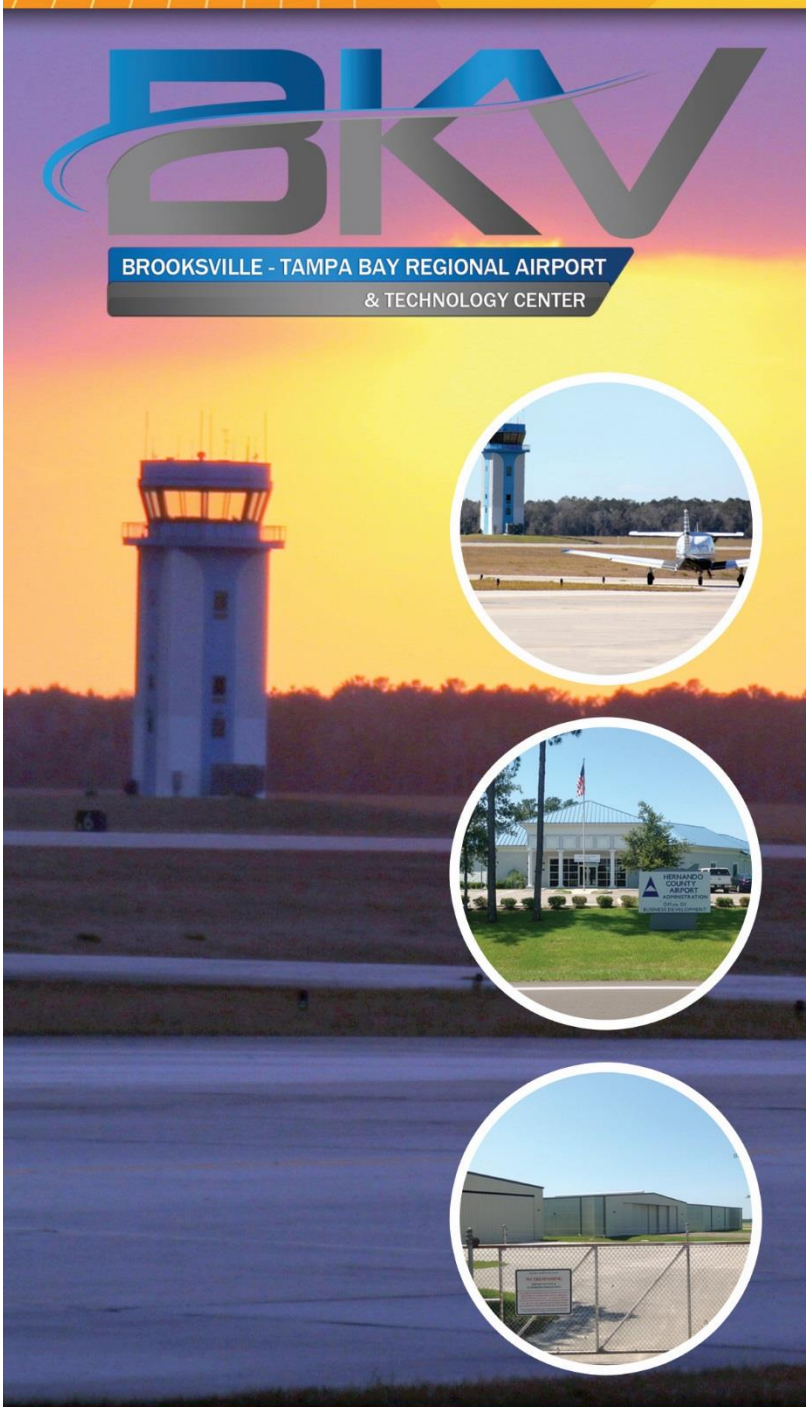
Chapter 3.0
Aviation Activity Forecasts



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3.0 AVIATION ACTIVITY FORECASTS

3.1 Introduction

This forecasting effort was conducted in 2014 as a component of the Master Plan Update (MPU) for the Brooksville-Tampa Bay Regional Airport (BKV). The forecasts were developed based on the most recent information available at the time and are utilized in later sections to determine long-term facility requirements, alternatives, and recommendations. The forecasts are presented over a 20-year planning period that extends from 2013 through 2033. It is noted that an Airport Traffic Control Tower (ATCT) opened on October 15, 2012 at BKV. The ATCT is open 365 days a year from 7:00 a.m. to 10:00 p.m. Therefore, the majority of aircraft operations are now counted by ATCT personnel and are utilized for this forecasting effort, as opposed to previous forecasting efforts that incorporated activity estimates from airport management and tenants. In the previous master plan, the initial or baseline year was 2004. Since that time, the number of based jets grew from 3 to 14 and Instrument Flight Rules (IFR) activity increased from 2,913 annual operations to 5,026, which represents an Average Annual Growth Rate of 6.25 percent for IFR activity between 2004 and 2013. The population of Hernando County increased 32.81 percent from 130,809 in 2000 to 173,731 in 2013. Much of the growth at BKV and within Hernando County may be attributed to population growth in the greater Tampa Bay area, constraining factors at other General Aviation (GA) airports in the region (e.g., runway length, approach capability, and developable space), and other projects such as the construction of the Suncoast Parkway which provided improved access to BKV and Hernando County. With the anticipation of continued population growth in the area, the airport should plan for the potential to accommodate greater numbers of annual operations and based aircraft. These types of historical and anticipated trends are reviewed in this chapter to evaluate the potential for operations and based aircraft growth at BKV. The forecasts herein are intended to present a growth scenario that will allow the Hernando County BOCC to plan for potential improvements to the airport in case they are necessary during the 20-year planning period. The following forecasting elements are presented in this chapter:

- Forecasting Limitations
- Historical and Baseline Activity
- Factors and Opportunities Affecting Activity Levels
- Annual Operations Forecast
- Itinerant and Local Operations Forecast
- Operations by Aircraft Type Forecast (Fleet Mix Forecast)
- Critical Aircraft Forecast
- Instrument Operations Forecast
- Peak Operations Forecast
- Based Aircraft Forecast
- Summary

3.2 Forecasting Limitations

Forecasting aviation activity is a complex process that considers a multitude of factors, both controllable and beyond an airport's control. Forecasts are not to be construed with predictions of the future but rather as an educated guess of future activity based on a variety of predictors, calculations, assumptions, and subjective judgment. The accuracy of the estimates decline as the

planning term is extended, potentially as a result of unforeseen local or geo-political events, natural disasters, and/or climatological events.

The Federal Aviation Administration's (FAA) forecast approval process typically constitutes an approval for planning purposes only, which allows for the illustration of projects that are consistent with long-term growth expectations on the Airport Layout Plan (ALP). In most cases, prior to issuing a grant, the FAA will require updated data which demonstrates that the proposed project is justified by activity at the time, or by activity that would directly result from the implementation of the proposed project. This ensures that available funding is directed towards critical airport projects throughout the U.S.

