Treasure Coast International Airport, Airport Master Plan Update

St. Lucie County

September 2018
Final

TREASURE COAST International Airport & Business Park
AT ST. LUCIE COUNTY

ATKINS

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1. Introduction

1.1. Purpose

The purpose of this study is to provide a 20-year development program that will create a safe, efficient, economical, and environmentally responsible airport capable of facilitating the demand for aviation services which can be reasonably expected, meet the development goals of the TCIA, and create additional public value for the residents in St. Lucie County and the entire aeronautical community.

1.2. Goals & Objectives

The goals and objectives of Treasure Coast International Airport (Airport) are important to the proper preparation and implementation of an airport master plan. They assist in identifying what is important for an airport to accomplish and thus important to determining what the master plan will accomplish. Different entities associated with an airport often have differing views on what it should become and how that should be accomplished. By establishing a set of well-defined goals and objectives drawn from the desires of the different airport stakeholders, a clear vision can be established for the future of the Airport and how that future is to be created. When future decisions are required, established goals and objectives can guide decision makers in making prudent choices based on logic rather than emotion.

Master plans are statements of intention and not guarantees of action by an airport. The results of the master plan are based on the Airport's stated goals and objectives and what is expected to transpire during the planning period. Changes occur, therefore the goals and objectives of an airport may change over time. Goals and objectives should be subject to annual scrutiny to insure they are still valid. Changes should be made only when there are clear indications that a stated goal or objective is no longer valid and in the best interests of the Airport. The goals and objectives should not be changed merely due to political considerations or populist sentiment.

The following goals and objectives were derived from discussions with airport staff, sponsor representatives, and community leaders. They were included in the Public Participation Program and subjected to review and comment by interested stakeholders and citizens.

Goal 1: Provide an airport that is safe, secure, and reliable for the citizens of St. Lucie County

- **Objective:** Meet and exceed Code of Federal Regulations (CFR) Title 14 Part 139 requirements.
- **Objective:** Provide navigational aids, flight support services, and meteorological facilities that enhance the safety and reliability of operations under all-weather conditions.
- **Objective:** Protect FAA-mandated safety areas, runway protection zones, and other clear zones.
- **Objective:** Eliminate, mitigate, or minimize obstructions to air navigation.
- **Objective:** Ensure that airside, terminal and landside operations and facilities meet all applicable security standards.
- **Objective:** Provide emergency back-up power for critical airport systems.

Goal 2: Create programs and projects to modernize and expand the airport infrastructure

- **Objective:** Establish Boeing 737 series or similar type aircraft as the future critical aircraft for the Airport.
- **Objective:** Provide additional apron space to accommodate an anticipated increase in itinerant and remain overnight (RON) operations.
- **Objective:** Bring runways, taxiways, and supporting airfield systems into compliance with current FAA guidance.
- **Objective:** Increase runway length to accommodate changes in critical aircraft.

- **Objective:** Build a complete parallel taxiway system to support aircraft operations and planned aeronautical development.

Goal 3: Expand domestic and international commercial air service to and from Treasure Coast International Airport

- **Objective:** Renovate the existing airport terminal to accommodate planned commercial air service and eventual development of new GA terminal.
- **Objective:** Evaluate the need for a replacement airport terminal to accommodate anticipated growth in domestic and international commercial air service and itinerant GA flights.
- **Objective:** Continue air service marketing efforts to attract additional commercial air service to the Airport.

Goal 4: Create expanded economic development opportunities and financially sustainable activities at Treasure Coast International Airport.

- **Objective:** Establish a leasing and incentive policy to attract and retain aeronautical and non-aeronautical businesses.
- **Objective:** Evaluate additional FBO opportunities for operation by the Airport or private operators.
- **Objective:** Establish an on-airport land use development plan and policy.
- **Objective:** Evaluate airport compatible business categories and create a business marketing plan targeting those business categories.
- **Objective:** Identify and support expansion and creation of surface transportation connections to the regional highway system.
- **Objective**: Enhance airport visibility through better roadway signage and creating “sense of place” entrance that uniquely identifies the airport location.
- **Objective:** Renovate the existing airport terminal to accommodate scheduled commercial air service and eventual transition to GA only operations.
- **Objective:** Continue air service marketing efforts to attract additional commercial air service to the Airport.
- **Objective:** Negotiate better business terms with airport tenants to enhance airport revenues.

Goal 5: Create programs, policies, and projects that increase the environmental sustainability of the Airport.

- **Objective:** Investigate and implement feasible alternative energy sources to reduce airport energy costs.
- **Objective:** Identify noise sensitive areas around the Airport and implement compatible land use controls in its immediate vicinity to prevent encroachment by non-compatible land uses.
- **Objective:** Avoid noise abatement actions that would adversely impact the capacity of the Airport and erode prudent margins of safety.
- **Objective:** Establish electric vehicle charging stations at the Airport.
- **Objective:** Investigate use of propane-fuelled airport vehicles.
- **Objective**: Identify wildlife threats to the airfield and approaches, implement mitigation programs that eliminate habitat in proximity to the airfield, and implement a wildlife management program to discourage use of the airfield environment.

Goal 6: Assess future airport trends and position Treasure Coast International Airport to be at the forefront of airport innovation.

- **Objective:** Participate in state, regional, and national organizations that support airport operations and development.
- **Objective:** Partner with aeronautical education organizations in Florida to provide research opportunities for airport management and operations staff.

Goal 7: Promote a strong relationship with the local and regional community.

- **Objective:** Create annual or semi-annual 'open house' events to promote the Airport and aviation.
- **Objective:** Establish an airport speaker program to promote the Airport to local and regional private and public organizations.

1.3. Socioeconomic Data

The information which will be presented in the subsequent sections is gathered from official Woods & Poole Data for both the State of Florida as well as the County of St. Lucie. Most statistics were finalized for calendar year 2015 and are represented for the standings as of 2015.

1.3.1. State Socioeconomic Data

The following information pertains to 2015 statistics gathered for the State of Florida. In comparison to the 2005 statistics, there is an overall consistent trend of growth within the State of Florida. **Table 1-1** depicts four categories of Florida socioeconomic data statistics for 2005 and 2015.

Table 1-1 **Florida Socioeconomic Data**

Year	Population (Residents)	Composition of Age (Years)	Per Capita Income	Employment (Jobs)
2005	17,842,038	39.78	$36,294	10,140,037
2015	20,158,753	41.91	$43,602	11,132,260

Source: Woods & Poole

1.3.2. County Socioeconomic Data

The following information pertains to 2015 statistics gathered for St. Lucie County. In comparison to the 2005 statistics the county grew in every category. A majority of the growth trends between the two years follow the trends of the state overall. For example, employment within the county dropped in both 2009 and 2010 which closely associates with the state trend for the employment dip. **Table 1-2** depicts four categories of county socioeconomic data statistics for 2005 and 2015.

Table 1-2 **St. Lucie County Socioeconomic Data**

Year	Population (Residents)	Composition of Age (Years)	Per Capita Income	Employment (Jobs)
2005	241,965	42.40	$29,008	96,098
2015	296,762	44.65	$34,784	107,714

Source: Woods & Poole

1.4. Airport Background

Treasure Coast International Airport (TCIA) is publicly owned and operated by St. Lucie County. The Board of Commissioners oversees the Airport and employs a professional aviation staff who manage the Airport's day-to-day operations. It was originally named the Fort Pierce Airport and was leased by the U.S. Navy in World War II as an auxiliary field for pilots and flight crews' training at various naval air stations located in southeast Florida. In 1947, the U.S. Navy ceased operations at the airfield and conveyed the Airport back to the county. Due to the financial burden that the Airport had on the county to maintain and operate, the facility laid dormant for several years. Throughout the 1960's and 1970's, major improvements to the facility were made to revive the Airport as a commercial activity. The facility was renamed Treasure Coast International Airport in 2016. It consists of approximately 3,844-acres in the community of Ft. Pierce, St. Lucie County, Florida. The Airport is located approximately two miles northwest of northern Ft. Pierce, and approximately eleven miles south of Vero Beach Regional Airport (VRB).

The Airport has a close proximity to the City of Ft. Pierce, which has retained a rising population count in recent years. Approximately 45,000 people currently reside in the City of Ft. Pierce, with the Airport being the most accessible airfield to said residents. The airfield is also close to the Port of Fort Pierce, where an emphasis can be placed on freight development. **Figure 1-1**, Location Map, illustrates the Airport's location within the State of Florida. **Figure 1-2**, Vicinity Map, illuminates the Airport in relation to its surrounding community.

As part of the AMP update, the existing airport reference point (ARP) for FPR was calculated to be Latitude 27° 29' 50.93'', Longitude 80° 22' 21.47''. The Airport's Elevation is approximately 23.4 feet above mean sea level (AMSL).

1.4.1. Airport History

Originally designated as Fort Pierce Airport in 1935, it was utilized by the US Navy during WWII. Being leased to the military branch in 1941, training exercises were conducted on the airfield to specifically simulate landing on an aircraft carrier. The newly leased and converted auxiliary field was majorly utilized by pilots from the Naval Air Station Vero Beach, Naval Air Station Fort Lauderdale, and the Naval Air Station Melbourne. After a long hold on the airfield through lease agreements, the US Navy then discontinued training operations in 1947 ultimately turning it back over to the county.

After some time of little to no operations being conducted on the airfield, between the 1960s and 1970s major developments were commenced and completed. Under the role of Curtis King, who became the first full time airport director, the Airport took off towards handling diverse types of operations from GA to commercial service.

1.5. Review of Existing Studies

Multiple studies have been completed or are in progress for the Airport. The following subsections provide a summary of prior and current studies that were reviewed as part of the master plan process. With a critical review of these studies is important to properly analyze current airport conditions and determine future airport needs, which should help ensure compatibility, efficiency, and effectiveness with local, state, and federal plans.

1.5.1. National Plan of Integrated Airport Systems (NPIAS) – FAA

The National Plan of Integrated Airport Systems (NPIAS) was submitted to Congress under 49 U.S. Code § 47103 on September 30, 2016. This plan identified 3,340 existing airports that are significant to national air transportation and estimates that $32.5 billion in infrastructure development will be needed over the next five years to meet the needs of all segments of civil aviation. The airports selected for the NPIAS are comprised of all commercial service airports, all reliever airports, and qualified GA airports. The NPIAS's primary purpose is to determine the identified airport's specific eligibility to receive a portion of the grant fund under the Airport Improvement Program (AIP).

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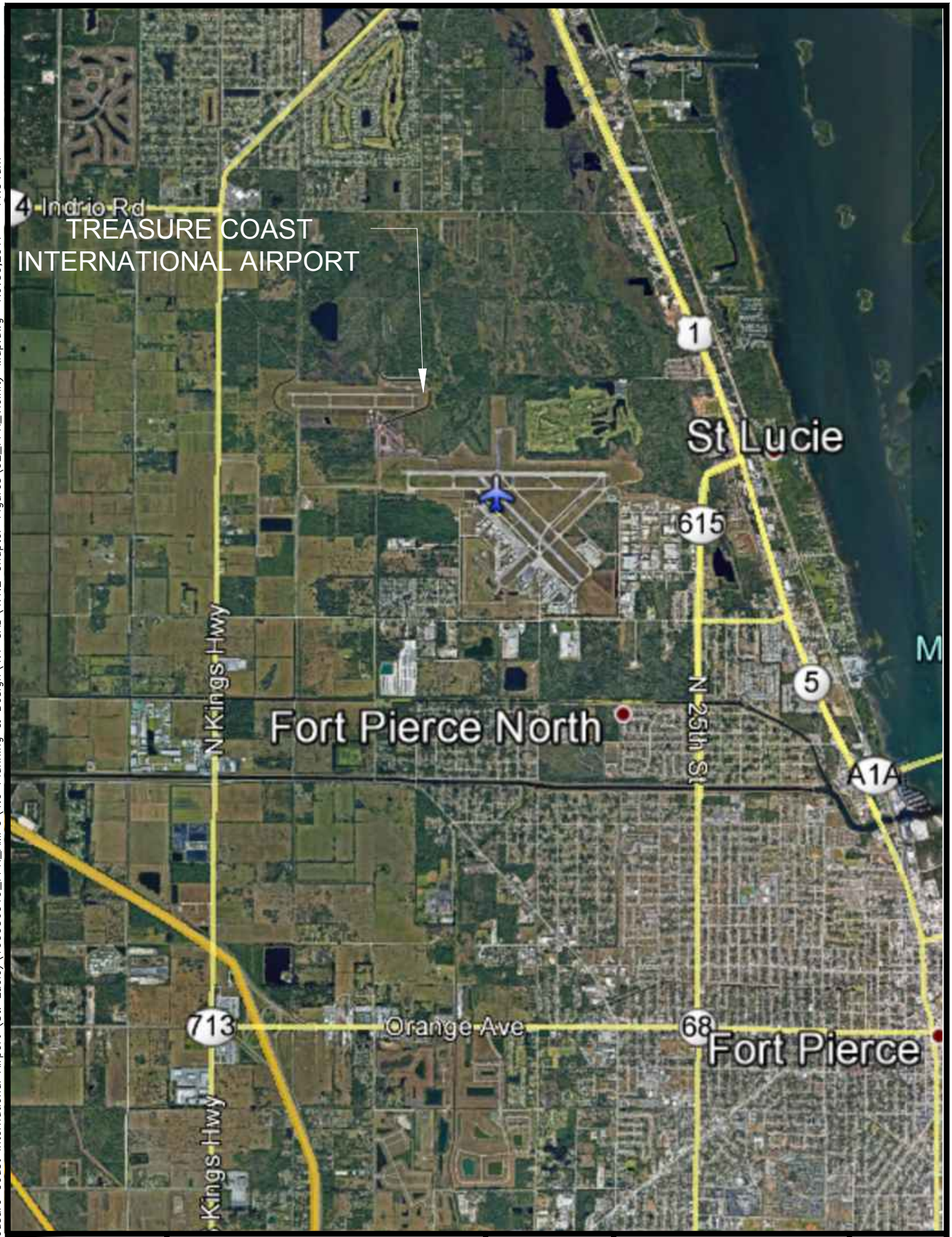
ATKINS	Treasure Coast International Airport Airport Master Plan Update	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Location Map	Figure. 1-1



ATKINS	Treasure Coast International Airport Airport Master Plan Update	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Vicinity Map	Figure. 1-2

Plotted By: hask8597
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The Airport is classified by the NPIAS as an eligible public use, National General Aviation Airport. The Airport's category will remain National General Aviation under the five- year planning period. Between 2017 and 2021, development estimated under the NPIAS totals to $16,469,000.

1.5.2. Florida Aviation System Plan- FDOT

In 2005, the Florida Department of Transportation (FDOT), along with the Federal Aviation Administration (FAA) and Florida's public airports developed the Florida Aviation System Plan (FASP). In accordance with the Continuing Florida Aviation System Planning Process (CFASPP), the FASP identifies seven strategic goals and the appropriate approaches, analysis, and overall recommendations to achieve these goals. Those goals include having a well-planned system of airports for the projected capacity growth in the coming years. That includes identifying major development projects for all of Florida's airports and accurate long-range plans to ensure the capable planning for the future. The FASP is also attempting to provide a diversified system of airports that is capable of meeting user demands by providing convenient air travel. In the most recently updated (2010) FASP, it has been identified that FPR will have modest future growth.

1.5.3. Florida State-wide Aviation Economic Impact Study- FDOT

In August 2014, the FDOT completed the Florida State-wide Aviation Economic Impact Study. That study analyzed the total economic impact, both direct and indirect, coming from airports within the state. Certain factors considered included airport tenants, businesses located at an airport, and airport construction projects to name a few. It was calculated that as of August 2014, the Airport contributes over $155 million per year to the local economy. The Airport is home to over 25 tenants, which employ 1,282 people as of August 2014 and have a total payroll amount of approximately $50 million.

1.5.4. Go2040 – St. Lucie TPO Long Range Transportation Plan

The Go2040 – St. Lucie Transportation Planning Organization's (TPO) Long Range Transportation Plan was adopted in 2016 to serve as guidance for future planning of county transportation needs. This document was completed by the St. Lucie Transportation Planning Organization to assist the overall economic development of the county through transportation enhancements. Two major developments were referenced in the document that directly impact the Airport.

- Establish a Freight Logistics Zone (FLZ) that encompasses the airport property.
- Create a direct connector to FPR from I-95 to further encourage freight operations.

Pursuit of these two goals should directly impact the Airport's ability to grow and allow for future development of cargo operations on airport property and expand its overall multi-modal capabilities.

1.5.5. FPR Airport Business Plan

In May 2015, Atkins, in association with R.A. Wiedemann & Associates, Inc., developed the Airport Business Plan to better assist the county with financial planning and guidance for the Airport. This plan will be referenced repeatedly as the master plan process progresses. The strategies outlined were developed in conjunction with the goals and objectives set by airport officials and will perform as a roadmap towards reaching set goals and objectives.

1.6. Key Planning Issues

St. Lucie Board of County Commissioners identified the following key issues to be considered during the development of the ALP and its associated drawings:

- Increasing industrial & non-aviation areas within the airport boundary to allow for the expansion of non-aeronautical land uses, and increase lease revenue.
- Create a comprehensive understanding of all land use capabilities on the Airport.
- Increase economic development within the immediate region of the Airport.
- Increase the diversification of the Airport's Fixed Based Operator opportunities.
- Update the current standing General Aviation Terminal and associated structures.
- Increase the Airport's capabilities to accommodate growing commercial service prospects.
- Improve roadway access into and out of the airport property.

2. Inventory of Existing Conditions

The development of an Airport Master Plan (AMP) for Treasure Coast International Airport (Airport) requires the collection and evaluation of baseline information relating to the Airport's property, facilities, services, location, and tenants, as well as access, utilities, and environmental considerations. The collected information will be used to determine any required airport improvements or expansion that will be identified as part of the aviation activity forecast and the demand/capacity analyses. The information presented in this chapter was obtained through a variety of sources, including Airport site visits, interviews with Airport staff and tenants, and examination of airport records and other public documents. This chapter includes the following sections.

- Airport Facility Inventory
- Airspace Structure
- Regional Setting and Land Use
- Environmental Considerations

2.1. Airport Facility Inventory

A thorough inventory of the Airport's existing facilities is necessary to fully understand the current conditions. Knowing the conditions of all the various airport facilities is crucial to determining what changes may be needed to meet future demand and create a more sustainable airport. The inventory is an intensive exercise to collect and categorize all the information available on airport facilities including runways, taxiways, navigation aids, roadways, utilities, energy use, drainage, buildings, signage, based aircraft, fueling facilities, and many more assets located at the Airport. The following sections will present information on all the facilities for which information has been gathered and their current condition.

2.1.1. Airside Facilities

Airside facilities comprise the most important component of the facility inventory. Without all the airfield facilities there would be no airport. Runways and taxiways are not the only facilities to be inventoried and inspected. There are lighting components, aprons, airfield signage, navigational equipment, markings, and many other facilities that make the airside function efficiently. The following sub-sections present information collected on all key airside facilities.

2.1.1.1. Runways

The existing airfield runway configuration consists of three bi-directional runways. Runway 10R-28L is considered the Airport's primary runway and is 6,492 feet long and 150 feet wide. Its surface is asphalt and is currently reported in good condition. Markings for this runway are precision for both ends and are reported in fair condition. Runway 10R-28L is equipped with 200-foot-long by 150-foot-wide blast pads prior to both runway ends. Runway 14-32 is approximately 4,755 feet long and 100 feet wide. Its surface composition is also asphalt, reported in good condition. Runway 14-32's current markings at both ends are non-precision in fair condition. Runway 10L-28R is located approximately 2,500 feet northwest of Runway 10R-28L. Runway 10L-28R has a cross-field taxiway which connects it to the rest of the airfield. Taxiway G connects from the Runway 10R approach end and runs to Runway 10L-28R's parallel taxiway. Runway 10L-28R is 4,000 feet long and 75 feet wide, and is primarily used for flight training operations. It has visual markings in fair condition. **Table 2-1** presents a summary of the Airport's runway characteristics.

Table 2-1 Runway Characteristics

Dimensions	Runway 10R-28L		Runway 14-32		Runway 10L-28R	
Length (ft.)	6,492		4,755		4,000	
Width (ft.)	150		100		75	
Surface Material	Asphalt		Asphalt		Asphalt	
Markings	Precision		Non-Precision		Visual	
Load Bearing Capacity by Gear Type						
SWL* (pounds)	30,000		15,000		15,000	
DWL* (pounds)	60,000		N/A		N/A	
2DWL (pounds)	N/A		N/A		N/A	
Approach Slope	3.00 Degrees		3.00 Degrees		3.00 Degrees	
Effective Gradient	0.00%		0.00%		0.00%	
Runway End Coordinates	**Runway 10R**	**Runway 28L**	**Runway 14**	**Runway 32**	**Runway 10L**	**Runway 28R**
Latitude	N 27° 29' 50.1164"	N 27° 29' 49.5919"	N 27° 29' 48.4986"	N 27° 29' 14.9363"	N 27° 30' 15.6717"	N 27° 30' 15.3520"
Longitude	W 080° 22' 45.7541"	W 080° 21' 33.6649"	W 080° 22' 18.9145"	W 080° 21' 41.8823"	W 080° 23' 27.8345"	W 080° 22' 43.4151"

**Single Wheel Load (SWL), Dual Wheel Load (DWL)*
Source: FAA Form 5010, FPR, June 2018

2.1.1.1.1. Declared Distances

The FAA requires GA airports having certain operational limitations to publish declared distances for each runway. This data informs pilots what the available runway lengths are for different types of operations to maintain standard safety areas and protection zones. Declared distances include the following:

- Take Off Run Available (TORA) – The runway length declared available for the ground run of an aircraft.
- Take Off Distance Available (TODA) – The runway length declared available for the ground run of an aircraft plus any remaining clearway.
- Accelerated Stop Distance Available (ASDA) – The length of runway plus any stop way declared available and suitable for the safe deceleration of an aircraft after aborting a takeoff.
- Landing Distance Available (LDA) – The length of runway declared available for landings.

The Airport's declared distances are not published and/or not calculated. **Table 2-2** depicts a general assumption of distances for each category for each individual runway.

Table 2-2 Declared Distances

Runway	TORA	TODA	ASDA	LDA
10R	6,492’	6,492’	6,492’	6,492’
28L	6,492’	6,492’	6,492’	6,492’
14	4,755’	4,755’	4,755’	4,755’
32	4,755’	4,755’	4,755’	4,755’
10L	4,000’	4,000’	4,000’	4,000’
28R	4,000’	4,000’	4,000’	4,000’

Source: Atkins Analysis 2017

2.1.1.2. Taxiways

The Airport’s three runways each have a parallel taxiway to accommodate operations. In addition, the Airport has multiple taxiways that provide access to both runways on the main airfield as well as all facilities located airside. These taxiways are designed to satisfy the conditions of the runways and associated critical aircraft that they serve. A summary of the Airport’s taxiways is as follows:

- Taxiway A is a 50-foot-wide full length parallel taxiway on the south side of Runway 10R-28L. It lies approximately 500 feet from runway centerline to taxiway centerline. There is a total of five (A1-5) connections from Runway 10R-28L onto Taxiway A, with one being a high-speed exit for operations arriving on Runway 10R. This taxiway crosses over Runway 14-32 approximately 450 feet from the Runway 14 threshold, and can be identified as a high-risk area due to the increased hazard of crossing active runways. Along Taxiway A there are two separate FAA recognized hot spots which will be discussed in later sections.
- Taxiway B is a 50-foot-wide taxiway running parallel to and on the north side of Runway 14-32. The taxiway has a direct connection to the Runway 32 end, where the taxiway then accommodates the current tenant in that location. APP Jet Center has two Taxiway B connections off their main apron, which is located directly to the north of the Runway 32 approach end. Taxiway B then runs up to Runway 10R-28L, where is intersects with both Taxiway A & A3 connection. Taxiway B is approximately 500 feet from the Runway 14-32 centerline to taxiway centerline
- Taxiway C is a 50-foot-wide taxiway running parallel to and on the south side of Runway 14-32. Taxiway C has multiple connections due to its accommodation of most airside facilities on the airfield. This taxiway provides direct access to the Airport’s apron areas from Runway 14-32 and Taxiway A. A high-speed taxiway exit is provided for arrivals on Runway 14, approximately 800 feet from its threshold. The centerline of Taxiway C is approximately 400 feet from the Runway 14-32 centerline.
- Taxiway D is a 50-foot-wide taxiway which runs from one of the main aprons, crosses Runway 14-32, and runs down to on field fire station. Taxiway D continues around the fire station to serve the Airport’s easternmost airside facilities.
- Taxiway E is a 50-foot-wide taxiway which runs parallel to the north of Taxiway D. Taxiway E has a direct connection to the Runway 28L approach end and crosses Runway 14-32 where it leads to the main aircraft parking apron area.
- Taxiway F is a 35-foot-wide taxiway which serves the standalone Runway 10L-28R. Taxiway F has four connections to Runway 10L-28R, two at each respective runway end and the remaining two lying between the ends. There is no connection to other portions of the airfield from this location, and is designated for touch/stop and go operations. The centerline of Taxiway F is approximately 400 feet from Runway 10L-28R’s centerline.
- Taxiway G is a newly constructed cross-field taxiway which connects Taxiway F down to the Runway 10R approach end. It was constructed to ultimately give primary airfield access to the recently isolated Runway 10L-28R.

2.1.1.3. Airfield Pavement Condition

The Airport's most recent FDOT Airfield Pavement Condition Index (PCI) Rating Inspection report available is from May 2015, which clearly identifies that Runway 14-32 needs rehabilitation to upgrade its pavement condition from below standards up to a compliant condition. Yet, Runway 10R-28L and Runway 10L-28R were both identified as being in 'good condition'. On average, the condition of the airfield pavement is between 'satisfactory' to 'good'. Only one section was identified as 'critical', and five sections as 'very poor'. **Table 2-3** and **Figure 2-1** depict the Airport's current pavement conditions. Pavement that is regarded to be in 'very good' or 'good' condition have no immediate need for rehab planning. Pavement quality that falls within 'fair' should be planned to rehab within the next five years, and pavement quality that falls within 'poor' and 'very poor' should be high priority to rehab, as it is now considered a safety hazard towards operators.

Table 2-3 Pavement Condition Report Overview

Pavement Section Name	Section	PCI	Rating
AP Center (Center Apron)	4105	68	Satisfactory
AP Center (Center Apron)	4110	25	Very Poor
AP Center (Center Apron)	4112	3	Critical
AP Center (Center Apron)	4115	82	Good
AP Center (Center Apron)	4120	61	Fair
AP Center (Center Apron)	4125	41	Poor
AP Center (Center Apron)	4127	40	Poor
AP E (East Apron)	4405	65	Satisfactory
Run-Up Apron at RWY 10R	5105	100	Good
AP S (South Apron)	4205	52	Poor
AP S (South Apron)	4210	100	Good
AP S (South Apron)	4212	100	Good
AP S (South Apron)	4215	65	Satisfactory
AP S (South Apron)	4220	71	Satisfactory
AP S (South Apron)	4225	71	Satisfactory
AP S (South Apron)	4230	100	Good
AP S (South Apron)	4240	90	Good
AP SE (Southeast Apron)	4305	40	Poor
AP SE (Southeast Apron)	4310	65	Satisfactory
AP SE (Southeast Apron)	4315	79	Satisfactory
AP SE (Southeast Apron)	4320	14	Very Poor
Runway 10L-28R	6305	97	Good
Runway 10R-28L	6105	91	Good

Pavement Condition Report
Overview Continued…

Pavement Section Name	Section	PCI	Rating
Runway 10R-28L	6110	96	Good
Runway 10R-28L	6115	94	Good
Runway 10R-28L	6120	94	Good
Runway 10R-28L	6125	85	Good
Runway 10R-28L	6130	65	Satisfactory
Runway 14-32	6205	65	Satisfactory
Taxiway A	105	82	Good
Taxiway A	106	100	Good
Taxiway A	110	100	Good
Taxiway A	150	88	Good
Taxiway A	151	89	Good
Taxiway A	435	76	Satisfactory
Taxiway A1	140	89	Good
Taxiway A1	145	86	Good
Taxiway A2	120	100	Good
Taxiway A3	130	100	Good
Taxiway B	203	67	Satisfactory
Taxiway B	205	100	Good
Taxiway B	207	77	Satisfactory
Taxiway B2	260	100	Good
Taxiway B3	250	100	Good
Taxiway C	410	100	Good
Taxiway C	415	100	Good
Taxiway C1	405	100	Good
Taxiway C1	408	58	Fair
Taxiway C1	505	63	Fair
Taxiway C4	420	100	Good
Taxiway C4	422	71	Satisfactory
Taxiway C5	607	100	Good
Taxiway C7	445	69	Satisfactory
Taxiway C8	430	82	Good
Taxiway C8	432	100	Good
Taxiway D	305	25	Very Poor
Taxiway D	310	100	Good
Taxiway D	311	61	Fair
Taxiway D	312	100	Good

Pavement Condition Report
Overview Continued…

Pavement Section Name	Section	PCI	Rating
Taxiway D	315	31	Very Poor
Taxiway E	605	38	Very Poor
Taxiway E	606	83	Good
Taxiway E	610	83	Good
Taxiway E	611	100	Good
Taxiway E	615	83	Good
Taxiway F	810	97	Good
Taxiway F1	815	97	Good
Taxiway F2	820	97	Good
Taxiway F3	825	97	Good
Taxiway F4	830	95	Good

2.1.1.4. Lighting

A variety of lighting aids are available at the Airport to facilitate identification, approach, landing, and taxiing. These aids are essential during night operations and operations during adverse weather conditions. The systems, categorized by function, are further described in the following paragraphs.

2.1.1.4.1. Obstruction Lighting

Existing obstructions that cannot be removed are lit. Obstructions near the Airport are marked or lit during both daylight and night time hours, to warn pilots of their presence. These obstructions may be identified for pilots on approach charts and on the official Airport Obstruction Chart, published by the National Oceanic and Atmospheric Administration (NOAA).

A more detailed analysis of airspace obstructions will be conducted as part of the Airport Layout Plan (ALP) presented later in this AMP.

2.1.1.4.2. Visual Approach Aids

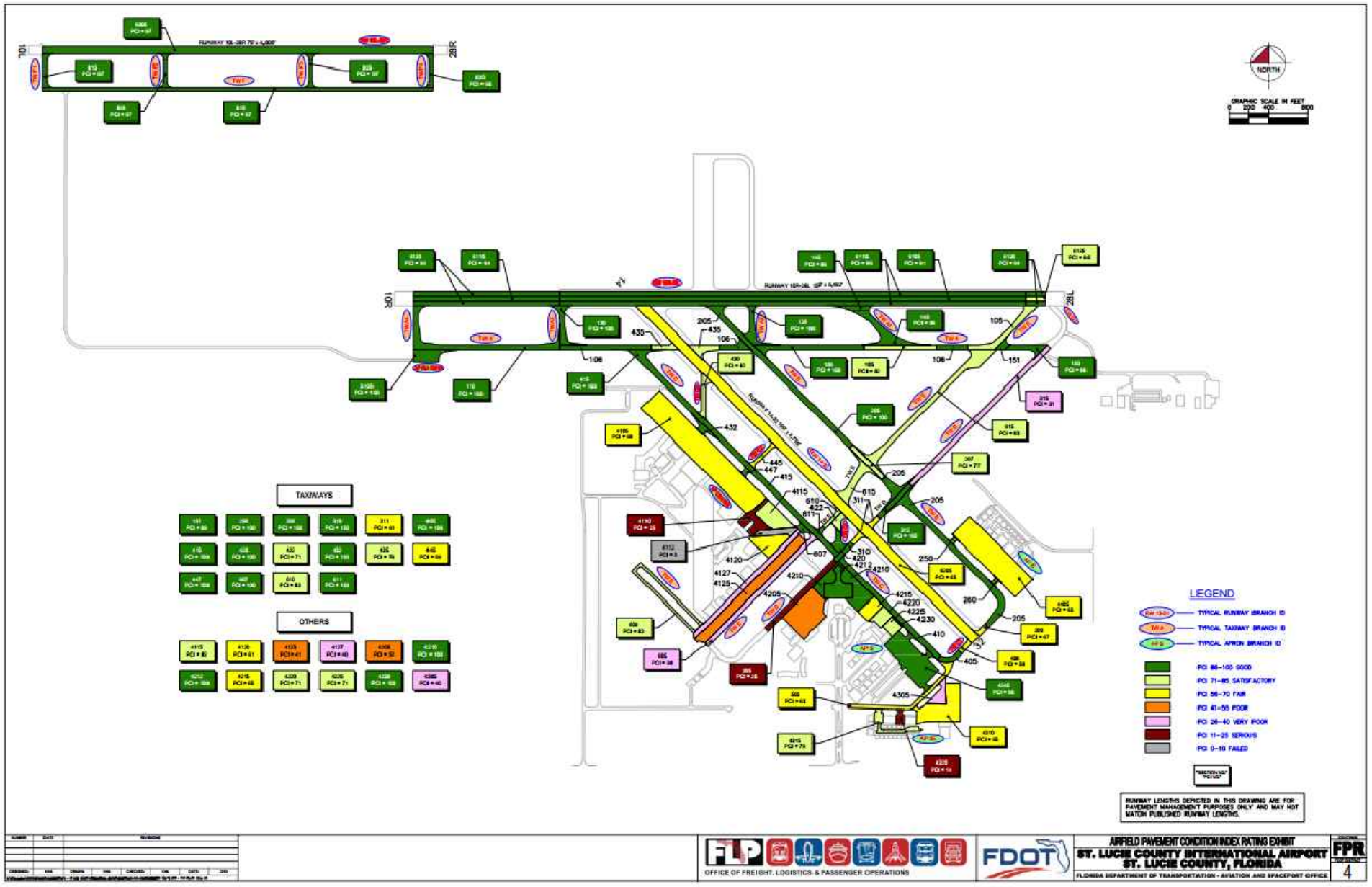
Visual approach aids consist of a series of visual cues which help pilots with aircraft alignment and position relative to a runway. The Airport's primary visual approach aids include 4-Box Visual Approach Slope Indicators (VASI) on Runway 10R-28L and a 4-light Precision Approach Path Indicator (PAPI) on Runway 14 only. Each system has a 3.00-degree angled glide path and assists pilots to accurately reach the appropriate runway touchdown position through visual vertical guidance.

2.1.1.4.3. Airport Identification Lighting

A rotating airport beacon light universally indicates the location and presence of an airport. The rotating beacon is equipped with an optical system that projects two beams of light (one green and one white) 180 degrees apart. At FPR, the Airport beacon is located on the south side of the airfield in the Airport terminal area. Specifically, the Airport beacon is found just northeast of the intersection of Pan Am Blvd and Curtis King Blvd.

2.1.1.4.4. Runway End Identifier Lights (REIL)

Runway End Identifier Light (REIL) systems are put in place to help pilots rapidly identify runway ends in areas of light pollution, or large open spaces. These systems consist of two synchronized flashing



ATKINS	Treasure Coast International Airport Airport Master Plan Update	FDOT Pavement Condition Index Report	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 2-1

unidirectional white lights situated near the runway end. Runway 10R-28L is the Airport's only runway to have a REIL system.

2.1.1.4.5. Apron Lighting

The apron is lit by an overhead mast lighting system. No other overhead mast lighting is known to exist on the airfield.

2.1.1.4.6. Runway and Taxiway Edge Lighting

Runway edge lighting is used to shape the edges of a runway during night operations and/or periods of low visibility. This system of lights is often identified by the intensity of the lights installed. All three of the Airport's runways are equipped with Medium Intensity Runway Lighting (MIRL) systems. The taxiway network is equipped Medium Intensity Taxiway Lighting (MITL) to effectively guide operators during night operations. The MITL is distinctly identified as a blue light.

2.1.1.5. Markings

All three types of runway markings are utilized on the Airport's three runways. Visual, non-precision, and precision runway markings have been utilized on the airfield due to the characteristics of each runway. Runway 10R-28L has precision runway markings in fair condition, Runway 14-32 has non-precision runway markings in fair condition, and Runway 10L-28R has visual runway markings in fair condition.

2.1.1.6. Signage

The Airport's airfield signage consists of all required signage for a public use airport. These airfield identification signs assist pilots in recognizing their location on the airfield and guide them to their desired end. The Airport currently has all required directional signage, location signage, and mandatory signs including holding position signage. This signage is key during ground operations, as the Air Traffic Control Tower can effectively relay direction to the pilots.

2.1.1.7. Airport Apron Areas

The Airport has three primary apron areas which are controlled by their respective leased tenants or the FBO. The Airport currently has 32 tenants, with only a hand full having airside access. The two largest aircraft parking apron areas are located south of Runway 14-32 and directly north of the Runway 32 approach end. Regarding the apron area south of Runway 14-32, there is a total of approximately 12,800 square feet between both primary apron areas. The apron area that is located directly south of the Runway 32 approach end is approximately 7,300 square feet, and the apron area to the north is approximately 5,500 square feet. The smaller apron area which is directly north of the Runway 32 approach end is approximately 2,300 square feet.

2.1.1.8. FAA Air Traffic Control Tower (ATCT)

The Airport has an operational air traffic control tower (ATCT) between the hours of 0700 and 2100 (7 a.m. to 9 p.m.). The ATCT was constructed in 1985 and is located off Hammond Road which runs directly to the west of the primary aircraft parking apron areas. The facility is a FAA designated tower, with respective personnel handling operations during operational hours. The airspace classification of Class D requires pilots to establish two-way communication when entering the airspace. ATCT provides guidance for non-aircraft vehicles in movement areas as well, where a constant visual connection is always required. At its current location, the ATCT is 123 feet AMSL in height.

2.1.2. Navigational Aids

Navigational aids, commonly referred to as NAVAIDs, assist pilots with enroute navigation and approaches and departures into and out of airports. These aids consist of both ground-based electronic systems and space-based satellite radio systems.

NAVAIDs for an airport vary in complexity, which is primarily based on the type of operations that will be occurring at that certain airport. The more sophisticated the NAVAID, the lower the approach visibility and descent height minimums are at an airport. The basis that categorizes these aids consider the type of guidance pilots are receiving while on approach. If both vertical and horizontal guidance are provided, then it can be classified as a precision-approach. Yet if only horizontal guidance is provided, it is classified as a non-precision approach. The systems available at an airport play an important role in determining weather minimums and overall day to day operations.

2.1.2.1. Terminal Area NAVAIDs and Landing Aids

Included in this group are NAVAIDs located at or near the airfield for providing aircraft guidance information while arriving, departing, or overflying the area under all weather conditions. Landing aids provide either precision or non-precision approaches to an airport or runway.

Currently the Airport has four Area Navigation (RNAV) approaches, one Instrument Landing System (ILS) in addition to one Instrument Landing System Localizer (LOC) and one Non-Directional Beacon (NDB). The four RNAV aids provide approach guidance for each end of Runway 10R-28L and Runway 14-32. RNAV can be defined as a system of navigation that permits aircraft operation on any desired course within the coverage of station-referenced navigation signals or within the confines of a self-contained system ability.

The ILS for Runway 10R allows for precision instrument operations to be conducted. This allows pilots to operate aircraft where visual contact with the runway ends cannot be established. The system provides both horizontal and vertical guidance to pilots on approach to the runway, where the guidance is established precisely to an appropriate reference point of landing. Runway 28L has a NDB system for a specific instrument approach system. **Figures 2-2** through **2-7** depict the Airport's instrument approach procedure (IAP) charts. A description of each IAP sorted by runways is listed in **Table 2-4**. Visibility conditions that are listed for each approach procedure are often referred to by pilots and the aviation community as an airport's "approach minimums", "minimums', or "approach minima".

Table 2-4 Instrument Approach Procedures Information

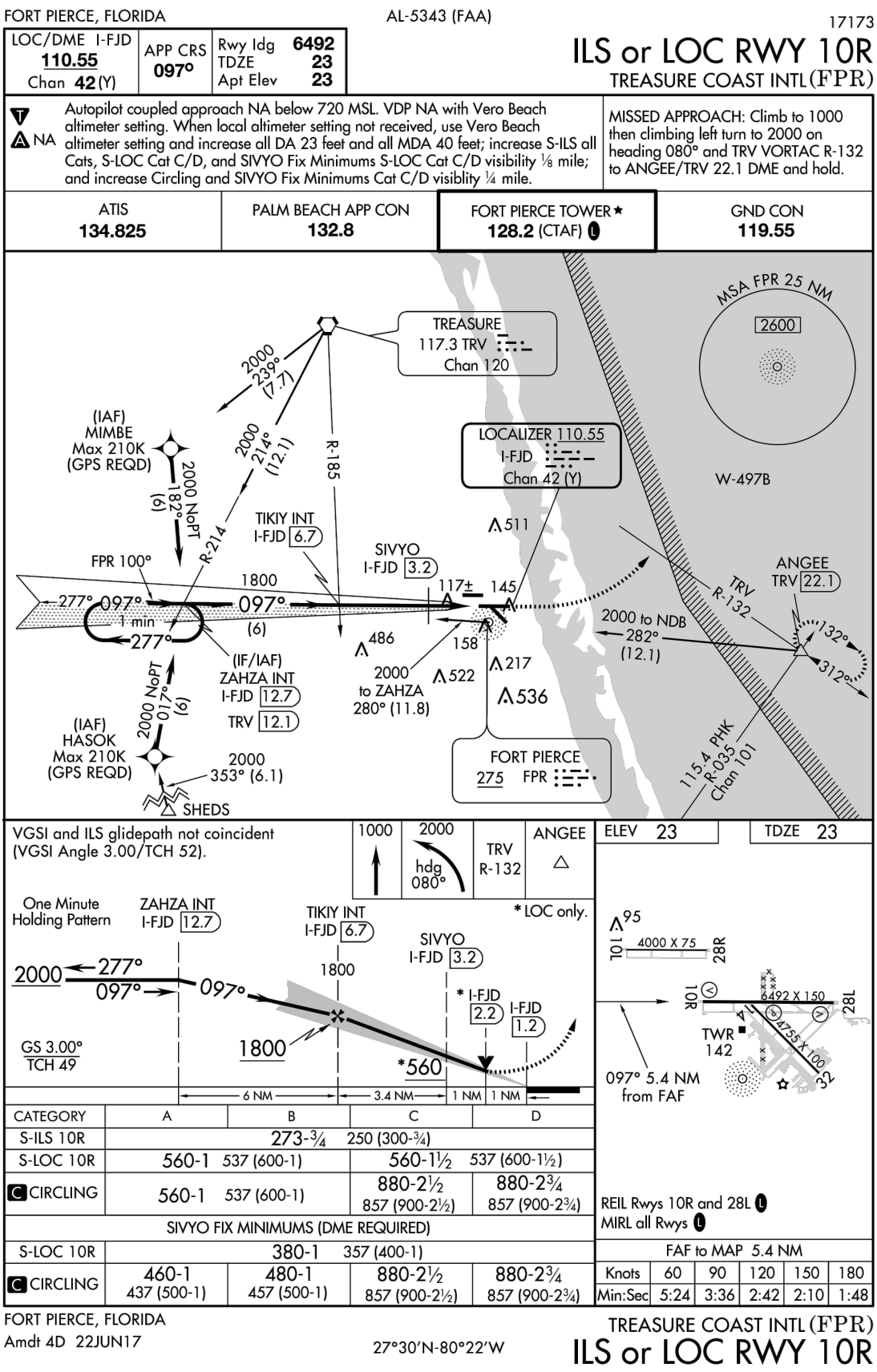
Runway	Type of Approach	Glideslope	Threshold Crossing Height (Feet AGL)	Visibility Requirements
Runway 10R	ILS or LOC	3.00 Degrees	49	<3/4 Mile
Runway 28L	NDB	3.00 Degrees	N/A	N/A
Runway 10R	RNAV (GPS)	3.00 Degrees	49	>1 Mile
Runway 28L	RNAV (GPS)	3.00 Degrees	59	>1 Mile
Runway 14	RNAV (GPS)	3.00 Degrees	46	>1 Mile
Runway 32	RNAV (GPS)	3.00 Degrees	32	>1 Mile

Source: AirNAV.com, 2018

The Airport has other NAVAIDs, such as the Automated Weather Observation System (AWOS), segmented circle and lighted wind cone (located northeast of Runway 14-32 and South of Runway 10R-28L), and supplemental lighted wind cone, provide weather condition information to pilots operating at the Airport. Those NAVAIDS provide electronic and visual indication of wind direction and velocity, which assists pilots in determining the proper runway end to conduct their operations. The AWOS also reports current conditions such as ceiling, visibility, temperature, dew point, altimeter setting, as well as any recorded remarks.

2.1.3. Landside Facilities

It takes airside facilities to make an airport, but it takes landside facilities to make an airport truly viable. Landside facilities include all those assets and activities outside of the airport operating area (AOA) and



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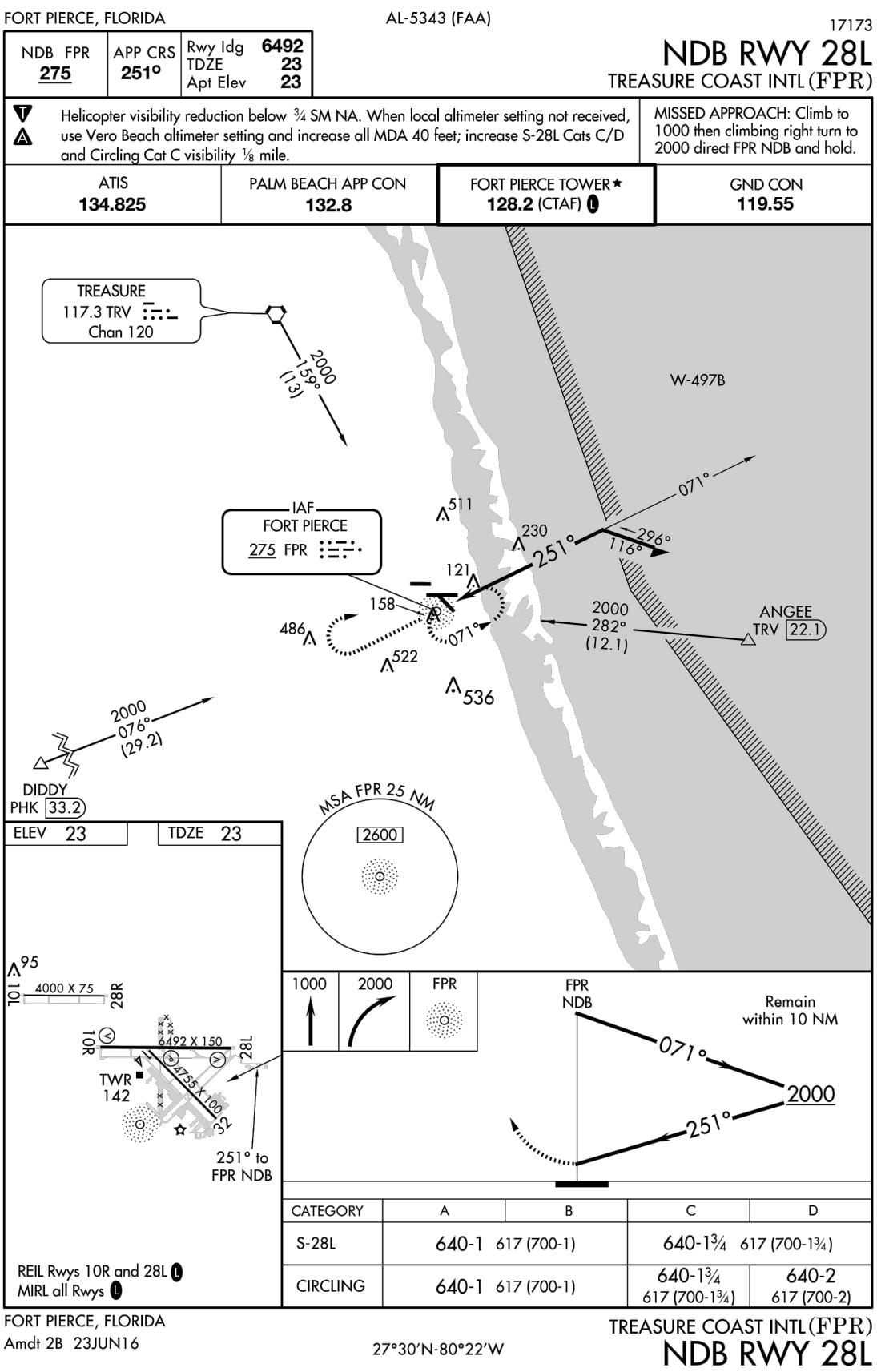
ATKINS	Treasure Coast International Airport Airport Master Plan Update	Treasure Coast International Airport & Business Park at St. Lucie County	Runway 10R ILS Approach Plate	Figure. 2-2



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ATKINS	Treasure Coast International Airport Airport Master Plan Update	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Runway 28L NDB Approach Plate	Figure. 2-3

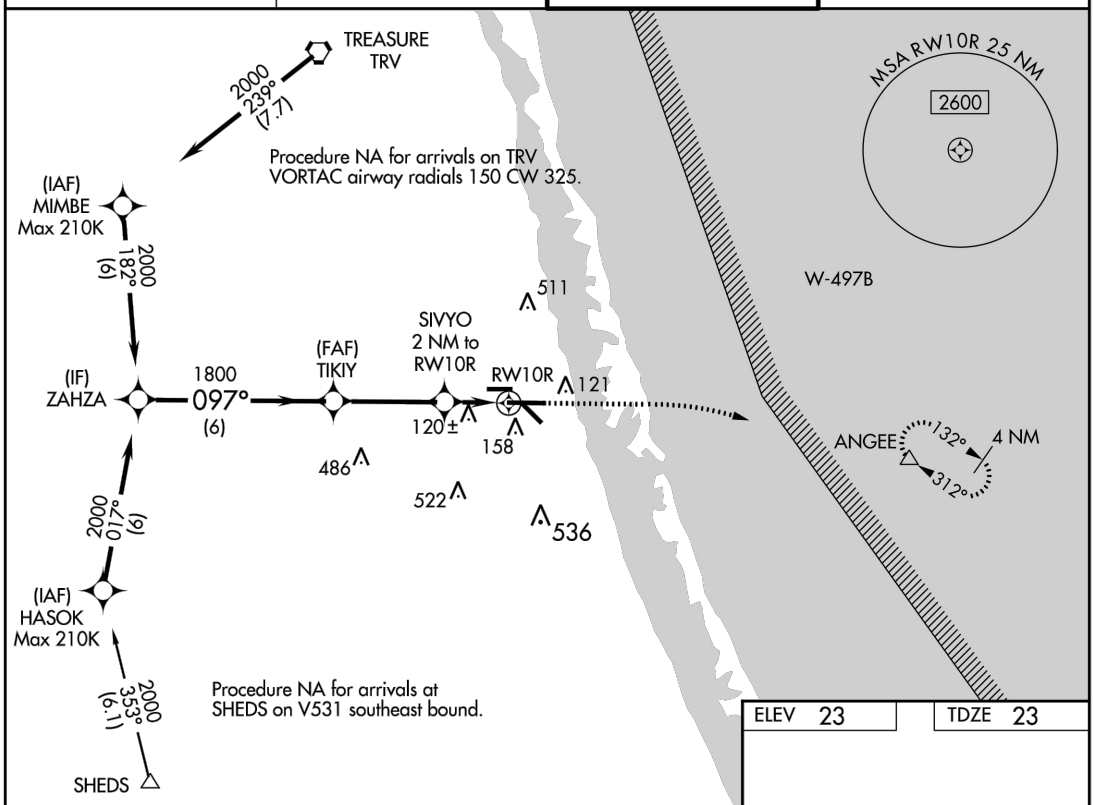
RNAV (GPS) RWY 10R
TREASURE COAST INTL (FPR)

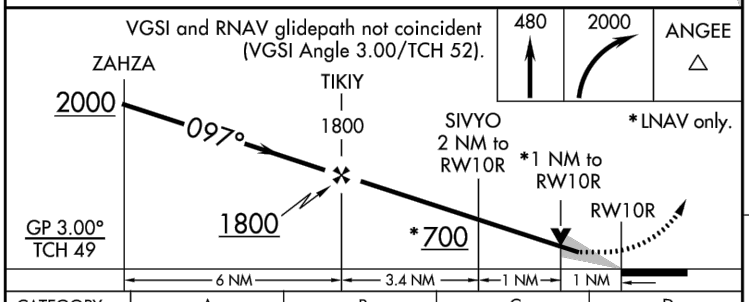
WAAS	APP CRS	Rwy Idg	6492
CH 69529	097°	TDZE	23
W10A		Apt Elev	23

T A Baro-VNAV NA when using Vero Beach altimeter setting. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -1°C (31°F) or above 54°C (130°F). When local altimeter setting not received, use Vero Beach altimeter setting and increase all DA 23 feet and all MDA 40 feet; increase LPV all Cats, LNAV/VNAV all Cats and LNAV Cats C/D visibility ⅛ mile, and increase Circling Cat C/D visibility ¼ mile. DME/DME RNP-0.3 NA. VDP NA with Vero Beach altimeter setting.

MISSED APPROACH: Climb to 480 then climbing right turn to 2000 direct ANGEE and hold.

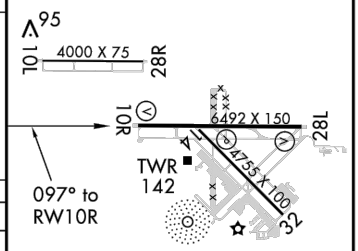
ATIS	PALM BEACH APP CON	FORT PIERCE TOWER ★	GND CON
134.825	132.8	128.2 (CTAF) L	119.55





CATEGORY	A	B	C	D
LPV DA		273-¾	250 (300-¾)	
LNAV/VNAV DA		348-1	325 (400-1)	
LNAV MDA		380-1	357 (400-1)	
C CIRCLING	460-1 437 (500-1)	480-1 457 (500-1)	880-2½ 857 (900-2½)	880-2¾ 857 (900-2¾)

ELEV 23 TDZE 23



REIL Rwys 10R and 28L L
MIRL all Rwys L

FORT PIERCE, FLORIDA
Amdt 2C 02MAR17

27°30'N-80°22'W

TREASURE COAST INTL (FPR)
RNAV (GPS) RWY 10R

SE-3, 17 AUG 2017 to 14 SEP 2017

FORT PIERCE, FLORIDA | AL-5343 (FAA) | 17173

RNAV (GPS) RWY 28L

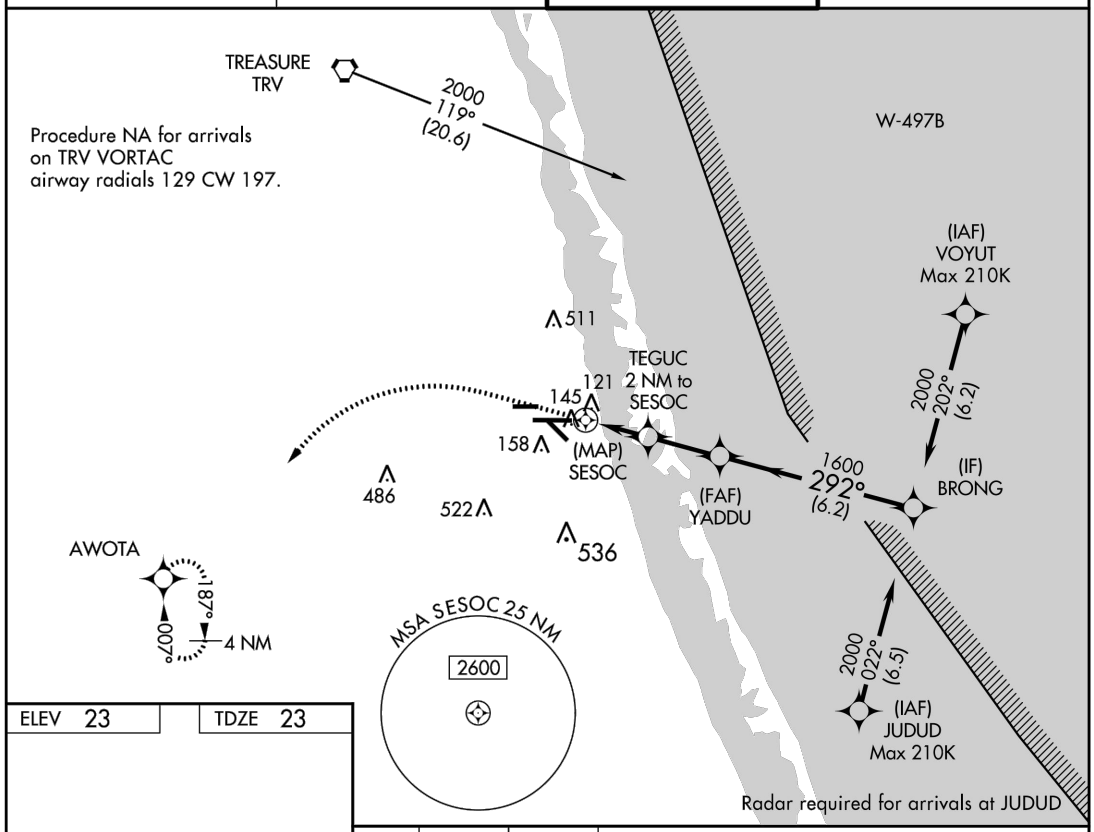
TREASURE COAST INTL (FPR)

APP CRS	Rwy Idg	TDZE	Apt Elev
292°	6492	23	23

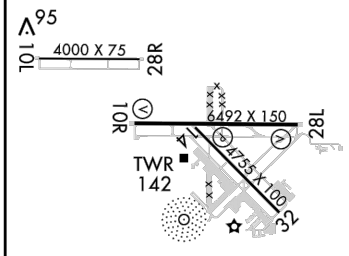
Helicopter visibility reduction below ¾ SM NA.For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 43°C (109°F). DME/DME RNP-0.3 NA. When local altimeter setting not received, use Vero Beach altimeter setting and increase LNAV/VNAV DA 24 feet and all MDA 40 feet; increase LNAV/VNAV all Cats and LNAV Cats C/D visibility ⅛ mile. Baro-VNAV NA when using local altimeter setting.

MISSED APPROACH: Climb to 440 then climbing left turn to 2000 direct AWOTA and hold.

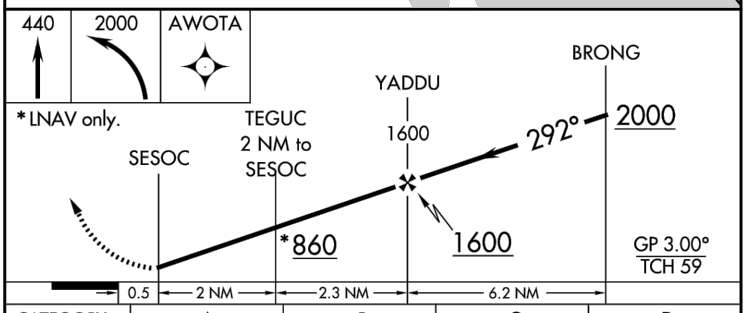
ATIS	PALM BEACH APP CON	FORT PIERCE TOWER★	GND CON
134.825	132.8	128.2 (CTAF) L	119.55



ELEV 23 | TDZE 23



REIL Rwys 10R and 28L L
MIRL all Rwys L



CATEGORY	A	B	C	D
LNAV/VNAV DA	412-1¼	389 (400-1¼)		
LNAV MDA	400-1	377 (400-1)		
CIRCLING	460-1 437 (500-1)	480-1 457 (500-1)	480-1½ 457 (500-1½)	580-2 557 (600-2)

FORT PIERCE, FLORIDA
Amdt 1B 23JUN16

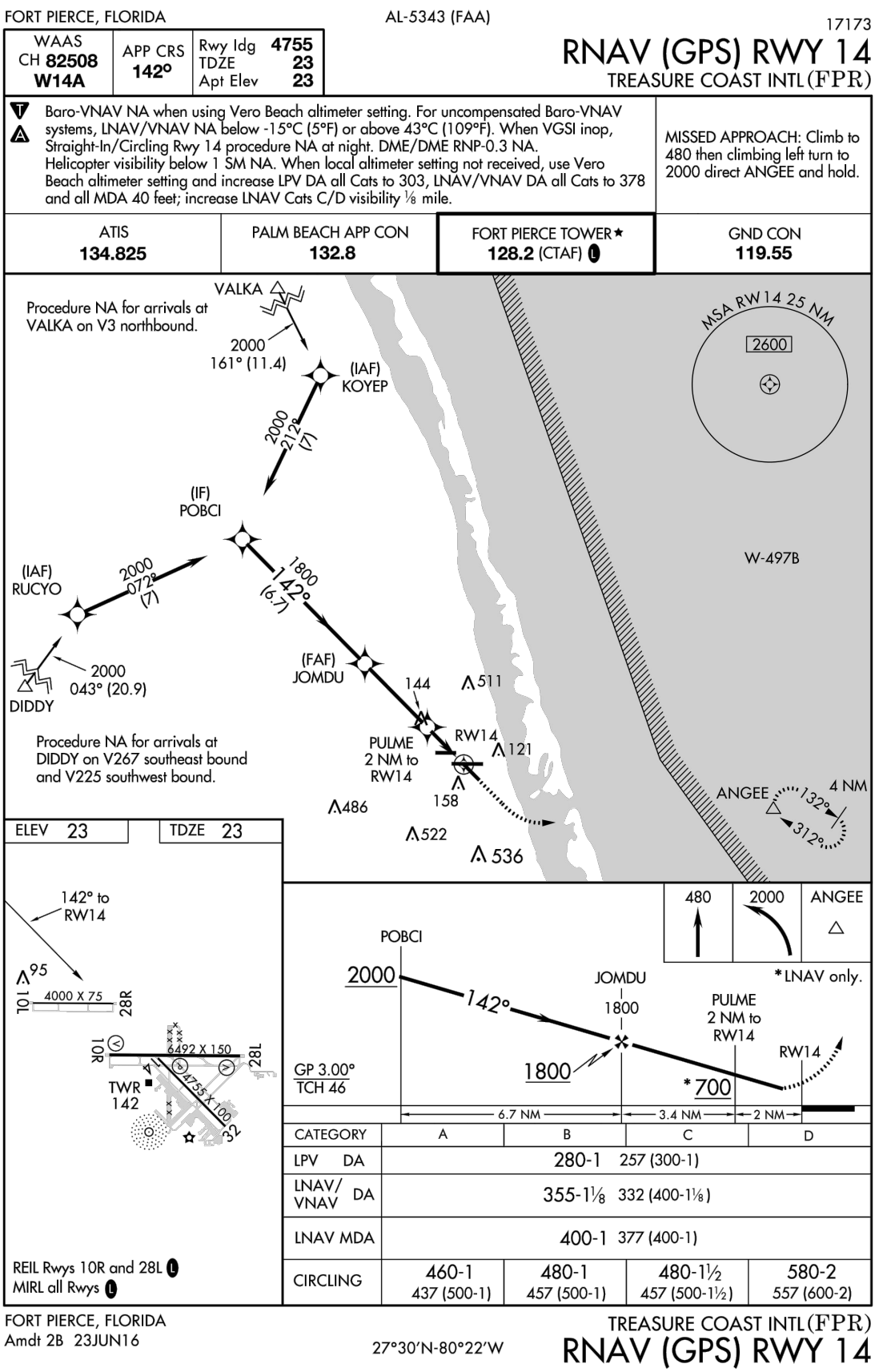
27°30'N-80°22'W

TREASURE COAST INTL (FPR)

RNAV (GPS) RWY 28L

SE-3, 17 AUG 2017 to 14 SEP 2017

ATKINS	Treasure Coast International Airport Airport Master Plan Update	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Runway 28L RNAV Approach Plate	Figure. 2-5



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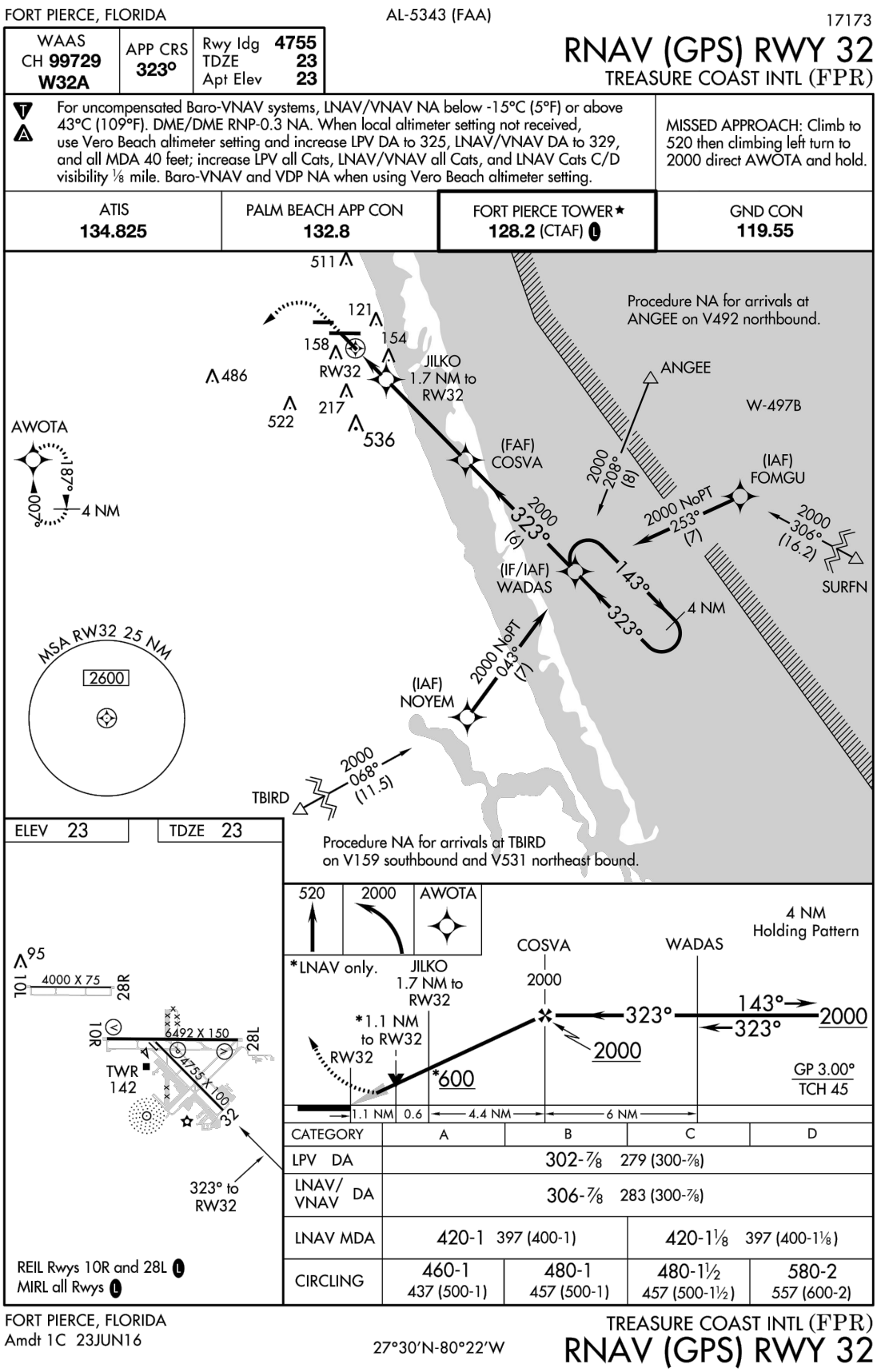
Treasure Coast International Airport
Airport Master Plan Update

TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY

Runway 14
RNAV Approach Plate

Figure. 2-6



SE-3, 17 AUG 2017 to 14 SEP 2017

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ATKINS	Treasure Coast International Airport Airport Master Plan Update	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Runway 32 RNAV Approach Plate	Figure. 2-7

comprise the most visible airport assets to the general public. This section presents information on landside facilities such as hangars, roadways, parking, terminals, office spaces, support facilities, business parks, and other activities located outside the airfield. The following sub-sections describe the existing conditions of the Airport's landside facilities.

2.1.3.1. Fixed-Base Operator

The Airport's fixed-base operator (FBO) is currently owned and operated by APP Jet Center, which offers full aircraft service as well as various miscellaneous services. Self-serve fueling is available 24 hours a day (100LL & Jet A). On-call service for fueling is available during the FBO service hours. The FBO terminal is located on the Airport's southernmost aircraft parking apron.

2.1.3.2. General Aviation Terminal

The existing terminal building has the capabilities to handle incoming charter operations if needed. The facility currently houses airport administration offices and gate areas. Fly the Whale, whom provided charter service out of FPR, utilized the terminal building during opreations.

2.1.3.3. Hangar Areas

Multiple hangars currently exist at the Airport, which include conventional and T-Hangars. The APP FBO manages all leased hangars which reside on airport property.

2.1.3.3.1. Conventional Hangars

A conventional hangar is typically rectangular or square in shape and can hold multiple aircraft while allowing for additional equipment to be present within the facility (based on size). The Airport is currently home to 61 conventional hangars, which vary in size, where the larger hangars are utilized by business tenants and the smaller hangars being utilized by private individuals whom store their respective aircraft on airport property. There are three main areas that contain the conventional hangars, with all having access to appropriate taxiway infrastructure. APP Jet Center primarily handles the Airport's hangar lease operations.

2.1.3.3.2. T-Hangars

T-Hangars are designed to maximize aircraft storage utilization. They typically allow for the complete protection of aircraft stored inside and are often scaled for small recreational aircraft. The facilities are usually rectangular and store aircraft in a line by alternating direction of aircraft by nose and tail. Currently, the Airport is home to one 16-unit T-Hangar.

2.1.3.4. Fuel Storage

The Airport's fuel storage is maintained by APP Jet Center. This provider has self-serve 100 Low Lead (LL) Avgas facilities along with full-service Jet-A and 100LL Avgas fueling services (during operational hours). APP Jet Center Aviation has one 20,000-gallon 100LL Avgas tank and one 20,000-gallon Jet-A tank for full service operations. The Jet Center has a 1,500-gallon Avgas self-serve tank as well. Fuel trucks are available for fueling services to provide aircraft curbside fueling. According to fuel sales records, an average of 1,211,805 gallons of total fuel (avgas and jet fuel) were sold annually between 2011 and 2017.

2.1.3.5. Automobile Parking

The Airport has multiple automobile parking areas. A major parking area is located directly south of the FBO terminal. Each tenant on airport property has some form of automobile parking.

2.1.3.6. Airport Boundary Fence

Developed and non-developed areas within the airfield and landside regions need to be protected to ensure the safe and secure operations at the Airport. As such, perimeter fencing has been installed around the appropriate areas to ensure this safe environment. This perimeter fence is eight feet high. The airport boundary fence should not be confused with the AOA fence, which protects the immediate airfield operating areas.

2.1.3.7. AOA Fence

The AOA fence includes airfield access from different points on the property using access gates where only authorized personnel can gain entrance. The AOA is completely enclosed by eight feet high fencing.

2.1.3.8. Industrial Sites

Industrial activities located on airport property are mostly concentrated in an area east of the airfield and adjacent to the Airport Industrial Park East. There are seven properties in this area north of Industrial Avenue 3 with five active tenants and two vacant parcels. Four of the parcels have access to Taxiway D1, but only two tenants current utilize this access. The two vacant parcels encompass approximately four acres and have frontage on Industrial Avenue 3, but do not have taxiway access. The remaining occupied parcels encompass an area of approximately ten acres. Current tenants are listed as follows.

- Aero Shade Technologies (taxiway access)
- Experimental Aircraft Association, Ch. 908 (taxiway access active)
- Phoenix Metal Products, Inc. (taxiway access)
- St. Lucie County (Sheriff's Office) (taxiway access active)
- Auto Care Experts

2.1.3.8.1. Foreign Trade Zone #218

The Airport has been established to fall within the designated Treasure Coast Foreign Trade Zone (FTZ) #218. The FTZ consists of four areas that comprise of a total 1,588 acres. The Airport and attached airport industrial park lie within the FTZ and has full access to its benefits.

