active aircraft experienced steady growth in all areas, however, the terrorist attacks of 2001 and

the economic downturn dampened activity over the last several years. These events happened to coincide with shifts in the active general aviation fleet that are showing signs of increased jet aircraft use. A rebound in active pilots in 2001 presents a positive signal of growth for the future. These two factors are reflected in FAA projections that show varied growth over the next several years, and most components of general aviation activity are projected to soon surpass previous activity levels.

3.3 BASED AIRCRAFT PROJECTIONS

This section discusses the methodology and conclusions resulting from developing projections of based aircraft under several scenarios. These scenarios reflect varying growth rates for population in Flagler County and the Daytona Beach MSA, along with activity growth rates used in the development of aerospace forecasts by the FAA. Additionally, other forecasts produced during the conduct of the Florida Aviation System Plan (FASP) have been included. The projections are documented in the following sections:

- Population Trends
- National Trends
- Other Forecasts
- Summary
- Preferred Based Aircraft Projections
- Based Aircraft Fleet Mix Projections

Population Trends

One means for projecting based aircraft for the planning period at Flagler County Airport is a correlation analysis based upon population and employment growth. Historical data was obtained from the U.S. Bureau of the Census and is presented in **Table 3-3**. Also shown is population and employment growth for Volusia County and the Daytona Beach MSA.

As mentioned in Chapter One, both population and employment in Flagler County have risen significantly between 1990 and 2000. Table 3-3 shows that population and employment have grown during this period by 5.7 percent and 6.0 percent, respectively. In fact, Flagler County is estimated to be the fastest growing county in Florida, ranking 5th on a list of the 10 fastest-growing counties in the United States between April 2000 and July 2002.

Table 3-3 displays historical population and employment data for Flagler County and Volusia County, which comprise the Daytona Beach metropolitan area.

**TABLE 3-3
 DAYTONA BEACH MSA POPULATION AND EMPLOYMENT**

Year	Population			Employment		
	Flagler County	Volusia County	MSA	Flagler County	Volusia County	MSA
1960	4,566	129,885	134,451	N/A	N/A	N/A
1970	4,454	173,941	178,395	N/A	N/A	N/A
1980	10,913	269,675	280,588	N/A	N/A	N/A
1990	28,701	399,413	428,114	10,542	155,529	166,071
2000	49,832	493,175	543,007	18,815	189,035	207,850
CAGR (1960-2000)	6.2%	3.4%	3.6%	N/A	N/A	N/A
CAGR (1990-2000)	5.7%	2.1%	2.4%	6.0%	2.0%	2.3%

Source: U.S. Bureau of the Census

Comparing historical population figures, it is clear that while Volusia County accounts for the vast majority of residential and commercial activity in the region, Flagler County has indeed experienced a surge of growth over the past decade. Flagler County population grew at nearly 6 percent annually - more than twice as fast as Volusia County population between 1990 and 2000. During the same period, employment in Flagler County grew at 6 percent annually – three times as fast as employment in Volusia County.

After periods of such rapid increases in population and employment, it is common for communities to experience a slight decline in the rate of increase in the near term, while still experiencing growth.

This general expectation is evident in population projections released by the Flagler County Planning Department in 2002, as shown in **Table 3-4**.

**TABLE 3-4
 FLAGLER COUNTY POPULATION PROJECTIONS**

Year	Flagler County	CAGR
2001	53,061	6.5%
2005	62,589	4.2%
2010	72,682	3.0%
2015	81,200	2.2%
CAGR (2001-2015)		3.1%

Source: Flagler County Planning Department, 2002

Flagler County population is projected to grow at a compound annual growth rate (CAGR) of 3.1 percent from 2001 through 2015. While the County is expected to experience continued population growth through 2015, and presumably the out-year of this study, it will not likely continue at the same rate as experienced during the 1990s. This projected rate of future growth appears to be realistic when compared to historical population and employment growth for the Daytona Beach MSA.