3.3 Historical and Baseline Activity

Many elements compose the broad definition of GA activity. In simplest terms, GA includes all segments of the aviation industry except those conducted by scheduled commercial air carriers and the U.S. military. GA activities may include pilot training, 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 within the airport traffic pattern, or those that occur within sight of the airport. Local operations are most often associated with training activity and flight instruction (e.g., touch-and-goes). Itinerant operations are arrivals or departures that do not remain within the airport traffic pattern and/or that originate from another airport. 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 takeoff plus one landing) and are deemed local operations. Itinerant operations are typically comprised of private, business/corporate, and air taxi flight activity, but may also include law enforcement and medical flights.

As mentioned, the ATCT at BKV opened on October 15, 2012 and therefore a full year of activity data was available for 2013. According to records from the FAA's Air Traffic Activity Data System (ATADS) database, the ATCT recorded a total of 46,275 operations in 2013, of which 47.52 percent were itinerant operations and 52.48 percent were local operations. Because the ATCT is only open 15 hours a day, that total does not account for operations that occurred when the ATCT was closed between 10:00 p.m. and 7:00 a.m. Therefore, IFR flight plan activity data, or operations that pilots file with the FAA when they intend to fly within IFR controlled airspace, was reviewed to determine the percentage of IFR operations that occurred when the ATCT was closed in 2013, which equated to 7.64 percent. That percentage was then utilized to determine that an additional 3,828 operations may have not been counted in 2013, thus resulting in an estimated total of 50,103 operations for BKV in the baseline year (refer to **Table 3-1**). Other historical activity data was obtained from the FAA's 2013 Terminal Area Forecast (TAF) for BKV as well as the FAA's Traffic Flow Management System Counts (TFMSC) database. The number of operations by aircraft type in 2013 was determined by first obtaining the number of jet operations from the FAA's TFMSC database; thereafter, the number of single-engine piston, multi-engine piston, turboprop, and jet operations were distributed based on their percentage of the based aircraft fleet at BKV.

Table 3-1
2013 Baseline Activity for BKV

Operations								
Itinerant (IT) Operations				Local (LOC) Operations				Total Operations
Civilian	Military	Total	IT %	Civilian	Military	Total	LOC %	
22,073	1,735	23,808	47.52%	20,136	6,159	26,295	52.48%	50,103

Operations by Aircraft Type				
SEP	MEP	Turboprop	Jet	Helicopter
37,871	3,607	2,404	1,412	4,809

Based Aircraft by Aircraft Type				
SEP	MEP	Turboprop	Jet	Helicopter
176	126	12	8	14

Sources: FAA ATADS database, FAA TFMSC database, airport records, and Michael Baker Jr., Inc., 2014.

FAA 2013 Terminal Area Forecast (2013 TAF)

Each year, the FAA develops activity forecasts for U.S. airports as part of the TAF, which is used to determine long-term planning and budgeting needs for aviation infrastructure. The most recent 2013 edition of the TAF presents historical activity records back to 1990 and forecasts through the year 2040. The TAF values are presented in **Table 3-2** and were not adjusted to reflect actual baseline operations and based aircraft data in 2013. Because the ATCT did not open until October 2012, there is little reliability to the operations numbers prior to 2013. The most important aspect of the TAF is the projected annual growth rates during the planning period. For example, the TAF projects an AAGR of 2.27 percent for total operations between 2013 and 2033 and a slight decline in the ratio of local operations to total operations. Those types of characteristics were considered as part of the operations forecasting effort in this MPU. The 2013 TAF projects based aircraft to increase at an AAGR of 1.48 percent from 2013 to 2033, with the strongest growth anticipated for jets.

Table 3-2
2013 TAF for BKV (1990-2013)

Operations									
Year	Itinerant (IT) Operations				Local (LOC) Operations				Total Operations
	Civilian	Military	Total	IT %	Civilian	Military	Total	LOC %	
1990	21,430	150	21,580	46.11%	25,220	0	25,220	53.89%	46,800
2000	21,800	150	21,950	46.26%	25,500	0	25,500	53.74%	47,450
2010	33,500	4,500	38,000	48.25%	40,000	750	40,750	51.75%	78,750
2013	18,683	1,795	20,478	46.58%	18,271	5,218	23,489	53.42%	43,967
2033	31984	1,958	33,942	49.32%	29,191	5,692	34,883	50.68%	68,825
AAGR	2.72%	0.44%	2.56%	0.29%	2.37%	0.44%	2.00%	-0.26%	2.27%

Based Aircraft						
Year	SEP	Jet	Multi	Helicopter	Other	Total
1990	78	2	18	6	0	104
2000	85	2	8	5	3	103
2010	107	15	13	6	0	141
2013	112	15	13	8	13	161
2033	125	39	13	26	13	216
AAGR	0.55%	4.89%	0.00%	6.07%	0.00%	1.48%

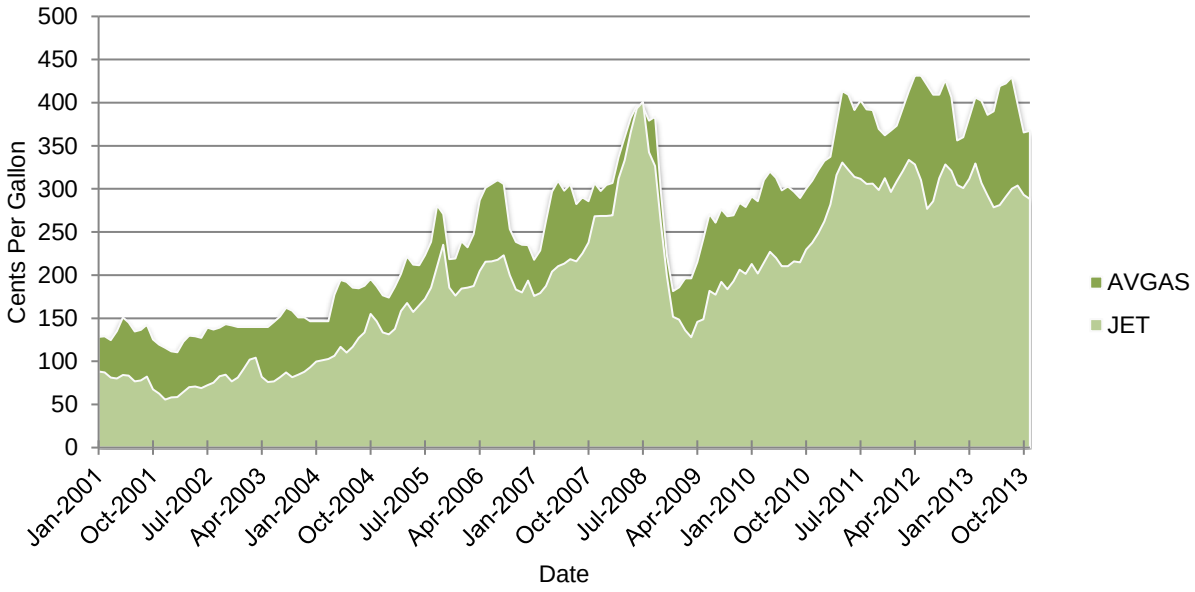
Source: FAA 2013 TAF.
AAGR – Represents the average annual growth rate from 2013 to 2033.