An FTZ is a secured and restricted area that is located near a US port of entry outside of customs territory of the United States. Customs and Border Protection entry procedures do not apply under these areas. Companies can benefit from tax exemptions, increased efficiency, reduction of insurance costs, and many other associated benefits of the FTZ. These sites attract companies that regularly import items for the continuation of their operations.

2.1.3.9. Aircraft Rescue and Firefighting (ARFF)

To provide a heightened level of airfield safety and to provide emergency services, an Aircraft Rescue and Firefighting (ARFF) station is located directly south of the Runway 28L approach end. The 6,900 square-foot ARFF station was constructed in 2008 and still serves the airport with emergency services. Even though the Airport does not have a Part 139 certificate, the ARFF station is essential to ensure the immediate response to emergencies that occur on airport property. The station is operational 24 hours a day, 7 days a week. The current ARFF truck is the Oshkosh Stryker 1500, which has a water capacity of 1,500 gallons, 210 gallons of foam, and 500 pounds of purple-K dry chem. The ARFF station is manned with six members per shift, with a total of 30 members rotating out every shift start/end. **Figure 2-8** depicts the current location of the FPR ARFF Station.

2.1.3.10. U.S. Customs and Border Protection Facility

The Airport is sometimes nicknamed the "Gateway to the Bahamas", as it provides an on-property Customs and Border Protection (CBP) facility, adjacent to the Airport Authority Building. Operations hours of the CBP facility is from 10:00AM to 6:00PM seven days a week, which allows for the continuous traffic from the frequented flights arriving from the Bahamas.

2.2. Airspace Structure

Congress granted the FAA the authority to control all airspace over the United States, via the Federal Aviation Act of 1958. The FAA then established the National Airspace System (NAS) to protect persons and property on the ground, and to establish a safe and efficient airspace environment for civil, commercial, and military aviation. The NAS is defined as the common network of U.S. Airspace, including air navigation facilities, airports, and landing areas, aeronautical charts and information, associated rules, regulations and

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ATKINS	Treasure Coast International Airport Airport Master Plan Update	ARFF Station Location	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 2-8

procedures, technical information, personnel, and material. System components shared jointly with military are also included. Florida's airspace has high traffic capacity due to its multiple major commercial airports, as well as the countless GA airports in the state. The ideal flying conditions that occur year-round promotes GA pilots to thrive in the state and to utilize these conditions. Due to high tourism demands, the commercial traffic daily throughout the state is a large contributor to this high volume of overall air traffic.

2.2.1. Airspace Environs

Airspace is classified as controlled or uncontrolled. Controlled airspace is supported by ground-to-air communications, NAVAIDs, and air traffic services. In September 1993, the FAA reclassified major airspace. The new classifications are graphically depicted in **Figure 2-9**.

The types of controlled airspace around the Airport include:

- Class A airspace: all airspace between 18,000 feet AMSL and 60,000 feet AMSL (as well as waters 12 NM off the cost of the 48 contiguous states).
- Class C airspace: (formerly referred to as the Airport Radar Service Area), includes Palm Beach International from either the surface or 1,200 feet AMSL to 4,000 feet AMSL. This variation can be determined based on the location within the five-nautical mile coverage from the airport property.
- Class D airspace: all airspace between the ground up to the designated ceiling. This airspace extends out 3 statute miles from the airfield. The closest public airport to FPR is Vero Beach Regional Airport (VRB), which holds Class D airspace.
- Class E airspace: all controlled airspace other than Class A, B, C, or D. Class E airspace extends upward from either the surface of the designated altitude to overlying or adjacent controlled airspace. Class E airspace includes transition areas and control zones for airports without ATCTs.
- Class G airspace: uncontrolled airspace.

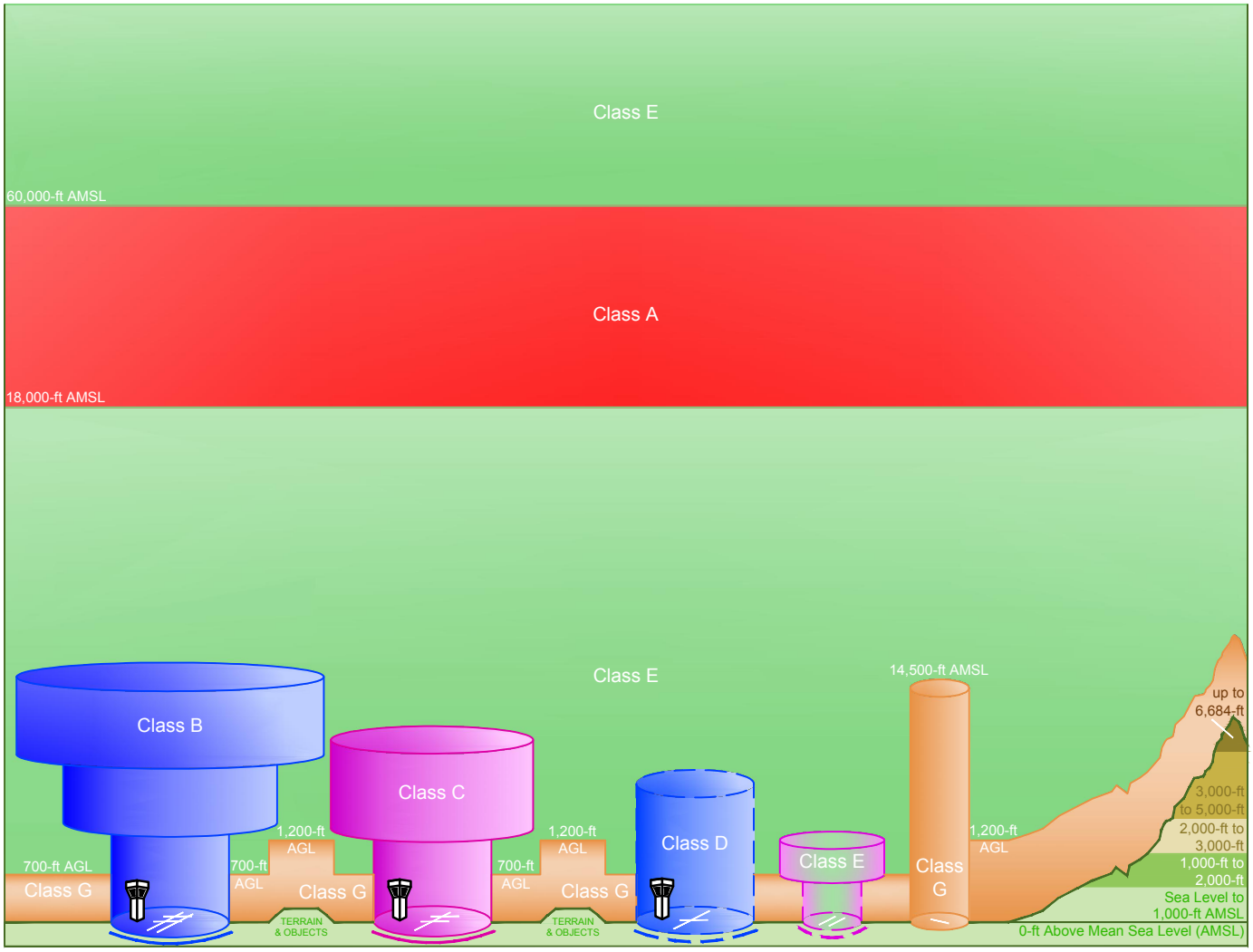
2.2.1.1. Class D

The Airport's airspace is classified as Class D, which holds the 3-statute mile radius around the Airport and is controlled from the ground up to 2,500 feet AMSL. Class D airspace is typically established around an airport with an operational control tower. Yet the Class D airports do not handle as significant IFR operations compared to Class B and C airports (due to amount of commercial service). Two-way communication with ATC must be established before entering the Class D airspace, yet no transponder is required for entry. Figure 2-10 depicts the Airport's surrounding airspace.

2.2.2. FAR Part 77 Surfaces and Existing Obstructions

Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*, defines standards for determining obstructions to navigable airspace. These imaginary surfaces are used to protect operations around airports from high structures that can pose a threat to aircraft landing at or departing from an airport or operating within an airport's terminal airspace. Obstructions are primarily determined by superimposing the Part 77 'imaginary surfaces' over an airport and its surrounding areas. An analysis is performed to determine the elevations of various objects (structures, terrain, trees, towers, etc.). The objects' elevations are then compared to the elevations of the associated Part 77 surfaces. Objects that are found to be higher than the Part 77 surfaces are considered obstructions. The ALP set contains an airport airspace sheet which illustrates the various obstructions and objects located within the Part 77 areas.

Dimensions of the 'imaginary surfaces' are derived from the type of approaches and aircraft operating at an airport. Federal regulations require that the primary and horizontal surfaces, identified within the Part 77 Imaginary Surfaces guidance, of the most demanding approach be applied to the entire runway. The typical Part 77 configuration and dimensions and those associated with the Airport's are illustrated in **Figure 2-10.**



Communication Requirements and Weather Minimums

	Class A	Class B	Class C	Class D	Class E	Class G
Minimum Pilot Qualification	Instrument Rating	Student *	Student *	Student *	Student *	Student *
Entry Requirements	IFR: ATC Clearance VFR: Operations Prohibited	ATC Clearance	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: Two-Way Communication w/ ATC	IFR: ATC Clearance VFR: None	None
VFR Visibility Below 10,000 AMSL **	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	3 Statute Miles	Day: 1 Statute Mile Night: 3 Statute Miles
VFR Cloud Clearance Below 10,000 AMSL	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal ***
VFR Visibility 10,000 AMSL and Above **	N/A	3 Statute Miles	3 Statute Miles	3 Statute Miles	5 Statute Miles	5 Statute Miles
VFR Cloud Clearance 10,000 AMSL and Above	N/A	Clear of Clouds	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 2,000 Horizontal	500 Below 1,000 Above 1 Statute Mile Horizontal	1,000 Below 1,000 Above 1 Statute Mile Horizontal
Airport Application	N/A	• Radar • Instrument Approaches • Weather • Control Tower • High Density	• Radar • Instrument Approaches • Weather • Control Tower	• Instrument Approaches • Weather • Control Tower	• Instrument Approaches • Weather	
Special VFR Permitted?	No	Yes	Yes	Yes	Yes	N/A

* Prior to operating within Class B, C, or D airspace (or Class E airspace with an operating control tower), student, sport, and recreational pilots must meet the applicable FAR Part 61 training and endorsement requirements. Solo student, sport, and recreational pilot operations are prohibited at those airports listed in FAR Part 91, Appendix D, Section 4.

** Student pilot operations require at least 3 statute miles visibility during the day and 5 statute miles visibility at night.

*** Class G VFR cloud clearance at 1,200 AGL and below (day): clear of clouds.

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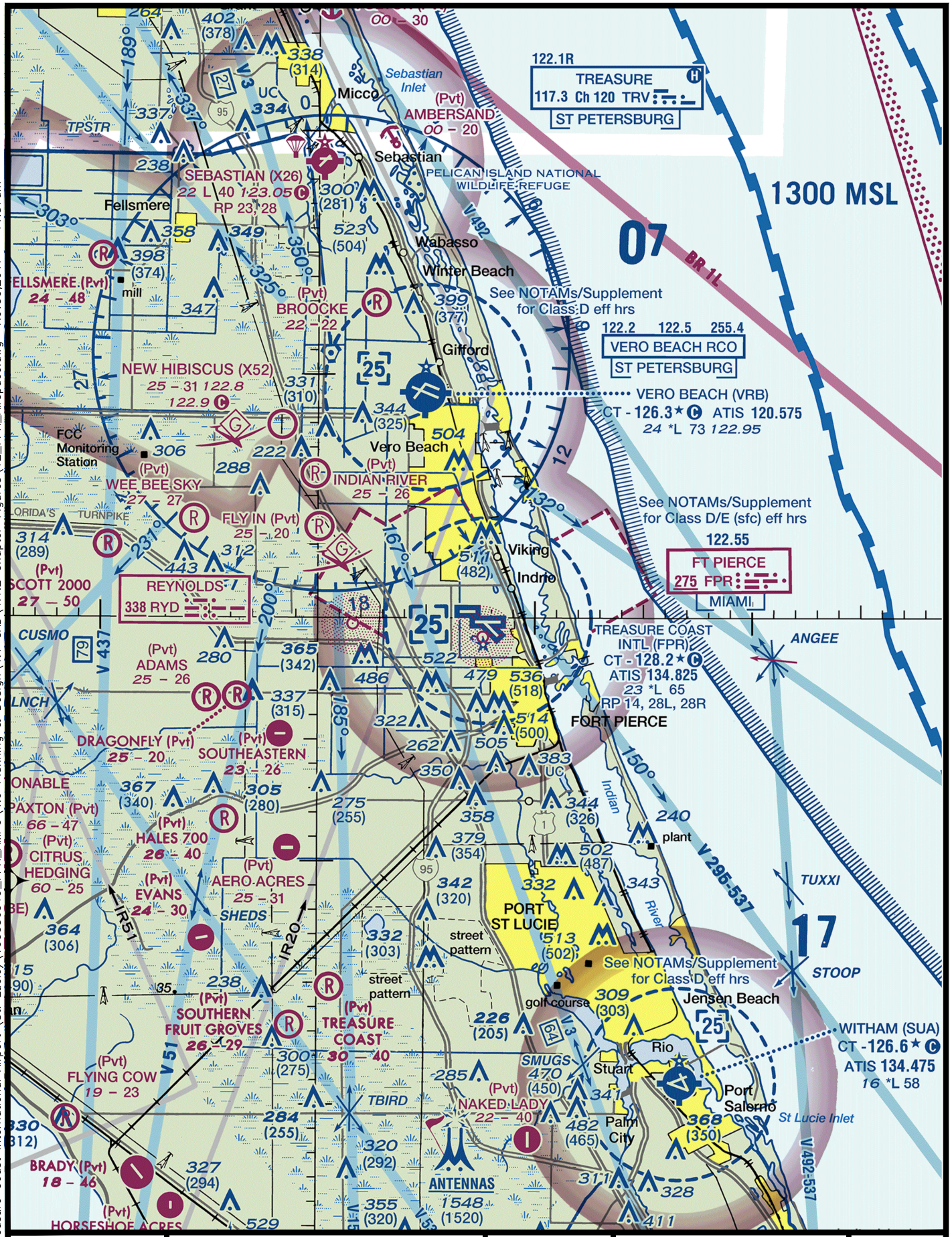
Treasure Coast International Airport
Airport Master Plan Update

TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY

Airspace Classification

Figure. 2-9



ATKINS	Treasure Coast International Airport Airport Master Plan Update	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	FPR Airspace	Figure. 2-10

Plotted By: hask8597
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2.2.3. Airports in the Region

There are currently six public use airports within a 40 NM radius of the Airport. Their descriptions are listed in **Table 2-5**. Regarding private airports, there are numerous facilities that hold that classification within a 40 NM radius of the Airport, specifically to the west, northwest, and southwest regions. **Figure 2-11** depicts the specified airports within the Airport's proximity.

Table 2-5 Airports Surrounding Treasure Coast International Airport

Airport Name (I.D.)	Location from IMM	Use (Airspace)
Vero Beach Regional (VRB)	10 NM NNW	Public (Class D)
Witham (SUA)	21 NM SSE	Public (Class D)
Sebastian (X26)	20NM NNW	Public (Class G)
Okeechobee CO (OBE)	29 NM SW	Public (Class E)
Valkaria (X59)	29 NM NNW	Public (Class G)
Melbourne International (MLB	39 NM NNW	Public (Class D)

Source: Skyvector.com, 2017, Analysis: Atkins, 2017.

2.3. Land Use and Zoning

Land use and zoning around an airport is critically important to the future utility and sustainability of airport operations. Without the security and support provided by compatible land uses around an airport property, airports and their sponsors can face a variety of safety difficulties, health and human safety concerns, and social/political dissent, which in the long run detracts from an airport's ability to reach its full public value potential. The Airport currently has 3,844 acres of land zoned for commercial and industrial use as classified by St. Lucie County. Approximately half of that area is currently used for aviation use.

Industrial development is key to the Airport in terms of providing additional lease income and to further develop landside industrial aspects, which should allow for the increase of industrial organizations on airport property. The specific *Airport West Commerce Park* is identified for immediate development of industrial commercial use. The 54-acre area is located on the southwest portion of airport property and is advertised as permit ready. All utilities have been established within the area to allow for expedited development.

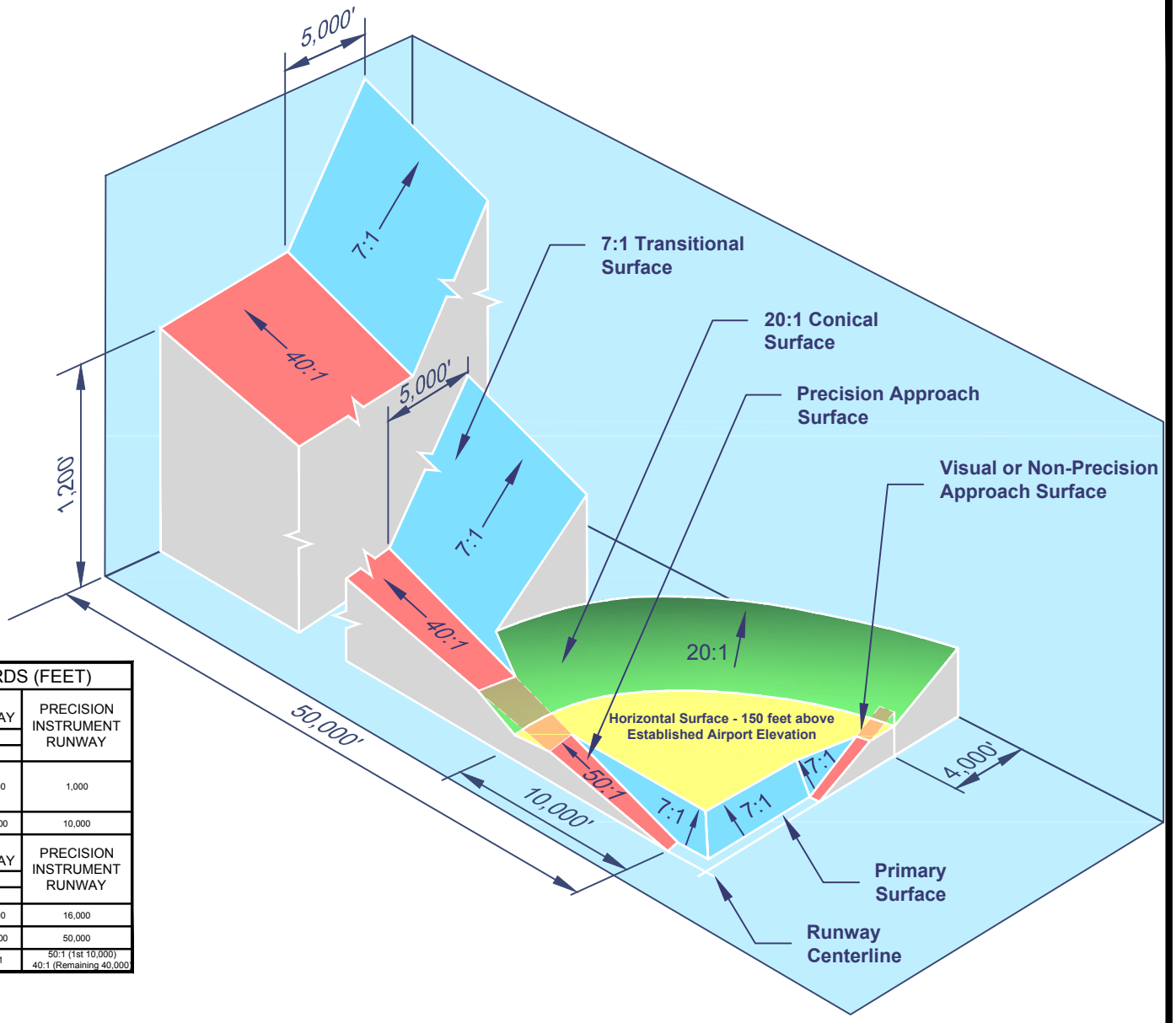
The majority of land use around the Airport is a combination of residential, agricultural, commercial, industrial, mixed use, and conservation type. One of the few potential conflicts for land use involves the village of St. Lucie to the east, which is a noise sensitive area. Aligned with the airport property boundary, there is currently an area of manufactured homes. The residential status of these parcels is considered to be incompatible land use and should be considered as a restriction going forward.

2.4. Wind and Meteorological Data

The climatic conditions commonly experienced at an airport can play a large role in the layout and usage of the facility. Weather patterns characterized by periods of low visibility and cloud ceilings often lower the capacity of an airfield, and wind direction and velocity dictate runway usage.

2.4.1. Wind Coverage

Local wind conditions at an airport play a large role in the runway usage at the field as the aircraft operate most efficiently when taking-off and landing into the wind. Runways not oriented to take full advantage of prevailing winds are often not utilized as frequently. Aircraft can operate on a runway when the crosswind



A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILES
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
E - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET

DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B		
					C	D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	50,000
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	50:1 (1st 10,000) 40:1 (Remaining 40,000

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Treasure Coast International Airport
Airport Master Plan Update

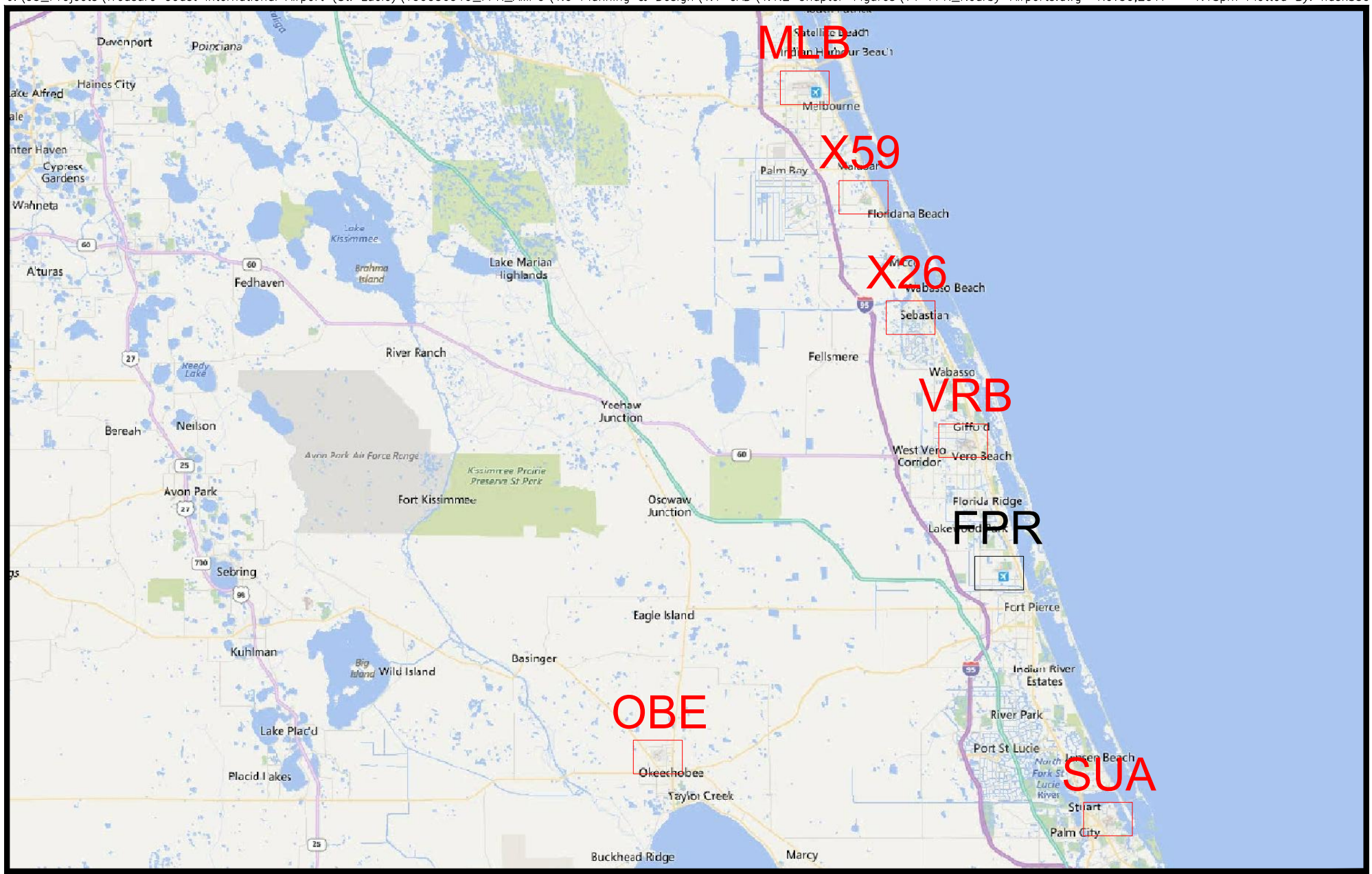
Part 77 Classifications

TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY

Figure 2-11

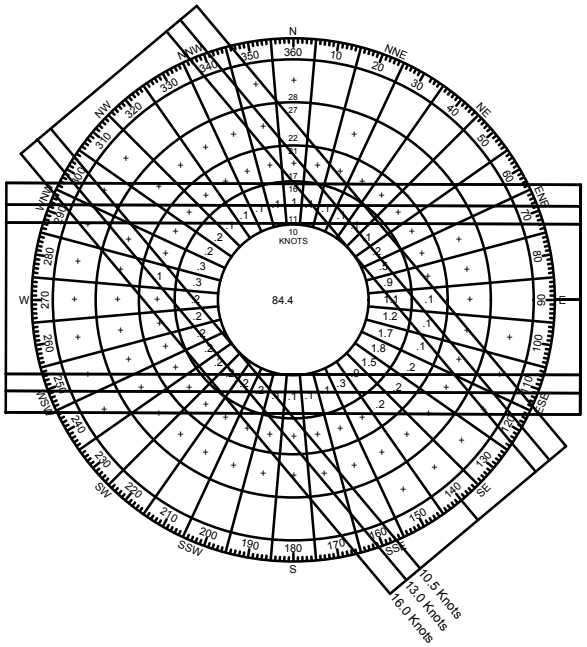
component, or wind component perpendicular to the direction of travel, is not excessive. Crosswind components differ slightly depending on the size of aircraft. The appropriate crosswind components for the Airport's runways were determined by the type of aircraft typically operating on those runways. **Figure 2-12** depicts the all-weather, IFR, and VFR wind rose when considering 10.5 and 13 knot crosswind components for the three runways.

The FAA indicates that the desired wind coverage for an airport is at least 95 percent, meaning that the maximum crosswind component is not exceeded more than 5 percent of the time. The coverage on all runways is greater than 95%, which meets the FAA requirement.



ATKINS	Treasure Coast International Airport Airport Master Plan Update	Airports in the Region	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 2-12

ALL WEATHER

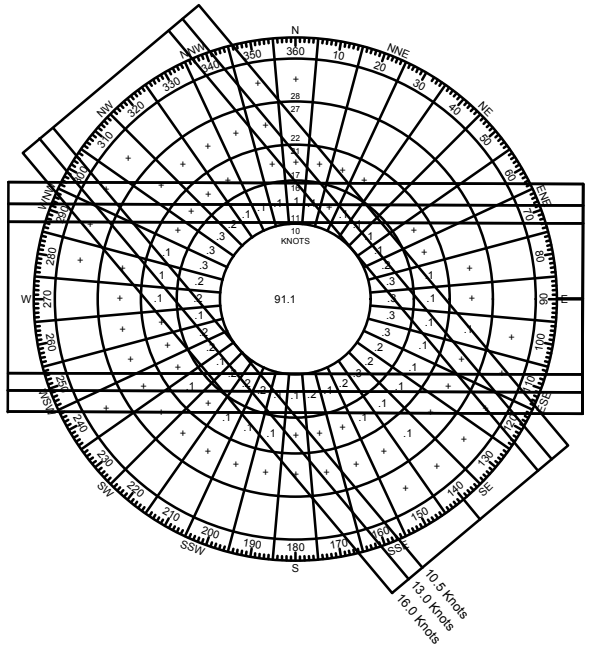


RUNWAY WIND COVERAGE

CROSS WIND COMPONENT	ALL WEATHER COVERAGE
10.5 Knots	98.72%
13.0 Knots	99.94%
16.0 Knots	99.90%

Station: St. Lucie County International Airport 722103 (2007-2016)
Source: National Climatic Data Center/National Oceanic and Atmospheric Administration

IFR WEATHER

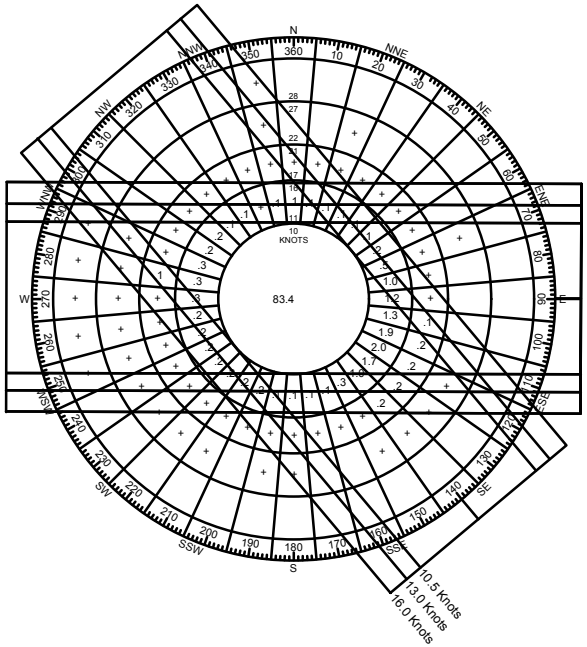


RUNWAY WIND COVERAGE

CROSS WIND COMPONENT	IFR WEATHER COVERAGE
10.5 Knots	98.46%
13.0 Knots	99.22%
16.0 Knots	99.75%

Station: St. Lucie County International Airport 722103 (2007-2016)
Source: National Climatic Data Center/National Oceanic and Atmospheric Administration

VFR WEATHER



RUNWAY WIND COVERAGE

CROSS WIND COMPONENT	VFR WEATHER COVERAGE
10.5 Knots	98.74%
13.0 Knots	99.52%
16.0 Knots	99.92%

Station: St. Lucie County International Airport 722103 (2007-2016)
Source: National Climatic Data Center/National Oceanic and Atmospheric Administration

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Treasure Coast International Airport
Airport Master Plan Update

Wind Roses
ALL, IFR, VFR

TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY

Figure 2-13

3. Environmental Overview

3.1. Introduction

Federal Aviation Administration (FAA) guidance encourages review of environmental factors in airport master planning to "help the sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing."[1] The Florida Department of Transportation (FDOT) *2016 Guidebook for Airport Master Planning*, provides similar guidance. As a federally obligated airport, Treasure Coast International Airport (Airport) is required to comply with the federal review process, regardless of the funding entity, if a federal action (funding, ALP approval, land release or acquisition, PFC approval, etc.) is required. Certain projects without a federal trigger that are 100 percent funded by FDOT (typically surface transportation projects) may receive approval through the FDOT Project Development and Environmental (PD&E) process (state delegated DOT NEPA). However, both agencies clearly note that it is not the intent of a Master Plan to complete the federal and state environmental review processes. Instead, the information should identify and set the stage for understanding what future environmental review or actions may be needed.

In order to inventory potential natural features and environmental constraints to the Airport's future development, a review of publicly available environmental data, prior environmental studies and permits, aerial photography, and other geographical information systems (GIS) data was conducted. The constraint categories that have the greatest potential to affect future development projects, or require further environmental documentation and clearances include:

- Archaeological resources
- Biotic communities
- Federal and state listed species
- Jurisdictional wetlands, surface waters, and other "Waters of the U.S."
- Floodplains

Due to the limited scope of environmental evaluation in this AMP study, some environmental constraint categories were not examined in great detail. While these categories may not require specific permits, future NEPA analyses would include discussion of these, as well as other required categories. For projects identified in this AMP, impacts are anticipated to be minimal, or insignificant, for the following environmental categories:

- Air quality
- Historic resources
- Prime farmland
- Department of Transportation Section 4(f) Properties
- Hazardous materials

3.1.1. Federal Environmental Reviews

This chapter provides a desktop review of publicly available and known environmental resources that should be considered during the identification and evaluation of development alternatives in this AMP. The environmental resources discussed in this chapter include many of the categories delineated in FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions;* FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures;* and the President's Council on Environmental Quality Regulations (CEQ) Title 40 Code of Federal Regulations (CFR) §§ 1500-1508, *CEQ Regulations for Implementing the Procedural Provisions of NEPA*, however this overview is not intended to meet the NEPA requirements for any included project(s). This environmental overview does not constitute NEPA or regulatory level resource review; instead, it represents a compilation of readily available data to help screen alternatives and provide an environmental basis to identify where additional investigation or studies may be required. The FAA is responsible for ensuring compliance with NEPA with respect to actions

1 FAA Advisory Circular 150/5070-6B, *Airport Master Plans*. Change 2. January 27, 2015.

at federally-obligated airports. The preparation of a Categorical Exclusion (CatEx), Environmental Assessment (EA), or an Environmental Impact Statement (EIS) documents FAA compliance with NEPA and reflects a thorough review of all relevant environmental issues using a systematic, interdisciplinary approach.

Processing Airport Improvement Program grant applications and Airport Layout Plan (ALP) approvals are two examples of "federal actions" commonly undertaken by the FAA in support of airport development projects which require environmental review under NEPA. While NEPA requires varying levels of interagency coordination, development of documents under NEPA does not exempt airport development projects from compliance with other federal environmental laws (e.g., *Endangered Species Act*) or state and local environmental regulations.

For those projects that require a federal action and therefore trigger environmental review under NEPA, the three types of documentation that are be used are summarized in **Table 3-1**. Categorical Exclusions and Environmental Assessments are usually prepared by the Airport Sponsor, and if the documentation meets FAA requirements, they are accepted by the FAA and become federal documents. Environmental Impact Statements are prepared by the FAA. Any future development projects recommended as part of this AMP would be subject to the appropriate level of environmental review at such time that a specific project is considered "ripe" for implementation.

Table 3-1 Types of FAA NEPA Review Documentation

CATEX **Categorical Exclusion**	The FAA has identified certain actions that may be categorically excluded from a more detailed environmental review. However, extraordinary circumstances, such as wetland impacts, may preclude a Categorical Exclusion (CATEX). A CATEX requires a review of impacts and completion of forms provided by the FAA. In some cases, documentation and agency coordination may be necessary to address extraordinary circumstances (see FAA ARP SOP No. 5.00). CATEXs that may apply to Airport's future development projects are summarized below. See FAA Orders 1050.1F and 5050.4B for a more detailed description of these and other categorically excluded actions that may apply to development projects at the Airport. 1. Access and service road construction that does not reduce the level of service on local traffic systems below acceptable levels. 2. Construction, repair, reconstruction, resurfacing, extending, strengthening, or widening of a taxiway, apron, loading ramp, or runway safety area; or the reconstruction, resurfacing, extension, strengthening, or widening of an existing runway – *provided the action would not result in significant erosion or sedimentation and will not result in a significant noise increase over noise sensitive areas or result in significant impacts on air quality*. 3. Construction or limited expansion of accessory on-site structures, including storage buildings, garages, hangars, T-hangars, small parking areas, signs, fences, and other essentially similar minor development items. 4. Construction or expansion of facilities – such as terminal passenger handling and parking facilities or cargo buildings, or facilities for non-aeronautical uses that *do not substantially expand those facilities*. 5. Demolition and removal of FAA or non-FAA on-airport buildings and structures, *provided no hazardous substances or contaminated equipment are present on the site of the existing facility*. Does not apply to historic structures. 6. Placing fill into previously excavated land with material compatible with the natural features of the site, *provided the land is not delineated as a wetland*; or minor dredging or filling of wetlands or navigable waters for any categorically excluded action, *provided the fill is of material compatible with the natural features of the site and the dredging and filling qualifies for a U.S. Army Corps of Engineers nationwide or a regional general permit*. 7. Grading of land, removal of obstructions to air navigation, or erosion control measures, *provided those activities occur on and only affect airport property*. 8. Topping or trimming trees to meet 14 CFR Part 77 standards for removing obstructions which can adversely affect navigable airspace.

EA **Environmental Assessment**	An Environmental Assessment (EA) is prepared for proposed actions with expected minor or uncertain environmental impact potential. An EA requires analysis and documentation like that of an EIS, but with somewhat less detail and coordination. The FAA will review the EA and decide to either issue a Finding of No Significant Impact (FONSI) or prepare an Environmental Impact Statement (EIS). The Airport's future development projects and actions which may require an EA are summarized below. See FAA Orders 1050.1F and 5050.4B for more information. 1. Runway extensions due to possible wetland impacts, potential off-airport impacts related to aircraft noise, and potential impacts to affect listed species habitat. 2. Taxiway construction due to possible wetland impacts and potential to affect listed species habitat. 3. Aircraft parking apron; hangar and structures; and/or access road projects that may not qualify for a CATEX due to extraordinary circumstances (e.g., wetland impacts may not qualify for a nationwide or regional general permit). 4. Approval of operations specifications or amendments that may significantly change the character of the operational environment of an airport. 5. New air traffic control procedures (e.g., instrument approach procedures, departure procedures, en route procedures) and modifications to currently approved procedures that routinely route aircraft over noise sensitive areas at less than 3,000 feet above ground level.
EIS **Environmental Impact Statement**	An EIS is prepared for major federal actions, which are expected or known to significantly affect the quality of the human environment. At this time, none of the Airport's future development projects are expected to require the preparation of an EIS.

Compiled by ESA, 2017

CEQ provides regulations for implementing the procedural provisions of NEPA, except where compliance would be inconsistent with other statutory requirements. These regulations are issued pursuant to NEPA; the Environmental Quality Improvement Act of 1970, as amended; Section 309 of the Clean Air Act, as amended; and Executive Order 11514, *Protection and Enhancement of Environmental Quality*.

3.1.2. State Environmental Reviews

In addition to compliance with NEPA, all recommended airport development must be consistent with other federal regulatory guidance, Florida Statutes, growth management and concurrency requirements as well as regional and state transportation plans. For projects that require NEPA, state environmental reviews typically initiate with the Florida State Clearinghouse which is administered by the Florida Department of Environmental Protection (FDEP). One of the Florida State Clearinghouse's primary functions is to serve as the state's single point of contact for the receipt of federal activities that require interagency review, which includes activities subject to consistency review under the Florida Coastal Management Program. Upon completion of their review, the Clearinghouse will typically issue a letter summarizing any potential concerns or inconsistencies regarding the proposed activity. The clearance letter will also include information on obtaining necessary state permits and will inform the applicant if there is a need to submit additional information to a specific state agency for review. In cases where NEPA is not required, direct coordination with the relevant state and federal regulatory agencies may still be required. Information related to the specific agencies and coordination and/or permits required, is discussed in the individual resources categories in this chapter.

3.1.3. Environmental Categories Considered During this Review

The following provides a list of the environmental categories considered during this review. Additional discussion for each category is provided in the respective sections that follow.

- Air Quality
- Noise and Compatible Land Use
- Prime and Unique Farmlands
- Biotic Communities / Vegetation
- Wildlife and Endangered Species
- Wetlands and Water Resources
- Section 4(f) and Other Environmentally Sensitive Public Lands
- Historical, Archeological, and Cultural Resources
- Energy Supply and Natural Resources
- Hazardous Materials and Waste Management
- Coastal Zone Management

While NEPA level evaluation of designated categories is not required for an AMP, other NEPA resource categories (socioeconomic impacts, environmental justice, children's health and safety risks, visual effects, and underwater and coastal resources) are briefly mentioned in this chapter. The discussion included in this section is an overview and is not intended to meet NEPA clearance criteria.

3.2. Air Quality

The federal *Clean Air Act*, as amended, required the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for principle air pollutants considered harmful to public health and the environment. Those areas where the NAAQS are not met are designated as 'nonattainment.' St. Lucie County, Florida, is classified as 'attainment' for all criteria air pollutants.[2] The Airport's emission sources, which are typical of airports, include aircraft engines, ground support equipment, auxiliary power units, motor vehicles, temporary use of construction equipment, and various stationary sources such as fuel storage tanks.

The existing and projected number of passengers and aircraft operations at the Airport, in conjunction with the County's NAAQS attainment status, indicates that continued development at the Airport is likely to not substantially affect air quality, exceed thresholds that require detailed air quality analyses, or require conformance with a State Implementation Plan.[3] Future airport development projects that require NEPA review will consider the project's effect on air quality. Certain projects and tenant activities, such as operating paint booths, will need to comply with applicable regulations and permit requirements.

3.3. Noise and Compatible Land Use

The FAA is responsible for the regulation of airport noise through the aircraft certification process and establishment of land use compatibility guidelines. Title 14 of the Code of Federal Regulations (CFR) Part 150 Noise and Land Use Compatibility, Appendix A, Table 1, identifies the 65 day-night average sound level (DNL) noise contour as the level of cumulative sound exposure above which noise sensitive land uses (residences, schools, hospitals, places of worship, etc.), are considered incompatible. Based on federal significance criteria, a project that results in a 1.5 DNL increase to noise sensitive uses located within the 65 DNL contour (or a 1.5 DNL change brings a noise sensitive use into the 65 DNL contour) would be considered to have a significant noise impact.[4] FAA is currently re-evaluating the 65 DNL contour as its threshold for compatibility and may modify its noise policy as result of the study findings.

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2 Environmental Protection Agency "Green Book." https://www3.epa.gov/airquality/greenbook/. Accessed November 2017.

3 Nonattainment areas are required to have a State Implementation Plan (SIP) that prescribes mitigation measures and timelines necessary to bring ambient concentrations of criteria pollutants below the NAAQS.

4 Day Night Average Sound Level (DNL) is the standard federal metric for determining cumulative exposure of individuals to noise. In 1981, the FAA formally adopted DNL as its primary metric to evaluate cumulative noise effects on people due to aviation activities. DNL is used by all federal agencies (EPA, HUD, etc.) for the purposes of evaluating aircraft noise impacts.

A Title 14 CFR Part 150 Noise and Land Use Compatibility Study update (Part 150 Study) was conducted for the Airport in 2005 and approved in 2006. The Part 150 Study provided St. Lucie County, the Airport, and the surrounding communities an opportunity to address noise and land use compatibility related to airport operations. Study objectives included the identification of the Airport's existing operational procedures and the determination of the existing and future noise conditions around the Airport as Noise Exposure Maps (NEMs). The Part 150 Study also identified and evaluated potential future operational, land use, and program management measures that could be implemented to reduce noise impacts, as well as the development of a Noise Compatibility Program (NCP) that consists of the recommendations made to alleviate future noise impacts to the surrounding communities.

Runway 10L-28R is the primary runway for training activities, and Runway 10R-28L is the primary runway for itinerant operations. However, Runway 14 is identified as the preferred calm wind runway for noise abatement purposes when weather and other factors permit. Other voluntary noise abatement procedures are shown in **Figure 3-1**. The Airport's voluntary noise abatement program focusses on avoiding noise sensitive residential areas to the east along the Indian River and south of the Airport. A review of land uses near the Airport also show residential areas to the southwest. Much of the remaining surrounding land is currently industrial, commercial or agricultural and is generally compatible with aircraft operations. Three churches were noted in the general area including Riverview Baptist Church to the northeast, Northside Christian Fellowship Church near the approach to Runway 32, and Crossing Community Church to the northwest. North Lake Elementary school is also located to the northwest. The Northside Christian Fellowship Church is located closest to the preferred noise abatement runway and could have the greatest potential for noise impact.

Noise contours generated during the last master plan indicate that the 65 DNL was completely contained within the airport property and in the immediate area of the runways based on both 2008 existing and 2028 projected conditions, displayed on **Figure 3-2**. The 60 DNL contour was almost completely contained within the airport boundary except for a small area to the east of the approach end of Runway 10L and south of the approach end of Runway 28R. Future contour changes will depend on the number, type, time of day and/or location of aircraft. A 40 percent increase in flight activity with runway use, fleet mix, time of day and other factors remaining constant would result in approximately a 1.5 DNL increase in sound exposure while a doubling in activity would result in a 3 DNL increase. A change in fleet mix that results in the operation of greater number of noisier aircraft could have a similar effect with a much smaller increase in activity[5]. An increase in night-time activity has considerable effect on the size of the contours. Night-time operations (those occurring between 10 p.m. and 7:00 a.m.) receive a 10 decibel (dB) weighting, or 'penalty,' due to their greater potential for annoyance. Because noise is measured logarithmically, each night-time operation has the same weighting as 10 daytime operations. Finally, any changes to the airfield that change the operational characteristics of the Airport and/or place aircraft closer or lower over noise sensitive areas have potential for increased noise exposure and possible impact.

Most of the areas in near proximity to the Airport are compatible with the 65 DNL contour so significant noise impacts appear unlikely. However, major changes in the type of aircraft or operational character of the Airport either since the last study or in the future will warrant a detailed noise investigation. Even if operational changes do not result in significant impacts, there may be an elevated potential for public controversy given the noise sensitivity of the community.

5 It should be noted that on December 31st, 2015, the FAA banned noisier Stage 2 jet aircraft with operating weights less than 75,000 pounds. All civil jet aircraft, regardless of weight must meet Stage 3 or Stage 4 to fly within the contiguous U.S.

St. Lucie County International Airport Voluntary Noise Abatement Procedures

Unless otherwise directed by ATCT to extend to mid-river, or for safety reasons, the voluntary noise abatement procedures request pilots doing touch-and-go, stop-and-go and full-stop taxi-back operations to avoid the noise sensitive areas by SAFELY TURNING BEFORE REACHING US 1.

Voluntary noise abatement for jets: Jet aircraft are to utilize National Business Aircraft Association close-in departure procedures. Also, jet aircraft departures on Runway 9 are to maintain runway heading until 2,000 ft. or reaching the ocean shoreline before initiating any turns. Touch-and-go operations by jet aircraft are to be avoided.

When Air Traffic Control Tower is closed (9:00 p.m. to 7:00 a.m.), preferred pattern is:

- **Right traffic for Runways 14 and 10R and 28R**
- **Left traffic for Runways 10L, 28L and 32**

St. Lucie County International Airport is a noise sensitive airport and we ask your consideration of the people that live in the surrounding area by complying with these **Voluntary Noise Abatement Procedures.**

BE A GOOD NEIGHBOR AND FLY QUIET!
QUIET FLYING IS GOOD BUSINESS!

- All aircraft takeoffs should be made utilizing the best rate of climb speed.
- Intersection takeoffs are strongly discouraged except as directed by ATCT.
- Runway 14 is preferred in calm wind as traffic, weather, and airspace safety and efficiency permit.
- Discourage Stage 1 aircraft operations unless for life safety, emergency or aircraft recertification.

Voluntary noise abatement procedures include allowing Touch & Go, Stop & Go, and Full-Stop-Taxi-Back Operations during the following times:

- **Monday through Friday: 8 a.m. to 10 p.m.**
- **Saturday: 9 a.m. to 10 p.m.**

Additionally, pilots are requested to avoid the above training activities on Sundays and Holidays: *(New Years Day, Martin Luther King Jr. Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Christmas Day).*

ATKINS	Treasure Coast International Airport Airport Master Plan Update	FPR Voluntary Noise Abatement Procedures	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 3-1

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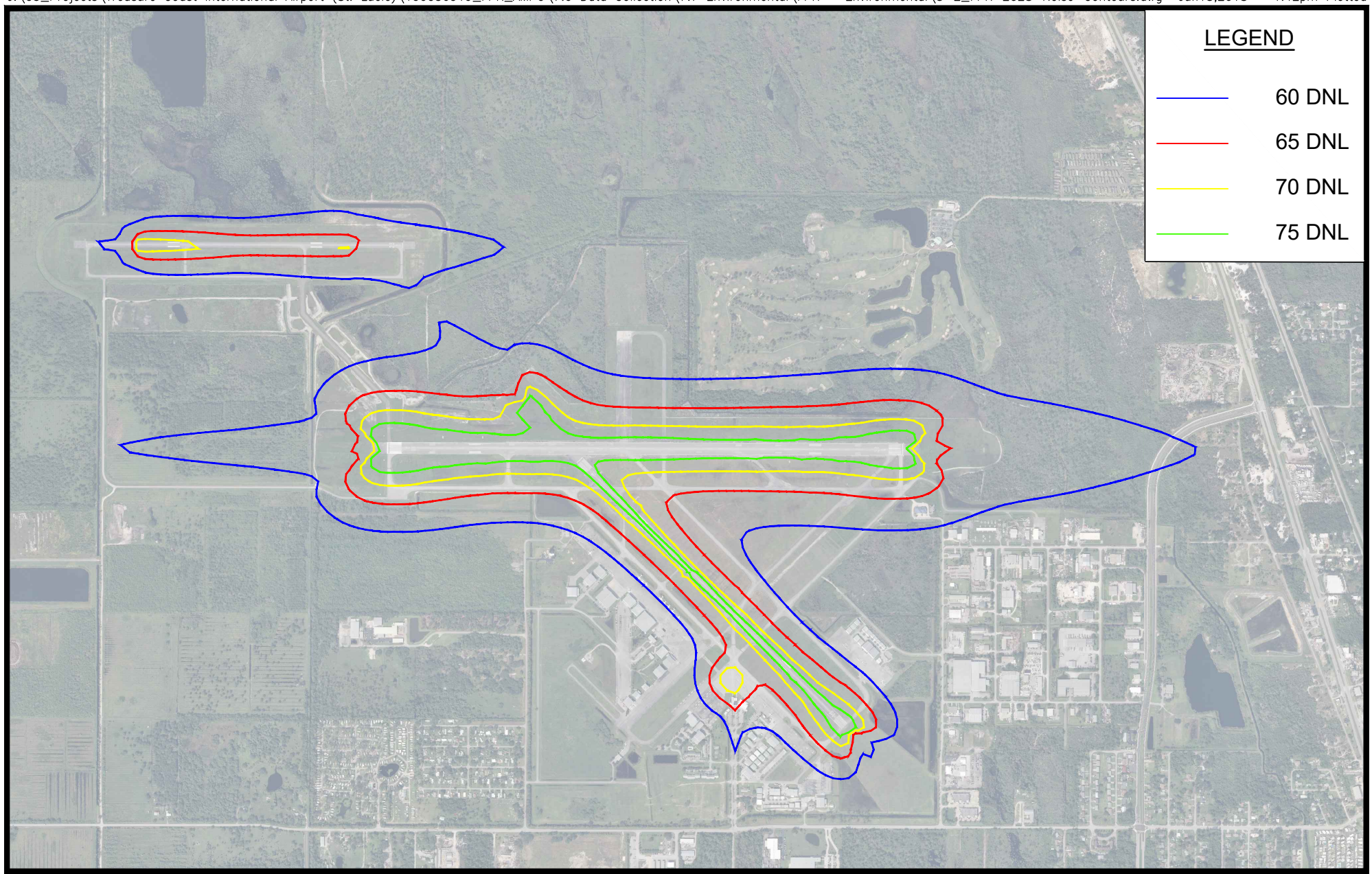

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Treasure Coast International Airport
Airport Master Plan Update

2028 Noise Contours

TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY

Figure 3-2

3.4. Prime and Unique Farmlands

FAA Order 1050.1F identifies 'prime and unique' farmlands as those agricultural areas that are considered important and protected by federal, state, and local regulations. Those of importance include all pasturelands, croplands, and forests considered to be prime, unique, or of state or local importance. Lands of this nature that are zoned for development are also included in this designation.

Based on a review of available data from the United States Department of Agriculture (USDA) National Resource Conservation Service (NRCS), there does not appear to be any prime or unique farmlands in the Airport's vicinity. Additionally, the Airport is located just outside of an urban area as defined on the US Census Bureau Urbanized Area Reference Map for Port St. Lucie, FL (Urban Area Code: 71479). Therefore, projects at the Airport would not impact farmlands protected by the Farmland Protection Policy Act.

If it is determined that a prime or unique farmland of state or local importance has the potential to be impacted by a proposed action at the Airport, consultation with the NCRS under the Farmland Protection Policy Act (FPPA) will occur. This consultation typically involves the use of the Farmland Conversion Impact Rating Form (Form AD-1006) to determine if the land in question is subject to the FPPA and if further action should be taken.

3.5. Biotic Communities / Vegetation

The total airport property is approximately 3,800 acres in size. The Fairwinds Golf Course occupies an area of approximately 180 acres on the northeast side of the main airfield. The remainder of the airport property north of the AOA is vacant undeveloped land. The existing land use and cover types have been mapped for the Airport using the South Florida Water Management District (SFWMD) Florida Land Use and Cover Classifications Systems (FLUCCS) data for St. Lucie County, combined with previously developed site-specific GIS data. The FLUCCS communities are depicted in **Table 3-2**, which lists the land use and land cover classes within the Airport's property limits and a brief description of each.

Table 3-2 FLUCCS Communities

Land Use Code	Description
1110	Fixed Single-Family Units (less than two dwellings per acres)
1120	Mobile Home Units (less than two units per acres)
1180	Rural Residential
1210	Fixed Single-Family Units (two-five dwelling per acre)
1320	Mobile Home Units (six or more dwelling per acre)
1400	Commercial and Services
1420	Wholesale and Services (excluding warehouses association with industrial use)
1550	Other Light Industries
1820	Golf Courses
1900	Open Land
1920	Inactive Land with Street Pattern but without structures
2120	Unimproved Pastures
2130	Woodland Pastures
2210	Citrus Groves
2430	Ornamentals
3100	Herbaceous (dry prairie)
3200	Shrub and Brushland
3210	Palmetto prairies
3300	Mixed Rangeland
4110	Pine Flatwoods

4130	Sand Pine
4200	Upland Hardwood Forest
4220	Brazilian Pepper
4340	Hardwood Coniferous Mixed
5120	Channelized River, Stream, and Waterway
5300	Reservoirs
6170	Mixed Wetland Hardwoods
6410	Freshwater Marshes
6430	Wet Prairies
6440	Emergent Aquatic Vegetation
8110	Airports
8140	Roads and Highways
6410	Freshwater Marshes

Source: SFWMD FLUCCS data

Potential impacts to biotic communities are regulated by a variety of agencies at the federal, state and local level depending upon the project type and community affected. At the local level, St. Lucie County Environmental Regulations and Land Management Division (ERD) regulates tree and vegetation removal and landscaping, wetland impacts, and listed species. **Figure 3-3** depicts a designated County tree mitigation area on the Airport located north of Runway 10L-28R. The Airport typically maintains an airport-wide County Vegetation Removal Permit to comply with FAR Part 77 requirements concerning maintenance of airspace that is free of obstructions, ATCT Line-of-Sight, and safety requirements for safe aircraft operations. The Airport routinely coordinates activities that may potentially affect wetlands, wetland buffers and protected species with the County ERD. ERD works with other County departments involved in development review, as well as with other federal and state agencies.

A comprehensive list of all local regulations can be found in the County's Comprehensive Plan and in Chapters 6 and 7 of the Land Development Code (Municode). There are also several state and federal regulatory agencies with jurisdiction over resources that may be impacted by airport development. These agencies and the coordination typically required are discussed in the following sections related to the specific resources they govern, and include state and federal wetland regulations, water quality protection, and state and federal protected species regulations.

3.6. Wildlife and Endangered Species

3.6.1. Wildlife Hazard Management

A FAA compliant Wildlife Hazard Assessment (WHA) was most recently conducted from August 2012 through July 2013. During that assessment more than 70 species were documented on or near the Airport, and the results were reported in the WHA dated March 2013. Subsequently, a Wildlife Hazard Management Plan (WHMP) was developed and recommendations within that plan are in various stages of implementation. Of note, the WHMP identifies actions and permits required to manage the Airport's wildlife, including protected species. Future airport development will need to consider the current WHMP and its recommendations.

3.6.2. Endangered Species

In addition to assessing impacts under NEPA, airport development projects are subject to other federal and state laws associated with wildlife and protected species. Most notable is the federal *Endangered Species Act* (ESA), which protects and recovers imperilled species and the ecosystems upon which they depend.[6]

6 *Endangered Species Act*. 16 U.S. Code § 1531-1544. December 28, 1973. As amended 1976-1982, 1984, and 1988.

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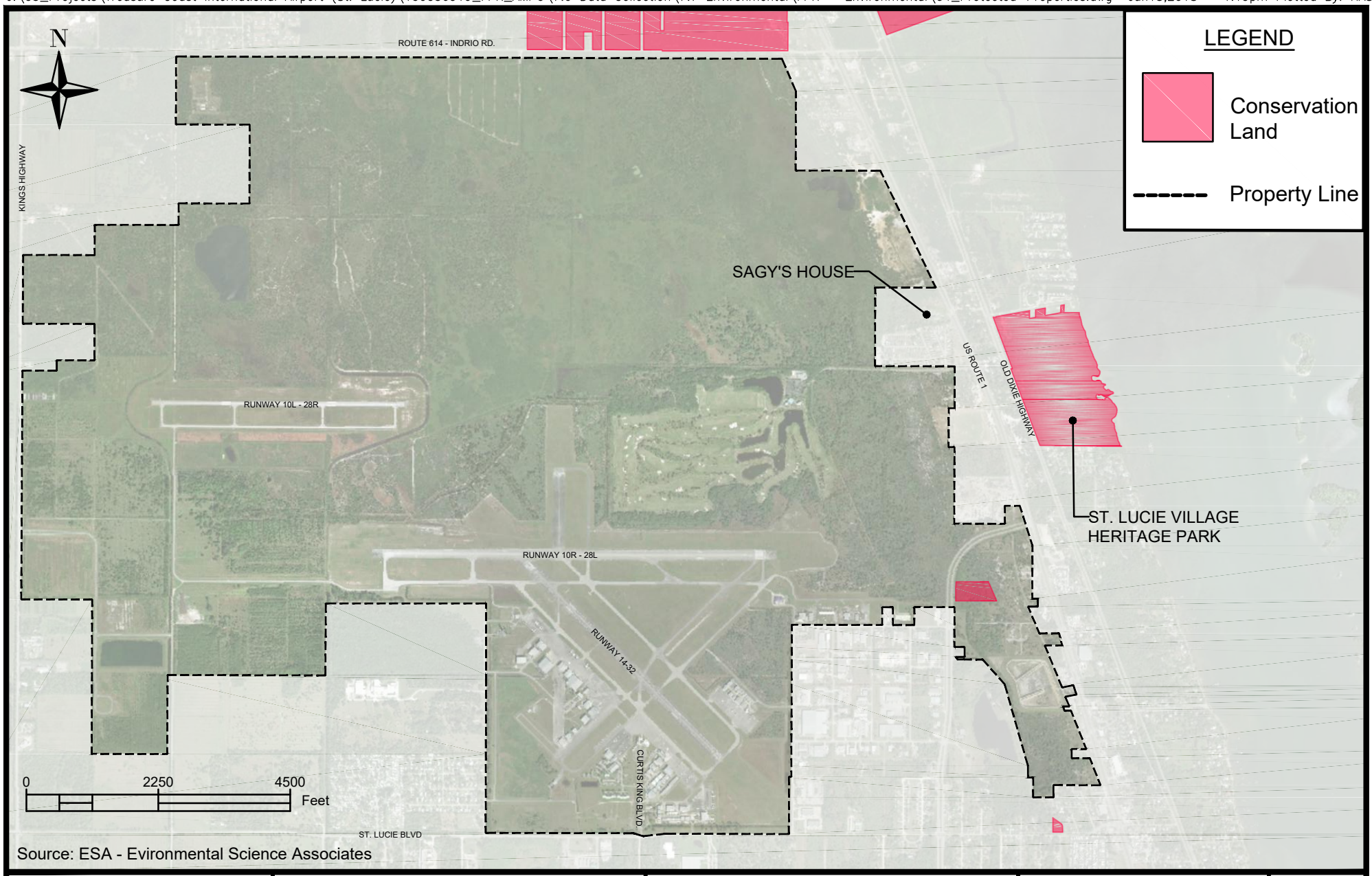

ATKINS	Treasure Coast International Airport Airport Master Plan Update	Conservation Land	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 3-3

The FAA and/or other federal agencies that may be involved with Airport's development projects are required to determine if their action(s) would affect listed species.[7] Depending upon the potentially impacted habitat or species affected, coordination with the US Fish and Wildlife Service (FWS), Florida Fish and Wildlife Conservation Commission (FFWCC) and County ERD may be required. In cases where wetlands are also impacted, this coordination typically occurs in conjunction with wetland permitting. A discussion of the most likely impacted species at the Airport, and the coordination required for each, is included in this section.

A review of publicly available resources (Florida Natural Areas Inventory (FNAI), previous environmental studies, surveys, and agency communication (from prior permits and NEPA reviews) has identified suitable habitat at the Airport for several federal and state-listed species. **Table 3-3** provides a list of the listed species for which suitable habitat exists, or there is a likelihood of occurrence on or near FPR.

Table 3-3 Federal and State Listed Species in the Airport's Vicinity

Vegetation		
Common Name	**Scientific Name**	**Status**
Piedmont Jointgrass	*Coelorachis tuberculosa*	State Threatened
Large Flowered Rosemary	*Conradina grandiflora*	State Threatened
Lakela's Mint	*Dicerandra immaculata*	Federal and State Endangered
Coastal Vervain	*Glandularia maritima*	State Endangered
Fragrant Prickly	*Harrisia fragrans*	Federally and State Endangered
Nodding Pinweed	*Lechea cernua*	State Threatened
Burrowing Four-O' Clock	*Okenia hypogaea*	State Endangered
Hand Fern	*Ophioglossum palmatum*	State Endangered
Blunt-leaved Peperomia	*Peperomia obtusifolia*	State Endangered
Tiny Polygala	*Polygala smallii*	Federal and State Endangered
Giant Orchid	*Pteroglossaspis ecristata*	State Threatened
Scrub Bluestem	*Schizachyrium niveum*	State Endangered
Coastal Hoary-pea	*Tephrosia angustissima var. curtissii*	State Endangered
Wildlife		
Eastern Indigo Snake	*Drymarchon couperi*	Federally Threatened
Gopher tortoise	*Gopherus Polyphemus*	State Threatened and a Federal Species of Special Concern
Pine Snake	*Pituophis melanoleucus*	State Threatened
Florida Sandhill Crane	*Antigone canadensis pratensis*	State Threatened
Florida Scrub-Jay	*Aphelocoma coerulescens*	Federally Threatened
Florida Burrowing Owl	*Athene cunicularia floridana*	State Threatened
Crested Caracara	*Caracara cheriway*	Federally Threatened
Little Blue Heron	*Egretta caerulea*	State Threatened
Tricolored Heron	*Egretta tricolor*	State Threatened
Southeastern American Kestrel	*Falco sparverius paulus*	State Threatened
Wood Stork	*Mycteria americana*	Federally Threatened
Osprey	*Pandion haliaetus*	State Species of Special Concern
Red-cockaded Woodpecker	*Picoides borealis*	Federally Endangered
Sherman's Fox Squirrel	*Sciurus niger shermani*	State Species of Special Concern

Source: Environmental Science Associates, 2017

7 50 CFR Part 402, *Interagency Cooperation – Endangered Species Act of 1973, as Amended*, Subpart B.

3.6.2.1. Species with Suitable Habitat at FPR that Require Regulatory Coordination

Florida scrub jay (*Aphelocoma coerulescens*) are known to occur on airport property. Habitat for this species is generally upland areas that contain scrub oak (or similar) species with well-drained, sandy soils. Florida scrub jays are classified as Threatened at both the federal and state level due to loss, fragmentation, and degradation of habitats throughout Florida. Areas that have the potential to contain Florida scrub jay habitat were determined through review of the most recent SFWMD FLUCCS data following the protocols established by the USFWS and are identified in **Figure 3-4**. Due to the Airport's large amount of suitable habitat and documented occurrences for this species onsite, USFWS approved survey protocols should be conducted prior to development in areas with suitable habitat. The scrub jay survey would need to be consistent with USFWS' "*Florida Scrub-Jay General Survey Guidelines and Protocols*". If the survey indicates that a proposed project would impact an occupied scrub jay territory, USFWS and FFWCC coordination would be required along with potential permitting, mitigation, and USFWS consultation pursuant to Section 7 of the ESA.

Most of the undeveloped portions of the airport property provide suitable habitat for the state-listed gopher tortoise (Gopherus polyphemus, Threatened) and the federally-listed eastern indigo snake (Drymarchon couperi, Threatened), and areas of the Airport have been designated as gopher tortoise recipient sites. Gopher tortoise burrows are found in most upland habitats and are protected from any type of soil disturbance, by a 25-foot buffer. Prior to construction of new facilities in upland portions of airport property that are undeveloped or in mowed or maintained areas that the gopher tortoise may inhabit, a gopher tortoise survey using the methodology described in the FFWCC's "Available Options to Address the Presence of Gopher Tortoises on Lands Slated for Development" would be required to determine their presence or absence. If gopher tortoises are present, then coordination with the FFWCC and a gopher tortoise relocation permit may be required.

Indigo snakes can occur within most of the existing, undeveloped habitats on airport property. Current guidance requires that disturbance of more than 25 acres of undeveloped land triggers coordination with USFWS. The eastern indigo snake has been documented to occur in St. Lucie County, and since it is a commensal species that often utilizes gopher tortoise burrows for shelter and nesting, proposed development areas that are surveyed and determined to contain gopher tortoise burrows may also contain eastern indigo snakes. Their presence would typically be determined during gopher tortoise relocation activities, and eastern indigo snake guidelines and conditions are typically included in a gopher tortoise relocation permit. If the indigo snake is documented within a proposed project area, USFWS and FFWCC coordination would be required and permitting and USFWS consultation (under Section 7 of the ESA) may be required.

The federally-listed wood stork (*Mycteria Americana*, threatened) is a species that typically utilizes shallow waterbodies, including wetlands, coastal areas, ponds, ditches, creeks, and impounded water areas, for foraging opportunities. The Airport is located within a USFWS designated Wood Stork Core Foraging Area; therefore, given the extent of wetlands and man-made drainage features on-airport property, future development projects that impact appropriate wood stork foraging habitat may require USFWS coordination and possibly mitigation. Such coordination is usually completed through the wetland permitting processes (USACE and SFWMD) and, if required, wood stork habitat mitigation is typically accomplished in conjunction with state and federal permitting actions for impacting wetlands and waterbodies.

Potential habitat also exists on airport property for crested caracara (*Caracara cheriway*) and for red-cockaded woodpecker *(Picoides borealis)*. For crested caracara, potentially suitable habitat includes dry or wet prairie areas with scattered cabbage palms (*Sabal palmetto*), but may also be found in lightlywooded areas. Because of widespread changes in land use, these birds will also use improved or semi-improved pasture, particularly where seasonal wetlands are nearby. Where suitable habitat exists onsite, USFWS approved surveys should be conducted, and results coordinated with the USFWS prior to land development.

The red-cockaded woodpecker has been documented to occur in two sites in south central St. Lucie County by the USFWS. Based on the FLUCCS mapping and a review of aerial photography, portions of the Airport's property may contain suitable habitat for this species. However, exclusion of fire from the Airport's property has likely rendered most of the habitats unsuitable for this species. Nevertheless, for projects that have the

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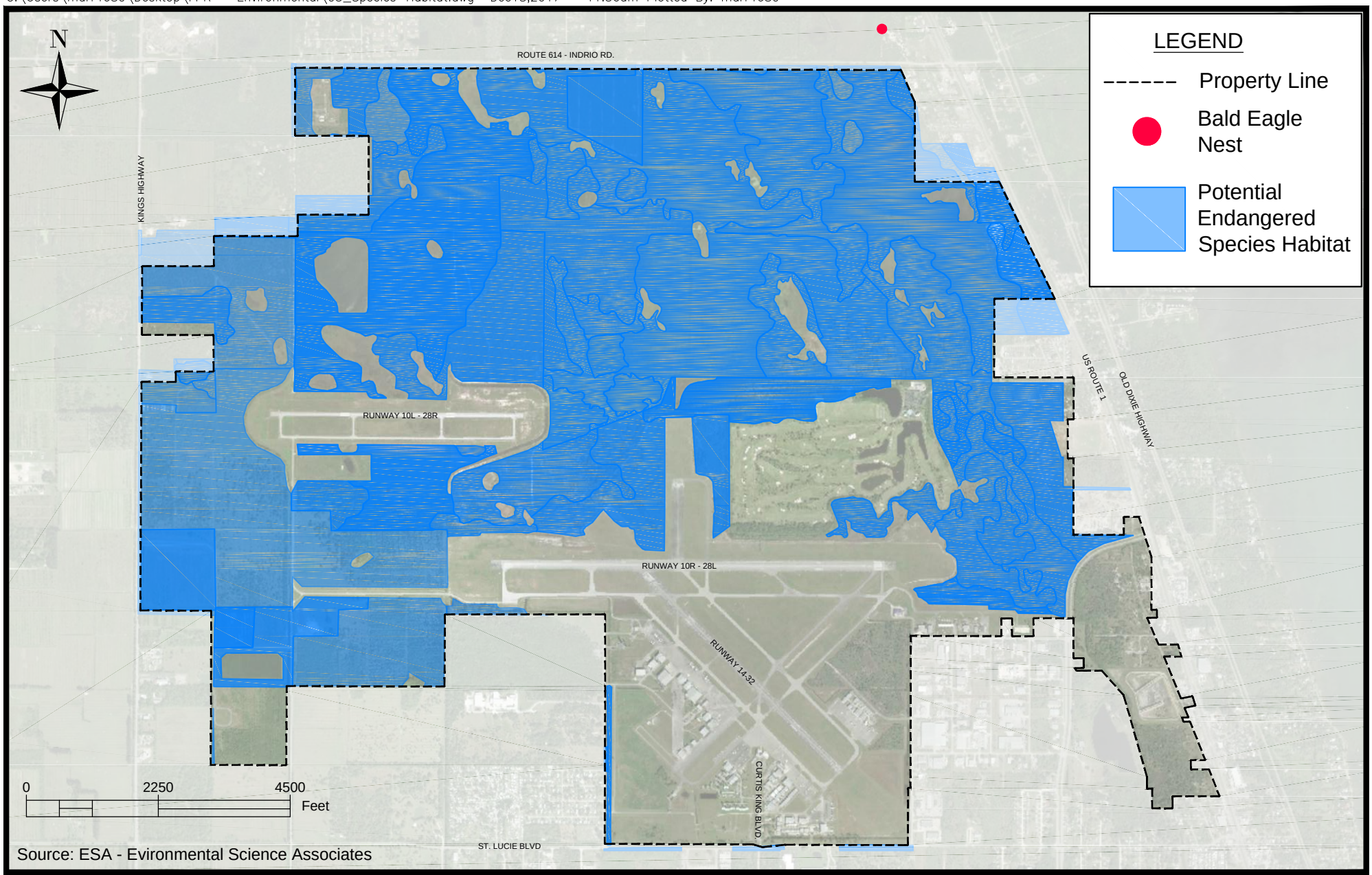

Source: ESA - Evironmental Science Associates

ATKINS	Treasure Coast International Airport Airport Master Plan Update	Potential Protected Species Habitat	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 3-4

potential to impact old growth pine forests, forests that have a substantial old growth pine component, or younger pine stands that could be utilized for foraging that are within proximity to suitable nesting habitat, a survey for red-cockaded woodpeckers should be conducted in accordance with the USFWS' "*Redcockaded Woodpecker South Florida Survey Protocol*" prior to development. If it is determined that red-cockaded woodpecker nesting or foraging habitat is present, USFWS and FFWCC coordination would be required to determine whether permitting and/or USFWS consultation (pursuant to Section 7 of the ESA) may be required.

