ALBERT WHITTED AIRPORT

Airport Master Plan

Working Paper #1

Background and Airport Setting
Existing Conditions
Aviation Activity Forecasts

Prepared for:

City of St. Petersburg
107 8th Avenue SE
St. Petersburg, FL 33701

July 26, 2019

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CHAPTER 1

Background and Airport Setting

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Background and Airport Setting

In 2018, the City of St. Petersburg began the process to develop a new master plan for the Albert Whitted Airport (SPG). The overall goal was to prepare a comprehensive planning document meeting the needs of airport management as well as the requirements of the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT). As such this study was conducted in accordance with FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans* and FDOT's *2016 Guidebook for Airport Master Planning*. It is also consistent with Chapter 14-60 of the Florida Administrative Code and other applicable FAA or FDOT guidance, including FAA AC 150/5300-13A, Change 1, *Airport Design*.

1.1 Need for a New Master Plan

The last airport master plan for SPG was adopted by the City of St. Petersburg in 2007. Since that time, a number of changes have occurred at SPG, the surrounding community, and in the aviation industry which require that a new airport master plan be prepared.

Over the past two decades, operational activity has varied at the airport, resulting in a number of peaks and declines in total operations. These fluctuations demonstrate the continuously dynamic landscape of the general aviation industry. Such changes and trends need to be understood to enable the airport to support its tenants and customers and to provide an even greater role in the economic and business growth of the surrounding community. A new airport master plan will also enable the airport to ensure it remains proactive in its efforts to address newer airport design standards and airport land use guidance that have also occurred since 2007.

A key focus of this study is to identify alternatives for additional aircraft storage over the course of the 20-year planning period. SPG's existing aircraft storage facilities area very constrained and cannot provide capacity to accommodate the current demand. At this point in time, the airport is in its second generational growth phase, where developable land is limited and the redevelopment or reconfiguration of existing facilities should be considered. When the 2007 Airport Master Plan Update was completed, the Albert Whitted Waste Water Treatment Plant (AWWWTP), located on airport property, was still operational. The AWWWTP was closed in April 2015; therefore, this study identifies potential opportunities should any of the nearly nine acre site become available for aviation related development. The master plan will also address and re-evaluate the potential to improve Runway 7-25, building upon the results of the *Runway 7-25 Feasibility Study* completed in 2017 (see **Appendix C**).

1.2 Study Goals and Objectives

Airports face many challenges in their day to day operation. At a minimum they must maintain a safe facility, comply with a myriad of regulations, manage numerous leaseholds, preserve compatibility with the community, be good stewards of the environment, encourage economic growth, and compete for limited funds, all while providing essential community services with a positive public image. The master plan process serves as a tool for an airport to address these issues in an organized approach. The overall objective of a new master plan is to accurately assess existing airport conditions, project aviation activity, define future needs, develop cost effective options, and provide a realistic development program. In doing so, the 20-year plan also needs to be flexible by including appropriate activity triggers or benchmarks, as well as potential scenarios to respond to the ever changing aviation industry. Such flexibility provides options for airport management to react to fluctuating market conditions, shifts in development priorities, and/or take advantage of unforeseen opportunities.

In short, the master plan will serve as a guide to achieve realistic airport development in line with both airport and community objectives. Since the previous 2007 study is out of date and no longer reflects the current conditions at the airport or of the community, this master plan will be a "from scratch" effort as defined by FDOT in their guidance. The primary goal will be to create a 20-year development program to maintain a safe, efficient, economical, and environmentally acceptable airport facility for the City of St. Petersburg and surrounding Pinellas County communities. By achieving this goal, the document will provide the guidance to satisfy the aviation demand in a financially feasible and responsible manner, while at the same time addressing the aviation, environmental, and socioeconomic issues of the community. In support of this goal, the following objectives were achieved:

- Ensure orderly development: consider short-term needs and long-term plans;
- Ensure compliance with latest FAA/FDOT design criteria, grant assurances, and policies;
- Provide flexibility to allow the airport to respond to changes in the aviation industry;
- Meet FAA Airport Geographic Information System (AGIS) mandate;
- Create a new Airport Layout Plan (ALP) drawing set;
- Integrate sustainability and resiliency concepts to ensure long-term viability;
- Enhance role as a gateway to the community;
- Integrate the City's Downtown Waterfront Master Plan elements; and
- Secure broad community buy-in for the future development program.

While some of these objectives fulfill the broader goals of a comprehensive planning document, others are much more unique to the airfield's setting and surrounding environment. For example, it was critical to include a resiliency planning component as a subset of the sustainability elements given the relatively low elevation of airfield facilities coupled with airport's proximity to the Tampa Bay. In fact, this became a significant concern in 2017 when eight to ten foot storm surge was expected for the Tampa Bay area during Hurricane Irma. While the airport did not experience any significant flooding as a result of Hurricane Irma, the effects of this storm on the local area, as well as the entire Florida peninsula, also highlighted the need to incorporate resiliency elements into future plans.

1.3 Planning Process

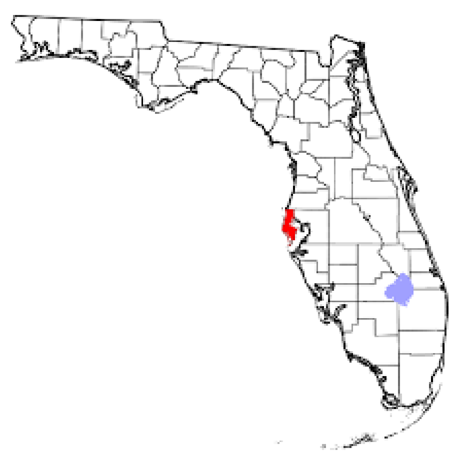
This master plan provides a systematic outline of the development actions required to maintain and further develop airfield and landside facilities. This process provides those officials responsible for the scheduling, budgeting, and ultimate funding of airport improvement projects with an advance notice of the airport's needs. By phasing airport improvements, this development can be conducted in an orderly and timely fashion.

Throughout this process, reviews were conducted to insure input was received from key stakeholders, including the Airport Advisory Committee, City of St. Petersburg staff, airport traffic control management, FAA, FDOT, airport tenants, airport customers, and the public. The individual steps in the master plan process are built upon information and decisions made during previous steps. Taken as a whole they address the objectives previously identified.

Airport Master Planning Process

1.4 Airport Setting

The Airport is located in Pinellas County on Florida's Gulf Coast. Approximately 15 miles south of Tampa International Airport, 10 miles southeast of St. Pete-Clearwater International Airport, and 7 miles from the Gulf of Mexico. The airport is located south of downtown St. Petersburg and surrounded on three sides by Tampa Bay. St. Petersburg is easily accessible via I-275, the north-south interstate that connects to I-4 in Tampa and I-75 north of Bradenton.



Pinellas County, Florida (highlighted)

1.4.1 History

Albert Whitted Airport opened at its present site in September 1917 and was named in honor of Lieutenant Albert Whitted on October 12, 1928. A native of St. Petersburg, Lieutenant Whitted was an aviation pioneer and naval aviator who introduced numerous Tampa Bay residents to flying.

SPG is the birthplace of National Airlines, which conducted their first scheduled airline flight from the airport to Daytona Beach in 1934. Decades later National merged with Pan-Am to create one of the world's largest air carriers. Then in the late thirties, Goodyear chose SPG as one of the first airports to base its famous blimps. During World War II, the airport helped support the war effort when it was converted from a public airfield to a military air base. At that time hundreds of Naval cadets received their training at Albert Whitted.

Albert Whitted Airport – 1968

The original airfield consisted of a narrow 1,800 foot runway oriented in the east-west direction. Early development of the airfield included lengthening of the east-west runway and construction of two new runways with north-south and northeast-southwest orientations. In 1944, the north-south runway was replaced with a new runway with a protective seawall. In the 1950s airport activity was promoted by local pilots and others in the community. This resulted in the City deciding to maintain and improve SPG.