3.4 Factors and Opportunities Affecting Activity Levels

This section describes past and present trends that may influence BKV's operations and based aircraft levels. As part of any forecasting effort, the FAA recommends the identification of historical factors that represented turning points for the U.S. aviation industry such as the terrorist attacks on September 11, 2001, sharp fuel price increases after Hurricane Katrina damaged Gulf Coast refineries in August 2005 (refer to **Figure 3-1**), and the economic recession of the late 2000s. Although some of those factors were impossible to predict, their resulting consequences had considerable impacts on aviation activity throughout the U.S. Local trends are also important because they provide airport-specific information that can be used to support the selection of preferred forecasts. The following trends were considered in this analysis:

- Economic Conditions
- Airport-Specific Factors
- FAA Next Generation Air Transportation System (NextGen)

Figure 3-1
Historical Wholesale Price of Aviation Fuel (2011-2013)



Source: U.S. Energy Information Administration.

Economic Conditions

As shown in **Figure 3-2**, BKV is located in Hernando County which is part of the Tampa-St. Petersburg-Clearwater Metropolitan Statistical Area (MSA) that also includes Hillsborough, Pasco, and Pinellas Counties. **Table 3-3** presents historical and forecast population data for Hernando County, the MSA, the entire state of Florida, and the U.S. Compared to the MSA, state, and U.S., Hernando County experienced a higher AAGR in population between 2000 and 2013 and the trend is projected to continue through 2018. Although this represents only one indicator of economic growth, the nearly 33 percent increase in the county's population from 2000 to 2013 is probably one of many factors that contributed to the growth in based aircraft and flight plan activity during the same timeframe. As the population is expected to continue to increase in the county, it should be

reasonable to expect that continued based aircraft and operational growth would occur at BKV. This may be particularly evident by the high number of large-scale housing developments that are being constructed in the county, many of which provide more affordable options than the higher population counties to the south. Furthermore, projects that provide improved access between Hernando County and Hillsborough, Pasco, and Pinellas Counties, such as the previous construction of the Suncoast Parkway and the current widening of the Veterans Expressway, may also result in continued population and economic growth in Hernando County. Additional economic considerations are presented in the Business Plan that was conducted in conjunction with this MPU.

Table 3-3
Historical and Forecast Population (2000-2018)

Year	County	MSA	State	U.S.
2000	130,809	2,385,998	15,963,334	281,302,576
2010	172,778	2,783,243	18,801,310	308,725,722
2013	173,344	2,879,531	19,380,009	315,024,374
2018	189,174	3,065,408	20,714,390	327,511,109
AAGR1	2.19%	1.46%	1.50%	0.87%
AAGR2	1.76%	1.26%	1.34%	0.78%

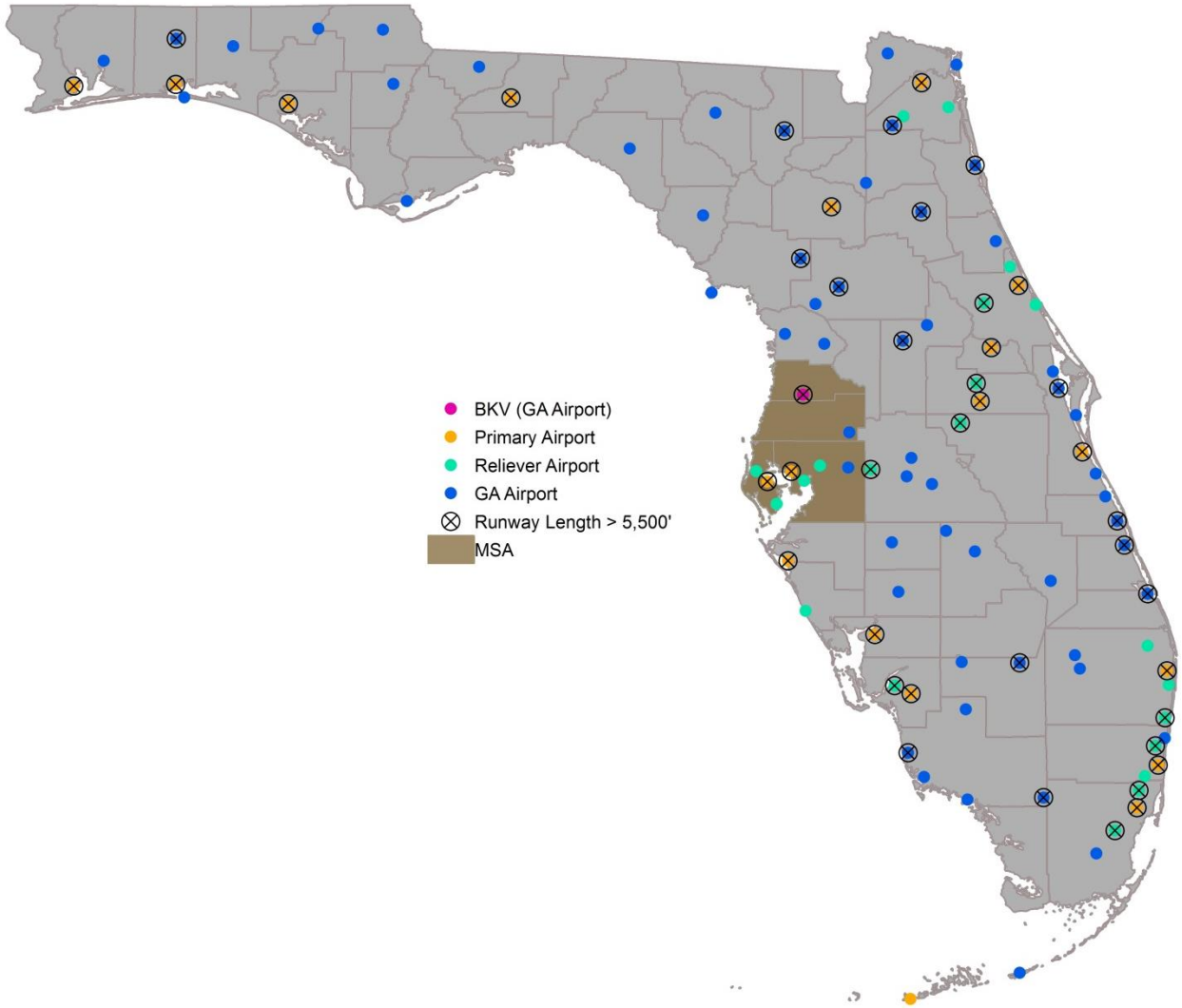
Source: Alteryx, Inc., 2014.
AAGR1 – Represents the average annual growth rate from 2000 to 2013.
AAGR2 – Represents the average annual growth rate from 2013 to 2018.