The use of demographic growth rates for determining future based aircraft levels serves to set upper and lower limits for based aircraft projections. It is generally accepted that increases in population and employment tend to spark increases in demand for general aviation-related facilities and operations. This being the case, it is helpful to apply growth rates to current based aircraft information to estimate future levels of based aircraft at a given airport.

Below is one formula for projecting future based aircraft using compound annual growth rates.

Calculation Formula - Based Aircraft Projection

$$c \times (1+r)^n = f$$

$$84 \times (1+.031)^{20} = 154$$

where: c = current based aircraft
r = compound annual growth rate
n = number of years
f = future based aircraft

Table 3-5 presents based aircraft forecasts developed with the above formula for 5-year increments through the master planning horizon year of 2022. A unique projection can be forecast for each growth rate as shown in boldface type in Table 3-3, along with the CAGR associated with population projections shown in Table 3-4.

**TABLE 3-5
 BASED AIRCRAFT PROJECTIONS**

Year	Flagler County	MSA CAGR	Flagler County	MSA CAGR	Flagler County
	CAGR	1960-2000	CAGR	1990-2000	CAGR
	1960-2000	1960-2000	1990-2000	1990-2000	2001-2015
2003	62	62	62	62	62
2004E	78	78	78	78	78
2007	93	87	92	84	85
2012	126	103	121	94	99
2017	170	123	160	106	116
2022	229	146	221	120	135

Source: Wilbur Smith Associates

These projected based aircraft figures were derived from both historic and projected population growth trends for Flagler County and the Daytona Beach MSA, and resulted in a range of future based aircraft between 120 and 229 aircraft. Comparison of the projected based aircraft in Table 3-5 presents a range of possible based aircraft that may result from population and employment growth in Flagler County. The projection calculated using the CAGR from population projections developed by the Flagler County Planning Department produces a forecast that is within this range. This projection seems reasonable as it considers the most up-to-date variables affecting population growth in the County. These variables indicate modest growth following a relatively strong period of recent population increases, focusing on anticipated trends unique to Flagler County.

National Trends

On an annual basis, the FAA publishes its Aerospace Forecasts that summarize anticipated trends in all components of aviation activity. Each published forecast revisits previous aerospace forecasts and updates them after examining the previous year’s trends in aviation and economic activity. Many factors are considered in the FAA’s development of its Aerospace Forecasts, some of the most important of which are U.S. and international economic forecasts and anticipated trends in fuel costs. FAA Aerospace Forecasts generally provide one of the most detailed analyses of historic and forecasted aviation trends and provide the general framework for examining future levels of aviation activity for the nation as well as in specific states and regions.

As discussed previously, the FAA tracks the number of active general aviation aircraft in the U.S. fleet annually. **Table 3-6** summarizes FAA projections of future active aircraft.

**TABLE 3-6
 FAA AEROSPACE PROJECTIONS – ACTIVE AIRCRAFT**

Year	Total Active Aircraft	CAGR
2002E	211,040	-
2007	218,820	-
2012	226,610	-
2014	229,490	-
CAGR (2002-2014)		0.7%

Source: FAA Aerospace Forecasts, Fiscal Years 2003-2014

The FAA projects continued growth in total active aircraft in the U.S. fleet from 2002 through 2014. There are some fluctuations in annual growth rates during this period, and the CAGR for the 12-year window is 0.7 percent. These fluctuations consider national trends in aircraft manufacturing, along with expectations for economic growth relevant to aviation-related activity nationwide. These growth rates reflect only input from national trends, and do not consider any data or aviation activity in the State of Florida or the Daytona Beach region.

One scenario under which projections for based aircraft at Flagler County Airport can be made is the assumption that these national trends in active aircraft are replicated in Flagler County. **Table 3-7** summarizes projections for based aircraft at Flagler County when applying the overall CAGR from the FAA Aerospace Forecasts to the number of aircraft currently based at the Airport. Projecting based aircraft using this growth rate through the horizon year of 2022 yields another scenario for forecasting the level of future based aircraft at Flagler County Airport.