3.7. Wetlands and Water Resources

Prior environmental studies and reports, GIS data and other publicly available data was reviewed to determine the extent of wetlands and other water resources on airport property. The most recent FLUCCS data was utilized to approximate the limits of wetlands and other surface waters where no previously delineated wetland mapping data was available. The Department of the Army, Corps of Engineers (USACE), the Florida Department of Environmental Protection (FDEP), and the State of Florida's Water Management Districts have jurisdiction over and regulate activities that impact wetlands, surface waters, and/or storm water management systems through the Environmental Resource Permit (ERP) Program in Florida. In St. Lucie County, the South Florida Water Management District (SFWMD) is the permitting authority that administers the ERP program.

3.7.1. Wetlands

In addition to review through the NEPA process, the wetlands at FPR are subject to three levels of regulatory jurisdiction: local (ERD), state (SFWMD) and federal (USACE/USEPA). While the three agencies have similar missions, the criteria for delineation, permitting and mitigation of wetlands varies between them. While not all the wetland areas on the Airport have been field reviewed or delineated, the mapping in the AMP represents the best combination of previous wetland delineations, various database GIS information, aerial photo interpretation and limited field reconnaissance. It should be noted that if not previously approved by regulatory personnel, wetlands within any project site would require field review and delineation prior to determination of extent of impacts.

As depicted in **Figure 3-5**, the airport property contains numerous wetlands and surface waters (such as canals and some ponds and ditches). These areas occur throughout the airport property, but are most abundant northeast, north, and northwest of Runway 10R-28L. The area west of the Airport has comparatively fewer wetlands. A field wetland delineation should be conducted and followed by coordination with ERD, SFWMD and/or the USACE for new development projects that have the potential to impact wetland and surface water areas to determine whether permitting will be necessary. When permits are required (wetlands will be impacted more than the minimums allowances), they are prepared through independent coordination with each of the agencies for which jurisdictional impacts occur. The USACE would require a permit for impacts under their jurisdiction, Waters of the United States under the Clean Water Act of 1972, as amended. This is typically completed concurrently with state permitting through the SFWMD administered ERP process which combines the environmental regulatory review with the water quality and water quantity (stormwater) review. While the local agency (ERD) may not require a separate permit, they will in some cases require mitigation for habitat loss or tree removal. Where impacts are significant, wetland mitigation may be required and would be determined on a case by case basis.

3.7.2. Floodplains

Executive Order 11988, *Floodplain Management*,[8] directs federal agencies "to take actions to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare, and restore and preserve

8 *Executive Order 11988*, "Floodplain Management", May 24, 1977 (42 FR 26951).

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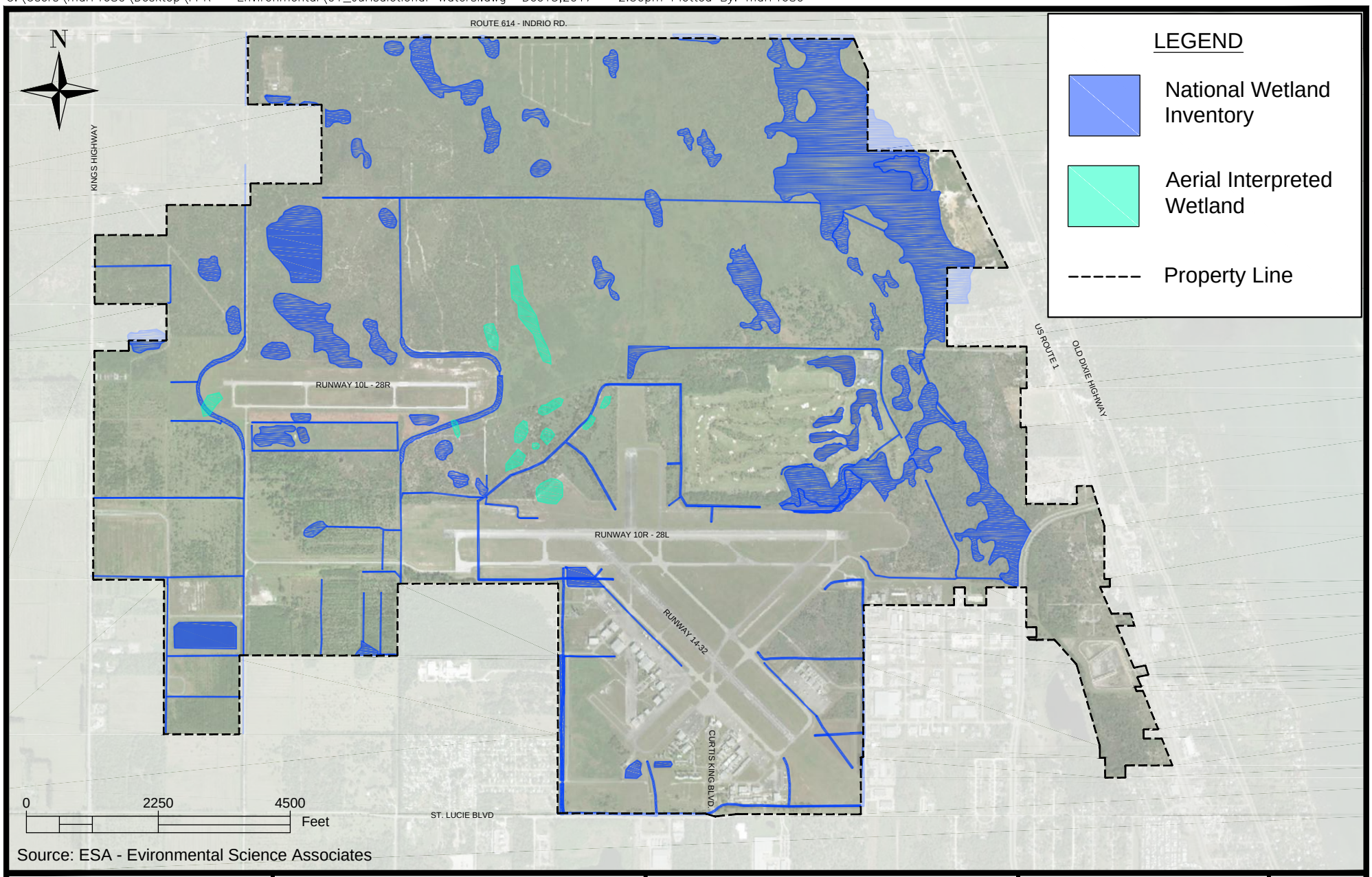

Source: ESA - Evironmental Science Associates

ATKINS	Treasure Coast International Airport Airport Master Plan Update	Jurisdictional Waters	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 3-5

preserve the natural and beneficial values served by the flood plains."[9] Department of Transportation Order 5650.2, *Floodplain Management and Protection*, and FAA Orders 1050.1F and 5050.4B contain policies and procedures for implementing the Executive Order and evaluating potential floodplain impacts. Agencies are required to make a finding that there is no practicable alternative before taking action that would encroach on a floodplain based on a 100-year flood (7 CFR 650.25).

The Federal Emergency Management Agency (FEMA) identifies flood hazard areas that are depicted on Flood Insurance Rate Maps (FIRMs). A floodplain is defined as the lowlands and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, at a minimum, that are prone to the 100-year flood. The 100-year floodplain is considered the base floodplain. Flood hazard areas identified on FIRMs are defined as Special Flood Hazard Area, which are assigned with various zone designations signifying their individual characteristics. Zone A is subject to inundation by the one percent annual chance flood event, and Zone B is a moderate flood hazard area. **Figure 3-6** depicts the floodplain locations on and around FPR property. As shown, there is a high risk/100-year flood plain located north of Runway 10R/28L. The remainder of the floodplains located on airport property are classified as moderate to low risk.

3.7.3. Other Water Resources

The Airport is located approximately 1.25 miles west of the Indian River. This 120-mile long, north-south river is part of a brackish lagoon (the Indian River Lagoon water system) located on the east coast of central Florida. The Airport, as well as its surrounding area, contain a network of ditches and drainage canals. A review of EPA databases reveals there are no impaired water bodies located on or adjacent to the Airport. However, an impaired stream does exist approximately one-mile south of the southern airport boundary. The airport operates under storm water management permits and implements pollution prevention plans and best management practices. The Airport has a network of drainage ditches and ponds used for storm water conveyance and storage, some of which maintain connections to other surface waters. Mitigation will be required should a proposed project at the Airport be determined to impact such facilities. Historically, coordination with Ft. Pierce Farms Water Control District has been required when impacts to regulated features are required, as was the case with the relocation of the drainage canal on the west end of Runway 10L-28R.

National Pollutant Discharge Elimination System (NPDES) regulations also serve to protect water quality. In the State of Florida, the NPDES permit program is administered by the FDEP. An NPDES Generic Permit for construction is required for projects that disturb greater than 0.5 acre. Therefore, proposed construction projects at the Airport that exceed this threshold would require an NPDES permit.

3.8. Historical, Archaeological, and Cultural Resources

NEPA requires Federal agencies to consider the potential effect of their actions on "the human environment," which includes cultural as well as natural aspects of the environment. NEPA regulations (40 CFR 1502.25) encourage integration of the NEPA review process with other environmental laws. Several laws and regulations require that possible effects on historic, archaeological, and cultural resources be considered during the planning and execution of federal undertakings. The primary laws that pertain to the treatment of historic, architectural, archaeological, and cultural resources during environmental analyses are the *National Historic Preservation Act* (NHPA), the *Archaeological Resources Protection Act*, and the *Native Graves Protection and Repatriation Act*. Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* and the Presidential Memorandum of April 29, 1994, *Government-to-Government Relations with Native American Tribal Governments,* require that the FAA consult directly with tribal governments on federal undertakings that may affect federally-recognized Native American Indian tribes.

9 FAA Order 1050.1F, Appendix A Section 9 9.1.

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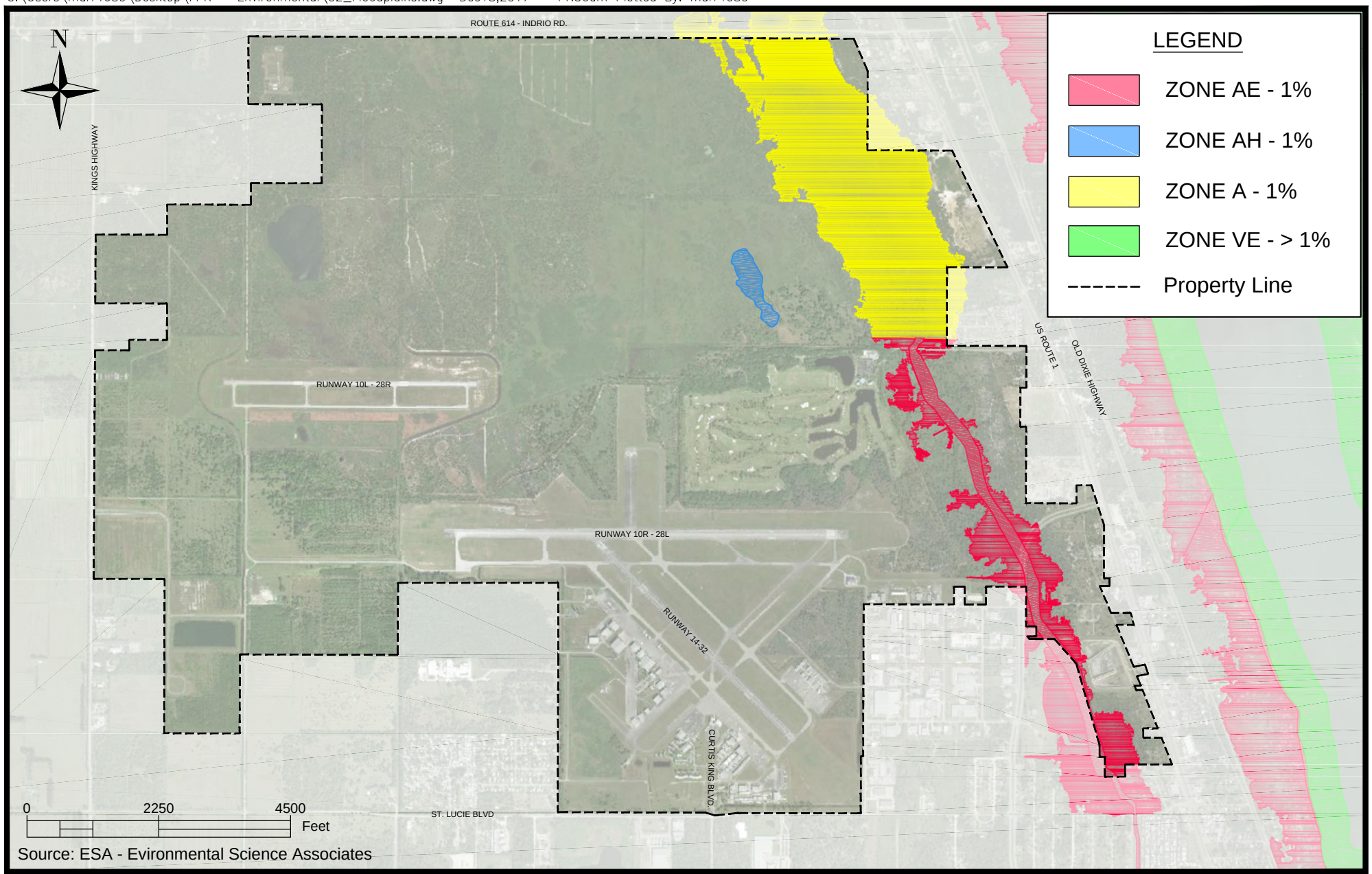

Source: ESA - Evironmental Science Associates

ATKINS	Treasure Coast International Airport Airport Master Plan Update	Jurisdictional Waters	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 3-6

A review of the EPA's NEPAssist database and the NRHP revealed one location (Casa Caprona) that is listed in the NRHP and within the Airport's vicinity. Casa Caprona is a building with architectural and engineering significance and was certified to the NRHP in June of 1984. Additionally, since this site is listed in the NRHP, it is thereby classified as a Section 106 resource. As such, a Section 106 review will need to be undertaken commensurate with any proposed action at the Airport that has the potential for impact on the resource.

Additionally, Florida Division of Historical Resources and the State Historical Preservation Office (SHPO) identified a potentially eligible site on the east side of the Airport. Sagy's House circa 1925 (8SL266) is a structure located on or adjacent to airport property along US Highway 1. The St. Lucie County Historic Resources Survey, August 2003, identifies other historic resources including the St. Lucie Village Historic located east of the Airport. Portions of the airport property located east, north (aside from the county-owned Fairwinds Golf Course), and west areas of the developed portion of the Airport are predominantly undeveloped and have the potential to contain archaeological resources. For projects that would impact areas that have not been previously disturbed or developed, coordination with the SHPO would be required, and a Phase I Cultural Resources Assessment Survey may be required.

3.9. DOT Act: Section 4(f) and Other Environmentally Sensitive Public Lands

Section 4(f) of the *Department of Transportation (DOT) Act of 1966* (re-codified and renumbered as Section 303(c) of 49 United States Code) states that the Secretary of Transportation will not approve any program or project that requires the use of publicly-owned land of a public park, recreation area; or wildlife and waterfowl refuge of national, state, or local significance; or land of an historic site of national, state, or local significance as determined by the officials having jurisdiction thereof, unless:

1. There is no feasible and prudent alternative to use of such land and such program, and

2. The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

There is one potential Section 4(f) resource located on airport property; the Fairwinds Golf Course that is owned and operated by St. Lucie County. A review of a U.S. Park Service data revealed one historic resource listed on the National Register of Historic Places (NRHP). Identified as the Casa Caprona, it is a building with architectural and engineering significance and was certified to the NRHP in June of 1984. Additional 4(f) resources within one mile of the Airport include two recreational facilities: St. Lucie Village Heritage Park and the Sheraton Plaza Recreation Area. Both facilities are owned/operated by St. Lucie County and feature a variety of active and passive recreational opportunities. Four wildlife preserve/conservation areas also exist within the Airport's vicinity. They are the Sheraton Plaza Scrub Preserve, (approximately three-quarters of a mile south of the Airport) and the D.J. Wilcox Preserve, Indrio North Savannahs, and the Indrio Scrub Preserve, all of which are located north/northeast of Indrio Road along the Airport's northern boundary. The Section 4(f) resources located within one mile of the Airport property are depicted on **Figure 3-7**.

Where impacts to 4(f) resources are proposed, coordination with applicable agencies (US Department of the Interior (DOI), US Department of Agriculture (USDA), or Housing and Urban Development (HUD)), in addition to any state/local officials with jurisdiction over and Section 4(f) property that may be potentially impacted by a proposed airport action, would typically be conducted as part of the NEPA process.

3.10. Energy Supply and Natural Resource Use

The Ft. Pierce Utilities Authority (FPUA) and Florida Power and Light Company (FPL) are the Airport's electric power suppliers, with a network capable of serving the Airport's existing and prospective future tenants.

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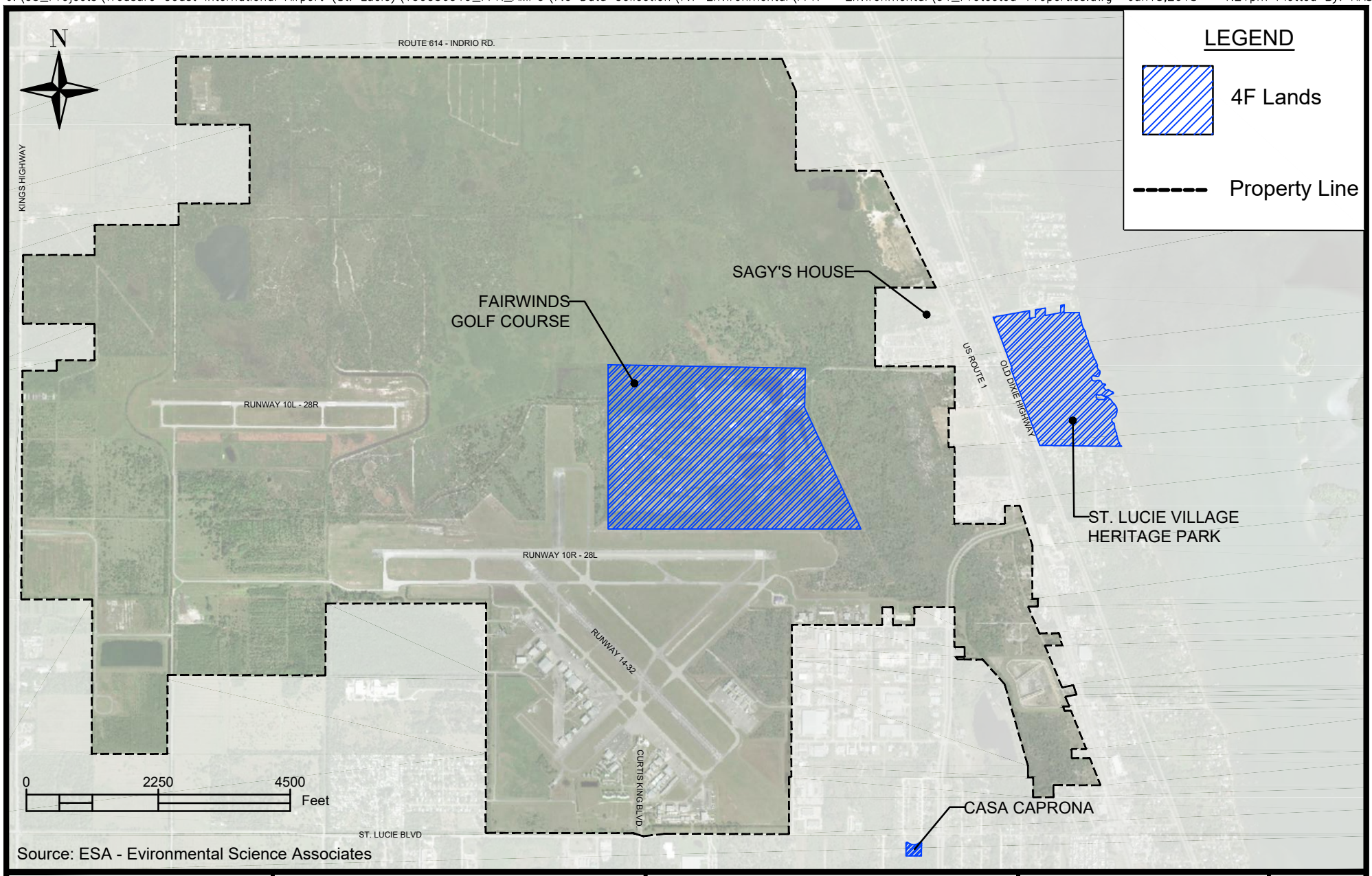

ATKINS	Treasure Coast International Airport Airport Master Plan Update	4F Lands	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 3-7

Any proposed airport improvements projects would require lighting; power for specialized equipment, tools, and processes; office equipment; and air conditioning. Local power utility requirements would include the need for electric service. Additional improvement proposed at the Airport will require an evaluation of the energy needs to determine the steps necessary to make such accommodations.

Although a threshold has not been specifically identified by the FAA, it is not anticipated that future airport improvements or development projects would have a significant impact on natural resources and energy supplies.

3.11. Hazardous Materials and Waste Management

3.11.1. Hazardous Materials

Federal, state, and local laws regulate hazardous materials use, storage, transport, or disposal. Major laws and issue areas include:

- *Resources Conservation and Recovery Act (RCRA)* - hazardous waste management.
- *Hazardous and Solid Waste Amendments Act* - hazardous waste management.
- *Comprehensive Environmental Response, Compensation, and Liability Act* – clean-up of contamination.
- *Superfund Amendments and Reauthorization Act (SARA)* – clean-up of contamination.
- *Emergency Planning and Community Right-to-Know (SARA Title 111)* - business inventories and emergency response planning.

According to the Florida Department of Environmental Protection (DEP), there is one petroleum cleanup site located on airport property, which is listed as an active cleanup site. This site is located near the main terminal buildings at the southern end of airport property and was contaminated by discharges of petroleum and petroleum products from above ground and underground storage systems. No other hazardous cleanup sites are located on-airport property.

The RCRA on-line database lists facilities that store, generate, transport, treat, and dispose of hazardous wastes (typically waste oils, paint solvents, and other hazardous materials). It should be noted that sites included in this database do not necessarily involve contamination. Multiple RCRA sites are located on or adjacent to FPR and are summarized in **Table 3-4**.

Table 3-4 Resources Conservation and Recovery Act Sites

Handler ID	Name	Generator Type	Compliance/ Enforcement Issues[1]
FLR000038901	Seagull Aviation	Conditionally Exempt Small Quantity Generator	None
FLR000038885	Micco Aircraft	Unknown[2]	None
FLR000154872	Missionary Flights International	Conditionally Exempt Small Quantity Generator	1 significant violation in previous 12 quarters
FLR000147124	Aircraft Ground Equipment Corp.	Conditionally Exempt Small Quantity Generator	None
FLR000039818	Bell Aircraft	Conditionally Exempt Small Quantity Generator	None
FLD984178699	Federal Express Corporation	Unknown[2]	None
FLT970057832	FMC Corporation	Conditionally Exempt Small Quantity Generator	None

Handler ID	Name	Generator Type	Compliance/ Enforcement Issues[1]
FLR000038869	Fort Pierce Air Center	Conditionally Exempt Small Quantity Generator	None
FLR000038877	Libersky Airmarine Service	Conditionally Exempt Small Quantity Generator	None
FLR000032755	Maverick Boat Company	Large Quantity Generator	1 Noncompliance and 1 Significant Violation in previous 12 quarters
FLR000023663	MDM Marble Company	Unknown[2]	None
FLR000095877	Pan Am International Flight Academy	Conditionally Exempt Small Quantity Generator	None
FLD980838791	S2 Yachts Pursuit Division	Large Quantity Generator	2 Noncompliance violations in previous 12 quarters
FLR000151043	Fairwinds Golf Course Landfill	Conditionally Exempt Small Quantity Generator	None
FLD982141566	A&A Auto Salvage Inc.	Conditionally Exempt Small Quantity Generator	None
FLD98213871	Z Tech Automotive	Unknown[2]	None
FLR000131573	Beyel Brothers Inc.	Conditionally Exempt Small Quantity Generator	None
FLR000078469	Bluewater Sport Fishing Boats, Inc.	Small Quantity Generator	None
FL0000338392	Matrix Engineering, Inc.	Small Quantity Generator	None
FLD982077604	Penske Truck Leasing, Inc.	Unknown[2]	None
FLR000088625	Phoenix Metal Products, Inc.	Conditionally Exempt Small Quantity Generator	None
FLR000073411	American Automated Stitching	Unknown[2]	None
FLR000193763	CDI Group USA	Unknown[2]	None
FLD984224410	Cumberland Farms #0901	Unknown[2]	None
FLD984186262	Farm Store #2450	Unknown[2]	None
FLR000216713	R&L Carriers	Small Quantity Generator	None
FLR000101097	Aerex Industries, Inc.	Small Quantity Generator	None
FLD984245092	Auto Care Center	Unknown[2]	None
FLD984188706	Automated Services Inc.	Unknown[2]	None
FLD984189563	JC Metal Spinning Inc.	Unknown[2]	None
FLD010816056	Marcar Enterprises Inc.	Unknown[2]	None
FLR000060574	TNT Custom Boat Works	Conditionally Exempt Small Quantity Generator	None

1. Compliance and enforcement information available in the EPA ECHO report only available for previous 5-year period.
2. Generator type unavailable from EPA at time of search (November 2017).

Source: EPA, 2017

National Priority List (NPL) sites, also referred to as “Superfund” sites, are considered by EPA to have the most significant public health and environmental risks to neighboring areas. A review of EPA on-line databases did not reveal any NPL sites or facilities on or within the Airport’s vicinity.

Figure 3-8 depicts the two closed landfills which occur onsite. One site was remediated and currently exists as Fairwinds Golf Course and the other is in the Airport’s southwest quadrant.

3.11.2. Waste Management

The *FAA Modernization and Reform Act of 2012* included a new requirement for airport master plans to address recycling by:

- Assessing the feasibility of solid waste recycling at the airport;
- minimizing the generation of waste at the airport;
- identifying operations and maintenance requirements;
- reviewing waste management contracts; and
- identifying the potential for cost savings or generation of revenue.

The Airport’s Recycling, Reuse, and Waste Reduction Plan (RRWRP) includes a review of the Airport’s waste management and recycling throughout the terminal and airfield, as well as a review of tenant practices. The RRWRP prepared as part of this AMP is included in **Appendix A**.

As a result of the RRWRP, the following initiatives are recommended to advance the Airport’s waste reduction and recycling efforts. These initiatives include:

- Broaden the recycling program
- Develop environmentally preferable purchasing procedures
- Provide additional recycling bins
- Develop a recycling awareness campaign
- Monitor waste reduction and recycling practices
- Provide hand dryers in restrooms
- Enhance tenant engagement to increase recycling efforts
- Update tenant contract language to establish waste diversion or recycling goals
- Host a periodic universal waste collection day
- Collect lost and found items and donate
- Initiate a composting program

A more detailed explanation of each of these initiatives is included as part of the RRWRP in **Appendix A**.

3.12. Construction Impacts

Construction impacts are generally short-term in nature and temporary at any one location, and would vary depending on which projects are implemented. The construction required for any improvement or proposed developments could have the potential to impact air quality, surface transportation, water quality, and noise through the uses of heavy equipment and vehicle trips generated from construction workers traveling to and from the project sites. For water quality, each project will have to adhere to the Airport’s applicable Storm Water Pollution Prevention Plan (SWPPP). For those where construction could take place in proximity to residential areas; this construction would be subject to local noise ordinances. Major and minor arterial roadways border the Airport; therefore, there is the potential for construction traffic to travel in proximity to residential areas. Construction impacts would be evaluated as part of any NEPA analysis required, prior to constructing any of the Airport’s proposed development projects.

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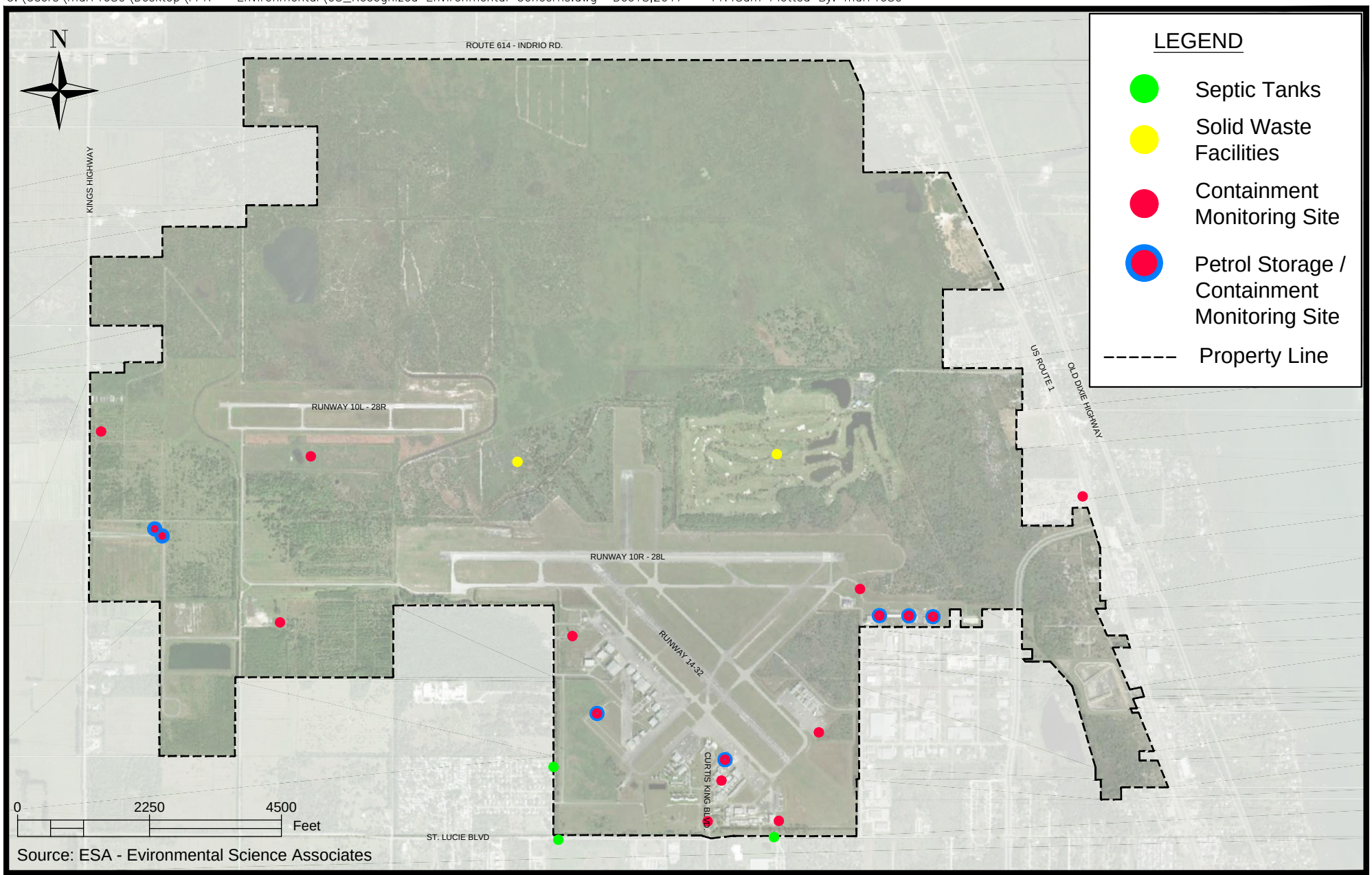


ATKINS	Treasure Coast International Airport Airport Master Plan Update	Recognized Environmental Concerns	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 3-8

3.13. Other Environmental Categories

3.13.1. Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

The FAA considers a proposed action's socioeconomic impacts including the relocation of residences or community businesses and traffic effects, potential effects to minority and low-income populations (environmental justice impacts), and potential environmental health and safety risks disproportionately affecting children. Applicable Federal statutes, Executive Orders, and DOT Orders include:

- *Executive Order 12898*, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations";
- DOT Order 5610.2, *Environmental Justice in Minority and Low-Income Populations*, April 15, 1997;
- *Executive Order 13045*, "Protection of Children from Environmental Health Risks and Safety Risks"; and,
- *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* as amended by the *Surface Transportation and Uniform Relocation Act Amendments of 1987*.

3.13.1.1. Socioeconomic Impacts

Socioeconomic impacts to consider include the following:

- Extensive relocation of residents is required, but sufficient replacement housing is unavailable.
- Extensive relocation of community businesses that would create severe economic hardship for the affected communities.
- Disruptions of local traffic patterns that substantially reduce the levels of service (LOS) of the roads serving the Airport and its surrounding communities.
- A substantial loss in community tax base.

3.13.1.2. Environmental Justice

Environmental justice impacts are considered when "disproportionately high and adverse human health or environmental effects on minority and low-income populations may represent a significant impact."[10] Environmental justice effects are considered during evaluation of other environmental impact categories such as air quality, hazardous materials, cultural resources, noise, water quality, and cumulative impacts related to the affected environment.

3.13.1.3. Children's Environmental Health and Safety Risks

Children's environmental health and safety risks are considered when "disproportionate health and safety risks to children may represent a significant impact."[11] Environmental health risks and safety risks include risks to health or to safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to.[12]

3.14. Visual Effects

The FAA encourages airport sponsors to consider the effects of light emissions (e.g., strobe lights, high-intensity airfield or facility lighting) and visual effects on sensitive areas (including residential areas, parks, and recreational areas). Light emissions and visual effects will be considered during the project specific evaluation of any proposed projects at the Airport.

[10] FAA Order 1050.1E Appendix A Section 16
[11] FAA Order 1050.1E Appendix A Section 16
[12] FAA Order 1050.1E Appendix A Section 16

3.15. Coastal Resources

The Coastal Zone Management Act (CZMA) aims to preserve, protect, develop, and where possible, restore and enhance the resources of the nation's coastal zone. The Florida Department of Environmental Protection (DEP), Office of Intergovernmental Programs, Florida State Clearinghouse (FSC) is responsible for directing the implementation of the Florida Coastal Management Program (FCMP) and coordinating review of Federal actions under the following authorities: *Presidential Executive Order 12372*; Section 403.061 (42), Florida Statutes; *Coastal Zone Management Act*, 16 U.S.C. Sections 1451-1464, as amended; and, *National Environmental Policy Act*, 42 U.S.C. Sections 4321-4347, as amended. The program is implemented through a network of programs and 24 statutes administered by agencies including the FDEP, the FFWCC, the Department of State (DOS), the Division of Emergency Management, the Department of Transportation (DOT), the Department of Health (DOH), the Division of Historical Resources (DHR), the Department of Economic Opportunity, the Florida Building Commission and the Department of Agriculture and Consumer Services (DACS). SFWMD is also a cooperating member in the consistency review process in the Airport's area. The Airport is located within the coastal zone; therefore, coastal zone consistency would be required for new airport development. The coastal zone consistency determination is a part of the ERP application process. It is anticipated that coastal zone consistency would be obtainable for the projects that are under consideration for the Airport's development.

The FWS maintains Coastal Barrier Resources System (CBRS) maps for the State of Florida. These maps designate which lands are within coastal areas regulated by the Coastal Barrier Resource Act (CBRA)[13]. The Airport is not located within the CBRS.

3.16. Summary, Conclusions, and Recommendations

As stated in the introduction, this overview does not constitute a NEPA evaluation; instead, it is intended to help prepare for any NEPA review that may be required by the FAA for future projects. Additional review, verification, and evaluation of environmental resources would be conducted during the NEPA evaluation process. Based on the results of the Alternatives Evaluation process, **Table 3-5** provides a summary of the likelihood that each resource category may require further evaluation or mitigation.

[13] Official CBRS map for the state of Florida can be viewed at: https://www.fws.gov/CBRA/Maps/Mapper.html

Table 3-5 Potential for Environmental Impacts

Resource Category	Impact Likelihood	Additional Information
Air Quality	Unlikely	The Airport is in an attainment area.
Noise and Compatible Land Use	Potential	Depending on future development projects, the fleet mix of aircraft could change, and could result in a change in noise contours.
Prime and Unique Farmlands	Unlikely	There does not appear to be any prime or unique farmlands in the vicinity of FPR
Biotic Communities / Vegetation	Potential	Extensive wetlands and natural areas.
Wildlife and Endangered Species	Likely	There is suitable habitat at FPR for both federal and state-listed species.
Wetlands and Water Resources	Potential	Need to consider avoidance and minimization of impacts and floodplains
Historical, Archaeological, and Cultural Resources	Potential	Two known sites, majority of property has not been surveyed.
DOT Act: Section 4(f) and Other Environmentally Sensitive Public Lands	Unlikely	One potential Section 4(f) resource is located on FPR property; Resources outside likely noise impact areas.
Energy Supply and Natural Resource Use	Unlikely	Future airport improvements or development projects would be unlikely to have a significant impact on natural resources and energy supplies.
Hazardous Materials and Waste Management	Unlikely	Laws governing hazardous materials use and Best Management Practices make it unlikely to result in foreseeable impacts.
Construction Impacts	Potential	Construction for any improvement or proposed developments could have the potential to impact air quality, surface transportation, water quality, stormwater, and noise.
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety	Unlikely	Unless there was a considerable increase in noise, it is unlikely that there would be any socioeconomic, environmental justice, or children's health and safety impacts.
Visual Effects	Unlikely	Construction for any improvement or proposed developments could change the visual landscape; however, impacts are unlikely to be significant.
Coastal Resources	Unlikely	The Airport is located approximately 1.5 miles from CBRS protected areas.

Source: Environmental Science Associates, 2017.

4. Aviation Activity Forecast

4.1. Introduction

Projecting aviation demand is a critical element in the overall planning process. The airport master plan forecasting process establishes the extent of projected future demand, forming the basis for demand-driven improvements at the Airport. This chapter summarizes the projected aviation demand for a 20-year period (2017-2037) at the Treasure Coast International Airport and Business Park (the Airport).

Aviation activity is influenced by many variables at the local, regional, and national levels, making it difficult to predict year-to-year fluctuations of activity over 20 years with any certainty. Therefore, it is important to note that forecasts serve only as a guideline, and planning must include flexibility to accommodate a range of unanticipated developments.

As part of the development of this Airport Master Plan (AMP) Aviation Activity Forecast, the Federal Aviation Administration's (FAA) Advisory Circular (AC) 150/5070-6B *Airport Master Plans*, Florida Department of Transportation (FDOT's) *Guidebook for Airport Master Planning*, and recommendations as provided in FAA Order 5090.3C were referenced and utilized.

The FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems* (NPIAS), dated December 4, 2004, states that forecasts should be:

- Realistic;
- Based on the latest available data;
- Reflective of current conditions at the airport;
- Supported by information in the study; and
- Able to provide adequate justification for airport planning and development.

The FAA has oversight responsibility to review and approve aviation forecasts developed in conjunction with airport planning studies. The aviation forecasts must be approved by the FAA to justify future FAA funding participation in eligible airport improvement projects. The FAA initially reviews forecasts to determine if the forecast is consistent with the most recent Terminal Area Forecast (TAF). According to FAA guidance:

Forecasts of total passenger enplanements, based aircraft, and total operations are considered consistent with the TAF if they are within the following tolerances:

- Forecasts differ by less than 10 percent in the five-year forecast period.
- Forecasts differ by less than 15 percent in the 10-year forecast period.

If the forecast is not consistent with the TAF, then the document will undergo more detailed FAA review at the regional and national level. The FAA may request additional information prior to approval of the forecasts. The approved AMP forecasts may be used to update the TAF in the coming years.

The assumptions and historical data underlying these updated projections are documented in this chapter, which is organized as follows:

- Overview
- Forecast Planning Horizon
- Airport Role
- Socioeconomic Review
- Industry Trends
- Previous Forecasting Efforts
- Forecasting Rationale

- Aviation Forecast
- Airport Peaking Period
- Instrument Operations
- Forecast Summary

4.2. Overview

Forecasting provides an airport with a general idea of the magnitude of growth, as well as fluctuations in activity anticipated. The Airport's growth rates over the past ten years have shown a modest increase in aviation activity. In order to thoroughly analyse and develop a probable aviation forecast, multiple forecast methods were utilized to quantify the potential aviation activity over the forecast period.

The forecast process for an AMP consists of a series of basic steps that vary in complexity depending upon the issues to be addressed and the type of airport being studied. FAA AC 150/5070-6B, *Airport Master Plans*, outlines seven standard steps involved in the forecast process, including:

- Identify Aviation Activity Measures: The level and type of aviation activities likely to impact facility needs. For general aviation, this typically includes based aircraft and operations.
- Review Previous Airport Forecasts: May include the FAA TAF, state or regional system plans, and previous master plans.
- Gather Data: Determine what data is required to prepare the forecasts, identify data sources, and collect historical and forecast data.
- Select Forecast Methods: There are several appropriate methodologies and techniques available, including regression analysis, trend analysis, market share or ratio analysis, exponential smoothing, econometric modelling, comparison with other airports, survey techniques, cohort analysis, choice and distribution models, range projections, and professional judgment.
- Apply Forecast Methods and Evaluate Results: Prepare the actual forecasts and evaluate for reasonableness.
- Summarize and Document Results: Provide supporting text and tables as necessary.
- Compare Forecast Results with the FAA's TAF.

The following forecast analysis for the Airport was produced following these basic guidelines. Existing forecasts are examined and compared against current and historical activity. The historical aviation activity is then examined along with other factors and trends that can affect demand. The intent is to provide an updated set of aviation demand projections for the Airport that will permit airport management to make planning adjustments as necessary to maintain a viable, efficient, and cost-effective facility.

4.3. Forecast Planning Horizon

Aviation demand forecasts were prepared for the 20-year planning period, which extends from 2017 to 2037, and spans the following planning intervals:

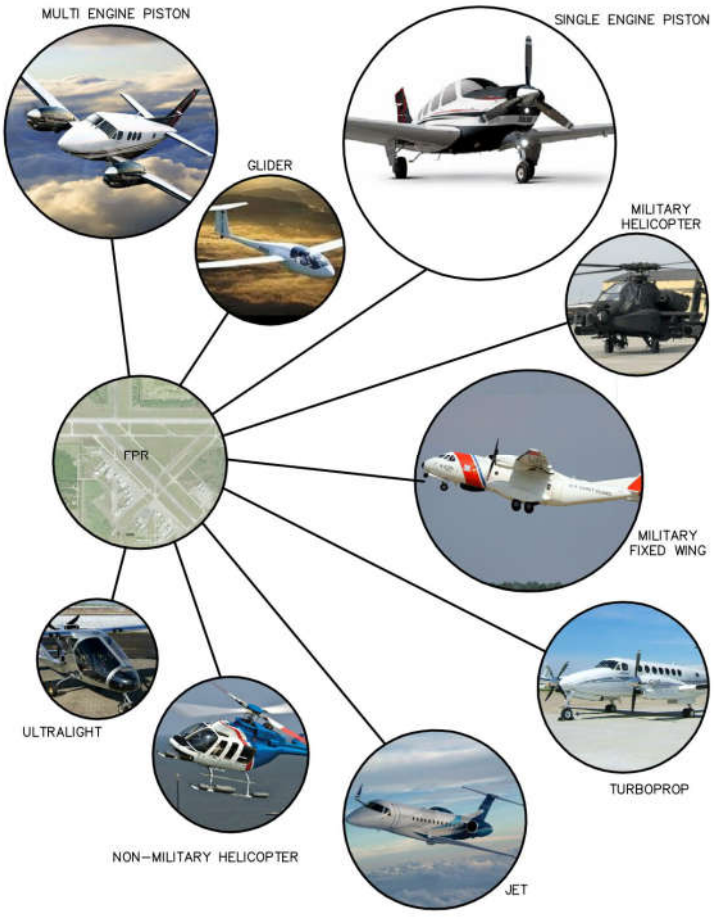
- Short-term (0-5-year planning period)
- Mid-term (6-10-year planning period)
- Long-term (11-20-year planning period with 2037 as the ultimate planning year)

In order to correspond with the AMP project time line, 2017 was used as the beginning of the 20-year planning period. The calendar year 2016 data serves as the baseline for historical activity levels. The demand for facilities beyond 2037 has not been contemplated as part of this AMP.

4.4. Airport Role

An airport's role is defined by the mix of aviation uses that exist, or are anticipated to exist, at the facility. Each use is defined by the type of aircraft involved and its mission. Aircraft can be used for multiple missions, such as a medium-sized turboprop that may be used by a commuter airline for scheduled passenger service, an air charter operator for on-demand air taxi service, an air cargo airline for transporting express packages, and the military for transport. It is critical to know both the aircraft type and mission to identify the necessary airport support facilities. The air charter operator is considered a Part 135 on-demand operator which applies to charter services utilizing aircraft with under 30 passenger seats. A key part of the forecasting effort is to identify how the current mix of aircraft types and missions will evolve over the 20-year forecast period. This information will be used to identify needed modifications to the airfield and airport facilities. **Figure 4-1** provides examples of different aircraft types that may operate at the Airport.

Figure 4-1 Example of Aircraft Types



Source: AECOM (2017)

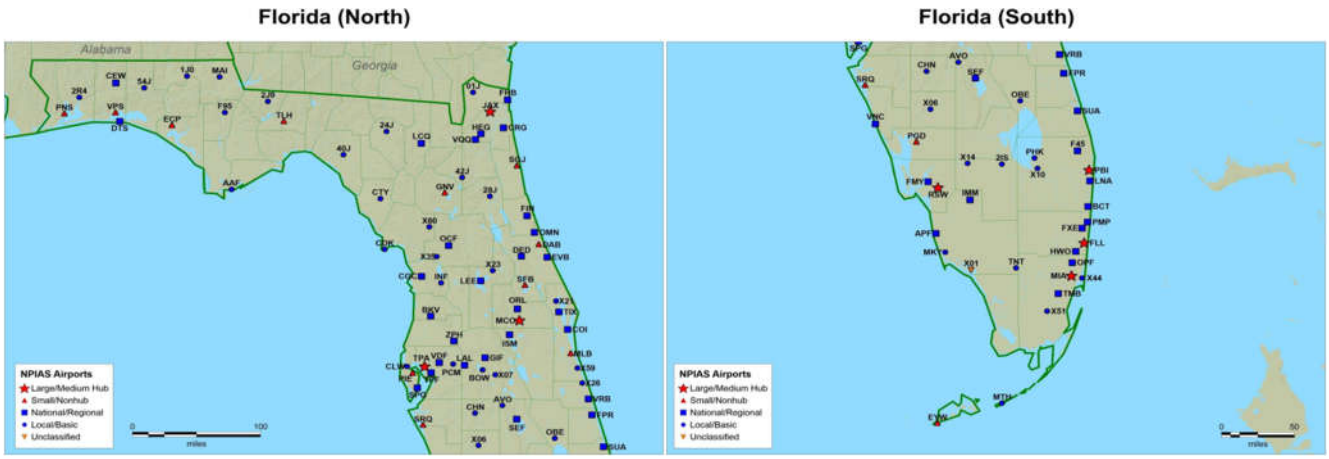
4.4.1. National plan of Integrated Airport Systems Role

The FAA's 2017- 2021 NPIAS categorizes the Airport as a "Non-Primary National General Aviation Airport." The NPIAS defines a National airport as:

> *Located in metropolitan areas near major business centers and support flying throughout the nation and the world. These airports provide pilots with attractive alternatives to the busy primary airports. National airports have very high levels of activity with many jets and multiengine propeller aircraft. National airports average about 250 total based aircraft, including 30 jets.*

The NPIAS identifies existing and proposed airports that are significant to the national air transportation system. It contains estimates of costs of airport development projects eligible for federal aid that are needed to meet aviation demand over the next five years. **Figure 4-2** provides location and classification of NPIAS airports across Florida.

Figure 4-2 NPIAS 2017-2021 Airport Classification



Source: NPIAS Report 2017-2021

4.4.2. Local Role

As a Non-Primary National General Aviation Airport, the Airport provides service to the Port St. Lucie, Florida Metropolitan Statistical Area (MSA) and surrounding counties. As of November 2017, the Airport does not provide any regularly scheduled commercial air carrier service. The following activities are supported at the Airport:

- Flight training attract
- Recreational aviation
- Aircraft maintenance
- Business aviation
- Military aviation
- Air ambulance service

The Airport is home to one fixed-base operator (FBO) that provides a wide variety of general aviation (GA) services, including:

- Aircraft storage facilities for the full range of GA aircraft, including: single- and multi-engine, piston-powered aircraft; turboprops; small- to medium-sized corporate jets; and helicopters.
- Aircraft fuelling, aircraft maintenance, flight training, aircraft charter, avionics repair, crew and passenger support facilities, and aircraft interiors.

4.4.3. Future Role

The Airport is anticipated to maintain its existing role throughout the 20-year planning period. As discussed in the sections that follow, the ways in which these roles are fulfilled may evolve over time. This evolution is based on the following assumptions.

- Scheduled and on-demand passenger service – Replacement of 50-seat passenger regional jets used in scheduled passenger service with those having 70-76 seats or larger. Volume of on-demand service will vary with the economy.

- Air cargo shipping – While there is the potential for introduction of larger turboprops, most scheduled cargo will remain with smaller turboprops.
- Business aviation – Increase in frequency of operations and size of aircraft during periods of rapid population and economic growth.
- Recreational aviation – Static or slow decline.
- Flight training – Static or slow decline.
- Aircraft maintenance – Slow growth linked to increased business use of the Airport.
- Military aviation – Continuation in role and mix of aircraft types.
- Disaster response – Continuation in role.

As the surrounding area's population continues to grow, FPR will continue to accommodate and support regional, commercial operations and activities. FPR has a large amount of undeveloped land that could attract various types of light industry and commercial businesses within existing and future industrial and business parks. The existing pilot shortage may cause flight training activity trends to increase in the future. As the airport develops further business use of the airport, aircraft maintenance may increase relative to these developments.

4.4.4. Airport Service Area

When developing a forecast of aviation demand for an airport it is important to define a generalized service area for the various segments of aviation the airport can accommodate. The airport service area refers to the geographic area surrounding an airport that can be expected to provide the largest share of airport users. The service area is determined primarily by evaluating the location of competing airports, their capabilities, their services, and their relative attraction and convenience. The definition of the service area can then be used to identify other factors, such as socioeconomic and demographic trends, which influence the Airport's aviation demand. Moreover, aviation demand will be impacted by the proximity of competing airports, the surface transportation network, and the strength of commercial and/or GA facilities and services provided by the Airport and competing airports.

As in any business enterprise, the more attractive the facility is in terms of service and capabilities, the more competitive it will be in the market. If an airport's attractiveness increases in relation to nearby airports, so will the size of its service area. If facilities and services are adequate and/or competitive, some level of aviation activity might be attracted to the Airport from more distant locales.

The Airport's primary roles are to accommodate commercial service, largely in the form of air tourism, as well as general aviation demand in the region.

A 30- or 60-minute surface travel time is used to approximate the boundaries of a service area for a typical GA airport. The population, economic characteristics, and capabilities of competing airports within an airport's service area are important factors in defining locally generated demand for aviation facilities and services, and influence the Airport's ability to attract transient aircraft activity. See **Figure 4-3** for illustration.

The Airport is the only FAA funded NPIAS airport in St. Lucie County, which creates a large geographic service area. Competing airports located beyond the service area typically have less impact on local airport activity due to the redundancy provided by closer facilities. In contrast, the service area for a commercial airport often extends beyond a two-hour drive due to the relatively small number of airports with scheduled airline service. With numerous airports nearby, service areas often overlap, creating competition between airports for items such as hangar space, fuel, and other aviation services. These items are sensitive to cost, convenience, and quality of facilities or services for both locally-based and transient users.

Table 4-1 lists the publicly-owned, public use airports within a 60-nautical mile radius of the Airport. It is noted that some of the public use airports listed provide competitive facilities and services with master plans that provide for future facility expansion. Vero Beach Regional Airport (VRB) is the largest airport located within the service area and provides many of the same facilities and services as the Airport. VRB has three paved runways, the longest being 7,314 feet, and has instrument approach capabilities, an FBO and jet fuel.

Table 4-1 Airport Service Area

Facility	GA Based Aircraft	% of Regional GA Aircraft	GA Operations	% of Regional GA	Enplanements	% of Regional Commercial Enplanements	Comm. Ops	% of Regional Commercial Operations
FDOT FASP – Treasure Coast Florida Region								
X58	63	7.7%	5,000	0.9%				
X26	13	1.6%	22,000	4.1%				
OBE	43	5.2%	50,000	9.4%				
SRB	66	8.0%	37,240	7.0%				
FPR	211	25.7%	196,000	36.8%				
VRB	224	27.3%	159,191	29.9%				
SUA	201	24.5%	63,801	12.0%				
FDOT FASP – Southeast Florida Region								
PHK	10	0.3%	35,240	2.4%			250	0.0%
PBI	149	4.89%	85,524	5.9%	2,958,416	9.5%	55,863	8.1%
F45	215	6.9%	97,400	6.8%			7,800	1.1%
FDOT FASP – East Central Florida Region								
MLB	248	7.62%	138,919	7.10%	180,441	0.95%	7,286	2.31%
X59	67	2.06%	33,100	1.69%				
FDOT FASP – Central Florida Region								
X26	52	6.3%	103,087	26.4%				

Source: FDOT Aviation Office, June 2012. Figures other than percentages are annual totals for 2011.
Note: Due to rounding, percentage values may not equal 100 percent.
Percentages shown are a percentage of all airports within that FASP region including airports outside of the service area.
F45 = N Palm Beach County GA Airport
FPR = Treasure Coast International Airport
MLB = Melbourne International Airport
OBE = Okeechobee County Airport
PBI = Palm Beach International Airport
SEF = Sebring Regional Airport
SUA = Witham Field Airport
VRB = Vero Beach Regional Airport
X26 = Sebastian Municipal Airport
X52 = New Hibiscus Airpark
X58 = Indiantown Airport
X59 = Valkaria Airport

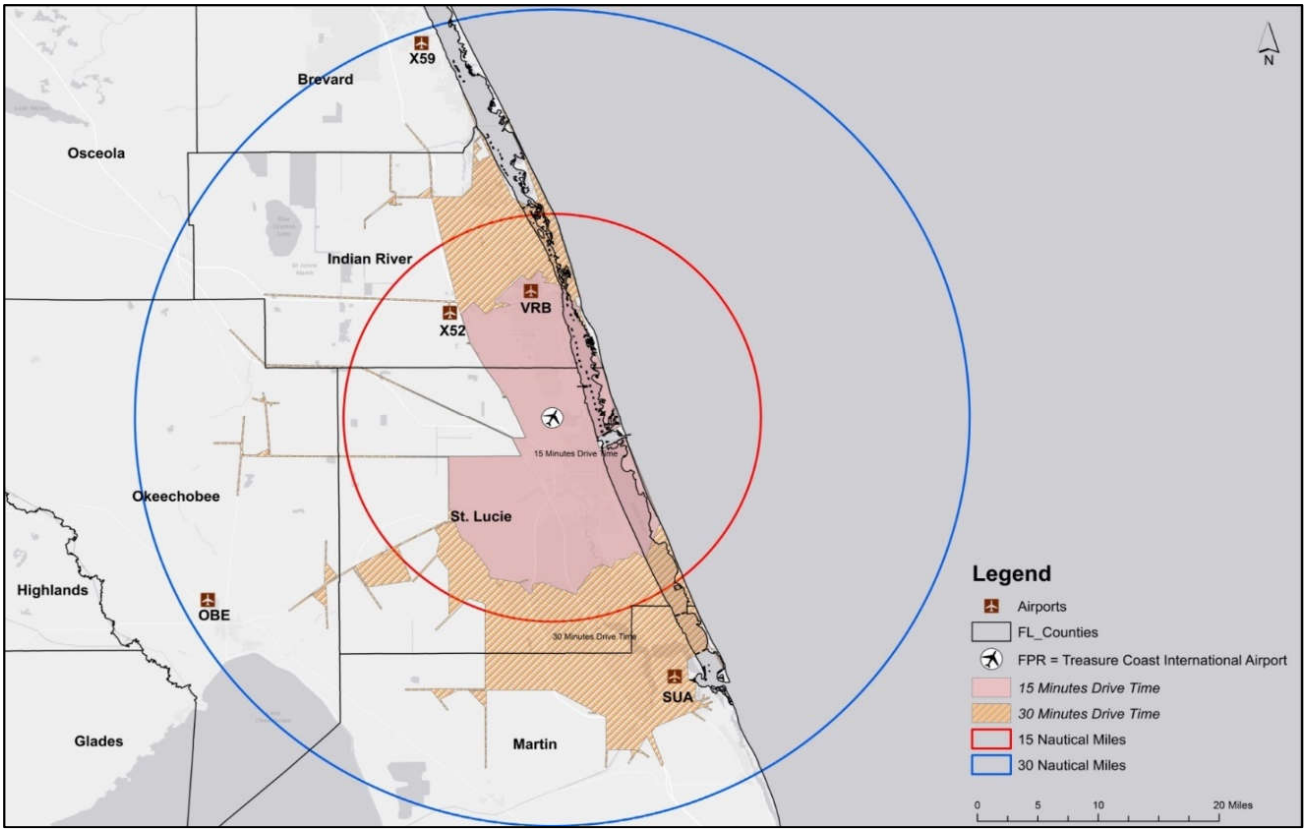
This forecast assumes a generalized 30-and 60-mile service area radius, for GA and commercial service, respectively. This service area extends into four nearby counties, which primarily includes St. Lucie County, and portions of Martin, Indian River, and Okeechobee Counties. **Figure 4-3** depicts the location of public use airports with in the 30-mile and 60-mile radius of the Airport.

4.4.5. Commercial (Charter) Service

Most of the Airport's commercial service operations are air tourism via helicopter and fixed wing aircraft. Air tour operators have established a strong business model at the Airport, offering air service connecting to the Bahamas and other Caribbean islands off Florida's east coast. Starting in December 2017, Fly the Whale, a land and sea based charter flight operator, flew two scheduled charter flights per week each from the Airport to Tallahassee, Florida for the legislative season and provided unscheduled charter service to the Bahamas.

The Airport is one of only 24 public use airports in Florida that maintains a US Customs and Border Patrol (CBP) inspection station, providing a convenient access point for aircraft returning from the eastern Caribbean islands. **Table 4-2** provides historical data regarding aircraft operations and passengers processed through the US Customs office.

Figure 4-3 FPR Service Area



Source: AECOM, 2017

Table 4-2 Historical US Customs Inspection Station Throughput

Year	Commercial Chartered	Military	Private	Total
Aircraft Operations				
2014	452	5	4,112	4,569
2015	357	0	4,087	4,444
2016	455	0	4,008	4,463
2017 (to date)	337	0	3,374	3,711
Passengers				
2014	3,846	22	14,318	18,186
2015	2,759	0	14,002	16,761
2016	2,968	0	13,698	16,666
2017 (to date)	2,640	0	13,564	16,204

Source: US Customs and Border Protection, TECS-ECAR Arrival Statistics, Port 5205 Fort Pierce, FL, November 2017.

4.4.6. General Aviation

General aviation (GA) is the term used to describe a diverse range of aviation activities which includes all segments of the aviation industry, except for commercial air carriers and military. GA includes common activities such as pilot training, recreational flying, agricultural applications, medical support, and other business and corporate uses.

GA aircraft can range from small glider and single engine aircraft to large turboprop and jet powered aircraft. In fact, some larger commercial airline aircraft models such as the Boeing 737, known as the Boeing Business Jet (BBJ), have been converted for GA uses.

As the only public use airport in St. Lucie County, the Airport serves an important role fulfilling the needs of the local GA community. It provides a highly functional and competitive GA option in the region with high quality aviation service providers and available hangar space. These are the two important factors for basing an aircraft for aircraft owners and operators, resulting in more compact service area than a commercial service area. The corporate aviation service area can extend slightly farther than the GA area, depending on the level of service and availability of necessary services at competing airports. It should be noted that most GA airports in Florida have a waiting list for hangar space.

Most registered aircraft are concentrated in and around regional population centers. In fact, most are located relatively close to an existing airport. Proximity to an airport is typically the most important aviation demand factor for GA activity. Most GA operators will elect to operate at a closer airport unless facilities or services cannot be provided. For example, an aircraft operator could choose a more distant airport location for more preferable rate and fee structures. For planning purposes, the Airport's primary GA service area is Fort Pierce- Port St. Lucie MSA which comprises most of St Lucie and Martin Counties.

4.5. Socioeconomic Review

The socioeconomic conditions for the service area provide an important baseline for preparing aviation demand forecasts. Local socioeconomic variables such as population, employment, and income are indicators for understanding the dynamics of the county and the trends in aviation growth.

4.5.1. Population

The population within an airport's service area affects the type and scale of aviation facilities and services that can be supported. Although a large number of airport-specific factors can affect activities at an airport, changes in population often reflect other broader economic conditions that may also affect airport activity. The Airport's service area extends beyond the City of Fort Pierce and includes portions of Martin, and St Lucie Counties (Port St. Lucie MSA). However, for the purposes of forecasting aviation activity, an evaluation of local and county population trends will provide a reasonable indication of activity.

Data retrieved from Woods & Poole Economics coupled with the US Census, conducted every ten years, provide an indication of local area population trends over an extended period. The 2016 St Lucie County and Martin County's population levels are up over 10 and 8 percent respectively over the 2010 Census, which translates into annual growth of 1.67 and 1.31 percent, respectively, during the same period.

Since 2000, St Lucie County's population has increased by 59 percent, with an average annual growth rate of 2.94 percent. During the same period, the Martin County population increased by 24 percent, or 1.38 percent annually, the state of Florida increased by over 27 percent or 1.53 percent annually, and the US population increased by 16 percent, or 0.93 percent annually. This data indicates that the St. Lucie county population has been growing at a much faster rate than the US, Florida and Martin county, and is expected to continue this trend through the next 20 years. Recent historical population data and average growth rates for the St. Lucie County, Martin County, Fort Pierce- Port St. Lucie MSA, Florida and the US are summarized in **Table 4-3**.

Table 4-3 Total Population

Year	United States	Florida	Fort Pierce- Port St. Lucie MSA	Martin County	St. Lucie County
2000	282,162,411	16,047,515	320,819	127,301	193,518
2001	284,968,955	16,356,966	328,315	129,856	198,459
2002	287,625,193	16,689,370	338,741	132,945	205,796
2003	290,107,933	17,004,085	351,522	136,598	214,924
2004	292,805,298	17,415,318	368,277	139,729	228,548
2005	295,516,599	17,842,038	383,877	141,912	241,965
2006	298,379,912	18,166,990	397,053	141,802	255,251
2007	301,231,207	18,367,842	410,402	143,542	266,860

Year	United States	Florida	Fort Pierce- Port St. Lucie MSA	Martin County	St. Lucie County
2008	304,093,966	18,527,305	417,520	144,369	273,151
2009	306,771,529	18,652,644	419,850	145,506	274,344
2010	309,330,219	18,838,613	425,220	146,488	278,732
2011	311,591,917	19,057,542	427,874	147,495	280,379
2012	314,659,175	19,330,382	435,258	149,607	285,651
2013	317,790,897	19,608,850	442,802	151,760	291,042
2014	320,976,914	19,892,347	450,496	153,950	296,546
2015	324,186,934	20,179,030	458,296	156,161	302,135
2016	327,418,257	20,468,753	466,203	158,394	307,809
2017	**330,673,051**	**20,761,658**	**474,217**	**160,648**	**313,569**
2022	**347,206,094**	**22,268,501**	**515,812**	**172,201**	**343,611**
2027	**363,846,088**	**23,825,313**	**559,497**	**184,052**	**375,445**
2032	**380,328,290**	**25,414,073**	**604,875**	**196,047**	**408,828**
2037	**396,730,104**	**27,038,542**	**652,046**	**208,199**	**443,847**
2040	**406,646,512**	**28,037,679**	**681,392**	**215,615**	**465,777**
AAGR 2000-2016	0.93%	1.53%	2.36%	1.38%	2.94%
Change 2000-2016	16.04%	27.55%	45.32%	24.42%	59.06%
AAGR 2010-2016	0.95%	1.39%	1.55%	1.31%	1.67%
Change 2010-2016	5.85%	8.65%	9.64%	8.13%	10.43%
AAGR 2017-2037	0.91%	1.33%	1.60%	1.30%	1.75%
Change 2017-2037	19.98%	30.23%	37.50%	29.60%	41.55%
Short-Term AAGR (2017-2022)	0.98%	1.41%	1.70%	1.40%	1.85%
Medium Term AAGR (2023-2027)	0.94%	1.36%	1.64%	1.34%	1.79%
Long-Term AAGR (2027-2037)	0.87%	1.27%	1.54%	1.24%	1.69%

Source: Woods & Poole Economics, 2014 USA, FL, Port St. Lucie MSA – Florida, AECOM 2017

4.5.2. Employment

This section addresses St. Lucie County employment with comparisons to Port St. Lucie MSA, state and national levels. Employment can be measured in various ways. Statistics on the employment levels, unemployment rates, distribution of employment and transportation employment are provided in **Tables 4-4 through 4-7**, respectively. Similar to the growth in population, the historical growth of employment in the combined two-county Port St. Lucie MSA outpaced the average state and national growth, as shown in Table 4-4. Between 2000 and 2016, employment in Port St. Lucie MSA increased an average rate of 2.28 percent per year which is higher than the annual averages of 1.31 and 0.80 percent in Florida and the US respectively.

Table 4-4 Total Employment

Year	United States	Florida	Fort Pierce- Port St. Lucie MSA	Martin County	St. Lucie County
2000	165,371,004	8,841,595	140,905	72,011	68,894
2001	165,510,145	8,917,148	145,182	74,713	70,469
2002	165,063,008	9,055,993	149,912	74,433	75,479
2003	166,019,479	9,286,027	156,832	76,870	79,962
2004	169,026,733	9,661,608	168,681	79,588	89,093
2005	172,551,350	10,087,919	181,209	85,542	95,667
2006	176,124,643	10,407,359	189,348	88,864	100,484
2007	179,899,653	10,577,329	192,035	90,737	101,298

Year	United States	Florida	Fort Pierce- Port St. Lucie MSA	Martin County	St. Lucie County
2008	179,644,834	10,324,518	186,984	86,606	100,378
2009	174,225,644	9,906,895	179,948	84,185	95,763
2010	173,626,671	9,878,416	182,119	85,759	96,360
2011	175,834,720	10,008,703	183,629	86,594	97,035
2012	178,203,085	10,179,011	187,222	88,249	98,973
2013	180,604,538	10,351,818	190,880	89,934	100,946
2014	183,038,210	10,527,135	194,604	91,648	102,956
2015	185,504,591	10,704,991	198,394	93,388	105,006
2016	188,004,070	10,885,418	202,257	95,157	107,100
2017	**190,537,334**	**11,068,444**	**206,187**	**96,960**	**109,227**
2022	**203,724,750**	**12,023,595**	**226,933**	**106,424**	**120,509**
2027	**217,824,596**	**13,048,563**	**249,609**	**116,693**	**132,916**
2032	**232,900,177**	**14,147,520**	**274,371**	**127,818**	**146,553**
2037	**249,019,443**	**15,325,017**	**301,389**	**139,860**	**161,529**
2040	**259,221,653**	**16,071,134**	**318,758**	**147,545**	**171,213**
AAGR 2000-2016	0.80%	1.31%	2.28%	1.76%	2.80%
Change 2000-2016	13.69%	23.12%	43.54%	32.14%	55.46%
AAGR 2017-2037	1.35%	1.64%	1.92%	1.85%	1.98%
Change 2017-2037	30.69%	38.46%	46.17%	44.25%	47.88%
Short-Term AAGR (2017-2022)	1.35%	1.67%	1.94%	1.88%	1.99%
Medium Term AAGR (2023-2027)	1.35%	1.65%	1.92%	1.86%	1.98%
Long-Term AAGR (2027-2037)	1.35%	1.62%	1.90%	1.83%	1.97%

Source: Woods & Poole Economics, 2014 USA, FL, Port St. Lucie MSA – Florida, AECOM 2017

An indicator of a region's economic strength is its performance during recessions or periods of weak economic conditions. During the last US recession beginning December 2007 through June 2009, the employment in both the Port St. Lucie MSA and the state decreased with the national trend. The decrease in employment in both the Port St. Lucie MSA and the state was higher than the nation on a percentage basis, which is likely due to the greater impact of the last recession on the tourism industry and related employment.

When the economy recovered, the regional and state-wide employment levels increased at a higher rate than the nation. Unemployment in Port St. Lucie MSA recovered faster from 2010 to 2016 than either the state or the nation. The Port St. Lucie MSA and State of Florida are expected to continue generating jobs at a steady pace over the next 20 years. The Port St. Lucie MSA employment of the combined two-county region is projected to grow at an average annual rate of 1.92 percent from 2017 to 2037, which is higher than the state and national averages at 1.64 and 1.35 percent respectively. **Table 4-5** summarizes the unemployment rate and percent in the labor force in the US, Florida, and the Port St. Lucie MSA.

Table 4-5 Unemployment Levels

Year	US		Florida		Fort Pierce Port St. Lucie MSA	
	% in Labor Force	% Unemployed	% in Labor Force	% Unemployed	% in Labor Force	% Unemployed
2012	64.7	6.0	60.7	6.8	56.4	8.2
2013	64.3	6.2	60.1	7.0	55.5	7.9
2014	63.9	5.8	59.5	6.5	54.7	6.9
2015	63.7	5.2	59.2	5.7	54.0	6.2
2016	63.5	4.7	58.8	4.9	53.5	5.0

Source: Woods & Poole Economics, 2014 USA, FL, Port St. Lucie MSA – Florida, AECOM 2017

Table 4-6 summarizes the comparison of St Lucie and Martin Counties transportation employment in relation to the state and national-wide.

Table 4-6 **Transportation Employment**

Year	United States	Florida	Fort Pierce- Port St. Lucie MSA	Martin County	St. Lucie County
2000	5,466,109	281,833	3,381	1,188	2,193
2001	5,477,889	288,667	3,538	1,263	2,275
2002	5,357,400	286,805	3,745	1,296	2,449
2003	5,313,165	283,887	2,669	1,121	1,548
2004	5,425,279	290,153	3,861	1,090	2,771
2005	5,614,661	306,371	4,527	1,238	3,289
2006	5,761,269	315,208	4,885	1,194	3,691
2007	5,948,804	320,050	4,153	1,224	2,929
2008	5,847,313	313,964	3,801	1,249	2,552
2009	5,568,926	300,827	3,543	912	2,631
2010	5,520,860	299,448	3,778	1,300	2,478
2011	5,635,709	306,669	3,627	1,112	2,515
2012	5,709,651	312,200	3,696	1,131	2,565
2013	5,784,299	317,800	3,766	1,150	2,616
2014	5,859,654	323,475	3,838	1,170	2,668
2015	5,935,671	329,224	3,910	1,190	2,720
2016	6,012,383	335,044	3,983	1,210	2,773
2017	**6,089,813**	**340,936**	**4,057**	**1,230**	**2,827**
2022	**6,487,456**	**371,543**	**4,445**	**1,335**	**3,110**
2027	**6,903,032**	**404,074**	**4,859**	**1,446**	**3,413**
2032	**7,336,979**	**438,595**	**5,302**	**1,563**	**3,739**
2037	**7,789,669**	**475,173**	**5,772**	**1,685**	**4,087**
2040	**8,070,431**	**498,123**	**6,070**	**1,762**	**4,308**
AAGR 2000-2016	0.60%	1.09%	1.03%	0.11%	1.48%
Change 2000-2016	9.99%	18.88%	17.81%	1.85%	26.45%
AAGR 2017-2037	1.24%	1.67%	1.78%	1.59%	1.86%
Change 2017-2037	27.91%	39.37%	42.27%	36.99%	44.57%
Short-Term AAGR (2017-2022)	1.27%	1.73%	1.84%	1.65%	1.93%
Medium Term AAGR (2023-2027)	1.25%	1.69%	1.80%	1.61%	1.88%
Long-Term AAGR (2027-2037)	1.22%	1.63%	1.74%	1.54%	1.82%

Source: Woods & Poole Economics, 2014 USA, FL, Port St. Lucie MSA – Florida, AECOM 2017

Table 4-7 provides the employment distribution by sector. As indicated in these tables, the Port St. Lucie MSA will have a higher growth rate than the US or Florida average over the next 20 years, and the MSA is highly susceptible to economic downturns due to the reliance on construction, retail trade and the tourism industry.