Airport-Specific Factors

Much of the growth at BKV may also be attributed to airport-specific factors. Since the previous master plan was completed, a second Fixed Base Operator (FBO) facility and an ATCT was constructed, and several industrial/commercial properties were also constructed on the airport property. The airport is also considering additional pursuits that may generate additional activity at BKV including a Maintenance, Repair, and Overhaul (MRO) facility that could accommodate narrow-body commercial jets (e.g., Boeing 737s) and a potential U.S. Customs and Border Protection (CBP) facility to provide clearance services for international arrivals. The county also plans to improve access to developable portions of the airport property by constructing new roads and infrastructure. The airport is also well-maintained and has been recognized by FDOT as General Aviation Airport of the Year three separate times. Subsequently, the airport is viewed as a key economic asset within Hernando County and there has been and continues to be a strong investment in the facility to make it attractive for growth opportunities.

Figure 3-2 also illustrates the airports in Florida that are part of the FAA's National Plan of Integrated Airport Systems (NPIAS), which includes airports that a critical to the nation's aviation system and are therefore eligible to receive Airport Improvement Program (AIP) grants. As shown, the three counties that border Hernando County (Pasco to the south, Citrus to the north, and Sumter to the east) do not have runways with lengths greater than 5,500 feet, which is often viewed as a minimum requirement for regular jet activity. The three NPIAS airports in those surrounding counties also do not have ILS approaches or ATCTs. Consequently, BKV already has the facilities and services available to continue to attract corporate aviation activity within the area.

Figure 3-2
NPIAS Airports in Florida



Source: Michael Baker Jr., Inc., 2014.

FAA Next Generation Air Transportation System (NextGen)

According to the FAA's June 2013 NextGen Implementation Plan, NextGen includes a series of improvements to the national aviation system that are intended to make air travel more safe, convenient, and dependable. By investing in new technologies and replacing aging systems, NextGen initiatives are focused on improving schedule predictability, reducing environmental impacts, flying more direct routes, limiting ground holding, better circumventing poor weather, providing better approaches and access to airports, and improving safety for accident avoidance. The FAA's investment in NextGen initiatives should help to improve access and approach capability for airports around the U.S. At GA airports such as BKV, the benefits of NextGen technologies are becoming more and more apparent with the rollout of Localizer Performance with Vertical Guidance (LPV) approaches that provide horizontal and vertical course guidance to aircraft via Global Positioning System (GPS). Through the recommendations of this MPU and the FAA's ongoing

NextGen initiatives, it is anticipated that BKV will continue to become more accessible for corporate aircraft traffic and instrument activity.

3.5 Annual Operations Forecast

In order to illustrate a range of growth scenarios during the 20-year planning period of a master plan, the FAA recommends the consideration of several operations forecasting methods. The FAA report, *Forecasting Aviation Activity by Airport*, suggests forecasting methods that include regression analysis, review of historical trends and growth rates, Operations Per Based Aircraft (OPBA), and others. Often times, forecasting methods that utilize regression or other statistical analyses require several years of historical activity records in order to determine if a reliable correlation between past activity and other variables can be determined. Because only one full year of ATCT records were available at the time of this writing, it was not possible to analyze such statistical trends for BKV. For that reason, the operations forecasting effort included an evaluation of several growth rates for national, state, and local factors. Descriptions of the operations forecasting methods that were considered for BKV are provided below and the resulting forecasts are shown in **Table 3-4** and **Figure 3-3**.

- **FAA Terminal Area Forecast (TAF) –** The 2013 TAF indicates that total operations at BKV will increase at an AAGR of 2.27 percent between 2013 and 2033. The 2.27 percent AAGR was utilized to calculate the TAF forecast for BKV (i.e., beginning with the 2013 baseline value, each forecast year was increased by 2.27 percent over the previous year). Of the forecasting methods that were evaluated, the TAF has the second highest AAGR.
- **FAA Aerospace Forecast –** The FAA also produces annual forecasts of nationwide aviation activity which are presented in the FAA Aerospace Forecast document. The most recent edition covers a forecast period between 2013 and 2033. For total general aviation hours flown during the forecast period, the FAA forecasts an AAGR of 1.50 percent. The 1.50 percent AAGR was applied to determine the FAA Aerospace Forecast for BKV.
- **FAA TFMSC Forecast –** The FAA's TFMSC database includes records of historical flight plan activity for BKV that date back to 2000. Between 2000 and 2013, flight plan activity increased at an AAGR of 3.23 percent. Although that AAGR is higher than any of the others mentioned in this section, it represents one of the few historical activity records where several years of data were available and was therefore used to forecast total activity for BKV. It is recognized that flight plan activity typically is associated with itinerant IFR operations, but the growth rate was utilized for all activity in order to evaluate a potential higher growth scenario.
- **FDOT GA Operations Forecast –** The FDOT Aviation and Spaceports Office also produces a forecast for public airports in Florida. In the most recent forecast, FDOT projects operations to increase at an AAGR of 1.35 percent between 2013 and 2032. The FDOT forecast utilized more accurate baseline numbers for 2013 than the Continuing Florida Aviation System Planning Process (CFASPP) forecast, which forecasted activity between 2009 and 2029 and was developed prior to the construction of the ATCT. As such, the FDOT's 1.35 AAGR was employed to forecast activity herein.
- **Population Forecast –** Prior to events such as the terrorist attacks that occurred on September 11, 2001, Hurricane Katrina in 2005, and the economic recession between 2007 and 2009, correlations between population and operations were commonly utilized to conduct aviation forecasts. In the years since 2009, the airport experienced strong growth in flight plan activity while Hernando County also experienced some minimal population growth.

Assuming that future growth in total operations will be consistent with the anticipated population growth, the population forecast utilized the 1.75 percent AAGR that was forecast for Hernando County between 2013 and 2018.

