

CHAPTER THREE

Aviation Activity Forecasts

Introduction

Aviation activity demand at airports drives operational and infrastructure improvements. This chapter focuses on identifying existing demand and forecasting likely aviation activity during the next twenty years (2017-2037). This chapter will also identify and forecast critical aircraft demand, which along with the forecasts, will support infrastructure development.

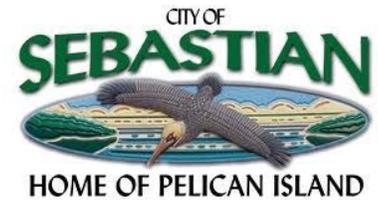
Since the Sebastian Municipal Airport (X26) exclusively supports general aviation operations, the following forecasts were developed:

- Aircraft Annual Operational Demand by Type
- Local and Itinerant Operational Demand
- Based Aircraft Demand
- Based Aircraft Fleet Mix
- On-Demand Air Taxi Enplanement Forecasts
- Total Aircraft Fleet Mix, and
- Critical Aircraft Demand.

Baseline activity utilized to determine all forecast demand was obtained from historical 2016/2017 data. Historical data was obtained from a variety of sources, and then compared to actual on-site survey data acquired in January 2017, April 2017 and July 2017.

Aviation activity may be influenced by economic factors, community goals, national and international trends as well as specific local and regional factors. Therefore, forecasts developed as part of this analysis were based upon more than historical data. Forecasts analyzed aircraft manufacturing, pilot training, new technology, and socio-economic trends (i.e. population, per capita income, and employment) as well as compared activity to other airports within the Treasure Coast Region. Further, on and off-airport

Sebastian Municipal Airport Master Plan Update



factors including, but not limited to, existing airport facilities, location to other airports, large population segments (e.g. flight schools) and business or tourism center, and community characteristics all impact to varying degrees historical and forecast aviation demand.

Forecasts are not to be construed with predictions of the future but rather an educated guess of future activity based on a variety of predictors, mathematical formulae, 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, or longer-term weather or climatological events. These caveats notwithstanding, the forecasts presented in this chapter employ a variety of methodologies which industry-accepted practices.

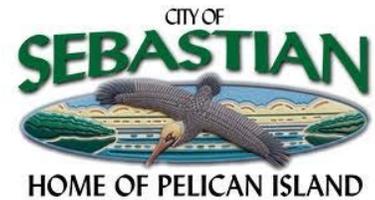
Historical and Current Air Traffic Activity

The first step in any forecast analysis is to gather existing historical operational and based aircraft data. Published sources of historical data for Sebastian Municipal Airport include the Airport Master Record, 5010 report, the FAA Terminal Area Forecasts (TAF), the Florida Department of Transportation Florida Aviation System Plan (FASP), FDOT Data and Forecasts, and Florida Aviation database (FAD), as well as previous planning documentation. Data from other sources typically used including Flight Aware and FAA Operations and Performance data were not available for X26, and historical data provided in the previous 2002 master plan was dated.

Since the Airport is not equipped with an air traffic control tower, the project team collected data through interviews with tenants and management, physical inventory of based aircraft, and manual counts of aviation activity. Aviation activity was recorded from 0700 to 1700, Monday, January 16 through Sunday, January 22, 2017, as well as Monday, April 10 through Sunday, April 16, 2017. Evening on-site inventory of activity was also performed on one evening during each week. The team was on-site past 2100, and noticed very little evening traffic (approximately 1 operation). Additional data was provided by Airport Management based upon onsite inventory of based aircraft in late June and early July 2017.

Discussions with both tenants and management revealed that April historically represents the peak month for aviation activity at the airport. Data collected included

Sebastian Municipal Airport Master Plan Update

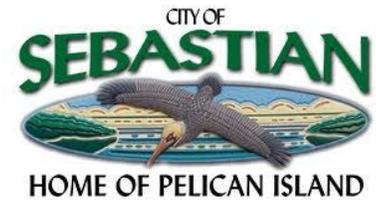


number of aircraft operations by aircraft type and user, number of touch & go operations, skydiving operations and jumps, on-demand air taxi operations as well as any other pertinent data that would assist in developing realistic forecasts of future activity and facility demand.

A comparison of historical operational data is provided in **Table 3-1**, and based aircraft is shown in **Table 3-2**. An important distinction in the recording of historical data and associated forecasts is that the FAA Terminal Area Forecast does not record operations or based aircraft associated with experimental, light sport aircraft or gliders (Other category), whereas the FDOT databases do. On-site survey of both based aircraft and operations did include experimental, light sport and glider activity.

| TABLE 3-1 HISTORICAL OPERATIONAL DATA | | | | | |
|--|---------------------------|---------------|---------------|--|------------------------------------|
| <i>Note: Items shown in Blue were each documents respective forecasts for those years</i> | | | | | |
| <i>¹FAA TAF data does not include operations associated with experimental, light sport and glider aircraft.</i> | | | | | |
| Fiscal Year | FAA TAF 2017 ¹ | FASP 2025 | FAD 2015 | Airport Master Record (submitted update 7/10/2017) | On-Airport Survey (All Operations) |
| 2007 | 37,240 | 47,800 | 47,800 | Not Available | |
| 2008 | 37,240 | 47,800 | 47,800 | Not Available | |
| 2009 | 37,240 | 37,240 | 37,240 | Not Available | |
| 2010 | 37,240 | 37,240 | 37,240 | Not Available | |
| 2011 | 37,240 | 37,240 | 37,929 | Not Available | |
| 2012 | 37,240 | 37,240 | 38,631 | Not Available | |
| 2013 | 37,240 | 37,240 | 39,346 | Not Available | |
| 2014 | 37,240 | 37,240 | 40,073 | Not Available | |
| 2015 | 37,240 | 37,929 | 40,815 | Not Available | |
| 2016 | 37,240 | 38,631 | 41,570 | 37,240 | |
| 2017 | 37,240 | 39,345 | 42,339 | 44,403* | 44,403 |
| <i>*Airport Master Record includes all operations</i> | | | | | |
| <i>Sources: 2017 FAA Terminal Area Forecast, FDOT 2025 Florida Aviation System Plan, 2015 Florida Aviation Database, 2016 Form 5010, Airport Master Record and TKDA 2017</i> | | | | | |

Sebastian Municipal Airport Master Plan Update



**TABLE 3-2
HISTORICAL BASED AIRCRAFT DATA**

*Note: Items shown in **Blue** were each documents respective forecasts for those years*
*¹FAA TAF data **does not** include operations associated with experimental, light sport and glider aircraft.*

| Fiscal Year | FAA TAF 2017 ¹ | FASP 2025 | FAD 2015 | Airport Master Record (submitted update 7/10/2017) | On-Airport Survey (7/10/2017) |
|-------------|---------------------------|-----------|---------------|--|-------------------------------|
| 2007 | 52 | 66 | 52 | Not Available | |
| 2008 | 52 | 66 | 52 | Not Available | |
| 2009 | 41 | 66 | 41 | Not Available | |
| 2010 | 39 | 66 | 39 | Not Available | |
| 2011 | 40 | 66 | 40 | Not Available | |
| 2012 | 42 | 66 | 42 | Not Available | |
| 2013 | 42 | 40 | 42 | Not Available | |
| 2014 | 40 | 36 | 40 | Not Available | |
| 2015 | 40 | 37 | 38 | Not Available | |
| 2016 | 40 | 38 | 38 | 38 | 62 |
| 2017 | 40 | 38 | Not Available | 59* | 59 |

*Note: *Airport Master Record shows 49 fixed wing aircraft (Single Engine, Multi-Engine, Twin, and Jet) and an additional 10 aircraft were represented by a combination of Light Sport, ultralights and powered parachute.*
Sources: 2017 FAA Terminal Area Forecast, FDOT 2025 Florida Aviation System Plan, 2015 Florida Aviation Database, 2016 Form 5010, 2016 Airport Master Record, Airport Management and TKDA 2017

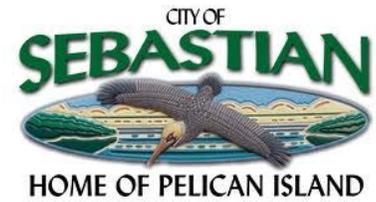
Historical data was used to develop likely based aircraft demand and activity forecasts for the twenty year planning period. As the most accurate data, FY 2017 historical data was used as the primary baseline for all airport forecasts.

Previous Forecasts of Demand

In addition to historical data, previous analyses of likely based aircraft and demand at X26 was reviewed. To see if any past trends would still be applicable. These forecasts in addition to various approved forecast methodologies (i.e. regression, share analysis, trend analysis, comparison to other airports, operations per based aircraft, etc.) were used in combination to determine likely operational and based aircraft demand in addition future fleet mix and critical aircraft demand. A summary of forecasts used as part of this study are illustrated in **Tables 3-3, Aviation Operational Forecasts,** and **3-4, Based Aircraft Forecasts.**

The 2000 Master Plan Update completed by The LPA Group Incorporated used the year 2000 as their baseline for forecasts through 2022. Since only key years (i.e. 2000, 2007,

Sebastian Municipal Airport Master Plan Update

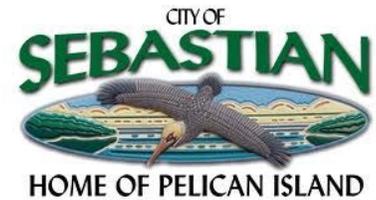


2012 and 2022) were provided for both operational and based aircraft demand, data was extrapolated to fill in the gap years. This data is highlighted in blue.

| TABLE 3-3 AVIATION OPERATIONAL FORECASTS | | | |
|---|---------------|---------------|--------------------------|
| Fiscal Year | FAA TAF 2017 | FASP 2025 | 2000 Airport Master Plan |
| 2000 | | | 26,237 |
| 2007 | | | 32,050* |
| 2012 | | | 36,974* |
| 2017 | 37,240 | 39,345 | 42,655 |
| 2018 | 37,240 | 40,073 | 43,893 |
| 2019 | 37,240 | 40,815 | 45,165 |
| 2020 | 37,240 | 41,570 | 46,475 |
| 2021 | 37,240 | 42,339 | 47,823 |
| 2022 | 37,240 | 43,122 | 49,210* |
| 2023 | 37,240 | 43,920 | 50,637 |
| 2024 | 37,240 | 44,732 | 52,106 |
| 2025 | 37,240 | 45,560 | 53,617 |
| 2026 | 37,240 | 46,403 | 55,172 |
| 2027 | 37,240 | 47,261 | 56,772 |
| 2028 | 37,240 | 48,135 | 58,418 |
| 2029 | 37,240 | 49,026 | 60,112 |
| 2030 | 37,240 | 49,933 | 61,856 |
| 2031 | 37,240 | 50,857 | 63,649 |
| 2032 | 37,240 | 51,797 | 65,495 |
| 2033 | 37,240 | 52,756 | 67,395 |
| 2034 | 37,240 | 53,732 | 69,349 |
| 2035 | 37,240 | 54,726 | 71,360 |
| 2036 | 37,240 | 55,738 | 73,430 |
| 2037 | 37,240 | 56,770 | 75,559 |
| AAGR 2017-2037 | 0.00% | 1.85% | 2.90% |

Sources: 2017 FAA TAF, 2025 FDOT FASP, 2000 X26 AMPU, LPA Group Inc., and TKDA 2017

Sebastian Municipal Airport Master Plan Update



| TABLE 3-4 BASED AIRCRAFT FORECASTS | | | |
|---------------------------------------|--------------|-----------|--------------------------|
| Fiscal Year | FAA TAF 2017 | FASP 2025 | 2000 Airport Master Plan |
| 2000 | | | 42 |
| 2007 | | | 51* |
| 2012 | | | 59* |
| 2016 | 40 | 38 | 66 |
| 2017 | 40 | 38 | 68 |
| 2018 | 40 | 39 | 70 |
| 2019 | 40 | 40 | 72 |
| 2020 | 40 | 41 | 75 |
| 2021 | 40 | 42 | 77 |
| 2022 | 40 | 43 | 79 |
| 2023 | 40 | 44 | 81 |
| 2024 | 40 | 45 | 84 |
| 2025 | 40 | 46 | 86 |
| 2026 | 40 | 47 | 89 |
| 2027 | 40 | 48 | 91 |
| 2028 | 40 | 49 | 94 |
| 2029 | 40 | 50 | 97 |
| 2030 | 40 | 51 | 100 |
| 2031 | 40 | 53 | 103 |
| 2032 | 40 | 54 | 106 |
| 2033 | 40 | 55 | 109 |
| 2034 | 40 | 56 | 112 |
| 2035 | 40 | 57 | 115 |
| 2036 | 40 | 59 | 119 |
| 2037 | 40 | 60 | 122 |
| AAGR 2017-2037 | 0.00% | 2.20% | 2.96% |

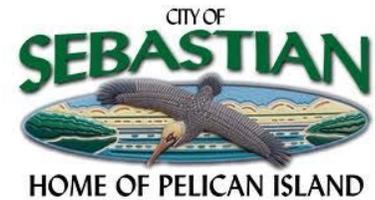
Sources: 2017 FAA TAF, 2025 FDOT FASP, 2000 X26 AMPU, LPA Group Inc., and TKDA 2017

Trends and Factors Affecting Activity

This section examines the effect of relevant trends on X26’s historical operations and based aircraft levels in order to establish a general mindset for the forecasting effort. For example, as shown in **Table 3-1**, operational demand from 2007 through 2017 fluctuated between 47,800 operations and 37,500 operations. During this time, several national and international negative and positive events occurred which could to a limited extent explain the fluctuations. In addition, statewide and local trends were also evaluated because they provide airport-specific information that can be used to support the selection of a preferred forecast. The following trends were considered in this analysis:

- U.S. Economic Conditions and National Aviation Trends

Sebastian Municipal Airport Master Plan Update



- Fluctuations in Oil Prices
- Pilot Demand
- New Technology, and
- Airport Level Service Factors

U.S. Economic Conditions and National Trends

Recent forecasts predict strong growth in both the aerospace and defense industries. Worldwide national spending on defense including the development of new aircraft and unmanned aerial aircraft technology to address internal and external threats is on the rise. This in addition to loosening of governmental regulations related to business development and growth, various national and local incentives and stable global gross domestic product (GDP) growth and lower commodity prices continues to fuel demand for corporate aircraft demand. Further, recent issues associated with the legacy carriers, strong travel demand, lower aircraft prices, as well as pilot demand and regulatory changes continues to drive growth in the small aircraft market segment.

According to the General Aviation Manufacturers Association (GAMA), GA aircraft demand remains favorable in the long-term. They forecast that the decrease in fixed wing piston aircraft will be offset by increases in both fixed wing and rotorcraft turbine, sport and experimental aircraft. Forecasts also continue to show that business turboprop and jet aircraft will remain strong for the next twenty-plus years.