Table 4-7 Employment Distribution by Sector (Non-Farm Employment)

Sector	US	Florida	Fort Pierce – Port St. Lucie MSA
Agriculture, Forestry, Fishing and Hunting, and Mining	2.0 %	1.1	1.2
Construction	6.2 %	6.6 %	8.3 %
Manufacturing	10.4 %	5.2 %	4.7 %
Wholesale Trade	2.7 %	2.9 %	2.3 %
Retail Trade	11.6 %	13.4 %	14.4 %
Transportation and Warehousing, and Utilities	5.0 %	5.0 %	4.8 %
Information	2.1 %	2.0 %	1.6 %
Finance and Insurance, Real Estate, and Rental and Leasing	6.6 %	7.7 %	6.0 %
Professional, Scientific, and Management, Administrative, and Waste Management Services	11.0 %	12.7 %	12.1 %
Educational Services, Health Care, and Social Assistance	23.1 %	21.3 %	23.5 %
Arts, Entertainment, and Recreation, and Accommodation and Food Services	9.6 %	12.2 %	11.3 %
Other Services, except Public Administration	4.9 %	5.4 %	5.5 %
Public Administration	4.8 %	4.6 %	4.3 %

Source: Woods & Poole Economics, 2014 USA, FL, Port St. Lucie MSA – Florida, AECOM 2017

4.5.3. Per Capita Personal Income

An additional major factor in determining demand for air transportation is income. Per Capita Personal Income (PCPI) reflects the average annual monetary wage per person in a set geographical area. High per capita income in an area is a good indicator for greater commercial and GA demand because higher income populations are more likely to travel, own and fly aircraft. Past trends show that the Port St. Lucie MSA has experienced growth of PCPI significantly below the state and national growth level since 2000.

The PCPI of Port St. Lucie MSA had increased 4.0 percent from 2000 through 2016 compared to a 13.96 percent increase for the state of Florida and a 15.3 percent increase for the United States, over the same period. This translates to an average annual growth rate of 0.25 percent for the Port St. Lucie MSA, 0.8 percent for the state of Florida, and 0.9 percent for the US. In 2016, Port St. Lucie MSA had a PCPI of $38,534. This PCPI is 9.5 percent below the national average of $42,065.00. It should be noted that the St. Lucie County PCPI has increased 13.95 from 2000 to 2016, while Martin County has only increased 1.87 percent over the same period. It is expected the growth for the Nation, State, and Port St. Lucie MSA will continue over the planning period. The lower PCPI for the Port St. Lucie MSA, compared to the state and national levels, would be an indicator of lower demand for air travel than the national and state demand levels. **Table 4-8** presents the total PCPI for the US, Florida, Port St. Lucie MSA and Martin and St Lucie Counties.

Table 4-8 Total Per Capita Personal Income

Year	United States	Florida	Fort Pierce- Port St. Lucie MSA	Martin County	St. Lucie County
2000	$36,473	$34,981	$36,637	$50,905	$27,252
2001	$36,772	$35,175	$36,984	$51,292	$27,622
2002	$36,661	$35,475	$36,403	$50,098	$27,557
2003	$36,878	$35,674	$36,115	$49,821	$27,405
2004	$37,802	$37,304	$38,686	$53,991	$29,329
2005	$38,426	$38,466	$39,146	$55,535	$29,535
2006	$39,825	$40,111	$40,661	$60,837	$29,453
2007	$40,687	$40,429	$40424	$60,880	$29,422
2008	$40,921	$39,952	$39,823	$59,030	$29,673

Year	United States	Florida	Fort Pierce- Port St. Lucie MSA	Martin County	St. Lucie County
2009	$38,637	$36,849	$35,896	$49,504	$28,680
2010	$39,144	$37,721	$36,272	$49,932	$29,093
2011	$39,929	$38,080	$36,855	$50,725	$29,560
2012	$40,261	$38,342	$37,029	$50,437	$30,007
2013	$40,644	$38,633	$37,185	$50,577	$30,202
2014	$41,079	$38,994	$37,435	$50,891	$30,450
2015	$41,554	$39,407	$37,751	$51,325	$30,736
2016	$42,065	$39,863	$38,121	$51,856	$31,055
2017	**$42,603**	**$40,353**	**$38,534**	**$52,462**	**$31,399**
2022	**$45,706**	**$43,295**	**$41,182**	**$56,534**	**$33,488**
2027	**$49,379**	**$46,871**	**$44,517**	**$61,812**	**$36,040**
2032	**$53,573**	**$50,983**	**$48,370**	**$67,977**	**$38,969**
2037	**$58,303**	**$55,644**	**$52,732**	**$75,026**	**$42,276**
2040	**$61,401**	**$58,706**	**$55,591**	**$79,683**	**$44,439**
AAGR 2000-2016	0.90%	0.82%	0.25%	0.12%	0.82%
Change 2000-2016	15.33%	13.96%	4.05%	1.87%	13.95%
AAGR 2017-2037	1.58%	1.62%	1.58%	1.80%	1.50%
Change 2017-2037	36.85%	37.89%	36.85%	43.01%	34.64%
Short-Term AAGR (2017-2022)	1.42%	1.42%	1.34%	1.51%	1.30%
Medium Term AAGR (2023-2027)	1.56%	1.60%	1.57%	1.80%	1.48%
Long-Term AAGR (2027-2037)	1.68%	1.73%	1.71%	1.96%	1.61%

Source: Woods & Poole Economics, 2014 USA, FL, Port St. Lucie MSA – Florida, AECOM 2017

4.6. Industry Trends

The FAA's Next Generation Air Transportation System (NextGen) is an ongoing and comprehensive transformation of the current National Airspace System (NAS). The conversion to NextGen includes a complete overhaul of current and outdated ground-based technology systems associated with air traffic control and navigation technology to integrate new satellite-based technologies and enhance the airspace system across multiple fronts. The NextGen system will update and enhance Global Positioning System (GPS) technology, reduce congestion, increase airspace capacity, minimize delays, reduce fuel consumption, and maximize the operational safety of flight.

Next Generation Aircraft are classified as either 1) New Large Aircraft (NLA) or very large transports (VLTs) utilized for cargo transportation or 2) Very Light Jets (VLJs). In addition, the introduction of unmanned aircraft systems (UASs) is imminent, while supersonic business jets (SBJs) and cruise-efficient short take-off and landing (CESTOL) may be flying by 2025. The innovation of NextGen creates dynamic economic development opportunities across the US and supports a more sustainable model for growth in air transportation.

4.7. Previous Forecasting Efforts

It is important to consider previous forecasting efforts to determine if they are consistent with current airport activity and anticipated trends. Existing forecasts that have been developed for the Airport which must be considered when selecting the preferred forecast include:

- **Federal Aviation Administration**: the FAA prepares annual forecasts as part of its efforts to identify staff workload and requirements based on future traffic levels at the nation's airports. The FAA publishes two sets of forecasts, the Terminal Area Forecasts (TAF) and Aerospace Forecasts. The

TAF focuses on individual airports that are included in the NPIAS and the Aerospace Forecasts focus on the aviation industry as a whole.

- **Florida State-wide Aviation System Plan (FASP)**: the Florida Department of Transportation publishes a state-wide aviation system plan that is updated periodically that identifies current and future needs for all airports and outlines projects that addresses these needs. Analyses of current and future demands of the transportation system are outlined and the plan includes forecasts of various aviation related activity.
- **Industry Organizations**: Each year aircraft manufacturers publish market outlook (20-year period) documents that present forecasts regarding delivery of aircraft, passenger and cargo activity. These market outlooks are published by Boeing, Airbus, Bombardier, the General Aviation Manufacturers Association (GAMA) and Embraer.
- **2010 FPR Airport Master Plan Update**: In 2010, the Airport completed an AMP update that included a forecast of aviation activity from 2008 through 2028.

4.7.1. Review of FAA Aerospace Forecast

The FAA Aerospace Forecast contains projections of future US aviation demand at the national level. The publication provides a 20-year outlook and is updated each year in March. It is the official FAA view of the immediate future for aviation. The FAA Aerospace Forecast report examines future trends expected in the aerospace industry.

The publication includes aggregate level forecasts of the following:

- Passenger enplanements, revenue passenger miles, fleet, and hours flown for large air carriers and regional/commuters;
- Cargo revenue ton miles and cargo fleet for large air carriers;
- Fleet, hours flown, and pilots for general aviation; and
- Activity forecasts for FAA and contract towers by major user category.

The *Aerospace Forecast* also considers the economics of the aviation industry in general, as well as trends expected to affect the commercial and general aviation community. The FAA *Aerospace Forecast* was reviewed to ascertain the general health and prosperity of the GA industry as a whole and to provide a sense of future aviation activity growth that may occur at the Airport throughout the planning period.

Since the Airport is primarily a GA airport, the two indicators from the FAA Aerospace Forecasts that are most applicable to this forecast are the *Active General Aviation and Air Taxi Aircraft* and the *Active General Aviation and Air Taxi Hours Flown* forecasts. These forecasts provide the current and projected levels of active GA/air taxi aircraft operating, and the number of hours these aircraft have flown or are expected to fly in the coming years. An active aircraft is an aircraft that has a valid, up-to-date registration and has flown at least one hour during the calendar year.

The active general aviation fleet is projected to increase at an average annual rate of 0.1 percent over the forecast period, as increases in the turbine, experimental, and light sport fleets offset declines in the fixed wing piston fleet. The total active GA fleet is projected to increase from an estimated 209,905 in 2017 to 213,420 aircraft by 2037.

The more expensive and sophisticated turbine-powered fleet (including rotorcraft) is projected to grow by 14,710 aircraft, an average rate of approximately 2.0 percent per year over the forecast period, with the turbojet fleet increasing by 2.3 percent per year. The largest segment of the fleet, fixed wing piston aircraft is predicted to shrink over the forecast period at an average annual decrease of 0.9 percent.

In 2005, a new category of aircraft, referred to as “light-sport” aircraft, was created. At the end of 2016, a total of 2,530 active special light-sport aircraft were estimated to be in this category. The forecast estimates a 4.3 percent annual growth of the fleet by 2037 to 5,885, adding a total of 3,355 light-sport aircraft by 2037 and more than doubling its 2016 fleet size.

The number of GA hours flown nationwide by all aircraft is projected to increase by 0.9 percent yearly during the forecast period. In the medium-term, much of the increase of hours flown reflects strong growth in the rotorcraft and turbine jet fleets. Hours flown by turbine aircraft (including rotorcraft) are forecast to increase by an annual increase of 2.4 percent during the forecast period, compared with a decline for piston-powered aircraft an annual decrease of 0.6 percent. The large increases in jet hours result mainly from the increasing size of the business jet fleet, along with a measured recovery in utilization rates from recession-induced record lows. Rotorcraft hours, which were less impacted by the economic downturn when compared to other categories and rebounded earlier, are projected to grow at an average annual increase of 2.0 percent, with turbine rotorcraft growing at an average annual rate of 2.1 percent. Lastly, the light-sport aircraft category is expected to experience an increase in hours flown of 4.6 percent per year; driven primarily by fleet growth.

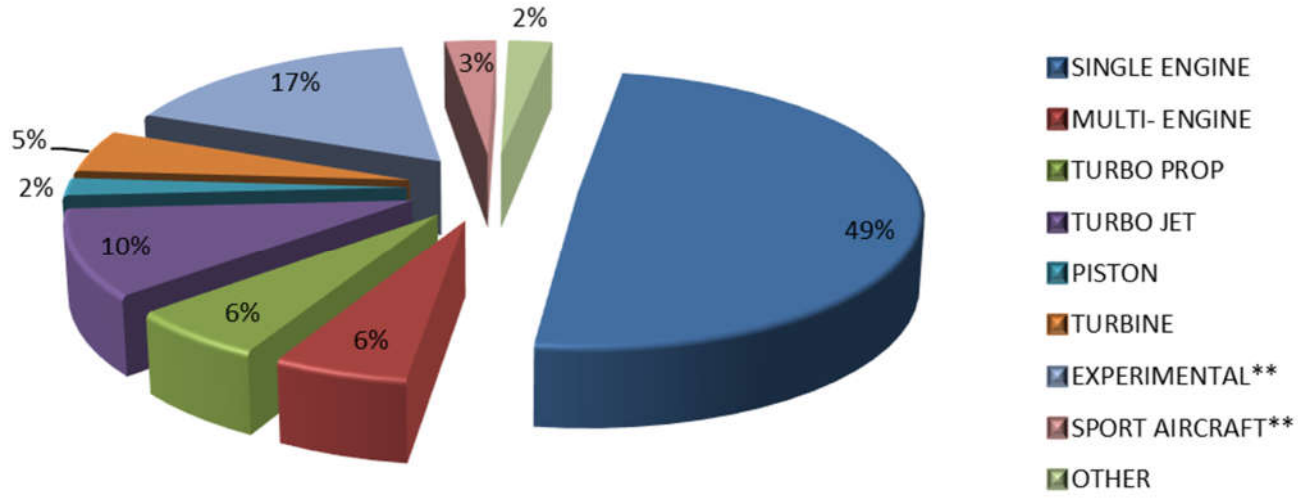
Tables 4-9 and **4-10** illustrate the *Aerospace Forecasts* projection of active GA/air taxi aircraft fleet and hours flown respectively for the US. **Figure 4-4** shows composition of the fleet mix and **Figure 4-5** illustrates the projected change in fleet mix.

Table 4-9 Active General Aviation & Air Taxi Aircraft Fleet of the US

Year	Active General Aviation & Air Taxi Aircraft Fleet									
	Piston		Turbine		Rotorcraft		**Experimental	Sport Aircraft	Other	Total General Aviation Fleet
	Single Engine	Multi Engine	Turboprop	Jet	Piston	Turbine				
Historical										
2010	139,519	15,900	9,369	11,484	3,588	6,514	24,784	6,528	5,684	223,370
2011	136,895	15,702	9,523	11,650	3,411	6,671	24,275	6,645	5,681	220,453
2012	128,847	14,313	10,304	11,793	3,292	6,763	26,715	2,001	5,006	209,034
2013	124,398	13,257	9,619	11,637	3,137	6,628	24,918	2,056	4,277	199,927
2014	126,036	13,146	9,777	12,362	3,154	6,812	26,191	2,231	4,699	204,408
2015	127,887	13,254	9,712	13,440	3,286	7,220	27,922	2,369	4,941	210,031
2016	126,820	13,200	9,460	13,770	3,335	7,365	28,475	2,530	4,950	209,905
Forecast										
2017	125,760	13,155	9,285	14,100	3,380	7,510	28,970	2,685	4,955	209,800
2022	120,600	12,965	9,115	15,845	3,605	8,195	30,895	3,480	4,955	209,655
2027	115,245	12,705	9,755	17,745	3,835	8,925	32,345	4,285	4,965	209,805
2032	110,000	12,355	10,950	19,805	4,095	9,725	33,900	5,095	4,995	210,920
2037	105,550	11,970	12,585	22,040	4,385	10,680	35,310	5,885	5,015	213,420
Period	**Average Annual Compound Growth Rate (AAGR)**									
2010-16	-1.6%	-3.1%	0.2%	3.1%	-1.2%	2.1%	2.3%	N/A	-2.3%	-1.0%
2016-17	-0.8%	-0.3%	-1.8%	2.4%	1.3%	2.0%	1.7%	6.1%	0.1%	-0.1%
2016-26	-0.9%	-0.3%	0.1%	2.3%	1.3%	1.8%	1.2%	5.0%	0.0%	0.0%
2016-37	-0.9%	-0.5%	1.4%	2.3%	1.3%	1.8%	1.0%	4.1%	0.1%	0.1%

**Source: 2017-2037, FAA Aerospace Forecast*
***Experimental Light-Sport category that was previously shown under Sport Aircraft is moved under Experimental Aircraft category, starting in 2012.*
Note: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

Figure 4-4 Forecast Composition of US Aircraft in 2037



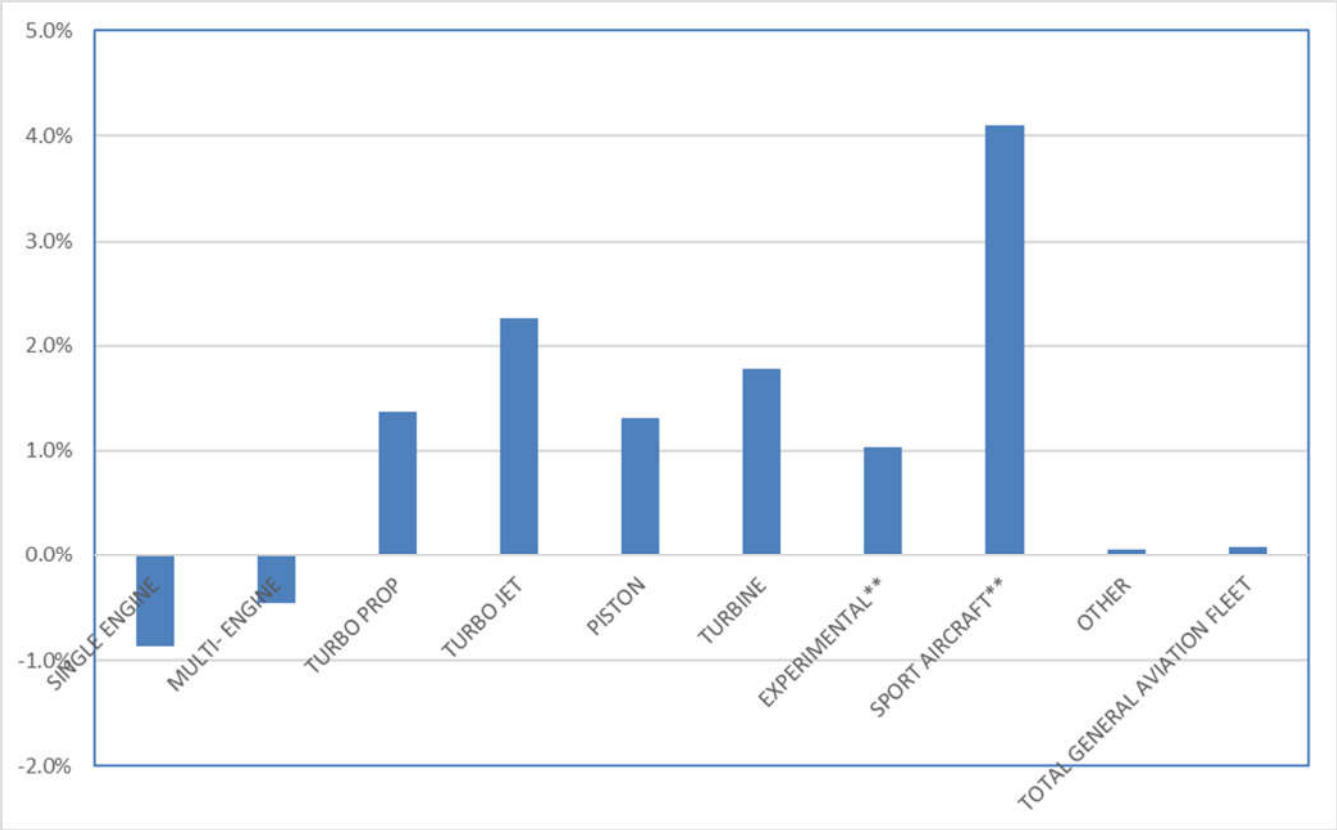
**Source: 2017-2037, FAA Aerospace Forecast*
***Experimental Light-Sport category that was previously shown under Sport Aircraft is moved under Experimental Aircraft category, starting in 2012.*

Table 4-10 Active General Aviation & Air Taxi Aircraft Hours Flown in the US

Year	Active General Aviation & Air Taxi Aircraft Hours Flown									
	Piston		Turbine		Rotorcraft		**Experimental	Sport Aircraft	Other	Total General Aviation Fleet
	Single Engine	Multi Engine	Turboprop	Jet	Piston	Turbine				
Historical										
2010	12,161	1,818	2,325	3,375	794	2,611	1,226	311	181	24,802
2011	11,844	1,782	2,463	3,407	757	2,654	1,203	278	181	24,570
2012	11,441	1,766	2,733	3,418	731	2,723	1,243	169	180	24,403
2013	10,706	1,646	2,587	3,488	636	2,312	1,191	173	135	22,876
2014	10,395	1,573	2,613	3,881	818	2,424	1,244	165	158	23,271
2015	11,217	1,608	2,538	3,837	798	2,496	1,295	191	162	24,142
2016	11,191	1,603	2,539	4,173	784	2,565	1,335	204	162	24,558
Forecast										
2017	11,007	1,596	2,538	4,445	777	2,636	1,372	218	163	24,753
2022	10,180	1,566	2,570	5,437	869	2,971	1,544	290	163	25,589
2027	9,724	1,543	2,759	6,191	950	3,297	1,701	366	164	26,694
2032	9,385	1,549	3,094	6,976	1,033	3,623	1,857	446	166	28,128
2037	9,187	1,566	3,561	7,736	1,118	4,005	2,007	529	167	29,876
Period	**Average Annual Compound Growth Rate (AAGR)**									
2010-16	-1.4%	-2.1%	1.5%	3.6%	-0.2%	-0.3%	1.4%	N/A	-1.8%	-0.2%
2016-17	-1.6%	-0.4%	0.0%	6.5%	-0.8%	2.7%	2.8%	6.8%	0.4%	0.8%
2016-26	-1.3%	-0.4%	0.6%	3.8%	1.8%	2.3%	2.3%	5.5%	0.1%	0.7%
2016-37	-0.9%	-0.1%	1.6%	3.0%	1.7%	2.1%	2.0%	4.6%	0.1%	0.9%

**Source: 2017-2037, FAA Aerospace Forecast*
***Experimental Light-Sport category that was previously shown under Sport Aircraft is moved under Experimental Aircraft category, starting in 2012.*
Note: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

Figure 4-5 Change in Fleet Mix



**Source: 2017-2037, FAA Aerospace Forecast*
***Experimental Light-Sport category that was previously shown under Sport Aircraft is moved under Experimental Aircraft category, starting in 2012.*

Based upon the *Aerospace Forecast* report regarding the manufacture and utilization of GA aircraft within the US, it can be assumed that the year-over-year growth of GA activity and number of based aircraft at the Airport will continue, although at a relatively low annualized growth rate. This level of growth is notable given the GA aircraft manufacturing's current state which has seen only limited growth in recent years. However, the Airport will most likely experience continued growth in aviation activity based solely on the number of locally-based aircraft and their associated activity levels. This includes the existing flight schools that could facilitate increases in based aircraft at the Airport as well as other services offered by the FBO.

4.7.2. Review of FAA Terminal Area Forecast (TAF)

The TAF assumes an unconstrained demand for aviation services (i.e., an airport's forecast is developed independent of the ability of the airport and the Air Traffic Control system to supply the capacity required to meet the demand). The FAA TAF for aviation activity at the Airport is presented in **Table 4-11**. The TAF is based on aviation activity occurring during the operating hours of the Air Traffic Control Tower (ATCT), currently 7:00 am to 9:00 pm, and therefore does not account for aviation activity that occurs at the Airport during the hours the ATCT is closed.

Table 4-11 FAA TAF for FPR

Year	Aircraft Operations									Based Aircraft
	Itinerant					Local			Total	
	Air Carrier	Air Taxi/ Commuter	General Aviation	Military	Total	Civil	Military	Total		
2000	12	1,908	84,084	87	86,091	84,335	22	84,357	170,448	174
2001	1	2,037	108,564	143	110,745	82,290	50	82,340	193,085	170
2002	0	1,783	113,296	22	115,101	78,231	0	78,231	193,332	185
2003	0	1,334	104,059	97	105,490	78,188	38	78,226	183,716	189
2004	0	1,220	104,625	91	105,936	83,014	99	83,113	189,049	185
2005	0	742	89,749	59	90,550	72,477	0	72,477	163,027	185
2006	0	677	66,785	119	67,581	35,726	12	35,738	103,319	185
2007	0	780	73,050	172	74,002	46,112	17	46,129	120,131	185
2008	0	958	82,109	97	83,164	68,149	256	68,405	151,569	211
2009	0	1,472	64,456	121	66,049	43,263	23	43,286	109,335	186
2010	0	1,295	65,812	252	67,359	62,531	5	62,536	129,895	202
2011	0	1,386	67,721	104	69,211	68,457	12	68,469	137,680	200
2012	0	1,618	66,331	75	68,024	69,800	2	69,802	137,826	202
2013	0	1,640	66,401	50	68,091	70,339	15	70,354	138,445	213
2014	0	1,816	67,994	38	69,848	84,557	0	84,557	154,405	216
2015	0	1,731	72,337	69	74,137	82,533	0	82,533	156,670	210
2016	0	1,635	71,727	55	73,417	78,998	23	79,021	152,438	218
2017	0	1,635	78,231	55	79,921	80,792	23	80,815	160,736	223
2022	0	1,635	79,411	55	81,101	84,914	23	84,937	166,038	246
2027	0	1,635	80,608	55	82,298	89,246	23	89,269	171,567	279
2032	0	1,635	81,824	55	83,514	93,799	23	93,822	177,336	309
2037	0	1,635	83,060	55	84,750	98,586	23	98,609	183,359	341
2045	0	1,635	85,073	55	86,763	106,755	23	106,778	193,541	398

Source: FAA APO TAF Detail Report (January 2017) (http://taf.faa.gov/Home/RunReport_FPR)
Note: Forecast projections provided in 5-year increments.

4.7.3. Review of FDOT FASP Forecasts

As part of the Continuing Florida Aviation System Planning Process (CFASPP) and in cooperation with the FAA and Florida's public airports the FDOT updated the FASP in 2012, the FDOT Aviation and Spaceports Office annually updates the forecasts of based aircraft and operational activity levels for each Florida public-use airport. **Table 4-12** summarizes the FDOT FASP projections for based aircraft and annual aircraft operations at the Airport through the year 2034.

Table 4-12 FDOT FASP FPR Aviation Forecast (2015-2034)

Year	Aircraft Operations	Based Aircraft
Historical		
2008	160,277	211
2009	135,883	211
2010	196,000	211
2011	141,953	211
2012	140,844	213
2013	141,313	216
2014	157,308	214

Year	Aircraft Operations	Based Aircraft
Forecast		
2015	159,589	218
2016	161,903	223
2017	164,251	227
2018	166,632	232
2019	169,048	236
2020	171,500	241
2021	173,986	246
2022	176,509	251
2023	179,069	256
2024	181,665	261
2025	184,299	266
2026	186,972	271
2027	189,683	277
2028	192,433	282
2029	195,223	288
2030	198,054	294
2031	200,926	300
2032	203,839	306
2033	206,795	312
2034	209,793	318
AAGR 2014-2034	**1.45 %**	**2.00 %**
% Change 2014-2034	**33.4 %**	**48.6 %**

Source: http://www.fdot.gov/aviation

The FASP projects based aircraft will increase from 214 to 318 over the 20-year forecast period representing an average annual growth rate (AAGR) of 2.0 percent. For the same period, the Airport's number of annual aircraft operations is projected to increase to 209,793 at an AAGR of 1.45 percent. The projected 2016 number of 161,903 annual GA aircraft operations compared to FAA TAF total operations of 152,438 was 9,429 operations higher than what actually occurred.

According to FDOT FASP, flight training encompasses a large portion of the Airport's GA activity. Nearly 55 percent of the Airport's annual operations are related to flight training. The Airport is home to three flight schools; Aviator College of Aeronautics and Tradewinds, Atlantic Helicopters, and US Sport Aircraft. Aviator College of Aeronautics and Tradewinds provide flight training services for the majority of flight students. In addition, the Airport is regularly visited by student pilots from Embry-Riddle Aeronautical University and Florida Tech. US Sport Aircraft concentrates its flight training activities for pilots and non-pilots interested in obtaining Light Sport Aircraft (LSA) licenses. GA operations by corporate, business, and recreational users account for the Airport's remaining 45 percent of local and itinerant operations. Visiting businesses that fly into the Airport include NetJets, Flexjet, and Executive Jet Aviation.

4.7.4. Review of FPR 2010 Airport Master Plan Update

The 2010 Airport Master Plan Update (AMPU), prepared by the LPA Group, provided recommendations for the Airport through the year 2028. The FAA-approved operations and based aircraft forecasts from the 2010 study are shown in **Table 4-13**. The 2010 AMPU selected an operations forecast based on a mid-range composite of multiple forecasts, which produced an operations forecast with an AAGR of approximately 2.12 percent over the 20-year planning period. The preferred based aircraft forecast from the 2010 AMPU was also based on the same composition of multiple forecasting methodologies. This based aircraft forecast resulted in an AAGR of approximately 2.22 over the 20-year forecast period.

Table 4-13 FPR 2010 AMPU Based Aircraft & Operations Forecast

Year	Total Airport Operations	Total Based Aircraft
2008	160,277	211
2009	163,280	215
2010	166,363	220
2011	169,528	224
2012	172,776	229
2013	176,111	233
2014	179,649	238
2015	183,291	244
2016	187,039	249
2017	190,898	254
2018	194,871	260
2019	199,051	266
2020	203,369	272
2021	207,831	278
2022	212,441	284
2023	217,207	291
2024	222,134	298
2025	227,230	305
2026	232,501	312
2027	237,954	320
2028	243,599	327
AAGR 2008-2028	**2.12%**	**2.21%**
Change 2008-2028	**51.99%**	**54.98%**

Source: FPR *2010 AMPU*

4.7.5. 2016 Statistical Databook / 2017 Industry Outlook

The 2016 General Aviation Statistical Databook and 2017 Industry Outlook contain aircraft shipment and billing information for 39 manufacturers of GA aircraft worldwide. The US fleet data in the Databook provides an overview of how the 210,000 active GA aircraft currently registered in the United States are used: from personal and recreational flying to various types of business operations, flight instruction, and aeromedical. In addition, it provides historical data about GA safety in both Europe and the US.

The US active pilot population continued its downward trajectory in 2016 and reached one of its lowest numbers in decades at 584,362 pilots at the end of 2015, as depicted in **Figure 4-6**.

The worldwide GA aircraft fleet is expected to continue to grow, led by the business jet and rotorcraft fleets. In 2015, the turbine fleet (i.e. includes both turboprop and jet aircraft) consisted of 23,152 airplanes and 7,220 rotorcraft. In addition, there were 141,141 piston aircraft and 3,286 piston rotorcraft in operation, a slight decline from the prior year (total of 30,895 aircraft), as is displayed in **Figures 4-7** and **4-8**. **Table 4-14** presents the GAMA Historical GA, On-Demand Part 135 & Forecast (2016- 2025).

4.8. Forecast Rationale

Aviation activity forecasting is an analytical and subjective process. Actual aviation activity that may potentially occur in future years may differ from the forecasts developed in this chapter as a result of future changes in local conditions, the dynamics of the general aviation industry, as well as economic and political changes for the local service area and across the nation as a whole. Future facility improvements should be implemented as demand warrants rather than at set future timeframes. This will allow the Airport to respond to changes in demand, either higher or lower than the forecast, regardless of the year in which those changes take place.

Forecasting the demand for airport services is a critical step in the development of an airport. It allows an airport to examine its ability to satisfy the needs of the aircraft and people it serves, and to determine the approximate timing of necessary improvements by projecting airport user activity levels.

Forecasts developed for airport master plans and/or federal grants must be approved by the FAA. It is the FAA's policy, listed in AC 150/5070-6B, Airport Master Plans, that FAA approval of forecasts at general aviation airport should be consistent with the TAF. Master plan forecasts for operations and based aircraft are considered to be consistent with the TAF if they meet the following criteria:

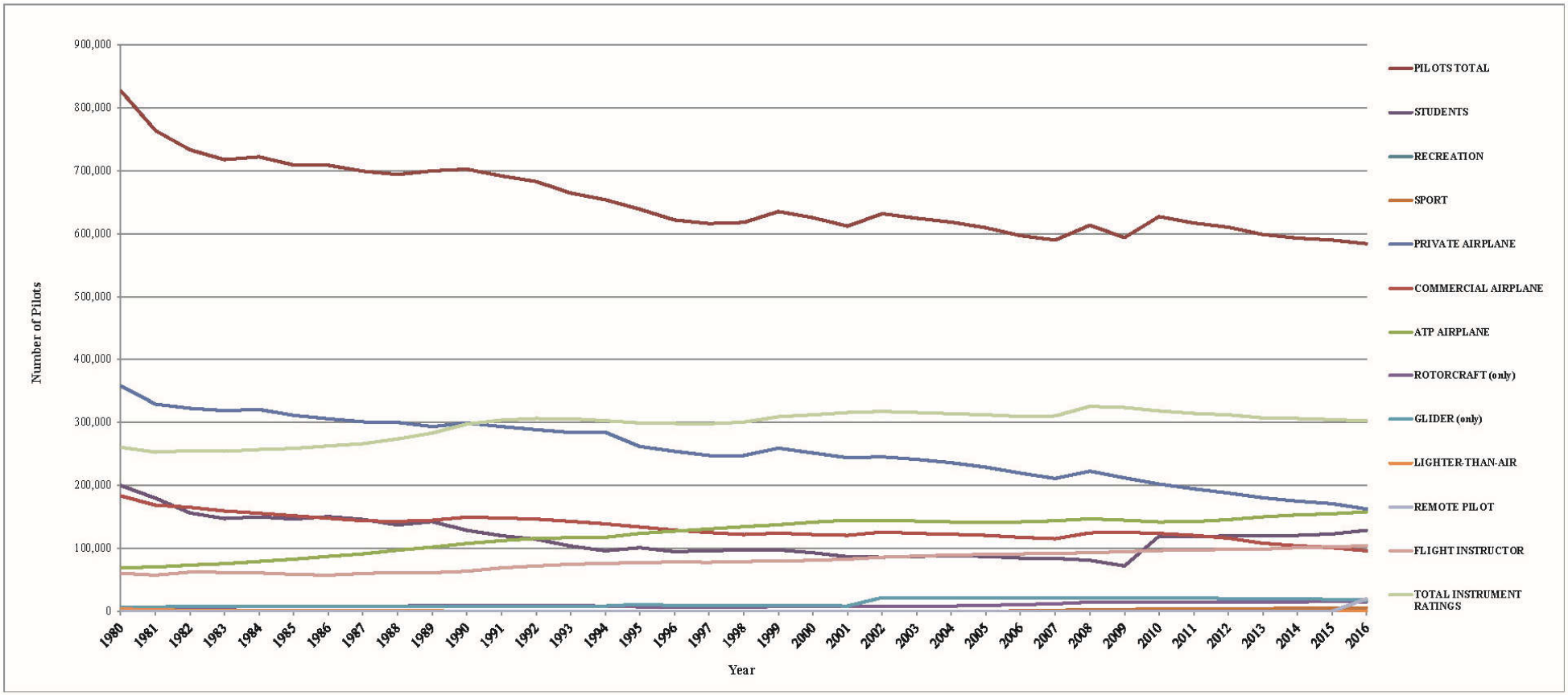
- Forecasts differ by less than 10 percent in the five-year forecast and 15 percent in the 10-year or 20-year period;
- Forecasts do not affect the timing or scale of an airport project;
- Forecasts do not affect the role of the airport as defined in the current version of FAA Order 5090.3, Field Formulation of the NPIAS

Furthermore, FAA Order 5090.3C, Chapter 3-2 states:

- Forecasts should:
    - be realistic;
    - be based on the latest available data;
    - reflect the current conditions at the airport;
    - be supported by information in the study
    - provide an adequate justification for the airport planning and development

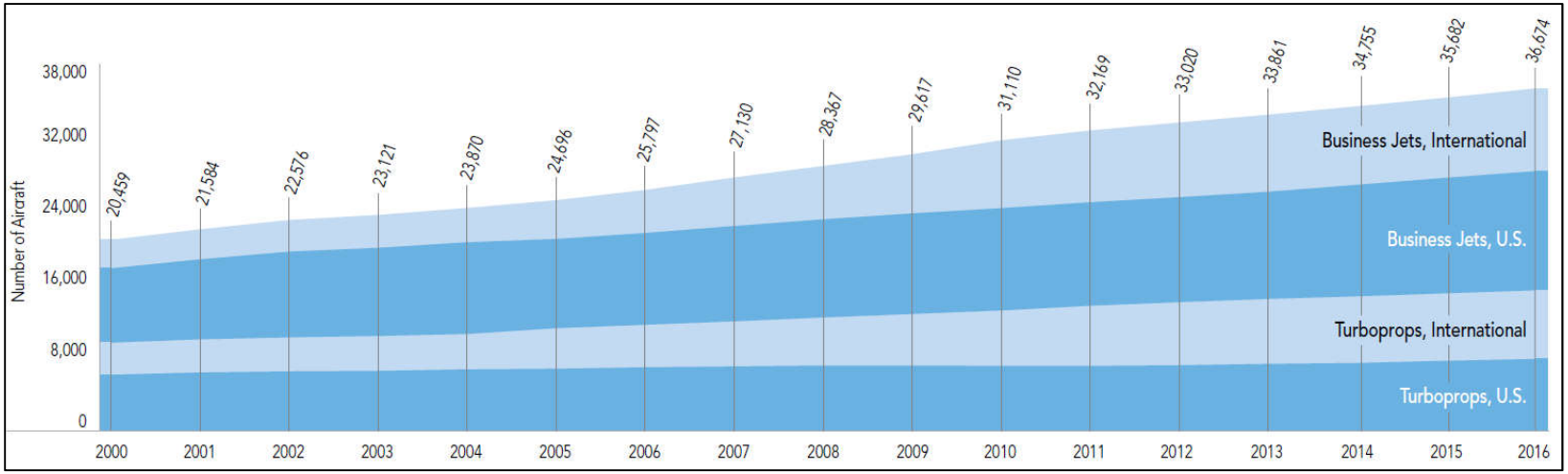
Forecasts supplied by the airport sponsor should not vary significantly (more than 10 percent) from the FAA's forecast. When a sponsor's forecast does vary significantly from the FAA's forecast, the sponsor's methodology should be verified, the forecast coordinated with APO-110, and only after the difference is resolved and the FAA is satisfied that the sponsor's forecast is valid will the sponsor's forecast be included in the NPIAS. In the absence of other forecast information, data from the FAA's forecast are included in the NPIAS database. When FAA forecast data are not available (usually a proposed airport) the master plan forecast should be validated against FAA's regional forecasts, and if appropriate, coordinated with APO-110.

Figure 4-6 Active FAA Certificated Pilots (1980-2016)



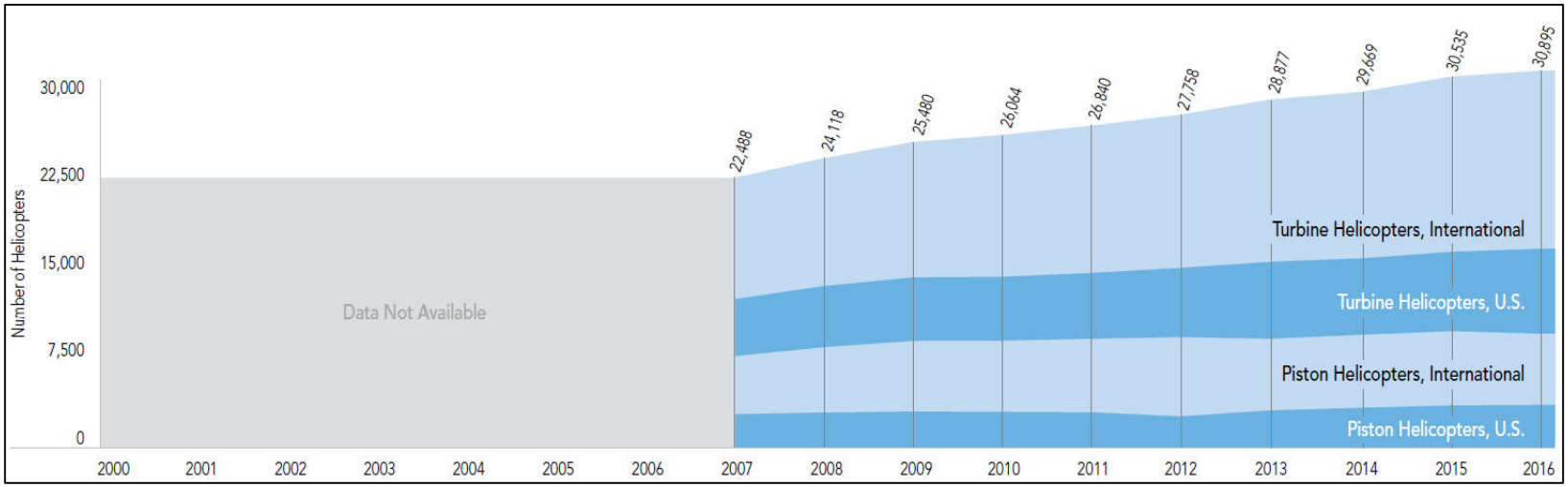
Source: FAA, GAMA 2016 Outlook, AECOM Analysis

Figure 4-7 Worldwide Turbine Business Airplane Fleet (2000-2016)



Source: GAMA 2016 Outlook, AECOM Analysis

Figure 4-8 Worldwide Turbine & Piston Helicopter (2007-2016)



Source: GAMA 2016 Outlook, AECOM Analysis

Table 4-14 GAMA Historical GA, On-Demand Part 135 & Forecast (2016-2025)

Year	Total Aircraft	Percentage of Total Based Aircraft			Rotorcraft		Balloons, Dirigibles, Gliders	Experimental	Light-Sport Aircraft		
		Piston	Turboprop	Business Jet	Piston	Turbine			Total	Experimental	Special
2000	217,534	170,513	5,762	7,001	2,680	4,470	6,701	20,407	-	-	-
2010	223,370	155,419	9,369	11,484	3,588	6,514	5,684	24,784	6,528	4,878	1,650
2011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2012	209,034	143,160	10,304	11,793	3,292	6,763	5,006	26,715	-	4,631	2,001
2013	199,927	137,655	9,619	11,637	3,137	6,628	4,278	24,918	-	4,157	2,056
2014	204,408	139,182	9,777	12,362	3,154	6,812	4,699	26,191	-	4,204	2,231
2015	210,030	141,141	9,712	13,440	3,286	7,220	4,941	27,922	-	3,942	2,369
Forecast											
2016	203,425	137,080	9,420	12,635	3,340	7,200	4,570	26,590	-	-	2,590
2017	203,300	136,095	9,310	12,870	3,435	7,410	4,560	26,850	-	-	2,770
2018	203,200	135,150	9,235	13,125	3,525	7,615	4,550	27,055	-	-	2,945
2019	203,185	134,220	9,195	13,395	3,610	7,820	4,545	27,270	-	-	3,130
2020	203,195	133,295	9,190	13,680	3,690	8,020	4,525	27,485	-	-	3,310
2021	203,225	132,345	9,215	13,975	3,770	8,215	4,525	27,690	-	-	3,490
2022	203,340	131,405	9,270	14,285	3,850	8,410	4,520	27,925	-	-	3,675
2023	203,365	130,440	9,350	14,610	3,930	8,605	4,510	28,060	-	-	3,860
2024	203,555	129,470	9,465	14,965	4,010	8,795	4,500	28,310	-	-	4,040
2025	203,745	128,505	9,600	15,340	4,090	8,990	4,490	28,500	-	-	4,230
Average Annual Growth											
2016 – 25	-0.3%	-0.9%	-0.1%	1.3%	2.2%	2.2%	-1.0%	0.2%	-	-	6.0%

Source: 2016 General Aviation Statistical Databook and 2017 Industry Outlook

Standard practice is for the FAA TAF to be used for comparison purposes; however, the TAF can be used as the airport sponsor's forecast. According to the FAA, if the TAF is used as the airport sponsor's forecast, the sponsor should:

- Make a conscious decision to use the TAF;
- Understand how the TAF was developed for the airport including assumptions, methods and calculations used;
- Document the decision to use the TAF, and the rationale, in the master plan or other planning document.

4.8.1. Factors Affecting Forecasts

FAA AC 150-5070-6B, *Airport Master Plans*, states:

> *"Planners preparing forecasts of demand or updating existing forecasts should consider socioeconomic data, demographics, disposable income, geographic attributes and external factors such as fuel costs and local attitudes towards aviation."*

St Lucie County and the surrounding region have recently experienced increase in populations, socioeconomic factors and infrastructure growth. For purposes of developing this forecast, the following defining factors have been used:

- Calendar year 2016 is the base year for most of the aviation forecast projections;
- The most recent projections of population, job growth and economic growth for the US, Florida, and Port St. Lucie Metropolitan Statistical Area (MSA) have been utilized;
- The Airport's catchment area has been developed using data from St. Lucie and Martin Counties.

4.8.2. Forecast Methods

Forecasts should not be considered exact predictions of the future, but rather an educated estimate of future activity using available data. Basic forecasting methods were used for the analysis, including trend extension, market share, and regression analysis.

Forecasts developed for airport master plans must be approved by the FAA and should be consistent with the FAA's TAF. A major element of the analysis found throughout this process was comparing the forecasts developed for the AMP to the TAF. Several forecast methods were evaluated to best predict future aviation activity in conjunction with the 2016 FAA TAF for the Airport.

Several methods have been applied in the development of the forecasts presented in the following sections. Projections of aviation demand incorporate local and national industry trends in assessing current and future demand. Therefore, socio-economic factors such as local population and income, and employment are also analysed for the effect they may have had on historical and future levels of activity.

The comparison of relationships among these various indicators provides the initial step in the development of realistic forecasts of aviation demand. Methodologies used to develop forecasts described in this section include:

- Market Share Analysis
- Trend Analysis
- Socio-economic and Regression Analysis
- National Outlook
- Regional Outlook

4.8.2.1. Market Share Analysis

Market share analysis assumes a relationship between local and national or regional forecasts. Market share, ratio, or top-down models compare local levels of activity with a larger entity. Such methodologies imply that the proportion of activity that can be assigned to the local level is a regular and predictable quantity. This method has been used extensively in the aviation industry to develop forecasts for the local level. It is most commonly used to determine the share of total national traffic activity that will be captured by a region or airport. Historical data is examined to determine the ratio of local airport traffic to total national traffic. The FAA develops national forecasts annually in its Aerospace Forecasts document. In this scenario the market share methodology compares this data source with the Airport's historic levels of aviation activity.

4.8.2.2. Trend Analysis

A linear or straight line, trend analysis is one of the simplest forecasting methods. It fits a linear growth line to historical data and extends it into the future. This technique assumes that the factors effecting aviation activity in the past will remain the same into the future.

4.8.2.3. Socioeconomic Regression Analysis

Regression analysis is a statistical technique for estimating the relationships among variables. It identifies correlations between known independent variables (e.g., population, per capita income and employment) and dependent variables (e.g., passengers and operations).

Socioeconomic and correlation analyses examine the direct relationship between two or more sets of historical data. Based upon the observed and projected correlation between historical aviation activity and the socioeconomic data sets, future aviation activity projections are developed.

Independent variables represented by local market conditions examined in this chapter include population, total employment, and per capita income for the Port St. Lucie, FL MSA. The Port St. Lucie, FL MSA includes St. Lucie and Martin counties. Historical and forecast socioeconomic statistics for this MSA were obtained from the economic forecasting firm Woods & Poole Economics. Based upon the observed and projected correlation between historical aviation activity and the socioeconomic data sets, future aviation activity projections were developed.

4.8.2.4. Regression Analyses-Socioeconomic Correlation

Sometimes there is a correlation between historical airport activity and historical socioeconomic characteristics, as presented previously. To test if such a correlation exists; a regression analysis is used to determine if an independent variable (X) can be used to predict a dependent variable (Y). Some regression analyses provide strong correlations (e.g., natural disasters and home insurance rates). The independent variable in aviation forecasting is typically a socioeconomic characteristic (e.g., population or employment), while the dependent variable is generally passenger enplanements, airport operations or based aircraft.

In the Airport's case, the independent variables (X) are comprised of total population, total employment, transportation employment, and total PCPI for St. Lucie County, and the dependent variables (Y) are the number of annual operations and based aircraft. The objective of the regression analyses was to determine if a correlation existed between historical socioeconomic variables and historical airport activity. If such a correlation were to exist (i.e., producing an R^2 value of 90 percent or greater), then it is likely that forecasts of the socioeconomic variables could be used to determine future airport activity. The regression analyses were performed between 2000- and 2015-time period. By evaluating historical relationships over this period, a better understanding of the types of national, state, and local factors that have the potential to influence airport activity is realized. **Table 4-15** presents the Airport's regression analyses' R^2 values**.**

As shown in **Table 4-15**, none of the evaluated historical socioeconomic characteristic of St. Lucie County produced a good correlation (i.e., R^2 value of 90 percent or greater) with historical operations and based aircraft levels at the Airport. A review of historical operations depicted in Table 4-14 reveals several cycles of annual increases and decreases that can be explained by incoming or outgoing businesses, hurricane damage, and national economic conditions. Consequently, the general annual increase in population, employment, and PCPI does not correlate well with the cyclical aircraft operations levels. Further, St. Lucie County's total employment levels between 2000 and 2015 were shown to have the highest correlation with operations levels, producing an R^2 value of 76.2 percent. However, all regression analyses for operations produced minimal overall activity growth during the evaluation periods. Although not presented herein, this trend also occurred when regression was performed using socioeconomic data for the United States, State of Florida, and Fort Pierce-Port St. Lucie MSA. Subsequently, the use of regression analysis for predicting the Airport's future operations would result in a negative growth forecast and may therefore be an ineffective method of evaluating future aviation demand.

Table 4-15 Regression Analysis – Socioeconomics Characteristics

Socioeconomic Variable (X Variable)	Operations (Y Variable)	Based Aircraft (Y Variable)
	2000 - 2015	2000 - 2015
Total Population – R^2 Value	44.5%	71.1%
Total Employment – R^2 Value	28.8%	76.2%
Transportation Employment – R^2 Value	27.9%	0.009%
Total Per Capita Personal Income – R^2 Value	23.1%	59.5%

Source: AECOM Analysis 2017

Similar to historical operations levels at the Airport, historical based aircraft levels have experienced annual cycles of increases and decreases. Consequently, the cyclical nature of based aircraft in earlier years (i.e., 2000 to 2015) resulted in the low R^2 regression values. Population, employment, and PCPI were generally increasing annually. Total population levels between 2000 and 2015 illustrated the highest correlation with based aircraft levels, producing an R^2 value of 71.1 percent, the associated trend line formulas produced low growth scenarios, in addition to very low confidence/R^2 values for predicting the Airport's future based aircraft levels. It is noted that regression analysis often produces more confident results for commercial airports than GA airports. Specifically, a correlation can often be seen between historical population and historical commercial passenger enplanements (i.e., the number of passengers that fly in a year). Therefore, the results of the regression analyses for the Airport are not uncommon for GA airports.

4.8.3. National Outlook

Each year, the FAA publishes an updated national aviation forecast. The FAA's Aerospace Forecasts for Fiscal Years (FY) 2012- 2032 was the most current version at the time this document was being prepared. The forecast provides a 20-year projection of aviation activity at the national level, taking into account global and national economic activity and aviation industry trends in technology, aircraft manufacturing and the characteristics of general and commercial aviation. The FAA Aerospace Forecasts include projected growth rates for the GA hours flown, which may be utilized to determine future airport operations. The FAA forecast also provides projected growth rates for the active GA fleet, which may be applied to determine future based aircraft.

4.8.4. Regional Outlook

The FAA also produces an airport specific forecast based on a national outlook, the TAF, as previously discussed. The TAF assumes an unconstrained demand for aviation services (i.e., an airport's forecast is developed independent of the ability of the airport and the ATC system to supply the capacity required to meet the demand). Also, as previously discussed, FDOT, as part of the Continuing Florida Aviation System Planning Process (CFASPP) and in cooperation with the FAA and Florida's public airports produces forecasts of based aircraft and operational activity levels for each Florida public-use airport.

4.9. Aviation Activity Forecast

This section presents aviation activity forecasts for aircraft operations, based aircraft and aircraft fleet mix. These forecasts will be used in subsequent sections of this AMP to assess the ability of existing facilities to accommodate existing and future levels of demand.

4.9.1. Aircraft Operations

Forecast of aircraft operations account for all areas of aviation activity, including air taxi and charter, GA, and military. The Airport's aircraft activity is primarily GA with some air taxi, charter, and a small number of military operations. A review of independent forecasts for aircraft operations at the Airport indicate that all forecasts show increases in aircraft operations but at slightly different growth rates. In addition, both the FAA TAF and the FDOT FASP projections have a baseline year other than 2016, with the TAF slightly lower and the FASP higher than the actual operation counts for 2016. The 2016 operation levels shown in both of these projections are forecast values rather than actual 2016 operational levels.

The historic aircraft operational counts at the Airport do not include two key items; aircraft operations occurring during the hours that the ATCT is closed, and aircraft operations resulting from the initiation of charter service by Fly-the-Whale at the end of 2016. The operations resulting from Fly-the-Whale include two flights per week each to two separate destinations, resulting in an additional eight operations per week, or 416 operations per year. These operations were added to the Airport's 2017 count of air taxi/commuter operations.

The only consistent source of night-time operational counts are the flight records provided by Aviator College of Aeronautical Science and Technology indicating that there were 6,803 flight school operations in 2016 occurring during the hours that the ATCT was closed and were therefore not included in the FAA TAF forecasts. This number is likely even higher, but detailed accounts of how many local operations were performed for each of these night-time training flights were unavailable. For purposes of this forecasting effort, these night-time operations performed by the flight training facility were split between itinerant and local GA operations at the same ratio as recorded in the FAA's TAF.

The Airport's forecasts were developed using the previously discussed methodologies, and additional forecasts were developed by applying the national and regional growth rates as provided by the FAA and the FDOT to actual aircraft operational counts, including the night time flight school operations and the Fly-the-Whale charter operations. **Table 4-16** and **Figure 4-9** illustrate the Airport's aircraft operations forecasts, including those forecasts adjusted to actual historic operations counts for 2017.

Table 4-16 Aircraft Operations Forecast

Year	Historical	FAA TAF AAGR	FAA TAF ADJ AAGR	FAA AERO AAGR	FDOT FASP AAGR	Market Share US	Market Share FL	Trend (Straight Line /Linear)	FDOT FASP ADJ AAGR	2010 AMPU AAGR
2000	170,448									
2005	163,027									
2008	151,569									160,277
2010	129,895									166,363
2015	156,670									183,291
2016	152,438	152,438	159,657	159,657	161,903	152,438	152,438	152,438	159,657	187,039
2017		**160,736**	**161,478**	**160,155**	**164,251**	**153,899**	**160,772**	**165,220**	**161,972**	**190,898**
2022		**166,038**	**168,699**	**162,668**	**176,509**	**156,285**	**165,619**	**199,596**	**174,060**	**212,441**
2027		**171,567**	**176,261**	**165,221**	**189,683**	**159,178**	**171,040**	**233,972**	**187,051**	**237,954**
2032		**177,336**	**184,180**	**167,814**	**203,839**	**162,312**	**176,909**	**268,348**	**201,011**	
2037		**183,359**	**192,475**	**170,447**		**165,708**	**183,258**	**302,723**	**216,013**	
AACGR		**0.88%**	**0.89%**	**0.31%**	**1.45%**	**0.40%**	**0.88%**	**3.32%**	**1.45%**	**2.12%**

Source: AECOM Analysis 2017

4.9.2. Preferred Forecast

After a review of the independent forecasts and other forecasting methodologies, the preferred forecast was developed through the application of the 2016 FAA TAF growth rates applied to the adjusted operations counts to include the night-time operations and the commencement of service by Fly-the-Whale in 2017. The preferred forecast of based aircraft uses the same methodology of applying the FAA TAF growth rate to the actual counts of the Airport's based aircraft.

The application of the FAA TAF growth rates to actual aircraft operations and based aircraft numbers was chosen as the preferred forecast due to the lack of detailed information of any extraordinary circumstances that would lead to higher or lower growth rates. The FAA spends a significant amount of time and research to produce the TAF, and without specific information leading to a deviation from the TAF, the growth rates provided are the most logical and defensible available.

The Airport's 2015 Business Plan made suggestions as to how the Airport could grow both in an operational sense and a financial aspect. These changes would most likely have a positive impact on the Airport's activity, but to date the opportunity and funding to significantly institute these suggestions have not appeared. Therefore, any impacts to the Airport's future aircraft activity are uncertain and the applicability to this forecast are similarly uncertain.

The FDOT FASP forecast provided the highest growth rates but this forecast was developed in 2014 and is based on older trends occurring at the Airport.

Without documentable resources to produce a more aggressive forecast, the 2016 FAA TAF for the Airport provided the most reasonable aircraft operational and based aircraft growth rates. As previously mentioned, forecasting is a fluid activity and is impacted by many factors and variables. Because of this, forecasts should be reviewed and revised whenever the Airport expects a significant change in characteristics to determine the impact on aircraft operational levels and other airport infrastructure needs and requirements.

4.9.3. General Aviation Operations

General aviation operations are classified as either local or itinerant. A local operation is a take-off or landing performed by an aircraft that operates within sight of the Airport, or which executes simulated approaches or touch-and-go operations at the Airport. Itinerant operations are those performed by aircraft with a specific origin or destination away from the Airport. Generally, local operations are characterized by training operations. Typically, itinerant operations increase with business and commercial use, since business aircraft are operated on a higher frequency. A distribution of local versus itinerant aircraft operations was generated for the preferred forecast by applying the same percentages as those in the TAF. This split, with the additional 6,803-night operations was grown at the recommended FAA TAF growth rates for itinerant and local operations throughout the forecast period. See **Figure 4-9** for illustration.

4.9.3.1. Air Charter / Air Taxi Operations

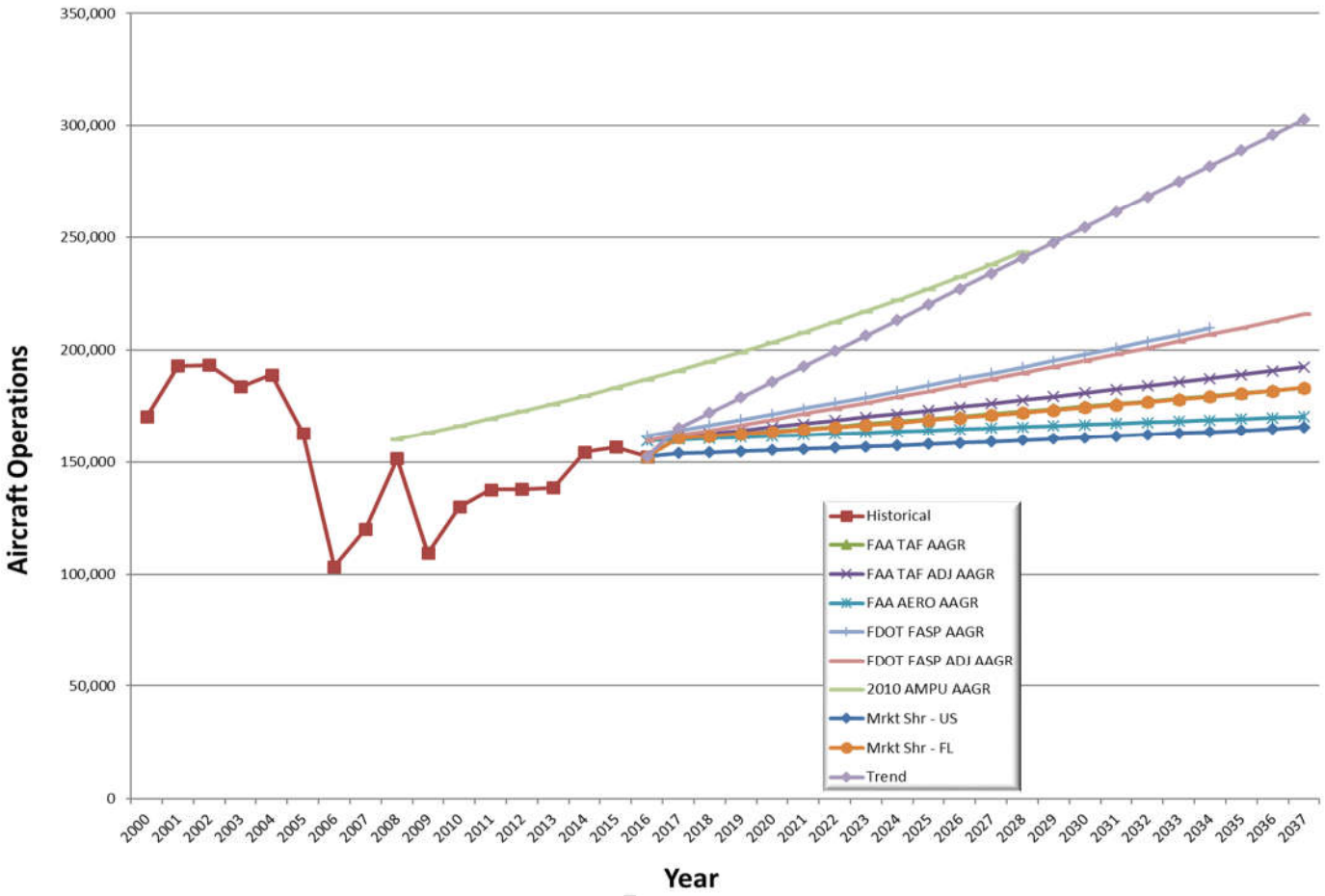
According to the FAA's TAF, there were 1,635 air charter / air taxi operations at the Airport in 2016. According to the current FAA Aerospace Forecasts – Fiscal Years 2017-2037, air charter / air taxi operations historically were projected to decrease at an AAGR of -3.5 percent from 2010 through 2016 and forecast to decrease at an AAGR of -3.0 percent from 2016 – 2026 and -0.9 percent from 2016 – 2037. However, the decrease is largely reflective of small regional airline operations losses.

Since 2009, the Airport's air charter / air taxi operations have consistently been in the 1,300 to 1,800 operations per year range. Fly-the-Whale commenced operations from the Airport in 2017 consisting of two weekly flights each to one destination. This increased air charter / air taxi operations by 416 annually. It could be expected that Fly-the-Whale, as a for profit charter service, would expect the demand for service to increase through the forecast period. However, the expectation is that air charter / air taxi service in the US is expected to decrease; therefore, the preferred forecast has the Airport's air charter / air taxi operations remaining at a flat rate of 2,051 annually throughout the forecast period. This preferred forecast of air charter / air taxi aircraft operations is provided in **Table 4-17**.

4.9.3.2. Military Operations

In 2016, there were 55 itinerant and 23 local military operations at the Airport according to the FAA's TAF. Utilizing historic military operational counts from the FAA's TAF, the Airport has experienced an average of 37 local and 96 itinerant annual military operations since the last AMPU in 2008. Developing a reliable forecast of military activity is inherently difficult, primarily because the military mission can change rapidly and is primarily influenced by training needs, budget constraints, and aircraft readiness levels. Generally during peace time, civilian airports will experience higher levels of military operations and when there are overseas commitments, many of those pilots and equipment will be out of the country. The FAA recognizes

Figure 4-9 Aircraft Operations Forecast



Source: AECOM Analysis 2017

Table 4-17 Preferred Operations Forecast

Year	Air Carrier	Air Taxi / Commuter	Itinerant GA	Local GA	Itinerant Military	Local Military	Total
2016	0	1,635	75,162	82,782	55	23	159,657
2017	0	2,051	75,689	83,660	55	23	161,478
2022	0	2,051	78,379	88,190	55	23	168,699
2027	0	2,051	81,165	92,966	55	23	176,261
2032	0	2,051	84,050	98,001	55	23	184,180
2037	0	2,051	87,038	103,308	55	23	192,475

Source: AECOM Analysis 2017

these challenges to forecasting military activity, therefore provides only a flat forecast for both local and itinerant military activity, unless there is specific knowledge concerning changes in usage rates, such as squadron relocation or replacement aircraft training requirements. Therefore, it is anticipated that the Airport's military activity will experience zero growth at the 2016 base year level of 23 local and 55 itinerant annual military operations.

4.9.4. Based Aircraft Forecasts

Based aircraft at an airport represent the total number of active civil aircraft permanently located or projected to be located at an airport during a specific period. Based aircraft categories include single-engine, multi-engine, jet, rotorcraft, and other. The national GA industry has experienced declines in nearly all measures of activity since the early 1980s including, but not limited to new aircraft shipments, active FBOs, and hours flown. The number of aircraft based at individual airports also dropped at many facilities, including the Airport.

A detailed count of based aircraft for 2017 indicated approximately 308, according to basedaircraft.com and verified by airport management. While these counts were performed in 2017, this data will serve as the base year 2016 for the forecast. Nine methodologies were utilized to forecast future based aircraft. As the Airport is assumed to continue its role as the airport of choice for flight training and recreational flying within the MSA, its future fleet is anticipated to become increasingly oriented toward the more sophisticated single engine and multi-engine aircraft. The fleet mix forecast calls for a slight increase in the number of single engine aircraft and material increases in the numbers of based multi-engine, turboprop, jet aircraft and helicopters.

It should be noted that the FAA's TAF and FDOT FASP forecasts start at a lower number of based aircraft than are currently located at the Airport. Airport management records indicate there were 308 aircraft based at the Airport in 2017. To account for this difference, additional forecasts were prepared using the growth rates provided by the TAF and the FASP. These forecasts applied these rates to the Airport's actual number of based aircraft. **Table 4-18** and **Figure 4-10** present these forecasts.

4.9.5. Based Aircraft Fleet Mix Forecast

The fleet mix of the based aircraft is often more important to airport planning and design than the total number of aircraft. For example, the presence of one or a few large business jets can impact design standards more than many smaller single engine piston-powered aircraft.

Table 4-18 Based Aircraft Forecast

Year	Historical	FAA TAF AAGR	FAA TAF ADJ AAGR	FAA AERO AAGR	FDOT FASP AAGR	FDOT FASP ADJ AAGR	Market Share US	Market Share FL	Trend (Straight Line /Linear)	2010 AMPU AAGR
2000	174									
2005	185									
2010	202									220
2015	210									244
2016	**206**	**218**	**270**	**270**	**223**	**308**	**218**	**218**	**218**	**249**
2017		**223**	**270**	**270**	**227**	**270**	**231**	**242**	**220**	**254**
2018		227	274	270	232	270	233	245	224	260
2019		232	278	269	236	275	235	248	228	266
2020		237	282	269	241	281	237	251	232	272
2021		241	287	268	246	287	239	255	236	278
2022		**246**	**291**	**268**	**251**	**292**	**241**	**258**	**240**	**284**
2023		256	296	268	256	298	243	262	244	291
2024		261	300	267	261	304	245	266	249	298
2025		267	305	267	266	310	247	269	253	305
2026		273	309	267	271	317	249	273	257	312
2027		**279**	**314**	**266**	**277**	**323**	**251**	**276**	**261**	**320**
2028		285	319	266	282	329	253	280	265	327
2029		291	323	266	288	336	255	283	269	
2030		297	328	266	294	343	257	287	273	
2031		303	333	265	300	350	259	291	277	

Year	Historical	FAA TAF AAGR	FAA TAF ADJ AAGR	FAA AERO AAGR	FDOT FASP AAGR	FDOT FASP ADJ AAGR	Market Share US	Market Share FL	Trend (Straight Line /Linear)	2010 AMPU AAGR
2032		**309**	**338**	**265**	**306**	**357**	**261**	**295**	**281**	
2033		315	343	265	312	364	263	298	285	
2034		321	349	265	318	371	265	302	289	
2035		327	354	265	324	379	267	306	293	
2036		334	359	265	331	386	269	310	297	
2037		**341**	**365**	**265**	**338**	**394**	**272**	**314**	**301**	

Source: AECOM Analysis 2017

The Airport's total based aircraft predicted during the planning period using the preferred based aircraft projection were allocated to five aircraft categories (single-engine, multi-engine, turboprop, jet, and helicopter) to develop a projection of the Airport's based aircraft fleet mix through the planning period. The Airport's fleet mix projections were based on the fleet mix percentages exhibited at the Airport and in the FAA Aerospace Forecast, Fiscal Years 2017-2037 projection of active GA aircraft.

The preferred based aircraft fleet mix projections are shown in **Table 4-19** and **Figure 4-11**, disaggregating the based aircraft forecast by major aircraft type. Each major category was projected to grow at the FAA's forecast national growth rate in that category and then adjusted proportionately to sum to the totals.

4.10. Airport Peaking Period

An additional measure of airport activity is design hour operations. The design hour is an estimate of the peak hour of the average day in the busiest month for an airport.

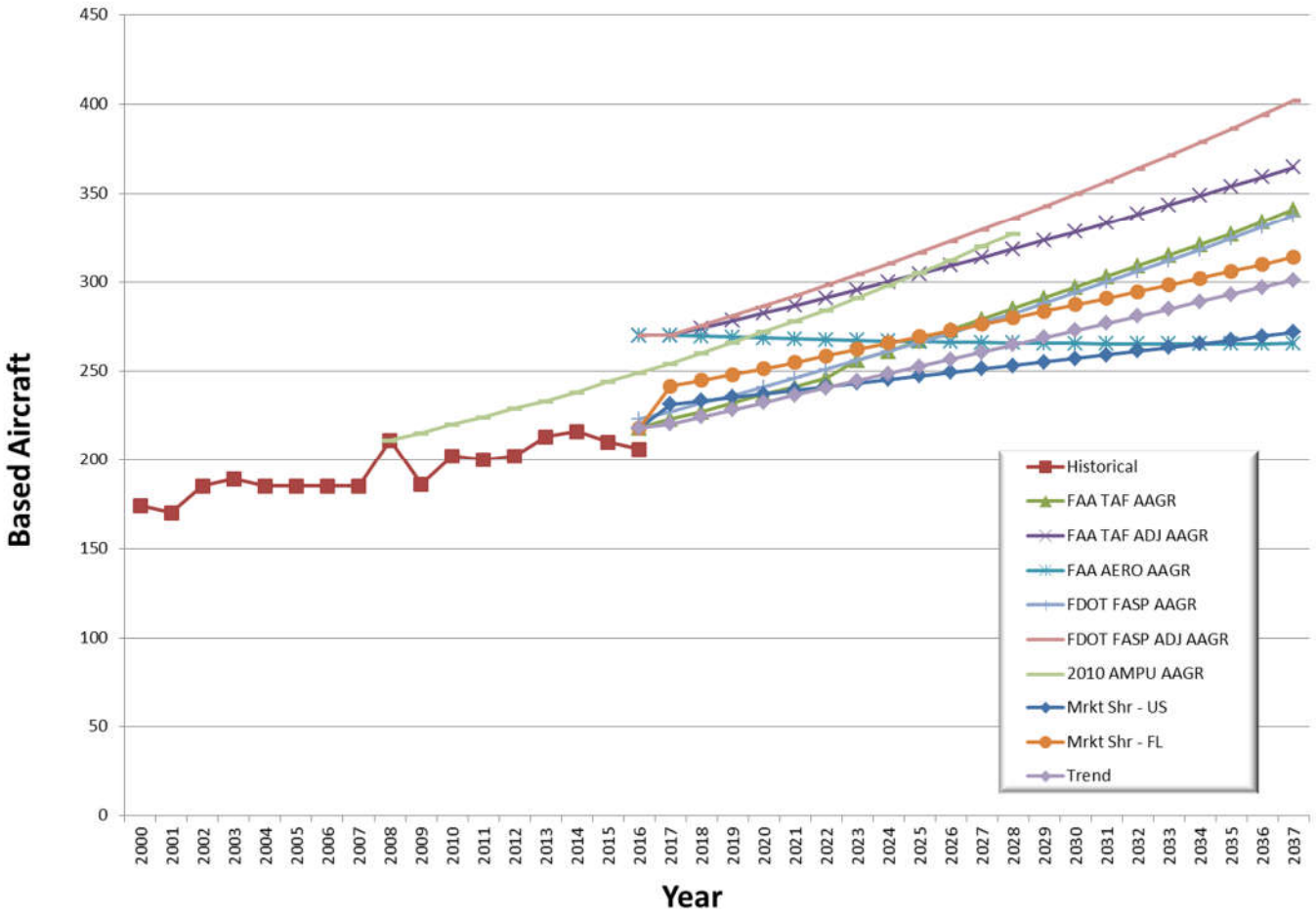
- Peak Month Operations is the month that has the most operations.
- Design Day is the Peak Month Operations divided by 30 days.
- Design Hour is the average number of operations during the peak hour of the peak month.