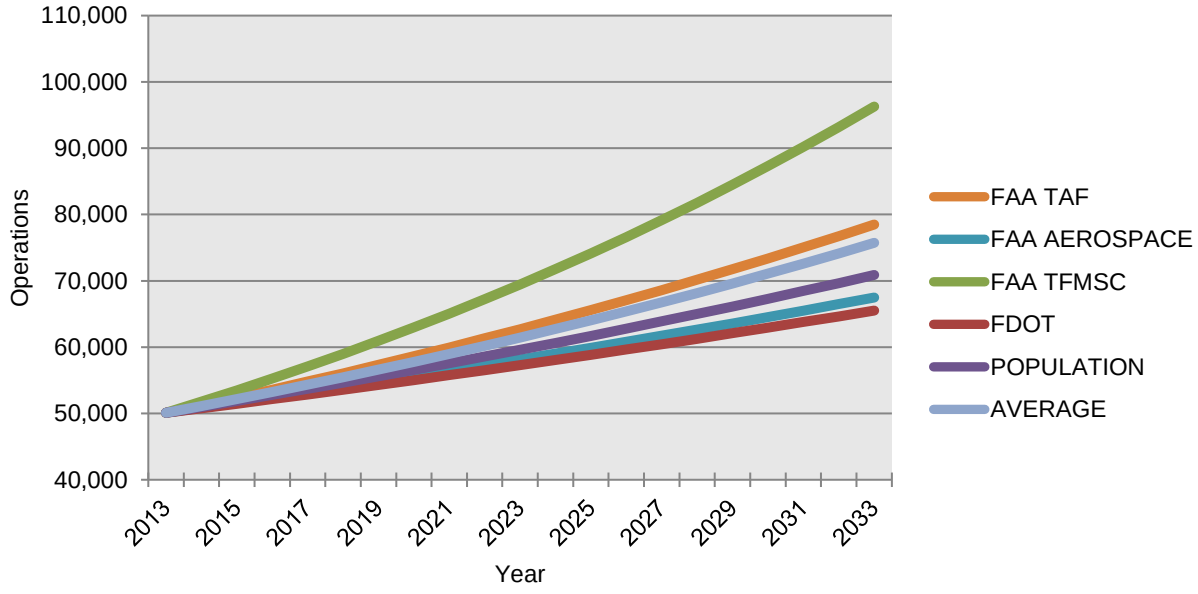
- **Average of Forecasting Methods –** The five forecasting methods above utilized different sources and techniques to develop forecasts for BKV which considered local, regional, and nationwide trends. Because overlapping factors may affect BKV's activity levels, the last forecasting method consists of an average of the five methods. The resulting forecast increases BKV's operations at an AAGR of 2.09 percent from 50,103 in 2013 to 75,731 by 2033.

Table 3-4
BKV Operations Forecasting Methods

Year	FAA TAF	FAA Aerospace	FAA TFMSC	FDOT	Population	Average
2013	50,103	50,103	50,103	50,103	50,103	50,103
2018	56,054	53,975	58,991	53,577	54,643	55,448
2023	62,711	58,146	69,455	57,293	59,595	61,440
2028	70,159	62,640	81,776	61,266	64,995	68,167
2033	78,492	67,481	96,283	65,515	70,884	75,731
AAGR	2.27%	1.50%	3.32%	1.35%	1.75%	2.09%

Source: Michael Baker Jr., Inc., 2014.
AAGR – Represents the average annual growth rate from 2013 to 2033.

Figure 3-3
BKV Operations Forecasting Methods (2013-2033)



Source: Michael Baker Jr., Inc., 2014.

Recommended Forecast

Several forecasting methods were considered while determining the recommended forecast for BKV that utilized various growth rates from the FAA, FDOT, and other sources. Because there is no way of determining exactly what types of activity levels may occur at BKV in 2033, it was important to select a forecast that would allow the airport to plan for improvements if and when they are needed, but that represented a conservative scenario considering some of the declines in nationwide general aviation activity since the early 2000s. Therefore, the average of the five forecasting methods was selected which increases total operations by 2.09 percent from 50,103 operations in 2013 to 75,731 operations by 2023. Although the associated growth is slightly less than the TAF, it provides a balanced scenario that is still stronger than the population growth expectations for Hernando County, the FAA Aerospace Forecast for the entire U.S., and FDOT's forecast for BKV.

3.6 Itinerant and Local Operations

Table 3-5 presents the itinerant and local operations forecast for both civilian and military activity during the planning period. Military activity was held steady in the forecast years due to the sensitive nature associated with future military plans and also because of recent announcements by the federal government regarding defense spending cuts. A slight increase in the ratio of itinerant operations to total operations was forecast, increasing the share of itinerant operations from 47.52 percent in 2013 to 51.47 percent by 2033, which is consistent with the growth projected in the 2013 TAF for BKV and anticipated trends at towered airports (as determined from the FAA Aerospace Forecast Fiscal Years 2013-2033).

Table 3-5
Itinerant and Local Operations Forecast (2013-2033)

Operations									
Year	Itinerant (IT) Operations				Local (LOC) Operations				Total Operations
	Civilian	Military	Total	IT %	Civilian	Military	Total	LOC %	
2013	22,073	1,735	23,808	47.52%	20,136	6,159	26,295	52.48%	50,103
2018	25,144	1,735	26,879	48.48%	22,410	6,159	28,569	51.52%	55,448
2023	28,650	1,735	30,384	49.45%	24,897	6,159	31,056	50.55%	61,440
2028	32,656	1,735	34,391	50.45%	27,618	6,159	33,777	49.55%	68,167
2033	37,242	1,735	38,977	51.47%	30,596	6,159	36,754	48.53%	75,731
AAGR	2.65%	0.00%	2.50%	0.40%	2.11%	0.00%	1.69%	-0.39%	2.09%

Source: Michael Baker Jr., Inc., 2014.
Note: Totals may not add correctly due to rounding.
AAGR – Represents the average annual growth rate from 2013 to 2033.

3.7 Operations by Aircraft Type Forecast (Fleet Mix Forecast)

Airfield design standards are determined based on the most demanding aircraft that regularly operates at the airport, which is referred to as the critical or design aircraft. The FAA defines regular activity as at least 500 annual operations. As shown in **Table 3-6**, with 1,412 jet operations in 2013, it is likely that jets are the most demanding type of aircraft that regularly operate at BKV; however, larger Lockheed C-130 turboprops that are flown by the military may also contribute to the design requirements for the airport. The forecast of operations by aircraft type was conducted as follows:

- **Single-Engine Pistons –** The forecast of single-engine piston operations consisted of the remainder of total operations after the forecasts below were calculated.

- **Multi-Engine Pistons –** The percentage of multi-engine piston operations to total operations (7.41 percent) was held stable throughout the planning period.
- **Turboprops –** Turboprop operations were forecast to increase at an AAGR of 2.10 percent during the planning period, which represents the FAA Aerospace Forecast Fiscal years 2013-2033 projected growth rate for GA turboprop hours flown between 2012 and 2033.
- **Jets (General Aviation) –** Jet operations were forecast to increase at an AAGR of 4.30 percent during the planning period, which represents the FAA Aerospace Forecast Fiscal years 2013-2033 projected growth rate for GA jet hours flown between 2012 and 2033. The stronger growth rate for jet operations was selected because of the FAA's growth expectations for based jets at BKV as well as the strong growth in based jets that has occurred at BKV.
- **Jets (Commercial) –** As explained within the critical aircraft forecast (following section), the airport has recently entered into a confidential agreement with a cargo operator to investigate the feasibility of establishing an air cargo operation at BKV in the future. Therefore, in order to adequately plan for that potential, it was assumed that 500 commercial-sized jets (e.g., Boeing 757 or 767) would operate at the airport by 2018 and a small increase in operations would occur in each year of the forecast period.
- **Helicopters –** The percentage of helicopter operations to total operations (3.26 percent) was held stable throughout the planning period.