Since that time, there have been numerous improvements to the airfield including extending the northeast-southwest runway into Tampa Bay. Other projects included hangar renovations, additional hangars, navigational aids, and airfield lighting. In 2003 the citizens of St. Petersburg voted to preserve the airport and a Blue Ribbon Task Force was created to guide development of the airport, to include the 2007 Airport Master Plan Update. Since, the General Aviation Terminal, a new airport control tower, rehabilitated runway, taxiways, hangars, aircraft parking aprons, and automobile parking have been constructed.

1.4.2 System Planning Roles

Airport planning occurs at the local, state, and national levels, each with its own particular emphasis. Airport master plans provide the local level, while statewide matters are addressed by FDOT, and issues at the national level are handled by the FAA.

Florida Aviation System Plan

The Florida Aviation System Plan (FASP) facilitates FDOT's strategic planning for the state's aviation system. This plan is updated annually through the Continuing Florida Aviation Systems Planning Process (CFASPP) and divides the state's public-use airports into nine regions. SPG is one of 11 public airports in the West Central Florida Region. As the most densely-populated CFASPP region, this area is home to some of the state's most popular attractions including world renowned beaches, four professional sports teams, museums, cruise ships, theme parks, three major league baseball spring training facilities, and other major area attractions. The region is also home to a number of universities, research centers, medical facilities, and military installations, not to mention every facet of business attracting an expanding global reach. The FASP identifies SPG as one of Florida's general aviation airports.

National Plan of Integrated Airport Systems

A National Plan of Integrated Airport Systems (NPIAS) is presented every two years to Congress by the Secretary of Transportation for the development of public-use airports which are significant to the national air transportation system. Specifically, this plan documents the federal aid required for infrastructure development at the nation's commercial service, reliever (high capacity general aviation airports), and other select general aviation airports. The categorization of these needs guides FAA management in their administration of the Airport Improvement Program.

The most recent NPIAS (2019-2023) groups airports into two major categories: primary (commercial service) and non-primary (general aviation). General aviation airports are then subdivided into either national, regional, local, basic, or unclassified facilities depending on activity measures (number/type of based aircraft and operations). These categories do not change any eligibility for federal funding; rather they are designed to further assist the FAA in determining the appropriate types of development. In the 2019-2023 NPIAS, SPG is designated as a local general aviation facility with $5.5 million in projects eligible for federal funding over the system's five-year planning period. SPG is also categorized as a reliever airport to the Tamp International and St.-Pete Clearwater International Airports.

1.4.3 Climate and Weather Data

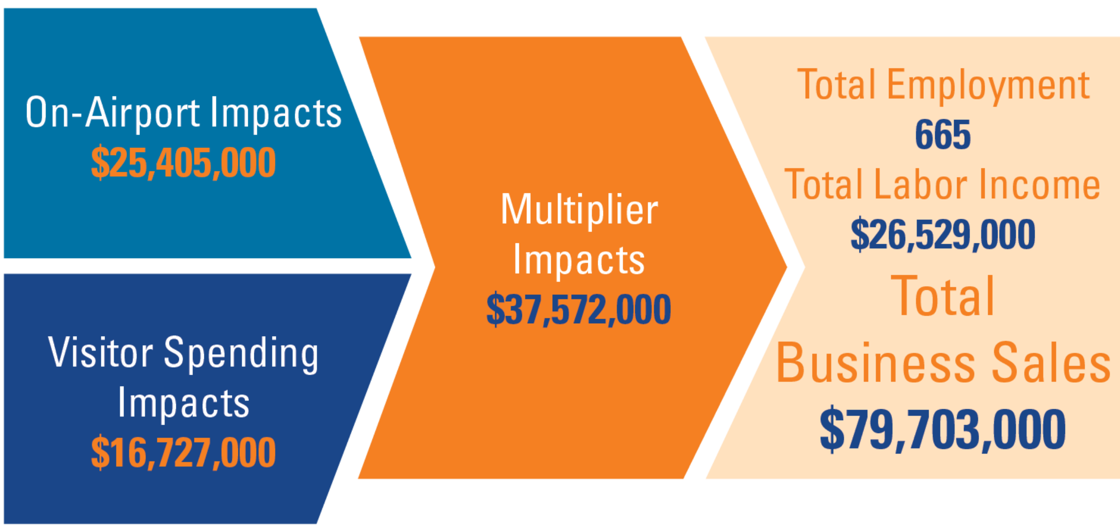
Pinellas County is located along the Gulf Coast of central Florida. As with much of coastal Florida, the surrounding land is relatively flat and the airfield is located on Tampa Bay. These characteristics, coupled with prevailing sea breezes and the maritime location significantly influence climate and prevailing winds for the area. Although the airport is located in the warmer southeastern portion of the nation, annual temperatures are considered moderate due to the influence of regular sea breezes.

Rainfall in this area occurs during all seasons; however, it is more abundant during the summer when daily showers are common. Pinellas County has averaged approximately 51 inches of rainfall on an annual basis over the last five years. Temperatures during the summer months rarely reach 100 degrees Fahrenheit; with an average maximum temperature of 89 degrees Fahrenheit in July. The average minimum winter temperature is 56 degrees Fahrenheit in January.

Historic wind and weather conditions are key considerations for an airport's runway system since aircraft takeoff and land into the wind. As recommended by FAA AC 150/5300-13A, Change 1, ten consecutive years of wind data was collected for SPG. This information will be analyzed and used to develop a number of airfield facility requirements in this study.

1.5 Local Economic Impact

In 2019, FDOT completed the Florida Statewide Aviation Economic Impact Study. The report provides the estimated annual impact created by the 116 public-use airports that participated in the study. For each airport the economic benefits are expressed as direct (on-airport), indirect (off-airport), and induced (multiplier) impacts. These measures are then expressed in terms of total annual employment, payroll (labor income), and activity (business sales). The 2019 study diagram below documents the annual contribution that SPG creates for the City of St. Petersburg and surrounding Pinellas County economy.



SPG's Impact on the City of St. Petersburg and Surrounding Pinellas County Economy

SOURCE: Florida Statewide Aviation Economic Impact Study, FDOT 2019.

All of the funds utilized for the operation, maintenance, and improvement of SPG are generated by the airport's activities, which includes leveraging both state and federal grants for various improvement projects. There are also a number of community services supported by the airport that cannot be easily quantified. Examples include supporting the flight operations associated with the Johns Hopkins All Children's Hospital, Bayflite Medevac, and other air ambulance services. In addition, the airport is home to a Civil Air Patrol squadron and a traffic/news reporting company, and supports transient flight activity by the Pinellas County Sheriff's Office and Pinellas County Mosquito Control.

CHAPTER 2

Existing Conditions

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Existing Conditions

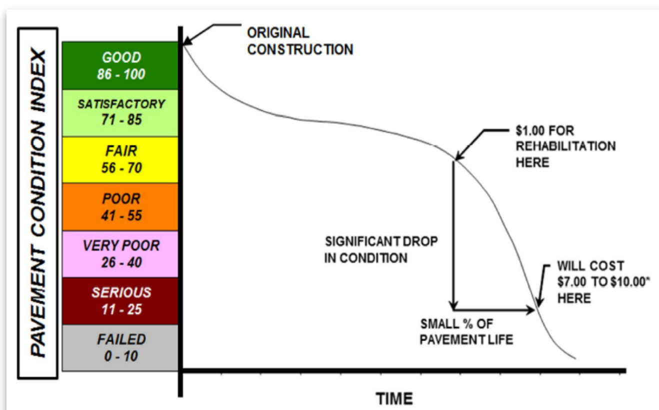
Information about the existing conditions of the Albert Whitted Airport (SPG) at the beginning of the study provides a foundation for subsequent analyses throughout the study. This includes an examination of the existing airfield, general aviation, landside, and other airport support facilities.

2.1 Airfield Environment

Surrounded by water on three sides, the airfield has two runways that cross at the northeast end. **Figure 2-1** illustrates the airfield facilities that are described in the following sections. While this includes the airport's runway and taxiway system, it also includes the available instrument approaches; airfield lighting and signage; pavement markings; and takeoff and landing aids.