**TABLE 3-7
 BASED AIRCRAFT PROJECTIONS – FAA ACTIVE AIRCRAFT**

Year	Flagler County Based Aircraft	CAGR
2003	62	-
2004E	78	-
2007	80	0.7%
2012	82	0.7%
2017	85	0.7%
2022	88	0.7%

Source: Wilbur Smith Associates

Other Forecasts

Each year the FAA prepares Terminal Area Forecasts (TAF) for use in the FAA’s decision-making and planning processes. The TAF includes all U.S. airports which have at least one of the following: an air traffic control tower; commercial airline service; 60,000 itinerant or 100,000 total annual operations; or at least 10 based aircraft. The current TAF for Flagler County Airport forecasts annual activity through the year 2020.

Table 3-8 displays the current TAF for Flagler County Airport.

**TABLE 3-8
 FAA TERMINAL AREA FORECAST – BASED AIRCRAFT**

Year	Based Aircraft	CAGR
2003	72	-
2004	73	-
2007	80	-
2012	90	-
2017	101	-
2020	110	-
CAGR (2002-2020)		2.3%

Source: FAA-APO Terminal Area Forecast (TAF)

In addition to the FAA TAF, the Florida Department of Transportation has developed projections of based aircraft at statewide system airports during the conduct of the Florida Aviation System Plan (FASP). These forecasts utilized historic data from the FAA TAF and developed straight-line projections for each year beginning in 2002 through 2022. These forecasts were based solely on these historical growth rates. The process of developing the forecasts did not include the consideration of population and employment growth trends unique to the areas where system airports reside.

Table 3-9 displays FASP projections for Flagler County Airport.

**TABLE 3-9
 FASP PROJECTIONS – BASED AIRCRAFT**

Year	Based Aircraft
2007	85
2012	102
2017	122
2022	145

Source: Florida Aviation System Plan (FASP), 2003

Summary

The forecasts described in this section offer a range of possible scenarios for growth of based aircraft dependent upon several variables. First, population growth at the County and metropolitan area levels is examined and CAGR were used to forecast based aircraft. Data pertaining to historical and recent trends are presented along with up-to-date population forecasts developed by the Flagler County Planning Department. Upon comparing the forecasts developed utilizing population growth rates, as shown in Table 3-5, it is reasonable to assume that the population projections formulated by the Flagler County Planning Department are those which can be considered to be the most worthy of further consideration. The 3.1 percent CAGR contained in the population projections produces an out-year forecast of 135 based aircraft at Flagler County Airport. Only these population forecasts are shown below. **Table 3-10** compares these forecast scenarios along with those developed using FAA Aerospace Forecast annual growth rates. TAF and FASP forecasts are also shown for comparison purposes.

**TABLE 3-10
 BASED AIRCRAFT PROJECTIONS COMPARISON**

Year	Flagler County Population 2001-2015 CAGR	FAA Aerospace Forecast CAGR	FAA Terminal Area Forecast	FDOT FASP Forecast
2007	85	80	80	85
2012	99	82	90	102
2017	116	85	101	122
2022	135	88	117	145

Source: Wilbur Smith Associates

The FAA Aerospace Forecast projections are based on national trends that, while reliable for general purposes, may not emulate the unique factors currently experienced in Flagler County or the Daytona Beach metropolitan area. This is evident in the wide disparity between this forecast and that developed using local population projections. The 0.7 percent CAGR used in the FAA Aerospace Forecast projections produces a 2022 forecast of just 88 based aircraft.

The FAA TAF projections, while developed specifically for Flagler County Airport, do not reflect local demographic and economic trends that greatly affect aviation-related activity. The 2.4 percent CAGR represented by the TAF projections produces a forecast of 117 based aircraft at Flagler County Airport by 2022.

The FASP forecasts were developed utilizing historical growth rates, which do not accurately reflect current trends or expectations for shifts in historical growth in the future. The CAGR used for the FASP projections produces a forecast of 145 based aircraft at Flagler County Airport by 2022.