Table 3-6
Operations by Aircraft Type Forecast (Fleet Mix Forecast) (2013-2033)

Year	Total Operations	SEP	MEP	Turboprop	Jet (GA)	Jet (Commercial)	Helicopter
2013	50,103	37,871	3,607	2,404	1,412	0	4,809
2018	55,448	41,255	3,978	2,668	1,743	500	5,304
2023	61,440	45,556	4,392	2,960	2,151	526	5,856
2028	68,167	50,353	4,853	3,284	2,655	552	6,470
2033	75,731	55,707	5,367	3,644	3,277	580	7,156
AAGR	2.09%	1.95%	2.01%	2.10%	4.30%	N/A	2.01%

Source: Michael Baker Jr., Inc., 2014.
Note: Totals may not add correctly due to rounding.
AAGR – Represents the average annual growth rate from 2013 to 2033.
SEP – Single-Engine Piston MEP – Multi-Engine Piston

3.8 Critical Aircraft Forecast

According to FAA Order 5100.38C, Airport Improvement Program Handbook, "a critical design aircraft is that airplane using (or is highly likely to use) the airport on a regular basis. A regular basis is at least 500 annual itinerant operations." At this time, the most demanding aircraft types that conduct at least 500 annual itinerant operations at BKV consist of medium-sized corporate jets (e.g., Citations, Learjets, and Hawkers). The airport also receives occasional operations by larger corporate jets (e.g., Gulfstreams and Challengers) and is considering providing U.S. Customs and Border Patrol (CBP) services in order to attract additional corporate aviation and international business opportunities. Furthermore, according to Airport Traffic Control Tower (ATCT) personnel, the airport also received approximately 200 operations by Lockheed C-130 Hercules turboprops in 2013. ATCT personnel indicated that the U.S. Coast Guard conducts C-130 training exercises as often as twice a month, the U.S. Air Force conducts C-130 parachute training operations at BKV approximately once a quarter, and the U.S. Army also conducts C-130 operations at BKV. Since the previous master plan, a new tenant that develops specialized C-130 technologies, Airdyne Aerospace,

Inc., also moved into a facility at BKV. Therefore, the airport has several current and potential opportunities for continued growth in C-130 operations during the planning period.

The previous two master plans and the CFASPP also identified the potential for future air cargo growth at BKV using larger commercial aircraft. The airport recently designed a customizable shell for an Aviation Services Facility (ASF) that can accommodate commercial aircraft such as the Boeing 737-800 and the Airbus A320. The ASF may be utilized as a facility for Maintenance, Repair, and Overhaul (MRO) activities, cargo processing, based aircraft storage, or any other aviation-related function. Consequently, after the ASF is constructed, it is anticipated that larger commercial aircraft may operate at BKV.

The previous master plan identified a Runway Design Code (RDC) of D-IV for Runway 9-27 and an RDC of B-II for Runway 3-21, which is determined based on the Aircraft Approach Category (AAC – approach speed) and Airplane Design Group (ADG – wingspan) of the critical aircraft (refer to **Table 3-7**). Of the 1,412 jet operations that occurred in 2013 at BKV, 953 were conducted by jets with approach speeds of 121 knots or more (i.e., C and greater approach speeds). Therefore, the existing RDC for Runway 9-27 was determined based on a combination of the following critical aircraft:

- **Bombardier Challenger 600 Corporate Jet –** This RDC C-II jet frequently operates at BKV and was used to determine the AAC for Runway 9-27 (i.e., C or D).
- **Lockheed C-130 Hercules –** This RDC C-IV military turboprop also frequently operates at BKV and was used to determine the ADG for Runway 9-27 (i.e., IV). Although only 200 C-130 operations occurred at BKV in 2013, this military aircraft has historically been identified as the critical aircraft for Runway 9-27 and there may be a potential for increased activity during the planning period.

It is assumed that the future RDC for Runway 9-27 will also be C-IV or D-IV as larger commercial jets are expected to utilize the proposed ASF at BKV. The airport has also recently entered into a confidential agreement with a cargo operator to investigate the feasibility of establishing an air cargo operation at BKV in the future. Discussions are in the initial stages and the interested party envisions establishing a distribution center in support of Boeing 757 and 767 operations. In the next two to three years the proposed development could result in approximately 500 commercial aircraft operations annually.

The critical aircraft forecasts are presented in **Table 3-8**. As shown, the existing and forecast critical aircraft for Runway 9-27 consisted of a combination of several aircraft to produce an RDC of C/D-IV. A minimal growth rate of one percent was applied to the C-130 operations and future commercial jet operations (following the construction of the ASF or opening of a cargo facility in the 2018 timeframe) to allow the airport to continue to plan for that type of activity during the planning period. The RDC for Runway 3-21 was determined based on the next less demanding class of aircraft that regularly operates at BKV, which consists of smaller business jets and corporate turboprops that have an ARC of B-II. The features of these critical aircraft and associated RDCs are evaluated later in this report to determine long-term facility requirements for BKV.

Table 3-7
Runway Design Code (RDC)

Aircraft Approach Category (AAC)		Airplane Design Group (ADG)	
Category	**Approach Speed (Knots)**	**Group**	**Wingspan (Feet)**
A	<91	I	<49
B (3-21)	91 to <121	II (3-21)	49 to <79
C (9-27)	121 to <141	III	79 to <118
D (9-27)	141 to <166	IV (9-27)	118 to <171
E	>166	V	171 to <214
		VI	214 to <262

Source: Michael Baker Jr., Inc., 2014.