2.1.1 Aircraft Operation Areas

The aircraft operation areas include the runways as well as any other paved or unpaved surfaces that enable aircraft to move between the runways and the different airport facilities. In addition to the physical characteristics of the runway and taxiway environment, there are other safety-related criteria. The specific criteria for each of these protective surfaces will be discussed in subsequent chapters.



Pavement Life Cycle

SOURCE: FDOT Statewide Airfield Pavement Management Program, 2015.

In July 2615, the Florida Department of Transportation (FDOT) published their most recent pavement report for SPG as part of the ongoing Statewide Airfield Pavement Management Program. This report provides an objective basis for determining maintenance and repair needs, as well as priorities, by assigning a Pavement Condition Index (PCI) value to each section of paved surface. The results of the 2015 report indicated that the airport's airfield pavement facilities had an overall area weighted average PCI of 65, satisfactory rating. This included an area-weighted average PCI of 61 for the runways, 60 for the taxiways, and 74 for the apron surfaces. As noted in the following sections, some of the paved surfaces have been rehabilitated since the 2015 report.

Runway 7-25

The primary runway, Runway 7-25, has a published length of 3,677 feet and width of 75 feet. Constructed of grooved asphalt, Runway 7-25 was last rehabilitated in 2016 and is now considered to be in good condition. The Runway 7 threshold is displaced 558 feet and the Runway 25 threshold is displaced 263 feet. At the southwest end of the runway, there is a lighted blast fence between the physical end of the runway and the airport perimeter road that parallels the western property line. This blast fence prevents any prop wash or jet blast from impacting pedestrians or vehicles just on the other side of the airport property line along 1st Street SE. **Table 2-1** provides technical data for both runways, including the current published weight bearing capacity.

Runway 18-36

The crosswind runway, Runway 18-36, is 2,864 feet in length and 150 feet in width. Also constructed of grooved asphalt, a PCI of 58 to 60 (fair) was assigned to Runway 18-36 in 2015. The runway has no displaced thresholds.

TABLE 2-1
RUNWAY CHARACTERISTICS

	Runway 7-25	Runway 18-36
Runway Length	3,677’	2,864’
Runway Width	75’	150’
Runway Markings	Non-Precision	Non-Precision
Pavement Strength (pounds)		
Single (S)	60,000	60,000
Dual (D)	105,000	105,000
Two Single in Tandem (2S)	133,000	133,000
Two Dual in Tandem (2D)	190,000	190,000
Pavement Surface	Asphalt	Asphalt
Runway Lighting	Medium-Intensity	Medium-Intensity
Displaced Threshold	Runway 7 – 558’ Runway 25 – 263’	None

SOURCE: 2019 FAA aeronautical publications.

Taxiways and Taxilanes

Aircraft ground movements between runways, aprons, hangars, and other facilities is conducted via an airfield’s taxiway and taxilane system. For SPG this consists of a network of major taxiways, connector taxiways, apron edge taxilanes, and hangar taxilanes. Taxilanes typically provide the final link to aircraft hangars and parking positions, and in most cases are outside of the aircraft movement area managed by the airport traffic control tower (ATCT). The various taxiways and taxilanes are identified on **Figure 2-1**.

Source: ESA, 2019.

Albert Whitted Airport Master Plan

FIGURE 2-1
EXISTING AIRFIELD FACILITIES

Taxiway A

Taxiway A is the full length parallel taxiway along the southeast side of Runway 7-25. At the southwest end, Taxiway A connects to the end of the runway pavement, before the displaced threshold. And at its northeast end, Taxiway A ends at Runway 18-36. There are four connector taxiways which also provide access onto Runway 7-25 along its alignment. The majority of this taxiway provides a pavement width of 40 feet. Taxiway A maintains a centerline to centerline offset with Runway 7-25 of 150 feet and has an overall area weighted average PCI of 61 (fair). As part of the project to rehabilitate Runway 7-25, the connector Taxiways A1, A2, A3, and A4 were also rehabilitated in 2016 and therefore considered to be in good condition.

Taxiway B

Taxiway B is the full length parallel taxiway along the west side of Runway 18-36. In between the ends of Taxiway B, which connect directly into the Runway 18 and Runway 36 thresholds, there is only one connector, Taxiway B1 (in addition to Taxiways A, C, and D) which also provides access onto Runway 18-36. Taxiway B and its end connectors provide a minimum width of 40 feet; however, Taxiway B1 provides 50 feet. The taxiway has a 150 foot offset from the Runway 18-36 centerline and the pavement was assigned an overall area weighted average PCI of 65 (fair). The exception is the portion between Runway 7-25 and Taxiway A which was repaved during the 2016 Runway 7-25 rehabilitation project. Taxiway B1 was rated very poor with a PCI of 37.

Taxiway C

Taxiway C is 40 feet wide and serves as the east to west midfield connector between the runways and facilities in the south half of the airport. In the 2015 pavement evaluation Taxiway C had a weighted average PCI of 45 (poor). The eastern-most section, which had a PCI of 21 (serious) was repaved in early 2018 and is now considered to be in good condition. As part of this project, a run-up area was added to the east end of Taxiway C where it ties into Taxiway B.

Taxiway D

Taxiway D is the partial parallel taxiway along the north side of Runway 7-25. It runs between Taxiway D2 at the General Aviation Terminal aircraft parking apron to Taxiway D5 at the Runway 25 end. Taxiway D1 connects the General Aviation Terminal aircraft apron with the Runway 7 end. While Taxiway D has a pavement width of 25 feet most of its connector are wider. Taxiway D maintains a centerline to centerline offset with Runway 7-25 of 175 feet for the majority of its length with the exception of the section to the east of Taxiway B, which is offset 200 feet from the Runway 7-25 centerline. Taxiway D was assigned an overall area weighted average PCI of 77 (satisfactory); however, sections of the taxiway and connector pavements ranged from 64 (fair) to 92 (good) in the 2015 report.

2.1.2 Airspace and Airport Traffic Control Tower

Controlled airspace is referred to as Class A, B, C, D, or E and uncontrolled airspace as Class G. Generally speaking, Class A airspace begins at 18,000 feet above mean sea level (AMSL), continues upward, and is used to manage en route aircraft traffic. Class B airspace surrounds the nation's busiest airports including Tampa International (TPA). Class C surrounds airports with high traffic levels, but not as high as Class B airports. A local example is Sarasota Bradenton International Airport (SRQ). Class D surrounds those airports with an ATCT not located in or designated as having Class B or C airspace. St. Pete-Clearwater International (PIE) has Class D airspace, below the overlapping Class B airspace for TPA. Class E airspace is any other controlled airspace where pilots are in radio contact with some portion of the Federal Aviation Administration (FAA) Air Traffic Control (ATC) network. This network primarily consists of ATCTs, Terminal Approach Control (TRACON) facilities, and Air Route Traffic Control Centers (ARTCC).

Much like PIE, SPG has Class D airspace below the overlapping Class B airspace for TPA. Over land this Class D airspace is from the surface up to 1,500 feet AMSL. The overlapping Class B airspace begins at 3,000 feet AMSL over land, with the airspace in-between designated as Class E from 700 feet above ground level (AGL) up to 2,999 feet AMSL. From the surface up to 700 feet AGL the airspace is Class G. The portion of SPG's Class D airspace over Tampa Bay is from the surface up to 1,200 feet AMSL where it meets the overlapping Class B airspace. To the northeast, SPG's Class D overlaps with the Class D airspace associated with MacDill Air Force Base (MCF). The ATCT facility at SPG is operated from 7:00 a.m. to 9:00 p.m. local time. When the tower is closed, the airspace surrounding SPG is designated as Class G.

TRACON facilities have controllers whose primary function is to guide aircraft approaching and departing airports within a 30 to 50 mile radius and up to 10,000 feet AMSL. When an aircraft is within five miles of SPG (or below 1,500 feet AMSL), TRACON controllers hand off the aircraft to the SPG ATCT. Alternatively, when departing aircraft leave the TRACON's range of control, TRACON controllers hand responsibility off to FAA ARTCC.