Table 4-20 presents historical GA peaking activity and peaking percentages used to determine the allocation of space for various terminal facilities (i.e., terminal building, aircraft parking and auto parking). Specifically, the peak hour flights are used to identify user space requirements during the average day of the peak month. The peaking activity is calculated using standard FAA demand/capacity guidelines.

The Peak Month for the average airport is normally at 10 percent of annual operations. Given the nature of the summer and holiday season, the Airport's peak month in 2016 was November, with approximately 16,163 operations. As shown in Table 4-20, peak hour operations range from 83 aircraft operations in 2012 to 101 in 2016. The Airport's Design Day in 2016 was 822 operations. The Airport's Design Hour in 2016 was 101 operations. Typically, these operations will range between 10 and 15 percent of the design day operations. Data provided by the Airport's ATC indicate that for 2017, peak hour operations were approximately 11 percent of daily operations. For planning purposes, this 11 percent was used to determine the Design Hour.

The Airport's forecasts estimate that current activity levels, including night-time operations, are expected to reach approximately 962 operations per day by the end of the forecast period. **Table 4-21** depicts the forecasted peaking level for the planning period of this forecast.

Figure 4-10 Based Aircraft Forecast



Source: AECOM Analysis 2017

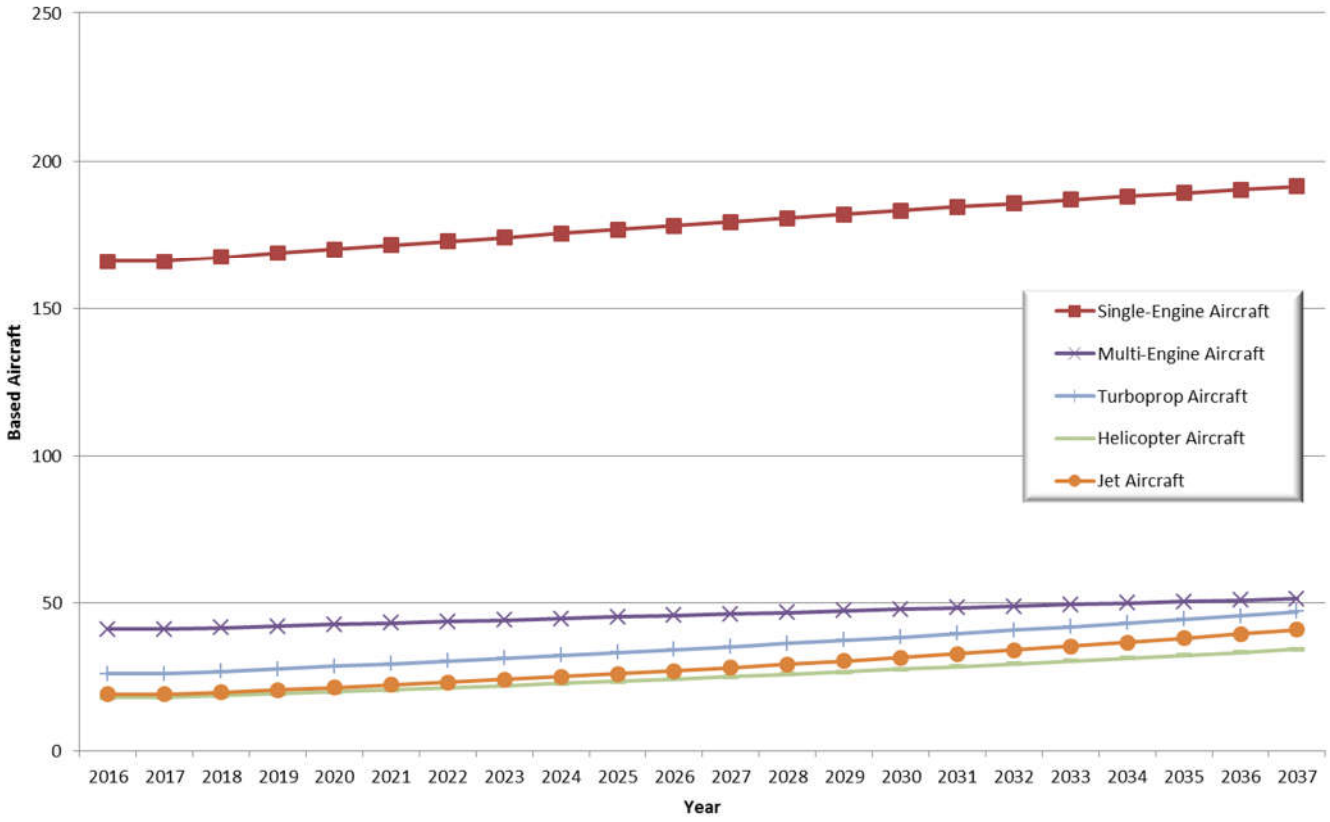
Table 4-19 Based Aircraft Fleet Mix Forecast

Year	Single-Engine		Multi-Engine		Turboprop		Helicopter		Jet		Total	
	Aircraft	% Total	Aircraft	% Total	Aircraft	% Total	Aircraft	Aircraft	% Total	Aircraft	% Total	Aircraft
2016	166	61.5%	41	15.2%	26	9.6%	18	7%	19	7.0%	270	100.0%
2017	166	61.5%	41	15.2%	26	9.6%	18	7%	19	7.0%	270	100%
2018	167	61.1%	42	15.1%	27	9.8%	19	7%	20	7.2%	274	100%
2019	169	60.7%	42	15.1%	28	9.9%	19	7%	21	7.4%	278	100%
2020	170	60.2%	43	15.1%	28	10.1%	20	7%	21	7.6%	282	100%
2021	172	59.8%	43	15.0%	29	10.2%	21	7%	22	7.8%	287	100%
2022	173	59.4%	44	15.0%	30	10.4%	21	7%	23	7.9%	291	100%
2023	174	59.0%	44	14.9%	31	10.6%	22	7%	24	8.1%	296	100%
2024	176	58.5%	45	14.9%	32	10.7%	23	8%	25	8.3%	300	100%
2025	177	58.1%	45	14.8%	33	10.9%	23	8%	26	8.5%	305	100%
2026	178	57.6%	46	14.8%	34	11.0%	24	8%	27	8.7%	309	100%
2027	179	57.2%	46	14.7%	35	11.2%	25	8%	28	8.9%	314	100%

2028	181	56.7%	47	14.7%	36	11.4%	26	8%	29	9.1%	319	100%
2029	182	56.3%	47	14.6%	37	11.5%	27	8%	30	9.4%	323	100%
2030	183	55.8%	48	14.5%	38	11.7%	28	8%	31	9.6%	328	100%
2031	184	55.4%	48	14.5%	40	11.9%	28	9%	33	9.8%	333	100%
2032	186	54.9%	49	14.4%	41	12.0%	29	9%	34	10.0%	338	100%
2033	187	54.4%	49	14.3%	42	12.2%	30	9%	35	10.3%	343	100%
2034	188	53.9%	50	14.3%	43	12.3%	31	9%	37	10.5%	349	100%
2035	189	53.5%	50	14.2%	44	12.5%	32	9%	38	10.7%	354	100%
2036	190	53.0%	51	14.1%	46	12.7%	33	9%	39	11.0%	359	100%
2037	191	52.5%	51	14.1%	47	12.9%	34	9%	41	11.2%	365	100%

Source: AECOM Analysis 2017

Figure 4-11 Based Aircraft Projections for FPR



Source: AECOM Analysis 2017

Table 4-20 Aircraft Operational Peaking (Average Day of Peak Month)

Historical General Aviation Peaking Characteristics					
Local Operations					
Peaking Element	2012	2013	2014	2015	2016
Local - Annual Operations	72,829	72,952	85,388	79,616	79,297
Local - Peak Month Operations	6,454	6,675	8,762	8,604	8,036
Local - Peak Month %	8.9 %	9.1 %	10.3 %	10.8 %	10.1 %
Local - Peak Day Operations	387	442	532	433	425
Local - Peak Day %	6.0 %	6.6 %	6.1 %	5.0 %	5.3 %
Local - Peak Hour Operations	48	55	67	54	51

Itinerant Operations					
Itinerant - Annual Operations	68,015	68,361	71,920	73,082	75,731
Itinerant - Peak Month Operations	7,066	6,826	6,876	7,120	8,127
Itinerant - Peak Month %	10.4 $	10.0 %	9.6 %	9.7 %	10.7 %
Itinerant - Peak Day Operations	279	255	244	290	397
Itinerant - Peak Day %	3.9 %	3.7 %	3.5 %	4.1 %	4.9 %
Itinerant - Peak Hour Operations	35	32	31	36	50
Total Operations					
Annual Operations	140,844	141,313	157,308	152,698	155,028
Peak Month Operations	13,520	13,501	15,638	15,742	16,163
Peak Month %	9.6 %	9.6 %	9.9 %	10.3 %	10.4 %
Peak Day Operations	666	697	776	723	822
Peak Day %	4.9 %	5.2 %	5.0 %	4.6 %	5.1 %
Peak Hour Operations	83	87	97	90	101

Source: AECOM Analysis 2017

Table 4-21 Aircraft Operations Peaking Forecast

Forecast General Aviation Peaking Characteristics					
Operations	**2017**	**2022**	**2027**	**2032**	**2037**
Annual	161,478	168,699	176,261	184,180	192,475
Peak Month	16,148	16,870	17,626	18,418	19,248
Design Day	807	843	881	921	962
Design Hour	89	93	97	101	106
Absolute Peak Hour	100	104	109	114	119

Source: AECOM Analysis 2017

4.11. Instrument Operations

Forecasts of annual instrument approaches are used by the FAA in evaluating an airport's requirements for navigational aid facilities. The FAA defines an instrument approach as an approach to an airport with the intent to land an aircraft in accordance with an instrument flight rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude. Instrument approach operations differ from instrument operations:

- Instrument operations are those operations conducted by aircraft under IFR in both visual meteorological conditions (VMC) and instrument meteorological conditions (IMC).
- An instrument approach is an approach made to an airport by an aircraft on an IFR flight plan, when the visibility is less than three miles or the ceiling is at or below the minimum control approach altitude (MCA). This definition maintains the following elements:
    - An instrument approach is limited to approaches in which aircraft pilots file an IFR flight plan.
    - The IFR arrival meets the requirements of an instrument approach if certain weather conditions are met.
    - Instrument approaches are associated with destination airport with appropriate landing aids.

A terminal navigational aid needs assessment must consider elements such as instrument operations and annual instrument approaches. The Airport has ATC which provided instrument approach operations data for the Airport in addition to data from the FAA's Air Traffic Activity System (ATADS). The National Oceanic and Atmospheric Administration's (NOAA's) weather observations data were also reviewed.

With a precision instrument landing system (ILS) on Runway 10R and non-precision instrument approaches to Runways 10R, 28L, 14 and 32, the Airport experiences a significant number of instrument operations. The Airport's ILS plays an integral role in day-to-day operations, with nearly one quarter of the aircraft operations utilizing the ILS system. Most of this traffic is flight training and jet aircraft operating under an IFR flight plan. Historic levels of IFR and Visual Flight Rule (VFR) operations are provided in **Table 4-22**.

Table 4-22 FPR OPSNET Historical Operations

Year	IFR Itinerant					VFR Itinerant			
	Air Carrier	Air Taxi	General Aviation	Military	Total	Air Taxi	General Aviation	Military	Total
2008	0	861	23,401	34	**24,296**	311	56,890	68	**57,269**
2009	0	853	18,942	48	**19,843**	511	42,640	101	**43,252**
2010	0	886	19,676	109	**20,671**	454	48,359	139	**48,952**
2011	0	716	21,075	42	**21,833**	625	45,614	23	**46,262**
2012	0	925	20,222	46	**21,193**	772	46,005	45	**46,822**
2013	0	800	20,784	14	**21,598**	912	45,827	24	**46,763**
2014	0	754	19,446	26	**20,226**	1,064	50,605	25	**51,694**
2015	0	563	21,648	32	**22,243**	1,091	49,709	39	**50,839**
2016	**0**	**614**	**21,833**	**25**	**22,472**	**1,195**	**52,009**	**55**	**53,259**

Sources: FAA, Operations Network (OPSNET)

As most jet operators typically operate under an IFR fight plan, the percentages for itinerant IFR for 2016 were as follows: 52 percent Air Taxi, 30 percent GA and 43 percent Military. This percentage was used to predict the Airport's IFR operations. When applying these percentages to the Airport's 2016 instrument operations of 53,259 it is expected that the instrument operations level by the end of the planning period will reach approximately 61,963. This accounts for a reasonable percentage of current instrument operations during night-time when the ATCT is closed. The instrument operations forecast is presented in **Table 4-23**.

Table 4-23 Instrument Operations Forecast

Year	IFR Itinerant					VFR Itinerant			Total
	Air Carrier	Air Taxi	General Aviation	Military	Total	Air Taxi	General Aviation	Military	
2016	0	614	21,833	25	22,472	1,195	52,009	55	53,259
Forecast									
2017	0	1,062	22,692	24	23,778	989	52,997	31	54,017
2022	0	1,062	23,499	24	24,585	989	54,880	31	55,900
2027	0	1,062	24,334	24	25,420	989	56,831	31	57,851
2032	0	1,062	25,199	24	26,285	989	58,851	31	59,871
2037	0	1,062	26,095	24	27,181	989	60,943	31	61,963

Source: AECOM Analysis 2017

4.12. Forecast Summary

The aviation activity forecast presented in this chapter provides short-, medium-, and long-term outlooks for the Airport through 2037. Information presented throughout the chapter outlines the historical data for each aviation activity indicator, which was then projected to the end of the planning period using trend line, market share, regression, and market adjusted forecasting analyses methods. The selected forecasts are consolidated to present the 20-year projections in a tabulated and summarized format specified by the FAA. The data used in preparing the forecast was reconciled using a variety of recognized government and private agencies such as the FAA, US Customs, FDOT, St. Lucie County, FPR/FBO staff and records, and Woods and Poole Economics Inc. Projections by the aviation activity indicator are also provided in this chapter.

Historically, the Airport's aviation activity saw declines in the early and late 2000s with a small increase between 2004 and 2005. The selected forecast anticipates a return to conservative growth. The Airport's average annual growth rates of 1.44 percent and 0.89 percent are determined for based aircraft and operations, respectively. Given the historic and forecast socio-economic conditions in the nation, state, and region, this level of growth is considered reasonable and attainable by the Airport over the long-term planning period.

4.12.1. Forecast Comparison to FAA TAF

The Airport's preferred forecasts fall within the acceptable ranges under FAA aviation activity forecasting guidelines. **Table 4-24** presents the comparison of the derived forecast of aviation activity at the Airport to the Terminal Area Forecasts Forecasting Aviation Activity by Airport, published by the FAA in 2017. **Table 4-25** presents the FAA's mandated forecast summary table

Table 4-24 Comparison of Derived & FAA TA Forecast

Year	Master Plan Forecast	FAA TAF	Master Plan Forecast vs. FAA TAF (%)
Total Operations			
2017	161,478	160,736	0.5%
2022	168,700	166,038	1.6%
2027	176,263	171,567	2.7%
2032	184,184	177,336	3.9%
2037	192,481	183,359	5.0%

Source: AECOM, 2017

Table 4-25 Summary of Aviation Activity Forecast

Category	Base Year	Forecast Level of Aviation Activity					Average Annual Compound Growth Rates				
	2016	2017	2022	2027	2032	2037	2016 - 2017	2017-2022	2022-2027	2027-2032	2032-2037
Itinerant											
Air Taxi (Part 135)	1,635	2,051	2,052	2,051	2,051	2,051	25.4%	0.00%	0.00%	0.00%	0.00%
General Aviation	75,162	75,689	78,379	81,165	84,050	87,038	0.70%	0.70%	0.70%	0.70%	0.70%
Military	55	55	55	55	55	55	0.00%	0.00%	0.00%	0.00%	0.00%
Local											
General Aviation	82,782	83,660	88,190	92,966	98,001	103,308	1.06%	1.06%	1.1%	1.1%	1.1%
Military (Local Traffic Pattern)	23	23	23	23	23	23	0.00%	0.00%	0.00%	0.00%	0.00%
Total Operations	159,657	161,478	168,699	176,260	184,180	192,475	1.14%	0.88%	0.88%	0.88%	0.88%
Instrument Operations	53,259	54,017	55,900	57,851	59,871	61,963	1.40%	0.70%	0.70%	0.70%	0.70%
Peak Day Operations	104	118	123	129	135	141	13.73%	0.88%	0.88%	0.88%	0.88%
Cargo/Mail (Enplaned + Deplaned Tons)	0	0	0	0	0	0	0.00%	0.00%	0.00%	0.00%	0.00%
Single-Engine (Non-jet)	166	166	173	179	186	191	0.00%	0.83%	0.68%	0.77%	0.53%
Multi-Engine (Non-jet)	41	41	44	46	49	51	0.00%	1.42%	0.89%	1.27%	0.80%
Turboprop	26	26	30	35	41	47	0.00%	2.90%	3.13%	3.22%	2.77%
Rotorcraft	18	18	21	25	29	34	0.00%	3.13%	3.55%	3.01%	3.23%
Jets	19	19	23	28	34	41	0.00%	3.90%	4.01%	3.96%	3.82%
Total Based Aircraft	**270**	**270**	**291**	**314**	**338**	**365**	**0.00%**	**1.51%**	**1.47%**	**1.61%**	**1.43%**

B. Operational Factors						
Average Aircraft Size (Seats)	**2016**	**2017**	**2022**	**2027**	**2032**	**2037**
Air Carrier	--	--	--	--	--	--
Commuter	--	--	--	--	--	--
Average Enplaning Load Factor	**2016**	**2017**	**2022**	**2027**	**2032**	**2037**
Air Carrier	--	--	--	--	--	--
Commuter	--	--	--	--	--	--
GA Operations Per Based Aircraft	513	509	494	480	464	451

Source: AECOM, 2017

5. Design Criteria and Facility Requirements

5.1. Introduction

This chapter presents design criteria that will be used for airport-specific planning, and serve as the basis of the demand/capacity and facility requirements analysis for Treasure Coast International Airport (the Airport). All design standards presented in this section have been established by the Federal Aviation Administration (FAA) for developing airport facilities to meet existing and forecast levels of activity.

This chapter compares the projected aviation demand to the existing capacity of the Airport's facilities. This comparison is then used to determine future facility requirements over the 20-year planning period. The facility improvements are directly related to the forecast aviation activity, and will allow the Airport and surrounding community to be adequately prepared to accommodate the potential demand over the 20-year-planning period. This chapter examines how anticipated activity levels translate into the Airport's ability to serve forecast traffic, focusing on the following distinct elements:

- Demand and Capacity Calculations
- Airside Facility Requirements
- Landside Facility Requirements
- Support Facility Requirements

Any shortcomings in the ability to serve the forecast demand, or meet FAA design standards are identified, and recommendations are made regarding physical improvements that may be needed to mitigate recognized deficiencies.

5.2. Design Criteria

Airport design standards, as established by the FAA, were employed in this AMP for developing airport facilities capable of meeting existing and forecast levels of aviation activity.

5.2.1. Runway Design Code (RDC)

The Runway Design Code (RDC) signifies standards to which the runway is to be built and maintained. Aircraft Approach Category (AAC), Airplane Design Group (ADG), and approach visibility minimums are combined to form the RDC of a specific runway. The AAC portion of the RDC relates to the aircraft approach speed, as depicted in **Table 5-1**. The ADG is the second component of the RDC and its represented by a Roman numerical as depicted in **Table 5-2**. The ADG relates to the aircraft wingspan or tail height. The final component of the RDC relates to the visibility minimums for the instrument approaches into each runway as depicted in **Table 5-3**. The runway reference code (RRC) of each runway at FPR is outlined in **Table 5-4.**

Table 5-1 Aircraft Approach Category (AAC)

AAC	Approach Speed
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more but less than 121 knots
C	Approach speed 121 knots or more but less than 141 knots
D	Approach speed 141 knots or more but less than 166 knots
E	Approach speed 166 knots or more

Source: FAA AC 150/5300-13A, Airport Design

Table 5-2 Airplane Design Group (ADG)

Group #	Tail Height (ft [m])	Wingspan (ft [m])
I	< 20' (< 6 m)	< 49' (< 15 m)
II	20' - < 30' (6 m - < 9 m)	49' - < 79' (15 m - < 24 m)
III	30' - < 45' (9 m - < 13.5 m)	79' - < 118' (24 m - < 36 m)
IV	45' - < 60' (13.5 m - < 18.5 m)	118' - < 171' (36 m - < 52 m)
V	60' - < 66' (18.5 m - < 20 m)	171' - < 214' (52 m - < 65 m)
VI	66' - < 80' (20 m - < 24.5 m)	214' - < 262' (65 m - < 80 m)

Source: FAA AC 150/5300-13A, Prepared by Atkins 2017

Table 5-3 Visibility Minimums

RVR (ft.)	Flight Visibility Category (statute mile)
VIS	Visual Approach
4000	Lower than 1 mile but not lower than ¾ mile (APV ≥ 3/4 but < 1 mile)
2400	Lower than 3/4 mile but not lower than 1/2 mile (CAT-I PA)
1600	Lower than 1/2 mile but not lower than 1/4 mile (CAT-II PA)
1200	Lower than 1/4 mile (CAT-III PA)

Source: FAA AC 150/5300-13A, Prepared by Atkins 2017

Table 5-4 Airport RDC

Runway	RDC – Existing	RDC – Existing Future
10R/28L	C-III-4000	C-III-4000
14/32	C-II-4000	C-II-4000
10L/28R	B / II / VIS	B / II / VIS

Source: FAA AC 150/5300-13A, Atkins Analysis 2018

5.2.2. Airport Reference Code (ARC)

Per FAA AC 150/5300-13A, the ARC is a system used to relate airport design criteria to the planner or designer and is based on an airport's highest RDC, minus the visibility component. Airport improvements can be planned and developed per the established ARC for an entire airport. The existing and future ARC for FPR is C-III.

5.2.3. Critical Aircraft and Design Standards

An initial step in identifying an airport's design requirements such as the RDC or ARC is the establishment that airport's existing and future Critical Aircraft. The critical aircraft is the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. An airport's critical aircraft affects key aspects of design, such as the sizing of runways, taxiways/lanes, and the location of aircraft parking areas, hangar facilities, and protected airspace surfaces. The FAA Defines Regular use as an aircraft type or grouping with 500 annual operations, an operation is a takeoff or landing with touch-and-go operations excluded. Airport improvements are planned and developed per the established design criteria ARC for the airport and further refined for each runway's RDC.

The Airport's existing ARC is cited by the previous airport layout plan (ALP) as C-III. This ARC was assigned to the primary runway, Runway 10R/28L. Runway 14/32 and Runway 10L/28R was assigned a separate ARC, which is C-II and B-II, respectively. This is due to the primary runway being able to accommodate

operations greater than 95 percent of the time considering wind conditions. The future critical aircraft for Runway 10R/28L was previously listed as the Gulfstream V. This will be taken into consideration during the critical aircraft determination.

Based on a review of the FAA's Traffic Flow Management System Counts (TFMSC), it has been determined that the Critical Aircraft will be the Gulfstream V to withhold the C-III ARC. This decision is based on the determination that there is substantial use at the Airport of AAC "C" aircraft, as well as ADG "III" aircraft. The most critical aircraft to have the C-III RDC that operates at the Airport is the Gulfstream V. TFMSC data was pulled for each year from 2013 to 2017. Based on further analysis, it was established that there is currently an upward trend of aircraft that is classified under the ADG III category. The proposed critical aircraft for each runway is presented in **Table 5-4**.

Table 5-4 FPR Critical Aircraft

Runway	Existing Critical Aircraft	Future Critical Aircraft
10R/28L	Gulfstream V	Boeing 737-700
14/32	LearJet 25	Gulfstream IV
10L/28R	King Air 200	King Air 200

Source: Atkins Analysis, 2018

5.3. Airside Facility Requirements

FAA standards are utilized in this analysis for developing airport facilities capable of meeting both existing and forecast levels of aviation activity. FAA AC 150/5300-13A, *Airport Design*, uses coding systems to relate airport design criteria will further dictate the future need for expanded airfield infrastructure and operational parameters to best plan and meet the forecast future operations.

5.3.1. Runway Requirements

The following sections examine the runways' general characteristics with respect to conformance to FAA design and safety requirements.

5.3.1.1. Runway Width

Runway width standards are established in FAA AC 150/5300-13A and are based on RDC criteria. **Table 5-5** Outlines the FAA runway width standards, and the existing runway facilities at FPR. Currently, Runways 10R/28L, 14/32, and 10L/28R meet their existing respective FAA requirements.

Table 5-5 Runway Width

Runway	ARC (Existing and Future)	FAA Requirement Width (Ft.)	Existing Width (Ft.)
10R/28L	C-III	150	150
14/32	C-II	100	100
10L/28R	B-II	75	75

Source: FAA AC 150/5300-13A, Prepared by Atkins 2018

5.3.1.2. Runway Length Analysis

In accordance with FAA Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*, an analysis was conducted to determine the runway length requirements for the existing and future critical aircraft operating at the Airport. FAA AC 150/5325-4B uses a five-step procedure to determine recommended runway lengths for a selected list of critical design airplanes. The five steps (somewhat summarized) are listed below.

1. Identify the list of critical design airplanes that will make regular use of the proposed runway for an established planning period of at least five years. For federally funded projects, the definition of the term "*substantial use*" quantifies the term "*regular use"*.
2. Identify the airplanes that will require the longest runway lengths at maximum takeoff weight (MTOW). This will be used to determine the method for establishing the recommended runway length. When the MTOW of listed airplanes is over 60,000 lbs., the recommended runway length is determined per individual airplane and their respective airplane planning manuals.
3. Use Table 1-1 in the AC 150/5325-4B (**Table 5-6** in this document) and the airplanes identified in step #2 to determine the method that will be used for establishing the recommended runway length. MTOW is used because of the significant role played by airplane operating weights in determining runway lengths.
4. Select the recommended runway length from among the various runway lengths generated by step #3 per the process identified in chapters 2, 3, or 4 of the AC, as applicable.
5. Apply any necessary adjustment to the obtained runway length, when instructed by the applicable chapter of the AC, to the runway length generated by step #4 to obtain a final recommended runway length. Adjustments to the length may be necessary for runways with non-zero effective gradients, excessive temperatures, wind conditions, airport elevation, etc.

Table 5-6 Airplane Weight Categorization for Runway Length Requirements

<table>
<tr><th colspan="3">Airplane Weight Category
Maximum Certificated Takeoff Weight (MTOW)</th><th>Design Approach</th><th>Location of Design Guidelines</th></tr>
<tr><td rowspan="4">12,500 pounds (5,670 kg) or less</td><td colspan="2">Approach Speeds less than 30 knots</td><td>Family grouping of small airplanes</td><td>Chapter 2; Paragraph 203</td></tr>
<tr><td colspan="2">Approach Speeds of at least 30 knots but less than 50 knots</td><td>Family grouping of small airplanes</td><td>Chapter 2; Paragraph 204</td></tr>
<tr><td rowspan="2">Approach Speeds of 50 knots or more</td><td>With Less than 10 Passengers</td><td>Family grouping of small airplanes</td><td>Chapter 2; Paragraph 205 Figure 2-1</td></tr>
<tr><td>With 10 or more passengers</td><td>Family grouping of small airplanes</td><td>Chapter 2; Paragraph 205 Figure 2-2</td></tr>
<tr><td colspan="3">Over 12,500 pounds (5, 670 kg) but less than 60,000 pounds (27,200 kg)</td><td>Family grouping of large airplanes</td><td>Chapter 3; Figures 3-1 or 3-2 1 and Tables 3-1 or 3-2</td></tr>
<tr><td colspan="3">60,000 pounds (27,200 kg) or more or Regional Jets 2</td><td>Individual large airplane</td><td>Chapter 4; Airplane Manufacturer Websites (Appendix 1)</td></tr>
<tr><td colspan="5">Note 1: When the design airplane's APM show a longer runway length than what is shown in Figure 3-2, use the airplane manufacturer's APM. However, users of an APM are to adhere to the design guidelines found in Chapter 4.</td></tr>
<tr><td colspan="5">Note 2: All regional jets regardless of their MTOW are assigned to the 60,000 pounds (27,200 kg) or more weight category.</td></tr>
</table>

Source: FAA AC 150/5325-4B Runway Length Requirements for Airport Design

5.3.1.2.1. Runway Length: Takeoff Distance

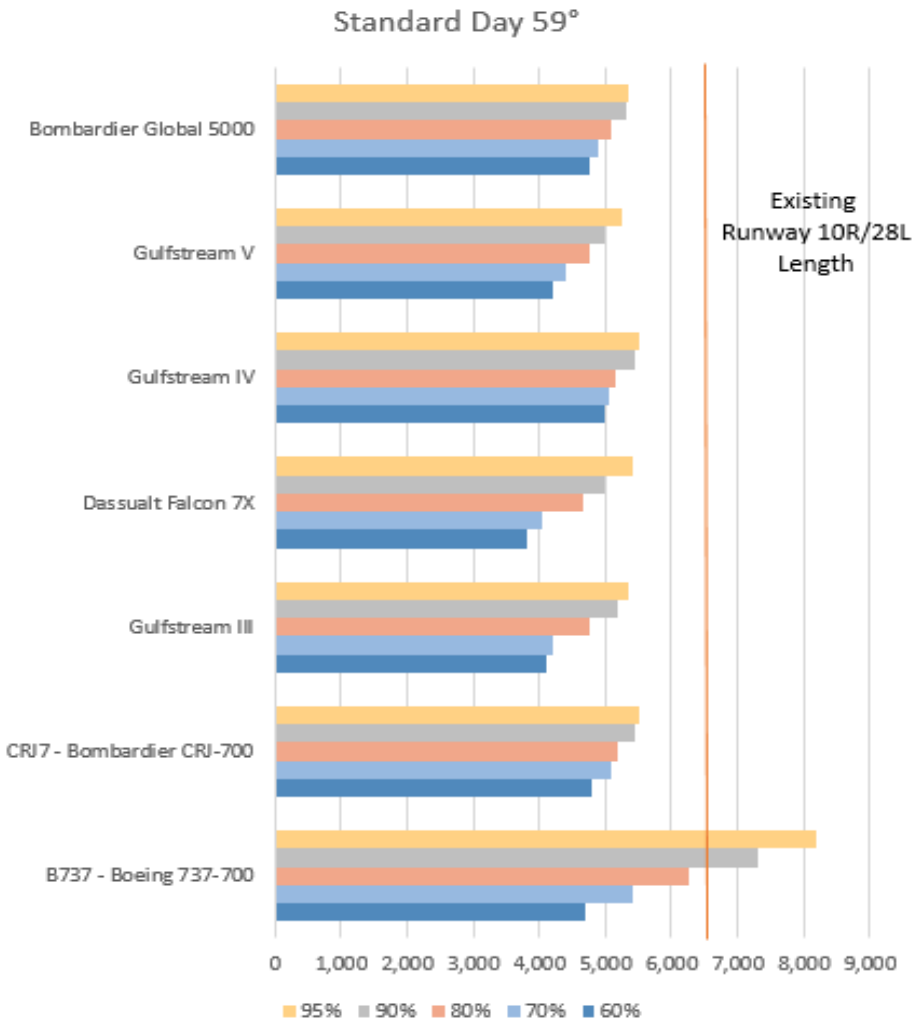
Runway length requirements are based on a variety of factors, the most notable of which is the takeoff distance of the critical aircraft operating on the runway. The departure requirements are often the most critical for measuring runway length required since departing aircraft typically have a full fuel load thus increasing the amount of runway required. Average high temperatures and the elevation of the runway are other factors that affect runway length requirements. The Airport's low elevation makes the elevation factor less important. Considering the Airport's location in Southern Florida, the region can reach higher temperatures during the summer months that will be taken into consideration during this analysis and will play a larger role. FAA AC 150/5325-4B, *Runway Length Requirements of Airport Design*, provides guidance that suggests recommending runway lengths based on a family grouping of aircraft. Due to the critical aircraft having a MTOW of over 60,000 pounds, it is advised that the aircraft's airport planning manual (APM) be analyzed to determine the takeoff length needed, then resulting in the recommended runway length.

5.3.1.2.2. Fleet Mix and Critical Aircraft

In accordance with AC 150/5325-4B, the existing fleet mix was analyzed in detail to verify the type of runway length analysis required. Based on the Airport's forecast analysis presented previously, the critical aircraft and other additional aircraft that are to be considered for this analysis fall within the 60,000 pounds or more category for MTOW. Per AC 150/5325-4B, it is recommended that determining the runway length required of aircraft over 60,000 pounds in MTOW is to directly reference the specific manufacturer provided APM, which provide information on a specific aircraft model such as performance, dimensions, weight, design standards, etc.

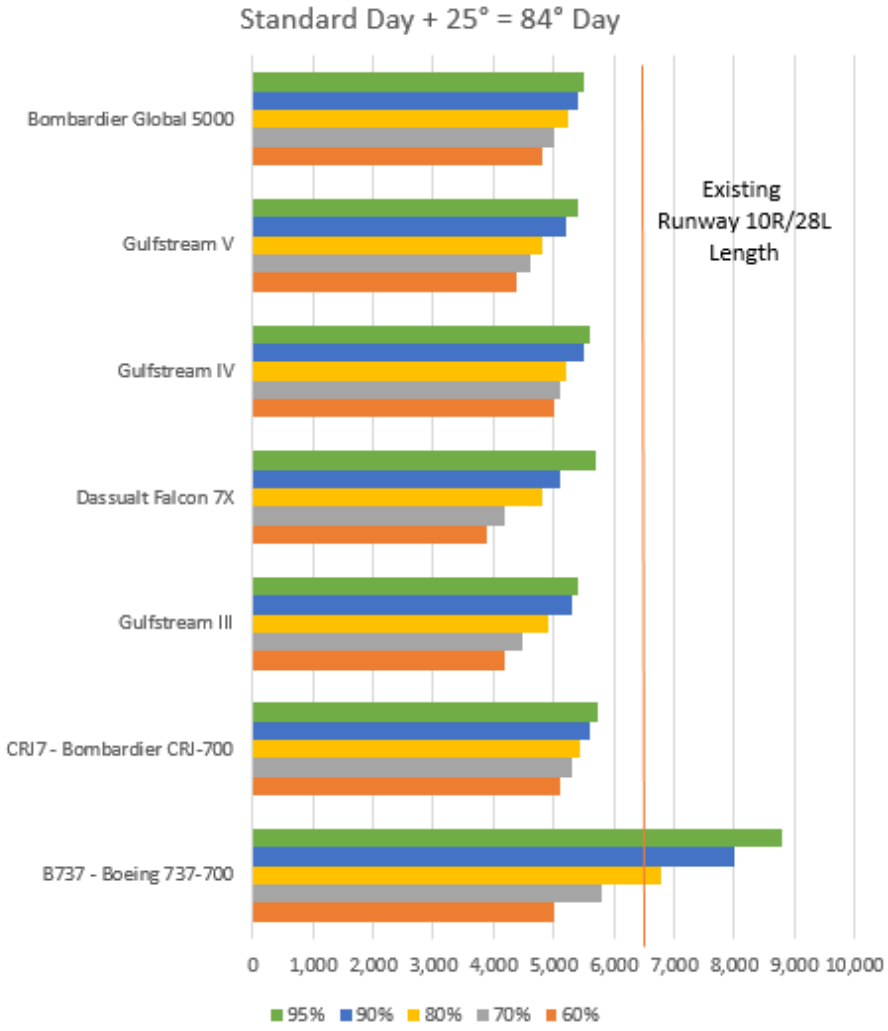
Figures 5-1 and **5-2** list the aircraft fleet mix obtained from potential MRO tenant traffic and an analysis of FAA Traffic Flow Management System Count (TFMSC) data of aircraft operations for calendar year 2017 by aircraft type, ARC, and MTOW. In addition, the figures depict the takeoff distances for the critical jet fleet, at various load percentages. Majority of the aircraft outlined in **Figure 5-1, 5-2** fall within the range of being 60,000+ pounds. Therefore, a family grouping of aircraft design approach was used when to calculate runway length requirements.

Figure 5-1 Critical Fleet Mix – Standard Day Takeoff Distances (59°F)



Source: TFMSC data January 2017-December 2017, Atkins Analysis 2018

Figure 5-2 Critical Fleet Mix – Standard Day + 25°F (84°F) Takeoff Distances



Source: TFMSC data January 2017-December 2017, Atkins Analysis 2018

According to the takeoff data presented, the existing critical aircraft can be safely accommodated by the Airport's existing primary runway length. However, the future critical aircraft, Boeing 737-700, will likely require additional runway length to effectively operate at the Airport. This required length will be considered in the alternatives chapter of this AMP, and will drive the potential extension of Runway 10R/28L.

5.3.1.2.3. Runway Length: Landing Distance

Per FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, the landing length required derives from the specific aircraft's performance metrics provided by the respective manufacturer. Due to the Airport's location, wet conditions are likely throughout a given day, primarily during the spring and summer months. In such cases, a standard 15 percent increase in the listed runway length required is used to adjust for wet runway conditions. Per the surveyed jet fleet mix, the Bombardier CRJ-700 is the most demanding aircraft in terms of landing distance, which is approximately 5,040'. Currently, the Airport's primary runway, Runway 10R/28L, can accommodate the CRJ-700 with a total runway length of 6,492'.

5.3.2. Runway Protective Surfaces

Runway protective surfaces such as the Runway Safety Area (RSA), Runway Object Free Area (ROFA), and Runway Protection Zone (RPZ) aim to protect aircraft, people, and property in the case of an aircraft

deviating from its intended course while conducting conventional runway operations. The following sections outline the existing and future criteria for the Airport's runway protective surfaces.

5.3.2.1. Runway Safety Area

A Runway Safety Area (RSA) is a graded surface centered on a runway that is required to be free of all objects except for those that are 'fixed by function' such as runway lights and certain NAVAIDS. The purpose of an RSA is to protect aircraft in the event of an under-shoot, overrun, or aircraft runoff from a runway during landing or take-off operations. The area must be able to support emergency vehicle operations and maintenance vehicles and is required to be graded to slope away from the runway at 1.5 to 5.0 percent. The width and length of an RSA depend upon an airport's RDC and approach visibility minimums. Meeting RSA requirements is one of the FAA's highest priorities in maintaining safety at the nation's airports. **Table 5-7** lists the Airport's existing and future RSA requirements.

Table 5-7 Runway Safety Area Dimensions

Runway	RDC	RSA Width (Ft.)	Length Beyond Runway End (Ft.)
10R/28L	C-III	500	1,000
14/32	C-II	500	1,000
10L/28R	B-II	150	300

Source: FAA 150/5300-13A, Airport Design, Atkins Analysis 2018

Portions of the Runway 10R/28L RSA are noncompliant due to an existing drainage canal which traverses the RSA approximately 963 feet east of the Runway 10R threshold. It is recommended that this RSA impact be mitigated in both the short and long-term planning periods to ensure the RSA remains compliant.

5.3.2.2. Runway Object Free Area (ROFA)

Like the RSA, the ROFA must be free of objects except those required to support air navigation and ground maneuvering operations. The function of the ROFA, also centered on the runway, is to enhance the safety of aircraft operating on the runway. It is not permissible to park an airplane within the ROFA. The width and length of the ROFA depend upon an airport's specific RDC and approach visibility minima. The ROFA does not have specific slope requirements, but the terrain within the ROFA must be relatively smooth and grade to be at or below the edge of the RSA. **Table 5-8** notes the Airport's ROFA dimensions.

Table 5-8 Runway Object Free Area Dimensions

Runway	RDC	ROFA Width (Ft.)	Length Beyond Runway End (Ft.)
10R/28L	C-III	800	1,000
14/32	C-II	800	1,000
10L/28R	B-II	500	300

Source: FAA 150/5300-13A, Airport Design, Atkins Analysis 2018

Portions of the Runway 10R/28L ROFA are impacted at both runway ends. The ROFA on the Runway 10R approach end is intersected with an existing drainage canal located approximately 963 feet from the Runway 10R end. The ROFA section on the Runway 28L approach end is impacted by 1.2 acres of trees existing within the on the southeast end of the surface. Per AC 150/5300-13A, *Airport Design*, the ROFA clearing standards requires clearing the area of all above-ground objects. These impacts are inadvisable due to the safety parameters of the area. It is recommended that this area be cleared and graded to ensure the safety of operating aircraft.

5.3.2.3. Runway Protection Zones (RPZ)

An RPZ is an area centered symmetrically on an extended runway centreline and has a trapezoidal shape, extending prior to each runway end. The RPZ is aimed at enhancing the safety of people and property on the

ground by limiting and/or restricting the construction of certain structures within its bounds. This area should be free of land uses that create glare, smoke, or other hazards to air navigation. Additionally, the FAA requires that no vertical structures are constructed within the extents of the RPZ.

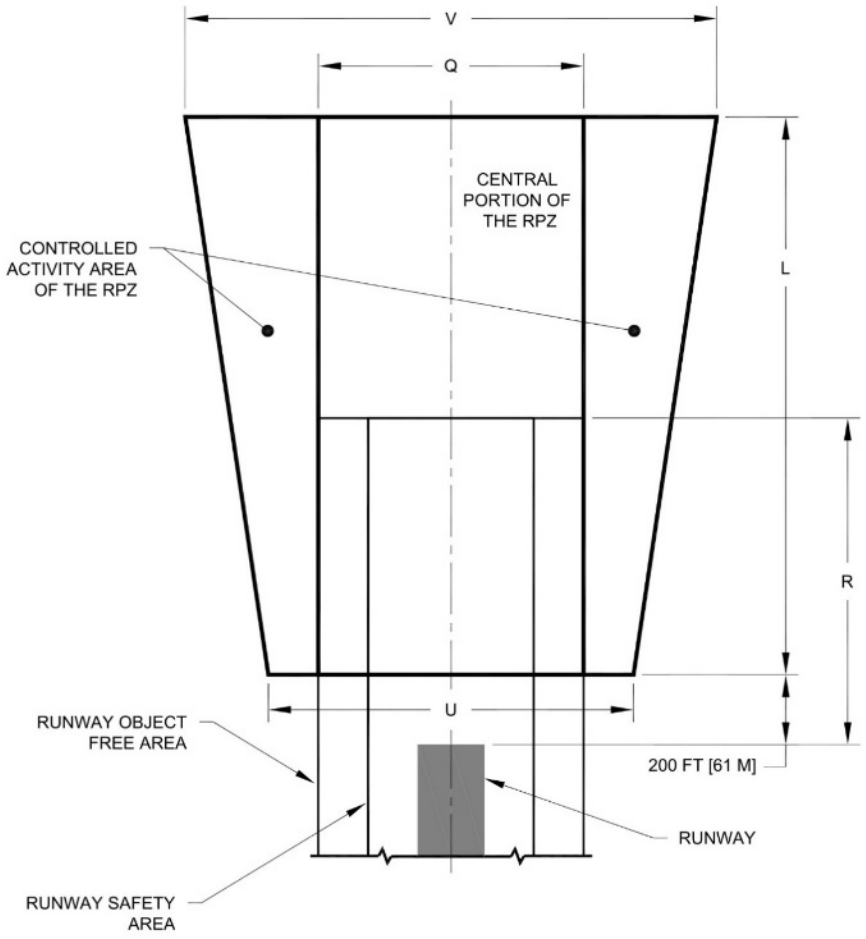
The dimensions of an RPZ depend on each runway's RDC. With no proposed reductions in instrument approach visibility minimums, the size and dimensions of the Airport's existing RPZs are not anticipated to change throughout the planning period. **Table 5-9** illustrates the RPZ requirements for RDCs C-III and B-II. **Figure 5-3** depicts the dimensions for RSA, ROFA, and RPZ.

Table 5-9 Runway Protection Zones Dimensions

Approach RPZ	RDC	Length (L) Ft.	Inner Width (U) Ft.	Outer Width (V) Ft.
10R/28L	C-III	1,700	1,000	1,510
14/32	C-II	1,700	500	1,010
10L/28R	B-II	1,000	500	700
Departure RPZ				
10R/28L	C-III	1,700	500	1,010
14/32	C-II	1,700	500	1,010
10L/28R	B-II	1,000	500	700

Source: FAA 150/5300-13A, Airport Design, Atkins Analysis 2018

Figure 5-3 Example RSA, ROFA, and RPZ Dimensions



5.3.3. Runway Designations

A runway designation is identified by the whole number nearest to the magnetic azimuth of the runway when oriented along the runway centerline as if on approach to that runway end. This number is then rounded off to the nearest unit of ten. Magnetic azimuth is determined by adjusting the geodetic azimuth associated with a runway to compensate for magnetic declination. Magnetic declination is defined as the difference between true north and magnetic north. The value of magnetic declination varies over time and global location. Magnetic declination is a natural process and periodically requires the re-designation of runways. **Table 5-10** shows the runway's true and magnetic bearing, along with the current magnetic declination.

Table 5-10 Runway Magnetic Bearing

Runway	True Bearing	Magnetic Declination	Magnetic Bearing	Runway Designation Required
10R	90° 10' 53''	6° 51' W	97° 01' 53''	10
28L	270° 10' 53''	6° 51' W	277° 01' 53''	28
14	135° 10' 13''	6° 51' W	142° 01' 13''	14
32	315° 10' 13''	6° 51' W	322° 01' 13''	32
10L	90° 10' 52''	6° 51' W	97° 01' 52''	10
28R	270° 10' 52''	6° 51' W	277° 01' 52''	28

Source: NOAA National Center for Environmental Information, Atkins Analysis 2018

The current annual rate of change is 0° 6' West according to the National Oceanic and Atmospheric Administration (NOAA) National Center for Environmental Information. According to that rate of change, the runway designations should not need to be changed within the planning period.

5.3.4. Runway Strength

The gross weight bearing capacity for Runway 10R/28L is published in the FAA Airport 5010 as Dual Wheel (D) 60,000 pounds and Single Wheel (S) 30,000 pounds. Runways 14/32, and 10L/28R are both published as Single Wheel (S) 16,000 pounds. Should any runway extension or rehabilitation occur within the forecast period, it is suggested to increase the weight bearing characteristics for the pavement. This would enable the Airport to service operations from larger aircraft, and to not restrict potential operations for the future.

5.3.5. Taxiway Requirements

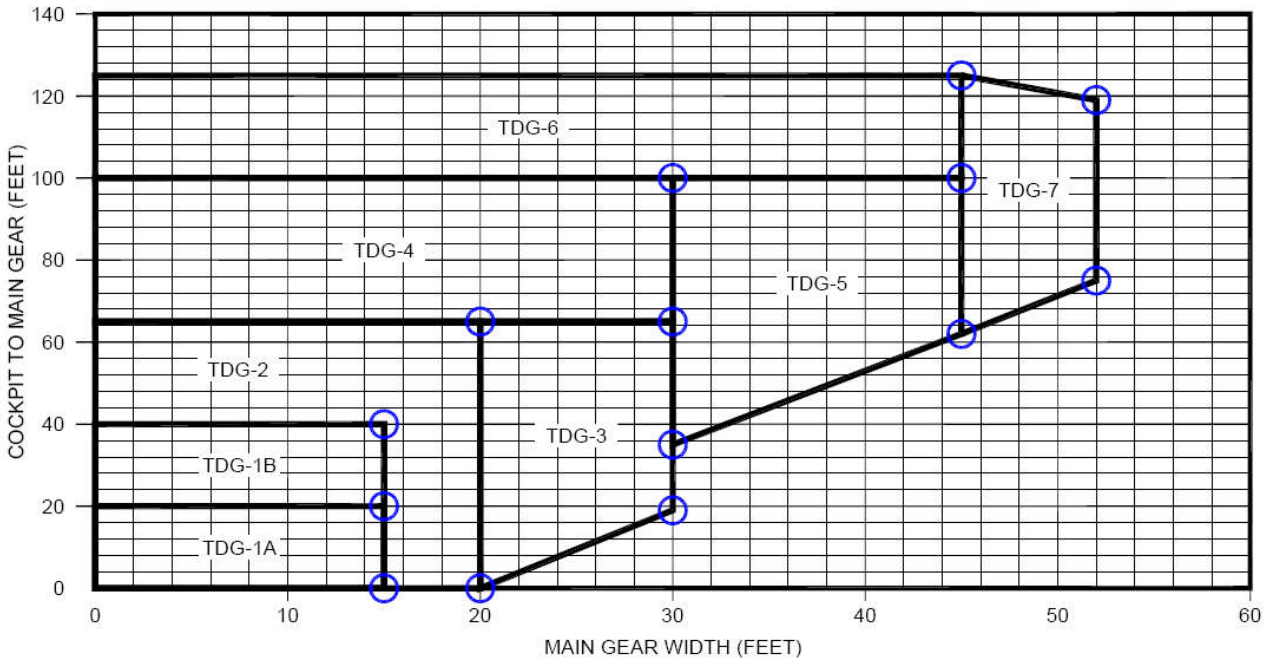
Taxiway Design Group (TDG) was introduced by the FAA with their release of AC 150/5300-13A. As depicted in **Figure 5-4**, there are eight TDGs which are determined by aircraft undercarriage (gear) dimensions such as main gear width and the distance between the cockpit and main gear. **Table 5-11** presents the Airport's anticipated critical aircraft during the planning period, along with the associated TDG dimensions.

Table 5-11 Critical Aircraft & Respective TDG

Airplane Design Group			
Aircraft Manufacture/Model	**Main Gear Width (ft.)**	**Cockpit to Main Gear (ft.)**	**TDG**
Gulfstream V (Existing)	16	45	2
Boeing 737-700W	22.9'	46.6'	3

Source: Atkins Analysis, 2018

Figure 5-4 FAA AC 150/5300-13A – Taxiway Design Groups (TDGs)



Source: FAA AC 150/5300-13A Change 1, Airport Design

A trend is present within the TFMSC data to show the increase of operations performed by TDG 3 aircraft. 2017 had approximately 360 operations performed at the Airport by TDG 3 aircraft, up from 336 operations in 2016 and 311 operations in 2015. This upward growth of TDG 3 aircraft and the need to safely accommodate said aircraft shows the demand for a future critical aircraft of TDG 3.

Taxiway systems should provide safe and efficient routes for aircraft ground movement to and from an airport's runways and apron areas. The type and location of taxiways in relation to a runway system have a significant impact on airfield capacity. As traffic increases, the taxiway system can limit an airport's overall capacity, especially if the configuration results in frequent runway crossings by taxiing aircraft or does not provide sufficient access to airport facilities. FAA guidance found in FAA AC 150/5300-13A, recommends that a taxiway system should:

- Provide each runway with a full-length parallel taxiway
- Have as many bypasses, multiple accesses, or connector taxiways as possible to each runway end
- Provide taxiway run-up / holding bay areas for each runway end
- Have the most direct routes possible
- Have adequate curve and fillet radii
- Avoid areas where ground congestion may occur

The Airport's existing taxiway system meets width and spacing requirements, yet some taxiway fillets at taxiway/runway and taxiway/taxiway intersections do not meet the current FAA design standards. Historically, the FAA permitted a few methodologies for designing and constructing taxiway fillets. However, with the most recent release of FAA 150/5300-13A Change 1, the options have been reduced to a single standard that ensures all wheels of an aircraft tracking on the taxiway centerline will maintain sufficient clearance from the taxiway edge. Most of the Airport's taxiway/runway and taxiway/taxiway intersections have pavement deficiencies considering this new standard. As a result, deficient airfield fillets should be upgraded to comply with current FAA design standards with any taxiway reconstruction or rehabilitation.

5.3.5.1. Taxiway Safety Area

Like the RSA for the runway pavement, the Taxiway Safety Area (TSA) is centered on a taxiway centerline and provides a protective area around the taxiway pavement. This is primarily to provide ample room for emergency vehicle accessibility and to minimize the severity of an aircraft run-off. The TSA is cleared and graded, and free of all objects that are not fixed by function. The width of the TSA depends on the critical aircraft's respective ADG and wingspan. **Table 5-12** depicts the TSA width in respect to the critical aircraft.

Table 5-12 Taxiway Safety Area Requirements

Critical Aircraft (ADG)	TSA Width
Existing - Gulfstream V (III)	118'
Future - Boeing 737-700W (III)	118'

Source: FAA AC 150/5300-13A Change 1, Airport Design. Atkins Analysis 2018

5.3.5.2. Taxiway Object Free Area

Like the ROFA for the runway pavement, the Taxiway Object Free Area (TOFA) is centered on the taxiway centerline and provides an additional protected area beyond the TSA. The TOFA prohibits service vehicle roads, parked aircraft, and other objects that are not necessary for aircraft ground navigation. Vehicles can only operate in the TOFA if the vehicle operator gives the right of way to the oncoming aircraft. **Table 5-13** depicts the TOFA width in respect to the critical aircraft.

Table 5-13 Taxiway Object Free Area Requirements

Critical Aircraft (ADG)	TOFA Width
Existing - Gulfstream V (III)	186'
Future - Boeing 737-700W (III)	118'

Source: FAA AC 150/5300-13A Change 1, Airport Design. Atkins Analysis 2018

5.3.6. Inadvisable Airfield Geometry

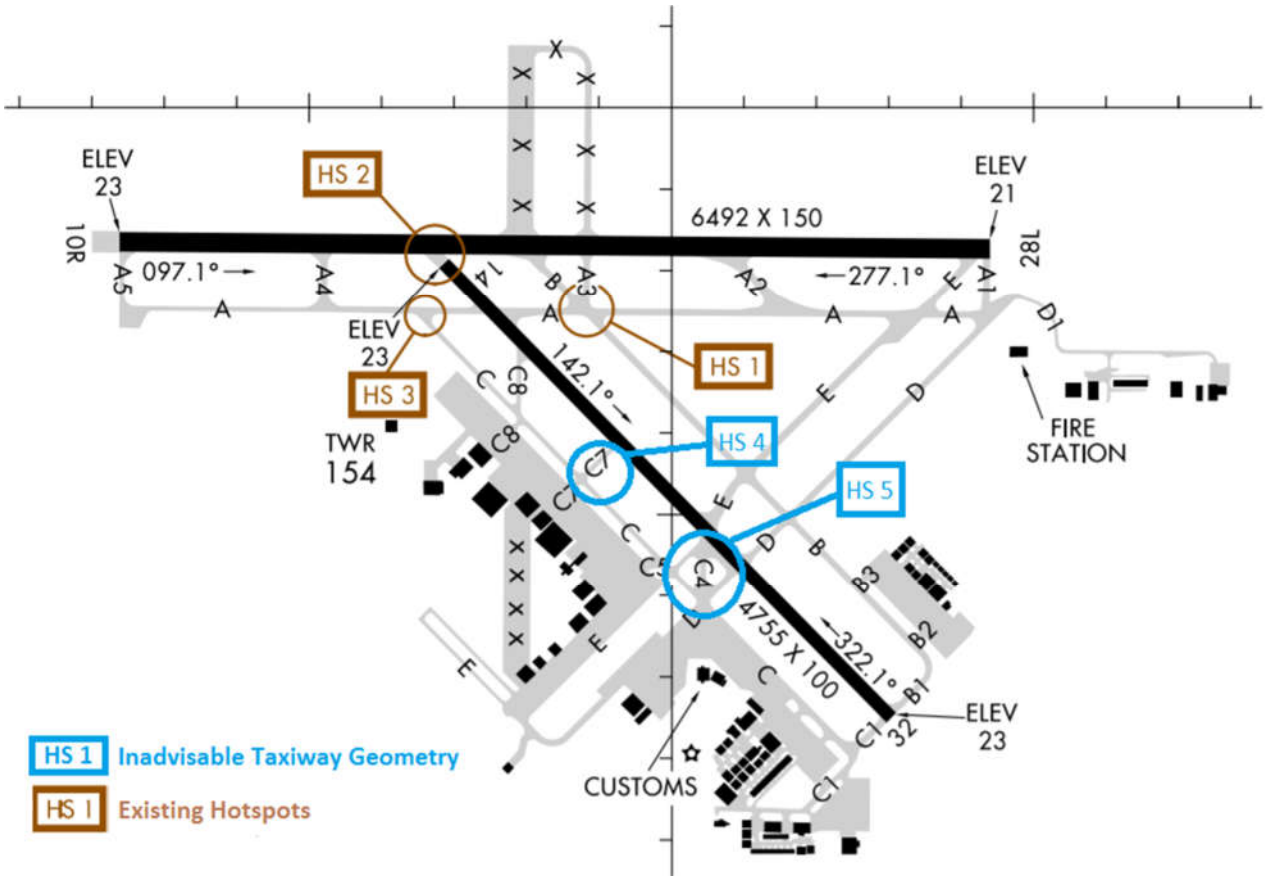
'Hotspots' are identified by the FAA when there is an increased risk of airfield incursions or there has historically been many incursions in a specific area. Another potential area that can be considered a 'hotspot' includes the intersection of Taxiway C4 and C5 at the Runway 14/32 entrance/exit. This area creates a high-energy section that presents the potential of aircraft incursions. In addition, Taxiway C7 connector from the apron to Runway 14-32 provides direct access from aircraft parking positions to the runway. The FAA has categorized this as 'non-compliant' and hazardous taxiway geometry. To create a safe operating airfield, the utility and alignment of these taxiways should be reconsidered and potentially altered to minimize the risk of an unanticipated runway crossing or airfield incursion. **Figure 5-5** depicts the current FAA identified hotspots, as well as the identified inadvisable airfield pavement geometry.

5.3.6.1. Full Length Parallel Taxiway

Currently, Runways 10R/28L and 10L/28R have full-length parallel taxiways. Runway 14-32 has sufficient taxiway infrastructure supporting it, yet is not considered a full-length parallel taxiway due to Taxiway C not connecting to the Runway 14 approach end. In addition, the full-length parallel taxiway supporting Runway 10R/28L, Taxiway A, requires a runway crossing at Runway 14/32. The possible holding at the runway crossing awaiting clearance can potentially cause congestion and delay.

As stated previously, it is preferable to have a full-length parallel taxiway to accommodate every active runway on the airfield, to keep traffic flow from becoming congested in any single location and to ultimately increase the Airport's capacity and minimize delays.

Figure 5-5 Existing and Proposed Hotpots



Source: FAA Airport Diagram, Atkins Analysis 2018

5.3.7. Aircraft Run Up Areas

The Airport currently has two designated aircraft run up areas. These are used by pilots to preform pre-takeoff procedures including instrument and engine performance checks as well as to hold while waiting for clearance from ATC. Ideally, they should be designed to provide a clearly marked area for pilots to park that will keep their aircraft clear of the active taxiway. The designated run up areas are located south of the intersection of Taxiway A and Taxiway E, and on Taxiway A at Connector A5.

Ideally, run up areas are located at the runway ends directly off the taxiway and clear of any protected runway or taxiway areas. General design of holding bays include assured wingtip clearance of established critical aircraft, and proper markings to guide pilots safely. Markings should be labeled to have a specified area where aircraft can turn within the holding bays to not line up nose to tail with other aircraft. This will allow for aircraft to easily enter and exit the holding bay without interfering with other aircraft in the same holding bay.

Both of the Airport's existing designated run up areas have deficiencies as the lack the proper markings to guide aircraft in and out, as well as the appropriate hold position to remain safely clear of operators on the taxiway.

Any proposed hold bay modification presented in the upcoming Alternatives Development will aim to meet the following criteria:

- Markings should be placed to direct pilots to turn perpendicular or angled to the taxiway, which will create independent standing areas so aircraft can enter and exit at ease and avoid prop wash during run up, and ensure proper wingtip clearance.

- Pavement area should be increased to address capacity issues and ensure proper hold bay depth for the established critical aircraft.
- Identify additional hold bay locations to maximize run up area availability for each runway end.

5.3.8. Airfield Lighting

The *Inventory* chapter of this AMP describes the existing condition of the Airport's airfield lighting equipment. Currently, the Airport has various lighting equipment on only select runways. Specifically, Runway 10R/28L has all lighting sufficient to classify it as a precision approach capable runway. Yet the other runways lack equipment such as Runway End Identifier Lights (REIL). However, lighting will be analyzed in the upcoming alternatives analysis when making any proposed improvements to instrument approach minima. Finally, future improvements to or implementation of lighting equipment should feature light-emitting diode (LED) technologies where able and when practical. To mitigate the Airport's Hotspot 3, it is suggested that Runway Holding Point Lighting (referred to as "wig-wags") be implemented on Taxiway-A at the runway holding position for Runway 14/32. This lighting system will further assist in the identification of the runway crossing and further increase the safety of aircraft ground navigation.

5.3.9. Signage

The *Inventory* chapter of this AMP describes existing conditions of the Airport's airfield signage. While no specific recommendations for signage improvement are identified, airfield signage should be expanded and updated as necessary in conjunction with any airfield improvement projects.

5.3.10. Airfield Marking

The *Inventory* chapter of this AMP describes the Airport's existing conditions of airfield markings. While no specific recommendations for marking improvements are identified, airfield markings should be expanded and updated as necessary in conjunction with any airfield improvement projects.

5.4. Landside Facility Requirements

The planning of landside facilities is based on both airside and landside capacity. The requirements for terminal and support area facilities has been determined for the 20-year planning period. The principal operating elements covered under these analyses for GA requirements include:

- Taxilanes
- Aircraft Hangars
- Aircraft Parking Apron
- Fueling Facilities
- Terminal/Airport Administration Building
- Support Facilities
- Perimeter/Security Fencing and Access Gates
- Utilities
- Vehicle Access and Parking
- Land Use

5.4.1. Taxilanes

A taxilane is used by aircraft for low speed and precise taxiing. They are generally located outside of the movement area, meaning that aircraft may navigate on them without receiving clearance from the ATCT. The Airport has several taxilanes stemming off of Taxiways C, D, and E. These taxilanes grant access to the apron area, associated parking positions, and the airside facilities. The FAA requires that taxilanes be designed with both a Taxilane Safety Area (TSA) and Taxilane Object Free Area (TOFA) that are based on the ADG of the design aircraft and are intended to protect aircraft using the taxilanes and persons, structures, and other aircraft adjacent to taxilanes. The TSA and TOFA are centered on the taxilane centerline and for an ADG III aircraft the width measures 118 feet and 162 feet respectively. Several of the Airport's taxilanes do not meet the FAA established TSA requirements and a majority of the taxilanes fail to meet the TOFA requirements. GA airports often do not meet the full FAA design standards in regards to

taxilane safety areas as they are frequently designed with hangar rows and taxiways that are specifically intended for use by an aircraft significantly smaller than the design aircraft. Additionally, the FAA will often allow non-compliant taxilanes to remain, but will require full compliance on any newly constructed taxilanes that accept FAA funding.

5.5. Demand and Capacity

5.5.1. Airspace Capacity

Airspace is defined as the navigable space that is used by pilots to navigate from one airport to another. Airspace capacity can become constrained when flight paths of air traffic at nearby airports, or local navigational aids (NAVAIDs), interact to add operations to the airspace that surrounds an individual airport. This creates the possibility of congestion within the Airport's airspace. The need to alter flight paths of arriving and departing aircraft to avoid obstructions is also a concern.

There are numerous public GA airports identified within 30 nautical miles of the Airport; most notably Vero Beach Regional Airport (VRB) and Witham Field (SUA), which both have Class D airspace. There are no public or private airports identified within five nautical miles of the Airport, and there are currently no present military operations in the area, which could negatively impact capacity due to special use airspace. In conclusion, the airspace surrounding the Airport is not congested with commercial, military, and/or special use airspace. GA airports in the region are far enough from the Airport to not negatively impact operations or capacity.

5.5.2. Airside Capacity

Airside Capacity calculations represent the capacity of the airside infrastructure such as runways, taxiways, and Instrument Approach Procedures (IAPs). These values are compared to existing and future demand to determine the need for future capacity enhancing infrastructure such as additional runways or taxiway exits.

Airside capacity is a measure of the number of aircraft that can operate at an airport in a given timeframe. Capacity is most often expressed in hourly or annual measures. Hourly capacities are calculated for visual flight rules (VFR) and instrument flight rules (IFR) to identify any peak-period issues. Hourly airport capacity calculations included in the following sections do not include variables attributed to air traffic control (ATC) procedures such as procedural spacing. The differentiation between VFR and IFR hourly capacities derived from the heightened minimums required for IFR operations. While under IFR conditions, some aircraft are limited in their ability to handle said conditions and will ultimately reduce the hourly capacity. Annual Service Volume (ASV) is calculated to measure an airport's ability to meet existing and future demand levels.

The major components to be considered when determining an airport's capacity include runway orientation and configuration, runway length, and runway exit locations. Additionally, the capacity of any given airfield system is affected by operational characteristics such as fleet mix, climatology, and IAP's. Each of these components has been examined as part of the airside capacity analysis.

The FAA defines total airport capacity as a reasonable estimate of an airport's annual capacity, which accounts for the differences in runway use, aircraft mix, weather conditions, etc., which would be encountered over a year's time. The parameters, assumptions, and calculations required for this analysis are included in the following sections.

5.5.2.1. Airfield Capacity Parameters and Assumptions

The generally accepted methodology for calculating airfield capacity is found in FAA AC 150/5060-5, *Airport Capacity and Delay*. The calculations are based on the runway utilizations that produce the highest sustainable capacity consistent with existing air traffic rules, practices, and guidelines. The criteria and values used in the AC are typical of US airports with similar runway configurations, and are designed to enable calculation of airport capacity as accurately as possible. The parameters and assumptions identified in this section were used to calculate the Airport's airfield capacity.

5.5.2.2. Runway Orientation, Utilization, and Wind Coverage

The Airport has three bi-directional runways, two (Runways 10R/28L and 10L/28R) with an east-west alignment and one (Runway 14/32) with a northwest-southeast alignment. The utilization rates and orientation of these runways were evaluated to determine the Airport's annual capacity, which is the sum of capacities determined for each operation. It is important to note that an operation is defined as either a takeoff or landing. The direction of each operation is highly influenced by wind, available instrument approaches, noise abatement procedures, airspace restrictions, and/or other operating parameters. The runway use configurations for the Airport's capacity calculations considered runway orientations for Runway 10R/28L, 10L/28R, and 14/32 in various combinations.

Providing adequate wind coverage is an important factor in enhancing an airports capacity. Runways should be constructed to maximize the opportunity for aircraft to take-off and land heading into the wind. The FAA recommends that each airport's primary runway has 95 percent or greater wind coverage in all-weather conditions. According to FAA AC-150/5300-13A, *Airport Design*, the 95 percent wind coverage is met for a B-II runway when the crosswind component does not exceed 13 knots. Furthermore, the wind analysis revealed that each of the three bi-directional runways exceed the 95 percent wind coverage independently for the classes of aircraft most regularly accommodated.

5.5.2.3. Aircraft Mix Index

The FAA has developed a classification system for grouping aircraft based on size, weight, and performance. **Table 5-14** illustrates the classification categories as they are presented in FAA AC 150/5060-5, *Airport Capacity and Delay.*

Table 5-14 FAA Aircraft Certifications

Aircraft Class	Max. Cert. Takeoff Weight (lb)	Number of Engines	Wake Turbulence Classification
A	12,500 or less	Single	Small (S)
B	12,501 – 41,000	Multi	Small (S)
C	41,000 – 300,000	Multi	Large (L)
D	Over 300,000	Multi	Heavy (H)

Source: FAA AC 150/5060-5, Airport Capacity and Delay.

This classification system is used to develop an aircraft mix which is the relative percentage of operations conducted by each of the four classes of aircraft (A, B, C, and D). The aircraft mix is used to calculate a mix index which is then used for airfield capacity studies. The FAA defines the mix index as a mathematical expression, representing the percent of Class C aircraft, plus three times the percent of Class D aircraft (C+3D). The FAA has established mix index ranges for use in capacity calculations from zero to 20, 21 to 50, 51 to 8, 81 to 120, and 121 to 180.

Review of the 2017 TFMSC provided by the FAA, indicates that the Airport experiences most of its traffic from aircraft falling into either A or B weight classifications outlined above. As the FAA establishes mix index ranges for airport capacity calculations it is not necessary to compute the actual mix index value. For the purposes of this analysis it is assumed that the Airport's mix index range will be between zero and twenty throughout the planning period. This is based on the assumption that the aircraft having MTOW between 41,000 and 300,000 pounds will not make up more than 30 percent of the Airport's total annual operations, and that there will be no operations by aircraft having MTOW in excess of 300,000 pounds.

5.5.2.4. Arrivals Percentage

The percent of arrivals is the ratio of arrivals to total operations. It is typically safe to assume that the total annual arrivals will equal total departures and that average daily arrivals will equal average daily departures. Therefore, a factor of 50 percent arrivals will be used in the capacity calculations for the Airport. This percentage is based on operational understandings.

5.5.2.5. Touch-and-Go Percentage

The touch and go percentage is the ratio of landings with an immediate takeoff to total operations. This type of operation is typically associated with flight training. The number of touch and go operations normally decreases as jet operations increase, the demand for service and number of total operations approach runway approach capacity, and/or weather conditions deteriorate. It is assumed that there are no touch and go operations conducted during IFR conditions. Typically, touch-and-go operations are assumed to be between zero and 49.2 percent of all operations at the Airport.

Due to the Airport's nature of being a controlled airfield, the existing ATCT staff provided input into the touch and go percentage. The training Runway 10L/28R has swayed the overall percentage due to approximately 90% of operations conducted on said runway being touch and go operations. The main airfield configuration, Runways 10R/28L and 14/32, accommodates approximately 10 percent of the Airport's touch and go operations.

5.5.2.6. Taxiway Access Factors

Taxiway entrance and exit locations are an important factor in determining the capacity of an airport's runway system. Runway capacities are highest when there are full-length parallel taxiways, ample runway entrance and exit taxiways, and no active runway crossings available. FAA AC 150/5060-5, *Airport Capacity and Delay,* identifies the criteria for determining taxiway exit factors at an airport. The criteria for exit factors are generally based on the mix index and the distance the taxiway exits are from the runway threshold and other taxiway connections. Taxiway exits were evaluated for operations in both directions on all three runways. **Table 5-15** depicts the findings of the taxiway exit evaluation. All runways have accessible taxiway exits between 2,000 feet and 4,000 feet of the landing threshold. For the taxiway exits to count towards the capacity at the airfield, the exits must be separated by at least 750 feet in addition to being in a range from 2,000 feet to 4,000 feet from the landing thresholds.

Table 5-15 FPR Taxiway Exit Ranges

Runway	Number of Exits within Optimal Range (2,000 ft. to 4,000 ft.)
10R	2
28L	3
10L	2
28R	2
14	1
32	3

Source: Atkins Analysis, 2018

5.5.2.7. Instrument Approach Capabilities

Instrument approach capability is qualified based upon the ability of an airport to safely accommodate aircraft operations during periods of inclement weather. Weather, in this regard, is characterized by two measures: local visibility in statute miles and the height of a substantial cloud ceiling above airport elevation. These two measurements are termed "approach minima". Each of the Airport's runways are equipped with at least one published instrument approach procedure (IAP). Runway 10R has both an ILS (LOC) approach as well as an RNAV (GPS) approach with approach minima as low as 300 feet above ground level (AGL) and 3/4 SM visibility. Both Runways 10R/28L and 14/32 have RNAV (GPS) approaches for each respective end. **Table 5-16** depicts the approach minima on each runway that has an IAP.