Preferred Based Aircraft Projections

Based on the analysis and projection methods used in this effort, and the comparison of these projections contained above, the preferred based aircraft projections for Flagler County Airport Master Plan Update are those based on current population projections as formulated by the Flagler County Planning Department. Current demand for hangar space is high, as evidenced by recent additions to based aircraft. Other interested parties continue to contact the Airport looking to lease storage space for their aircraft. With this in mind, it is reasonable to anticipate the numbers of based aircraft to remain consistent with overall population growth rates as projected by the County Planning Department. This projection method represents a CAGR of 3.1 percent from the 2004 estimate (78 based aircraft) through 2022 (135 based aircraft). This projection method forecasts an increase of 57 aircraft over the planning period.

The preferred projected based aircraft figures are as follows:

Year	Preferred Based Aircraft Projection
2007	85
2012	99
2017	116
2022	135

Based Aircraft Fleet Mix Projections

An airport's based aircraft fleet mix is one indication of its operational role. The future based aircraft fleet mix for Flagler County Airport was projected using the current based aircraft fleet mix tempered with national trends. Approximately 72 percent (56 aircraft) of the total aircraft fleet estimated to be based at the Airport in 2004 is single-engine aircraft. Approximately 11 percent (8 aircraft) of this based fleet is made up of multi-engine and turboprop aircraft. The Airport recently recorded its first based jet aircraft, and the Ginn Company is expected to base an additional jet at the Airport in 2004. There are also two helicopters based at Flagler County Airport. The 10 remaining aircraft are those categorized as experimental, recreational and sport general aviation aircraft such as gyrocopters and ultralight aircraft.

The future based aircraft fleet mix for the Airport is presented in **Table 3-11**. The percentage of based aircraft by type is projected to change slightly over the planning period, with expected increases and decreases fluctuating based upon national trends within these segments. The FAA anticipates an overall increase in the number of aircraft in the national general aviation fleet. The number of active single-engine aircraft is expected to increase; however, their overall percentage of the fleet will decrease slightly. The FAA also asserts that the percentage of multi-engine and turboprop aircraft in the fleet will increase slightly. The FAA expects a slight decrease in single-engine aircraft to be complemented by a slight increase in the jet fleet percentage. As stated previously, this growth trend illustrates a movement in the general aviation community toward higher performing, more demanding aircraft, which will impact the types of activities occurring at general aviation airports and the types of facilities that may be required.

Table 3-11 presents the future based aircraft fleet mix for Flagler County Airport.

**TABLE 3-11
 BASED AIRCRAFT FLEET MIX PROJECTIONS**

Year	Single-Engine		Multi-Engine/ Turboprop		Jet		Helicopter		Other		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	
2003	43	69%	4	6%	1	2%	4	6%	10	16%	62
2004E	55	71%	8	11%	3	3%	2	2%	10	13%	78
2007	57	67%	7	8%	6	7%	4	5%	11	13%	85
2012	63	64%	10	10%	8	8%	5	5%	13	13%	99
2017	73	63%	13	11%	9	8%	5	4%	16	14%	116
2022	87	64%	16	11%	10	8%	5	4%	17	13%	135

Source: Wilbur Smith Associates

As shown in Table 3-11, it is projected that 87 single-engine aircraft will be based at Flagler County Airport by the end of the planning period. The number of multi-engine and turboprop based aircraft is projected to increase to 16 aircraft by 2022. It is projected that jet aircraft will increase to 10 and helicopters are forecasted to increase to 5 during this same timeframe. Aircraft categorized in the other segment are anticipated to increase to 17 through 2022. This segment is comprised of experimental, recreational and sport general aviation aircraft such as gyrocopters and ultralight aircraft.