For SPG, the approach and departure flow is managed by the Tampa TRACON facility. Depending upon direction of travel, TRACON controllers will hand off or receive aircraft from ARTCCs in either Jacksonville or Miami.

Arrival Procedures

A Standard Terminal Arrival (STAR) is an ATC procedure published for arriving aircraft in order to transition from the en route phase of flight to the approach phase. STARs provide guidance to either a published instrument approach procedure or to a point from which ATC might provide the aircraft with radar vectors to their destination. There are three STARs (BRDGE eight, DARBS three, and LZARD six) published for aircraft en route for SPG. These vary based on from where the arriving aircraft is coming, as well as the flow and active runway at the airport.

Instrument Approach Procedures

During times of inclement weather, and/or reduced visibility, instrument approaches enable pilots to safely descend into the airport environment for landing. There are a number of different instrument approaches that can be established, each with specific limitations. When the cloud ceiling is greater than 1,000 feet above ground level (AGL) and the visibility is greater than three statute miles, the conditions are considered visual and pilots can operate under visual flight rules (VFR). In VFR conditions, no published approaches are required for an aircraft to safely land at an airport. However, once the cloud ceiling is less than 1,000 feet AGL and/or the visibility is less than three statute miles, pilots must operate under instrument flight rules (IFR). Additional ATC services are provided to pilots during IFR conditions. During the arrival phase, instrument approaches are what allow a pilot to safely navigate to and land on a runway.

There are three categories for instrument approaches: precision approaches (PA), approach procedures with vertical guidance (APV), and non-precision approaches (NPA). All provide course guidance to the runway centerline they serve. The degree of horizontal guidance increases with the sophistication of the instrument approach established, which is reflected through the specific minimum operating parameters for each. The primary difference between the three is that non-precision approaches do not provide any vertical guidance to the runway end. For both PA and APV approaches, the vertical course allows an aircraft to descend safely on a fixed glideslope signal, even when the runway environment is not yet in sight.

All instrument approaches have heights published that dictate how low a pilot can descend without the runway environment in sight before having to abandon the approach and try again. For most precision approaches this is called the decision height which is indicated in feet above the ground level or the decision altitude (DA) in feet AMSL. DA is also used in approach procedures with vertical guidance. For non-precision approaches, it is referred to as the minimum descent altitude (MDA) with heights published in the number of feet AMSL. In addition, every instrument approach has minimum visibility requirements, measured in feet or miles. If visual identification of the runway environment cannot be made before the published minimums, then the aircraft must execute a missed approach and either try again or go to an alternate airport.

Precision Approaches

Precision approaches are further defined as any approach that has visibility minimums lower than ¾ of a mile and the capability of safely guiding aircraft down to heights less than 250 feet above the threshold. There are no precision approaches established to the runways at SPG.

Approach Procedures with Vertical Guidance

Approach procedures with vertical guidance are defined as any approach that has visibility minimums not lower than ¾ of a mile and the capability of safely guiding aircraft down to heights greater than or equal to 250 feet above the threshold. Precision area navigation (RNAV) procedures are based on Global Positioning System (GPS) and the Wide Area Augmentation System (WAAS). These are referred to as LPV approaches (localizer performance with vertical guidance) or

LNAV/VNAV (lateral navigation/vertical navigation) approaches, both of which have the minimums published as a DA. There are no APV approaches established to the runways at SPG.

Non-Precision Approaches

Different non-precision approaches have been established to three of the four runway ends. There are no approaches established to Runway 25 due to proximity and overlap of airspace with MacDill Air Force Base to the northeast. Non-precision RNAV/GPS LNAV approaches have been established to Runways 7, 18, and 36 with minimums published as a MDA. For Runway 7 the LNAV provides a straight-in approach with visibility minimums of one mile and a MDA of 660 feet. For Runway 18-36 the LNAV straight-in approaches provide visibility minimums of one mile to both ends while the Runway 18 MDA is 800 feet and the Runway 36 MDA is 540 feet. There is also a straight-in non-precision approaches established to Runway 18 based on the PIE VHF omnidirectional range (VOR). For aircraft with distance measuring equipment (DME), the Runway 18 VOR approach provides visibility minimums of one mile and a MDA of 800 feet. Without DME, the visibility minimums increase to one and a quarter mile and the MDA to 940 feet.

For Runways 7, 18, and 36, the RNAV/GPS and VOR approaches also provide NPAs with circling approach minimums. Circling approaches allow an aircraft to approach and establish visual contact with the airport environment in less than VFR conditions. Once in the vicinity, the pilot can then maneuver the aircraft to set up a final approach to the runway and land with visibility minimums of one mile and a MDA of 720 feet when using the published approach for Runway 7. For the other published procedures, the circling approach visibility minimums are one and a quarter mile and the MDA is 860 feet. It should be noted that the FAA classifies runways with only circling approach minimums as visual runways.

Departure Procedures

Departure Procedures provide obstacle clearance as aircraft transition from their departure to the en route phase of flight. Procedures designed for obstacle avoidance are referred to as obstacle departure procedures (ODP) and are described using text only. Other standard instrument procedures (SID) are named and published graphically to regulate traffic flows, ensure aircraft separation, enhance capacity, and reduce both pilot/controller workload. There are no SIDs established for SPG; however, there are general ODPs published for aircraft departing from any of the four runway ends. These simply establish the preferred departure heading and minimum altitude before a turn can be made.

2.1.3 Airfield Lighting

Proper airfield lighting is required at all airports that are utilized for nighttime or IFR operations. With the exception of the airport rotating beacon, the lighting systems at the airport are supported by equipment in the airfield electrical vault, with primary control routed to the ATCT.

Identification Lighting

Rotating beacons universally indicate the location and presence of an airport at night or in adverse weather conditions. The rotating beacon is located on top of the ATCT. It is equipped with an optical rotating system that projects two beams of light, one green and one white, 180 degrees apart. The beacon is continuously operated during nighttime hours or when the airfield is under instrument meteorological conditions.

Runway Lighting

Runway lights allow pilots to identify the edges of the runway and assist them in determining the length remaining during periods of darkness or restricted visibility. These lighting systems are classified according to their intensity or brightness. Both runways are equipped with medium intensity runway lights (MIRL). The runway edge lights emit white light except when a caution zone has been established. At SPG, caution zone lights are in the last 1,800 feet of Runway 7 and the last 1,400 feet of Runway 18. In the caution zone, yellow lights are substituted for white lights (split lens) to emit yellow light in the last portion of the respective runway ends and white light for the opposite direction. The MIRLs for Runways 7-25 and 18-36 both consist of base mounted light fixtures on cans with the cables in electrical conduit between each fixture. The Runway 7-25 MIRLs are light-emitting diode (LED) while those on Runway 18-36 are incandescent fixtures.

As part of the runway lighting systems, the identification of the runway ends and thresholds are critical to a pilot during landing and takeoff. This is especially important when the runway ends have displaced thresholds, as there are at both ends of Runway 7-25. Therefore, the runway ends are equipped with special lighting configurations to aid in their identification.

At the physical end of all four runways, sets of four inboard threshold lights are installed. For Runway 18-36 these fixtures have a split lens with the half facing the approaching aircraft are green, indicating the beginning of usable runway, while from the opposite direction they are red, indicating the end of usable runway. For Runway 7-25, these fixtures display red from both directions indicating to approaching aircraft that there is a displaced threshold as well as the end of useable pavement. For the displaced thresholds at each end of Runway 7-25, there are four outboard threshold lights which have a split lens. The half of the lens which faces the approaching aircraft are green, indicating the beginning of usable runway. From the opposite direction, only the fixture that is in line with the runway edge lighting emits light. For landings on Runway 7 these two lights are yellow, since they are part of the runway edge lighting's caution zone. For landings on Runway 25, these two lights are white. The outside three on each side and for both landing directions are shielded from emitting any light from that side to the landing aircraft.