Table 3-8
Critical Aircraft Forecast

Runway	**Runway 9-27**			**Runway 3-21**	
Aircraft Type	Business Jet	C-130	Commercial Jet	Business Jet	Turboprop
RDC	C-I to C-III	C-IV	C-III to C-IV	B-I to B-II	B-I to B-II
Sample Aircraft	Challenger 600	C-130	Boeing 757	Lear 35	King Air 350
Year	**Critical Aircraft Operations**			**Critical Aircraft Operations**	
2013	953	200	0	459	2,204
2018	1,176	221	500	567	2,447
2023	1,452	244	526	699	2,716
2028	1,792	269	552	863	3,015
2033	2,212	297	580	1,065	3,346
AAGR	4.30%	2.00%	N/A	4.30%	2.11%

Source: Michael Baker Jr., Inc., 2014.
AAGR – Represents the average annual growth rate from 2013 to 2033.
RDC – Runway Design Code

3.9 Instrument Operations Forecast

According to the FAA report, Forecasting Aviation Activity by Airport, instrument operations consist of "arrivals, departures, and overflights conducted by an FAA approach control facility for aircraft with an Instrument Flight Rule (IFR) flight plan or special Visual Flight Rule (VFR) procedures." At BKV, IFR operations generally consist of approaches and departures by aircraft filing flight plans with the FAA, which included a total of 5,026 operations in 2013 or 10.03 percent of all operations, which was obtained from the FAA's TFMSC database. For this forecasting effort, it was assumed that the percentage of IFR operations to total operations would increase at 0.70 percent per year in accordance with the FAA's forecast of IFR GA aircraft at en route traffic control centers from the FAA Aerospace Forecast Fiscal Years 2013-2033. As shown in **Table 3-9**, this forecast results in instrument operations increasing from 5,026 operations in 2013 to 8,734 operations by 2033. It is anticipated that this forecast is consistent with the FAA's ongoing NextGEN improvements that are being conducted to improve access to airports and efficiency within the nation's airspace system.

Table 3-9
Instrument Operations Forecast (2013-2033)

Year	Total Operations	Instrument Operations	Instrument %
2013	50,103	5,026	10.03%
2018	55,448	5,760	10.39%
2023	61,440	6,609	10.76%
2028	68,167	7,592	11.14%
2033	75,731	8,734	11.53%
AAGR	2.09%	2.80%	0.70%

Source: Michael Baker Jr., Inc., 2014.
Note: Totals may not add correctly due to rounding.
AAGR – Represents the average annual growth rate from 2013 to 2033.

3.10 Peak Operations Forecast

Peak activity was calculated for the Average Peak Month (APM), Average Day Peak Month (ADPM), Average Day Peak Hour (ADPH), itinerant peak hour, and local peak hour. Peaking forecasts are conducted so that airports can plan for times when the highest concentration of activity occurs. **Table 3-10** presents the forecast of peaking activity for BKV and the methodology for each component of the peaking forecast is detailed below. These forecasts are typically used to determine apron area requirements and terminal sizing requirements. The demand for passenger services and potential peak hour passengers is presented in the following chapter.

- **Average Peak Month (APM) –** In 2013, FAA TFMSC data indicates that April was the peak month for instrument activity with 344 operations, which equated to 10.51 percent of annual instrument activity. That percentage was applied to calculate the APM throughout the planning period.
- **Average Day Peak Month (ADPM) –** An average month contains 30.42 days (365 ÷ 12). The ADMP was calculated by dividing the APM by 30.42.
- **Average Day Peak Hour (ADPH) –** When both itinerant and local operations occur simultaneously at BKV, the ADPH can represent a large portion of the ADPM. Although the exact ADPH value is difficult to quantify, it is estimated that peak hour activity may equate to 15 percent of ADPM activity at BKV.
- **Itinerant Peak Hour –** Itinerant peak hour operations were calculated according to the year-to-year share of itinerant activity from Table 3-5.
- **Local Peak Hour –** Local peak hour operations were calculated according to the year-to-year share of local activity from Table 3-5.

Table 3-10
Peak Operations Forecast (2013-2033)

Year	Total Operations	APM	ADPM	ADPH	Itinerant	Local
2013	50,103	5,266	173	26	12	14
2018	55,448	5,828	192	29	14	15
2023	61,440	6,457	212	32	16	16
2028	68,167	7,164	236	35	18	18
2033	75,731	7,959	262	39	20	19
AAGR	2.09%	2.09%	2.09%	2.09%	2.50%	1.69%

Source: Michael Baker Jr., Inc., 2014.
Note: Totals may not add correctly due to rounding.
AAGR – Represents the average annual growth rate from 2013 to 2033.

3.11 Based Aircraft Forecast

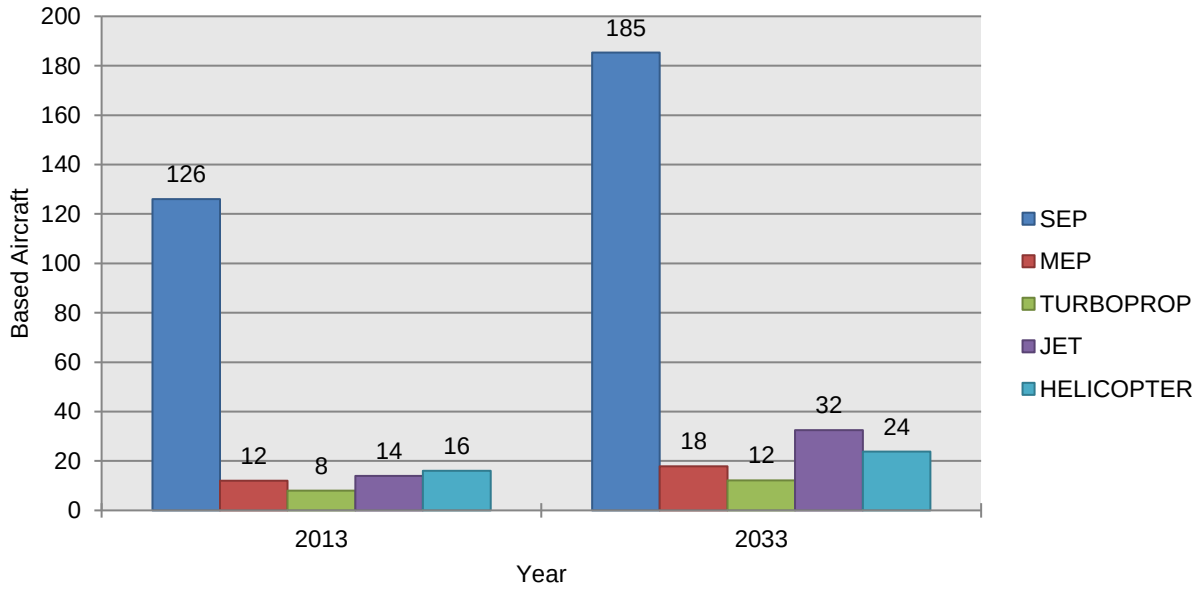
As shown in **Table 3-11** and **Figure 3-4**, the forecast of based aircraft by type employed the annual growth rates that were calculated for operations by aircraft type (refer to Table 3-6). This produced consistent growth scenarios for both operations and based aircraft, with the strongest growth anticipated for jets to be consistent with the FAA's projection in the 2013 TAF and the strong growth in based jets that has occurred in recent years at BKV. The forecast increases the number of based jets by 18 from 14 in 2013 to 32 by 2033. The number of total based aircraft is forecast to increase by 96 from 176 in 2013 to 272 by 2033. Single-engine pistons are expected to continue to comprise the majority of BKV's fleet mix throughout the planning period. It is noted that the airport currently has a waiting list for T-hangar storage, which is typically the preferred storage method for piston aircraft.