The FAA is also in the process of upgrading the National Airspace System (NAS), national Air Traffic Control technology and procedures as well as airport pavement and other infrastructure. The new Administration has stated that it will support the rebuilding and expansion of America's infrastructure especially aviation infrastructure to support current and long-term demand. Therefore, possible changes in the regulatory environment especially related to Commercial and General Aviation airport funding is expected to drive growth within this market sector.

Fluctuations in Oil Prices

Fluctuations in oil prices not only impacts operations but aircraft fleet mix demands. General aviation operations in the United States alone represents more than 3 times commercial aviation activity. GA aircraft provide access to rural and remote communities, and are also the primary means of delivering other services including, but not limited to: aerial applications, photography, training, law enforcement, medivac,

Sebastian Municipal Airport Master Plan Update



disaster relief, etc. However, in reviewing data from 1999 through 2010 provided by the FAA and GAMA, GA aircraft declines were partially due to rising fuel and oil prices.¹ Other costs impacting aircraft operations include: maintenance, oil, engine overhaul, airframe, avionics, etc. However, fuel, when compared to other costs, usually represents the greatest percentage of total overall costs which correlates with hours of use. Since fluctuations in fuel costs are less predictable than other operating costs, predictions of likely aircraft demand over any significant period of time must consider elasticity of oil fluctuations and correlate its likely impacts on itinerant and based aircraft demand.

An interesting outcome of higher oil prices in addition to environmental concerns related to lead has led the GA and commercial aircraft manufacturing market to develop more fuel efficient engines and airframes as well as modifications (e.g. winglets) to existing aircraft which allow better fuel efficiency. This is especially true related to turboprop and turbofan aircraft. However, both Jet A, used by turbojet aircraft, and 100LL, used by piston engine aircraft, are impacted by fluctuations in oil prices.

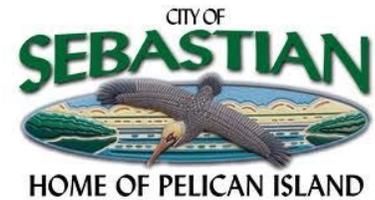
An analysis of fuel fluctuation impacts² showed that a 10 percent increase in the fuel cost ratio would decrease aircraft operations related to both piston and turboprop aircraft by 15 percent and 12 percent respectively. However, turbofan operations would increase. This illustrates that piston and turboprop aircraft are more sensitive to fuel costs than turbofan aircraft. Still when comparing turboprop to piston operations, it was found that piston operations were the most sensitive to fuel cost fluctuations. Based upon this data, aircraft manufacturers have and continue to develop more efficient turboprop and turbofan aircraft while demand for piston aircraft has been steadily decreasing.

The fuel analysis also considered fuel fluctuations and operations related to itinerant and local operations. Itinerant operations refer to operations of aircraft flying from one airport to another; whereas local operations usually remain within less than 20 miles of

¹ Federal Aviation Administration, & U.S. Department of Transportation. (2010). National Plan of Integrated Airport Systems (NPIAS).

² Hansman, J (PI), McConnachie, D. and Wollersheim, C., Massachusetts Institute of Technology; Elke, M., Hansen, M(PI), Chan, N., and Crépin, M., University of California at Berkley; and Li, T., Peterson, E (PI), and Trani, A. (PI), Virginia Tech. The Impact of Oil Prices on the Air Transportation Industry, National Center of Excellence for Aviation Operations Research, March 28, 2014, pp.1-161, p. 79.

Sebastian Municipal Airport Master Plan Update



the airport and within the traffic pattern. An analysis of fuel fluctuations to national local demand showed that an approximate “10% increase in (fuel) costs would result in about 4% decrease in local hours flown.”³ Itinerant aircraft operations allowed for greater flexibility. It was found that itinerant demand would not decrease until total operating costs reached a critical point for the aircraft and user. Once that tipping point is met, which is different for different type of aircraft and users, then itinerant operations were forecast to decrease.⁴

Pilot Demand

Boeing, Northrop Grumman, Bombardier and other manufacturing and educational organization continue forecast strong growth in both domestic and worldwide pilot demand for the next 20+ years. The **2016-36 Boeing: Pilot and Technician Outlook** and **Airbus Global Market Forecast: 2016-2035** both predict over 20 percent average annual demand for new pilots to support the North American Aviation Market. New pilot demand worldwide estimates over 40 percent average annual demand to support: new aircraft deliveries, new technology demands, pilot retirements, pilot attrition and pilot loss due to promotions.

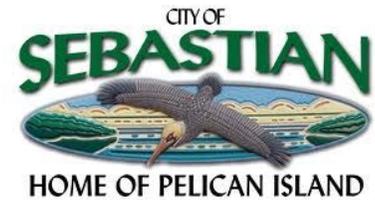
Since 2000, there was a steady decrease in the airport transport pilot (ATP) population primarily associated with pilot retirements, fewer students interested in pursuing an aviation career due to cost and limited job prospects, and other attrition issues (i.e. loss of medical, career change, and/or loss of certificate). Consequently, the resulting decline in pilot population indicates that pilots are leaving at a rate higher than the rate at which student pilots are becoming certified. According to **2016-36 Boeing: Pilot and Technician Outlook**, the North American market will need 216,000 new pilots in 2035 to accommodate demand. Worldwide demand will require over 680,000 new pilots to address pilot retirements, attrition, expanded aircraft fleets, new technology and commercial demand.

Further, as a result of several regional jet accidents, the National Transportation Safety Board (NTSB) recommended and FAA issued new pilot hourly and training requirements including: requiring first officers who fly US passenger and cargo aircraft to hold an Airline Transport Pilot (ATP) certificate. Similar requirements were adopted by the

³ Id at 79

⁴ Id.

Sebastian Municipal Airport Master Plan Update



European Aviation Safety Agency (EASA) and the International Civil Aviation Organization. Historically, regional jets were flown by less experienced, lower time pilots who had yet to acquire their ATP certification. The new rule now requires pilots to obtain: additional 50 hours of multi-engine flight experience and completion of a new FAA-approved training program; ground and flight training stall and upset training, which also includes increased simulator training; as well as additional training in more effective pilot monitoring requirements, enhanced runway safety procedures, and expanded crosswind operations.

The new rule, however, does make some allowances for pilots with less than 1500 hours flight time or who have not reached the age of 23 including: “military pilots with 750 hours total pilot time; graduates holding a Bachelor’s degree with an aviation major including 1,000 total flight hours; graduates with an Associate’s degree with an aviation major and 1,200 hours of flight time; or pilots who are at least 21 years old with 1,500 flight hours. These “restricted privileges” ATP certificate allows a pilot to serve as a co-pilot until he obtains the required 1,500 hours.⁵

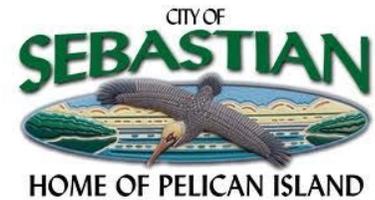
Due to X26’s proximity to a number of large flight training academies as well as some on-site pilot training operations, it is heavily used for private and commercial flight training. Historically, more than 80 percent of the Airport’s operations may be directly linked to aircraft flight training primarily from Flight Safety based at Vero Beach Regional Airport located approximately 12 miles south of X26. Therefore, flight training operations along with Sebastian Skydiving activities represent the largest components of local general aviation operations at X26. Therefore, based aircraft operations although important was not used as the only factor for determining local operational demand.

New Technology

The FAA defines NextGen as an “umbrella term for the ongoing transformation of the National Airspace System (NAS)... (and it) represents an evolution from a ground based system of air traffic control to a satellite based system of air traffic management.” According to the FAA’s *June 2013 NextGen Implementation Plan*, the shift to smarter, satellite based and digital technologies combined with new procedures will allow FAA to

⁵ 14 CFR Part(s) 61, 121, 135, 141, and 142, Pilot Certification and Qualification Requirements for Air Carrier Operations, FAA (DOT) Final Rule, August 1, 2013

Sebastian Municipal Airport Master Plan Update



more efficiently guide and track aircraft while enhancing safety, reducing delays, saving fuel, and reducing aircraft exhaust emissions.

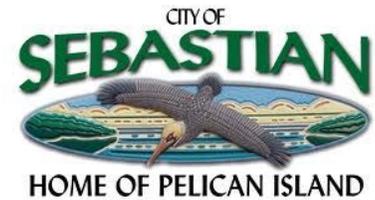
With the implementation of NextGen and increased use of global positioning system (GPS) technology, several non-precision instrument approaches, not less than ½ mile visibility, were installed at X26 on both Runway 5 and 23. The RNAV GPS approaches are based upon the Wide Area Augmentation System (WAAS) implemented approximately 10 years ago which uses satellite technology. Both Runways are equipped with non-precision Lateral Performance without Vertical Navigation (LP) and Lateral Navigation with Horizontal Guidance (LNAV). The LP approach uses WAAS satellite technology to provide horizontal guidance whereas LNAV uses FAA surveyed and approved lateral guidance. Both are typically used when terrain or obstructions will not allow installation of vertical guided approach (LPV). Both the LP and LNAV approaches require 1 nautical mile (NM) visibility to the end of the runway, but allow lower minimum decision altitudes (MDA) than a typical visual approach. Thus, allowing for greater use of the Airport during lower cloud cover and lighting conditions.

Therefore, availability of various navigational aids and non-precision and precision approach procedures does have and is likely to continue to have a positive impact on operational use of the Airport. Further, the implementation of NextGen and other satellite based approach systems, according to FAA, are expected to have a positive impact on aircraft operations especially among commercial and corporate activity due to operational cost savings as well as improved airport and terminal airspace capacity.

Other technology advances that may impact operations and infrastructure needs at X26 include increased use of light sport aircraft, federal approval of the Sport Aircraft license, and development and use of unmanned aerial system technology. Both FAA and manufacturers anticipate strong growth of light sport aircraft. These lower cost and easier to fly aircraft are anticipated to replace the older fixed wing piston aircraft. The increase in light sport aircraft as well as FAA approval of the Sport Aircraft license, which requires less training hours than a typical private pilot license, is expected to open the field up to more interested individuals for both recreational and limited business use.

Unmanned Aerial Systems (UAS) aircraft have exploded on the scene. UAS small aircraft have been used for various types of aerial photography, railroad and other infrastructure inspections, managing wildlife, law enforcement, firefighting, etc. in

Sebastian Municipal Airport Master Plan Update



addition to military uses. According to FAA, UAS aircraft will exceed the number of pilot operated aircraft as soon as 2019. In addition to demand for small UAS aircraft, there is ongoing development and demand for larger UAS, as small as a typical training aircraft (e.g. Cessna 172) and as large as a Boeing 767. Development of these aircraft will depend upon line of sight requirements, ability to fly over people and their safe integration into both the NAS and airport environments. Since demand for UAS technology at X26 is unknown, forecasts included this new technology under the “experimental” aircraft category.

Airport Level Service Factors

Airport level service factors represents facilities, infrastructure and services provided at an airport. These factors directly impact the type and number of operations that an airport serves. “For example, the operations of large aircraft usually require runways greater than 4,000 feet and good runway pavements. According to *Ghobrial, 1997*, the presence of a control tower could increase GA operations by greater than 253% and runway length greater than 4,000 feet would increase GA operations by approximately 52 percent.”⁶

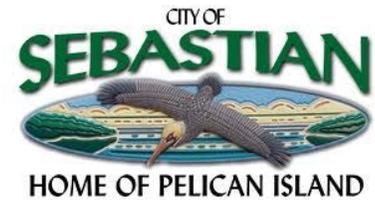
Other factors include the total number of runways available, runway length, airport elevation, location to City Center, type (asphalt or concrete) and condition of pavement, availability of ILS or precision approach equipment, Aircraft Maintenance and Powerplant repair station on airfield, on-site fuel facilities (self-service and full service), avionics shop, and other amenities. In addition the number of based aircraft will have a direct impact on the number of total airport operations. Similar other sized general aviation airports as identified by GAATA survey, more than 65 percent of local aircraft flown by local operations are performed by single-engine piston aircraft. Looking at historical data, because of X26’s heavy use for flight training, approximately 80 percent of local operations are related to single-engine operations.

Aviation Activity Forecasts

A variety of methodologies were used to develop the forecast of demand at X26. Historical data with the exception of transient military operations were validated using

⁶ Ghobrial, A. (1997). A model to forecast aircraft operations at general aviation airports. *Journal of Advanced Transportation*, 31(3), 311-323. doi: 10.1002/atr.5670310306

Sebastian Municipal Airport Master Plan Update



multiple source data. Historical aircraft operations, based aircraft and enplanement data was utilized to provide the baseline for all forecast methodologies.

Forecasting Methodologies

Regression Analysis

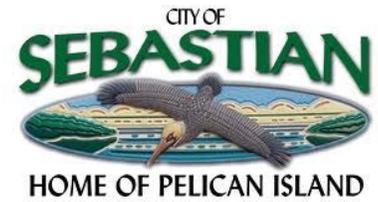
A regression analysis, a statistical model, which uses independent variables, such as population, income, and employment to determine a dependent variable such as passenger enplanements, operations and/or based aircraft. The relationship is estimated using at least 10 years of historical data for the independent and dependent variables. The explanatory power of the equation is measured by the R^2 statistic (called the coefficient of determination). An R^2 of 0 indicates that there is no statistical relationship between changes in the independent and dependent variables. R^2 values near 1.0 mean that there is a very strong statistical relationship. Forecasts of the independent variables are used in the regression equation to calculate forecast values for the dependent variable.

Single and Multi-variable regression analyses were developed to see if there was a strong correlation between various socio-economic variables and based aircraft, on-demand air taxi operations, general aviation operations and total airport operations. Historical observations based upon data available ranged from 5 to 20 years. **Table 3-5** shows the correlation between Sebastian Vero Beach MSA Population and Employment data to historical X26 operations and based aircraft. Correlations between these socio-economic factors and airport data were not strong, and, therefore, regression was not used to determine future operational and based aircraft demand.

Trend Analysis

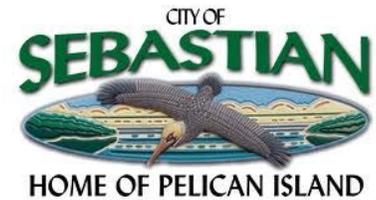
Trend analysis relies on projecting historical trends into the future using time as the independent variable. The trend forecast uses historical data to forecast future demand. It is one of the fundamental techniques used to analyze and forecast aviation activity. Trend analysis was used to determine long-term demand for both aircraft operations and based aircraft using historical Florida Airport Data and sponsor provided and on-site survey historical data.

Sebastian Municipal Airport Master Plan Update



Linear trend growth rates were also applied to the 2000 Airport Master Plan Forecast for the published forecast years of 2012 and 2022, and then applied this average annual growth rate from 2022 through 2037.