The MIRLs system for Runway 7-25 is considered to be in good condition as it was installed in 2016. The system for Runway 18-36 is in fair condition. Additionally, the runway lighting, as well as the taxiway lighting described in the following section, can be activated by pilots through the common traffic advisory frequency (CTAF) when the ATCT is closed. When activated, the lighting systems for both runways and all taxiways come on and then turn off automatically after a set period of time.

Taxiway Lighting

All of the taxiways have blue medium intensity taxiway lights (MITL) along the edge of their alignment. The circuits for Taxiways B, B1, D (east of Taxiway B), and D5 have incandescent light fixtures while Taxiways A, C, and D (west of Taxiway B) have LED fixtures. The MITLs have been installed using base mounted light fixtures on cans with conduit. All of the LED taxiway lighting circuits are considered to be in good condition while the incandescent ones are fair.

Airfield Signage

As part of the airfield lighting system, the airport has a number of internally illuminated airfield signs. These include mandatory instruction, location, direction, and destination signs. The mandatory signs include the holding position signs which delineate to a pilot the limits of the runway environment. These critical signs are typically located on the left side of each connector taxiway, adjacent to the runway holding position markers. The current airfield signage is considered to be in good condition for those on the newer LED taxiway circuits while those on the older incandescent MITL circuits are considered to be fair and have panels that are significantly faded.

2.1.4 Pavement Markings

Pavement markings delineate the various movement areas of the airfield. The following sections describe those markings used at SPG which establish the various boundaries and paths along the paved surfaces.

Runway Markings

Both Runways 7-25 and 18-36 are marked with landing designators, centerline striping, threshold, and edge markings. The Runway 7-25 markings are interrupted at the intersection with Runway 18-36, since the crosswind has the lowest published approach minimums. Threshold bars and the appropriate arrows and arrow tails have been included to denote the displaced thresholds at each end of Runway 7-25. All of these markings are white. The markings on Runway 7-25 are in good condition, especially those along the portion of the runway that is used as part of the annual Grand Prix of St. Petersburg race course, as this section is remarked after each race. The markings for Runway 18-36 are occasionally repainted, though most appeared quite faded during the visual inspection conducted in the early part of 2019.

Taxiway Markings

All of the primary taxiways have centerline stripes along their alignments and holding position markings at each intersection with a runway. These markings provide supplemental visual cues to alert pilots of an upcoming runway holding position marking to minimize the potential for runway incursions.

A number of the hangar taxilanes also have yellow centerline stripes and all of the hangar taxilanes (as well as aircraft parking aprons) have the appropriate non-movement area boundary marking. All of the taxiway, holding position, taxilane, and non-movement area markings are painted yellow and most have a black background, the exceptions being the centerline stripes of Taxiway B and the west half of Taxiway C which also appeared faded during the visual inspection conducted in the early part of 2019. The majority of the other taxiway markings were in good conditions.

2.1.5 Takeoff and Landing Aids

A number of different systems on the airfield facilitate the arrival and departure of aircraft. The primary ones are described in the following sections.

Runway End Identifier Lights (REIL)

Runway end identification lights (REIL) consist of a pair of synchronized white flashing lights which are situated on each side of and abeam the runway threshold lights. They provide pilots with a rapid and positive visual identification of the approach end of the runway during night, instrument, and marginal weather conditions. REILs also aid in identification of the runway end in areas having a high concentration of lighting or areas that lack contrast with the surrounding terrain. All four runway ends are equipped with unidirectional REILs. For both ends of Runway 7-25, the REILs are located next to the outboard displaced threshold lights. While the REILs for Runway 7-25 are in good condition (as they were installed as part of the 2016 runway rehabilitation project) they do show signs of corrosion due to the saltwater environment surrounding the airfield. The REILs for Runway 18-36 are much older, heavily corroded, and considered to be in fair condition. All of the REILs are owned and maintained by the airport.

Visual Glide Slope Indicators

Visual glide slope indicators are systems installed to provide an indication of the aircraft's relation to the proper glideslope. Precision Approach Path Indicator (PAPI) systems have been installed on all four runway ends. These consist of a 2-light unit system for each end, and are typically located on the left side of the runway (PAPI-2L), but can also be located on the right side (PAPI-2R). Runways 7, 25, and 18 are equipped with PAPI-2L systems, while Runway 36 is equipped with a PAPI-2R system. The Runway 36 PAPIs are located on the right side due to the proximity of Taxiway B to the runway pavement edge.

The lights of a PAPI system provide pilots with visual descent information during an approach to a runway. These lights are typically visible from five miles during the day and up to 20 miles or more at night. PAPIs use a light bar unit that is installed in a single row perpendicular to the runway edge. The lights project a beam of white light in the upper segment and red light in the lower segment. Depending on the aircraft's angle in relation to these lights, the pilot will receive a combination that indicates his position relative to the desired glideslope. The PAPI systems for Runway 7-25 are in excellent condition as they were just installed in 2016 while the ones for Runway 18-36 are much older and considered to be in fair condition. All of the PAPIs are owned and maintained by the airport.

Automated Surface Observing System

The airport has an Automated Surface Observing System (ASOS) located just west of the Runway 18 end, near the seawall (see **Figure 2-1**). The ASOS is a combination of instruments which observe, report, and record the airfield altimeter setting, wind data, temperature, precipitation, dew point, visibility, and cloud/ceiling data. Pilots can receive this information from the ASOS's discrete radio frequency or through a dedicated telephone number. The ASOS equipment is owned by the FAA and maintained by the National Weather Service.

Wind and Traffic Indicators

Perhaps the most basic takeoff and landing aid is the wind cone, which indicates relative wind direction and speed. The primary wind cone is collocated with the segmented circle in the center of the airfield between the runways (see **Figure 2-1**). Together, these provide pilots with a visual indication of the current surface wind conditions, established traffic patterns for the airfield, and if the ATCT is closed, the preferred landing direction. There are also two supplemental wind cones. One is located to the north of Taxiway D, approximately 260 feet down from the Runway 7 landing threshold. The other is to the right of Runway 36, approximately 600 feet from the landing threshold. All of the wind cones at SPG are illuminated and considered to be good condition.

2.2 Airport Facilities

A majority of the facilities at the airport directly support the general aviation tenants and customers. While not every building or hangar is described in the following sections, the primary facilities providing services to support the activity at SPG are included.

2.2.1 General Aviation Terminal Facilities

The General Aviation Terminal is located on the west side of the airport just northwest of the Runway 7 threshold. The building is a two-story structure and provides a total of 10,600 square feet (SF) of space. Constructed in 2007, the General Aviation Terminal currently houses the Sheltair fixed base operator (FBO), the Hangar Restaurant and Lounge, one rental car company (Hertz), and various aviation related businesses. As the only full service FBO, the terminal facilities support general aviation passengers and pilots; aircraft parking, fueling, and storage; and other support services such as aircraft ground handling, catering and ground transportation. The FBO, rental car, and aviation related businesses are all located on the first floor of the terminal, while the Hangar Restaurant and Lounge occupy the second floor.

General Aviation Terminal / FBO

2.2.2 Aircraft Parking Aprons

The FBO manages approximately 11,000 square yards (SY) of aircraft parking apron directly adjacent to the General Aviation Terminal. This apron is predominately utilized by itinerant operations and aviation tenants that occupy the terminal building. There are 10 dedicated tie-down parking positions for small aircraft within this apron area. The FBO apron was documented in the 2015 Pavement report as having an area weighted average PCI of 89 (good).

The mid-field apron in located between Taxiways A and C. This area provides 8,000 SY and 28 tie-down parking positions and was assessed a PCI of 100 (good) since it was constructed just prior to the 2015 pavement study. A run-up area has been incorporated into the northeast corner of the apron area where it ties into Taxiway A. In addition to the paved mid-field paved apron, about 2,000 SY of open grass space to the east of the self-serve fueling facility is utilized for small aircraft parking.