Table 3-11
Based Aircraft Forecast (2013-2033)

Year	Total Based Aircraft	SEP	MEP	Turboprop	Jet	Helicopter
2013	176	126	12	8	14	16
2018	196	139	13	9	17	18
2023	218	153	15	10	21	20
2028	243	168	16	11	26	22
2033	272	185	18	12	32	24
AAGR	2.19%	1.95%	2.01%	2.10%	4.30%	2.01%

Source: Michael Baker Jr., Inc., 2014.
Note: Totals may not add correctly due to rounding.
AAGR – Represents the average annual growth rate from 2013 to 2033.

Figure 3-4
Based Aircraft Forecast (2013-2033)



Source: Michael Baker Jr., Inc., 2014

3.12 Summary

Table 3-12 presents a summary of the forecasts for BKV. According to the FAA's June 2008 Review and Approval of Aviation Forecasts guidance, total operations and based aircraft forecasts are considered consistent with the TAF if they differ by less than 10 percent in the five-year forecast period and 15 percent in the 10-year forecast period. Both the total operations and based aircraft forecasts remain within those thresholds (as shown in red); although the operations forecast is lower than the 2013 TAF for BKV, the values calculated herein utilized actual baseline numbers and considered a wide variety of growth scenarios. Overall, the forecasts were developed in order to allow the airport to plan for facility improvements that are typical of an airport such as BKV, if and when they may be needed in the future.

Table 3-12
Airport Planning Forecasts
Forecast Levels and Growth Rates

Brooksville-Tampa Bay Regional Airport
Base Year: 2013

							Average Annual Compound Growth Rates				
	Base Yr. Level	**Base Yr. + 1 Yr.**	**Base Yr. + 5 Yrs.**	**Base Yr. + 10 Yrs.**	**Base Yr. + 15 Yrs.**	**Base Yr. + 20 Yrs.**	**Base Yr. + 1 Yr.**	**Base Yr. + 5 Yrs.**	**Base Yr. + 10 Yrs.**	**Base Yr. + 15 Yrs.**	**Base Yr. + 20 Yrs.**
	2013	**2014**	**2018**	**2023**	**2028**	**2033**	**2014**	**2018**	**2023**	**2028**	**2033**
Itinerant and Local Operations											
Itinerant (IT) Civilian	22,073	22,656	25,144	28,650	32,656	37,242	2.64%	2.64%	2.64%	2.65%	2.65%
IT Military	1,735	1,735	1,735	1,735	1,735	1,735	0.00%	0.00%	0.00%	0.00%	0.00%
IT Total	**23,808**	**24,390**	**26,879**	**30,384**	**34,391**	**38,977**	**2.45%**	**2.46%**	**2.47%**	**2.48%**	**2.50%**
IT %	47.52%	47.71%	48.48%	49.45%	50.45%	51.47%	0.40%	0.40%	0.40%	0.40%	0.40%
Local (LOC) Civilian	20,136	20,575	22,410	24,897	27,618	30,596	2.18%	2.16%	2.14%	2.13%	2.11%
LOC Military	6,159	6,159	6,159	6,159	6,159	6,159	0.00%	0.00%	0.00%	0.00%	0.00%
LOC Total	**26,295**	**26,734**	**28,569**	**31,056**	**33,777**	**36,754**	**1.67%**	**1.67%**	**1.68%**	**1.68%**	**1.69%**
LOC %	52.48%	52.29%	51.52%	50.55%	49.55%	48.53%	-0.36%	-0.37%	-0.38%	-0.38%	-0.39%
Total Operations	**50,103**	**51,124**	**55,448**	**61,440**	**68,167**	**75,731**	**2.04%**	**2.05%**	**2.06%**	**2.07%**	**2.09%**
TAF Comparison	**0.00%**	**-0.23%**	**-1.08%**	**-2.03%**	**-2.84%**	**-3.52%**					
Operations by Aircraft Type (Fleet Mix)											
SEP	37,871	38,615	41,255	45,556	50,353	55,707	1.96%	1.73%	1.86%	1.92%	1.95%
MEP	3,607	3,678	3,978	4,392	4,853	5,367	1.97%	1.98%	1.99%	2.00%	2.01%
Turboprop	2,404	2,455	2,668	2,960	3,284	3,644	2.10%	2.10%	2.10%	2.10%	2.10%
Jet (GA)	1,412	1,473	1,743	2,151	2,655	3,277	4.30%	4.30%	4.30%	4.30%	4.30%
Jet (Commercial)	0	0	500	526	552	580	N/A	N/A	N/A	N/A	N/A
Helicopter	4,809	4,904	5,304	5,856	6,470	7,156	1.97%	1.98%	1.99%	2.00%	2.01%
Instrument Operations											
Instrument Operations	5,026	5,164	5,760	6,609	7,592	8,734	2.75%	2.76%	2.78%	2.79%	2.80%
Peak Operations											
Average Peak Month (APM)	5,266	5,373	5,828	6,457	7,164	7,959	2.04%	2.05%	2.06%	2.07%	2.09%
Average Day Peak Month (ADPM)	173	177	192	212	236	262	2.04%	2.05%	2.06%	2.07%	2.09%
Average Day Peak Hour (ADPH)	26	26	29	32	35	39	2.04%	2.05%	2.06%	2.07%	2.09%
IT Peak Hour	12	13	14	16	18	20	2.45%	2.46%	2.47%	2.48%	2.50%
LOC Peak Hour	14	14	15	16	18	19	1.67%	1.67%	1.68%	1.68%	1.69%
Based Aircraft											
SEP	126	128	139	153	168	185	1.95%	1.95%	1.95%	1.95%	1.95%
MEP	12	12	13	15	16	18	2.01%	2.01%	2.01%	2.01%	2.01%
Turboprop	8	8	9	10	11	12	2.10%	2.10%	2.10%	2.10%	2.10%
Jet	14	15	17	21	26	32	4.30%	4.30%	4.30%	4.30%	4.30%
Helicopter	16	16	18	20	22	24	2.01%	2.01%	2.01%	2.01%	2.01%
Total Based Aircraft	**176**	**180**	**196**	**218**	**243**	**272**	**2.15%**	**2.16%**	**2.17%**	**2.18%**	**2.19%**
TAF Comparison	**0.00%**	**0.66%**	**3.39%**	**7.01%**	**10.89%**	**15.04%**					
Operational Factors											
Ops per Based Aircraft	285	284	283	282	280	279	-0.11%	-0.11%	-0.11%	-0.11%	-0.10%
Local Ops per Based Aircraft	149	149	146	142	139	135	-0.47%	-0.48%	-0.48%	-0.49%	-0.49%

Source: Michael Baker Jr., Inc., 2014.
Note: Totals may not add correctly due to rounding.
SEP – Single-Engine Piston MEP – Multi-Engine Piston