Sebastian Municipal Airport Master Plan Update



**TABLE 3-5
REGRESSION EVALUATION**

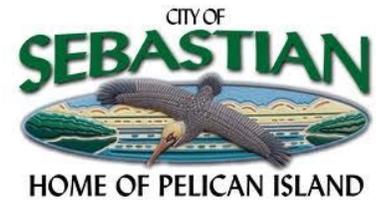
| Year | Population | Employment | Historical Operations | Based Aircraft |
|------|------------|-----------------|-----------------------|----------------|
| 2000 | 112,947 | 84,647.50 | 26,237 | 52 |
| 2001 | 115,235 | 85,722.40 | 26,237 | 52 |
| 2002 | 117,569 | 85,821.90 | 47,800 | 52 |
| 2003 | 119,951 | 86,790.70 | 47,800 | 52 |
| 2004 | 122,380 | 89,771.50 | 47,800 | 52 |
| 2005 | 124,859 | 93,373.10 | 47,800 | 52 |
| 2006 | 127,388 | 95,795.20 | 47,800 | 52 |
| 2007 | 129,969 | 95,979.40 | 47,800 | 52 |
| 2008 | 132,602 | 92,579.00 | 47,800 | 52 |
| 2009 | 135,288 | 86,788.00 | 37,240 | 41 |
| 2010 | 138,028 | 86,074.20 | 37,240 | 39 |
| 2011 | 139,072 | 87,022.90 | 37,240 | 40 |
| 2012 | 140,123 | 88,762.60 | 37,240 | 42 |
| 2013 | 141,183 | 90,989.60 | 37,240 | 42 |
| 2014 | 142,250 | 93,898.20 | 37,240 | 40 |
| 2015 | 143,326 | 97,121.30 | 40,815 | 38 |
| 2016 | 146,410 | 100,249.80 | 41,570 | 62 |
| 2017 | 148,778 | 101,553.04 | 44,403 | 59 |
| | | Pop. Intercept | 127689.0354 | 153187.9308 |
| | | Pop. Slope | 0.107087554 | -436.308047 |
| | | Pop. RSQ | 0.106987 | 0.079139891 |
| | | Emp. Intercept | 78955.88 | 77966.04 |
| | | Emp. Slope | 0.287398 | 275.0305 |
| | | Emp. RSQ | 0.192222 | 0.141625 |

Sources: University of Florida Bureau of Economic Business Research, U.S. Bureau of Labor Statistics Database, historical airport data from various sources, and TKDA, 2017

Share Analysis

Share analysis is used when a larger or more reliable higher level forecast is available. In this case, historical operational and based aircraft data was compared to forecasts developed by FDOT for all NPIAS airports within the Treasure Coast CFASPP Region as well as to Vero Beach Regional Airport’s twenty year forecast for pilot training. Using historical data for all airports, it was possible to determine the existing and likely share of the Treasure Coast market that Sebastian Airport would support. As noted earlier, demand for pilots is continued to remain strong for at least the next 10 to 15 years. The state supports extensive flight training as well as small aircraft manufacturing businesses; therefore, it was logical to assume that small aircraft manufacturing and

Sebastian Municipal Airport Master Plan Update



pilot training would likely remain major (i.e. < 50%) contributors to long-term airport demand.

Exponential Smoothing

Another methodology to determine forecasts of demand involves exponential smoothing. In exponential smoothing, older data is given progressively less importance and newer data is given greater importance in determining long-term demand. Exponential smoothing is also referred to as averaging, and is typically employed for short-term forecasts. Since this methodology requires at least three numbers and is only credible for determining short-term demand, it was not used as part of this forecast analysis.

Extrapolation

The extrapolation model of forecasts uses data that may be representative of the data to be forecast. This data could be from historical operations, analogous situations or field simulations. For X26, extrapolation was used in two ways: First, FASP average annual growth rates for the short (2017-2022), mid (2022-2027), and long-term (2027-2037) were applied to the actual historical data for 2017 to determine likely demand. The second extrapolation analysis applied Active GA and Air Taxi Hours (Table 29) average annual growth rates for the short, mid, and long term from the 2016-36 FAA Aerospace Forecasts to historical X26 data.

Operations per Based Aircraft

Operations per based aircraft (OPBA) uses a time series methodology to determine a correlation between historical based aircraft and operations at non-towered, general aviation airports. X26 supports significant flight training operations related to aircraft not based at Sebastian but at nearby airports, such as Vero Beach Regional, Melbourne International, and Treasure Coast International Airports. Therefore, operations per based aircraft may skew higher due to the impacts of flight training as well as repetitive skydiving activity at the airport. Historical operations per based aircraft are illustrated in **Table 3-6**.

Sebastian Municipal Airport Master Plan Update



| TABLE 3-6 HISTORICAL OPERATIONS PER BASED AIRCRAFT | | | |
|---|------------|---------------------|------------|
| Year | Operations | Based Aircraft | OPBA |
| 2007 | 47,800 | 52 | 919 |
| 2008 | 47,800 | 52 | 919 |
| 2009 | 37,240 | 41 | 908 |
| 2010 | 37,240 | 39 | 955 |
| 2011 | 37,240 | 40 | 931 |
| 2012 | 37,240 | 42 | 887 |
| 2013 | 37,240 | 42 | 887 |
| 2014 | 37,240 | 40 | 931 |
| 2015 | 37,240 | 38 | 980 |
| 2016 | 41,570 | 62 | 670 |
| 2017 | 44,403 | 59 | 753 |
| | | Median OPBA* | 885 |

**Note: The median OPBA factor based upon 2007 through 2017.
Sources: Airport Sponsor data, On-Site Surveys, 2017 Terminal Area Forecast, 2015 Florida Aviation Database, and TKDA*

Comparison to other X26 Forecasts

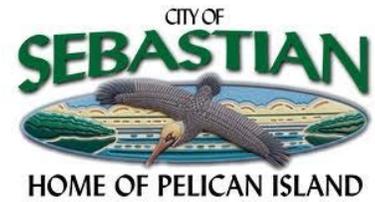
Both the FAA Terminal Area Forecast and Florida Aviation System Plan provide specific forecasts of likely operational demand and based aircraft at Sebastian Airport. These forecasts in addition to the various approved methodologies were used to determine realistic forecasts of likely demand over the next 20 years. Forecasts, however, are not predictions of the future but rather an educated guess based upon current variables. As a result, years shown in the following tables should not be construed to mean that operations will occur on that specific year, rather these time period represent planning activity triggers used to support infrastructure improvements at the airport.

Based Aircraft Demand

Several sources and forecast methodologies were used to determine likely based aircraft demand at X26. Based aircraft demand typically justifies apron and aircraft storage requirements. Based aircraft at X26 includes a combination of single-engine piston (SEP), multi-engine piston (MEP), turboprop (TP) and other (i.e. gliders and ultralights) aircraft. As noted in the inventory section,

- FY 2016 based aircraft include: 53 SEP, 5 MEP, 2 TP, and 2 Other (experimental, light sport, gliders, etc.) totaling 62 based aircraft.

Sebastian Municipal Airport Master Plan Update



- FY 2017 based aircraft include: 42 SEP, 4 MEP, 3 TP, 0 Jet, 0 Helicopters, 2 ultralights, 5 powered parachute, and 3 Light Sport.

Several infrastructure and aircraft storage facilities are in varying stages of design and construction and will likely be completed sometime in 2017 or early 2018. Therefore, based upon information provided by the Sponsor and current tenants and users, an increase of approximately 14 aircraft is anticipated in 2018. The sponsor and airport management are actively marketing the airport, and exploring adding facilities to attract more tenants. Further, business forecast information provided by current tenants revealed an average increase of between 1 to 3 aircraft bi or triennially. Applying exponential smoothing based upon the average of other forecasts, a growth rate of 1.50 percent was used to forecast mid and long-term demand. Considering short-term growth planned by existing and new tenants, this resulted in an average annual growth rate of approximately 2.72 percent for the planning period of 2017-37. This growth rate is in-line with previous forecasts of demand.

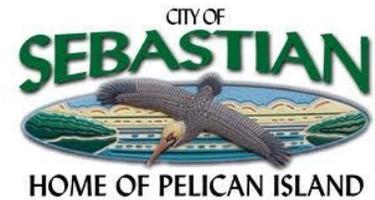
Key forecast years (2017, 2018, 2022, 2027, 2032, and 2037) are provided in Table 3-7. For a full annual breakdown of each based aircraft forecast, see **Appendix F** of this report.

| TABLE 3-7 BASED AIRCRAFT FORECAST | |
|--------------------------------------|-----------------|
| Year | Forecast Demand |
| 2017 | 59 |
| 2018 | 73 |
| 2022 | 80 |
| 2027 | 86 |
| 2032 | 93 |
| 2037 | 101 |
| AAGR 2017-37 | 2.72% |

Based Aircraft Fleet Mix

Aside from determining the number of based aircraft, it is also vital to determine the aircraft fleet mix to develop appropriately sized facilities. Understanding the future fleet mix allows airport management to develop facilities to accommodate various types of aircraft forecast to operate at the airport during the twenty-year planning period.

Sebastian Municipal Airport Master Plan Update

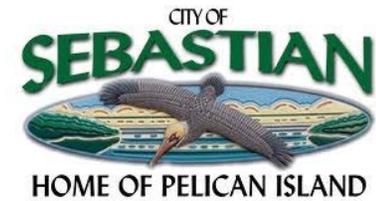


The future fleet mix was determined by studying the national fleet mix forecast and comparing it with the current based fleet mix at X26.

The FAA Aerospace Forecast (2016-2036) includes a fleet mix forecast for the nation as a whole; however, when compared to historical based aircraft data, inconsistencies were revealed. Since the FAA's forecast is representative of the entire country rather than specific to the types of activity that occur at X26, the FAA forecast could not be used to forecast the future based aircraft fleet mix. Still it is logical to assume that the fleet mix at X26 would remain somewhat consistent with prior years; however, it is also practical to assume that the FAA's forecast is also realistic in some aspects due to their consideration of new aircraft and industry trends.

Thus using historical fleet mix data, data provided by users and applying realistic trends, such as the decrease of multi-engine piston aircraft in favor of light turboprop, as outlined in the FAA Aerospace Forecast, forecasts of likely based aircraft demand are provided in **Table 3-8**. X26 supports experimental aircraft manufacturers and light sport aircraft operators in addition to traditional fixed wing aircraft. Discussions with on-airport tenants, interested parties and the Sponsor demonstrate fairly robust growth in both experimental and light sport aircraft demand along with turboprop and fixed wing single engine aircraft will remain fairly steady throughout the planning period and beyond. Regular use of X26 by large, turbofan aircraft (greater than 60,000 lbs.) was assumed to be unlikely based upon current infrastructure limitations and noise concerns.

Sebastian Municipal Airport Master Plan Update



**TABLE 3-8
BASED AIRCRAFT FLEET MIX FORECAST**

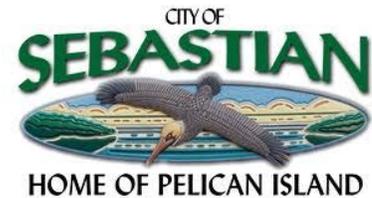
| Key Years | Single Engine Piston | Multi-Engine Piston | Turboprop | Jet | Helicopter | Light Sport | Other | Total | W/o Other* |
|--------------|----------------------|---------------------|-----------|-----|------------|-------------|-------|-------|------------|
| 2017 | 42 | 4 | 3 | 0 | 0 | 3 | 7 | 59 | 49 |
| 2018 | 53 | 4 | 3 | 0 | 1 | 5 | 7 | 73 | 61 |
| 2022 | 56 | 3 | 3 | 1 | 1 | 8 | 7 | 80 | 64 |
| 2027 | 59 | 2 | 4 | 1 | 1 | 12 | 7 | 86 | 67 |
| 2032 | 63 | 0 | 4 | 1 | 1 | 17 | 7 | 93 | 70 |
| 2037 | 63 | 0 | 4 | 1 | 2 | 24 | 7 | 101 | 70 |
| AAGR 2017-37 | 2.05% | -99.91% | 2.00% | NA | NA | 10.96% | 0.00% | 2.72% | 1.80% |

**Note: Other includes Experimental, light sport and other designated aircraft (e.g. gliders, hot air balloons, and UAVs)
Note: Numbers may not add up due to rounding.
Sources: Airport management records, Airport Master Records, 5010, on-site survey, FAA Aerospace Forecast, Table 29, Tenant and Sponsor interviews, and TKDA, 2017*

Total Operational Demand

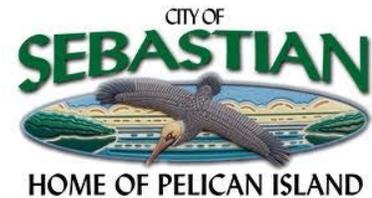
Projected airport operational activity levels are an important factor in identifying existing airfield capacity shortfalls and assessing future needs for airside improvements. Frequency and type of operation also give insight into specific airfield needs that may be sensitive to increased levels of operational activity. Thus, in order to develop an accurate forecast for X26, it was necessary to create several forecasts using existing data and to compile and compare existing forecasts from a variety of sources.

Sebastian Municipal Airport Master Plan Update



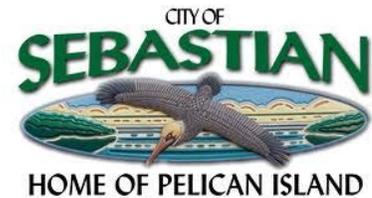
- **2000 Airport Master Plan Update:** Key years from the 2000 Airport Master Plan update were 2007, 2012 and 2022. Using this forecast data and information provided in this previous plan, forecasts were extrapolated between the key years and then forecast forward through the year 2037. This resulted in an average annual growth rate of 2.90% from 2017 through 2037.
- **2017 FAA Terminal Area Forecast:** The FAA TAF projects likely airport operations and based aircraft through the year 2040 based upon the latest historical information. In this case, the last data that the FAA used was from the Airport Master Record, updated in 2014. The forecast demand for X26 remained stagnant from 2014 through 2040. It is also important to note that both the FAA TAF operations and based aircraft forecasts do not include experimental or “other” types of aircraft.
- **2015-34 Florida Aviation System Plan:** The Florida Aviation System Plan update was completed last year. The system plan evaluated overall aviation growth in the state, identified key trends that may impact commercial and GA airports as well as forecast demand for all the airports within the state. The data provided in the FASP for X26 was provided through the year 2035, so the remaining two years of data were extrapolated based upon prior growth rates. The average annual growth rate established within the FASP for X26 was approximately 1.85% which is in-line with other similarly sized airports within the region.
- **2015 Sebastian Municipal Airport Florida Airports Directory:** The Florida Department of Transportation in addition to creating the Florida Aviation System Plan also develops individual three page summaries for each NPIAS airport within the state. This document is referred to as the Florida Airports Directory (FAD) and it includes a brief summary of current airport conditions, anticipated forecast demand, recommended infrastructure improvements as well as the airport’s economic impact on the local economy. Key data provided in the document included the base year 2012 operational and based aircraft data and forecast 2040 aircraft operations and based aircraft data. To allow comparison with other forecasts, the average annual growth rate between 2012 and 2040 was determined and then applied existing data. This shows a type of exponential smoothing since yearly growth remains consistent throughout the 38 year period.