3.4 AIRCRAFT OPERATIONS PROJECTIONS

Data on historical and projected aircraft operations for Flagler County Airport were obtained from FAA Terminal Area Forecast records since the Airport does not have an Air Traffic Control Tower to provide accurate operational counts. In order to project future operations for the Airport, methodologies that examined the historic Airport activity levels and national general aviation trends were utilized. Two accepted methodologies were analyzed in the development of the general aviation operations forecast. These consist of an operations per based aircraft (OPBA) methodology and another utilizing the FAA’s anticipated trend in national operational activity. From these scenarios, a preferred operations projection was selected. The preferred operations projection was then used to develop projections for local and itinerant operations through the planning horizon year of 2022.

OPBA Projection

Future operational activity for the Airport was projected using operations per based aircraft (OPBA), a commonly accepted planning statistic. OPBAs are calculated by dividing the total number of annual operations at an airport by the number of based aircraft. This methodology analyzes historical OPBA ratios and projects future operations based on the historical average. The OPBA ratio does not indicate which based aircraft will actually conduct any certain number of operations, however, the OPBA is a methodology recognized by the FAA to relate total

general aviation activity to a known variable, in this case, based aircraft. Historical operations and OPBA are shown in **Table 3-12**.

TABLE 3-12
HISTORICAL OPBA – FAA TAF

Year	Total Operations	Based Aircraft	OPBA
1990	155,110	73	2,125
1991	155,110	79	1,963
1992	160,110	77	2,079
1993	160,110	77	2,079
1994	160,110	72	2,224
1995	160,110	72	2,224
1996	190,110	79	2,406
1997	190,110	96	1,980
1998	190,110	96	1,980
1999	195,645	70	2,795
2000	201,180	70	2,874
2001	202,834	69	2,940
Average Historical Operations per Based Aircraft			2,306

Sources: FAA-APO Terminal Area Forecast (TAF)

The number of operations at Flagler County Airport has increased steadily between 1990 and 2001. In 1990, there were 155,110 recorded annual operations. According to the FAA, the Airport surpassed 201,000 operations in 2000 on its way to nearly 203,000 operations in 2001. Over this period, the Airport's average OPBA has been 2,306.

Table 3-13 presents the projected OPBA for the Airport utilizing based aircraft and operations projections published in the TAF. As indicated, operations in the TAF are projected to continue at a steady increase throughout the planning period, exceeding 300,000 operations by 2017 and reaching a total of more than 321,500 by 2020. Based on the TAF data, the average OPBA is anticipated to be 3,008 operations per based aircraft through the planning period.

TABLE 3-13
PROJECTED OPBA – FAA TAF

Year	Operations	Based Aircraft	OPBA
2002	209,081	70	2,987
2003	215,328	72	2,991
2004	221,576	73	3,035
2005	227,823	76	2,998
2006	234,072	78	3,001
2007	240,319	80	3,004
2008	246,566	81	3,044
2009	252,814	84	3,010
2010	259,061	85	3,048
2011	265,310	89	2,981
2012	271,557	90	3,017
2013	277,805	93	2,987
2014	284,052	94	3,022
2015	290,299	96	3,024
2016	296,548	98	3,026
2017	302,795	101	2,998
2018	309,043	102	3,030
2019	315,290	104	3,032
2020	321,539	110	2,923
Average Projected Operations per Based Aircraft			3,008

Sources: FAA-APO Terminal Area Forecast (TAF)

At several points throughout the TAF projection period shown above, the OPBA is projected to surpass 3,000, however, it is never anticipated to rise above 3,048. Information regarding based aircraft and operations available from the Airport estimates the OPBA to be 3,473 in 2003. This is significantly higher than TAF projected OPBA levels and is likely due to the high level and unpredictable nature of flight training that is conducted at the Airport. Recent and anticipated increases in based aircraft at the Airport, along with no significant change in operations, effectively reduces the OPBA for 2004, which is estimated to be 2,760.

The historical and projected OPBA ratios published in the TAF represent a range of future operations to base aircraft relationships. FAA projects a future OPBA at a level lower than the Airport's 2003 estimate but higher than historical levels, indicating no anticipated reduction of operations per based aircraft. The 2004 estimate, which reflects the most current increases in based aircraft at the Airport, lies within this range.