Table 5-16 Instrument Approach Minimums

Runway	Approach Minimums
Runway 10R	¾ Mile Visibility / 273' MSL DA
Runway 28L	1 ¼ Mile Visibility / 412' MSL DA
Runway 14	1 Mile Visibility / 280' MSL DA
Runway 32	1 Mile Visibility / 302' MSL DA

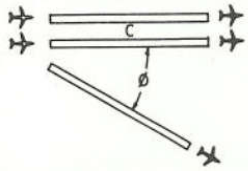
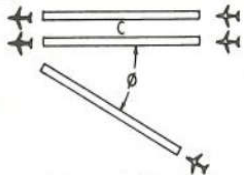
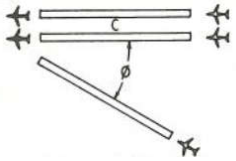
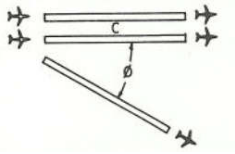
Source: FAA FPR NOAA Instrument Approach Charts 2018, DA= Decision Altitude

5.5.2.8. Weather Influences

Operational limitations during such times of inclement weather were accounted for in airport capacity computations. Weather data obtained from the National Climatic Data Center (NCDC) is broken up into VFR and IFR observations. The data indicates that IFR conditions (ceilings greater than 200 feet or less than 1,000 feet AGL and/or visibility greater than ½ mile but less than three miles) occur approximately 12.63 percent of the time at the Airport.

Wind data was obtained and analyzed to accurately depict the most appropriate operational traffic flow during various wind conditions. This wind data was utilized to understand runway utilization scenarios and the most favorable operational scenarios. **Table 5-17** depicts the airfield operating condition assumptions at the Airport based on the NCDC weather VFR data. **Table 5-18** depicts the airfield operating condition assumptions at the Airport based on the NCDC weather IFR data.

Table 5-17 VFR Airfield Operating Configurations

	080° - 170° Wind	171° - 260° Wind	261° - 350° Wind	351° - 79° Wind
Arrivals	10R, 14, 10L	28L, 14, 28R	28L, 14, 28R	10R, 14, 10L
Arrival Traffic Flows				
Occurrence %	32.50%	15.31%	17.93%	10.17%

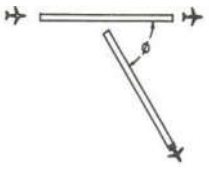
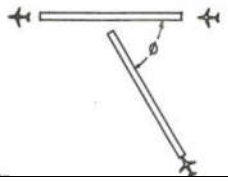
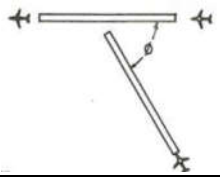
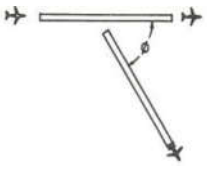
Source: NCDC Wind & Weather Observations, 2017, & Atkins Analysis 2018

The wind ranges were calculated based on the most effective basis to compare the collected NCDC data to the existing airfield layout.

5.5.3. Airfield Capacity Calculations

The airfield capacity calculations in this section were performed using the parameters and assumptions discussed in the previous sections. These calculations also utilize data from the aviation demand forecast, as presented previously for portions of the capacity calculations. The following sections outline the hourly capacities in VFR and IFR conditions, as well as the Airport's calculated ASV.

Table 5-18 IFR Airfield Operating Configurations

	080° - 170° Wind	171° - 260° Wind	261° - 350° Wind	351° - 79° Wind
Arrivals	10R, 14	28L, 14	28L, 14	10R, 14
Arrival Traffic Flows				
Occurrence %	7.97%	13.20%	26.42%	4.57%

Source: NCDC Wind & Weather Observations, 2017, & Atkins Analysis 2018

5.5.3.1. Hourly Capacity Calculations

The hourly capacity of the runway facilities is determined by analysing the appropriate VFR and IFR figures in AC 150/5060, *Airport Capacity and Delay*. The equation used to obtain the hourly capacity was taken from the FAA AC 150/5060-5, and is presented below.

Hourly Capacity = (C*) x (T) x (E)

5.5.3.1.1. Hourly Capacity Base (C*)

Hourly Capacity Base (C*) is calculated for both VFR conditions and IFR conditions utilizing FAA provided diagrams provided in AC 150/5060. By first imputing a combination of Mix Index, and Arrivals Percentage, the Hourly Capacity is determined. The following hourly capacity bases were utilized:

- VFR – Operating Runway 10R, 14, & 10L, (C*) = **305**
- IFR – Operating Runway 10R, & 14, (C*) = **62**
- VFR – Operating Runway 28L, 32, & 28R, (C*) = **290**
- IFR – Operating Runway 28L, 32, (C*) = **62**

5.5.3.1.2. Touch & Go Factor (T)

The Touch and Go Factor (T) is an expression of touch and go activity and its effect on capacity. The value is derived using tables within AC 150/5060. Due to the weather constraints under IFR conditions, the factor for (T) is constant during said conditions. This is primarily due to the training aspect of touch and go operations. The factors in calculating (T) include the percent of operations which are touch and go, and the mix index.

- In VFR scenarios operating Runway 10R, 14, & 10L at FPR, (T) = **1.18**
- In VFR scenarios operating Runway 28L, 32, & 28R at FPR, (T) = **1.34**
- For IFR scenarios (T) is always assumed to be **1.00**

5.5.3.1.3. Exit Factor (E)

Exit Factor (E) is an expression of the availability of taxiway exits within an appropriate range for the mix of aircraft operating at the Airport, derived by selecting the appropriate tables provided within AC 150/5060. The primary factors in calculating (E) are the mix index, the number of exits which are within appropriate exit range for arriving aircraft, and the percent arrivals (50%). The appropriate exit range for arriving aircraft, based on the calculated mix index, is within 2,000’ to 4,000’ from the arriving runway threshold. For the exit to count, there must be a minimum separation of 750’ between runway exits. To calculate capacity at the Airport for various scenarios the following exit factors (E) were utilized:

- Operating Runway 10R, 14, & 10L, (E) = **0.82**
- Operating Runway 28L, 32, & 28R, (E) = **0.93**

5.5.3.1.4. Hourly VFR Capacity

Hourly VFR capacities at the Airport were calculated to be 295 when winds favor the use of Runways 10R, 14, and 10L, and 361 when winds favor the use of Runways 28L, 32, and 28R.

5.5.3.1.5. Hourly IFR Capacity

Hourly IFR capacities used similar assumptions to those used in the VFR hourly capacity calculations. However, maintaining greater separation between aircraft is generally required during IFR operations, which results in hourly capacity base variable of the equation to be lower. In addition, the lack of instrument approach capabilities on the training runway, Runway 10L/28R, brings the airfield down to two operational runways during IFR conditions. These adjustments reduce the overall hourly capacity during IFR operations. When under IFR conditions at the Airport, the hourly IFR capacity is 62.

5.5.3.1.6. Annual Service Volume

An airport's ASV is the maximum number of annual operations that can occur at the airport before an assumed maximum operational delay value is encountered. ASV is calculated based on the existing runway configuration, aircraft mix, and the parameters and assumptions identified herein, and incorporates the hourly VFR and IFR capacities calculated previously. Utilizing this information and the guidance provided in FAA AC 150/5060-5, *Airport Capacity and Delay,* the Airport's existing conditions ASV was calculated to be 306,935 operations. It should be noted that the ASV represents the existing airfield capacity in its present configuration, with two east-west runways, one northwest-southeast runway, existing taxiway infrastructure, and ILS/RNAV/GPS capabilities. The equation used to obtain the ASV were taken from the FAA AC 150/5060-5, and is presented below.

- Weighted Hourly Capacity (Cw) x Annual/Daily Demand (H) = **ASV**

The weighted hourly capacity (Cw) is an expression of hourly capacity which considers the percentage of time each runway use configuration is used for both VFR and IFR conditions. The Airport's Cw was calculated to be 292.53. The Annual/Daily Demand (D) represents the ratio of annual demand to average daily demand during the peak month. The Airport's typical Annual/Daily Demand value was calculated to be 195.54. The Daily/Hourly Demand (H) represents the ratio of average daily demand to average peak hour demand during the peak month. The Airport's Daily/Hourly Demand was calculated to be 5.37.

- Cw x D x H = ASV → 292.53 x 195.54 x 5.37 = **306,935**

Additionally, according to the FAA, the following guidelines should be used to determine necessary steps as demand reaches designated levels.

- **60 percent of ASV –** The threshold at which planning for capacity improvements should begin.
- **80 percent of ASV** – The threshold at which planning for improvements should be complete and construction should begin.
- **100 percent of ASV** – The airport has reached the total number of annual operations it can accommodate, and capacity-enhancing improvements should be made to avoid extensive delays.

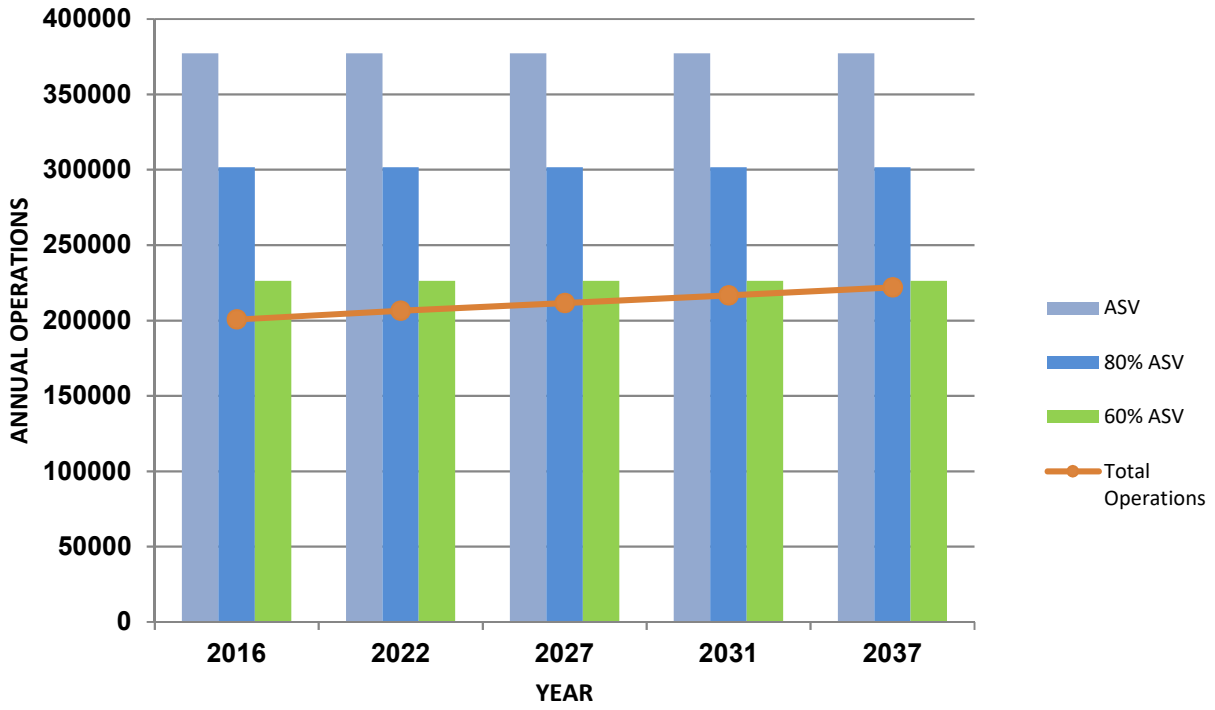
The Airport's current aviation demand in number of aircraft operations for the base year 2016, as presented in the *Forecast* of this AMP is 152,438. This equals approximately 49.70 percent of the present ASV. **Table 5-19** Illustrates the Airport's preferred aviation demand forecast and the relation to its current ASV, and **Figure 5-6** graphically depicts this relationship.

Table 5-19 Annual Service Volume vs. Annual Demand

Year	Annual Operations	Annual Service Volume	Percent of Annual Service Volume
2016	152,438	**306,935**	49.70%
2022	166,038	**306,935**	54.10%
2027	171,567	**306,935**	55.90%
2032	177,336	**306,935**	57.78%
2037	183,359	**306,935**	59.74%

Source: FAA AC 150/5060-5, Airport Capacity and Delay, *AECOM analysis 2017, and Atkins analysis, 2018*

Figure 5-6 Annual Service Volume vs. Annual Demand



Based on the calculated relationship between the Airport's existing ASV and forecast of aviation demand, the Airport does not have a need to plan for capacity enhancing runway and taxiway projects within the 20-year planning period.

5.5.3.1.7. Aircraft Delay

Although, the analysis indicated that the Airport's current and forecast level of aeronautical activity is not anticipated to exceed the airfield's calculated capacity, the potential for aircraft delay still exists due to factors such as ATC procedures and weather conditions.

5.5.4. Based Aircraft Count

The primary factor that is utilized for landside calculations, the forecast based aircraft count, assists in establishing a realistic projection for landside facilities in the future. However, due to the methodology for the Airport forecasting effort, the primary factor that will be utilized for the following calculations is the actual occupancy count for the existing aircraft storage facilities. This includes not only the based aircraft count, but un-registered aircraft that currently reside within the hangar storage facilities. These un-registered aircraft utilize storage space on airfield, and it would be inadvisable to negate them from the projected landside facilities required.

5.5.5. Aircraft Storage Hangars

Hangar requirements for a GA facility are a function of the number of based aircraft, the type of aircraft to be accommodated, owner preferences, and area climate. Furthermore, it is common when calculating the hangar size needs of a facility to use an average size requirement for the various types of aircraft; meaning that each type of aircraft will require a different amount of space (usually measured in square-feet) within a specific type of storage facility, e.g. T-hangar, single-aircraft box hangar, or large multi-aircraft conventional hangar. **Table 5-20** illustrates the aircraft storage assumptions throughout the planning period at the Airport.

Table 5-20 Aircraft Storage Assumptions

Aircraft Storage Type	% of Based Aircraft Fleet Using Storage
SE Piston	
T-Hangar	25%
Parking Apron	50%
Conventional/Box Hangar	25%
ME Piston	
Conventional/Box Hangar	70%
T-Hangar	0%
Parking Apron	30%
Turboprop	
Conventional/Box Hangar	75%
Parking Apron	25%
Jet	
Conventional Hangar (Large)	100%
Rotorcraft	
Conventional/Box Hangar	80%
Apron	20%

Acronyms: Square Feet (Sq. Ft.), Single-Engine (SE), Multi-Engine (ME)
Source: TRB's Airport Cooperative Research Program (ACRP), Report 113. Atkins Analysis 2018

5.5.5.1. T-Hangars

Future T-Hangar requirements will be representative of the type and sophistication of future based aircraft and the preferences of aircraft owners. Existing T-Hangar facilities at the Airport cater specifically to small single-engine aircraft. At present, currently 16 single-engine aircraft are stored in the T-Hangar facilities, out of the 125 single-engine aircraft based at the Airport. It is reasonable to anticipate that the T-Hangar storage requirement will increase compared to the existing utilization rate, as there is currently a limited amount of T-Hangar capacity at the Airport. T-Hangars provide an efficient method for aircraft storage and should be capitalized to ensure proper airport land use. **Table 5-20** depicts the aircraft storage assumptions throughout the planning period. These assumptions were selected after review of the Airport Cooperative Research Program (ACRP) Report 113, *Guidebook on General Aviation Facility Planning*. This guidebook has provided researched and effective guidance to help the creation of flexible and cost-effective general aviation plans. It will be assumed that in the future, 25 percent of single-engine based aircraft will be stored in T-Hangars throughout the planning period. Utilizing that assumption and comparing it to the forecast operation numbers, **Table 5-21** projects the need for additional T-Hangar units at the Airport over the planning period. There is currently a deficiency at the Airport, due to the limited number of T-Hangars available and the airport created wait list that currently exists for it. These results will be further analyzed during the alternatives section of this AMP.

Table 5-21 T-Hangar Requirements

	Base Year	Forecast			
	2016	2022	2027	2032	2037
Single-Engine Aircraft Requiring T-Hangar/T-Shed Storage	48	50	52	53	55
Current Capacity	16	16	16	16	16
Surplus/Deficiency	**32**	**34**	**36**	**37**	**39**

Source: Atkins Analysis 2018

5.5.5.2. Conventional Hangars

Those single engine aircraft not forecast to be based on the apron or in a T-Hangar unit are assumed to be based in a conventional hangar. Further it is assumed that all multi-engine and jet aircraft, as well as all rotorcraft based at the Airport will require storage in a conventional hangar. For planning purposes, the spatial requirements for each aircraft type is depicted in **Table 5-22**.

Table 5-22 Average Aircraft Space Requirements (Conventional/Box Hangars)

Aircraft Storage Type	Space Required (Sq. Ft.)
Conventional/Box Hangar	
SE Piston	1,800
ME Piston	3,200
Turboprop/Jet	5,200
Rotorcraft	3,200

Acronyms: Square Feet (Sq. Ft.), Single-Engine (SE), Multi-Engine (ME)
Source: Atkins Analysis 2018

The average space requirements for the various aircraft in the Airport's based aircraft fleet mix was applied to the based aircraft forecasts to estimate hangar area requirements for each hangar type. **Table 5-23** includes the assumptions made regarding the type of storage needed for each type of based aircraft at the Airport. The existing based aircraft data provided by airport management, along with the current aircraft storage conditions, combined with the forecasted fleet mix, Table 5-23 depicts the calculated demand requirements for hangar space at the Airport for each of the planning periods.

As portrayed in Table 5-23, there is currently no deficiency in conventional hangar space at the Airport. However, with the given forecast, it is projected that a deficiency will occur in the range of 2022 to 2027, due to the projected increase of based jet aircraft, which require larger storage space per aircraft. These results will be considered during the alternatives portion of this AMP.

5.5.6. General Aviation Aprons

General aviation aprons are areas that provide for the tie-down and storage of aircraft, as well as provide access to airside facilities and fuel facilities. FAA AC 150/5300-13A, *Airport Design*, provides guidelines for sizing aircraft aprons based on the number of aircraft anticipated to be utilizing the aircraft on a busy day. At FPR, the total operations can be classified in two categories: based aircraft operations and itinerant operations. Aircraft aprons were analyzed across each category in accordance with FAA guidance.

Table 5-23 Conventional Hangar Requirements

	Base Year	Forecast			
	2016	2022	2027	2032	2037
Based Single-Engine Aircraft Requiring Hangar Space	70	73	76	78	81
Based Multi-Engine Requiring Hangar Space	33	34	36	39	41
Based Jet Requiring Hangar Space	22	26	30	35	41
Based Helicopter Requiring Hangar Space	18	22	27	33	39
Total Aircraft Hangar Space Required (sq. ft.)	**404,434**	**448,508**	**496,716**	**551,352**	**614,414**
Total Existing Hangar Space (sq. ft.)	467,040	467,040	467,040	467,040	467,040
Surplus / Deficiency (sq. ft.)	**62,606**	**18,532**	**29,676**	**84,312**	**147,374**

Acronyms: Square Feet (Sq. Ft.)
Source: Atkins Analysis 2018

5.5.6.1. Aircraft Parking Apron

The Airport is comprised of multiple aircraft parking areas. In order to identify the required parking needed for based aircraft not stored in a hangar, as well as transient aircraft requiring temporary parking, a demand analysis for the parking has been conducted. Transient aircraft are those that are visiting the Airport on a temporary basis and do not remain for an extended period. Areas designated for the parking of transient aircraft are usually identified as “itinerant aprons”. There are currently multiple apron areas for based aircraft. Their layouts are arranged to be accessible to the conventional hangars at the Airport, and are typically located directly in front of said hangars.

Due to the Airport’s flight training operations, it has been assumed that a total of 30 percent of the based aircraft will be stored on appropriate apron pavements. Most of this 30 percent will come from the single-engine and multi-engine aircraft owned by the flight school. Itinerant apron space is intended for relatively short-term parking periods, usually less than 24 hours. For the purpose of this study, it is assumed the average itinerant aircraft occupies the apron for five hours. Utilizing the peaking characteristics established in the *Forecast* chapter of this AMP, recognizing that itinerant operations represent 40 percent of total airport operations, and applying the FAA recommendation of 360 square yards per itinerant aircraft, **Table 5-24** Identifies the Airport’s itinerant apron requirements over the planning period.

Table 5-24 Apron Requirements

	Forecast				
	2017	**2022**	**2027**	**2032**	**2037**
Based Aircraft Apron Requirements					
Total Based Aircraft	313	337	363	392	422
Based Aircraft on Apron (30% of total)	94	101	109	118	127
Total Based Aircraft Apron Required (sq. yards)[1]	**33,804**	**36,396**	**39,204**	**42,336**	**45,576**
Itinerant Aircraft Apron Requirements					
Average Day Peak Hour Operations	89	93	97	101	106
Average Day Peak Hour Itinerant Operations	20	20	21	22	23
Transient Aircraft Positions Required (5-hour avg. stay)	98	102	107	111	117
Total Transient Apron Required (sq. yards)[1]	**42,293**	**44,194**	**46,094**	**47,995**	**50,371**
Total Apron Requirements					
Total Apron Required (sq. yards)[1]	**76,097**	**80,590**	**85,298**	**90,331**	**95,947**
Existing Aircraft Apron (sq. yards)	139,453	139,453	139,453	139,453	139,453
Surplus/Deficiency (sq. yards)	**63,356**	**58,863**	**54,155**	**49,122**	**43,506**

1: Includes 20% planning buffer
Source: Atkins Analysis 2018

5.5.7. Automobile Parking and Access

Clearly defined parking areas near an airport’s terminal building and other landside facilities are essential elements for GA airports. The Airport has numerous vehicle parking areas available, both to the public and for its based aircraft users and tenants. Public parking areas, which will be analyzed in this report, have a current deficiency in the amount of spaces available. The number of automobile parking spaces required is generally calculated as a function of peak hour users as well as tenant and employee demand. Parking requirements are shown in **Table 5-25**.

Table 5-25 Automobile Parking Requirements

	Forecast				
	2017	**2022**	**2027**	**2032**	**2037**
GA Peak Hour Airport Users	89	93	97	101	106
Employees	15	15	15	15	15
Simultaneous Parking Area Users	104	108	112	116	121
Parking Area Required (sq. yards)	**3,640**	**3,780**	**3,920**	**4,060**	**4,235**
Existing (sq. yards)	3,496	3,496	3,496	3,496	3,496
Surplus / Deficiency (sq. yards)	**144**	**284**	**424**	**564**	**739**

Source: Atkins Analysis 2018

Based on the existing public parking spaces currently available at the Airport, and the calculations presented in Table 5-25, there is a current need for additional marked automobile parking areas. It is also recommended that as future facilities are developed, appropriately sized parking facilities be accommodated within site plans.

5.5.8. Security and Perimeter Fencing

The primary function of airport fencing is to restrict the inadvertent entry to the Airport by unauthorized individuals or wildlife. Most GA airports at a minimum possess some type of perimeter fencing around the airfield. Per Part 139 requirements, the security fencing must be at least eight feet in height with three-strand wiring. The Airport currently has fencing and access control measures in place that provides a layer of security and safety for its users and tenants. Overall, the eight-foot high fencing is in good condition. Sections of the fence have been recently replaced with the construction of Taxiway G. However, portions of the fencing near the training runway and north of the primary Runway 10R/28L, have deteriorated. Specifically, wildlife has created erosion under the fencing in these areas to more readily gain access to the airfield. This creates a large gap between the ground and fencing, and an overall security problem. Additionally, as new development at the airport occurs, security and perimeter fencing will need to be expanded and or modified proportionally to maintain a security perimeter.

5.5.9. Fuel Storage

Fuel flowage is measured in U.S. gallons and is divided into two categories; Jet A for jet aircraft and 100LL (Avgas) for non-jet aircraft. Fuel flowage data at FPR is maintained by APP, and has been used in the evaluation of fuel demand at the airport. The fuel flowage demand was determined by segregating airport operations into jet and non-jet operations and applying trend in gallons of flowage per operation to the operations forecast in jet and non-jet categories. The peak month forecast was taken into consideration to best plan for most demanding operation periods.

Based on existing capacity and the fuel demand analysis, it is seen that the existing fuel storage at FPR is sufficient to the current operational levels. However, to be operationally efficient, it is recommended that fuel storage facilities are located next to major airside and landside development that is located to the east of Runway 14-32 and north of Runway 10R-28L. This will reduce the number of runway crossings needed and overall will increase capacity.

5.5.10. GA Terminal

The existing GA terminal is described in the *Inventory* of this AMP. Chapter 5 of ACRP Report 113, *Guidebook on General Aviation Facility Planning*, provides general guidance as to the sizing of GA terminals. The primary consideration is that the facility can support the number of pilots, passengers, and visitors which could reasonably be expected during peak hour operations. GA facility sizing can range from 100 to 150 square feet of space per person would be adequate for the Airport. For planning purposes, the ACRP

suggests using a factor of 2.5 people per peak-hour operation (pilots and passengers). Additionally, combining the square-footage of the terminal building and the FBO facility produced total "terminal" space available at the Airport today. The logic being that the majority of GA itinerant users are likely to use the FBOs rather than the Terminal; thus, the FBO shared public space in fact adds to the overall "terminal" space at the Airport, even though the space is located in physically different locations. The requirements for the GA building are presented in **Table 5-26**. The terminal facilities are current deficient in square footage based on the determined peak hour operations. This deficiency becomes larger over the planning period as the peak hour operations are forecasted to increase at the Airport.

Table 5-26 GA Terminal Requirements

	Base Year	Forecast			
	2016	2022	2027	2032	2037
Peak Hour Operations	89	93	97	101	106
Required General Terminal Building Space (sq. ft.)	22250	23250	24250	25250	26500
Current Capacity Terminal Building (sq. ft.)	9000	9000	9000	9000	9000
Current Capacity Fixed Based Operator (sq. ft.)	7200	7200	7200	7200	7200
Surplus/Deficiency (sq. ft.)	**6050**	**7050**	**8050**	**9050**	**10300**

6. Airport Development Plan

The primary objective of this chapter is to outline a logical development plan for the Treasure Coast International Airport (the Airport), which meets the aviation needs over the planning period as well as satisfies the ultimate development goals of the Airport Staff. The identification of alternatives was completed based on the information presented in the previous chapters of this AMP in conjunction with reasonable foresight into industry trends and associated facilities.

The alternatives were evaluated and the result is a selected development plan. The alternatives and selected development plan is based on the following general criteria in **Table 6-1**.

Table 6-1 Evaluation Criteria for Selected Development Plan

Criteria	Description
Operational	Any selected development plan should be capable of meeting the Airport's facility needs as they have been identified for the planning period. Further, preferred plans must resolve any existing or future deficiencies as they relate to FAA design and safety criteria.
Environmental	Airport growth and expansion has the potential to impact the Airport's environs. The selected development plan should seek to minimize environmental impacts in the areas outside the Airport's boundaries. The preferred development plan should also recognize sensitive environmental features that may be impacted by the development plan.
Cost	Some alternatives may result in excessive costs as a result of expansive construction, acquisition, or other development and/or environmental requirements. For a preferred development plan to best serve the Airport and the community it must satisfy development needs at reasonable costs.
Feasibility	The selected development plan should be capable of being implemented. Therefore, it must be acceptable to the FAA, Airport Staff, local governments, and the community served by the Airport. The preferred development plan should proceed along a path that supports the area's long-term economic development and diversification objectives.
Sustainability	The four categories of sustainability should be referenced throughout all planning processes to ensure future airport development is completed to the FAA expectations of economic viability, operational efficiency, natural resource conservation, and social responsibility.

6.1. Development Plans

As a preliminary guideline for the creation of airport development alternatives and plans, a conceptual on-airport land use map was created to highlight the general development areas for each functional airport user group including:

The on-airport land use concept was created after thorough review of the Airport's previous airport layout plans (ALPs), master plan update, and other prior planning reports. The concept incorporates criteria designed to protect approach/departure paths, safety areas, and Part 77 surfaces; limit environmental impacts, and enhance compatible land use in the vicinity of the Airport.

The on-airport land use concept was finalized after review and input by airport staff so as to ensure the land use concept portrays a realistic vision for facility placement and best represent the Airport's unrestricted growth plans. **Figure 6-1** depicts the resulting on- airport land use plan, which serves as a general framework for the placement of future airport facilities further discussed in subsequent sections of this chapter.

6.2. Airport Development Alternatives and Concepts

The airport development plan outlines the necessary development and facility requirements to not only meet the forecast demand, but to ultimately ensure competitiveness and financial viability for the Airport, and to provide the Airport and surrounding community with the greatest overall benefit.

The following sections provide a description of the Airport's future airfield development alternatives.

6.2.1. Airfield Alternatives

Airfield facilities are, by their nature, the focal point of an airport complex. Because of their role, and the fact that they physically dominate a great deal of the airport's property, airfield facility needs are often the most critical factor in the determination of viable airport development alternatives. The runway system requires the greatest commitment of land area and is often the greatest influence on the identification and development of other airport facilities.

The potential for physical expansion of an airport to accommodate airfield development is the primary factor that determines development in the long term. The runway and taxiway system directly affects the efficiency of aircraft movements both on the ground and in the surrounding airspace - not only in the terminal area, but in regional airspace as well. It also limits the ability of the Airport to handle certain aircraft, which can directly affect the types of air service the Airport can offer or accommodate. In addition, the efficiency of aircraft movements is also affected by local approach and departure procedures, which can be influenced by local restrictions due to noise, airspace congestion, or other considerations

The previous airport master planning effort included visions of the Airport in terms of airfield, airside, and landside developments. These visions were re-assessed within this report and has been represented if deemed suitable. Market conditions and specific needs have been dynamic since the Airport's last master plan update. Due to this, previous development concepts have been modified to better accommodate the Airport's current needs.

6.2.1.1. Required and Recommended Airfield Improvements

The airfield's current configuration accommodates the existing aircraft fleet mix and traffic levels with use of three bi-directional Runways 10R/28L, 14/32, and 10L/28R. The supporting taxiway and taxilane infrastructure plays a large role to provide safe and efficient ground navigation for operators. However, the airfield's fleet mix is estimated to slowly increase and change during the forecast period. The previous chapters identified areas for improvement on the airfield to mitigate capacity issues while encouraging growth and promoting safety. These elements are discussed in detail in the following sections.

6.2.1.1.1. Runways

Runway 10R/28L is the Airport's primary runway and is approximately 6,492 feet long by 150 feet wide. It is anticipated that this runway will continue to serve as the Airport's primary runway and accommodate most corporate aircraft, with the addition of GA aircraft operations when needed. The runway length of 6,492 feet currently serves most of the Airport's needs and the surrounding community. However, within the forecast period if current trends continue, operations by jet aircraft are anticipated to increase. A future 708-foot extension to Runway 10R/28L will likely be warranted within the planning period as Boeing 737 series aircraft (and similarly sized aircraft) are forecast to frequent the Airport in greater numbers. It has been specified that the anticipated aircraft utilizing the Airport will be larger compared to the existing critical aircraft. This has been considered for the alternatives analysis and airfield infrastructure needed to accommodate.

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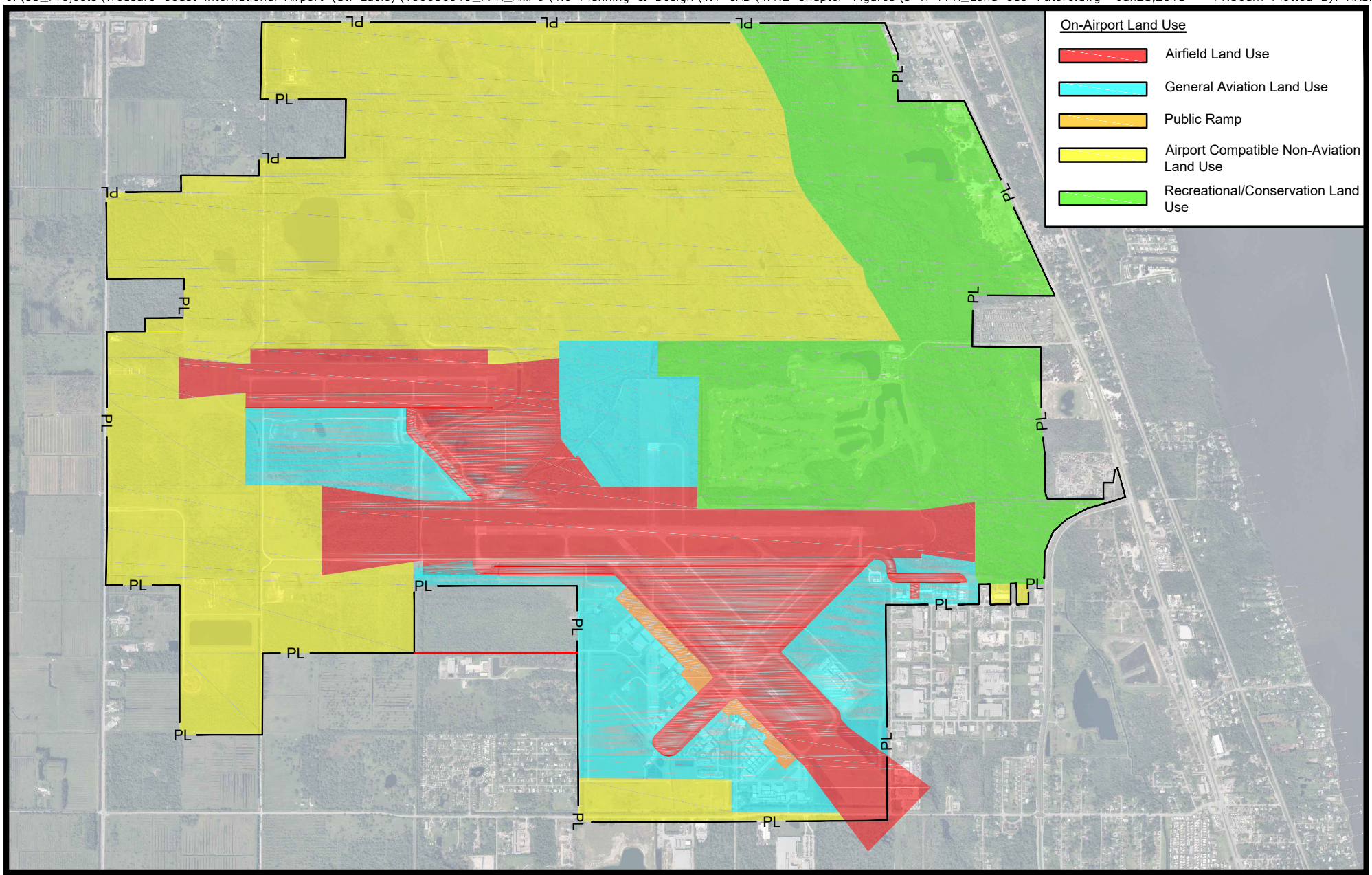


ATKINS	Treasure Coast International Airport Airport Master Plan Update	Future Land Use	TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY	Figure 6-1

The Airport's crosswind Runway 14/32 is approximately 4,755 feet long by 100 feet wide. Modifications to the Runway 14 approach end are needed due to current safety concerns on the airfield. It is proposed that the Runway 14 approach end pavement is decoupled from Runway 10R-28L to remove the capability for aircraft operating on Runway 10R/28L to utilize Runway 14/32 as an exit taxiway. This will reduce the chances of runway incursions.

6.2.1.1.2. Taxiways

At present, required modifications to the taxiway infrastructure is to mitigate existing hotspot locations, high-risk taxiway geometry, and non-standard airfield geometry. These areas of safety concern have been outlined in the previous chapter. Primary modifications will mitigate direct access from aircraft parking positions to active runways, high-activity areas, and high-risk areas identified from past airport incidents.

The following are recommended taxiway modifications:

- Taxiway E: Between Runway 10R/28L and Taxiway A, Taxiway E runway entrance is noted to be non-standard airfield geometry as it does not meet the runway end at a 90-degree angle. This portion of the taxiway is recommended to be removed.
- Taxiway B: Between Runway 10R/28L and Taxiway A, Taxiway B high-speed exit creates a high activity area with intersecting Taxiways A3 and A. Due to its high-speed geometry entering a high-activity area, it is recommended that this portion of the taxiway be removed. Taxiway A3 can accommodate all operations utilizing the runway and is substantial.
- Taxiway C8: Between Runway 14/32 and Taxiway C, Taxiway C8 high-speed exit creates a direct access risk from the adjacent apron to the active runway. Due to its location from the threshold and its primary use as a runway exit, its utilization rate has been determined to be low. It is recommended to be removed.
- Taxiway C7: Between the apron area and Taxiway C, it is proposed that this connector be relocated to mitigate the direct access hazard.
- Taxiway C5: Between the apron area and Taxiway C, it is proposed that this connector be removed to mitigate the direct access hazard. Taxiway E's location directly adjacent to C5 can accommodate operations that would utilize C5 and does not allow for direct access from the apron area to an active runway.
- Taxiway C4: Between Runway 14/32 and Taxiway C, it is proposed that this connector be removed to mitigate the high activity area. This high activity area is at the intersection of Taxiways C, D, and C4. The high-speed nature of Taxiway C4 allows for increased risk when entering this taxiway area and the potential for possible airfield incursions to occur.
- Taxiway E: Between Taxiways C and B, it is proposed that the taxiway is aligned with Taxiway E prior to crossing Taxiway B to allow a 90-degree entrance to the runway on both sides.

6.2.1.2. Proposed Airfield Improvements

Some airfield improvements have been proposed at the Airport to enhance the existing aeronautical capacity of the airfield and make available taxiway accessible land for future aviation related development interest. Additional airfield facilities should be planned to represent the ultimate development goals of the Airport. While these ultimate airfield development initiatives may not be justified for immediate implementation, planning for their eventual implementation serves to preserve the required land area for such improvements and guides the creation of development concepts for the other functional areas of the airport property.

A future runway extension up to a total 7,200 feet length has been proposed to note and reserve the associated land from inhibiting development. It is understood that there is no current demand for such aircraft at the Airport, yet near future development indicates a need for specified runway enhancements. The property located near SW of Taxiway E should be developed in a way to capitalize on potential airside development opportunities. The Airport has sufficient land north of Runways 10R/28L and 10L/28R that can be utilized for a mixed use of both airside and landside development. This area will be preserved to allow for further analysis towards best and highest utilization of the developable land. Local government offices note that there are significant development opportunities for the Airport with potential to bring in larger aircraft. Certain operations including maintenance and commercial services have been identified as realistic next steps for the Airport, which will require airfield enhancements to occur. Therefore, it is prudent to evaluate

development alternatives which may attract this type of operator, and to prepare the airfield to accommodate said aircraft in a safe and efficient manner.

6.2.1.3. Alternative 1

Airfield Alternative 1 is depicted in **Figure 6-2**. Components of this alternative were proposed in the previous master plan and there was interest expressed in re-evaluating this alternative within this AMP effort. Specifically, the airside development located to the southeast of Taxiway E, located in the existing Taxiway D location. This airside development features new FBO/Terminal building, conventional hangars, and an MRO operation. The depicted development is considered excessive in terms of the Airport's existing needs, but has been preserved and modified from the previous master planning effort. Alternative 1 proposed a 708-foot westward runway extension effort resulting in a future 7,200 foot by 150-foot-wide Runway 10R/28L. This alternative would allow the proposed future critical aircraft to operate at the Airport on hot and rainy days. In addition, larger aircraft compared to the proposed future critical aircraft will be able to utilize the future Runway 10R-28L with reduced load factor. This scenario includes MRO operations as aircraft coming into the airport for such services will be at reduced load factor. Alternative 1 calls for a partial parallel taxiway to Runway 10R/28L's north side, starting from Taxiway G and running parallel to Taxiway A3. This taxiway is envisioned to be constructed for Taxiway Design Group (TDG) 3 to accommodate the proposed critical aircraft. This proposed taxiway will allow for the airside development to the north of the primary runway and will provide substantial access to the area.

Runway 14/32's pavement is proposed to be severed from Runway 10R/28L to mitigate the existing high-risk area. The Runway 14 approach end is proposed to remain, to ensure there is no loss in runway length, yet note that the runway pavement to the north of the Taxiway A crossing is inaccessible. It is proposed that runway entrance identifier lights are installed at the hold short lines for Runway 14/32 on Taxiway A. This is due to the existing FAA hotspot identified on the airport diagram and will allow for the clear identification of the Runway. Regarding the Taxiway C8 high speed exit removal, it could be replaced with a standard 90-degree taxiway to runway connector that would not allow for direct access from the adjacent apron area to the active runway.

Key benefits of Alternative 1 include:

- Total Runway 10R/28L length of 7,200 feet, which would accommodate most if not all narrow body aircraft (Boeing 737-700 aircraft of similar) in difficult weather and operating conditions.
- Partial parallel taxiway, north of Runway 10R/28L.
- Taxiway E airside development to optimize existing developable land.
- Increase of airfield capacity.

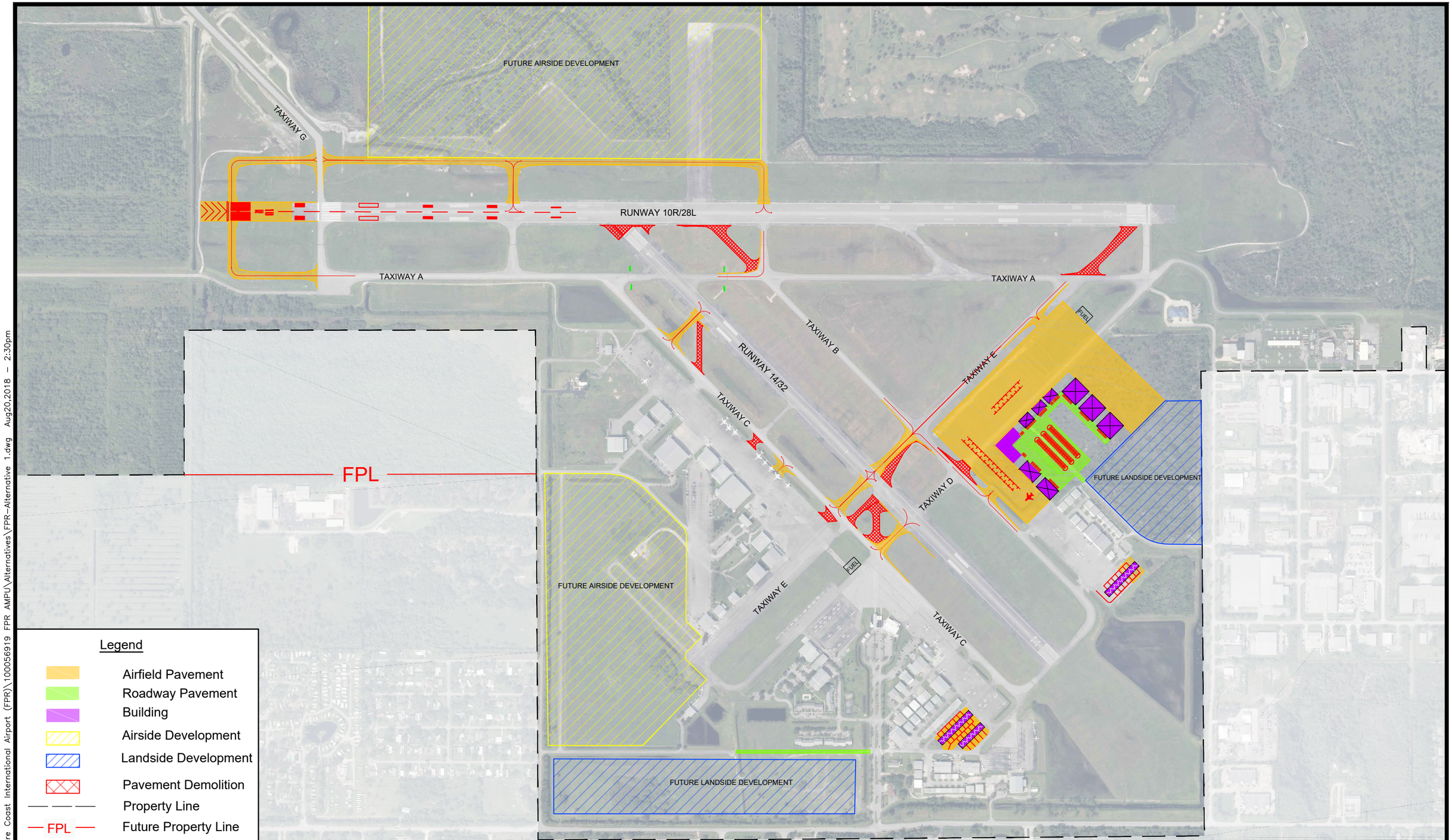
Disadvantages of Alternative 1 include:

- Environmental impact for the Taxiway E development.

6.2.1.4. Alternative 2

Alternative 2 is depicted in **Figure 6-3**. This alternative call for a 708-foot eastward runway extension to Runway 10R/28L resulting in a total proposed length of 7,200-feet. This is similar to the proposed runway extension in Alternative 1, yet the location of the extension has been modified to analyze other options. Runway 14/32 pavement is proposed to be disconnected from Runway 10R/28L to minimize the risk outlined in previous sections. Yet, Runway 14 will now be relocated to the Taxiway-A crossing of the runway to ensure that aircraft are entering and crossing at the runway threshold. This will allow for aircraft to safely utilize the full length of the runway. A standard blast pad is proposed for the Runway 14 end to ensure that debris does not enter Runway 10R/28L from aircraft taking off from Runway 14.

Similar to Alternative 1, a partial parallel taxiway is proposed for north of Runway 10R/28L. This will continue to promote the airside development to the north of the primary runway to better utilize existing developable land. Proposed airside development in this area includes a new FBO/Terminal building with associated conventional hangar infrastructure. This allows for baseline development of the north side area to start to expand. Regarding developable land, to analyze the highest and best land use near the



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TREASURE COAST International Airport & Business Park
AT ST. LUCIE COUNTY

Treasure Coast International Airport
Airport Master Plan Update

Alternative 1

Figure 6-2

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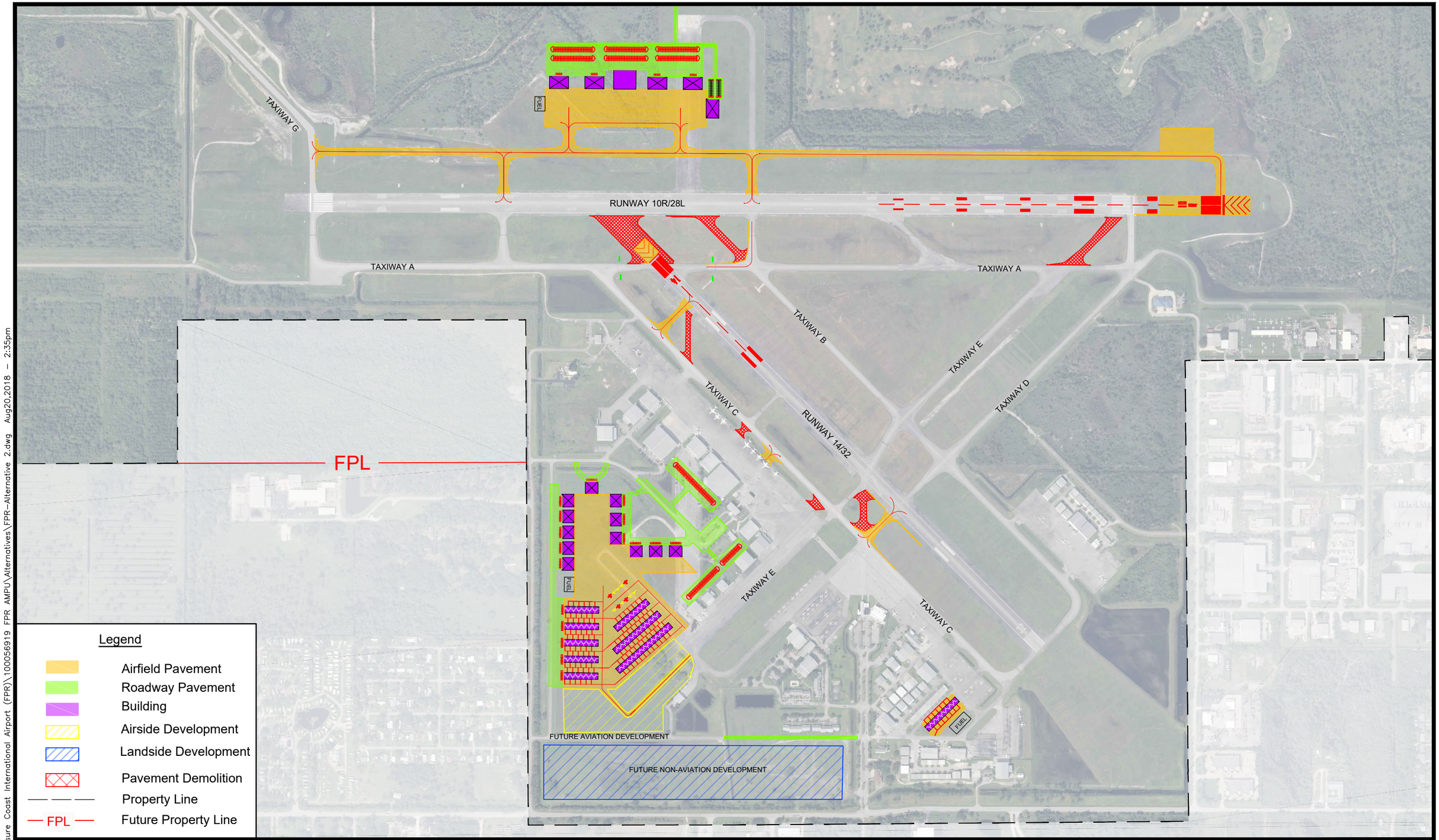

Legend

- Airfield Pavement
- Roadway Pavement
- Building
- Airside Development
- Landside Development
- Pavement Demolition
- Property Line
- FPL — Future Property Line

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TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY

Treasure Coast International Airport
Airport Master Plan Update

Alternative 2

Figure 6-3

southeast area of Taxiway E, an airside development area has been proposed to show the extent of area. This proposed airside development exceeds the Airport's current needs for enhancements and is not entirely justified within the planning period. However, to show possible development options, this layout has been presented.

Key benefits of Alternative 2 include:

- Total Runway 10R/28L length of 7,200 feet, which would accommodate most if not all narrow body aircraft (Boeing 737-700 aircraft or similar) in difficult weather and operating conditions.
- Partial parallel taxiway, north of Runway 10R/28L.
- Southwest development area to optimize readily developable land.
- Introduction of development on the northern portion of the Airport.
- Increase of airfield capacity.

Disadvantages of Alternative 2 include:

- Environmental impact for the North side development will be substantial.
- Runway 10R/28L extension to the east would likely cause environmental impacts along with potential impact to the runway protection surfaces.
- Limited in space available to the east of Runway 10R/28L for extension.
- Reduction of length for Runway 14/32 (Approximately 400 feet, total length of 4,355 feet).

6.2.1.5. Alternative 3

Alternative 3 is depicted in **Figure 6-4**. This alternative presents an aspect which was presented in the previous AMP, which is it was represented with detail on the Airport Layout Plan. The extension of Runway 14/32 to the northwest could mitigate the existing FAA identified hot spot, while adding additional runway length to the Airport's only crosswind runway. A proposed extension of 945 feet would bring Runway 14/32 to a total length of 5,700 feet. A runway crossing is proposed to be created between Runway 10R/28L and Runway 14/32. Taxiway B is envisioned to be extended crossing Runway 10R/28L to support the new Runway 14 approach end. A proposed partial parallel to Runway 10R/28L could start at Taxiway G and run to the proposed Runway 14 approach to allow for enhanced accessibility. As listed in previous alternatives, Taxiway B high speed exit was creating a risk for a high activity area. Due to the possibility of a full length parallel for Runway 14/32 associated with it potential extension, Taxiway A3 is proposed to be removed to mitigate the hotspot location.

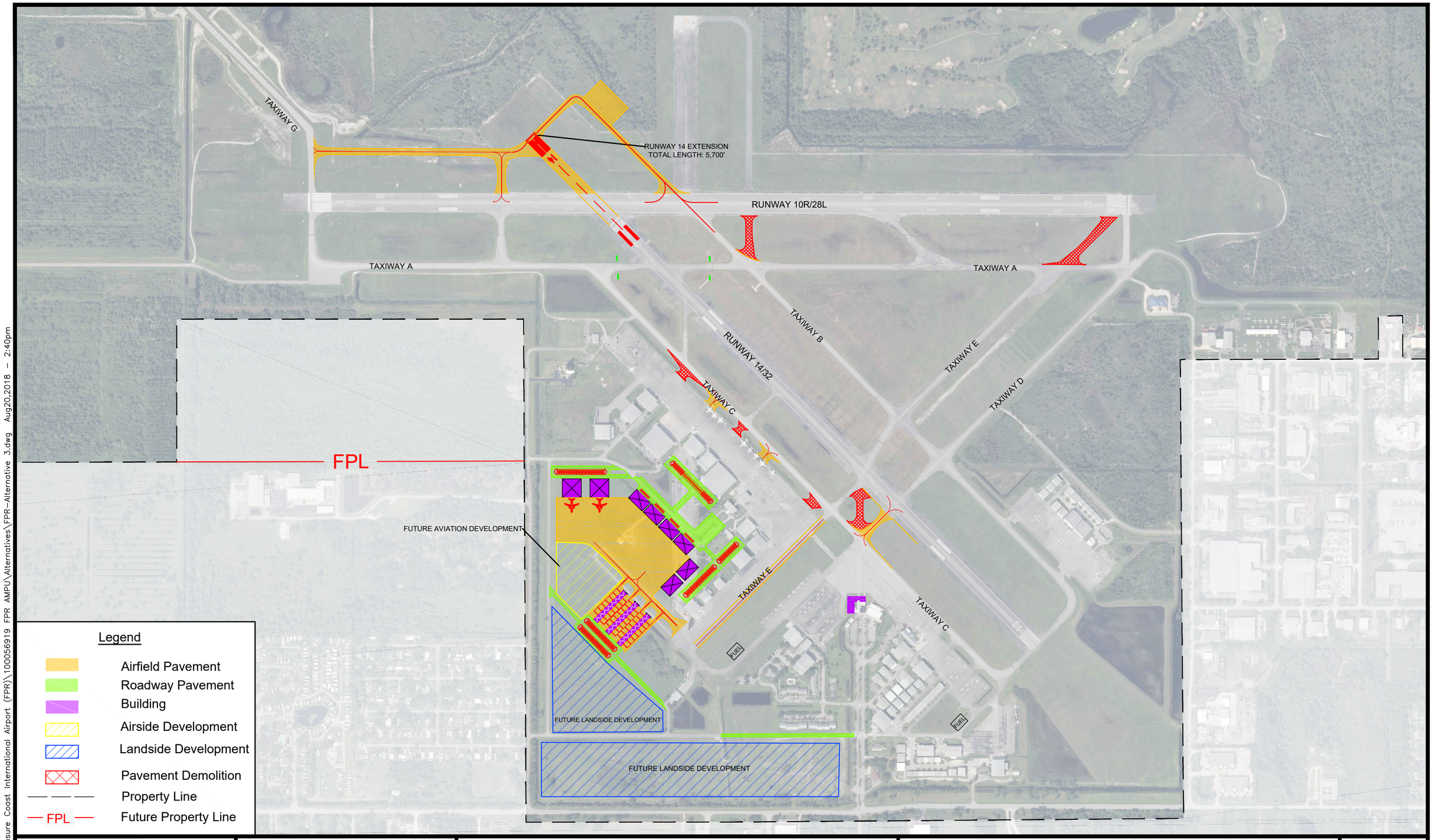
Similar to Alternative 2, development has been proposed within the Airport's southwestern area of the airport to further propose options for the highest and best land use. This development expands outside of the Airport's current needs, yet can be seen as an ultimate development proposal. With the extension of Runway 14/32 up to the Airport's northern portion, the developable land in terms of airside and landside facilities would decrease due to the needed runway protection zones.

Key benefits of Alternative 3 include:

- Increase Runway 14/32 length to maximize the crosswind runway.
- Partial parallel to enhance overall capacity.

Disadvantages of Alternative 3 include:

- Decreased airside/landside developable land north of Runway 10R/28L due to runway extension.
- Runway 14/32 extension would likely create an environmental impact.
    - Relocation of canal on extended CL for Runway 14/32.
- Creation of runway crossing and the implementation of the Runway Visibility Zone (RVZ) surface.



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TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY

Treasure Coast International Airport
Airport Master Plan Update

Alternative 3

Figure 6-4

6.3. Alternatives Evaluation Criteria

The evaluation of the alternatives followed the criteria as found in FAA's AC 150/5070-6B, *Airport Master Plans* and included the following:

- Financial Feasibility
- Operational Performance
- Environmental Implications
- Best Planning Tenets

6.3.1. Financial Feasibility

This analysis considers the impacts of a particular alternative in relation to the Airport's economic viability as well as that of the surrounding community. Furthermore, the analysis provides consideration of the estimated development costs associated with the various alternatives, along with prospective funding sources. The following were assessed as a part of this analysis:

- Development costs – Includes anticipated costs of development and potential alternative funding sources. Alternative funding sources include those other than the City or the FAA, such as private business owners and/or developers.
- Job creation – The potential of each alternative to create employment and other economic development benefits for the Airport and immediate surrounding area.
- Financial sustainability – Anticipated opportunities for revenue generation through increased activity, new businesses, etc. to increase the Airport's ability to become more financially self-sufficient.

6.3.2. Operational Performance

An airport's ability to function as a system can be determined based on several factors:

- Capacity – The ability to accommodate future demand as determined in the facility requirements.
- Capability – The ability to meet airport design standards and ensure a safe operating environment.
- Operational efficiency – How well the alternatives work as a system to avoid delays, inefficiencies, airspace conflicts, etc. This also considers the coexistence of existing and future users.

6.3.3. Environmental Implications

As discussed in the Environmental Overview, there are several environmental resources that may be impacted to some degree resulting from airport development. To review the NEPA environmental categories associated with the Airport in detail, please refer to Section 3, Environmental Overview. Following are the Airport's identified environmental criteria:

- Air Quality
- Biological Resources (Including Fish, Wildlife, and Plants)
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Land Use
- Noise and Noise-Compatible Land Use
- Climate
- Department of Transportation Act, Section 4(f)
- Historical, Architectural, Archaeological, and Cultural Resources
- Visual Effects (Including Light Emissions)
- Water Resources (Including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

6.3.4. Sustainability

The FAA is committed to making airports environmentally responsible with initiatives that affect facility operations, the aviation industry, and customers. Airports commonly follow the approach to sustainability codified by Airports Council International-North America, known as EONS, which take into account four key considerations when sustainability programs are designed and implemented:

- **E**conomic Viability
- **O**perational Efficiency
- **N**atural Resource Conservation
- **S**ocial Responsibility

Furthermore, the Florida Department of Transportation Aviation and Spaceports Office developed the Airport Sustainability Guidebook to lead sustainability at Florida airports. At its core, the guidebook provides a basic structure for developing, implementing, and monitoring sustainability initiatives at airports.

A Sustainability Charrette was held at the Airport on January 28, 2018. The charrette was comprised of members of the Master Plan Team, Airport staff, and various County agency representatives. The purpose of this interactive meeting was to establish priorities, identify challenges, and generate ideas regarding the Airport's potential sustainability initiatives. 58 Ideas were proposed because of the charrette. Those ideas were ranked as 'high priority', 'worth considering', and 'low ranking'.

Alternatives 2 and 3 would incur impacts to sensitive environmental features (wetlands/habitat) with its proposed northern landside development. This could adversely affect the Airport's environmental sustainability. It should be noted that a majority of the 'high priority' items are not directly reliant on airside or landside development for success, as they are a largely programs that would require implementation through cooperation between the Airport and the County.

Due to the vast developable landside areas and favorable solar collection conditions in the region, it is likely future solar farm development is feasible at FPR. Solar farm placement must be further analyzed due to implications such as glare, sun exposure, and utility connections.

A copy of the complete Sustainability Charrette report is included in **Appendix 2**.

6.3.5. Best Planning Practices (measurable)

Several best planning tenets were selected to determine the most responsible and implementable alternative within this AMP. These include:

- Flexibility to accommodate unforeseen change (e.g., increases or decreases in activity levels, changes to fleet mix, new users, etc.).
- Technically feasible (e.g., considers site constraints and other limitations).
- Conforms to the County's goals.

6.4. Alternatives Evaluation Summary

The evaluation criteria described above were applied to each airside and landside alternative based on the initial input from the Airport staff, County, and public. **Table 6-2** contains a detailed summary of each alternative evaluation. Based on the overall assessment, each criterium was assigned a rating for comparison. The rating system is based on the Consumer Reports method. As a result of the evaluation summary, Alternative 1 scored the highest, followed by Alternative 2 and Alternative 3, consecutively. Descriptions of the summary categories are included in **Table 6-3**.

Table 6-2 Alternatives Evaluation Summary

Alternatives Evaluation Criteria

Treasure Coast International Airport and Business Park

○ = +1 ◒ = 0 ● = -1	Alt. 1	Alt. 2	Alt. 3
Financial Feasibility			
Development Costs	◒	◒	◒
Job Creation	◒	◒	◒
Financial Sustainability	◒	◒	◒
Operational Performance			
Capacity	○	○	○
Capability	○	○	●
Operational Efficiency	○	○	●
Environmental			
Air Quality	◒	◒	◒
Biological Resources	◒	●	●
HazMat/Waste	◒	◒	◒
Land Use	◒	◒	◒
Noise	◒	◒	◒
Climate	◒	◒	◒
DOT Section 4(f)	◒	●	◒
NHPA Section 106	◒	◒	◒
Visual/Lighting Effects	◒	◒	◒
Water Resources	◒	●	●
Best Planning Tenents			
Flexibility	○	○	●
Technically Feasible	◒	◒	◒
Conforms to County's Goals	○	○	●
Sustainability Goals			
Overall Support of Sustainability	○	●	●
Evaluation			
Score	6	1	-6
Summary			
Ranking	1	2	3

6.5. Preferred Airfield Development Alternative

The Preferred Airfield Development Alternative (Preferred Alt.) includes most of the aspects from Alternative 1. The Preferred Alt. is comprised of three specific categories; these being safety modifications, airfield enhancements, and landside development. Details of these three categories are in **Table 6-3**.

Table 6-3 Preferred Airfield Development Alternative Details

Safety Modifications	
Description	**Justification**
Demolition of pavement connecting Runway 14 end with Runway 10R/28L	Mitigates existing FAA Hotspot
	Inhibits aircraft landing on Runway 10R/28L from utilizing Runway 14 as a runway exit
	Very low utilization, is non-standard airfield geometry
Implementation of Declared Distances on Runway 10R-28L	Mitigates insufficient RSA & ROFA east of the Runway 10R threshold
Demolition of Taxiway B high-speed exit (Between Runway 10R/28L and Taxiway A)	Mitigates existing FAA Hotspot
	The intersection of Taxiway B, Taxiway A3, and Taxiway A creates a high activity area (High activity areas are prone to aircraft incursions due to the amount of operations that can converge on a single point at the same time)
	Does not decrease capacity primarily due to Taxiway A3 being located directly to the east of the high-speed exit
	Taxiway A3 to be re-designed for Taxiway Design Group 3 fillet geometry
	90 Degree runway connectors are deemed more safe than angled runway connectors. This is due to the aircraft having a full, unobstructed view down the entire runway in both directions
Demolition of Taxiway E high-speed exit (Between Runway 10R/28L and Taxiway A)	Non-standard geometry to runway end (pilots are angled at the runway entrance, inhibiting their line of sight to both ends of the runway)
	Existing 90° runway entrance (Taxiway A1) is operationally sufficient
	No operator would ever need the highspeed exit this close to the runway threshold
Demolition of Taxiway C8 high-speed exit (Between Runway 14/32 and Taxiway C)	Mitigates existing direct access to Runway 14/32 from aircraft parking positions on adjacent apron (Via C8 & C)
	Cannot be utilized by aircraft landing on Runway 14
	To be replaced by proposed taxiway to the SW of existing C8 (Taxiway Design Group 2 fillet design, standard 90° taxiway entrance/exit)
Demolition and relocation of Apron-Taxiway Connector C7	Mitigates existing direct access to Runway 14/32 from aircraft parking positions on apron (Via C7 & C)
Demolition of Apron-Taxiway Connector C5	Mitigates existing direct access to Runway 14/32 from aircraft parking positions on apron (Via C5 & C)
Demolition of Runway-Taxiway Connector C4 and relocation of Taxiway D (Between Runway 14/32 and Taxiway C)	Mitigates high activity area located at the intersection of Taxiway D, Taxiway C, and Taxiway C4
Relocating Taxiway D to enhance overall airport capacity	Aligns Taxiway D Centerline to provide safe ground operations
	TDG 3 fillet design (The TDG allows to accommodate the future critical aircraft, the 737-700. Larger overall wheel base and cockpit to main gear on aircraft results in the lower overall turning radius. As TDG standards are examined, taxiway fillet geometry is enhanced with additional space/pavement to accommodate the lower turning capabilities)
Installation of additional lighting and signage on Taxiway A entering Runway 14/32	Mitigates existing FAA hotspot
	Assists operators with ground situational awareness
Runway shoulder compliance requirements	The current runway shoulders do not encompass the entire runway length
	These shoulders are necessary for enhanced safety
	Both Runway 10R/28L and Runway 14/32 need additional shoulder pavement where missing
Tree clearing on Runway 28L approach end	To ensure that the Runway Object Free Area (ROFA) is clear of all objects, the tree coverage that is currently existing within in that surface should be considered for removal

Airfield Enhancements (Beyond Facility Requirements)	
Description	**Justification**
Runway 10R/28L 708' West Extension (Total proposed length, 7,200')	Runway extension is currently not needed within the facility requirements
	Proposed extension was calculated utilizing a future critical aircraft of a Boeing 737-700 aircraft (Takeoff distance is the most critical between takeoff and landing operations) *
	Associated taxiway redevelopment will allow for the safe access to the proposed Runway 10R end (Extension of Taxiway A - Taxiway development was designed utilizing the Taxiway Design Group 3 standards)
Partial parallel taxiway to the north of Runway 10R/28L	Beginning at the Runway 10R approach end and running to align with Taxiway A3 connector
	Will allow for increase in capacity, and future development on the northern portion of the airfield
Landside Development	
Description	**Justification**
Taxiway E Development	~410,000 SQ. FT. Apron Space
	Pre-Fab 14 Unit T-Hangar Facility**
	Two 15,000 SQ. FT., 150'x100', Conventional Hangars
	Three 7,500 SQ. FT., 100'x75', Conventional Hangars
	~30,000 SQ. FT. GA Terminal/FBO Building
	Associated automobile parking, expanded roadway access
Taxiway E MRO Facility	AVCON Design
	Projected critical aircraft to use facility: Boeing 737-700
	Associated roadway access
Taxiway B Development	~60,000 SQ. FT. Apron Space
	Three 7,500 SQ. FT., 100'x75', Conventional Hangars
	Associated automobile parking, and roadway access
South Taxiway E Development (APP Development Concepts)	~40,000 SQ. FT., Four 12,000 SQ. FT., 120'x100', Conventional Hangars
	~32,000 SQ. FT. Apron Space, One 60,000 SQ. FT., 300'x200', Conventional Hangar
Airman's Way Development (APP Development Concepts)	~50,000 SQ. FT. Apron Space, Two 12,000 SQ. FT., 120'x100', Conventional Hangars
	Associated automobile parking, and roadway access
Taxiway C1 Development	Pre-Fab 14 Unit T-Hangar Facility**
Northside Development (Beyond Facility Requirements)	~380,000 SQ. FT. Apron Space, Five 15,000 SQ. FT., 150'x100', Conventional Hangars
	Associated automobile parking, and roadway access

* The calculated total need for runway length with a 737-700 at 90% useful load on a +25° F standard day is 7,200'. Useful load is a combination of operating empty weight (includes all fluids necessary for operation such as engine oil, coolant, hydraulic fluid, etc. with the weight of the total airframe) with the max payload and fuel weights that can be accommodated by a particular aircraft. +25°F increased from the standard day was utilized due to the Airport's location in a tropical climate

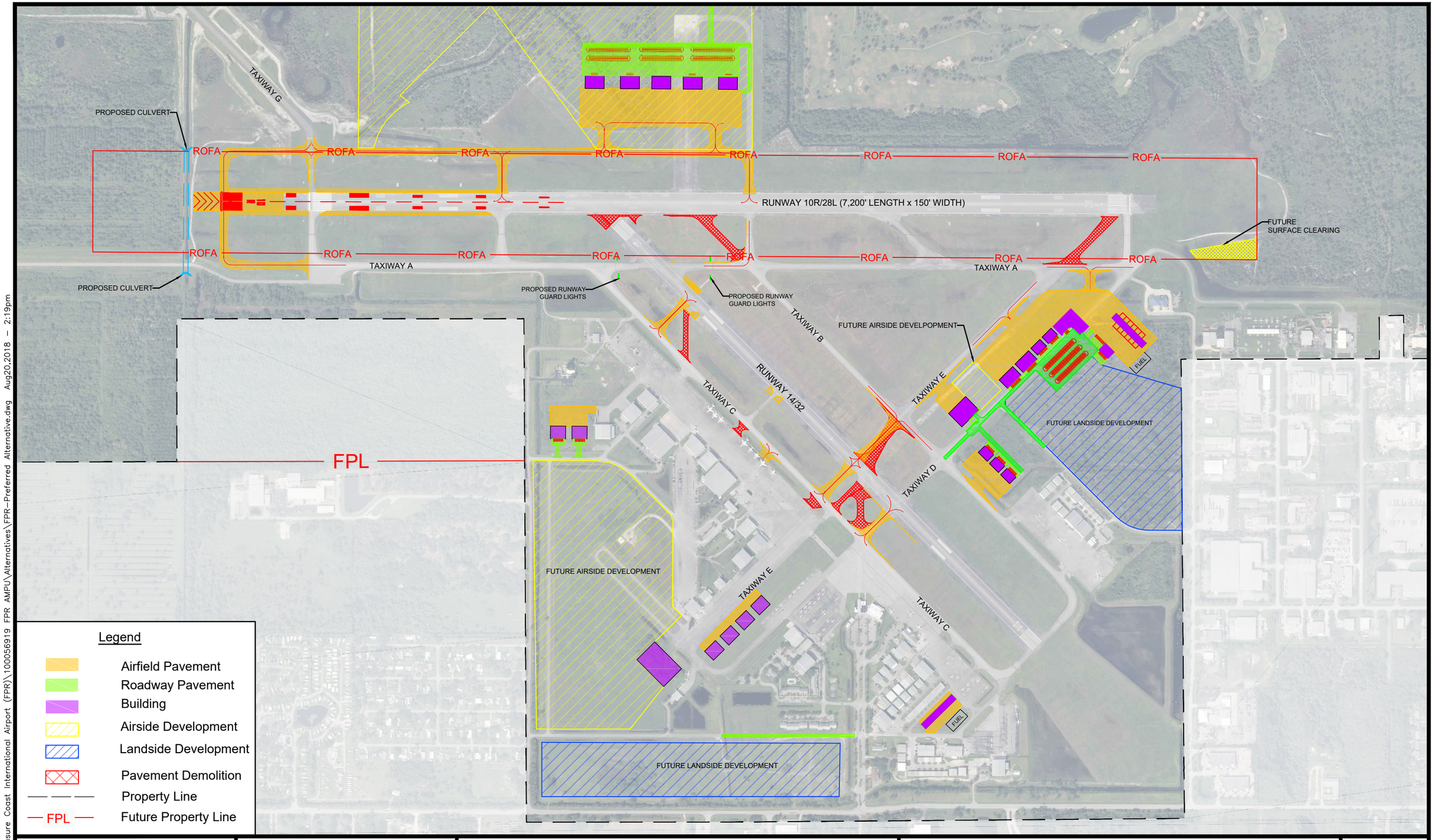
** GA Single Engine Aircraft, ADG I

Pros for the Preferred Alt:

- Allows for further enhanced capacity
- Allows for development north of Runway 10R/28L
- The Extended centerline of Runway 10R/28L to the west provides ample developable property to accommodate for this extension
- Cannot safely accommodate proposed future critical aircraft

Cons for the Preferred Alt:

- Environmental impacts



Legend

- Airfield Pavement
- Roadway Pavement
- Building
- Airside Development
- Landside Development
- Pavement Demolition
- Property Line
- FPL — Future Property Line

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TREASURE COAST International Airport & Business Park AT ST. LUCIE COUNTY

Treasure Coast International Airport
Airport Master Plan Update

Preferred Alternative

Figure 6-5

Plotted By: HASK8597
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7. Capital Improvement Program

7.1. Introduction

The analyses conducted in the previous chapters evaluated airport development needs based on safety, security, potential aviation activity, and operational efficiency. However, the most important element of the master planning process is the application of basic economic, financial, and management rationale to each development item so that the feasibility of implementation can be assured. The purpose of this chapter is to provide cost estimates for phased development through the planning period, examine federal, state, and local funding sources, summarize capital needs at Treasure Coast International Airport (the Airport), and examine the ability of the Airport's operating fund to support future capital projects.