Sebastian Municipal Airport Master Plan Update



- **Historical Trend (FY 2016 and 2017):** Since the airport management had recorded information for only FYs 2016 and 2017, based upon on-site surveys, this information was used to create a historical trend analysis based upon this two years' worth of data. Typically it is better to complete a Trend analysis with at least 10 years' worth of data, but information was limited in this case. Using the trend forecast methodology resulted in an average annual growth rate of 1.52 percent which is slightly lower than both the FASP and FAD forecasts, but still realistic.
- **2015-34 Florida Aviation System Plan Average Annual Growth Rate:** The forecast growth rate established in the FASP for the Airport was 1.85 percent annually. Since the base year shown in the FASP was inconsistent with actual historical data, the FASP growth rate was applied to FY 2017 operations in an attempt to predict demand through the year 2037. Again, this is a type of exponential smoothing since growth remained constant throughout the forecast period.
- **Florida Aviation Data Treasure Coast Airport Market Share:** Using the data provided in the Florida Aviation System Plan database, all airports including Okeechobee County Airport, general aviation operations associated with all airports located within the Treasure Coast CFAPP region were summarized. Using the historical percentage of X26 operations compared to other airports within the CFASPP operations resulted in a historical share of total GA operations. Applying this share forward to total FDOT forecast operations for the region, resulted in anticipated operational demand of 56,666. The resulting average annual growth rate for the twenty-year period ranged from 1.48 percent to 1.49 percent, which again within range of other similarly sized airports.
- **Vero Beach Regional Airport Flight Training Market Share:** Vero Beach is home to Flight Safety International Academy and Paris Air, both which provide extensive aircraft flight training. According to the Airport's recently completed Master Plan, flight training represents approximately 40% of total airport operations. Vero Beach recently reinstated commercial service and is also home to a number of different businesses including Piper Aircraft. As a result, a number of pilot training operations occur at X26. In addition to flight training originating from Vero Beach, the airport supports an on-site business, Pilot's

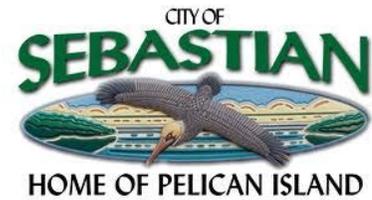
Sebastian Municipal Airport Master Plan Update



Paradise, which also provides flight training, as well as supports flight training operations from Melbourne International Airport primarily related to Florida Institute of Technology's aviation program. However, during the team's on-site visit it was obvious that the majority of flight training operations at Sebastian Airport were directly associated with flight training academies based at Vero Beach. As a result, similar to the Treasure Coast analysis, an operational share analysis was determined between the two airports and then used to estimate likely future demand.

- **FAA Aerospace Forecast Trend Analysis:** The 2016-2036 FAA Aerospace Forecasts provide predictions for commercial, air taxi, general aviation and flight training demand for the entire country based upon historical operations and current trends. The forecast growths outlined in the FAA Aerospace Forecasts are often in sync with general aviation growth in states with large general aviation and flight training activity, such as Florida, Texas, Arizona and California. Therefore, using predictive average annual GA flight hours to determine likely operations based upon actual historical airport operational data has and continues to be a relatively realistic predictor of future demand. Based upon **Table 29, Active General Aviation and Air Taxi Hours Flown**, average annual growth ranged between 1 and 1.2 percent between 2015 through 2036.
- **Operations per Based Aircraft:** The median historical operations per based aircraft from 2007 through 2017 was 885 operations per based aircraft. To determine likely operations, median historical operations were applied to forecast based aircraft to predict likely demand over the twenty year planning period. The operations per based aircraft methodology is often used to determine demand at GA airports since operational traffic is limited.
- **Average Forecast:** The average forecast merely represents the average of all ten forecasts listed above. This is an attempt to determine a logical prediction of possible aircraft operations based upon various existing forecasts and methodologies.

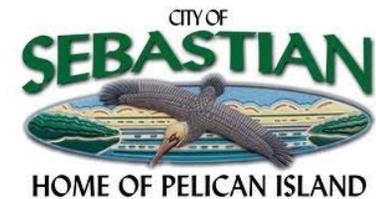
Sebastian Municipal Airport Master Plan Update



Selected Forecast

Since all forecasts considered both national trends and specific factors that impacted aviation activity at Sebastian, an average annual growth rate was created based upon taking the average of the other forecast average annual growth rates including the TAF. Although the TAF showed 0 percent growth, it provides possible elasticity in forecast operations that may cause periodic unforeseen slow-down or negative growth. Applying this average to historical data through the forecast period provides a smoothing forecast effect. Again, it is important to note that recommended infrastructure improvements are based upon planning activity levels/trigger points rather than specific years. Therefore, when operations reach 60 percent of forecast need, planning efforts including environmental documentation should be initiated. **Tables 3-9 and 3-10** illustrate the estimated operational forecasts of demand for the next twenty-plus years.

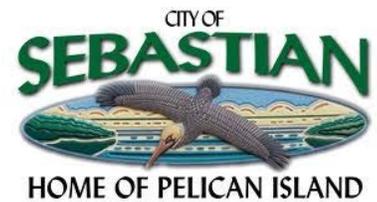
Sebastian Municipal Airport Master Plan Update



**TABLE 3-9
AIRCRAFT OPERATIONS FORECAST**

| Fiscal Years | 2000 AMP | 2017 TAF | FASP Forecast | X26 FAD Forecast | Trend 2016/2017 Data | Growth rate based upon FASP | Treasure Coast | Vero Beach | FAA Trend Forecast | OPBA | Average | Proposed Forecast |
|--|--|----------|---------------|------------------|----------------------|-----------------------------|----------------|------------|--------------------|---------|---------|-------------------|
| 2017 | 42,655 | 37,240 | 39,345 | 42,339 | 46,477 | 46,477 | 46,477 | 46,477 | 46,477 | 46,477 | 44,044 | 46,477 |
| 2018 | 43,893 | 37,240 | 40,073 | 43,122 | 44,687 | 47,337 | 42,808 | 42,615 | 46,922 | 90,119 | 47,881 | 48,491 |
| 2022 | 49,210 | 37240 | 43122 | 46,403 | 48,497 | 50,938 | 45,400 | 44,786 | 48,743 | 108,781 | 52,312 | 56,190 |
| 2027 | 56,772 | 37,240 | 47,261 | 50,857 | 53,260 | 55,827 | 48,871 | 47,657 | 51,330 | 132,412 | 58,149 | 62,053 |
| 2032 | 65,495 | 37,240 | 51,797 | 55,224 | 58,022 | 61,186 | 52,619 | 50,710 | 54,390 | 156,403 | 64,309 | 68,193 |
| 2037 | 75,559 | 37,240 | 56,770 | 59,138 | 62,785 | 67,059 | 56,666 | 53,960 | 57,632 | 180,778 | 70,759 | 74,686 |
| AAGR 2017-37 | 2.90% | 0.00% | 1.85% | 1.68% | 1.52% | 1.85% | 1.00% | 0.75% | 1.08% | 7.03% | 2.40% | 2.40% |
| Notes: | <p>Column 1: 2000 Airport Master Plan Trend Analysis Column 2: 2017 FAA TAF Column 3: 2015-34 Florida Aviation System Plan Column 4: 2015 Florida Aviation Directory Column 5: Historical Trend Data Column 6: Extrapolation FASP Growth Rate applied to historical airport data Column 7: Share analysis of Treasure Coast GA Airport, FASP operations Column 8: Share of VRB Airport Flight Training Operations, VRB MP and FASP Column 9: FAA Trend Forecast Extrapolation based upon 2016-36 FAA Aviation Activity Forecasts for GA hours) Column 10: Forecast Operations per Based Aircraft Column 11: Average of other Forecasts Column 12: Preferred Forecast (Growth based upon average growth rates of all forecasts except FAA TAF)</p> | | | | | | | | | | | |
| Sources: 2017 FAA Terminal Area Forecasts, 2014-24 Florida Aviation System Plan, 2015 Florida Aviation Database, FAA Aerospace Forecasts, 2016-24, 2000 X26 Airport Master Plan Update, Airport historical data and surveys, and TKDA, 2017. | | | | | | | | | | | | |

Sebastian Municipal Airport Master Plan Update



Since the FAA Terminal Area Forecasts do not currently recognize operations associated with light sport, ultralights, gliders and other non-traditional aircraft, **Table 3-10** highlights the preferred aircraft operational forecast based upon traditional activity as well as the identifies the number of operations associated with “Other” types of aircraft activity. The preferred FAA forecast matches the 2015-34 FASP data provided by the Florida Department of Transportation.

| TABLE 3-10 PREFERRED OPERATIONAL FORECASTS | | | |
|---|---------------------------------|-----------------------------|---------------------------|
| Year | Preferred FAA and FDOT Forecast | “Other” Aircraft Operations | Total Forecast Operations |
| 2017 | 39,345 | 5,058 | 44,403 |
| 2018 | 40,073 | 5,240 | 45,313 |
| 2022 | 43,122 | 5,861 | 48,983 |
| 2027 | 47,261 | 6,055 | 53,316 |
| 2032 | 51,797 | 6,162 | 57,959 |
| 2037 | 56,770 | 6,160 | 62,930 |

Sources: 2015-34 FDOT Florida Aviation System Plan, Airport Inventory and Management, and TKDA 2017

Itinerant Operations

Itinerant aircraft operations are defined as operations which occur between two different airports, which on average are typically 20 nm apart. However, in Florida, some airports are closer than the 20 nm threshold, so this definition typically refers to aircraft that leave the airport pattern. Itinerant operations include air taxi and commuter, military, commercial carriers, air cargo operators, business/corporate operations as well as recreational and personal use. Some flight training is also included in this category related to cross-country, instrument and air transport pilot training.

Previous analyses including the 2017 TAF predicted a split of 66 percent and 33 percent between itinerant and local operations, respectively. This ratio decreased as actual data was recorded. Thus, based upon on-site inventory and discussions with users including those related to sky diving and flight training, the actual ratio in FY 2017 was determined to be 39 percent and 61 percent itinerant and local, respectively. This flip is primarily due to increased sky diving activity and in-pattern flight training operations, such as touch and go training.

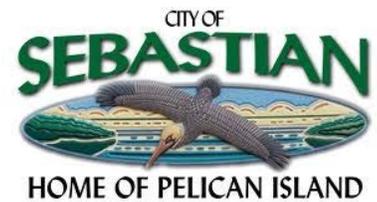
Sebastian Municipal Airport Master Plan Update



X26 has and continues to support limited on-demand air taxi, business and personal use itinerant operations. The airport does not support any military related operations. Estimated air taxi and itinerant general aviation operations forecasts were both based upon historical percentage of total operations, information provided by airport users and tenants, as well as regional and national trends. **Table 3-11** outlines predicted air taxi demand, and **Table 3-12** summarizes anticipated itinerant GA demand which includes personal, corporate, flight training and other activities.

| TABLE 3-11 AIR TAXI OPERATIONS FORECAST | | | |
|--|---------------------------|----------------------------------|-----------------------------|
| Year | Total Operations Forecast | Air Taxi and Commuter Operations | Percent of Total Operations |
| 2016 | 41,570 | 1,000 | 2.4% |
| 2017 | 44,403 | 1,779 | 4.0% |
| 2018 | 45,313 | 1,852 | 4.1% |
| 2022 | 48,983 | 2,171 | 4.4% |
| 2027 | 53,316 | 2,614 | 4.9% |
| 2032 | 57,959 | 3,144 | 5.4% |
| 2037 | 62,930 | 3,776 ¹ | 6.0% ² |
| <i>Notes:</i> ¹ Air Taxi operations for 2017 was based upon data provided by tenants and on-site inventory ² According to the FASP, on-demand air taxi operations represent approximately 6 percent of total operations at predominantly GA airports. Sources: 2017 TAF, 2015 FASP, Tenant Data, on-site inventory, and TKDA 2017 | | | |

Sebastian Municipal Airport Master Plan Update



**TABLE 3-12
ITINERANT GA OPERATIONS ONLY**

| Year | Total Operations | Itinerant 5010 GA Operations | Itinerant GA "Other" Operations | Itinerant GA Percent of Total Operations |
|-------------------|------------------|------------------------------|---------------------------------|--|
| 2016 | 41,570 | 24,000 | 0 | 57.7% |
| 2017 ² | 44,403 | 14,144 | 506 | 33.0% |
| 2018 | 45,313 | 14,178 | 524 | 32.4% |
| 2022 | 48,983 | 14,150 | 645 | 30.2% |
| 2027 | 53,316 | 13,758 | 787 | 27.3% |
| 2032 | 57,959 | 13,049 | 986 | 24.2% |
| 2037 | 62,930 | 11,983 | 1,232 | 21.0% |

Notes:

¹2016 itinerant operations were taken from the 2017 TAF data.

²2017 itinerant GA operations were based upon on-site inventory, discussions with tenants, users and management, and comparison to other airports in the region.

Sources: 2017 FAA TAF, 2015 FASP, 2016 FAD, tenant and management interviews, and TKDA, 2017

Local Operations

Local operations are defined as aircraft operations that stay within the airport traffic pattern. Local operations include flight training, glider and experimental aircraft, aircraft flight tests, skydiving and other similar operations. Sebastian Municipal Airport is home to several experimental and glider users, a local fixed based operator that performs on-site maintenance as well as Sebastian Skydivers, a national and international skydiving training and event firm.

Local Flight Training

Sebastian also supports extensive flight training operations associated with on-site operators as well as students from Flight Safety International, Paris Air, as well as Florida Institute of Technology (FIT). Based upon historical and current inventory data, flight training represents approximately 78 to 80 percent of total airport operations, and touch and go operations are estimated to represent 77 percent of total flight training operations. Touch and go flight training activity in FYs 2016 and 2017 were estimated to represent 56 percent of total annual operations.

Touch and Go aircraft operations consist of two operations, a landing then immediate takeoff, performed consecutively on a runway. Touch and Go operations are associated with fixed wing aircraft training. Aircraft fly in a circuit flying crosswind, then downwind, then base until final. All of these maneuvers are done with the local airspace and are completed repetitively.