Aircraft parking in the southwest corner of the airport includes a 3,200 SY apron with seven dedicated small aircraft tie-down positions. Additionally, a 14,400 SY apron is located on the south side of the airfield and serves the activities of Hangars 2, 3, and 4. This apron also provides three additional helicopter parking positions. Most of these apron areas were assigned with an area weighted average PCI of 67 (fair) with the exception of areas around Hangars 3 and 4 which were given a PCI of 55 (poor) in 2015.

2.2.3 Aircraft Storage Hangars

The City of St. Petersburg owns and maintains all of the T-hangar buildings and parking aprons while the FBO manages the leases of the aircraft storage facilities. The airport currently has 88 T-hangar units, 9 shade hangars, and 8 port-a-port hangars. T-hangars are located on the south side of the airport and are accessible from the airfield via Taxiways A and C. Surface access and vehicular parking is available off 8th Avenue SE. The port-a-port hangars are privately owned, neither the FBO nor the City of St. Petersburg manages or maintains these facilities.

SPG Shade Hangars

In addition to T-hangars, there are several clearspan hangars that are owned and occupied by airport tenants. These hangars, which typically accommodate more than one aircraft, are used for aircraft maintenance, storage, and office/shop space. **Table 2-2** summarizes the existing clearspan hangars at SPG; however, it should be noted that future development plans underway at the time of the master plan inventory, specifically the Hangar Redevelopment Project, will change the number of hangar spaces. Additionally, shade hangars will soon be constructed for the 11 aircraft parking positions that are currently located south of the existing shade hangars.

Hangar 1

TABLE 2-2
SUMMARY LARGE/CORPORATE HANGARS

Hangar	Tenants	Aircraft Storage Space
Terminal	Sheltair	7,000 SF
Hangar 1	Sheltair	10,000 SF
Hangar 2	Sheltair (sublease to St. Pete Air, Med-Trans, and Total Traffic Networks)	12,500 SF
Hangar 3	Advertising Air Force, Tampa Bay Air Charter, and St. Pete Avionics	11,400 SF
Hangar 4	Romac Air and Executive Helicopters	7,500 SF
Blue Hangar	Sky Addict Aviation	2,900 SF
VM Hangar	Private-owned (with direct land lease with the City)	4,200 SF

SOURCE: ESA, 2019.

There are two dedicated aircraft wash racks among the hangars on the south side of the airfield. One is off the west end of a T-hangar building in the middle of the T-hangar area. The other is located on the east side of Hangar 3.

2.2.4 Aeronautical Businesses and Services

A number of aeronautical businesses at the airport provide aircraft storage, maintenance, sales, flight training, charter, rental, medevac, and fractional aircraft ownership services. These include, but are not limited to:

Advertising Air Force

Advertising Air Force provides banner towing and aerial advertising services through two single-engine aircraft based at SPG. They utilize an area immediately east of Runway 18-36 for their banner pick-up and drop-off locations.

Biplane Rides

Biplane Rides offers tours in a two passenger open cockpit biplane based at SPG. Tours available include flights over downtown St. Petersburg, Treasure Island/St. Pete Beach, Tampa Bay, Madeira Beach, Egmont Key, and Anna Maria Island. Biplane Rides operates out of the General Aviation Terminal.

Executive Helicopters

Executive Helicopters provides local helicopter rides and sightseeing tours. Tour sites include downtown St. Petersburg, area beaches, area islands, Fort De Soto, and the Sunshine Skyway Bridge. Executive Helicopters has a counter in Hangar 1 and bases a Robinson R44 in Hangar 4.

Flying Adventure

Flying Adventure is a company based at the airport that conducts biplane sightseeing tours of the local area, to include the various beaches, barrier islands, and even areas where dolphins and other marine wildlife are often spotted. Flying Adventure operates out of the General Aviation Terminal.

Romac Air

Romac Air provides maintenance services for both fixed wing aircraft and rotorcraft. Maintenance services include major airframe and major power plant repairs.

Sheltair

As the approved full service FBO, Sheltair is the only entity authorized to commercially sell aviation fuel at SPG. They currently offer 100LL and Jet A fuels via truck service. In addition, they manage and operate the airport's self-serve fuel facility (100LL). Sheltair also manages the leases on the majority of the City's aircraft storage facilities, including the Terminal Hangar, Hangar 1, Hangar 2, T-hangars, shade hangars, and a majority of the tie-down parking positions. Additional FBO services and amenities include a pilots' lounge, planning/weather room, ground support, shuttle services, interior aircraft cleaning, and catering.

Sky Addict Aviation

Sky Addict Aviation provides aircraft maintenance services out of the Blue Hangar located on the south side of the airfield.

St. Pete Air

St. Pete Air occupies portions of Hangars 1, 2, and 3 in the southwest portion of the airport. Services provided by St. Pete Air include flight training; aircraft rental and sales; aircraft storage; aircraft maintenance and avionics; and aircraft charters. Charter services are provided by a subsidiary company, Tampa Bay Air Charter, using a Pilatus PC-12 which accommodates up to nine passengers. St. Pete Air's training fleet consists of 14 single-engine aircraft and one multi-engine.

Tampa Bay Aviation

Tampa Bay Aviation provides helicopter rides and aerial sightseeing tours of the beaches of Clearwater and St. Petersburg beaches, as well as other area landmarks. Tampa Bay Aviation has a counter located on the first floor of the General Aviation Terminal and operates a single Robinson R44.

Total Traffic Networks

Total Traffic Networks provides aerial traffic and news reporting for the area using two Robinson R44 helicopters based at the airport.

2.2.5 Medevac Operators

In addition to the FBO and private businesses, SPG also supports two medevac companies that provide aviation services to the surrounding community.

Med-Trans

Med-Trans provides emergency medical flight services. At SPG they primarily support the flight operations for Johns Hopkins All Children's hospital. Med-Trans bases one Eurocopter EC-135 at the airport. Fixed winged aircraft medical transfer services are also available.

Suncoast Air Medical

Suncoast Air Medical provides a variety of long-distance air and ground medical transport services. At SPG, medical transport primarily conducted using their Pilatus PC-12.

2.2.6 Support and Service Facilities

There are a number of facilities around the airfield which provide support services to the airfield and its operation, as well as the tenants and customers. The primary support and service facilities are described in the following sections.

Airport Administration

On the east side of Hangar 1, there is approximately 900 SF of office space on the second floor utilized by the City to manage the airport's facilities and operations.

Airport Traffic Control Tower

In 2011, the City completed construction of a new ATCT to the northwest of the runway intersection, just east of the old tower site. The tower building is four stories and provides 2,500 SF of space beneath the observation cab which is utilized for office space, a break room, a training room, and equipment rooms. Two controllers (one ground control/controller in charge and one local control) through the FAA's Federal Contract Tower program are needed each shift to operate the tower from 7:00 a.m. to 9:00 p.m. daily. Airport information and advisory services can be obtained through the airport's Common Traffic Advisory Frequency and universal communications (UNICOM) services when the ATCT is closed. The ATCT also has a backup generator located just west of the building.

Airport Traffic Control Tower

Airfield Electrical Vault

The airfield electrical vault is located to the southwest of the ATCT. The approximate 520 SF structure houses all of the airfield lighting regulators, meters, main disconnect, breaker panels, airfield lighting control panel, and radio equipment to facilitate pilot control of the airfield lighting. Currently there is no backup generator for the airfield electrical vault.

Airport Maintenance Equipment and Facilities

Three full-time maintenance personnel staff the airport's maintenance department. The maintenance department currently occupies three separate T-hangar end units and one full T-hangar stall to provide the office, shop, and storage space needed to maintain the airport's equipment.

Fuel Farm

Constructed in 1999, the airport fuel farm is located to the southeast of the T-hangar buildings. The fuel farm consists of three 10,000 gallon above ground fuel storage tanks, plus associated equipment and other site improvements. The fuel farm is owned and maintained by the City of St. Petersburg; however, the FBO manages and operates it under lease agreement to support their fuel operations.

In addition to the fuel farm, there is one above ground self-serve tank located on the north side of Taxiway C. The self-serve fuel facility is equipped with a credit card reader and dedicated apron space for aircraft fueling. Both are in good condition as they were constructed in 2016. Capacities of the various fuel tanks are included in **Table 2-3**. The fuel farm can be serviced by tanker trucks or mobile fueling trucks via 8th Avenue SE.