Table 3-14 compares the range of projected future operations at Flagler County Airport based on the historical and projected OPBAs contained in the TAF, along with projected operations as calculated utilizing the existing OPBA at the Airport.

**TABLE 3-14
 OPERATIONS PROJECTIONS – OPBA**

Year	Based Aircraft	TAF	Flagler County Operations	TAF	Flagler County Operations	Airport Estimated OPBA	Flagler County Operations
		Historical Average OPBA		Projected Average OPBA			
2003	62	3,473	215,328	3,473	215,328	3,473	215,328
2004E	78	2,760	215,300	2,760	215,300	2,760	215,300
2007	85	2,306	196,000	3,008	255,700	2,760	234,600
2012	99	2,306	228,300	3,008	297,800	2,760	273,200
2017	116	2,306	267,500	3,008	348,900	2,760	320,200
2022	135	2,306	311,300	3,008	406,100	2,760	372,600

Source: Wilbur Smith Associates

Comparing the historical, existing, and projected OPBA at Flagler County Airport provides a range within which a projection of future operations can be made. One scenario for projecting future operations is to forecast that future OPBA will fall between 2,306 and 3,008 – the historical and projected average OPBA as published in the TAF. Applying these OPBAs to the preferred projection of based aircraft presents a range of future operations can be anticipated to fall within 311,300 and 406,100. As shown, the projection of operations using the Airport’s 2004 estimated OPBA is within this range.

National Trends

The FAA prepares an aviation forecast that includes projections of the number of hours flown annually by general aviation aircraft. Historically, the number of hours flown has been shown to be a broad indication of general aviation activity, where growth in national hours flown can be anticipated to cause similar growth at the local level. In 2002, the FAA estimated that all types of general aviation aircraft flew nearly 29.5 million hours. By 2005, the number was forecast to increase to more than 30.7 million hours. By 2014, the number of hours flown by general aviation aircraft is expected to exceed 35.2 million, representing a 1.5 percent compound annual growth rate. This rate was used to extrapolate a total of approximately 39.7 million hours flown by 2022.

Table 3-15 presents the projected national hours flown. Table 3-15 displays the projected future compound annual growth rate as published in the FAA Aerospace Forecasts projections.

**TABLE 3-15
 FAA AEROSPACE PROJECTIONS – HOURS FLOWN**

Year	National Hours Flown	CAGR
2003	29,795,000	-
2007	31,695,000	-
2012	34,215,000	-
2017 ^{1/}	36,825,600	-
2022 ^{1/}	39,671,600	-
CAGR (2002-2022)		1.5%

^{1/} Hours flown were extrapolated using a 1.5 percent compound average annual growth rate.

Sources: FAA Aerospace Forecasts, Fiscal Years 2003-2014

Table 3-16 presents a projection of operations for Flagler County Airport using the national rate of growth projected for hours flown by active general aviation aircraft. Using this method, approximately 278,600 operations are projected for 2022 using 2002 as the base year. The projection using growth rates projected for national hours flown falls far below the range of operations projected utilizing historical and existing OPBA figures.

**TABLE 3-16
 OPERATIONS PROJECTIONS – HOURS FLOWN**

Year	Flagler County Operations	CAGR
2003	215,328	-
2004E	215,300	-
2007	225,100	1.5%
2012	242,500	1.5%
2017	261,300	1.5%
2022	281,500	1.5%

Source: Wilbur Smith Associates

Summary

The forecasts described in this section offer a range of possible scenarios for growth of annual operations at Flagler County Airport dependent upon several variables. **Table 3-17** compares these forecast scenarios.

The projections based on the historical average OPBA data available from the TAF, while reliable for understanding the past operations at the Airport, may not prove to be a reasonable foundation on which to predict future increases. This is evident in the large difference between the projections of 2022 operations. The projection that uses the historical average OPBA represents operations growth at a CAGR of 2.1 percent while the projected average shown by the TAF represents operations growth at a CAGR of 3.6 percent through 2022, with increases of 96,000 and 190,800 operations, respectively.