Sebastian Municipal Airport Master Plan Update

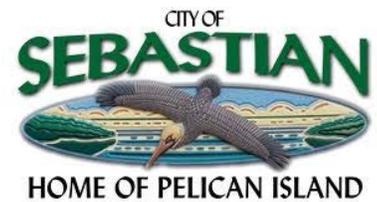
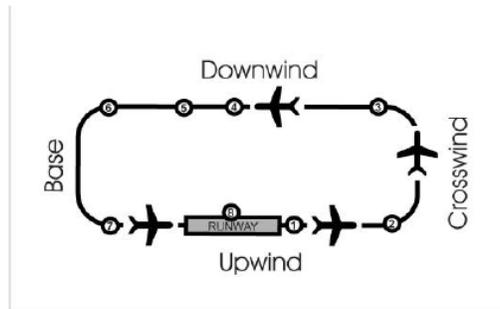


Figure 3-1



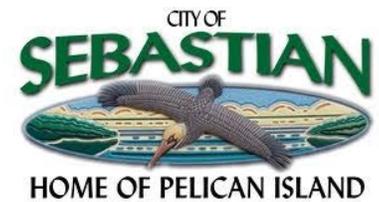
Source: Touch and Go Tutorial, http://www.flightadventures.com/misc/fa_pattern_tutorial.pdf

On average, students perform 20 touch and go operations every two hours. Peak training typically occurs on weekdays between 10 am and 12 pm and can account for up to 40 touch and go operations if weather is good. These touch and go operations are designated as local since they occur within the airport traffic pattern and impact both airport and airspace capacity. Estimated Local touch and go flight training activity is shown in **Table 3-13**.

| TABLE 3-13 LOCAL AIRCRAFT OPERATIONS TOUCH AND GO PROCEDURES | | | |
|--|-------------------------|-------------------------|-----------------------------|
| Year | Total Annual Operations | Touch and Go Operations | Percent of Total Operations |
| 2016 | 41,570 | 23,279 | 56.0% |
| 2017 | 46,477 | 26,137 | 56.2% |
| 2018 | 48,491 | 27,356 | 56.4% |
| 2022 | 56,190 | 32,104 | 57.1% |
| 2027 | 62,053 | 36,021 | 58.0% |
| 2032 | 68,193 | 40,218 | 59.0% |
| 2037 | 74,686 | 44,751 | 59.9% |

Sources: Northrop Grumman, Bombardier and Boeing Pilot demand and training operations forecasts, FAA TAF, FASP and FAD data, User data, on-site inventory TKDA, 2017

Sebastian Municipal Airport Master Plan Update



Since commercial and corporate pilot demand is expected to remain strong for the foreseeable future based upon domestic and international forecasts, training activity at X26 is expected to grow throughout the planning period. It is important to note that training activities such as touch and go operations can impact an airports overall airspace and airport capacity with very little return on investment since most students do not purchase fuel at these airports.

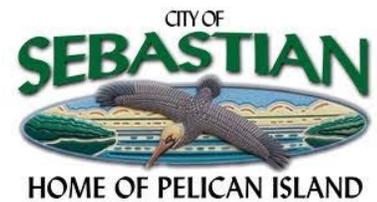
Discussions with heavy training users from other airports is recommended to determine if third party funding or some other revenue mechanism could be implemented to support airport infrastructure maintenance. This is discussed in more detail in later chapters of this report.

Skydiving Activity

Skydiving activity occurs throughout the year. However, in addition to training and usual tandem and certificate jump activities, Skydive Sebastian holds various events throughout the year. These events include: **the Alter Ego Canopy Course** (April 14 and 15); **Team Dirty Sanchez** (April 28-30); **Rookiefest** (May 20); **Splash Bash** (July 28-30); **Head Down Camp** (October 27-29) and **Skydive Invasion** (December 28-January 1). Last year in concert with the Airport and the City of Sebastian, Skydive Sebastian also held an international weekend skydiving event in September which included various local vendors and live music. It is unknown if that event will re-occur this year or if this will be a biennial event.

As a result of these events, peak skydiving activity normally occurs in December, late April, July, September and October. Skydive Sebastian is also looking to expand their facilities as a result of both domestic and international demand. They are an official US Parachute Association certificate provider as well as work with organizations throughout Europe. Therefore, with increased growth in population as well as interest in skydiving, operations are expected to continue to grow. On an average day, skydiving operations can range from 4 to 6 operations per hour from 10 am to 3 pm. Estimated skydiving local operations are provided in **Table 3-14**.

Sebastian Municipal Airport Master Plan Update



| TABLE 3-14 LOCAL AIRCRAFT OPERATIONS SKYDIVING AIRCRAFT OPERATIONS | | | |
|--|-------------------------|-----------------------------|--------------------------------|
| Year | Total Annual Operations | Percent of Total Operations | Estimated Skydiving Operations |
| 2016 | 41,570 | 5% | 2,000 |
| 2017 | 46,477 | 5% | 2,368 |
| 2018 | 48,491 | 5% | 2,580 |
| 2022 | 56,190 | 6% | 3,559 |
| 2027 | 62,053 | 8% | 4,885 |
| 2032 | 68,193 | 10% | 6,674 |
| 2037 | 74,686 | 12% | 8,962 |
| AAGR 2017-37 | | 4% | 7.4% |

Sources: Skydive Sebastian tenant information, on-site inventory, US Parachute Association forecast activity, Global Market parachute forecast, 2017 published by WiseGuyReports, and TKDA 2017.

The commercial and military parachute global market forecast compound annual growth from 2017 through 2021 is expected to increase by 5.79 percent. Since Florida supports extensive commercial and recreational skydiving activity, growth of approximately 4 percent was deemed realistic based upon skydiving activity at similarly sized airports and planned tenant development.

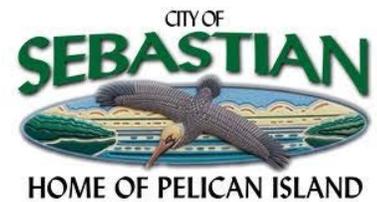
Other Aircraft Local Operations

“Other” aircraft local activity that currently exists and is forecast to grow fairly significantly is operations related to “other” aircraft, which currently includes Light Sport, some experimental, gliders, ultralights and powered parachute operations. The City has recently signed a lease with a light sport manufacturer who anticipates, along with recent FAA forecasts, strong growth in this market. In 2017, this operator added 3 aircraft to the Airport’s based aircraft fleet and anticipates in the short-term to add at least 2-3 additional aircraft annually.

X26 is ideally suited to support manufacturing and training of light sport aircraft in addition to also supporting other experimental aircraft operations. The airport has ample space for development, and attracting these type of operations is in line with the City and Community’s long-term vision for the airport. Thus, it is anticipated that the majority of forecast local “other” operations will be related to light sport training, research, development and testing.

Table 3-15 shows anticipated local “other” aircraft operations for the next 20 years.

Sebastian Municipal Airport Master Plan Update



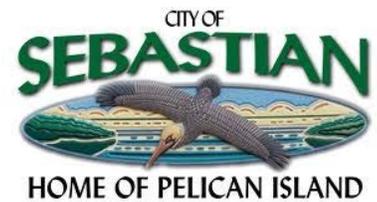
| TABLE 3-15 LOCAL AIRCRAFT OPERATIONS "OTHER" AIRCRAFT OPERATIONS | | | |
|--|-------------------------|-----------------------------|------------------------------------|
| Year | Total Annual Operations | Percent of Total Operations | Estimated "Other" Local Operations |
| 2016 | 41,570 | 7% | 2,939 |
| 2017 | 44,403 | 10% | 4,552 |
| 2018 | 45,313 | 10% | 4,716 |
| 2022 | 48,983 | 11% | 5,216 |
| 2027 | 53,316 | 10% | 5,268 |
| 2032 | 57,959 | 9% | 5,176 |
| 2037 | 62,930 | 8% | 4,928 |
| AAGR 2017-37 | | | 0.40% |

Sources: FAA Aerospace Forecasts, 2017-2037, Airport and City of Sebastian Management, Tenant Discussions, and TKDA 2017

Local and Itinerant Operations Summary

A summary of local and itinerant total operations is provided in **Table 3-16**. Historical data obtained from the 2017 TAF and 2000 Airport Master Plan Update estimated that itinerant operations represent 60 percent of total airport operations. However, with the continued growth in flight training demand, experimental aircraft development and testing as well as skydiving operations at X26, local operations represent the larger percentage of total operations. Although it is anticipated that there will continue to be growth in all operations, data supports continued strong growth in local operations. Based upon current and forecast trends, the percent of local operations is anticipated to increase from 61 to 70 percent by the end of the forecast period. However, if the airport starts to support larger aircraft turboprop and turbofan operations, the percentage between local and itinerant operations may likely equalize in the long-term.

Sebastian Municipal Airport Master Plan Update



**TABLE 3-16
LOCAL AND ITINERANT OPERATIONS**

| Fiscal Year | Total Annual Operations | Itinerant Operations | Itinerant Percentage | Local Operations | Local Percentage |
|-------------|-------------------------|----------------------|----------------------|------------------|------------------|
| 2014 | 40,073 | 25,000 | 62% | 15,073 | 38% |
| 2015 | 40,815 | 25,000 | 61% | 15,815 | 39% |
| 2016 | 41,570 | 25,000 | 60% | 16,570 | 40% |
| 2017 | 44,403 | 16,429 | 37% | 27,974 | 63% |
| 2018 | 45,313 | 16,555 | 37% | 28,758 | 63% |
| 2022 | 48,983 | 16,966 | 35% | 32,017 | 65% |
| 2027 | 53,316 | 17,159 | 32% | 36,157 | 68% |
| 2032 | 57,959 | 17,179 | 30% | 40,780 | 70% |
| 2037 | 62,930 | 16,991 | 27% | 45,939 | 73% |

Sources: 2017 FAA TAF, 2015 FASP, FAA Aerospace Forecasts 2017-37, airport records, tenant information, global and regional skydiving and flight training forecasts, and TKDA 2017.

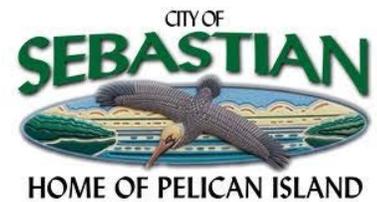
Derivative Forecasts

Once preferred forecasts were selected for total operations and based aircraft, several derivative forecasts may be developed including peak period demand, instrument/visual operations, day and night operations, aircraft operational fleet mix and air taxi enplanement forecasts. Each of these forecasts plays an important role in determining airport facility requirements during the 20-year planning period.

Day and Night Operations

Operations at Sebastian Municipal Airport primarily occur during the daylight hours between 8:00 am and 6:00 pm EST. There have been recorded operations between 7:00 pm and 10:00 pm, but those have been limited to one to three a week at most. With the exception of the self-service fuel facilities located on the Arrival and Departure apron, no other services at the airport are available after 6:00 pm. Further, portions of the airfield are not lit at night. Runway 5-23 is equipped with low-light runway edge lights and 10-28 is not equipped with any edge lights. Further, signage and portions of the taxiways are not equipped with lighting. The lack of lighting, available facilities and volunteer noise ordinances explains the lack of traffic during the night hours. Operations that occur after 6 or 7 pm usually occur during the spring and summer months due to longer daylight hours available. However, an increase in nighttime operations may occur with growth of some on-site businesses which use aircraft for cross country operations.

Sebastian Municipal Airport Master Plan Update



Based upon on-site observations, historical data and discussions with users and tenants, estimates of day and night operations were determined as shown in **Table 3-17**.

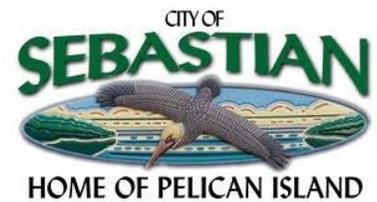
| TABLE 3-17 DAY AND NIGHT OPERATIONAL ACTIVITY FORECASTS | | | | | |
|--|------------------|-------------------------------|------------------|----------------------------------|------------------|
| Year | Total Operations | Day Operations (7 am to 7 pm) | Percent of Total | Night Operations (7 pm to 10 pm) | Percent of Total |
| 2016 | 41,570 | 41,500 | 99.83% | 70 | 0.17% |
| 2017 | 44,403 | 44,325 | 99.82% | 78 | 0.16% |
| 2018 | 45,313 | 45,239 | 99.84% | 74 | 0.16% |
| 2022 | 48,983 | 48,902 | 99.83% | 81 | 0.17% |
| 2027 | 53,316 | 53,226 | 99.83% | 90 | 0.17% |
| 2032 | 57,959 | 57,859 | 99.83% | 100 | 0.17% |
| 2037 | 62,930 | 62,819 | 99.82% | 111 | 0.18% |

Sources: On-site inventory, limited Flight Aware data, user and airport management information primarily from fuel receipts, and TKDA 2017

IFR/VFR Operations

Sebastian Municipal Airport is located within Class E airspace which requires the airport to be equipped with meteorological communications (e.g. AWOS or ASOS) and for aircraft to have the ability to contact an air traffic control tower. Visual Flight Rules (VFR) requirements for Class E airspace under Federal Aviation Regulations (FAR) 91.155, no person may operate an aircraft under VFR when altitude, flight visibility or distance from clouds is less than:

Sebastian Municipal Airport Master Plan Update



| ALTITUDE | FLIGHT VISIBILITY | DISTANCE FROM CLOUDS |
|-----------------------------|-------------------|--|
| Less than 10,000 feet MSL | 3 statute miles | 500 feet below. 1,000 feet above. 2,000 feet horizontal |
| At or above 10,000 feet MSL | 5 statute miles | 1,000 feet below. 1,000 feet above. 1 statute mile horizontal. |

Source: FAR Part 91.155 Class E airspace requirements

Instrument flight rules (IFR) allow pilots to operate under lower minimums during instrument meteorological conditions such as lower cloud cover, poor light and visibility. Under these conditions, pilots will need to rely on on-board instrumentations to get them to a point where they can visually see the runway threshold. Both Runway 5 and 23 are equipped with RNAV/GPS non-precision approaches, which allow down to one statute mile visibility and lower minimum descent altitude than would be allowed for a VFR approach. The RNAV/GPS approaches allow pilots to use WAAS satellite and lateral navigation signals to line up to the centerline of the runway during lower visibility conditions.

According to meteorological data, on-site observations and information provided by users, as well as limited Flight Aware data, recorded instrument operations at X26 is very limited. According to meteorological conditions, when the airport is not closed due to a weather event, meteorological conditions requiring instrument flight operations occurs approximately 1.55 percent of the time. Therefore, using this information and the fact that airport facilities are open between 08:00 am and 4:00 pm, this seemed a logical estimate of likely IFR activity at Sebastian over the 20-year planning period. IFR operations may increase in the future with the advent of additional approach and departure procedures and other new technology. However, we still anticipate that evening and nighttime operations will be kept to a minimal.