Airport Fuel Farm

Self-Serve Fuel Facility

Sheltair also utilizes fuel trucks to conduct the aircraft fueling operations around the airport. Sheltair owns and maintains one 750 gallon 100LL truck and one 3,000 gallon Jet A truck, both of which are typically stored on the apron adjacent to the General Aviation Terminal.

TABLE 2-3
AVIATION FUEL TANKS AND TRUCKS

	Fuel Type	Capacity (gallons)
Fuel Farm Tank 1	100LL	10,000
Fuel Farm Tank 2	Jet A	10,000
Fuel Farm Tank 3	100LL	10,000
Self-Serve Tank	100LL	1,000
Sheltair Truck	100LL	750
Sheltair Truck	Jet A	3,000

SOURCE: ESA, 2019.

2.2.7 Aviation Organizations

SPG is home to a local preservation society, and two local chapters of national aviation organizations.

Albert Whitted Airport Preservation Society

The Albert Whitted Airport Preservation Society (AWAPS) is a non-profit organization that is dedicated to preserving and enhancing SPG. The Society offers airport tours while promoting aviation education, encouraging airport business, and showcasing the airports history through the aviation museum. AWAPS offices are located on the south side of the airport off 8th Avenue SE.

Civil Air Patrol

The Civil Air Patrol (CAP) is the official United States Air Force Auxiliary. Nationwide, the CAP operates approximately 560 single-engine piston aircraft, flying about 100,000 hours annually in support of search and rescue, disaster relief, air defense, cadet orientation flights, and Air Force assigned missions. There are two CAP squadrons that share a building just south of Taxiway C. The Pinellas Senior Squadron is an adult unit that manages flight operations, while the Cadet Squadron focuses on aerospace education, youth programs, and emergency services. The CAP bases one single-engine aircraft at the airport.

Experimental Aircraft Association

Headquartered in Oshkosh, Wisconsin, the Experimental Aircraft Association (EAA) fulfills a mission of supporting and encouraging recreational aviation throughout the nation. The local EAA Chapter 1602 at SPG meets every third Tuesday of the month.

2.3 Access and Landside Facilities

Due to the airfield configuration and surrounding environment, landside access to the airport is predominantly limited to the north and south sides of the property. Only the General Aviation Terminal and FBO facilities have access from the west side via 1st Street SE. Access to this area as well as the long-term/overflow automobile parking just north of Taxiway D is also provided off 5th Avenue SE. The primary automobile parking lot for the General Aviation Terminal has a total of 69 spaces. There is also a long-term/overflow lot to the east which provides 90 spaces; however, 50 of those spaces are currently leased year to year to The Dali Museum for their employees. An access card gate north of the General Aviation Terminal provides authorized deliveries and vehicle access onto the aircraft parking apron.

Landside access to the ATCT is via Dan Wheldon Way through a manual gate at the back of Albert Whitted Park. There is also a partial interior service road on the north side of the airport which parallels Taxiway D. Access to this interior service road by authorized vehicles is via an access card gate off of a driveway at the curve where 5th Avenue SE and Bayshore Drive SE converge.

All of the facilities on the south side of the airport are only accessible off of 8th Avenue SE, which runs just outside of the airport's south property line and ends at the United States Coast Guard (USCG) Sector St. Petersburg base. Automobile parking to the various facilities on the south side is provided by a number of small parking lots. To the west of Hangar 1 there is a small lot with 19 spaces; between Hangars 1 and 2 there is a 30 space lot; and the lot next to Hangar 3 provides 23 spaces. Additionally, a 40 space lot is located at the end of 8th Avenue SE (by the USCG gate) which is utilized by tenants of the adjacent T-hangar, shade hangar, and aircraft parking areas.

Automobile access through the east end of the 40 space lot also provides public automobile access up to the CAP building just south of Taxiway C. Four access card gates on the south side of the airport provide access to the hangars and facilities on this side of the airfield. Access into the fuel farm is via manual gates.

In addition to the access card and manual gates, the airfield property is secured by a six foot chain-link fence around most of the airport property perimeter. There is no fencing along most of the airfield that directly borders Tampa Bay and in some areas the fencing is only four feet high. The fencing, as well as the various gates, card readers, and gate operating equipment are in fair condition. The airport continuously works to maintain the functionality and security of the current perimeter control systems.

2.4 Non-Aviation Facilities

There are a number of non-aviation facilities located on airport property which provide different amenities to the community. The primary ones are described in the following sections.

2.4.1 Albert Whitted Park

The Albert Whitted Park is part of the City of St. Petersburg waterfront park system and is located on the north side of the airport off Bayshore Drive SE. The park, which occupies nearly five acres of land between the City's South Yacht Basin and the airport, includes an aviation themed playground, restrooms, picnic area, and an observation area overlooking both the airport and marina facilities. The easternmost end of the park (at the end of Dan Wheldon Way) is on-airport property.

2.4.2 Rental Cars

Currently on-airport rental car services are provided by the Hertz Rental Car with a rental car desk located on the first floor of the General Aviation Terminal. The predominant renters are aviation users, but the general public can rent cars at this location. The vehicles leased are not stored at the airport, rather they are brought in from other local area Hertz branches.

2.4.3 The Hangar Restaurant and Flight Lounge

The Hangar Restaurant and Flight Lounge is located on the second floor of the General Aviation Terminal. This aviation themed restaurant is open daily to the public and serves breakfast, lunch, and dinner. It features outdoor deck seating overlooking the airfield, live entertainment on the weekends, and has a large banquet room for special events.

CHAPTER 3

Aviation Activity Forecasts

CHAPTER 3
Aviation Activity Forecasts

3.1 Introduction

This chapter presents projections of aviation activity that form the basis of future development needs for Albert Whitted Airport (SPG). Previous activity forecasts, industry trends, local socioeconomic conditions, and historic data were analyzed and applied to methodologies accepted by both the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT) to develop these forecasts.

The standard planning period for an airport master plan is 20 years and the key planning periods include the five, ten, and 20-year horizons. Since this study was largely conducted in 2019, the forecasts are presented for 2024, 2029, and 2039, using data obtained through calendar year 2018. For a complete picture of operational activities and emerging opportunities at SPG, interviews were also conducted with the airport tenants, customers of the airfield's facilities, airport businesses, and industry groups, as well as airport and air traffic control management.

3.2 Recent Projections of Aircraft Activity

The most recent local, state, and national forecasts for SPG include those prepared for the 2007 Airport Master Plan Update, FDOT's Florida Aviation System Plan (FASP), and the FAA's 2018 Terminal Area Forecast (TAF). Each forecast projects different levels of based aircraft and annual operations for the airport as summarized in the following sections. As required by the FAA, a direct comparison of the recommended forecasts must be made relative to the FAA TAF. This comparison is included at the end of this chapter.

3.2.1 2007 Airport Master Plan Update

The 2007 Airport Master Plan Update included forecasts which were projected over a 20-year planning period using 2004 as the base year. The expected number of based aircraft and annual operations for the key planning horizons of that study, as well as for 2018, are included in **Table 3-1**. Given that in 2018 there were 176 based aircraft documented and 83,918 annual operations recorded, the 2007 master plan figures were never realized.

3.2.2 Florida Aviation System Plan

The Florida Aviation System Plan (FASP) is a comprehensive planning and development guide for the state's public airports. The FASP ensures that Florida has an effective statewide aviation transportation system which provides a link to the global air transportation network and effectively interfaces with regional surface transportation systems. In support of these goals, FDOT's Aviation and Spaceports Office provides annual updates to historic aviation data and prepares forecasts of the based aircraft, annual operations, and passenger enplanements (as applicable) for each public airport in the state. The FASP information is included as part of the Florida Aviation Database (FAD) with the most recent update for SPG providing historic data through 2017 and projections out to 2037 for based aircraft, but only historic data through 2015 and projections to 2035 for annual operations. FASP data for the key forecast horizons of this study, including an extrapolation to 2039, are shown in **Table 3-*2***.