**TABLE 3-17
 OPERATIONS PROJECTIONS COMPARISON**

	TAF Historical Average	TAF Projected Average	2004 Estimated	Projected National
Year	OPBA	OPBA	OPBA	Hours Flown
2007	196,000	255,700	234,600	225,100
2012	228,300	297,800	273,200	242,500
2017	267,500	348,900	320,200	261,300
2022	311,300	406,100	372,600	281,500

Source: Wilbur Smith Associates

The projections shown under the TAF Historical and Projected Average OPBA columns represent a reasonable range of operational increases for each five-year forecast period through the end of the planning horizon. However, use of either the Historical or Projected Average OPBAs from the TAF may not reflect current activity at the Airport.

The projections based on the 2004 estimated OPBA forecast methodology represents the middle ground of the projections, showing moderate increases during each five-year period throughout the planning horizon. The growth presented under this scenario represents a CAGR of 3.1 percent through 2022 – an increase of over 157,300 operations in the 20-year period. This projection is within the range of operations produced using the TAF Historical and Projected Average OPBAs shown in Table 3-17.

The projections calculated utilizing the CAGR from FAA projections for national hours flown produces increases for each five-year forecast period through the end of the planning horizon, with a forecast of approximately 281,500 operations by 2022. This projection is well below the range of operations produced using the TAF Historical and Projected Average OPBAs discussed above.

Preferred Projection of Operations

Of the various scenarios presented in this section, the projection methodology that uses the CAGR taken from the FAA projection of national hours flown yields a forecast of 281,500 for 2022, an increase of 30 percent in 20 years. When compared to the preferred projection of based

aircraft, this forecast level represents an OPBA of 2,085. This is a significant reduction from both historical and projected OPBA levels provided in the TAF.

The operational projection numbers produced using the TAF Historical and Projected Average OPBAs present a reasonable range of future operational activity for Flagler County Airport. This is especially true because TAF data does not indicate a decrease in the number of operations per based aircraft through the planning period. However, recent and anticipated increases in based aircraft at the Airport yields a moderate decrease from projected OPBA levels in 2004 that is appropriate. From this point, it is likely that the OPBA will not deviate significantly from the 2004 estimate of 2,760. Therefore, the methodology using the 2004 OPBA estimate is selected as the preferred operations projection for the planning period and is as follows:

Year	Preferred Operations Projection
2007	234,600
2012	273,200
2017	320,200
2022	372,600

Local and Itinerant Operations

As defined by the FAA, local operations are performed by aircraft that:

- Operate in the local traffic pattern or within sight of an airport
- Are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of an airport
- Are executing simulated instrument, non-precision, or visual approaches or low passes at an airport (touch-and-go operations)

Itinerant operations are all other operations.

Historical annual operations data contained in the TAF for Flagler County Airport indicates that annual operations between 1990 and 1999 were comprised of approximately 50 percent each of itinerant and local aircraft. TAF projections, however, begin to suggest a different trend in the near term, with significant change at the Airport by 2020. The TAF projections show a shift towards a higher percentage of itinerant aircraft operations beginning in 2000, with itinerant aircraft operations accounting for 57 percent by 2005. In 2020, the FAA projects that local aircraft operations will account for just 33 percent of total annual operations, with itinerant operations increasing to approximately 67 percent.

Potential reasons for this shift could include increased corporate aviation activity, a trend that is anticipated nationally, or a relocation of training activities to other airport facilities in the region due to increased congestion at the Airport. Due to this projected fluctuation in operational characteristics, the preferred operations forecasts have been classified by following the operational split percentages for each five-year forecast period as contained in the FAA Terminal Area Forecast.

Table 3-18 illustrates the preferred operations forecast as classified by the projected local/itinerant percentage splits published by the TAF.