Sebastian Municipal Airport Master Plan Update

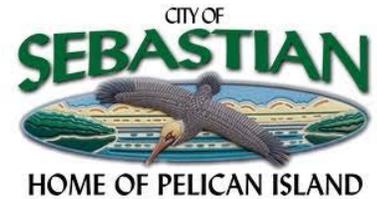


Table 3-18 provides likely estimates of VFR and IFR operations.

| TABLE 3-18 IFR AND VFR OPERATIONAL ACTIVITY FORECASTS | | | | | |
|--|------------------|-----------------------------|------------------|---------------------------------|------------------|
| Year | Total Operations | Visual Flight Rule Activity | Percent of Total | Instrument Flight Rule Activity | Percent of Total |
| 2016 | 41,570 | 40,925 | 98.45% | 644 | 1.55% |
| 2017 | 44,403 | 43,715 | 98.45% | 688 | 1.55% |
| 2018 | 45,313 | 44,611 | 98.45% | 702 | 1.55% |
| 2022 | 48,983 | 48,224 | 98.45% | 759 | 1.55% |
| 2027 | 53,316 | 52,490 | 98.45% | 826 | 1.55% |
| 2032 | 57,959 | 57,061 | 98.45% | 898 | 1.55% |
| 2037 | 62,930 | 61,955 | 98.45% | 975 | 1.55% |

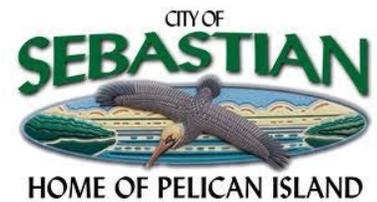
Sources: On-site inventory, limited Flight Aware data, user and airport management information primarily from fuel receipts, and TKDA 2017

Aircraft Fleet Mix

The aircraft fleet mix forecast like the based aircraft fleet mix is used to determine critical aircraft demand as well as airport infrastructure sizing requirements including hangars, apron movement areas, taxiways, taxilanes, runways, holding pads, etc. The current majority of aircraft operations are associated with single-engine piston aircraft, typically the PA-28 Cherokee. However, because Skydive Sebastian regularly uses the Cessna 208 Caravan, Beech 200D and DE Havilland DH-6 Twin Otter aircraft, all multi-engine turboprop aircraft, to support their skydiving operations, a large portion of turboprop operations are associated with skydiving activity.

Sebastian Aero. Service, Lois Aviation LLC and Pilots Paradise all fly multi-engine piston aircraft providing both on-demand air taxi and training services. On average these aircraft provide 4 to 6 seats including the pilot. The airport also supports Velocity Aviation which manufactures both single and multi-engine aircraft. Some of Velocity's aircraft along with other kit planes on the field are designated as experimental, so these aircraft were placed in this category. Other aircraft represent gliders, motorized gliders, and other types of aircraft. Finally, although there are no helicopters currently based at X26, airport management has pointed out that there are regular helicopter operations. And, they have requested as part of this project to evaluate

Sebastian Municipal Airport Master Plan Update



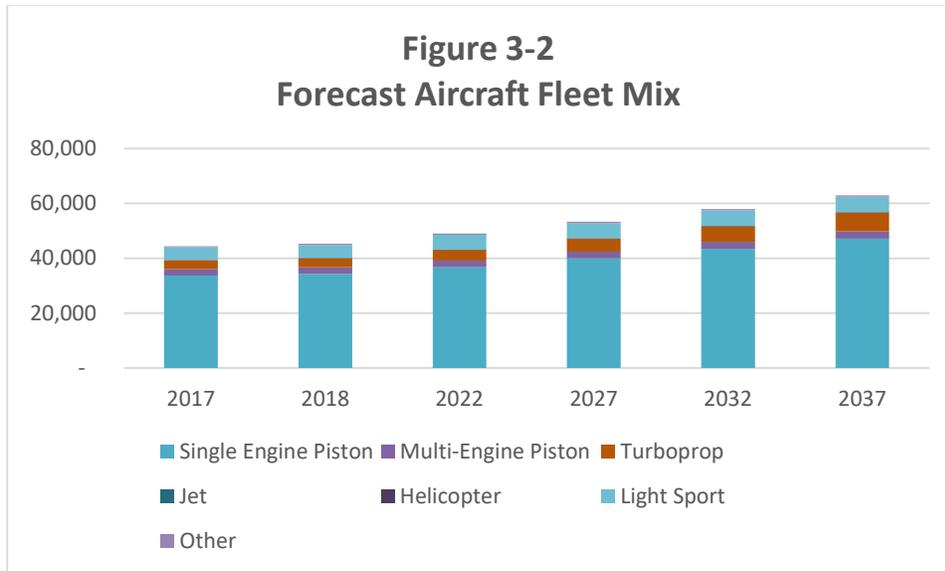
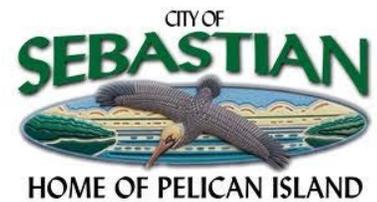
locations for rotorcraft parking near the Arrival and Departure building as well as near Pilot’s Paradise.

The FAA Aerospace Forecasts predict that piston aircraft will begin to decrease as new aircraft come on the market and 100LL fuel is phased out. In addition, very light jets are continuing to build a foothold in the general aviation and corporate market because of their fuel efficiency and ability to use short runways. Therefore, based upon anticipated aviation operational and manufacturer trends, it is viable that X26 could continue to support growth of turboprop aircraft as well as attracting turbine rotorcraft and jet aircraft. To allow for flexibility in development, the following aircraft operational fleet mix was created as illustrated in **Table 3-19** and **Figure 3-2**.

| Year | Total Operations | Single Engine Piston | Multi-Engine Piston | Turboprop | Jet | Helicopter | Light Sport | Other |
|------|------------------|----------------------|---------------------|-----------|-----|------------|-------------|-------|
| 2017 | 44,403 | 33,737 | 2,348 | 3,234 | - | 26 | 4,638 | 420 |
| 2018 | 45,313 | 34,308 | 2,372 | 3,366 | - | 27 | 4,820 | 420 |
| 2022 | 48,983 | 36,673 | 2,463 | 3,939 | 14 | 33 | 5,441 | 420 |
| 2027 | 53,316 | 39,919 | 2,550 | 4,733 | 17 | 42 | 5,635 | 420 |
| 2032 | 57,959 | 43,408 | 2,636 | 5,680 | 19 | 53 | 5,742 | 420 |
| 2037 | 62,930 | 47,149 | 2,722 | 6,809 | 23 | 67 | 5,740 | 420 |

Sources: Airport historical data, on-site inventory, Florida Aviation System Plan, FAA Aerospace Forecast, user and tenant information, and TKDA, 2017.

Sebastian Municipal Airport Master Plan Update



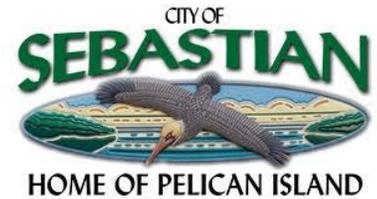
Peak Period Demand Forecasts

Peaking forecasts allow airports to be planned for times when the highest volume of traffic is expected, and are therefore used to determine critical requirements such as transient apron area and airfield capacity. Historically, April has represented the peak month for aviation activity at Sebastian for over four years. Although there are limited skydiving activities that occur during this month, this is a high month for aircraft training, air taxi and other general aviation activities. Peak month for skydiving instead tends to be in the fall and early spring with the exception of one long-weekend event scheduled in July.

Peak operations were determined based upon historical and current operations as well as current trends. Peaking estimates were calculated as follows:

- The peak month historically supports 10.5 percent more operations than the average month.
- The average day of the peak month (ADPM) was determined by dividing the number of peak month operations by total number of operations in April (30 days)
- Operational typically occur between 8:00 am and 9 pm EST. Therefore, the peak hour is 18 percent higher than the average hourly operations mostly due to skydiving and flight training activities.

Sebastian Municipal Airport Master Plan Update



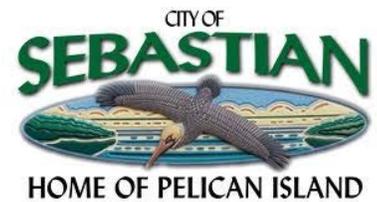
- In reviewing activity, 84 percent of total operational activity was associated with flight training, 70 percent of flight training operations are related to touch and go activity, and on average 40 percent of monthly operations are attributed to skydiving activity.

A breakdown of peak activity is provided in **Table 3-20**.

| TABLE 3-20 PEAK PERIOD DEMAND FORECASTS | | | | | | | | | | | | |
|--|-----------|------------|---------|-----------|-----------|----|----|-------|----------|-----|-----------|--------|
| | | 10.5% | 30 days | 18% | Itinerant | | | Local | | | | |
| | | | | | | | | | 84% | 70% | 40% | |
| Fiscal Year | Total Ops | Peak Month | ADPM | Peak Hour | Total | AT | GA | Total | Training | T&G | Skydiving | Other* |
| 2016 | 41,570 | 3,828 | 128 | 15 | 9 | - | 9 | 6 | 5 | 4 | 2 | - |
| 2017 | 44,403 | 4,089 | 136 | 16 | 6 | 1 | 5 | 10 | 8 | 6 | 4 | - |
| 2018 | 45,313 | 4,173 | 139 | 16 | 6 | 1 | 5 | 10 | 8 | 6 | 4 | - |
| 2022 | 48,983 | 4,511 | 150 | 18 | 6 | 1 | 5 | 12 | 10 | 7 | 5 | - |
| 2027 | 53,316 | 4,910 | 164 | 19 | 6 | 1 | 5 | 13 | 11 | 8 | 5 | - |
| 2032 | 57,959 | 5,337 | 178 | 21 | 6 | 1 | 5 | 15 | 13 | 9 | 6 | - |
| 2037 | 62,930 | 5,795 | 193 | 23 | 6 | 1 | 5 | 17 | 14 | 10 | 7 | - |

*Note: *Not enough information to accurately forecast*
Sources: Airport historical data, on-site inventory, Florida Aviation System Plan, FAA Aerospace Forecast, user and tenant information, and TKDA, 2017.

Sebastian Municipal Airport Master Plan Update



Air Taxi Enplanements*

Several tenants including the local FBO provide on-demand air taxi services primarily using the Beech King Air 200D or the Cessna 320. The majority of air taxi aircraft were configured to support 2 to 6 passenger seats. Based upon this data and enplanement information, a forecast of anticipated on-demand aircraft operations is provided in **Table 3-21**. Air Taxi operations have increased because of new ownership of Pilot’s Paradise, the Fixed Based Operator, as well as interest in sightseeing activities.

| Year | Air Taxi Operations | Enplanements | Enplanements Per Operation | Estimated Average Seats ¹ |
|------|---------------------|--------------|----------------------------|--------------------------------------|
| 2017 | 1,779 | 3,598 | 2 | 3 |
| 2018 | 1,852 | 3,822 | 2 | 3 |
| 2022 | 2,171 | 4,846 | 2 | 3 |
| 2027 | 2,614 | 6,439 | 2 | 3 |
| 2032 | 3,144 | 8,546 | 3 | 5 |
| 2037 | 3,776 | 11,327 | 3 | 6 |

Note: ¹Estimated average seats was based upon the type and model of air taxi aircraft not including pilot.

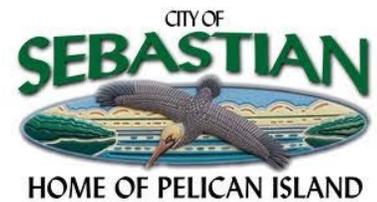
Source: Aircraft Manufacturer data, tenant and airport data, FAA Aerospace Forecast, FASP and FAD Forecasts, and TKDA, 2017

Summary of Forecast Aircraft Activity

In summary, the data and methods used to forecast aviation demand for the Sebastian Municipal Airport are consistent with those used by the FAA, FDOT and other airports in Florida. The forecasts presented in this chapter are considered to accurately reflect X26’s anticipated activity growth through 2037, provided that facilities necessary to accommodate the demand are made available. For FAA review purposes, **Table 3-22** presents a comparison between the FAA’s 2017 TAF values and the preferred activity forecasts for X26, and **Table 3-25** includes a consolidated summary of the forecasts.

Table 3-22 provides a comparison of FAA TAF forecast operations and based aircraft in relation to forecast operations and based aircraft minus experimental, light sport and other* types of aircraft. Since the 2017 TAF Base Year was different from actual operations and based aircraft, **Table 3-22** also provides a comparison between the forecasts and the TAF if the base year data was the same.

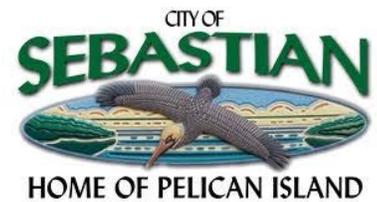
Sebastian Municipal Airport Master Plan Update



| TABLE 3-22 FORECAST OPERATIONS AND BASED AIRCRAFT COMPARISON TO 2017 FAA TAF | | | | | |
|---|-------------------------|----------------------------------|--------------------|----------------------------|--------------------|
| Aircraft Operations Forecast | | | | | |
| Fiscal Year | Aircraft Operations* | 2017 Published TAF | Percent Difference | Adjusted TAF Forecast | Percent Difference |
| 2017 | 39,345 | 37,240 | 5.7% | 39,345 | 0.0% |
| 2018 | 40,073 | 37,240 | 7.6% | 39,345 | 1.9% |
| 2022 | 43,122 | 37,240 | 15.8% | 39,345 | 9.6% |
| 2027 | 47,261 | 37,240 | 26.9% | 39,345 | 20.1% |
| 2032 | 51,797 | 37,240 | 39.1% | 39,345 | 31.6% |
| 2037 | 56,770 | 37,240 | 52.4% | 39,345 | 44.3% |
| Based Aircraft Forecasts | | | | | |
| Fiscal Year | Airport Based Aircraft* | 2017 TAF Based Aircraft Forecast | Percent Difference | Adjusted 2017 TAF Forecast | Percent Difference |
| 2017 | 49 | 40 | 23% | 49 | 0% |
| 2018 | 61 | 40 | 52% | 49 | 24% |
| 2022 | 64 | 40 | 61% | 49 | 31% |
| 2027 | 67 | 40 | 67% | 49 | 36% |
| 2032 | 70 | 40 | 74% | 49 | 42% |
| 2037 | 70 | 40 | 75% | 49 | 43% |
| *Both Airport Operational forecasts and Based Aircraft forecasts do not include experimental, light sport or other aircraft in the forecast of demand. Sources: Airport historical data, 2017 FAA TAF, 2015-34 FASP, and TKDA 2017 | | | | | |

A number of documents and aviation experts expect dynamic growth in experimental, light sport and other non-traditional aircraft. X26 is currently home to one experimental and light sport aircraft manufacturer and is in discussions with another. Based upon the existing tenant’s business plan and FAA forecasts of demand, **Tables 3-23, 24 and 25**, summarize likely non-traditional aircraft demand.