7.2. Sources of Funding

Financing for capital improvements comes from several sources. Funding sources for the Airports capital improvements include Airport generated funds, grants from FDOT, and grants from FAA through the Airport Improvement Program (AIP). Airport generated funds typically come from taxes, lease payments, investment income, fees, and forms of debt financing. The following paragraphs outline the key sources for funding.

7.2.1. Federal Funding

7.2.1.1. Airport Improvement Program

The AIP has been providing federal grants for airport development and planning since the passage of the Airport and Airway Improvement Act of 1982 (P.L. 97-248). AIP funding is usually spent on projects that support aircraft operations such as runways, taxiways, aprons, noise abatement, land purchase, and safety or emergency equipment.

The funds obligated for the AIP are drawn from the Airport and Airway Trust Fund (hereafter referred to as the trust fund), which is supported by a variety of user fees and fuel taxes. The AIP is one of five major sources of airport capital development funding. Small airports are more dependent on AIP grants than large or medium-sized airports. Since passage of the Airport and Airway Improvement Act of 1982, AIP has been amended several times, most recently with the passage of the Century of Aviation Reauthorization Act (Vision 100). Under the AIP program the FAA can contribute a portion of the capital costs for airport development. This portion ranges from 75 percent of eligible projects at large and medium hub primary commercial service airports which enplane 0.05 percent or greater of the total national enplanements, to 95 percent funding of eligible projects for small hub primary commercial service and non-hub commercial service, reliever, and GA airports. The Airport is eligible for 95 percent funding from the FAA. **Table 7-1** provides examples of eligible versus ineligible AIP projects.

Table 7-1 Eligible and Ineligible AIP Projects

Eligible Projects	Ineligible Projects
Runway construction/rehabilitation	Maintenance equipment and vehicles
Taxiway construction/rehabilitation	Office and office equipment
Apron construction/rehabilitation	Fuel farms[1]
Airfield lighting	Landscaping
Airfield signage	Artworks
Airfield drainage	Aircraft hangars[1]
Land acquisition	Industrial park development
Weather observation stations (AWOS)	Marketing plans
NAVAIDs such as REILs and PAPIs	Training
Planning studies	Improvements for commercial enterprises
Environmental studies	Maintenance or repairs of buildings
Safety area improvements	
Airport Layout Plans (ALPs)	
Access roads only located on airport property	
Removing, lowering, moving, marking, and lighting hazards	
Glycol recovery trucks/glycol vacuum trucks[2] (11/29/2007)	

Notes:

[1]*May be eligible.*

[2]*To be eligible, the vehicles must be owned and operated by the Airport and meet the Buy American Preference specified in the ALP grant.*

Source: Airport Improvement Program Handbook.
Prepared by: Atkins, 2018.

Discretionary Funding

The Airport is eligible for discretionary funds, which consist of two types. One type is discretionary set-aside funds which have two set-asides designed to achieve specified funding minimums: 1) an amount equal to 31 percent of the discretionary fund is reserved for noise compatibility planning and implementing noise compatibility programs under Section 47501 et seq. of Title 49 U.S.C. (formerly the Aviation Safety and Noise Abatement Act of 1979). Such minimums can be met with apportioned or discretionary funds; 2) four percent of the discretionary fund is used for the Military Airport Program (MAP).

The other type consists of those funds remaining after the apportionments are made and the set-asides are accommodated. Of these remaining funds, 75 percent, known as capacity/safety/security/noise (C/S/S/N), is to be used for preserving and enhancing capacity, safety, and security, and carrying out noise compatibility planning and programs at primary and reliever airports. The remaining 25 percent, known as remaining or pure discretionary, may be used for any eligible project at any airport.

While the discretionary funds can cover a large portion of the capital development of an airport, there are limited discretionary funds available through the AIP. As such, an application for AIP discretionary funds must be submitted to the FAA, who will prioritize these applications against other projects in the southern region. Currently, the projects that receive the highest priority are those associated with C/S/S/N. Unlike AIP entitlement funds, availability of discretionary funds to the Airport is not certain on an annual basis, as discretionary funding varies annually. Therefore, it is unlikely that all the eligible projects as proposed at the Airport would be funded in an expeditious timeframe.

7.2.1.2. Facilities and Equipment Spending

In addition to AIP grants, the FAA may also provide funding to airports via FAA Facilities and Equipment (F&E) spending. F&E is not part of the AIP program and these funds primarily support FAA constructed and maintained facilities such as runway instrumentation, weather reporting devices, ATC facilities. The FAA typically funds the entire cost of an F&E project with no requirement for a local matching share.

7.2.2. State Funding

The Florida Department of Transportation (FDOT) annually funds a state–sponsored airport development program supported by statewide aviation fuel taxes. The program generates over $100 million per year to assist publicly-owned and operated Florida airports. The FDOT will participate in projects not funded with FAA monies on 50-50 basis for commercial service airports, depending upon the nature and eligibility requirements of the projects. The state will also participate with federal and local agencies on a project on a 90 percent federal, five percent state, and five percent local share basis. Typically, projects funded through this aviation development program have been developed on a pay-as-you-go basis. FDOT also provides interest free loans for 75 percent of the cost of the airport land purchases for both commercial service and GA airports. These loans are to be repaid when federal funds become available or in 10 years, whichever comes first.

FDOT has developed a computer program in conjunction with the FAA, the Joint Automated Capital Improvement Program (JACIP), as a tool to assist airports in coordinating their capital improvement program with the FAA and FDOT. FDOT uses the projects included in the JACIP to prioritize projects into the FDOT Work Program. The Work Program includes five years of projects that have been approved for funding if funds are approved by the Legislature for the current year.

7.2.3. Funding Sources – Other

Several Federal assistance-funding programs (other than FAA) are available to Airports. These include the following.

- **Economic Development Assistance Grants (EDA)** – Managed by the US Department of Commerce, this program provides grants available to finance industrial park development.
- **Transportation Act for the 21st Century (TEA-21**) – Airports eligible for access road development and intermodal-related projects.
- **Florida Economic Development Transportation Fund Agency** – Administered by Enterprise Florida, Incorporated, this program provides funding to local governments for transportation projects serving as an inducement for a company's Florida location, retention, or expansion project.
- **Small Cities Community Development Block Grant (CDBG)** – *Section 108 Loan Guarantee Program* – offered by the Florida Department of Community Affairs (DCA), this program provides a mechanism for small cities to access funds for larger community development projects.
- **Florida Small Cities Community Development Block Grant (CDBG)** – Available through the Florida Department of Community Affairs (DCA), the purpose of this program is to provide grants to eligible jurisdictions to provide infrastructure improvements which specific businesses need to create new jobs, and provide eligible jurisdictions with grants which are used for loans to new or expanding businesses when other sources of financing are not available.
- **Metropolitan Planning Organization Surface Transportation Program (STP) Grants Program** – Available through the local Metropolitan Planning Organization (MPO) and provides financial assistance to publicly owned, publicly operated airports and other governmental entities for surface transportation projects.
- **Small Community Air Service Development Program Grants (SCASDP**) – These grants are available to eligible airports whose sponsors want to improve or begin new airline service.

It is important to note that the availability or amount of funds from any of these sources cited is not predictable on an annual basis and have not been included in this analysis as a steady revenue source.

7.3. Local Funding

Local share funding can come through three distinct sources.

- **Debt Financing:** This option involves borrowing money against the available credit for the County. The debt may become a bond issue, where municipal bonds are sold to cover the cost of capital construction. These bonds generally fall into two categories – general obligation bonds and revenue bonds. General obligation bonds do not rely upon any revenue generated by the project, whereas revenue bonds depend upon the ability of the project to generate money to repay the debt.
- **Private Enterprise**: Private investors are a potential source of funds for revenue-producing developments at the Airport. Tenants and/or investors may finance the purchase of existing facilities or the construction of new facilities from which they derive income. While direct revenues to the Airport are usually limited to the purchase or lease charges for the land underlying the facilities, the local sponsor does not need to obtain its own funding for these improvements. Additionally, the increased activity resulting from airport improvements often increases the number of based aircraft or operations, which in turn generates additional revenue associated with fuel sales and other aviation services. Examples of private investment at airports include buildings for fixed based operators, fuel facilities, hangars (bulk and T-hangars), aviation-related commercial development, and non-aviation commercial development.
- **County Appropriations from their General Fund:** The remainder of this analysis will examine the Airport's potential to generate enough revenues to supplement appropriations from the County to cover airport operations and capital improvement projects.

7.3.1. Historical Revenues and Expenses

The Airport is owned by the St. Lucie County Board of County Commissioners (BOCC) and is managed by the Air and Seaport Department, County Administration. The Airport operates as an enterprise fund. Revenues generated from use are dedicated by federal, state, and local law to fund the Airport's operations, maintenance, and capital costs. All airports that are recipients of federal grant funding are obligated to establish a fee and rental structure that makes the Airport as financially self-sufficient as possible under airport specific circumstances.

Table 7-2 shows the historical revenues for FY2009 through FY2017. The fiscal year for St. Lucie County is October 1st through the end of September. This information was gleaned from Actual Airport Revenue and Expenses (FY2009-FY2017) produced by the St. Lucie County Office of Management and Budget. Some of the revenue categories represent aggregated totals of several accounting sub-categories. Revenues from airport operations are derived from the following.

- **Lease Revenue:** This includes hangar rent and ground lease revenue.
- **Fuel Flowage Fee:** The Airport charges a fuel flowage fee of $0.0614 per gallon.
- **Golf Course Land Lease:** The County leases 228.70 acres of Airport land to the Fairwinds Golf Course.
- **Interest on Investments:** Interest earned on airport investments.
- **Miscellaneous Revenues:** This category captures all revenue that is not attributable to the other categories.

Table 7-2 Historical Revenues

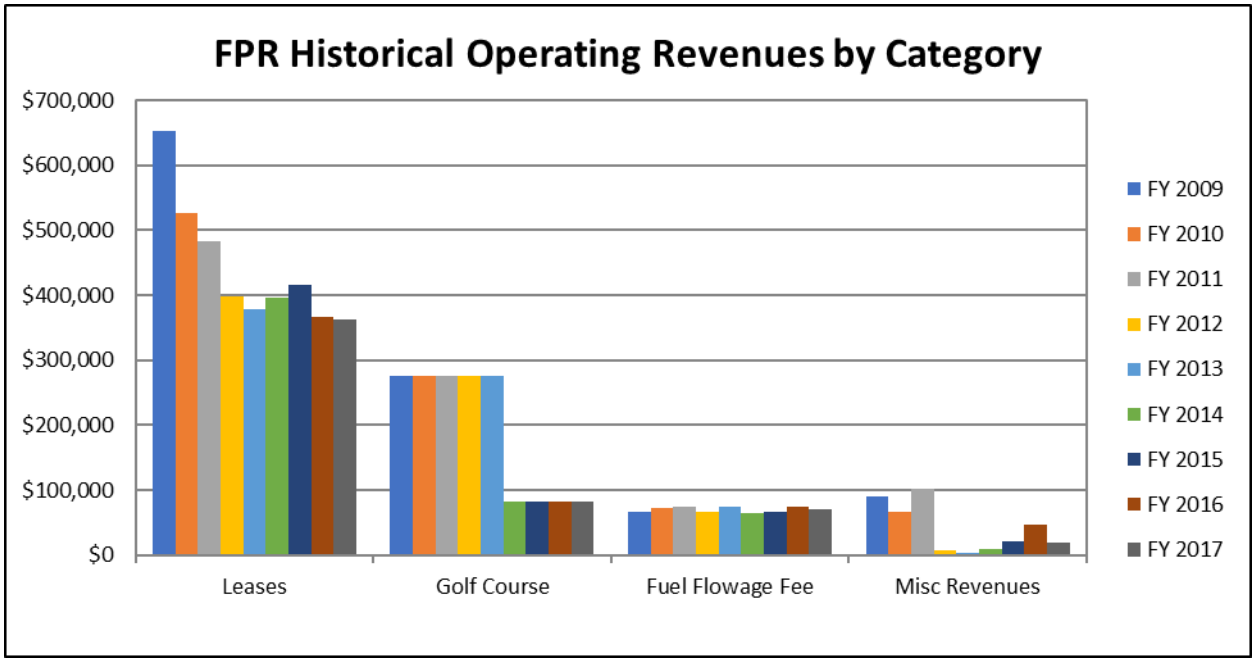
Revenue Category	FY 2009 ($)	FY 2010 ($)	FY 2011 ($)	FY 2012 ($)	FY 2013 ($)	FY 2014[1] ($)	FY 2015 ($)	FY 2016 ($)	FY 2017 ($)	CAGR (09 -17) (%)	Growth (%)
Leases	651,925	527,140	483,081	397,376	378,191	396,908	415,624	366,209	362,734	-7.1	-44.4
Golf Course	275,000	275,000	275,000	275,000	275,000	82,500	82,500	82,500	82,500	-14.0	-70.0
Fuel Flowage Fee	66,014	73,467	75,000	66,942	73,910	65,656	65,967	74,335	69,662	0.7	5.5
Interest on investments	52,829	58,645	41,522	6,026	0	6,697	21,290	19,967	17,876	-12.7	-66.2
Miscellaneous Revenues	36,939	8,119	61,536	1,547	2,606	1,780	955	26,394	1,062	-35.8	-97.1
Total Operating Revenues	**1,082,707**	**942,371**	**936,138**	**746,892**	**729,706**	**553,541**	**586,337**	**569,405**	**533,834**	**-8.5**	**-50.7**
Non- Operating Revenues	**FY 2009 ($)**	**FY 2010 ($)**	**FY 2011 ($)**	**FY 2012 ($)**	**FY 2013 ($)**	**FY 2014[2] ($)**	**FY 2015 ($)**	**FY 2016 ($)**	**FY 2017 ($)**	**CAGR (09 -17) (%)**	**Growth (%)**
Reimbursements-Capital Improvement	4,000	413,959	0	0	0	0	0	0	0		
General Fund	786,197	409,324	239,909	511,801	488,591	881,841	1,148,849	1,017,052	350,467		
State Grants	1,854,811	2,436,360	362,990	866,778	2,953,211	3,474,949	399,215	400,264	3,745,078		
Federal Grants	7,472,983	2,981,150	191,341	1,540,769	2,071,853	585,369	57,770	0	0		
Other	1,046,534	1,961	32,575	-16	40	0	0	0	0		
Total Non-Operating Revenues	**11,164,525**	**6,242,754**	**826,815**	**2,919,331**	**5,513,695**	**4,942,159**	**1,605,835**	**1,417,316**	**4,095,545**	**-12**	**-63**
Total Revenues	**12,247,232**	**7,185,125**	**1,762,954**	**3,666,223**	**6,243,401**	**5,495,700**	**2,192,172**	**1,986,721**	**4,629,379**	**-11.45**	**-62**

[1]Consultant Estimate due to differences in the Actual Airport Revenue and Expenses (FY2014) data and the FY2014 Comprehensive annual financial report (CAFR). FY2014 data was not used in the revenue projections.
[2]Source: FY 2014 Budget

Also included in Table 7-2 are the Airport's non-operating revenues. These revenues include sale of airport property and annual contributions to the Airport from FAA/FDOT and County for capital development. It should be noted that non-operating revenues costs are just that – they are not generated from airport operations. To determine what revenue the Airport is generating, the analysis will focus on and compare operating revenues with operating expenses.

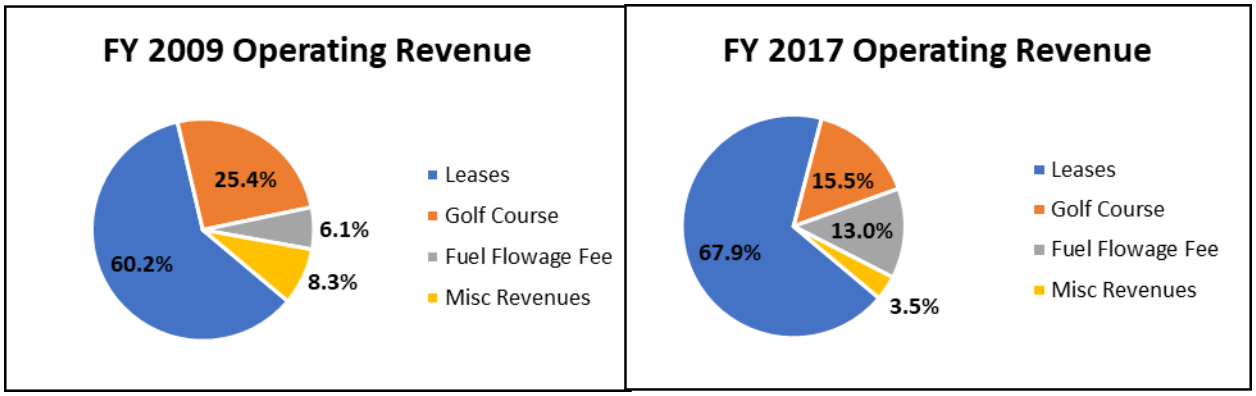
From the historical financial information, the operating revenues have shown a steady decline since FY2009, with fuel flowage fees being the only category with positive growth (0.7 percent annual growth rate). Operating revenues have declined from $1,082,707 in FY2009 to $533,834 in FY2017 – a total decrease of 50.7 percent (-8.5 percent annual growth rate). The $289,191 decrease in lease revenue and $192,000 decrease in golf course rents are the primary reasons for the decline. The historic operating revenues by category and the percentage shifts in operating expenses from 2009 to 2017 are depicted in **Figures 7-1** and **7-2** respectively.

Figure 7-1 Historical Operating Revenues by Category



Source: R.A. Wiedemann & Associates
Note: Misc. Revenues includes interest on investment category

Figure 7-2 Percentage Shifts in Operating Expenses

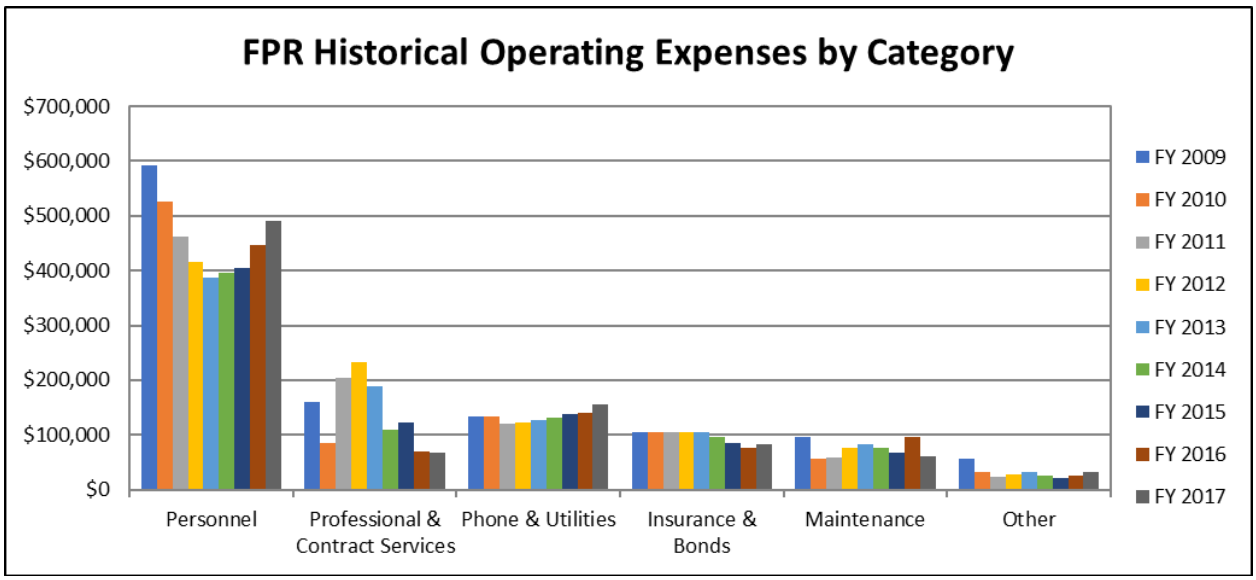


Source: R.A. Wiedemann & Associates

Table 7-3 shows the Airport's historical Operating Expenses from FY2009 through FY2017. **Figure 7-3** depicts the Airport's historical Operating Expenses by Category from FY 2009 through FY2017. These expenses consist of the following cost items.

- **Personnel Expenses:** This includes salaries and benefits of airport employees.
- **Professional & Contract Services:** This category includes legal and auditing fees, engineering and consultant costs as well as paid services not performed by County employees.
- **Phone and Utilities:** Costs for telecommunications and utilities.
- **Insurance & Bonds – Specific Policies:** Includes the Airport's commercial insurance premiums and self-insurance premiums.
- **Equipment Maintenance:** Services or supplies purchased to maintain equipment owned or used by the Airport.
- **Building Maintenance:** Services or supplies purchased to maintain airport grounds and buildings owned or used by the Airport.
- **Administration Expenses:** Includes office supplies, postage, printing, dues and memberships, travel and training.
- **Materials and Supplies**: Includes operating supplies, equipment, and equipment rental.
- **Promotional and Advertising:** Advertising expenses related to promoting the Airport.
- **Miscellaneous Expenses:** All other expenses not attributable to the other categories.

Figure 7-3 Historical Operating Expenses by Category



Source: R.A. Wiedemann & Associates

Non-operating expenses shown in Table 7-3 are inclusive of the Airport's capital improvement costs. Capital spending is based primarily on the Airport's infrastructure development needs and its ability to secure grants and program improvements. These funds vary widely annually and will be forecast based on the Airport's most recent ACIP.

According to historical financial information, operating expenses have experienced annual fluctuations, ranging from a high of $1,142,847 in FY2009 to a low of $838,696 in FY2015. Over the most recent five-year period, operating expenses have experienced an overall decrease of 9.2 percent (-1.9 percent annual growth rate), primarily due to a decrease in professional and contract services and insurance and bonds-specific policies categories.

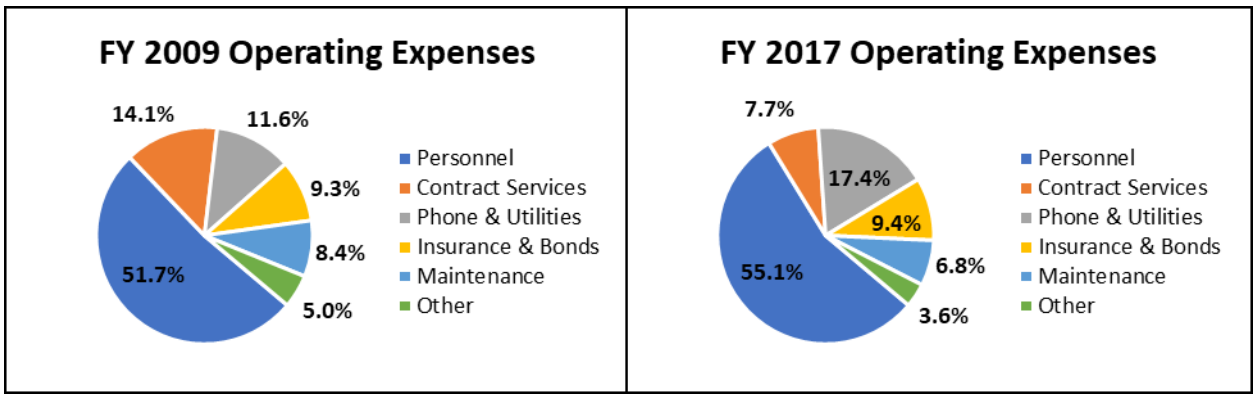
Personnel was the Airport's largest expense ($489,991) in FY2017 and accounted for 55.1 percent of operating expenses. Phone/ & utilities, and insurance &/ bond expenses were the second and third largest expenditures at the Airport. **Figure 7-4** graphically illustrates the percentage shift in operational revenues by type for comparison years FY2009 and FY2013.

Table 7-3 Historical Expenses

Expense Category	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014[1]	FY 2015	FY 2016	FY 2017	CAGR (09 -17)	Growth
Personnel Expense	$591,138	$526,972	$462,666	$415,159	$387,413	$395,518	$403,623	$447,204	$489,991	-2.3%	-17.1%
Professional & Contract Services	$160,624	$85,491	$204,797	$232,269	$187,900	$109,285	$123,127	$69,468	$68,297	-10.1%	-57.5%
Phone and Utilities	$132,653	$133,869	$120,552	$122,888	$127,463	$132,446	$137,428	$140,819	$154,942	2.0%	16.8%
Insurance & Bonds-Specific Policies	$105,900	$105,900	$105,900	$105,900	$105,900	$96,056	$86,212	$76,725	$83,511	-2.9%	-21.1%
Equipment Maintenance	$44,838	$48,506	$50,317	$60,473	$53,140	$47,559	$41,978	$62,075	$47,568	0.7%	6.1%
Building & Ground Maintenance	$50,886	$7,849	$9,302	$15,722	$30,448	$28,124	$25,800	$34,859	$12,933	-15.7%	-74.6%
Administration Expenses	$12,559	$10,872	$8,678	$6,961	$8,953	$10,137	$11,321	$12,658	$13,168	0.6%	4.9%
Materials and Supplies	$37,534	$17,817	$6,169	$14,801	$16,969	$12,836	$8,703	$8,949	$7,031	-18.9%	-81.3%
Promotional and Advertising	$1,897	$1,356	$701	$686	$1,282	$783	$284	$4,317	$2,273	2.3%	19.9%
Miscellaneous Expenses	$4,820	$2,500	$8,089	$4,692	$4,427	$2,324	$220	$192	$9,487	8.8%	96.8%
Total Operating Expenses	**$1,142,847**	**$941,132**	**$977,171**	**$979,550**	**$923,894**	**$835,068**	**$838,696**	**$857,265**	**$889,201**	**-3.1%**	**-22.2%**
Non-Operating Expenses	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014[2]**	**FY 2015**	**FY 2016**	**FY 2017**	**CAGR (09 -17)**	**Growth**
Transfers to General Fund	$275,000	$275,000	$275,000	$275,000	$275,000	$280,954	$82,500	$82,500	$82,500	-14.0%	-70.0%
Capital Outlay	$12,052,038	$3,808,893	$581,794	$5,947,758	$2,555,333	$5,012,190	$262,019	$730,216	$1,676,022	-21.9%	-86.1%
Debt Service	$390	$857	$858	$554	$254	$127	$0	$0	$0	-100.0%	-100.0%
Airport Fund Capital Expenses	$2,024,835	$440,273	$610,199	$584,989	$490,672	$14,880	$126,594	$149,477	$1,033,791	-8.1%	-48.9%
Total	**$14,352,263**	**$4,525,023**	**$1,467,850**	**$6,808,300**	**$3,321,259**	**$5,308,151**	**$471,113**	**$962,193**	**$2,792,313**	**-18.5%**	**-80.5%**
Total Expenses	**$15,495,110**	**$5,466,156**	**$2,445,021**	**$7,787,851**	**$4,245,153**	**$6,143,219**	**$1,309,809**	**$1,819,458**	**$3,681,514**	**-16.4%**	**-76.2%**

[1]Consultant Estimate due to differences in the Actual Airport Revenue and Expenses (FY2014) data and the FY2014 Comprehensive annual financial report (CAFR). FY2014 data was not used in the expense projections.
[2]Source: FY 2014 Budget

Figure 7-4 Percentage Shifts in Operating Expenses



Source: R.A. Wiedemann & Associates

Table 7-4 presents a summary and comparison of historical operating revenues and expenses. As shown, 2010 was the only year that the Airport did not have an operating deficit. Operating deficits in 2016 and 2017 were $287,861 and $355,367, respectively.

Table 7-4 Comparison of Historical Operating Revenues & Expenses

Year	Operating Revenues	Operating Expenses	Operating Net Gain/(Loss)
FY 2009	$1,082,707	$1,142,847	($60,140)
FY 2010	$942,371	$941,132	$1,239
FY 2011	$936,138	$977,171	($41,033)
FY 2012	$746,892	$979,550	($232,659)
FY 2013	$729,706	$923,894	($194,188)
FY 2014	$553,541	$835,068	($281,527)
FY 2015	$586,337	$838,696	($252,359)
FY 2016	$569,405	$857,265	($287,861)
FY 2017	$533,834	$889,201	($355,367)

Source: R.A. Wiedemann & Associates

It is against this historical backdrop that the Forecast of Revenues and Expenses for the Airport is developed. It should be noted that most public-use GA airports in the United States do not cover expenses with revenues and must be subsidized by their owners/sponsors.

7.3.2. Forecast of Operating Revenues and Expenses

The forecast of operating revenues and expenses presents a look at revenues and expenses, influenced primarily by historical activity and revenue-producing capital investments. To determine the historical trend, the percent change from 2013 to 2017 was examined to calculate the average percent change in revenues and expenses. Thus, any major fluctuation during any one year did not unduly affect the overall trend. Assumptions used in developing the forecast included the following.

- ***Rate of Inflation/Consumer Price Index (CPI):*** Historically, the rate of inflation/CPI has been used to escalate prices when making forecasts of revenues and expenses. For this forecast, a rate of 2.0 percent was used to forecast Fuel Flowage Fees, Interest on Investments and Miscellaneous Revenues. On the expense side, CPI was used to forecast Insurance & Bonds-Specific Policies, Phone and Utilities, Administration Expenses, and Promotional and Advertising.
- ***Lease Revenues:*** The forecast utilized existing rental rates for tenant leases. These rents then were increased by escalations contained in the lease agreements. This projection also assumed the

construction of new hangars and the development of a self-serve fuel station, operated by the County. 2017 lease rates were estimated to start at $7.80 per square foot for conventional hangars, $500 per unit per month for T-hangars and at $0.25 per square foot for ground leases. These were then escalated by the CPI. Ground leases were assumed to be the hangar footprint plus 25 percent. Profit from the fuel station was conservatively estimated at $50,000 per year, also escalated by CPI.

- ***Golf Course Rents:*** The annual rent of $82,500 was kept constant through the end of the lease (FY 2020). It was then increased by CPI annually through the rest of the planning period.
- ***Personnel Expenses:*** Personnel Expenses used the 2018 County Budget to estimate 2018 levels. This was then increased by four percent throughout the planning period.
- ***Phone and Utilities:*** Phone and utilities were increased by four percent throughout the period.
- ***Three Year Average:*** The three-year average (2015-2017) of Professional & Contract Services, Equipment Maintenance, Building & Ground Maintenance, Materials and Supplies, and Miscellaneous Expenses were used to calculate the 2018 totals for each category due to fluctuations of expenses year to year. They were then projected to increase by CPI throughout the planning period.
- ***Additional Lease Expense:*** Additional expenses (maintenance, repair, admin) from new leases were estimated to be 5 percent of new lease revenues.
- ***Debt Service:*** No debt service was included in the forecast of operating revenues and expenses to determine if surplus net operating revenues (if available) could be used to help pay debt service costs.

Drawing on these assumptions and taking a conservative approach to Airport financial performance, a reasonable forecast was developed. The projection of revenues and expenses was forecast through FY 2038. As shown in **Tables 7-5** and **7-6**, operating revenues are anticipated to grow from $533,834 in 2017 to $2,257,344 by FY 2038 - an overall increase of 305 percent for the period. Operating expenses are expected to increase from $889,201 in FY 2017 to $2,017,985 in FY 2038 - an overall growth of 120 percent**. Table 7-7** presents the isolated summary of operating revenues and expenses generated by the Airport and its improvements.

As shown, the Airport's operating net revenues are expected to improve. However, these operating revenues do not incorporate any repayment of debt which will arise from the investment in hangar facilities. These hangar facilities are anticipated to cost more than $84.2 million ($43.8 million in local funding and $40.3 million in private funding). Typical debt service on the local funding amount using a low, four percent rate of interest, would cost roughly $3.2 million per year. The net revenue surplus by 2038 would not be able to cover this cost. The results of this forecast indicate that the Airport will still require a subsidy from the County and other sources to cover operational and non-operational expenses over the long term.

Figure 7-5 Forecast of Operating Revenues and Expenses

Operating Revenues:	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Lease Revenue	$362,734	$372,700	$390,041	$398,179	$406,137	$414,253	$422,532	$430,983	$439,603	$448,395	$457,363
MRO Hangar			$243,454	$248,323	$253,289	$258,355	$263,522	$268,792	$274,168	$279,652	$285,245
New Hangar Leases								$134,396	$137,084	$139,826	$641,801
New Ground Leases						$5,918	$6,036	$6,157	$6,280	$6,406	$15,676
Golf Course Land Lease	$82,500	$82,500	$82,500	$82,500	$84,150	$85,833	$87,550	$89,301	$91,087	$92,908	$94,767
Fuel Flowage Fee	$69,662	$69,988	$71,388	$72,816	$74,272	$75,757	$77,272	$78,818	$80,394	$82,002	$83,642
Interest on Investments	$17,876	$18,234	$18,599	$18,970	$19,350	$19,737	$20,132	$20,534	$20,945	$21,364	$21,791
Miscellaneous	$1,062	$1,083	$1,105	$1,127	$1,149	$1,172	$1,196	$1,220	$1,244	$1,269	$1,294
Total Operating Revenues	**$533,834**	**$544,505**	**$807,086**	**$821,914**	**$838,347**	**$861,026**	**$878,240**	**$1,030,201**	**$1,050,805**	**$1,071,821**	**$1,601,578**

Operating Expense:	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Personnel Expense	$489,991	$595,975	$619,814	$644,607	$670,391	$697,206	$725,095	$754,099	$784,262	$815,633	$848,258
Professional & Contract Services	$68,297	$86,964	$88,703	$90,477	$92,287	$94,133	$96,015	$97,936	$99,894	$101,892	$103,930
Phone and Utilities	$154,942	$158,041	$161,202	$164,426	$167,714	$171,069	$174,490	$177,980	$181,539	$185,170	$188,874
Insurance & Bonds-Specific Policies	$83,511	$85,181	$86,884	$88,622	$90,395	$92,202	$94,047	$95,927	$97,846	$99,803	$101,799
Additional Lease Expenses			$12,173	$12,416	$12,664	$13,214	$13,478	$20,467	$20,877	$21,294	$47,136
Equipment Maintenance	$47,568	$50,540	$51,551	$52,582	$53,634	$54,707	$55,801	$56,917	$58,055	$59,216	$60,400
Building & Ground Maintenance	$12,933	$24,531	$25,021	$25,522	$26,032	$26,553	$27,084	$27,626	$28,178	$28,742	$29,317
Administration Expenses	$13,168	$13,431	$13,700	$13,974	$14,253	$14,538	$14,829	$15,126	$15,428	$15,737	$16,051
Materials and Supplies	$7,031	$8,227	$8,392	$8,560	$8,731	$8,906	$9,084	$9,265	$9,451	$9,640	$9,832
Promotional & Advertising	$2,273	$2,319	$2,365	$2,413	$2,461	$2,510	$2,560	$2,611	$2,664	$2,717	$2,771
Miscellaneous Expenses	$9,487	$3,300	$3,366	$3,433	$3,502	$3,572	$3,643	$3,716	$3,791	$3,866	$3,944
Total Operating Expenses	**$889,201**	**$1,028,509**	**$1,073,172**	**$1,107,031**	**$1,142,064**	**$1,178,609**	**$1,216,125**	**$1,261,670**	**$1,301,985**	**$1,343,710**	**$1,412,313**
Net Operating Revenues	**($355,367)**	**($484,004)**	**($266,086)**	**($285,117)**	**($303,717)**	**($317,584)**	**($337,885)**	**($231,469)**	**($251,180)**	**($271,889)**	**$189,723**

Source: Randal A. Wiedemann and Associates

Figure 7-6 Forecast of Operating Revenues and Expenses (Continued)

Operating Revenues:	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 3038
Lease Revenue	$466,510	$475,840	$485,357	$495,064	$504,965	$515,065	$525,366	$535,873	$546,591	$557,522	$568,673
New Hangars	$654,637	$667,729	$865,423	$882,731	$900,386	$918,394	$936,762	$955,497	$974,607	$994,099	$1,013,981
New Ground Lease	$15,990	$16,310	$16,636	$16,968	$17,308	$17,654	$18,007	$18,367	$18,735	$19,109	$19,491
MRO Hangar	$290,950	$296,769	$302,704	$308,758	$314,933	$321,232	$327,656	$334,210	$340,894	$347,712	$354,666
Golf Course Land Lease	$96,662	$98,595	$100,567	$102,578	$104,630	$106,723	$108,857	$111,034	$113,255	$115,520	$117,830
Fuel Flowage Fee	$85,315	$87,021	$88,762	$90,537	$92,348	$94,195	$96,079	$98,000	$99,960	$101,959	$153,999
Interest on Investments	$22,227	$22,671	$23,125	$23,587	$24,059	$24,540	$25,031	$25,532	$26,042	$26,563	$27,095
Miscellaneous	$1,320	$1,347	$1,374	$1,401	$1,429	$1,458	$1,487	$1,517	$1,547	$1,578	$1,609
Total Operating Revenues	**$1,633,610**	**$1,666,282**	**$1,883,947**	**$1,921,626**	**$1,960,058**	**$1,999,259**	**$2,039,244**	**$2,080,029**	**$2,121,630**	**$2,164,063**	**$2,257,344**
Operating Expense:	**FY 2028**	**FY 2029**	**FY 2030**	**FY 2031**	**FY 2032**	**FY 2033**	**FY 2034**	**FY 2035**	**FY 2036**	**FY 2037**	**FY 2038**
Personnel Expense	$882,189	$917,476	$954,175	$992,342	$1,032,036	$1,073,317	$1,116,250	$1,160,900	$1,207,336	$1,255,629	$1,305,855
Professional & Contract Services	$106,009	$108,129	$110,292	$112,497	$114,747	$117,042	$119,383	$121,771	$124,206	$126,690	$129,224
Phone and Utilities	$192,651	$196,504	$200,434	$204,443	$208,532	$212,702	$216,956	$221,296	$225,721	$230,236	$234,841
Insurance & Bonds-Specific Policies	$103,835	$105,912	$108,030	$110,191	$112,394	$114,642	$116,935	$119,274	$121,659	$124,092	$126,574
Equipment Maintenance	$61,608	$62,841	$64,097	$65,379	$66,687	$68,021	$69,381	$70,769	$72,184	$73,628	$75,100
Additional Lease Expenses	$48,079	$49,040	$59,238	$60,423	$61,631	$62,864	$64,121	$65,404	$66,712	$68,046	$69,407
Building & Ground Maintenance	$29,903	$30,501	$31,111	$31,733	$32,368	$33,015	$33,675	$34,349	$35,036	$35,737	$36,451
Administration Expenses	$16,372	$16,700	$17,034	$17,375	$17,722	$18,076	$18,438	$18,807	$19,183	$19,567	$19,958
Materials and Supplies	$10,029	$10,230	$10,434	$10,643	$10,856	$11,073	$11,294	$11,520	$11,751	$11,986	$12,225
Promotional & Advertising	$2,827	$2,883	$2,941	$3,000	$3,060	$3,121	$3,183	$3,247	$3,312	$3,378	$3,446
Miscellaneous Expenses	$4,023	$4,103	$4,185	$4,269	$4,354	$4,441	$4,530	$4,621	$4,713	$4,807	$4,903
Total Operating Expenses	**$1,457,524**	**$1,504,319**	**$1,561,971**	**$1,612,294**	**$1,664,387**	**$1,718,315**	**$1,774,148**	**$1,831,956**	**$1,891,813**	**$1,953,796**	**$2,017,985**
Net Operating Revenues	**$176,086**	**$161,964**	**$321,975**	**$309,331**	**$295,671**	**$280,944**	**$265,096**	**$248,073**	**$229,817**	**$210,266**	**$239,359**

Source: R.A. Wiedemann & Associates

Figure 7-7 Forecast Net Revenues

Year	Operating Revenues	Operating Expenses	Operating Net Revenues
FY 2017	$533,834	$889,201	($355,367)
FY 2018	$544,505	$1,028,509	($484,004)
FY 2019	$807,086	$1,073,172	($266,086)
FY 2020	$821,914	$1,107,031	($285,117)
FY 2021	$838,347	$1,142,064	($303,717)
FY 2022	$861,026	$1,178,609	($317,584)
FY 2023	$878,240	$1,216,125	($337,885)
FY 2024	$1,030,201	$1,261,670	($231,469)
FY 2025	$1,050,805	$1,301,985	($251,180)
FY 2026	$1,071,821	$1,343,710	($271,889)
FY 2027	$1,601,578	$1,412,313	$189,266
FY 2028	$1,633,610	$1,457,524	$176,086
FY 2029	$1,666,282	$1,504,319	$161,964
FY 2030	$1,883,947	$1,561,971	$321,975
FY 2031	$1,921,626	$1,612,294	$309,331
FY 2032	$1,960,058	$1,664,387	$295,671
FY 2033	$1,999,259	$1,718,315	$280,944
FY 2034	$2,039,244	$1,774,148	$265,096
FY 2035	$2,080,029	$1,831,956	$248,073
FY 2036	$2,121,630	$1,891,813	$229,817
FY 2037	$2,164,063	$1,953,796	$210,266
FY 2038	$2,257,344	$2,017,985	$239,359

Source: R.A. Wiedemann & Associates

7.4. Project Phasing

This section addresses a phased schedule for implementing proposed development projects during the planning period. The schedule represents a prioritized CIP to meet forecast increases in aviation demand and/or economic development initiatives. Projects that appear in the first phase are of greatest importance and have the least tolerance for delay. Additionally, some projects included in an early phase may be a prerequisite for other planned improvements in a later phase. The development phasing for the Airport has been divided into three phases as follows:

- Phase I (short-term): **2019-2023**
- Phase II (mid-term): **2024-2028**
- Phase III (long-term): **2029-2038**

The phasing of individual projects should undergo an annual review to determine the need for changes based upon variation in forecast demand, available funding, economic conditions, and/or other factors that influence airport development. It should be noted that other projects not foreseen in this report may be identified in the future and would necessitate changes in the phasing of projects and the overall CIP. Although the projects in the CIP have an implementation year assigned, this is only a recommendation tied to current assumptions and priorities. The Airport should review the goals, objectives, and priorities shown in the plan and the CIP annually and re-evaluate the CIP based on any changes in current conditions and the

goals, objectives, and priorities stated in the plan. An annual review is necessary to maintain the viability of the AMP and the CIP.

7.4.1. Cost Estimates

Project cost estimates were developed for each project identified in the development plan. The cost estimates provided are order-of-magnitude and presented in 2018 dollars. Estimated quantities of major items, such as pavement or fill material, were used in conjunction with unit cost values to determine a construction cost. A final project cost was then determined by adding set percentages of the construction cost for mobilization (eight percent), safety, security, and traffic control (two percent), drainage (where applicable), and engineering services for construction and design phases (eight percent). Additionally, a contingency amount of 20 percent of the estimated construction cost was added to account for items that were unknown at the time. Actual construction costs may vary based upon inflation, variations in labor and changes in the type or cost of materials used, as well as other unforeseeable economic factors. Furthermore, federal grant assistance available and eligibility may also vary annually. It is highly recommended that an annual review of the estimated project costs be conducted as part of the annual CIP review.

7.5. Capital Improvement Plan

Based on the facility requirements and recommended development plan presented previously, a CIP was developed that lists projects proposed by this AMP. The CIP is shown by phase in **Table 7-8.** Individual CIP Project Sheets, integrated with future projects listed in the JACIP, are provided in **Appendix C** and contain project descriptions, project justification, detailed cost estimates, and other information.

Figure 7-8 Capital Improvement Plan (2018 dollars)

Federal FY	Project Description	Project Cost	Funding			
			Federal	FDOT	Local	Private
SHORT RANGE (Federal Fiscal Years 2019 – 2023)						
2019	Propane Generator	$100,000	$90,000	$5,000	$5,000	
2020	Taxiway A Runway Guard Lights	$49,040	$44,136	$2,452	$2,452	
2020	Runway 10R-28L / 14-32 Decoupling / Taxiway B Demolition	$227,240	$204,516	$11,362	$11,362	
2020	Taxiway E Demolition	$161,680	$145,512	$8,084	$8,084	
2020	Runway 28L ROFA Clearing	$10,800	$9,720	$540	$540	
2021	Taxiway C8 Realignment / Runway 14-32 Shoulders	$677,810	$610,029	$33,891	$33,891	
2021	Taxiway C7 Realignment	$191,810	$172,629	$9,591	$9,591	
2021	Taxiway C1 Airside Development	$1,480,360				$1,480,360
2022	Taxiway E Realignment / Taxiway C4 and C5 Demolition	$1,377,870	$1,240,083	$68,894	$68,894	
2023	Runway 10R-28L Shoulders	$411,050	$369,945	$20,553	$20,553	
2023	Taxiway E North Conventional Hangars (2 7,500 SQ. FT.)	$4,346,570		$2,173,285	$2,173,285	
2023	Taxiway E North Terminal Building (35,022 SQ. FT)	$8,240,400		$4,120,200	$4,120,200	
2023	Taxiway E North Apron Pavement (14,601 SQ. YDS.)	$2,205,690		$1,102,845	$1,102,845	
	TOTAL	**$25,980,320**	**$2,886,570**	**$7,556,695**	**$7,556,695**	**$1,480,360**
MID RANGE (Federal Fiscal Years 2024 – 2028)						
2024	Southside Road Extension	$296,900			$296,900	
2026	Taxiway E North Airside Development - Phase II	$11,161,590		$5,580,795	$5,580,795	
2026	Taxiway B Airside Development	$7,931,310		$3,965,655	$3,965,655	
2026	Airman's Way Airside Development	$7,584,200				$7,584,200
	TOTAL	**$26,974,000**	**$0**	**$9,546,450**	**$9,843,350**	**$7,584,200**
LONG RANGE (Federal Fiscal Years 2029 – 2038)						
2029	Taxiway E North Airside Development - Phase III	$6,122,740.00		$3,061,370	$3,061,370	
2030	Runway 10R-28L Extension	$1,772,930	$1,595,637	$88,647	$88,647	
2038	Runway 10R-28L North Parallel Taxiway (partial)	$1,105,820	$995,238	$55,291	$55,291	
2038	Taxiway E South Airside Development	$31,318,600				$31,318,600
2038	Northside Airside Development	$33,774,300		$16,887,150	$16,887,150	
	TOTAL	**$74,094,390**	**$2,590,875**	**$20,092,458**	**$20,092,458**	**$31,318,600**
	PROGRAM TOTAL	**$127,048,710**	**$5,477,445**	**$37,195,603**	**$37,492,503**	**$40,383,160**

Source: R.A. Wiedemann & Associates, Atkins Analysis 2018

7.6. Financial Analysis

When the CIP local share requirements are paired with the anticipated net revenues from airport operations, a funding shortfall will continue. **Table 7-9** displays that $3.5 million will be needed to fund both operations and capital improvements in the immediate phase. In the intermediate phase, an additional $8.89 million will be needed, while the third phase will require an additional $31.3 million in local funding. Without considering interest rates or inflation, the cumulative net deficit for the period is more than $43.8 million.

Figure 7-9 Overall Cash Flow from Net Revenues and Capital Costs

Year	Operating Revenues	Operating Expenses	Non-Operating Expenses[1]	Net Deficit
FY 2018	$544,505	$1,028,509	$258,329	($742,333)
FY 2019	$807,086	$1,073,172	$255,781	($521,867)
FY 2020	$821,914	$1,107,031	$264,691	($549,808)
FY 2021	$838,347	$1,142,064	$261,413	($565,130)
FY 2022	$861,026	$1,178,609	$253,869	($571,453)
FY 2023	$878,240	$1,216,125	$287,220	($625,105)
Subtotals Phase 1	**$4,751,118**	**$6,745,511**	**$1,581,303**	**($3,575,696)**
FY 2024	$1,030,201	$1,261,670	$262,920	($494,388)
FY 2025	$1,050,805	$1,301,985	$253,329	($504,509)
FY 2026	$1,071,821	$1,343,710	$322,223	($594,111)
FY 2027	$1,601,578	$1,412,313	$273,882	($84,616)
FY 2028	$1,633,610	$1,457,524	$7,396,330	($7,220,244)
Subtotals Phase 2	**$6,388,016**	**$6,777,202**	**$8,508,683**	**($8,897,868)**
FY 2029	$1,666,282	$1,504,319	$296,900	($134,936)
FY 2030	$1,883,947	$1,561,971	$5,580,795	($5,258,820)
FY 2031	$1,921,626	$1,612,294	$7,931,310	($7,621,979)
FY 2032	$1,960,058	$1,664,387	$0	$295,671
FY 2033	$1,999,259	$1,718,315	$3,061,370	($2,780,426)
FY 2034	$2,039,244	$1,774,148	$88,647	$176,450
FY 2035	$2,080,029	$1,831,956	$55,291	$192,782
FY 2036	$2,121,630	$1,891,813	$0	$229,817
FY 2037	$2,164,063	$1,953,796	$16,887,150	($16,676,884)
FY 2038	$2,257,344	$2,017,985	$0	$239,359
Subtotals Phase 3	**$20,093,482**	**$17,530,985**	**$33,901,463**	**($31,338,965)**

1The airport is already paying Debt service on the MRO Hangar project so the local share cost is included as debt service payments.

Source: R.A. Wiedemann & Associates

Again, this points to the need for financial sources outside the County's general fund. The recommended plan shows most of the local share cost going toward hangar development. It should be noted more than $43.8 million in local funding is needed for hangar development and $40.3 million is needed from private sources. One method is to have the County fund all of it and take all the rental revenues. Another method is to have a third party develop the hangars with private capital. This removes debt service, but also lowers revenues to simple land leases. Also, that method assumes builders will appear when needed.

The financial plan assumes hangars will be filled and will begin paying for themselves, starting the year after construction. However, these assumptions must be proved in the market place. The County may not

have the funds or the debt ceiling available to initiate construction of hangars in the desired timeframe. This is when additional third-party developers are could be used.

For the future, the County will need to borrow money to meet their capital improvement program needs. In those years when local share needs far exceed resources, a total of more than $37.7 million in local funding is programmed – mostly for hangar development. While conditions can change between now and then, planning should be initiated to mitigate the cost and perhaps lay the groundwork for economic development grants or other forms of state or federal assistance.

In order to build a revenue base at the Airport, a number of strategies need to be considered including:

- County development of hangars and other revenue producing facilities – to move away from simple land leases. This would help get the full market rate of return on those capital investments.
- Development of a fuel facility as a revenue base. This would require discussions with the flight schools and others about the need for a second fuel seller on the Airport.
- Non-aviation property development – to funnel money back into airport operations.
- Renegotiations of leases when appropriate. These would be negotiated more in favor of the County when they expire.
- Acquisition of hangars when they come up for sale. It is often much less expensive to buy hangars than to build them. The payback is much quicker on used hangars than on new ones.

These strategies and others will need to be considered in the coming years to stem the losses associated with the Airport and its operation. In the meantime, it will be important to market the Airport and improve its brand among users in the Treasure Coast region. While this may require relatively small amounts of funding, it can result in significant returns if business interests learn about the Airport and decide to locate there.

8. Public Involvement

The Public Involvement Program (PIP) aims to generate public awareness of the Airport's AMP and to prompt public input. Generating public input will insure the planning effort meets the stakeholder's needs. The level of public involvement in airport planning is proportional to the complexity of the planning study and to the degree of public interest. The Airport's PIP process involved public awareness through press releases, information via website and public presentations, and a feedback process to encourage information sharing between stakeholders and the planning team throughout relevant milestones of the AMP process.

Copies of media announcements and other elements of the public awareness campaign are available in Appendices of this report as the official record of the PIP. The project team utilized multiple public forums, including an open house and a public information presentation. The selection of the specific PIP platforms depended heavily on the complexities associated with the Airport, the expected public interest in the master plan, and budget considerations.

8.1. County Web Page Project Updates

Project materials, and announcements were hosted on the St. Lucie County, Florida web page. This site hosted notifications related to the AMP process, informational materials, and opportunity to provide project feedback. A link to the St. Lucie County Master Plan feedback portal is included below.

http://stlucieco.gov/departments-services/a-z/administration/airport/airport-master-plan/master-plan-update-feedback

8.2. Media Announcements

Media announcements are important components of the CIP to inform the public of various project milestones, meetings, and circulate project information. Media announcements were made by airport staff using various mediums including press releases, website announcements, and newspaper articles. Copies of media announcements are provided in **Appendix C.** Various media announcement milestones are listed below:

- 12/27/2017 Public Meeting Announcement Press Release from St. Lucie County, FL
- 1/3/2018 Public Meeting Announcement, TCPalm.com
- 1/8/2018 Public Meeting Announcement, St. Lucie County Facebook Page
- 3/10/2018 Public Presentation Announcement, St. Lucie County Press Release Web Page
- 3/10/2018 Public Meeting Announcement Press Release from St. Lucie County, FL

8.3. Public Meetings

The project team facilitated two public outreach events open to all interested community members. The first meeting was a public open house held from 5:00 p.m. to 8:00 p.m. on January 11, 2018 in the Commission Chambers of the County Administration Complex in Ft. Pierce, Florida. The purpose of this first event was to introduce the public to the AMP process, to discuss characteristics of the Airport (airside, landside, environmental, etc.), and to solicit input. Graphics were available for audience inspection. Members of the project team were on hand during and after the open house to answer questions and provide information. Comment cards were available for public input.

Nine comment cards were turned in at the end of the event.

- Four of the nine comments were concerning a perceived issue regarding aircraft noise; three of which mentioned the flight school, specifically.

- Two of the comments encouraged the growth of passenger/travel options.
- Two comments encouraged the growth of commercial/business opportunities.
- One comment indicated a need for a second FBO
- One comment mentioned purchasing land for buffer zones (highway/agricultural).

The second event was a public presentation that occurred during the regularly scheduled St. Lucie County Commissioners Meeting on January 11, 2018 from 5:30 p.m. to 7:30 p.m. in the Commission Chambers of the County Administration Complex in Ft. Pierce, Florida. The purpose of the presentation was to inform the public of project progress, present the project alternatives, to solicit input, and gather information for alternatives refinement. An oral presentation was given with PowerPoint graphics. Members of the project team were on hand after the presentation to answer questions and provide information. Comment cards were available for public input.

One public comment card was turned in after the session.

- Suggested dropping the demand for GA in future plans showing development of smaller GA structures.

The above items summarize a majority of the input that was received from the public during the public outreach events; however, all public comments related to the project can be found in **Appendix D**.

Appendices

Appendix A. FPR Recycling, Reuse, and Waste Reduction Plan

In 2012, the *Federal Aviation Administration (FAA) Modernization and Reform Act of 2012* was issued and included a new requirement for Airport Master Plans to address recycling by:

- Assessing the feasibility of solid waste recycling at the airport;
- Minimizing the generation of waste at the airport;
- Identifying operations and maintenance requirements;
- Reviewing waste management contracts; and
- Identifying the potential for cost savings or generation of revenue.

Subsequent to the passing of the FAA Reauthorization bill, the FAA issued guidance[1] on preparing recycling, reuse, and waste reduction plans as part of Airport Master Plans. This appendix provides detailed information regarding the management of Treasure Coast International Airport's (FPR) waste and recycling programs. This Recycling, Reuse, and Waste Reduction Plan (RRWRP) includes a review of FPR's waste management and recycling operations throughout the terminal and airfield, as well as a review of tenant practices.

A Airport Description and Background

FPR implemented a recycling program approximately four years ago. The Airport has direct control over waste disposed of in the parking lots, public and FPR terminal spaces (e.g., terminal areas and offices), and the airfield. St. Lucie County does not mandate recycling. Solid waste and recycling collection is handled by a private contractor (Waste Pro) via a county-wide agreement.

FPR owns a significant amount of property that is leased, which also includes property outside the aircraft operating area (AOA) fence line. FPR has more than 30 commercial business tenants located either within the AOA fence line or on Airport property. The Airport has several on-Airport tenants that are extremely proactive with their recycling programs. For example, there are tenants that currently recycle cardboard and scrap metals. Notably, some FPR tenants collect their own recyclable materials and deliver them to recycling collection facilities within the county. Several tenants have formal recycling programs that could potentially be used or adapted by Airport staff. Working with these tenants could rapidly improve the Airport's overall recycling practices, including tenant recycling activities. The Airport has no direct control or influence over off-Airport tenants, such as Briggs and Stratton, etc. The only mechanism for control or influence would be in lease language, which is administered by the St. Lucie County Board of County Commissioners.

The majority of waste at an airport is generated by passengers, tenants, and airport users. Common waste disposed of at FPR includes:

- Common office/terminal waste: paper, plastic (hard plastic containers and film plastics), cans and bottles, food and food-packaging waste, and cardboard boxes
- Deplaned waste (e.g., beverage cups and containers)
- Construction and demolition waste from construction projects

[1] FAA. *Guidance on Airport Recycling, Reuse, and Waste Reduction Plans.* September 30, 2014. http://www.faa.gov/airports/environmental/media/airport-recycling-reuse-waste-reduction-plans-guidance.pdf

- Spill clean-up and remediation waste
- Hazardous waste such as batteries, fluorescent tubes, solvents, and paint

The Airport is responsible for collecting waste generated by airport terminal users and employees. The tenants are responsible for their own trash and recycling disposal. In addition to municipal solid waste, the Airport and some of the tenants have hazardous waste and spill waste, project-related construction and demolition waste, as well as landscaping waste, is typically managed by a contractor, under contract to St. Lucie County.

Figure C-1 depicts the primary types of recycling bins located throughout the Airport terminal building / office areas. Recycling containers used to contain the Airport's waste for collection are located at various areas around the Airport property (**Figure C-2**). The Airport's recycling is picked up once per week, from a six-cubic-yard bin (mixed recyclables); several other tenants also have six-cubic-yard bins for recycling and the aircraft rescue and fire fighting (ARFF) facility has four 95-gallon recycling bins. The local landfill and recycling facility (located on Glades Cutoff Road) is located approximately six miles south/southwest of FPR. The primary commodity markets in this area are for scrap metals (e.g., steel, aluminum); presently, the Airport and several tenants retain these materials for sale in the marketplace.

Most of the waste generated by the Airport staff is from the office areas; however, this is a small volume relative to the overall waste, which is generated by passengers, tenants, and other Airport users. The Airport administrative office has recycling bins located throughout the office areas. Employees are encouraged to use less paper through using network storage for electronic files as well as double-sided printing.

Figure C-1: Examples of Terminal Recycling Bins

Figure C-2: Examples of Recycling/Waste Containers

The recycling bins on the left are located at the ARFF station; the large bin on the right is a tenant waste container, similar to FPR's waste and recycling containers.

Some of the waste minimization efforts undertaken by one or more tenants include:

- Double-sided printing and electronic document usage/storage
- Electronic systems for processing orders and optional receipts (Airport Tiki Restaurant)
- Voluntary recycling (i.e., tenants collect and deliver materials to processing centers)

FPR does not have a formalized recycling/waste reduction program; however, the Airport has taken steps to reduce waste and increase recycling. There are no formalized goals or targets for recycling and no tracking or reporting on the performance of the solid waste recycling programs at FPR. Due to the way solid waste and recycling services are billed (i.e., flat rate billing rather than by volume), it is hard to track and monitor the Airport's performance. A formalized recycling program could be established, but staff time requirements are commonly a challenge to formalizing programs and limited resources are available to implement waste-reduction initiatives.

B Waste Walk-Through

Based on the size of FPR, a waste walk-through was conducted in January 2018 rather than a full waste audit. The walk-through included a review of the terminal space and offices, as well as a select group of Airport tenants.

Waste Pro is the County-wide solid waste and recycling removal provider for the Airport and bills FPR based on container size and does not track the actual volume or weight of waste and recycling. As described previously, the Airport has a six-cubic-yard bin for mixed recyclables, which is picked up once per week, and a six-cubic-yard bin for trash, picked up twice per week. The ARFF facility has four 95-gallon recycling bins and one bin for trash. Each bin was observed during the walk through; however, most bins were empty or nearly empty.

C Review of Recycling Feasibility

FPR currently experiences factors that impact the Airport's ability to recycle. There is limited financial incentive to recycle because the volume of waste and recycled materials at FPR is low. FPR is also a small Airport with limited staff resources, which would make recycling programs challenging to implement.

This Master Plan Update includes a sustainability component, which was based on the overall goals established for the Master Plan Update. A Sustainability Charrette was conducted at the Airport for key County stakeholders, including the County's Environmental Resources Department, Engineering, Public Works, and Planning and Development Services. The Charrette included a discussion of the benefits of waste reduction and recycling because of the cost-savings and environmental benefits. Having the support of the County could help advance FPR's recycling efforts.

Educating the public is continually a logistical challenge as many people throw trash in the recycling bins. Additionally, FPR has a large footprint and many tenants and it is logistically challenging to coordinate with each and every tenant. Continual coordination with all of the tenants would be burdensome for the limited administrative staff.

D Operation and Maintenance (O&M) Requirements

FPR janitorial staff are responsible for collecting in-house waste from the terminal space and offices on a daily basis, as well as transporting the waste to the disposal containers. Additional County (not Airport) responsibilities include:

- The St. Lucie County Solid Waste Department is responsible for tracking and paying bills from Waste Pro, the county-wide vendor for solid waste removal.
- The terminal staff maintains waste equipment.
- Waste containers are procured by the St. Lucie County Solid Waste Department.

E Review of Waste Management Contracts

FPR is under the St. Lucie County's exclusive franchise agreement with Waste Pro of Florida. Information related to the charges for Waste Pro's services were not available. The Airport's current contracts do not require or recommend the use of environmentally-preferred products, nor do they impede their use.

FPR has more than 30 commercial business tenants located either within the Airport fence line or outside of this boundary. Each company has its own lease, with its own time frame. Individual tenant leases were requested from the county; however, this information was unavailable.

F Potential for Cost Savings or Revenue Generation

The Airport may be able to sell scrap metal, particularly from construction and demolition projects. Some of the current tenants sell scrap metals, proving the commodity market is present

in the area. However, the low volume of waste limits the potential for savings or revenue generation potential.

G Plan to Minimize Solid Waste Generation

FPR does not have a formalized program, but does encourage and support recycling in the administrative offices and the Airport terminal. Recycling bins in the terminal have labels detailing acceptable materials for recycling (see **Figure C-3**). The Airport and many tenants have been actively recycling municipal solid waste for several years.

Figure C-3: Recycling Bin Signage

Many initiatives were identified for this RRWRP that would advance FPR's waste reduction and recycling efforts. These initiatives include the following.

- **Broaden the Recycling Program:** Work with the County to embrace a top-down approach to the recycling program to be implemented by the County and encourage employee participation. The program should incentivize waste reduction, diversion and recycling. Identify relevant waste reduction goals as well as recycling methods (e.g., reusable toner cartridges, rechargeable batteries, reusable packaging, etc.) to further this program.
- **Develop Environmentally Preferable Purchasing Procedures:** Work with the County to establish procedures for purchasing materials with recycled/bio-based content, low toxicity, or other environmentally-friendly products. Consider Green Label equipment in purchasing guidelines or other equipment that has low emissions and/or low sound levels.
- **Provide Additional Recycling Bins:** Co-locate recycling receptacles with waste receptacles, and use same-sized receptacles where practical.
- **Develop an Awareness Campaign:** Educate employees, tenants, and passengers about proper recycling practices; this could include posters and additional signage. Upon request, Waste Pro offers responsible recycling and waste management classes to interested parties, which would be a beneficial opportunity for employees and tenants.

- **Periodic Monitoring:** Conduct a monthly walk-through of FPR's offices and terminal to monitor the progress of the waste reduction and recycling program.
- **Provide Hand Dryers:** Install high-efficiency hand dryers in all restrooms, and reposition towel dispensers to reduce paper towel use.
- **Enhance Tenant Engagement:** Coordinate with tenants to consolidate materials and improve economies of scale.
- **Update Contract Language:** Revise existing contract language to establish waste diversion or recycling goals for all tenants, with annual audits and training provided by St. Lucie County, Waste Pro, or a qualified third party.
- **Host a Periodic Universal Waste Collection Day:** Coordinate with Waste Pro to host a periodic (recommend quarterly or semi-annually) collection day for universal waste. Provide an opportunity to Airport employees, tenants, and the local community to drop off materials such as batteries, lightbulbs, pesticides, and more.
- **Charitable Donations:** Collect lost and found items (e.g., jackets, sunglasses) and donate these materials to a local charity.
- **Initiate a Composting Program**. Consider establishing a composting or mulching program, which could utilize organics such as yard waste/debris, grass clippings, and even coffee grounds.

This plan would not require any significant capital improvements. The most significant investment would be providing additional in-house recycling receptacles and a composting bin, and these could be added when there is available operating budget. The Airport should consider future development projects, and whether any of the initiatives would become obsolete or if there would be synergy in implementing the initiative as part of a future project (e.g., develop recycling signage when replacing other airport signs).

The recommended plan is flexible and would allow FPR to implement initiatives when it is financially and logistically feasible. Many of the initiatives could be implemented in phases, such as adding recycling receptacles; or in conjunction with other projects, such as:

- Installing high efficiency hand dryers when renovating restroom facilities.
- Adding outdoor bin enclosures when renovating the exterior or modifying landscaping.
- Creating space for receptacles when remodeling break-room areas.

It is recommended that FPR review their waste reduction initiatives annually and identify whether they need to be revised or updated to meet current goals or new goals established in the future. The Airport's plan should document the process and requirements for including waste reduction in new development projects as well as establishing goals for utilizing recycled/repurposed materials for new development projects (as applicable).

Additional Resources

Leadership in Energy and Environmental Design (LEED) is a rating system which evaluates the sustainability / environmental performance of building development projects. The LEED rating criteria provide valuable ideas for waste reduction techniques during construction and operation

of new facilities, and *LEED for Existing Building O&M* (LEED EBOM)[2] provides ideas for waste reduction at existing facilities. The Sustainable Aviation Guidance Alliance[3] also provides ideas for advancing airport sustainability efforts, including waste reduction and recycling.

2 https://www.usgbc.org/articles/getting-know-leed-building-operations-and-maintenance-om
3 http://airportsustainability.org/

Appendix B. Sustainability Report

Treasure Coast International Airport and Business Park – Master Plan

Sustainability Charrette Summary & Recommendations

February 2018

Prepared by:
C&S Engineers, Inc.

Table of Contents

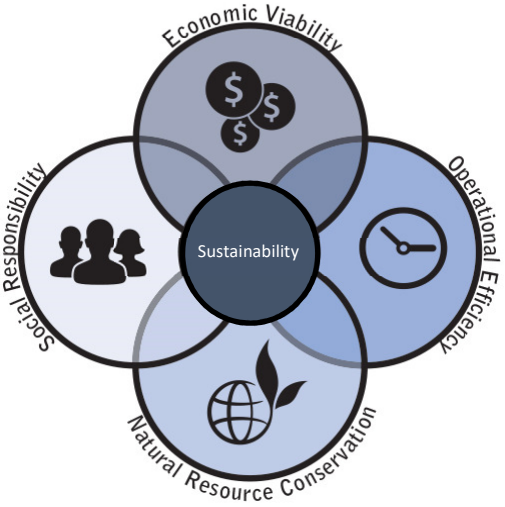
Section 1—Introduction

As part of the Airport Master Plan Update for Treasure Coast International Airport and Business Park (FPR or Airport), St. Lucie County (County) showed its commitment to sustainability by holding a sustainability charrette early in the planning process. This effort, led by C&S Engineers, Inc. (C&S), brought together County representatives and other stakeholders to discuss priorities, challenges and opportunities for the Airport that could be considered in the future development and even operation of the Airport.

In advance of this charrette, the Master Plan team had worked with the County to establish goals and objectives, which helped provide a foundation for this process. C&S also gathered information on existing values, past efforts related to sustainability, and the unique conditions within the County via desktop research and review of previously prepared documentation.

The Treasure Coast International Airport Master Plan Goals align well to the Airports Council International – North America's (ACI-NA) definition of sustainability, considering economic, environmental, social, and operational factors, as shown to the right. Expanding this definition beyond the commonly recognized triple bottom line, specifically calling out operational efficiency, helps address many key priorities of airport departments. Furthermore, this definition of sustainability – often referred to by its acronym, "EONS" – has been embraced by airports across the country. Existing values and goals served as a starting point for the sustainability discussions.

Airport Sustainability



Airport Sustainability—"EONS" (as defined by ACI-NA)

The sustainability charrette was held on January 29, 2018. Following a presentation, attendees participated in a facilitated discussion to refine priorities and challenges, and generate and evaluate ideas. The desired outcome of this effort is to pursue implementable recommendations that offer added value through cost savings, increased efficiency, minimized environmental impacts, and overall social benefits. The charrette also sets a foundation for a collaborative approach to future sustainability planning.

The following report summarizes key considerations for identifying high-value opportunities for the Airport, documents outcomes of the charrette, and provides potential recommendations for consideration in the Master Plan.

Section 2— Considerations

2.1 Master Plan

A Master Plan is intended to establish a long-term plan for an airport by determining the extent, type and schedule of development needed. The Federal Aviation Administration (FAA) offers a number of objectives as a guide in the preparation of a master plan:

- Understand the issues, opportunities and constraints of the airport
- Consider the impact of recent national and local aviation trends
- Identify the capacity of airport infrastructure
- Determine the need for new improvements
- Estimate costs and identify potential funding sources
- Develop a schedule for implementation of proposed projects
- Comply with federal, state and local regulations

The Master Plan includes a report of existing and future conditions, an Airport Layout Plan (ALP) and a schedule of priorities and funding sources for proposed improvements. This planning process offers the opportunity to integrate the County's sustainability goals and objectives into future development and operation of the Airport. While not all of the recommendations that come out of the charrette will necessarily be shown on the ALP, they should be considered for future implementation given the potential economic, operational, environmental and social value.

2.2 National and Regional Sustainability Goals

Airports are part of a broader aviation and transportation system. Fortunately, the County's commitment to sustainability aligns with local, regional, state and even federal commitments that can inform and support implementation of sustainability strategies.

On the national level, the FAA provides various policies, guidelines, and programs to support sustainability initiatives at airports. Funding programs include, but are not limited to, the Energy Efficiency of Airport Power Sources Program (often referred to as "Section 512), the Voluntary Airport Low Emissions (VALE) Program,[1] and the Zero Emissions Vehicles and

[1] The Airport is not eligible for FAA VALE funding, which is applicable to commercial facilities in non-attainment areas.

Infrastructure (ZEV) Program. In addition, the Florida Department of Transportation (FDOT) Aviation and Spaceports Office issued the *Airport Sustainability Guidebook* for use by airports in the state to help plan for, implement, and achieve sustainability goals.