**TABLE 3-18
 OPERATIONS PROJECTIONS - LOCAL AND ITINERANT**

Year	Total Operations	Local Operations	Local Percentage	Itinerant Operations	Itinerant Percentage
2003	215,328	99,050	46%	116,277	54%
2004E	215,300	99,038	46%	116,262	54%
2007	234,600	96,200	41%	138,400	59%
2012	273,200	95,600	35%	177,600	65%
2017	320,200	105,700	33%	214,500	67%
2022	372,600	123,000	33%	249,600	67%

Sources: FAA-APO Terminal Area Forecast (TAF)
 Wilbur Smith Associates

Peak Operational Demand

To develop a portrait of peak operational demands, a peaking factor was applied to the preferred operational forecasts. Generally, peak month operations have been found to represent approximately 10 to 15 percent of annual operations. Since there are no Air Traffic Control Tower counts for Flagler County Airport, peak month operations were assumed to lie in the middle of this range at 13 percent. For projection purposes, it was also assumed that this monthly peaking factor would remain constant throughout the planning period. From this point, average daily operations were estimated by dividing the peak month figure by 31 - the average number of days in any month throughout the year. To estimate peak hour operations, another peaking factor, the estimated percentage of daily activity occurring in the peak hour (12 percent), was applied to the number of average daily operations.

Peak hour operations projections are depicted in **Table 3-19**.

TABLE 3-19
PEAK HOUR OPERATIONS^{1/}

Year	Annual Operations	Peak Month	Peak Month Average Day	Peak Month Peak Hour
2003	215,328	27,992	903	108
2004E	215,300	27,989	903	108
2007	234,600	30,498	984	118
2012	273,200	35,529	1,146	138
2017	320,200	41,626	1,343	161
2022	372,600	48,438	1,563	188

1/ The peak month operations are estimated to represent approximately 13 percent of total annual operations. Average daily operations are estimated by dividing the peak month operations by 31 days. The peak hour operations are estimated to represent approximately 12 percent of average daily operations.

Source: Wilbur Smith Associates

As shown, peak month operations are expected to increase from approximately 28,000 in 2004 to more than 48,400 in 2022. Average day operations are projected to increase from 903 to more than 1,560 over this same time period. Peak hour activity is anticipated to increase from 108 to nearly 190 operations by the end of the planning period. It should be noted that these projections represent averages that are based on generally accepted peak operational factors, and may not represent absolute peak operational demand. In fact, the hourly and daily peaks may be exceeded during exceptionally active periods at the Airport. The ability of the Airport to accommodate this high level of peak activity will be addressed in subsequent chapters.

3.5 SUMMARY

The aviation demand projections for Flagler County Airport are summarized in **Table 3-20** and can be characterized as follows:

- All forecasts developed as part of this study are based on historical Airport activity, area demographic trends, and FAA projections. These trends were tempered with specific knowledge of local conditions where appropriate.
- All forecasts are considered unconstrained by current conditions.
- Based aircraft are expected to increase from 78 to 135 during the planning period.
- Using operations per based aircraft (OPBA) and the projected number of based aircraft, the number of annual operations is expected to increase to approximately 372,600 by the end of the planning period.
- The operating fleet mix is projected to see an increase in the percentage of jet and turboprop aircraft using the Airport. Single-engine aircraft will continue to comprise the majority of the Airport’s operating fleet throughout the planning period.
- The average number of peak hour operations is estimated to increase from approximately 108 in 2004 to nearly 190 by the end of the planning period.

**TABLE 3-20
 SUMMARY OF FORECASTS**

Year	Annual Operations			Based Aircraft					
	Local	Itinerant	Total	Single	Multi	Jet	Hel	Other	Total
2003	99,050	116,277	215,328	43	4	1	4	10	62
2004E	99,038	116,262	215,300	55	8	3	2	10	78
2007	96,200	138,400	234,600	57	7	6	4	11	85
2012	95,600	177,600	273,200	63	10	8	5	13	99
2017	105,700	214,500	320,200	73	13	9	5	16	116
2022	123,000	249,600	372,600	87	16	10	5	17	135

Source: Wilbur Smith Associates