Sebastian Municipal Airport Master Plan Update



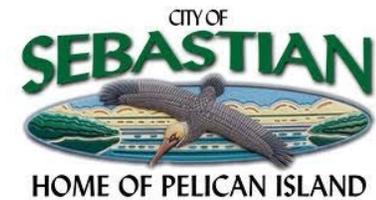
| TABLE 3-23 FORECAST OTHER* AIRCRAFT OPERATIONS DEMAND | | | | | |
|--|------------------|-------------|-----------------------|-------|-------------------|
| Fiscal Year | Total Operations | Light Sport | "Other" "Aircraft" | Total | % of Total Ops |
| 2017 | 44,403 | 1,517 | 3,541 | 5,058 | 11% |
| 2018 | 45,313 | 2,217 | 3,023 | 5,240 | 12% |
| 2022 | 48,983 | 3,182 | 2,679 | 5,861 | 12% |
| 2027 | 53,316 | 3,877 | 2,178 | 6,055 | 11% |
| 2032 | 57,959 | 4,344 | 1,818 | 6,162 | 11% |
| 2037 | 62,930 | 4,769 | 1,391 | 6,160 | 10% |

Note: "Other" aircraft include: experimental, ultralights, gliders, powered parachute, UAVs, etc.
Sources: Airport historical data, Tenant Business Plans, Airport Sponsor and TKDA 2017

| TABLE 3-24 FORECAST OTHER* BASED AIRCRAFT DEMAND | | | | | |
|---|-------------------------|-------------|---------------------|-------|------------------------------|
| Fiscal Year | Total Based Aircraft | Light Sport | "Other" Aircraft | Total | % of Total Based Aircraft |
| 2017 | 59 | 3 | 7 | 10 | 17% |
| 2018 | 73 | 5 | 7 | 12 | 17% |
| 2022 | 80 | 8 | 7 | 15 | 19% |
| 2027 | 86 | 12 | 7 | 19 | 23% |
| 2032 | 93 | 17 | 7 | 24 | 25% |
| 2037 | 101 | 24 | 7 | 31 | 31% |

Note: "Other" aircraft include: experimental, ultralights, gliders, powered parachute, UAVs, etc.
Sources: Airport historical data, Tenant Business Plans, Airport Sponsor and TKDA 2017

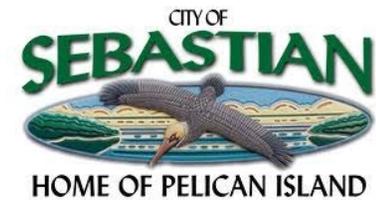
Sebastian Municipal Airport Master Plan Update



**TABLE 3-25
AIRPORT PLANNING FORECAST SUMMARY
SEBASTIAN MUNICIPAL AIRPORT**

| Base Year | 2017 | | | | | | | | | | | |
|--|----------------|-----------------|------------------|-------------------|-------------------|-------------------|--------------------------------------|----------------|-----------------|-----------------|-----------------|--|
| | | | | | | | 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 | |
| | 2017 | 2018 | 2022 | 2027 | 2032 | 2037 | 2018 | 2022 | 2027 | 2032 | 2037 | |
| PASSENGER ENPLANEMENTS | | | | | | | | | | | | |
| On-Demand Air Taxi | 3,598 | 3,822 | 4,846 | 6,439 | 8,546 | 11,327 | 6.20% | 6.13% | 5.99% | 7.94% | 5.90% | |
| Total Passenger Enplanements | 3,598 | 3,822 | 4,846 | 6,439 | 8,546 | 11,327 | 6.20% | 6.13% | 5.99% | 5.94% | 5.90% | |
| OPERATIONS | | | | | | | | | | | | |
| <i>Itinerant Operations:</i> | | | | | | | | | | | | |
| Air Carrier | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | |
| Commuter | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | |
| On-Demand Air Charter | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | |
| On-Demand Air Taxi | 1,779 | 1,852 | 2,171 | 2,614 | 3,144 | 3,776 | 4.13% | 17.19% | 20.41% | 20.26% | 20.11% | |
| Total Commercial Operations | 1,779 | 1,852 | 2,171 | 2,614 | 3,144 | 3,776 | 4.13% | 17.19% | 20.41% | 20.26% | 20.11% | |
| 5010 General Aviation Operations | 14,144 | 14,178 | 14,150 | 13,758 | 13,049 | 11,983 | 0.24% | -0.20% | -2.77% | -5.15% | -8.17% | |
| Other General Aviation Operations (LS and Exp) | 506 | 524 | 645 | 787 | 986 | 1,232 | 3.60% | 23.04% | 22.09% | 25.25% | 24.97% | |
| Military | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | |

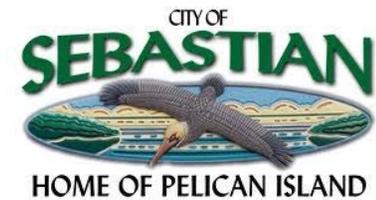
Sebastian Municipal Airport Master Plan Update



**TABLE 3-25
AIRPORT PLANNING FORECAST SUMMARY
SEBASTIAN MUNICIPAL AIRPORT**

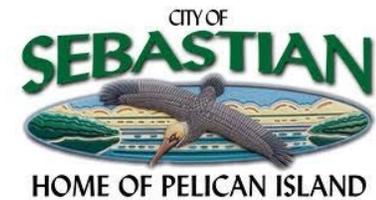
| Base Year | 2017 | | | | | | | | | | |
|--|----------------|-----------------|------------------|-------------------|-------------------|-------------------|--------------------------------------|----------------|-----------------|-----------------|-----------------|
| | | | | | | | Average Annual 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 |
| | 2017 | 2018 | 2022 | 2027 | 2032 | 2037 | 2018 | 2022 | 2027 | 2032 | 2037 |
| Total Itinerant Operations | 16,429 | 16,555 | 16,966 | 17,159 | 17,179 | 16,991 | 0.76% | 2.48% | 1.14% | 0.11% | -1.09% |
| <i>Local Operations:</i> | | | | | | | | | | | |
| Recorded (5010) Civil Operations | 23,422 | 24,042 | 26,801 | 30,889 | 35,604 | 41,011 | 2.65% | 11.47% | 15.25% | 15.26% | 15.19% |
| Other General Aviation Operations (LS and Exp) | 4,552 | 4,716 | 5,216 | 5,268 | 5,176 | 4,928 | 3.60% | 10.61% | 0.99% | -1.74% | -4.79% |
| Military | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Total Local Operations | 27,974 | 28,758 | 32,017 | 36,157 | 40,780 | 45,939 | 2.80% | 11.33% | 12.93% | 12.79% | 12.65% |
| TOTAL OPERATIONS | 44,403 | 45,313 | 48,983 | 53,316 | 57,959 | 62,930 | 2.05% | 8.10% | 8.85% | 8.71% | 8.58% |
| <i>Day Operations</i> | 44,325 | 45,239 | 48,902 | 53,226 | 57,859 | 62,819 | 2.06% | 8.10% | 8.84% | 8.70% | 8.57% |
| <i>Night Operations (19:00 - 23:00)</i> | 78 | 74 | 81 | 90 | 100 | 111 | -5.62% | 9.87% | 11.08% | 10.94% | 10.81% |
| <i>Instrument Operations (NPI)</i> | 688 | 702 | 759 | 826 | 898 | 975 | 2.05% | 8.10% | 8.85% | 8.71% | 8.58% |
| <i>Cargo/Mail (enplaned + deplaned tons)</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| PEAK OPERATIONS FORECAST (April 2017) | | | | | | | | | | | |

Sebastian Municipal Airport Master Plan Update



| TABLE 3-25 AIRPORT PLANNING FORECAST SUMMARY SEBASTIAN MUNICIPAL AIRPORT | | | | | | | | | | | |
|--|----------------|-----------------|------------------|-------------------|-------------------|-------------------|--------------------------------------|----------------|-----------------|-----------------|-----------------|
| Base Year | 2017 | | | | | | | | | | |
| | | | | | | | 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 |
| | 2017 | 2018 | 2022 | 2027 | 2032 | 2037 | 2018 | 2022 | 2027 | 2032 | 2037 |
| Peak Month | 4,089 | 4,173 | 4,511 | 4,910 | 5,337 | 5,795 | 2.05% | 8.10% | 8.85% | 8.70% | 8.58% |
| Average Day Peak Month | 136 | 139 | 150 | 164 | 178 | 193 | 2.21% | 7.91% | 9.33% | 8.54% | 8.43% |
| Peak Hour | 16 | 16 | 18 | 19 | 21 | 23 | 0.00% | 12.50% | 5.56% | 10.53% | 9.52% |
| OPERATIONAL FLEET MIX | | | | | | | | | | | |
| Single-Engine Piston | 33,737 | 34,308 | 36,673 | 39,919 | 43,408 | 47,149 | 1.69% | 6.89% | 8.85% | 8.74% | 8.62% |
| Multi-Engine Piston | 2,348 | 2,372 | 2,463 | 2,550 | 2,636 | 2,722 | 1.02% | 3.84% | 3.53% | 3.37% | 3.26% |
| Turboprop | 3,234 | 3,366 | 3,939 | 4,733 | 5,680 | 6,809 | 4.09% | 17.00% | 20.17% | 20.02% | 19.87% |
| Jet | 0 | 0 | 14 | 16 | 19 | 23 | 0.00% | 0.00% | 0.00% | 0.00% | 16.00% |
| Civil Helicopter (CH) | 26 | 27 | 33 | 42 | 53 | 67 | 3.85% | 22.22% | 27.27% | 26.19% | 26.42% |
| <i>Total</i> | <i>39,345</i> | <i>40,073</i> | <i>43,122</i> | <i>47,261</i> | <i>51,797</i> | <i>56,770</i> | <i>1.85%</i> | <i>7.61%</i> | <i>9.60%</i> | <i>9.60%</i> | <i>9.60%</i> |
| <i>Excluded from FAA TAF Forecasts</i> | | | | | | | | | | | |
| Light Sport Aircraft | 1,517 | 2,217 | 3,182 | 3,877 | 4,344 | 4,769 | 46.14% | 43.53% | 21.84% | 12.05% | 9.79% |
| Other (Experimental Gliders, UAVs, Ultralights, etc.) | 3,541 | 3,023 | 2,679 | 2,178 | 1,818 | 1,391 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| TOTAL OPERATIONAL FLEET MIX | 44,403 | 45,313 | 48,983 | 53,316 | 57,959 | 62,930 | 2.05% | 8.10% | 8.85% | 8.71% | 8.58% |
| BASED AIRCRAFT FLEET MIX FORECAST | | | | | | | | | | | |

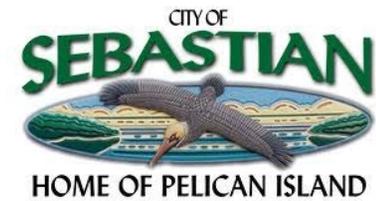
Sebastian Municipal Airport Master Plan Update



**TABLE 3-25
AIRPORT PLANNING FORECAST SUMMARY
SEBASTIAN MUNICIPAL AIRPORT**

| Base Year | 2017 | | | | | | | | | | |
|---|----------------|-----------------|------------------|-------------------|-------------------|-------------------|--------------------------------------|----------------|-----------------|-----------------|-----------------|
| | | | | | | | 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 |
| | 2017 | 2018 | 2022 | 2027 | 2032 | 2037 | 2018 | 2022 | 2027 | 2032 | 2037 |
| Single-Engine Piston | 42 | 53 | 56 | 59 | 63 | 63 | 25.72% | 5.99% | 5.23% | 6.96% | 0.00% |
| Multi-Engine Piston | 4 | 4 | 3 | 2 | 0 | 0 | 0.00% | -25.00% | -33.33% | 0.00% | 0.00% |
| Turboprop | 3 | 3 | 3 | 4 | 4 | 4 | 2.00% | 8.24% | 10.40% | 10.40% | 10.40% |
| Jet | 0 | 0 | 1 | 1 | 1 | 1 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Civil Helicopter | 0 | 1 | 1 | 1 | 1 | 2 | 0.00% | 9.20% | 11.63% | 11.63% | 11.63% |
| <i>Total</i> | <i>49</i> | <i>61</i> | <i>64</i> | <i>67</i> | <i>69</i> | <i>70</i> | <i>24.21%</i> | <i>5.77%</i> | <i>3.73%</i> | <i>3.93%</i> | <i>0.83%</i> |
| <i>Excluded from FAA TAF Forecasts</i> | | | | | | | | | | | |
| Light Sport Aircraft | 3 | 5 | 8 | 12 | 17 | 24 | 71.19% | 61.89% | 49.89% | 34.19% | 43.51% |
| Other (Experimental, Gliders, UAVs, Ultralights, etc.) | 7 | 7 | 7 | 7 | 7 | 7 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| TOTAL BASED AIRCRAFT | 59 | 73 | 80 | 86 | 93 | 101 | 23.73% | 9.16% | 8.22% | 7.98% | 8.43% |
| OPERATIONAL FACTORS | | | | | | | | | | | |
| <i>Average aircraft size (seats)</i> | | | | | | | | | | | |
| Air Carrier | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Commuter | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| On-Demand Charter | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| On-Demand Air Taxi | 3 | 3 | 3 | 5 | 5 | 6 | 0.00% | 0.00% | 66.67% | 0.00% | 20.00% |

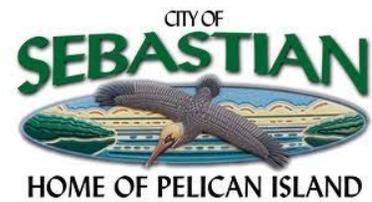
Sebastian Municipal Airport Master Plan Update



**TABLE 3-25
AIRPORT PLANNING FORECAST SUMMARY
SEBASTIAN MUNICIPAL AIRPORT**

| Base Year | 2017 | | | | | | | | | | | |
|---|----------------|-----------------|------------------|-------------------|-------------------|-------------------|--------------------------------------|----------------|-----------------|-----------------|-----------------|--|
| | | | | | | | 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 | |
| | 2017 | 2018 | 2022 | 2027 | 2032 | 2037 | 2018 | 2022 | 2027 | 2032 | 2037 | |
| <i>Average enplaning load factor</i> | | | | | | | | | | | | |
| Air Carrier | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | |
| Commuter | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | |
| On-Demand Charter | 0 | 0 | 0 | 0 | 0 | 0 | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | |
| On-Demand Air Taxi | 2 | 2 | 2 | 2 | 3 | 3 | 1.99% | 8.20% | 10.36% | 10.36% | 10.36% | |
| <i>GA Operations per based aircraft</i> | 637 | 515 | 514 | 518 | 521 | 525 | -19.11% | -0.23% | 0.75% | 0.70% | 0.65% | |
| <i>Note: Due to Rounding may not add up</i> | | | | | | | | | | | | |
| <i>Sources: Airport historical data, 2017 FAA TAF, 2015-34 FDOT FASP, and TKDA 2017</i> | | | | | | | | | | | | |

Sebastian Municipal Airport Master Plan Update



Critical Aircraft Demand

Critical aircraft operations represent the most demanding aircraft in terms of approach speed, wingspan and tail height that regularly, approximately 500 annual operations, use an airport. The critical aircraft may be a single aircraft or a combination/family of aircraft. These aircraft operational requirements direct airfield and facility needs at an airport. As discussed in more detail in Chapters 3 and 4, a design aircraft may differ for different on-airport facilities. For example, the most demanding aircraft for a t-hangar storage area, associated apron and taxi lanes may be designed to accommodate an A-I and B-I aircraft, such as the Cessna 182 or Cessna Mustang, respectively; whereas the primary runway, taxiways and terminal apron may be designed to accommodate B-II aircraft, such as the King Air 350i.