2.2.1 LEED Regional Priorities

The Airport's geographic location can play a major role in prioritizing initiatives. In order to understand the more regionally specific concerns, C&S reviewed the regional priority credits determined by the U.S. Green Building Council LEED version 4 rating system. These credits are listed below:

- Sensitive Land Protection
- High Priority Site (e.g., emphasizing infill areas for development)
- Site Development - Protect or Restore Habitat
- Open Space (creating open space areas for public use or wildlife benefits)
- Outdoor Water Use Reduction
- Indoor Water Use Reduction

The above helped inform the sustainability charrette priority discussion.

2.2.2 St. Lucie County Sustainability Advisory

The County's emphasis on sustainability is also beneficial in understanding priorities and tailoring the charrette. The St. Lucie County Sustainability Advisory consists of 11 members with the purpose of advising the Board of County Commissioners on matters relating to codes and regulations that currently preclude Sustainable Practices. The Sustainability Advisory puts an emphasis on water resources such as stormwater and incorporates living green elements such as; green building, green business, green government, energy, landscaping, water conservation, waste and recycling, food, alternative transportation, and air quality index. The Florida Green Building Coalition (FGBC) recently honored the County for achieving a Silver level of "Florida Green" certification.

2.3 Treasure Coast International Airport Master Plan Sustainability Objectives

As previously noted, sustainability objectives have been integrated into the Master Plan goals for FPR. These objectives were derived from the long-term vision for the Airport by airport staff, sponsor representatives, and community leaders. During the Public Participation Program, interest stakeholders and the general public were able to review and comment on the following objectives. Objectives covered environmental, financial, social, and operational factors – covering the full realm of sustainability as defined by "EONS." In addition, two objectives related to Airport Innovation further demonstrate the County's forward-thinking approach:

- Participate in state, regional, and national organizations that support airport operations and government; and
- Partner with aeronautical education organizations in Florida to provide research opportunities for airport management and operation.

See Working Paper 1 for the full list of objectives, which were rolled into the charrette discussion to guide the idea generation.

Section 3—Sustainability Priorities and Challenges

Using the above local, regional, state and federal considerations, charrette participants identified specific priorities and challenges that should be considered in generating sustainability ideas for the Airport.

Photo Credit: C&S Engineers, Inc.

3.1 Priorities

Priorities have been organized by general category:

Stormwater & Natural Resources

- Improve integration of Stormwater Master Planning
- Stormwater management
- Stormwater reuse and smart growth, reducing runoff

Energy & Emissions

- Electric vehicle charging stations
- Propane-fueled vehicles
- Renewable energy
- Incorporate alternative energy/solar

Economic

- Implement necessary rates and charges
- Enhance revenue
- Accommodate Aviation Growth
- Attract users/business partners
- Fiscal self-sufficiency and availability of developable space
- Minimized construction, operational costs
- Right-sizing of infrastructure
- Reuse of facilities
- Expand on marketing developable land typically non-aeronautical

Social Responsibility

- Job creation
- Skilled jobs (leveraging MRO)
- Increase airport awareness
- Highlight positive stories such as good air quality
- Compatible land use planning
- Strategic noise abatement
- Open house events
- Airport speaker program
- Partner with educational organizations
- Observation areas
- Safety requirements
- Emergency Operations Center (EOC) integration and identification of opportunities into sustainability
- Airport as centerpiece to tie in the walkable corridor concept (need to balance with vehicle types, e.g., trucks)
- Trails tied into set-aside lands outside fence (900 developable acres with trails; Savannah area is good and should consider phasing
- Potential for phasing multi-modal-rail

Environmental Improvements to Operations

- Green Maintenance Protocol

Tenant Relations

- Minimized disruptions

The majority of these priorities translated into specific ideas discussed during the charrette. However, there were several that were not later addressed but represent strategies that could be implemented. Therefore, these have been incorporated into the ideas discussion and evaluated to determine recommendations. See Section 4.

3.2 Challenges

Following the discussion on priorities, a list of potential challenges were identified to help assess feasibility of sustainability initiatives/strategies and guide the generation of potential solutions. In many cases, these represent existing challenges or hurdles that have already been faced by FPR staff. Challenges include:

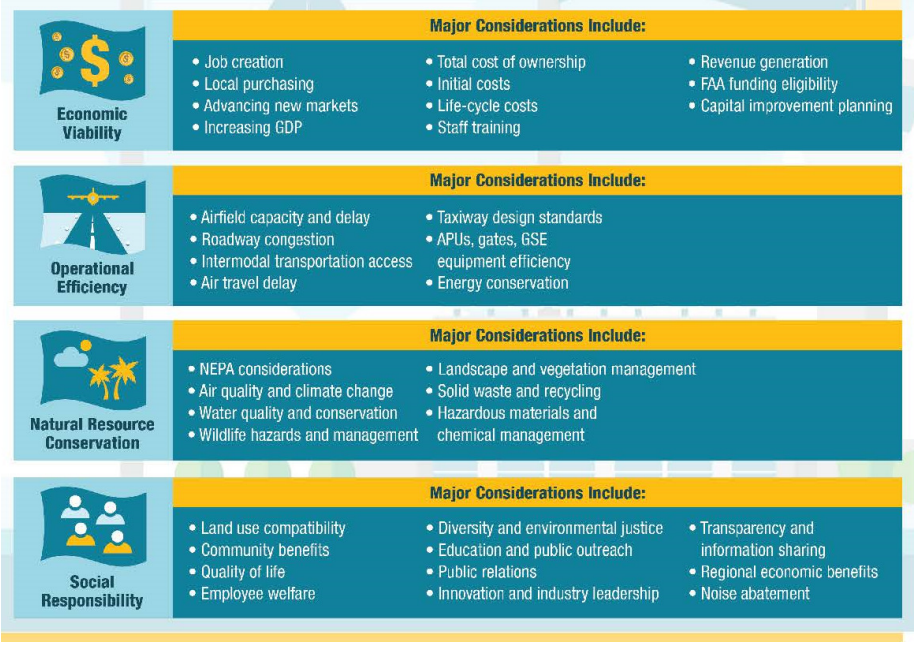
- Fiscal self-sufficiency
- Waiting for growth and/or creating opportunity
- Stakeholder engagement and maintaining momentum (considering chance of potential political changes)
- Staff resources
- Infrastructure and utilities

- Accommodating growth and access
- Cumulative environmental effects
- Vehicle access; could be supported by multimodal development (e.g., bus service)
- Protected species mitigation
- Wetlands and conservation
    - Opportunity to plan for highest and/or best use
- Finding the right short-term uses (e.g., other interim options) for areas
- Awareness of FPR
- Internal access and connectivity throughout the Airport
- Build on the golf course by providing amenities and short-term lodging *(more of an opportunity than a challenge)*
- Need to address groundwater/historical issues; should seek funding
- Prevent encroachment of non-compatible land use
    - Minimize noise complaints
    - Show zones (integrate with County planning)
- Determining whether or not the Airport connector location is truly best
- Skilled jobs

Section 4—Sustainability Ideas

4.1 Generation

Charrette attendees were divided into breakout groups for idea generation, and were encouraged to consider ideas that addressed the ideas previously presented, as well as all four "EONS" elements of sustainability. The following image from FDOT's *Airport Sustainability Guidebook* was shared for reference.



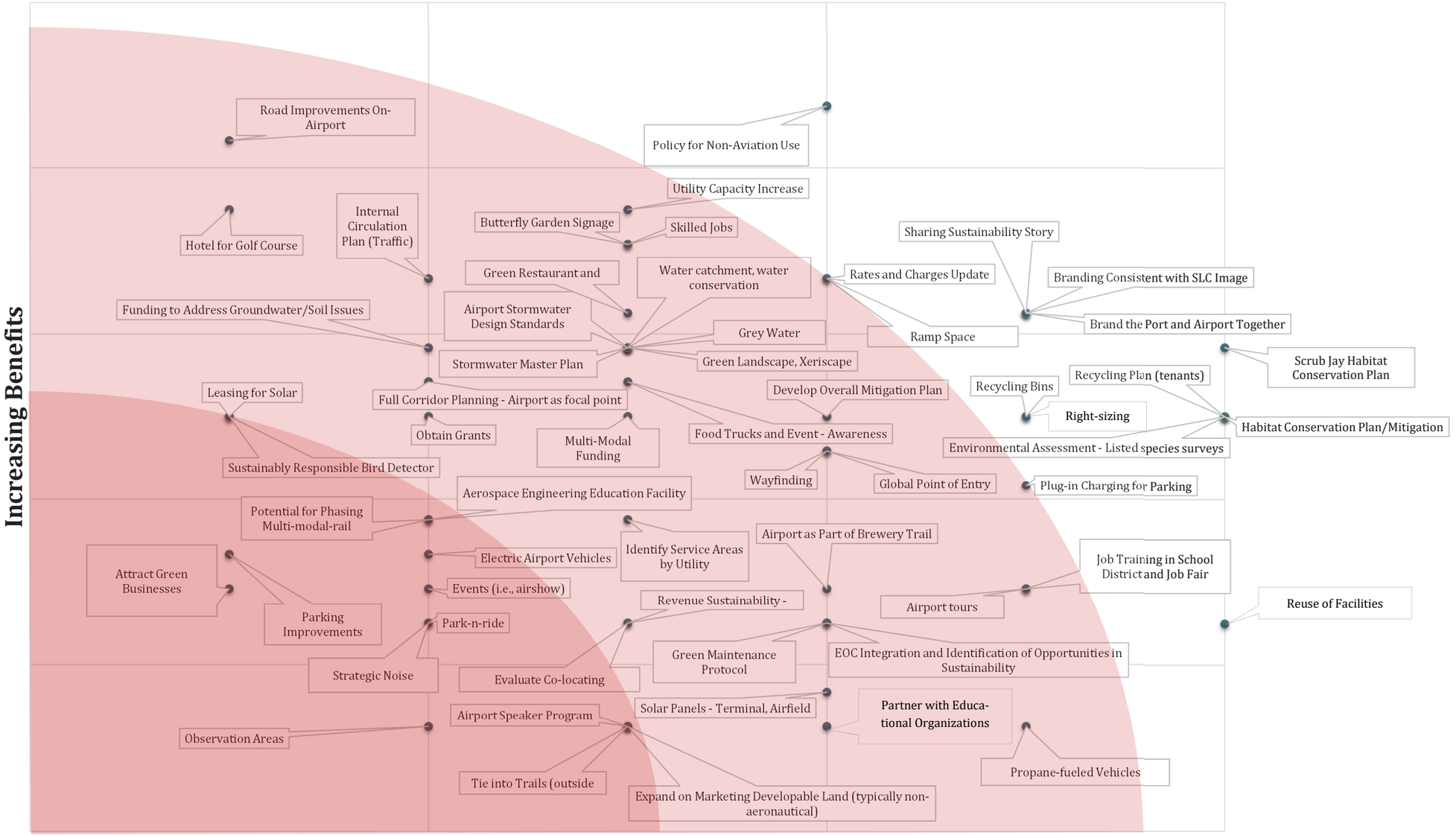
4.2 Prioritization

Following the breakouts, C&S worked with attendees to evaluate ideas according to their feasibility and importance (i.e., contribution to the Airport's priorities and objectives). Post-charrette, C&S conducted further evaluation to ensure that a balanced sustainability lens was used. This follow-up evaluation was averaged with the results of the in-charrette evaluation of importance to arrive at a more informed benefits rating.

Some of the priorities identified in Section 3.1 were action-oriented and therefore included in the evaluation. The feasibility for these priority-derived ideas was not determined during the charrette and is therefore estimated. In total, **59 ideas/initiatives were considered**.

Based on the assessment, ideas were plotted on a matrix according to their feasibility and benefits rating to show the correlation and help determine which initiatives are of the greatest value (i.e., those with high feasibility, high/medium feasibility and high benefits, and very high benefits). The matrix is shown on the following page.

Sustainability Idea Prioritization



The following ideas are recommended due to their potential benefits and feasibility. Numbers correspond to the list of ideas as they were originally recorded. Recommendations are organized by general topic, e.g., economic or social, and classified as either Highly Recommended (appearing in white in the matrix above) or Worth Consideration (falling within the light-pink shading in the matrix above). See "Priority" column. Those that fall within the darker pink area are then listed for reference, but may provide minimal value and/or feasibility.

Table 1—Recommended Ideas

#[2]	Idea	Additional Information	Priority[3]	
			H	WC
Economic				
2	Skilled Jobs	Incentivize skilled jobs at the airport; see Idea #25 for specific strategy		X
3	Policy for Non-Aviation Use		X	
11	Revenue Sustainability - Increase fuel sales, increase rental space	Specific strategy not identified		X
13	Multi-Modal Funding	Pursue funding for eligible projects		X
16	Obtain Grants	Consider FAA's ZEV Program; noted that there is no current staff to support		X
17	Funding to Address Groundwater/Soil Issues	Pursue funding opportunities to address legacy issues		X
19	Hotel for Golf Course			X
32	Rates and Charges Update		X	
58	Right-sizing of Infrastructure		X	
59	Reuse of Facilities		X	
Social				
12	Food Trucks and Event - Awareness			X
28	Airport as Part of Brewery Trail	Tie into brewery trail via existing business		X
39	Job Training in School District and Job Fair	For airport and aeronautical jobs		X
57	Partner with Educational Organizations			X
30	Airport Tours			X
35	Wayfinding			X
36	Global Point of Entry			X
37	Branding Consistent with SLC Image	History, walkable, healthy living (We Care)	X	

[2] Numbers are associated with those assigned in Attachment 1.

[3] H = Highly Recommended; WC = Worth Considering

#[2]	Idea	Additional Information	Priority[3]	
			H	WC
39	Brand the Port and Airport Together		X	
40	Sharing Sustainability Story	Highlight good stories such as good Air Quality	X	
Operational				
1	Utility Capacity Increase			X
18	Road Improvement On-Airport			X
33	Ramp Space		X	
47	Identify Service Areas by Utility	To increase availability of utilities		X
49	EOC Integration and Identification of Opportunities in Sustainability			X
Environmental				
4	Airport Stormwater Design Standards			X
5	Water Catchment, Water Conservation			X
6	Butterfly Garden Signage			X
7	Green Landscape, Xeriscape			X
8	Grey Water			X
10	Green Restaurant and Green Events - No Styrofoam/organic options/recycling	Prohibit non-sustainable materials and require recycling	X	
55	Propane-fueled Vehicles			X
34	Solar Panels - Terminal, Airfield	Available funding		X
41	Recycling Plan (tenants)		X	
42	Plug-in Charging for Parking		X	
51	Green Maintenance Protocol			X
Planning				
14	Full Corridor Planning - Airport as focal point			X
9	Stormwater Master Plan	Being developed	X	
15	Internal Circulation Plan (Traffic)	To address traffic; some work already ongoing		X
21	Evaluate Co-locating	For different facilities that serve both airport and County purposes		X
31	Develop Overall Mitigation Plan	For various species		X
43	Scrub Jay Habitat Conservation Plan		X	
44	Habitat Conservation Plan/Mitigation		X	
45	Environmental Assessment - listed species surveys		X	

Table 2—Low-Ranking Ideas

#[4]	Idea	Additional Information
22	Leasing for solar	Lease available space to a third party to develop solar
48	Expand on Marketing Developable Land (typically non-aeronautical)	
53	Potential for Phasing Multi-modal-rail	
25	Aerospace Engineering Education Facility	Would help contribute to skilled jobs
27	Events (i.e., airshow)	Can increase awareness and promote relationship-building
56	Airport Speaker Program	
50	Observation Areas	
52	Tie into Trails (outside fence)	
46	Parking Improvement	
20	Sustainably Responsible Bird Detector	To minimize wildlife hazards
24	Electric Airport Vehicles	Perhaps with chargers powered by solar; funding is available through ZEV program → *Although this ranked low, funding could make this more cost-effective and beneficial*
26	Park-n-ride	At the airport; may be related to multi-modal progress
54	Strategic Noise Abatement	
23	Attract Green Businesses	Issue RFPs for socially responsible businesses; can reference other airport examples

[4] Numbers are associated with those assigned in Attachment 1.

Section 5—Next Steps

The recommendations above should be considered in the Alternatives Development phase of the Master Plan in case certain strategies can be incorporated into layouts and development options. These should also be revisited during the preparation of the ALP and Capital Improvement Plan (CIP). For ideas that are not eligible for FAA funding, the County should review the recommendations, select those worthy of implementation, and establish an implementation strategy. This strategy could be rolled into a full sustainability management plan in the future.

Appendix C. CIP Worksheets

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN
Roll-up by Project ID

Short	2019 to 2023
Mid	2024 to 2028
Long	2029 to 2038

				Construction				
Project ID	**Project Name**	**Master Plan Phase**	**Estimated Design Cost**	**Program Year**	**Estimated Cost**	**FAA Partricipation**	**FDOT Partricipation**	**Local Participation**
1	Runway 10R-28L Extension	Long	$131,330	2030	$1,641,600	$1,477,440	$82,080	$82,080
2	Runway 10R-28L North Parallel Taxiway (partial)	Long	$81,920	2038	$1,023,900	$921,510	$51,195	$51,195
3	Taxiway A Runway Guard Lights	Short	$3,640	2020	$45,400	$40,860	$2,270	$2,270
4/5	Runway 10R-28L / 14-32 Decoupling / Taxiway B Demolition	Short	$16,840	2020	$210,400	$189,360	$10,520	$10,520
6	Taxiway E Demolition	Short	$11,980	2020	$149,700	$134,730	$7,485	$7,485
7/19	Taxiway C8 Realignment / Runway 14-32 Shoulders	Short	$50,210	2021	$627,600	$564,840	$31,380	$31,380
8	Taxiway C7 Realignment	Short	$14,210	2021	$177,600	$159,840	$8,880	$8,880
9/10/11	Taxiway E Realignment / Taxiway C4 and C5 Demolition	Short	$102,070	2022	$1,275,800	$1,148,220	$63,790	$63,790
12	Taxiway B Airside Development	Mid	$587,510	2026	$7,343,800			$7,343,800
13A	Taxiway E North Airside Development - A	Short	$1,095,760	2023	$13,696,900		$7,396,330	$7,396,330
13B	Taxiway E North Airside Development - B	Mid	$826,790	2026	$10,334,800		$5,580,795	$5,580,795
13C	Taxiway E North Airside Development - C	Long	$453,540	2029	$5,669,200		$3,061,370	$3,061,370
14	Airman's Way Airside Development	Mid	$561,800	2026	$7,022,400			$7,022,400
15	Taxiway C1 Airside Development	Short	$109,660	2021	$1,370,700			$1,370,700
16	Taxiway E South Airside Development	Long	$2,319,900	2038	$28,998,700			$28,998,700
17	Southside Road Extension	Mid	$22,000	2024	$274,900			$274,900
18	Runway 10R-28L Shoulders	Short	$30,450	2023	$380,600	$342,540	$19,030	$19,030
19	Runway 28L ROFA Clearing	Short	$800	2020	$10,000	$9,000	$500	$500
20	Northside Development Plan	Short		2023	$412,500			$412,500
		TOTAL	**$6,420,410**		**$80,666,500**	**$4,988,340**	**$16,315,625**	**$61,738,625**
JACIP 1	MRO Hangar	Short		2016	$5,055,000		$2,527,500	$2,527,500
JACIP 2	Install Segmented Circle Runway 10L-28R	Short		2018	$75,000		$60,000	$15,000
JACIP 3	Security Perimeter Fencing and Access Control	Short		2019	$645,000		$516,000	$129,000
JACIP 4	Install RVR Sensor	Short		2023	$300,000		$220,000	$80,000
JACIP 5	Runway 14/32 Airfield Lighting and Signage Update	Short		2019	$200,000		$160,000	$40,000
JACIP 6	10R/28L Strengthening	Short		2022	$4,500,000	$4,050,000	$225,000	$225,000
JACIP 7	Rehabilitate Taxiway D1	Short		2018	$503,085		$402,468	$100,617
JACIP 8	Airfield Signage and Lighting Update	Short		2019	$1,800,000	$1,620,000	$90,000	$90,000
JACIP 9	Taxiway B Strengthening	Short		2023	$3,000,000	$2,700,000	$150,000	$150,000
JACIP 10	Taxiway C Strengthening	Mid		2024	$3,000,000	$2,700,000	$150,000	$150,000
JACIP 11	Taxiway A Strengthening	Mid		2025	$3,000,000	$2,700,000	$150,000	$150,000
JACIP 12	Wildlife Hazard Assessment/Plan	Short		2023	$150,000		$120,000	$30,000
		TOTAL	**$0**		**$22,228,085**	**$13,770,000**	**$4,770,968**	**$3,687,117**
		PROGRAM TOTAL	**$6,420,410**		**$102,894,585**	**$18,758,340**	**$21,086,593**	**$65,425,742**

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN
Roll-up by Phase

Short	2019 to 2023
Mid	2024 to 2028
Long	2029 to 2038

				Construction				
Project ID	Project Name	Master Plan Phase	Estimated Design Cost	Program Year	Estimated Cost	FAA Partricipation	FDOT Partricipation	Local Participation
3	Taxiway A Runway Guard Lights	Short	$3,640	2020	$45,400	$40,860	$2,270	$2,270
4/5	Runway 10R-28L / 14-32 Decoupling / Taxiway B Demolition	Short	$16,840	2020	$210,400	$189,360	$10,520	$10,520
6	Taxiway E Demolition	Short	$11,980	2020	$149,700	$134,730	$7,485	$7,485
19	Runway 28L ROFA Clearing	Short	$800	2020	$10,000	$9,000	$500	$500
7/19	Taxiway C8 Realignment / Runway 14-32 Shoulders	Short	$50,210	2021	$627,600	$564,840	$31,380	$31,380
8	Taxiway C7 Realignment	Short	$14,210	2021	$177,600	$159,840	$8,880	$8,880
15	Taxiway C1 Airside Development	Short	$109,660	2021	$1,370,700			$1,370,700
9/10/11	Taxiway E Realignment / Taxiway C4 and C5 Demolition	Short	$102,070	2022	$1,275,800	$1,148,220	$63,790	$63,790
13A	Taxiway E North Airside Development - A	Short	$1,095,760	2023	$13,696,900		$7,396,330	$7,396,330
18	Runway 10R-28L Shoulders	Short	$30,450	2023	$380,600	$342,540	$19,030	$19,030
20	Northside Development Plan	Short		2023	$412,500			$412,500
	SHORT RANGE PHASE SUBTOTAL		$1,435,620		$18,357,200	$2,589,390	$7,540,185	$9,323,385
17	Southside Road Extension	Mid	$22,000	2024	$274,900			$274,900
12	Taxiway B Airside Development	Mid	$587,510	2026	$7,343,800			$7,343,800
13B	Taxiway E North Airside Development - B	Mid	$826,790	2026	$10,334,800		$5,580,795	$5,580,795
14	Airman's Way Airside Development	Mid	$561,800	2026	$7,022,400			$7,022,400
	MID RANGE PHASE SUBTOTAL		$1,998,100		$24,975,900			$20,221,895
1	Runway 10R-28L Extension	Long	$131,330	2030	$1,641,600	$1,477,440	$82,080	$82,080
13C	Taxiway E North Airside Development - C	Long	$453,540	2023	$5,669,200		$3,061,370	$3,061,370
2	Runway 10R-28L North Parallel Taxiway (partial)	Long	$81,920	2038	$1,023,900	$921,510	$51,195	$51,195
16	Taxiway E South Airside Development	Long	$2,319,900	2038	$28,998,700			$28,998,700
	LONG RANGE PHASE SUBTOTAL		$2,986,690		$37,333,400	$2,398,950	$3,194,645	$32,193,345
	MASTER PLAN TOTAL		**$6,420,410**		**$80,666,500**	**$4,988,340**	**$10,734,830**	**$61,738,625**
JACIP 1	MRO Hangar	Short		2016	$5,055,000		$2,527,500	$2,527,500
JACIP 2	Install Segmented Circle Runway 10L-28R	Short		2018	$75,000		$60,000	$15,000
JACIP 7	Rehabilitate Taxiway D1	Short		2018	$503,085		$402,468	$100,617
JACIP 3	Security Perimeter Fencing and Access Control	Short		2019	$645,000		$516,000	$129,000
JACIP 5	Runway 14/32 Airfield Lighting and Signage Update	Short		2019	$200,000		$160,000	$40,000
JACIP 8	Airfield Signage and Lighting Update	Short		2019	$1,800,000	$1,620,000	$90,000	$90,000
JACIP 6	10R/28L Strengthening	Short		2022	$4,500,000	$4,050,000	$225,000	$225,000
JACIP 4	Install RVR Sensor	Short		2023	$300,000		$220,000	$80,000
JACIP 9	Taxiway B Strengthening	Short		2023	$3,000,000	$2,700,000	$150,000	$150,000
JACIP 12	Wildlife Hazard Assessment/Plan	Short		2023	$150,000		$120,000	$30,000
	SHORT RANGE PHASE SUBTOTAL				$16,228,085	$8,370,000	$4,470,968	$3,387,117
JACIP 10	Taxiway C Strengthening	Mid		2024	$3,000,000	$2,700,000	$150,000	$150,000
JACIP 11	Taxiway A Strengthening	Mid		2025	$3,000,000	$2,700,000	$150,000	$150,000
	MID RANGE PHASE SUBTOTAL				$6,000,000	$5,400,000	$300,000	$300,000
	JACIP TOTAL		**$0**		**$22,228,085**	**$13,770,000**	**$4,770,968**	**$3,687,117**

	SHORT RANGE PHASE TOTAL	$1,435,620		$34,585,285	$10,959,390	$12,011,153	$12,710,502
	MID RANGE PHASE TOTAL	$1,998,100		$30,975,900	$5,400,000	$300,000	$20,521,895
	LONG RANGE PHASE TOTAL	$2,986,690		$43,333,400	$7,798,950	$3,494,645	$32,493,345

PROGRAM TOTAL	**$6,420,410**		**$102,894,585**	**$18,758,340**	**$15,505,798**	**$65,425,742**

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Runway 10R-28L Extension
Project Description:	The project includes extending Runway 10R-28L feet to the west to a length of 7,200 feet. The project includes runway lighting and relocation of the glide slope. The project also includes extending Taxiway A and designing it to TDG 3 standards.
Justification:	Long range aviation forecasts indicate an increased use of Runway 10R-28L by larger jet aircraft and the longer runway is required to accommodate those aircraft.
Last Estimate:	June 2018
Program Year:	2030

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$101,340.00	$101,340.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$40,000.00	$40,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	0	$8.00	$0.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	0	$15.00	$0.00
5		Superpave Asphaltic Concrete, 4-Inch	TON	0	$150.00	$0.00
6	FDOT-334-1	Superpave Asphaltic Concrete, 6-Inch	TON	0	$150.00	$0.00
7	P-125-3	Full Depth Asphalt Pavement Removal	SY	3,330	$8.00	$26,640.00
8	P-152-1	Earthwork	CY	0	$20.00	$0.00
9	P-620-1	Pavement Markings	SF	0	$1.00	$0.00
10	D-701-1	72" Reinforced Concrete Pipe Aircraft rated	LS	1,000	$800.00	$800,000.00
11	T-904-1	Sodding	SY	0	$5.00	$0.00
12	L-100	Electrical Lighting	LS	1	$150,000.00	$150,000.00
13	L-125	Glide Slope Relocation	LS	1	$250,000.00	$250,000.00
					Estimated Total	$1,367,980.00
					+20% Contingency	$273,596.00
					Raw Construction Cost	$1,641,576.00

Construction Cost (rounded)	$1,641,600.00
Design Cost	$131,330.00

TOTAL PROJECT COST (2018 dollars) **$1,772,930.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2029			$131,330.00
Construction	2030	$1,477,440.00	$82,080.00	$82,080.00
	TOTAL	$1,477,440.00	$82,080.00	$213,410.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Runway 10R-28L North Parallel Taxiway (partial)
Project Description:	Construct a parallel taxiway from the extended end of Runway 10R to the extension of Taxiway A3 from the south.
Justification:	The taxiway is necessary to increase capacity and future development on the northern portion of the airfield.
Last Estimate:	June 2018
Program Year:	2038

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$63,200.00	$63,200.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$40,000.00	$40,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	0	$8.00	$0.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	0	$15.00	$0.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 6-Inch	TON	0	$150.00	$0.00
6	P-152-1	Earthwork	CY	0	$20.00	$0.00
7	P-620-1	Pavement Markings	SF	0	$1.00	$0.00
8	D-701-1	Drainage	LS	1	$200,000.00	$200,000.00
9	T-904-1	Sodding	SY	0	$5.00	$0.00
10	L-100	Electrical Lighting	LS	1	$550,000.00	$550,000.00
					Estimated Total	$853,200.00
					+20% Contingency	$170,640.00
					Raw Construction Cost	$1,023,840.00

Construction Cost (rounded)	$1,023,900.00
Design Cost	$81,920.00

TOTAL PROJECT COST (2018 dollars) **$1,105,820.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2037			$81,920.00
Construction	2038	$921,510.00	$51,195.00	$51,195.00
	TOTAL	$921,510.00	$51,195.00	$133,115.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway A Runway Guard Lights
Project Description:	Construct runway guard lights on Taxiway A where it crosses Runway 14-32.
Justification:	Helps mitigate an existing FAA identified hot spot and provides for greater pilot situational awareness.
Last Estimate:	June 2018
Program Year:	2020

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$2,800.00	$2,800.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$10,000.00	$10,000.00
3	L-100	Electrical Lighting	LS	1	$25,000.00	$25,000.00
					Estimated Total	$37,800.00
					+20% Contingency	$7,560.00
					Raw Construction Cost	$45,360.00
					Construction Cost (rounded)	$45,400.00
					Design Cost	$3,640.00
					TOTAL PROJECT COST (2018 dollars)	**$49,040.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2019			$3,640.00
Construction	2020	$40,860.00	$2,270.00	$2,270.00
	TOTAL	$40,860.00	$2,270.00	$5,910.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Runway 10R-28L / 14-32 Decoupling / Taxiway B Demolition
Project Description:	The project demolishes and removes pavement that connects Runway 14-32 to Runway 10R-28L and demolishes and removes Taxiway B pavement between Runway 10R-28L and Taxiway A.
Justification:	The demolition and removal is required to comply with the provisions of AC 150/5300-13A, Airport Design. This removed a FAA designated hot spot from the airfield.
Last Estimate:	June 2018
Program Year:	2020

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$12,990.00	$12,990.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$15,000.00	$15,000.00
3	P-125-3	Full Depth Asphalt Pavement Removal	SY	5,490	$8.00	$43,920.00
4	P-152-1	Earthwork	CY	3,660	$20.00	$73,200.00
5	T-904-1	Sodding	SY	6,039	$5.00	$30,195.00
					Estimated Total	$175,305.00
					+20% Contingency	$35,061.00
					Raw Construction Cost	$210,366.00
					Construction Cost (rounded)	$210,400.00
					Design Cost	$16,840.00
					TOTAL PROJECT COST (2018 dollars)	**$227,240.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2019			$16,840.00
Construction	2020	$189,360.00	$10,520.00	$10,520.00
	TOTAL	$189,360.00	$10,520.00	$27,360.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway E Demolition
Project Description:	Demolish the Taxiway E high-speed exit between Runway 10R-28L and Taxiway A.
Justification:	Taxiway E is a non-standard geometry based on AC 150 5300-13A, change 1, Airport Design and should be demolished to bring the airfield into compliance with current statndards.
Last Estimate:	June 2018
Program Year:	2020

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$9,240.00	$9,240.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$10,000.00	$10,000.00
3	P-125-3	Full Depth Asphalt Pavement Removal	SY	3,930	$8.00	$31,440.00
4	P-152-1	Earthwork	CY	2,620	$20.00	$52,400.00
5	T-904-1	Sodding	SY	4,323	$5.00	$21,615.00
					Estimated Total	$124,695.00
					+20% Contingency	$24,939.00
					Raw Construction Cost	$149,634.00
					Construction Cost (rounded)	$149,700.00
					Design Cost	$11,980.00
					TOTAL PROJECT COST (2018 dollars)	**$161,680.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2019			$11,980.00
Construction	2020	$134,730.00	$7,485.00	$7,485.00
	TOTAL	$134,730.00	$7,485.00	$19,465.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway C8 Realignment / Runway 14-32 Shoulders
Project Description:	This project demolishes the existing Taxiway C8 high-speed exit and realigns the taxiway to conform to AC 150 5300-13A requirements. Construct missing shoulders along the entire length of Runway 14-32.
Justification:	Taxiway C8 does not comply with the requirements of AC 150-5300-13A and needs to be demolished and replaced with a new taxiway that meets the requirements. Full length runway shoulders enhance safety, helps reduce FOD, and protects the runway pavement.
Last Estimate:	June 2018
Program Year:	2021

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$38,740.00	$38,740.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$20,000.00	$20,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	3,750	$8.00	$30,000.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	3,750	$15.00	$56,250.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 6-Inch	TON	1,294	$150.00	$194,062.50
6	P-125-3	Full Depth Asphalt Pavement Removal	SY	1,580	$8.00	$12,640.00
7	P-152-1	Earthwork	CY	2,670	$20.00	$53,400.00
8	P-620-1	Pavement Markings	SF	1,050	$1.00	$1,050.00
9	D-701-1	Drainage	LS	1	$30,000.00	$30,000.00
10	T-904-1	Sodding	SY	2,360	$5.00	$11,800.00
11	L-100	Electrical Lighting	LS	1	$75,000.00	$75,000.00
					Estimated Total	$522,942.50
					+20% Contingency	$104,588.50
					Raw Construction Cost	$627,531.00
					Construction Cost (rounded)	$627,600.00
					Design Cost	$50,210.00
					TOTAL PROJECT COST (2018 dollars)	**$677,810.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2020			$50,210.00
Construction	2021	$564,840.00	$31,380.00	$31,380.00
	TOTAL	$564,840.00	$31,380.00	$81,590.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway C7 Realignment
Project Description:	This project demolishes the existing Taxiway C7 high-speed exit and realigns the taxiway to conform to AC 150 5300-13A requirements.
Justification:	Mitigates direct access to Runway 14-32 from aircraft parking positions. Taxiway C7 does not comply with the requirements of AC 150-5300-13A and needs to be demolished and replaced with a new taxiway that meets the requirements.
Last Estimate:	June 2018
Program Year:	2021

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$10,960.00	$10,960.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$10,000.00	$10,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	950	$8.00	$7,600.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	950	$15.00	$14,250.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 6-Inch	TON	328	$150.00	$49,162.50
6	P-125-3	Full Depth Asphalt Pavement Removal	SY	530	$8.00	$4,240.00
7	P-152-1	Earthwork	CY	740	$20.00	$14,800.00
8	P-620-1	Pavement Markings	SF	240	$1.00	$240.00
9	D-701-1	Drainage	LS	1	$10,000.00	$10,000.00
10	T-904-1	Sodding	SY	1,340	$5.00	$6,700.00
11	L-100	Electrical Lighting	LS	1	$20,000.00	$20,000.00
					Estimated Total	$147,952.50
					+20% Contingency	$29,590.50
					Raw Construction Cost	$177,543.00
					Construction Cost (rounded)	$177,600.00
					Design Cost	$14,210.00
					TOTAL PROJECT COST (2018 dollars)	**$191,810.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2020			$14,210.00
Construction	2021	$159,840.00	$8,880.00	$8,880.00
	TOTAL	$159,840.00	$8,880.00	$23,090.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway E Realignment / Taxiway C4 and C5 Demolition
Project Description:	Demolish and realign the Taxiway E high-speed exit between Runway 10R-28L and Taxiway A. Demolish Taxiways C4 and C5 and realign to connect with realigned Taxiway E and existing Taxiway D.
Justification:	Taxiway E high-speed exist is non-standard geometry, per AC 150 5300-13A that inhibits pilot view to the ends of the runway. Taxiway C5 allows direct access to the runway from an aircraft parking position which is not permitted per AC 150 5300-13A. Taxiway C4 creates an area of confusion along with Taxiway E. Realigning Taxiway C4 reduced pilot confusion and creates a cleaner intersection.
Last Estimate:	June 2018
Program Year:	2022

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$78,760.00	$78,760.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$30,000.00	$30,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	6,380	$8.00	$51,040.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	6,380	$15.00	$95,700.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 6-Inch	TON	2,201	$150.00	$330,165.00
6	P-125-3	Full Depth Asphalt Pavement Removal	SY	7,110	$8.00	$56,880.00
7	P-152-1	Earthwork	CY	6,750	$20.00	$135,000.00
8	P-620-1	Pavement Markings	SF	2,200	$1.00	$2,200.00
9	D-701-1	Drainage	LS	1	$50,000.00	$50,000.00
10	T-904-1	Sodding	SY	11,680	$5.00	$58,400.00
11	L-100	Electrical Lighting	LS	1	$175,000.00	$175,000.00
					Estimated Total	$1,063,145.00
					+20% Contingency	$212,629.00
					Raw Construction Cost	$1,275,774.00

Construction Cost (rounded)	$1,275,800.00
Design Cost	$102,070.00

TOTAL PROJECT COST (2018 dollars) $1,377,870.00

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2021			$102,070.00
Construction	2022	$1,148,220.00	$63,790.00	$63,790.00
	TOTAL	$1,148,220.00	$63,790.00	$165,860.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway B Airside Development
Project Description:	Construct three 7,500 SF conventional hangars including approximately 60,000 SF of apron space, taxiway connectors, associated vehicle parking and access to Jet Center Terrace.
Justification:	Additional hangar space is necessary to accommodate growth in based aircraft and tenant demand.
Last Estimate:	June 2018
Program Year:	2026

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$453,320.00	$453,320.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$30,000.00	$30,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	14,250	$8.00	$114,000.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	14,250	$15.00	$213,750.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 4-Inch	TON	1,467	$150.00	$220,110.00
6	FDOT-334-2	Superpave Asphaltic Concrete, 6-Inch	TON	2,715	$150.00	$407,272.50
7		New Hangars	SF	22,500	$200.00	$4,500,000.00
8	P-620-1	Pavement Markings	SF	220	$1.00	$220.00
9	P-152-1	Earthwork	CY	3,700	$20.00	$74,000.00
10	D-701-1	Drainage	LS	1	$75,000.00	$75,000.00
11	T-904-1	Sodding	SY	1,425	$5.00	$7,125.00
12	L-100	Electrical Lighting	LS	1	$25,000.00	$25,000.00
					Estimated Total	$6,119,797.50
					+20% Contingency	$1,223,959.50
					Raw Construction Cost	$7,343,757.00
					Construction Cost (rounded)	$7,343,800.00
					Design Cost	$587,510.00
					TOTAL PROJECT COST (2018 dollars)	**$7,931,310.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2021			$587,510.00
Construction	2022			$7,343,800.00
	TOTAL	$0.00	$0.00	$7,931,310.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway E North Airside Development - A
Project Description:	Pavement includes: Taxiway E connector, 14,610 square yards of apron Facilities includes: Two conventional hangars (7500 sq feet each), one terminal building ($538/sq ft, 30,022 sq ft) Landside pavement includes: Full roadway, respective parking areas, access road to apron
Justification:	Additional hangars are needed to meet anticipated growth in based aircraft, tenant demand for space, and commercial hangar space demand. A fueling faclity will be needed to service aircraft utilizing the new development.
Notes:	Expands on the NE Apron Phase 1 project listed in the JACIP, UPIN: PFL0012230. Consider amending the JACIP project or replacing it. This includes the fueling faclity listed in the JACIP, UPIN: PF00112287. Consider removing the fuel farm from the JACIP if this development is approved.
Last Estimate:	June 2018
Program Year:	2023

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$845,490.00	$845,490.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$30,000.00	$30,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	18,550	$8.00	$148,400.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	18,550	$15.00	$278,250.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 4-Inch	TON	849	$150.00	$127,305.00
6	FDOT-334-2	Superpave Asphaltic Concrete, 6-Inch	TON	5,127	$150.00	$769,005.00
7		New Hangars	SF	45,022	$200.00	$9,004,400.00
8		New T-Hangars	LS	0	$700,000.00	$0.00
9	P-620-1	Pavement Markings	SF	3,355	$1.00	$3,355.00
10	P-152-1	Earthwork	CY	6,760	$20.00	$135,200.00
11	D-701-1	Drainage	LS	1	$41,667.00	$41,667.00
12	T-904-1	Sodding	SY	1,855	$5.00	$9,275.00
13	L-100	Electrical Lighting	LS	1	$21,667.00	$21,667.00
					Estimated Total	$11,414,014.00
					+20% Contingency	$2,282,802.80
					Raw Construction Cost	$13,696,816.80
					Construction Cost (rounded)	$13,696,900.00
					Design Cost	$1,095,760.00
					TOTAL PROJECT COST (2018 dollars)	**$14,792,660.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2031		$547,880.00	$547,880.00
Construction	2032		$6,848,450.00	$6,848,450.00
	TOTAL	$0.00	$7,396,330.00	$7,396,330.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway E North Airside Development - B
Project Description:	Pavement includes: Taxiway E connector, 14,610 square yards of apron Facilities includes: Two conventional hangars (7500 sq feet each), one terminal building ($538/sq ft, 30,022 sq ft) Landside pavement includes: Full roadway, respective parking areas, access road to apron
Justification:	Additional hangars are needed to meet anticipated growth in based aircraft, tenant demand for space, and commercial hangar space demand. A fueling faclity will be needed to service aircraft utilizing the new development.
Notes:	Expands on the NE Apron Phase 1 project listed in the JACIP, UPIN: PFL0012230. Consider amending the JACIP project or replacing it. This includes the fueling faclity listed in the JACIP, UPIN: PF00112287. Consider removing the fuel farm from the JACIP if this development is approved.
Program Year:	2026

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$637,950.00	$637,950.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$20,000.00	$20,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	27,830	$8.00	$222,640.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	27,830	$15.00	$417,450.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 4-Inch	TON	4,080	$150.00	$612,030.00
6	FDOT-334-2	Superpave Asphaltic Concrete, 6-Inch	TON	3,481	$150.00	$522,157.50
7		New Hangars	SF	30,000	$200.00	$6,000,000.00
8		New T-Hangars	LS	0	$700,000.00	$0.00
9	P-620-1	Pavement Markings	SF	0	$1.00	$0.00
10	P-152-1	Earthwork	CY	5,140	$20.00	$102,800.00
11	D-701-1	Drainage	LS	1	$41,667.00	$41,667.00
12	T-904-1	Sodding	SY	2,783	$5.00	$13,915.00
13	L-100	Electrical Lighting	LS	1	$21,667.00	$21,667.00
					Estimated Total	$8,612,276.50
					+20% Contingency	$1,722,455.30
					Raw Construction Cost	$10,334,731.80
					Construction Cost (rounded)	$10,334,800.00
					Design Cost	$826,790.00
					TOTAL PROJECT COST (2018 dollars)	**$11,161,590.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2031		$413,395.00	$413,395.00
Construction	2032		$5,167,400.00	$5,167,400.00
	TOTAL	$0.00	$5,580,795.00	$5,580,795.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway E North Airside Development
Project Description:	Pavement includes: Taxiway E connector, 14,610 square yards of apron Facilities includes: Two conventional hangars (7500 sq feet each), one terminal building ($538/sq ft, 30,022 sq ft) Landside pavement includes: Full roadway, respective parking areas, access road to apron
Justification:	Additional hangars are needed to meet anticipated growth in based aircraft, tenant demand for space, and commercial hangar space demand. A fueling faclity will be needed to service aircraft utilizing the new development.
Notes:	Expands on the NE Apron Phase 1 project listed in the JACIP, UPIN: PFL0012230. Consider amending the JACIP project or replacing it. This includes the fueling faclity listed in the JACIP, UPIN: PF00112287. Consider removing the fuel farm from the JACIP if this development is approved.
Program Year:	2029

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$349,950.00	$349,950.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$20,000.00	$20,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	26,010	$8.00	$208,080.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	26,010	$15.00	$390,150.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 4-Inch	TON	499	$150.00	$74,865.00
6	FDOT-334-2	Superpave Asphaltic Concrete, 6-Inch	TON	8,225	$150.00	$1,233,720.00
7		New Hangars	SF	7,500	$200.00	$1,500,000.00
8		New T-Hangars	LS	1	$700,000.00	$700,000.00
9	P-620-1	Pavement Markings	SF	5,014	$1.00	$5,014.00
10	P-152-1	Earthwork	CY	8,310	$20.00	$166,200.00
11	D-701-1	Drainage	LS	1	$41,667.00	$41,667.00
12	T-904-1	Sodding	SY	2,601	$5.00	$13,005.00
13	L-100	Electrical Lighting	LS	1	$21,667.00	$21,667.00
					Estimated Total	$4,724,318.00
					+20% Contingency	$944,863.60
					Raw Construction Cost	$5,669,181.60
					Construction Cost (rounded)	$5,669,200.00
					Design Cost	$453,540.00
					TOTAL PROJECT COST (2018 dollars)	**$6,122,740.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2031		$226,770.00	$226,770.00
Construction	2032		$2,834,600.00	$2,834,600.00
	TOTAL	$0.00	$3,061,370.00	$3,061,370.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Airman's Way Airside Development
Project Description:	Construct two 12,000 SF conventional hangars and approximately 50,000 SF of apron space with taxiway connectors with associated parking spaces and roadway access.
Justification:	Additional hangar space needed to meet anticipated based aircraft growth and commercial demand for medium sized hangars.
Last Estimate:	June 2018
Program Year:	2026

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$433,480.00	$433,480.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$20,000.00	$20,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	7,290	$8.00	$58,320.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	7,290	$15.00	$109,350.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 4-Inch	TON	412	$150.00	$61,755.00
6	FDOT-334-2	Superpave Asphaltic Concrete, 6-Inch	TON	1,898	$150.00	$284,625.00
7		New Hangars	SF	24,000	$200.00	$4,800,000.00
8	P-152-1	Earthwork	CY	2,790	$20.00	$55,800.00
9	D-701-1	Drainage	LS	1	$25,000.00	$25,000.00
10	T-904-1	Sodding	SY	729	$5.00	$3,645.00
					Estimated Total	$5,851,975.00
					+20% Contingency	$1,170,395.00
					Raw Construction Cost	$7,022,370.00
					Construction Cost (rounded)	$7,022,400.00
					Design Cost	$561,800.00
					TOTAL PROJECT COST (2018 dollars)	**$7,584,200.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2025			$561,800.00
Construction	2026			$7,022,400.00
	TOTAL	$0.00	$0.00	$7,584,200.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway C1 Airside Development
Project Description:	Construct one 14-unit, pre-fab T-hangar facility.
Justification:	The new T-hangar facility is needed to meet the anticpated growth in based aircraft and meet tenant demand.
Last Estimate:	June 2018
Program Year:	2021

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$84,610.00	$84,610.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$20,000.00	$20,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	3,660	$8.00	$29,280.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	3,660	$15.00	$54,900.00
5	FDOT-334-2	Superpave Asphaltic Concrete, 6-Inch	TON	1,263	$150.00	$189,405.00
6		New T-Hangars	LS	1	$700,000.00	$700,000.00
7	P-152-1	Earthwork	CY	1,860	$20.00	$37,200.00
8	D-701-1	Drainage	LS	1	$25,000.00	$25,000.00
9	T-904-1	Sodding	SY	366	$5.00	$1,830.00
					Estimated Total	$1,142,225.00
					+20% Contingency	$228,445.00
					Raw Construction Cost	$1,370,670.00
					Construction Cost (rounded)	$1,370,700.00
					Design Cost	$109,660.00
					TOTAL PROJECT COST (2018 dollars)	**$1,480,360.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2028			$109,660.00
Construction	2029			$1,370,700.00
	TOTAL	$0.00	$0.00	$1,480,360.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway E South Airside Development
Project Description:	Construct a 60,000 SF conventional hangar and four 12,000 SF conventional hangars along Taxiway E south of Runway 14-22. Work will also include approximately 72,000 SF of apron space.
Justification:	This is part of the APP Jet Center proposed development plan.
Last Estimate:	June 2018
Program Year:	2038

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$1,790,040.00	$1,790,040.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$20,000.00	$20,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	7,940	$8.00	$63,520.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	7,940	$15.00	$119,100.00
5	FDOT-334-2	Superpave Asphaltic Concrete, 6-Inch	TON	2,739	$150.00	$410,895.00
6		New Hangars	SF	108,000	$200.00	$21,600,000.00
7	P-152-1	Earthwork	CY	6,650	$20.00	$133,000.00
8	D-701-1	Drainage	LS	1	$25,000.00	$25,000.00
9	T-904-1	Sodding	SY	794	$5.00	$3,970.00
					Estimated Total	$24,165,525.00
					+20% Contingency	$4,833,105.00
					Raw Construction Cost	$28,998,630.00
					Construction Cost (rounded)	$28,998,700.00
					Design Cost	$2,319,900.00
					TOTAL PROJECT COST (2018 dollars)	**$31,318,600.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2037			$2,319,900.00
Construction	2038			$28,998,700.00
	TOTAL	$0.00	$0.00	$31,318,600.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Southside Road Extension
Project Description:	Construct approximately 1,035 feet of roadway to connect Curtis King Boulevard to the south airport access road.
Justification:	This roadway will provide access to the landside development area along the south airport property line and thus increase visibility and ability to lease the area to potential tenants. The road will also provide access to the west side of the airport on roadways contained within airport property.
Last Estimate:	June 2018
Program Year:	2024

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$16,970.00	$16,970.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$10,000.00	$10,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	2,660	$8.00	$21,280.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	2,660	$15.00	$39,900.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 4-Inch	TON	612	$150.00	$91,770.00
6	P-152-1	Earthwork	CY	890	$20.00	$17,800.00
7	D-701-1	Drainage	LS	1	$30,000.00	$30,000.00
8	T-904-1	Sodding	SY	266	$5.00	$1,330.00
					Estimated Total	$229,050.00
					+20% Contingency	$45,810.00
					Raw Construction Cost	$274,860.00
					Construction Cost (rounded)	$274,900.00
					Design Cost	$22,000.00
					TOTAL PROJECT COST (2018 dollars)	**$296,900.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2023			$22,000.00
Construction	2024			$274,900.00
	TOTAL	$0.00	$0.00	$296,900.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Runway 10R-28L Shoulders
Project Description:	Construct missing shoulders along the entire length of Runway 10R-28L.
Justification:	Full length runway shoulders enhance safety, helps reduce FOD, and protects the runway pavement.
Last Estimate:	June 2018
Program Year:	2023

Runway 10R-28L Shoulders

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Mobilization	LS	1	$40,980.00	$40,980.00
2	M-110-2	Safety, Security, and Traffic Control	LS	1	$20,000.00	$20,000.00
3	FDOT-160-1	Subgrade Stabilization, 12-Inch Depth (100% Compaction)	SY	7,610	$8.00	$60,880.00
4	FDOT-285-1	FDOT Index No. 514, Optional Base Group 5	SY	7,610	$15.00	$114,150.00
5	FDOT-334-1	Superpave Asphaltic Concrete, 4-Inch	TON	1,750	$150.00	$262,545.00
6	P-152-1	Earthwork	CY	2,540	$20.00	$50,800.00
7	T-904-1	Sodding	SY	761	$5.00	$3,805.00

Estimated Total	$317,150.00
+20% Contingency	$63,430.00
Raw Construction Cost	$380,580.00
Construction Cost (rounded)	$380,600.00
Design Cost	$30,450.00
TOTAL PROJECT COST (2018 dollars)	**$411,050.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2022			$30,450.00
Construction	2023	$342,540.00	$19,030.00	$19,030.00
	TOTAL	$342,540.00	$19,030.00	$49,480.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Runway 28L ROFA Clearing
Project Description:	Clear trees and obstructions inside the runway object free area (ROFA) for Runway 28L.
Justification:	The ROFA should be clear of objects as specified in AC 150 5300-13A for enhanced aircraft safety.
Last Estimate:	June 2018
Program Year:	2020

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1	M-110-1	Clearing + Grubbing	AC	1.38166	$6,000.00	$8,289.95
					Estimated Total	$8,289.95
					+20% Contingency	$1,657.99
					Raw Construction Cost	$9,947.93
					Construction Cost (rounded)	$10,000.00
					Design Cost	$800.00
					TOTAL PROJECT COST (2018 dollars)	**$10,800.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design	2037			$800.00
Construction	2038	$9,000.00	$500.00	$500.00
	TOTAL	$9,000.00	$500.00	$1,300.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Northside Development Plan
Project Description:	Create a land development plan for airport property designated for non-aeronautical use on the north side of the airport property south of Indrio Road. Work should include a proposed roadway network, utility corridors, parcel layout, recommended land use, drainage system, and a marketing plan.
Justification:	Development of the north side of the airport property is necessary to provide the airport with a separate income stream from leases in order for the airport to become self-sustaining.
Last Estimate:	June 2018
Program Year:	2023

No.	Item	Description	Unit	Quantity	Unit Price	Total
Site Base Bid						
1		Plan Development	EA	1.00000	$375,000.00	$375,000.00
					Estimated Total	$375,000.00
					+10% Contingency	$37,500.00
					Raw Cost	$412,500.00
					Cost (rounded)	$412,500.00
					Design Cost	$0.00
					TOTAL PROJECT COST (2018 dollars)	**$412,500.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				$0.00
Construction	2023			$412,500.00
	TOTAL	$0.00	$0.00	$412,500.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	MRO Hangar
Project Description:	Design and construct a 30,000 SF MRO hangar and support facilities
Justification:	The airport has had multiple requests from existing and prospective tenants for large maintenance hangar facilities. The airport currently has no vacant hangar facilities and has garnered community and political support for expansion of aviation industrial development.
Notes:	AVCON is working on the design of this facility. UPIN: PF0011076
Last Estimate:	
Program Year:	2016

TOTAL PROJECT COST **$5,055,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction	2016		$2,527,500.00	$2,527,500.00
	TOTAL	$0.00	$2,527,500.00	$2,527,500.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Install Segmented Circle Runway 10L-28R
Project Description:	Runway 10L/28R was completed in 2009. However, the existing segmented circle for the airport is located approximately3,000 feet southeast of Runway 10L28R. Sixty percent (60%) of flight traning activities take place on 10L/28R. installation ofthe segmented circle provides for additonal safety for aircraft utilizing the 10L/28R and enhances operational safety.
Justification:	Safety, operational enhancement for flight training activities.
Notes:	UPIN: PFL0009566
Last Estimate:	
Program Year:	2018

TOTAL PROJECT COST **$75,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction			$60,000.00	$15,000.00
	TOTAL	$0.00	$60,000.00	$15,000.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Security Perimeter Fencing and Access Control
Project Description:	This project will update current airport perimeter fencing as well as add new fencing where needed. 8 foot fencing would be installed for the entire 14+ miles of periemeter fencing the airport has. 3 strand barbed wire would be added to the perimeter fencline where it does not already exist. The airfield access control system will be updated to include a new badging and CCTV system. The new access control system would be in line with FAR Part 139 standards
Justification:	The airport currently has a variety of fencing heights and many areas where there is no barbed wire. This project would bring uniformity to the perimeter and bring this aspect of safety and security up to FAR Part 139 standards. The airport currently has no CCTV system. Cameras should be installed at all airfield access gates as well as key areas on the airfield to allow for better monitoring of all access made. The current badging system will need to be updated and meet FAR Part 139 standards. The current access control system is outdated and this project is much need at of 2017.
Notes:	UPIN: PFL0010048
Last Estimate:	
Program Year:	2019

TOTAL PROJECT COST **$645,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction	2019		$516,000.00	$129,000.00
	TOTAL	$0.00	$516,000.00	$129,000.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Install RVR Sensor
Project Description:	Weather Reporting Equipment: As required by 215.971, F.S., this scope of work includes but is not limited to consultant anddesign fees, survey and geotechnical costs, permitting, construction inspection and material testing costs, mobilization anddemobilization, purchase, delivery, installation, testing, commissioning of the equipment, coordination with all necessaryagencies; and site preparation (earthwork and electrical work). It includes all materials, equipment, labor, and incidentals tocomplete a Weather Reporting Equipment installation project. The Sponsor will comply with Aviation Program Assurances.
Justification:	The current weather reporting system does not provide pilots with information needed for for runway visual range. This project will address those needs by installing a sensor compitable with the current ASOS sytem.
Notes:	UPIN: PFL0012236
Last Estimate:	
Program Year:	2023

TOTAL PROJECT COST **$300,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction	2023		$220,000.00	$80,000.00
	TOTAL	$0.00	$220,000.00	$80,000.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Runway 14/32 Airfield Lighting and Signage Update
Project Description:	This project will update the lighting and signage associated with RWY 14/32. All edge lights and airfield signge will beupdated to more reliable cost effective versions
Justification:	Lighting and signage updates for areas associated with RWY 10R/28L are scheduled for 2019. This project will complete the update for the entire airport. This is important for uniformity and maintenance costs
Notes:	UPIN: PFL0010873
Last Estimate:	
Program Year:	2019

TOTAL PROJECT COST **$200,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design Construction	2019		$160,000.00	$40,000.00
	TOTAL	$0.00	$160,000.00	$40,000.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	10R/28L Strengthening
Project Description:	As required by 215.971, F.S., this scope of work includes but is not limited to consultant and design fees, survey and geotechnical costs, construction inspection and material testing costs, mobilization and demobilization, permitting, erosion control, excavation, embankment, subgrade preparation, base course, surface course, joint construction, runway grooving, pavement markings and striping, sodding, stormwater management improvements, airfield lighting, cables, guidance signs, conduits, lightning protection, structural concrete, required vault equipment modifications, and safety barricades, including all materials, equipment, labor, and incidentals required to construct the runway pavement. The Sponsor will comply with Aviation Program Assurances.
Justification:	The current strength of Runway 10R/28L is 60,000 pound dual wheel. The current PCI is 79, and the forecast PCI is 68 in 2022 using typical forecast models. The Airport has been experiencing increased usage by Gulfstream 550, Gulfstream 650, and other aircraft in similar weight categories. The gross weight of many of these aircraft exceeds 90,000 pounds. As well as more than 500 operations per year which will increase the wear on the runway and accelerate its degradation.
Notes:	UPIN: PFL0012231
Last Estimate:	
Program Year:	2022

TOTAL PROJECT COST **$4,500,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction	2022	$4,050,000.00	$225,000.00	$225,000.00
	TOTAL	$4,050,000.00	$225,000.00	$225,000.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Rehabilitate Taxiway D1
Project Description:	Improvements to Taxiways D1. This project will rehabilitate existing asphault taxilane area used by several airport tenants. This paved area also connetcts to undeveloped land for possible aeronautical use expansion.
Justification:	The pavement condition of TWY D1 is a safety issue for the aircraft that use it on a daily basis. Potholes and chunks ofasphalt are daily obstacles for the users of this area. Improving the pavement and drainage for this area will not only benefit existing users of the area, but also allow the airport to develop the area in the future due to the improved access.
Notes:	UPIN: PFL0007474. The total cost was updated to reflect the recent bid tab.
Last Estimate:	
Program Year:	2018

TOTAL PROJECT COST **$503,085.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction	2018		$402,468.00	$100,617.00
	TOTAL	$0.00	$402,468.00	$100,617.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Airfield Signage and Lighting Update
Project Description:	This project will update the airfield lighting and signage associated with RWY 28L/10R. Taxiway edge lights, runway edge lights and illuminated signs will be updated or replaced to make this portion of airfield uniform and cut down on the maintenance costs associate with maintaining old assets. The project will be in line with other airport projects in that everything will be done to FAR Part 139 standards to allow the airport to move in that direction if needed. The signage for RWY 10L/28R was installed within the safety area of the runway and will need to be moved/repleced in order to avoid continuing discrepencies during inspections. An additional DOT funded project will follow to replace lighst and signage associated with RWY 14/32. Additionally, the Disadvantaged Business Enterprise Plan will be updated as part of this project.
Justification:	The last airfield signage and lighting update occurred in 2006 and many of those assets have exceeded their lifespan. The current airfield lighing and signage is a mix of old and new technology which makes repair both expensive and time consuming. Edge lighting and signage needs to be brought up to Part 139 standards in order to allow the airport to move in that direction should that decision be made. The signage for RWY 10L/28R needs to be moved out of the runway safety area.
Notes:	UPIN: PFL0010047
Last Estimate:	
Program Year:	2019

TOTAL PROJECT COST **$1,800,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction	2019	$1,620,000.00	$90,000.00	$90,000.00
	TOTAL	$1,620,000.00	$90,000.00	$90,000.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway B Strengthening
Project Description:	Taxiway Strengthening: As required by 215.971, F.S., this scope of work includes but is not limited to consultant and design fees, survey and geotechnical costs, permitting, construction inspection and material testing costs, mobilization and demobilization, maintenance of traffic, erosion control, demolition, excavation, embankment, subgrade preparation, base course, surface course, joint construction, pavement markings, airfield lighting system, signage improvements (includes conduits, lights, conductors, cans, lightning protection, and vault upgrades), drainage, stormwater structures, utilities, fencing and gates, and sodding, including all materials, equipment, labor, and incidentals required to complete the project. The Sponsor will comply with Aviation Program Assurances.
Justification:	The Current Taxiway is rated at 60,000 Dual Wheel. To meet the needs of the airports critical aircraft the strength will need to be increased to 90,000 pounds dual wheel.
Notes:	UPIN: PFL0012239
Last Estimate:	
Program Year:	2023

TOTAL PROJECT COST **$3,000,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction	2023	$2,700,000.00	$150,000.00	$150,000.00
	TOTAL	$2,700,000.00	$150,000.00	$150,000.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway C Strengthening
Project Description:	Taxiway Strengthening: As required by 215.971, F.S., this scope of work includes but is not limited to consultant and design fees, survey and geotechnical costs, permitting, construction inspection and material testing costs, mobilization and demobilization, maintenance of traffic, erosion control, demolition, excavation, embankment, subgrade preparation, base course, surface course, joint construction, pavement markings, airfield lighting system, signage improvements (includes conduits, lights, conductors, cans, lightning protection, and vault upgrades), drainage, stormwater structures, utilities, fencing and gates, and sodding, including all materials, equipment, labor, and incidentals required to complete the project. The Sponsor will comply with Aviation Program Assurances.
Justification:	The Current Taxiway is rated at 60,000 Dual Wheel. To meet the needs of the airports critical aircraft the strength will need to be increased to 90,000 pounds dual wheel.
Notes:	UPIN: PFL0012242
Last Estimate:	
Program Year:	2024

TOTAL PROJECT COST **$3,000,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction	2024	$2,700,000.00	$150,000.00	$150,000.00
	TOTAL	$2,700,000.00	$150,000.00	$150,000.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Taxiway A Strengthening
Project Description:	Taxiway Strengthening: As required by 215.971, F.S., this scope of work includes but is not limited to consultant and design fees, survey and geotechnical costs, permitting, construction inspection and material testing costs, mobilization and demobilization, maintenance of traffic, erosion control, demolition, excavation, embankment, subgrade preparation, base course, surface course, joint construction, pavement markings, airfield lighting system, signage improvements (includes conduits, lights, conductors, cans, lightning protection, and vault upgrades), drainage, stormwater structures, utilities, fencing and gates, and sodding, including all materials, equipment, labor, and incidentals required to complete the project. The Sponsor will comply with Aviation Program Assurances.
Justification:	The Current Taxiway is rated at 60,000 Dual Wheel. To meet the needs of the airports critical aircraft the strength will need to be increased to 90,000 pounds dual wheel.
Notes:	UPIN: PFL0012243
Last Estimate:	
Program Year:	2025

TOTAL PROJECT COST **$3,000,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design Construction	2025	$2,700,000.00	$150,000.00	$150,000.00
	TOTAL	$2,700,000.00	$150,000.00	$150,000.00

TREASURE COAST INTERNATIONAL AIRPORT
CAPITAL IMPROVEMENT PLAN

Project Title:	Wildlife Hazard Assessment/Plan
Project Description:	Wildlife Hazard Assessment Study/Management Plan: As required by 215.971, F.S., this scope of work includes but is not limited to consultant fees and survey costs. it includes all equipment, labor, and incidentals required to complete the project in accordance with FAA Advisory Circular (AC) 150/5200-33B, Hazardous Wildlife Attractants On or Near Airports. Wildlife Biologist(s) will be qualified in accordance with FAA AC 150/5200-36A, Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports. The Sponsor will comply with Aviation Program Assurances.
Justification:	The Current Wildlife Hazard management plan will need to be updated by 2023.
Notes:	UPIN: PFL0012237
Last Estimate:	
Program Year:	2023

TOTAL PROJECT COST **$150,000.00**

Funding Plan (not adjusted for inflation)

Phase	FY	FAA	FDOT	Local
Design				
Construction	2023		$120,000.00	$30,000.00
	TOTAL	$0.00	$120,000.00	$30,000.00

Appendix D. Media Announcements

Press Releases

Treasure Coast International Airport Hosts Public Meeting Jan. 11 to Begin the Updating of the Master Plan

Post Date: 12/27/2017 6:30 PM

St. Lucie County Commissioners invite residents and businesses to participate in the first of several public meetings regarding the updating of the Airport Master Plan for the Treasure Coast International Airport and Business Park.

The meeting will take place on Thursday, Jan. 11 from 5 to 8 p.m. in the Commission Chambers of the County Administration Complex, Roger Poitras Annex, 2300 Virginia Ave.

This workshop is the first in a series of three meetings with the public and will address:

- Inventory: The current facilities available at the airport
- Aviation Demand Forecast: Expected air traffic based on historical growth trends

The format of the workshop will allow the public to visit stations addressing the elements above, and speak directly with the experts assigned to that element. A comment table will be provided for public feedback.

Airport Master Plans are updated every five to seven years and provide a strategic roadmap for future development and business opportunities at airports. The Airport Master Plan for Treasure Coast International Airport and Business Park was last updated in 2011.

Consultants working on this 39-week project include: Atkins; AECOM; R.A. Wiedemann & Associates; C&C Companies, ESA; Quantum Spatial; and Brown and Phillips.

For additional information about the Treasure Coast International Airport visit: www.flytcia.com.

Return to full list >>

Interested in the airport's master plan update?

Erick Gill, YourNews contributor Published 3:55 p.m. ET Jan. 3, 2018 | **Updated 4:00 p.m. ET Jan. 3, 2018**

(Photo: CONTRIBUTED BY ERICK GILL/ST. LUCIE COUNTY)

FORT PIERCE — St. Lucie County Commissioners invite residents and businesses to participate in the first of several public meetings regarding the updating of the Airport Master Plan for the Treasure Coast International Airport and Business Park.

The meeting will take place from 5 to 8 p.m. on Thursday, Jan. 11, in the Commission Chambers of the County Administration Complex, Roger Poitras Annex, 2300 Virginia Ave.

This workshop is the first in a series of three meetings with the public and will address:

• Inventory: The current facilities available at the airport

• Aviation Demand Forecast: Expected air traffic based on historical growth trends

The format of the workshop will allow the public to visit stations addressing the elements above, and speak directly with the experts assigned to that element.

A comment table will be provided for public feedback. Airport Master Plans are updated every five to seven years and provide a strategic roadmap for future development and business opportunities at airports.

The Airport Master Plan for Treasure Coast International Airport and Business Park was last updated in 2011.

Consultants working on this 39-week project include: Atkins; AECOM; R.A. Wiedemann & Associates; C&C Companies, ESA; Quantum Spatial; and Brown and Phillips.

For additional information about the Treasure Coast International Airport, visit www.www.flytcia.com (http://www.www.flytcia.com).

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Events

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JAN
11

TCIA Airport Master Plan Public Workshop

Public · Hosted by St. Lucie County

Interested | Invite Friends | Invite

Thursday, January 11 at 5:00 PM - 8:00 PM EST
3 days from now · 17–26°Sunny

St. Lucie County
Fort Pierce, Florida 34982

Show Map

About Discussion

10 Going · 31 Interested
Share this event with your friends

Invite

Details

This workshop, held in the Commission Chambers, 2300 Virginia Ave. Fort Pierce, is the first in a series of three meetings with the public and will address:
• Inventory: The current facilities available at the airport
• Aviation Demand Forecast: Expected air traffic based on historical growth trends

The format of the workshop will allow the public to visit stations addressing the elements above, and speak directly with the experts assigned to that element. A comment table will be provided for public feedback.

Airport Master Plans are updated every five to seven years and provide a strategic roadmap for future development and business opportunities at airports. The Airport Master Plan for Treasure Coast International Airport and Business Park was last updated in 2011.

For additional information about the Treasure Coast International Airport visit: http://www.stlucieco.gov/departments-services/a-z/administration/airport

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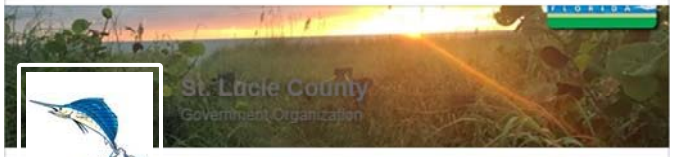
About the Venue



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More Events at St. Lucie County

JAN 12 Oxbow Naturalist Training – Wondrous and Wild
Jan 12 - Jan 13

JAN 24 Covering the Bases with the St. Lucie Mets
Wed 8:30 AM EST · 9 people are going

JAN 26 Coffee with the Chair
Fri 8:30 AM EST · 1 person is going

See All Events

1 post in the discussion.

See Discussion

Appendix E. Public Comments

FPR AMPU Public Meeting 1: January 11th 2018			
NO.	COMMENT BY	COMMENT DATE	COMMENT
1	McHugh, Emily	11-Jan-18	"Thank you for having this open forum and for including out input! It is CRITICAL and ESSENTIAL that TCIA become a vibrant and central engine for economic growth in our community .The airport and port together will bring this region into the 21st century and beyond and provide the necessay infrastruturce for growth that will contribute towards efficiencies that facilitate both domestic and international trade and commerce. So we need to build an infrasture that will attract: MRO's, International business - caribbean outpost in Florida, Large aircraft, foreign trade zones expansion, facilitation of travel options. Thank you! If you want more feedback just ask or call (772)-460-8998
2	Bowersock, Deborah	11-Jan-18	I would like to see a passenger carrier that would fly here a couple times a week. I am from upstate N.Y. and have to travel to Fort Lauderadale or WPB for a flight. The small airport in Plattsburgh N.Y. has had to expand twice after setting up routes with Allegiant and Spirit. They are close enough to Canadien border to tap into both marktes. They both fly to FL airport now. With a little planning I think you could make Fort Pierce and Port Saint Lucie a destiantion spot. Thank you
3	Gallahin, Martha Sue	11-Jan-18	I live in Holiday Pines our concern is flight school traffic noise - low flying + often annoying
4	Van Hidden, Ingrid	11-Jan-18	Noise is the main concern for us in St. Lucie Village. Currently we have in place agreement with flight school (illegible) touch and goes, etc. but increase in daily flights will greatly effect our quality of life. Currently its very disruptive - 24 / 7!
5	Neil, Richard	11-Jan-18	Those living east of the airport are very concerned about noise impacts. Tax payers are also concerned that unrealistic projections could result in wasteful spending.
6	Weiner, Patricia	11-Jan-18	What is being done to ensure voluntary noise abatement procedures are being honored. Education of flight schools, tracking rude pilots, etc. Who from St. Lucie Village is participating in the master plan update?
7	Witel, Bud	11-Jan-18	This airport will never be more than a very limited passenger facility. Too many established passenger airports at West Palm Beach, Orlando, Melbourne. Lets develop this into a commercial facility that will employ our people. We need some good paying job in St. Lucie County. Lets get FedEx, or Amazon, or UPS or other companies to use this airport. Lots of land around this airport. Lets use some of it.
8	Le Gall, Charles	11-Jan-18	1.) Purchase land from (illegible) highway to I-95 for buffer zone and possible other use 2.) Plan for (illegible) dept. of agriculture for impact of plants + animals from oversea use quarantine area.
9	Pipes, Don	11-Jan-18	Huge need for another FBO to create competition for single FBO on field.
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