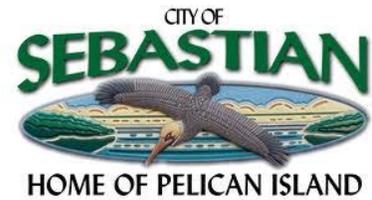
The 2010 Airport Layout Plan shows that the current critical aircraft for Runway 5-23 is an A-II (DH-6-300 “Twin Otter”), and should be upgraded to support a B-II aircraft such as the Cessna 560 XL. The secondary runway, 10-28, currently lists the King Air B-100 (B-I Small Aircraft Only) as the current critical aircraft, and upgrading it to support a King Air C-90B (B-I) aircraft.

Skydive Sebastian uses the DH-6-300 as their main jump plane. At one point, Skydive Sebastian had two DH-6-300 aircraft on the field, but one was irreparably damaged during an accident. During peak skydiving season, the company also uses a Cessna 208 Caravan which temporarily is based at the airport.

In addition to turboprop aircraft used by Skydive Sebastian, Pilot’s Paradise and other tenants utilize a Beech King Air 200D on a fairly regular basis. This was confirmed through discussions with airport users and on-site inventory of activity. **Table 3-26** illustrates current aircraft demand for FY 2017.

As noted, the previous Airport Layout Plan suggested that the Cessna Citation jet XL would regularly operate at Sebastian Airport. Although based upon manufacturer operating criteria the aircraft can safely operate on Runway 5-23, there has been no user interest in operating such an aircraft at X26. Further, since the Airport is noise sensitive and has implemented noise abatement procedures, the introduction of a jet aircraft may not “sit well” with the local community.

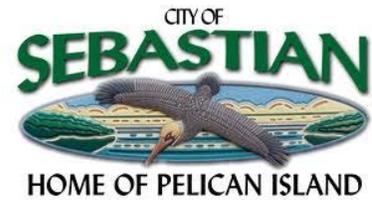
Sebastian Municipal Airport Master Plan Update



Aircraft regularly using the airport include the following.

| TABLE 3-26 CURRENT AIRCRAFT DEMAND | | | |
|---|----------|--------------|---------------|
| Aircraft Type | ARC Code | Engine Type | Operations |
| Beech B-23 | A-I | SEP | 120 |
| Beech P-35 | A-I | SEP | 104 |
| Beech V35 | A-I | SEP | 250 |
| Cessna 152 | A-I | SEP | 108 |
| Cessna 172 | A-I | SEP | 303 |
| Cessna 182 | A-I | SEP | 110 |
| Cessna Skyhawk | A-I | SEP | 62 |
| Piper 28 Cherokee | A-I | SEP | 24,689 |
| Piper Arrow | A-I | SEP | 5,578 |
| Piper 32 Cherokee | A-I | SEP | 216 |
| Piper Cub | A-I | SEP | 100 |
| Cirrus SR22 | A-I | SEP | 100 |
| Maule M-7-235 | A-I | SEP | 1,897 |
| Piper Warrior | A-I | SEP | 100 |
| | Subtotal | SEP | 33,737 |
| Piper 31 Navajo | B-I | MEP | 1,514 |
| Piper 30 Twin Comanche | A-I | MEP | 792 |
| Piper 34 Seneca | A-I | MEP | 132 |
| | | | 2,438 |
| | | | |
| Cessna 320D | A-I | TP | 964 |
| Cessna 208 Caravan | B-I | TP | 495 |
| DH6-300-600 | A-II | TP | 867 |
| Beech 200D | B-II | TP | 908 |
| | | | 3,234 |
| Glider | | NA | 420 |
| Helicopter - Small | | Unknown | 26 |
| Light Sport* | | | 4,638 |
| | | TOTAL | 44,403 |
| <i>Items in blue are Turboprop aircraft used by current airport tenants and users</i> | | | |
| <i>*Light sport includes Velocity Aircraft operations</i> | | | |
| <i>Sources: Airport surveys, airport data, on-site survey – TKDA 2017</i> | | | |

Sebastian Municipal Airport Master Plan Update

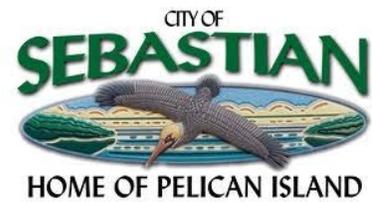


Currently, the critical design aircraft is the **Beech 200D**. The aircraft fleet mix forecast, supported by aircraft manufacturer and FAA data, forecast that multi-engine piston aircraft are being replaced by quieter and efficient turboprop aircraft and light jet aircraft. Turboprop operations at X26 based upon historical and current data consist of a mix of ARC A-II and B-II aircraft. Assuming that turboprop demand will remain strong throughout the forecast period, it is anticipated that B-II turboprop aircraft will remain the airport design group for the foreseeable future.

In addition, the sponsor is developing larger hangar facilities adjacent to the terminal apron. Since the King Air family is still heavily used at GA airports for business or on-demand air taxi operations, it is likely that the **King Air 350i**, **ARC B-II**, as well as similarly sized aircraft can be accommodated in the southeast quadrant of the airport. Although some jet aircraft are forecast to operate at X26 in the future, the light jet category of aircraft also tend to be included in the ARC B-I and B-II categories. Again, this supports that B-II-II operations will remain the critical aircraft for airfield design for the foreseeable planning period.

A breakdown of future critical aircraft operational demand is provided **Table 3-27**.

Sebastian Municipal Airport Master Plan Update



**TABLE 3-27
2037 FORECAST AIRCRAFT DEMAND**

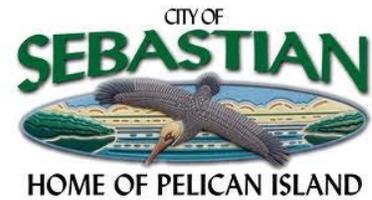
| Aircraft Type | ARC Code | Engine Type | Operations |
|------------------------|----------|---------------------|---------------|
| Beech B-23 | A-I | SEP | 168 |
| Beech P-35 | A-I | SEP | 145 |
| Beech V35 | A-I | SEP | 349 |
| Cessna 152 | A-I | SEP | 151 |
| Cessna 172 | A-I | SEP | 423 |
| Cessna 182 | A-I | SEP | 154 |
| Cessna Skyhawk | A-I | SEP | 87 |
| Piper 28 Cherokee | A-I | SEP | 34,504 |
| Piper Arrow | A-I | SEP | 7,795 |
| Piper 32 Cherokee | A-I | SEP | 302 |
| Piper Cub | A-I | SEP | 140 |
| Cirrus SR22 | A-I | SEP | 140 |
| Maule M-7-235 | A-I | SEP | 2,651 |
| Piper Warrior | A-I | SEP | 140 |
| | | Subtotal SEP | 47,149 |
| Piper 31 Navajo | B-I | MEP | 1,651 |
| Piper 30 Twin Comanche | A-I | MEP | 918 |
| Piper 34 Seneca | A-I | MEP | 153 |
| | | Subtotal MEP | 2,722 |
| Cessna 320D | A-I | TP | 230 |
| Cessna 208 Caravan | B-I | TP | 1,042 |
| DH6-300-600 | A-II | TP | 1,825 |
| Beech 200D | B-II | TP | 1,912 |
| Beech KingAir 350I | B-II | TP | 1,800 |
| | | Subtotal TP | 6,809 |
| Embraer Phenom 100 | B-I | Turbofan | 15 |
| Embraer Phenom 300 | B-II | Turbofan | 10 |
| | | Subtotal Jet | 23 |
| Light Sport Aircraft * | A-I | SEP/Other | 5,740 |
| Glider/Other | | NA | 420 |
| Helicopter | | Unknown | 67 |
| | | TOTAL | 62,930 |

Note: May not add up due to use of percentages and rounding

**Includes Velocity and new tenant estimates*

Sources: TKDA, 2017

Sebastian Municipal Airport Master Plan Update



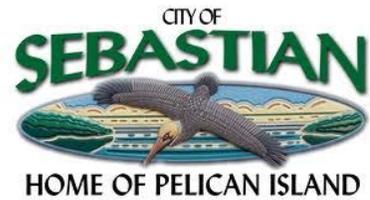
Next Steps

As illustrated in **Figure 3-3**, forecast demand is used to identify needed airport infrastructure as well as provides planning activity level triggers for project justification. Typically, airport development triggers include:

- Aircraft Operations
 - Airport planning, environmental documentation and preliminary permitting should start when at 60 percent of forecast planning activity triggers.
 - Design and construction should begin at 80 percent of forecast planning activity levels to allow for infrastructure to be in place to meet demand.
- General Aviation Hangar Development
 - Hangar site preparation and construction should begin when demand is at 90 percent capacity or based upon tenant/user requests
- Transient Aircraft Storage Demand
 - Transient aircraft storage, including apron parking, shade hangars and box hangar storage should begin around 80 percent of demand to allow adequate time for site preparation, funding and construction.
- Tenant Demand, and
 - Trigger demand for tenant infrastructure needs are specifically related to their need. If demand warrants and funding available, design, permitting and any environmental work should begin immediately.
- Airport Capacity
 - Airport capacity is tied to operational demand. Therefore, planning, environmental and other documentation should begin when airport and airspace demand equals 60 percent of total capacity.
 - At 80 percent capacity, engineering design and construction should begin. This typically will include additional taxiways, runways, and navigational aids.

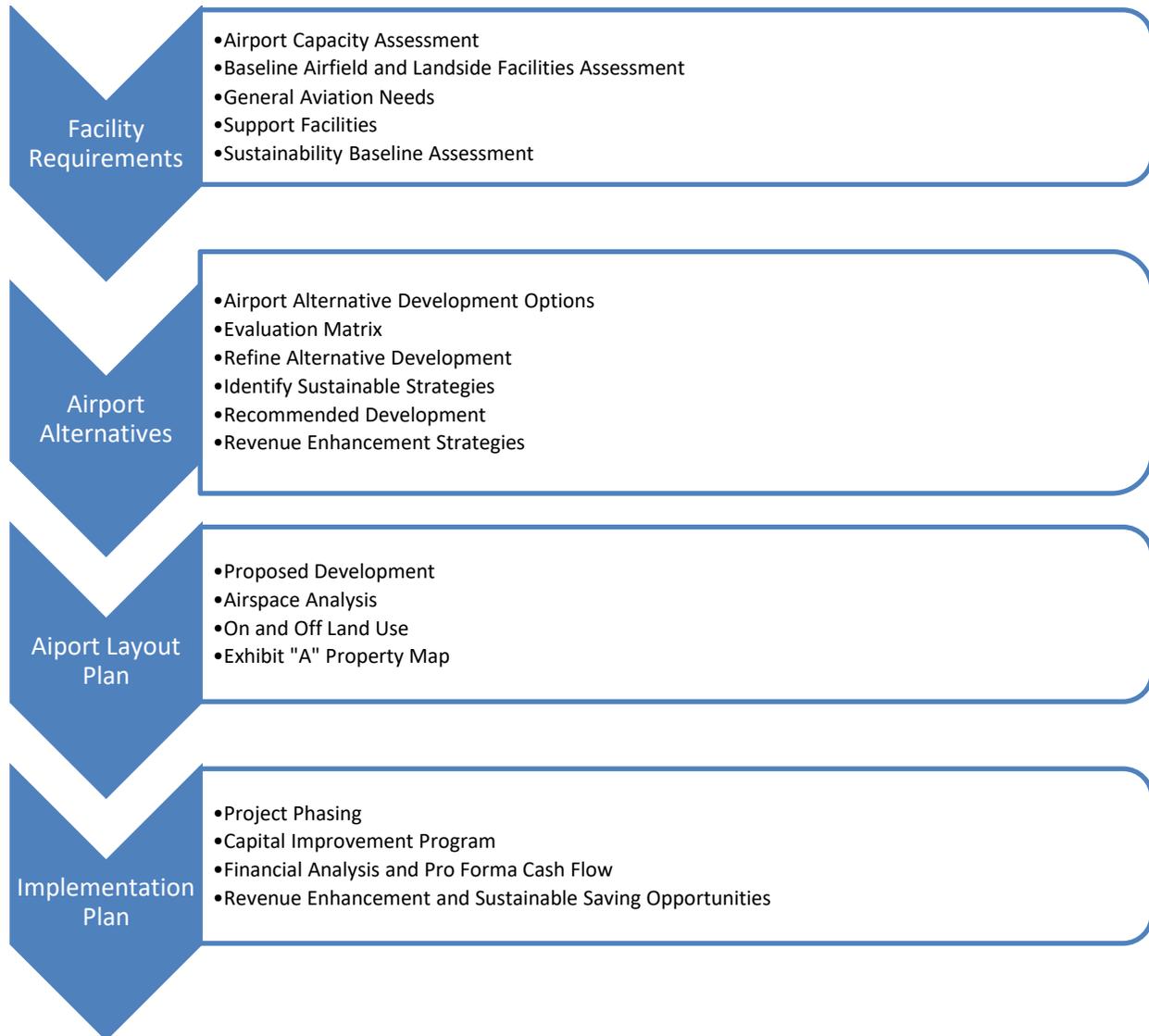
Forecast data and facility needs are used to create airport alternative options, on and off land use, to identify revenue diversification opportunities as well as establish phasing for project development. Proposed airport development for the next twenty-years is graphically presented in the Airport Layout Plan set and a pro-forma cash flow analysis and updated capital improvement program will provide the sponsor data related to likely federal and state funding

Sebastian Municipal Airport Master Plan Update

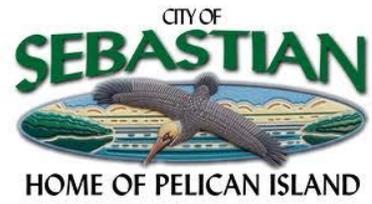


as well as identify third party funding and revenue and costs associated with proposed development.

**FIGURE 3-3
NEXT STEPS**



Sebastian Municipal Airport Master Plan Update



This Page was Intentionally Left Blank