TABLE 3-1
2007 AIRPORT MASTER PLAN UPDATE

	Based Aircraft	Annual Operations
Base Year		
2004	200	106,283
Forecast		
2009	213	112,618
2014	227	119,259
2018	238	124,895
2024	257	133,941
Average Annual Change (2004 – 2024)	1.3%	1.2%

SOURCE: 2007 Airport Master Plan Update.

TABLE 3-2
FLORIDA AVIATION SYSTEM PLAN

		Based Aircraft		Annual Operations
Base Year				
2015		-		84,074
2017		115		-
Forecast				
2018		116		86,905
2024		125		92,856
2029		133		98,125
Average Annual Change	(2017 – 2037)	1.2%	(2015 – 2035)	1.1%
Extrapolated				
2039		151		109,577

SOURCE: Florida Aviation Database and ESA analysis, 2019.

3.2.3 FAA Terminal Area Forecast

The Terminal Area Forecast (TAF) is prepared annually by the FAA to meet the budget and planning needs of the agency, as well as to provide information for use by state agencies, local authorities, the aviation industry, and the public. Projections in the FAA TAF are prepared for each airport in the National Plan of Integrated Airport Systems (NPIAS). The TAF projections detailed in **Table 3-3** are based on the federal fiscal year, which ends on September 30th. The 2018 TAF (issued in February 2019) utilizes a 2017 base year for based aircraft and a 2018 base year for annual operations.

TABLE 3-3
FAA 2018 TERMINAL AREA FORECAST

		Based Aircraft		Annual Operations
Base Year				
2017		122		-
2018		-		82,904
Forecast				
2024		142		83,787
2029		157		85,372
2039		187		88,634
Average Annual Change	(2017 – 2039)	2.0%	(2018 – 2039)	0.4%

NOTE: Annual operations based on FAA fiscal year ending September 30th.

SOURCE: 2018 FAA Terminal Area Forecast, issued February 2019.

3.3 Factors Influencing Forecast Approach

To guide the forecasting effort, an understanding of the relationship between industry trends and the airport operating environment is essential. Using historic information and data, it is possible to compare how changes in the general aviation industry and local area economics may have influenced activity at SPG. The analysis of recent trends also allows educated assumptions to be made as to how the airport's service area and activity will be affected in the future.

National, regional, and local trends with the potential to impact existing, expanded, or even create new general aviation activity were identified from several sources. In addition to the historic data and recent activity forecasts, information was collected from a number of reports, studies, and industry articles including, but not limited to:

- FAA Aerospace Forecast (2019 – 2039)
- FAA Annual Business Jet Reports (2009 – 2018)
- General Aviation Manufacturers Association (GAMA) Annual Aircraft Shipment Reports (2001 – 2018)

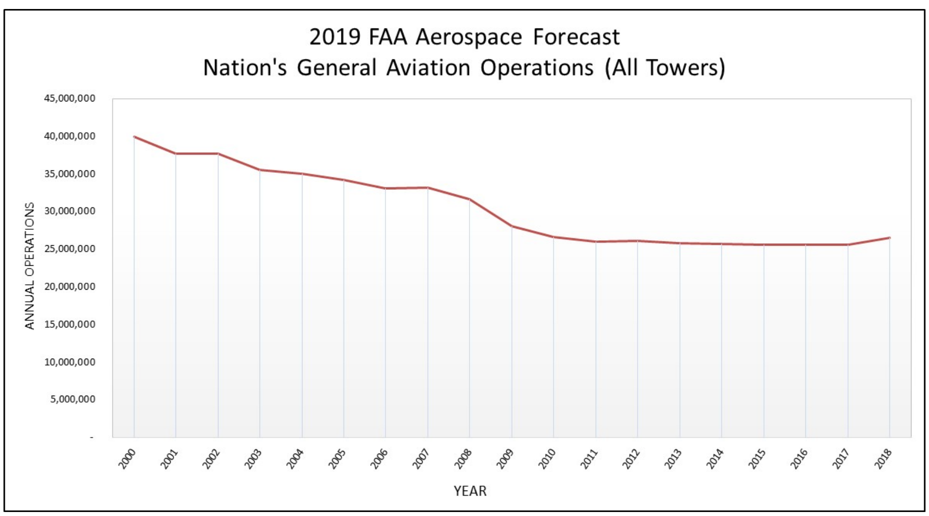
- Florida Statewide Aviation Economic Impact Study (2019)

The information gathered frames SPG's role in the national air transportation network and provides insight into how activity at the airport may change over time.

3.3.1 State of the General Aviation Industry

General aviation encompasses all segments of the aviation industry except for activity that is conducted by commercial airlines or the military. Examples include pilot training, law enforcement flights, medical transportation, aerial surveys, aerial photography, agricultural spraying, advertising, and various forms of recreation, not to mention business, corporate, and personal travel.

Historically, general aviation has been an industry marked by some very significant fluctuations, both positive and negative. For example, just as the 2007 Airport Master Plan Update for SPG was finalized, general aviation activity for the nation was on a decline through 2006. Between 2003 and 2007, the industry experienced major advances in aircraft and navigation technologies, which created new product offerings and services during a period with an overall good economy. These included widespread use of Global Positioning Satellite (GPS) technology, the emergence of very light jet aircraft, and the introduction of an entirely new category; the light sport aircraft. These new product offerings and services bolstered most every segment of the general aviation industry. In spite of this, there was only limited growth in 2007.



By the end of 2008, most segments of the industry experienced losses as the overall national economy declined during the Great Recession. The very light jet industry was hit hardest as many manufacturers delayed development plans and/or went bankrupt. Data from the General Aviation Manufacturer's Association (GAMA) showed that general aviation aircraft manufactured in the U.S. fell from a high of 3,279 aircraft in 2007 to 1,334 in 2010. It was not until 2011 that GAMA reported the first increase in new general aviation shipments since 2007. While manufacturing has increased most every year since 2011, 2018 levels were still just half of those before the Great

Recession. Compounding this issue, the 2019 FAA Aerospace Forecast documents the decline in the number of aircraft in the nation's overall active general aviation fleet between 2007 and 2013. It is interesting to note that the greatest decline between 2011 and 2013 was attributed to the 2010 Rule for Re-Registration and Renewal of Aircraft Registration. According to the FAA, implementation of this rule removed cancelled, expired, or revoked records from the national database.

Overall, the 2019 FAA Aerospace Forecast projects growth in general aviation activity over the next 20 years, despite industry fluctuations that are likely to continue. While the number of active general aviation aircraft is expected to decline through 2039, this trend is not consistent across all segments of the industry. The most common single-engine piston aircraft are expected to decline 1.0 percent annually for the period while jet aircraft are forecast to grow 2.2 percent each year. The number of hours flown by all general aviation aircraft is projected to increase at a rate of 0.8 percent each year. Similar to the fleet projections, the hours flown by turbine aircraft are forecast to grow 2.8 percent annually while the single-engine piston aircraft show a decline in activity of 1.1 percent each year. These turbine aircraft projections are supported by figures in the FAA's monthly Business Jet Reports which shows that operations conducted by general aviation jet aircraft have consistently increased since a low in 2009. They are however, still just below the level recorded for 2007, prior to the negative press during the 2008 and 2009 corporate bailouts which resulted in a 20 percent decrease in total business jet activity by the end of 2009.

3.3.2 Local Socioeconomic Factors

A number of socioeconomic indicators were evaluated that typically have a direct relationship to the use of aviation and therefore to airport activity. Overall and average annual growth rates for Pinellas County, the Tampa-St. Petersburg-Clearwater Metropolitan Statistical Area (Bay Area MSA), the State of Florida, and the U.S. are presented based on data obtained from Woods & Poole Economics, Inc. These data sets also included projections out to 2050. Similar comprehensive data sets for the City of St. Petersburg's historic and projected socioeconomic factors could not be obtained; therefore, the Pinellas County datasets were considered the best representation of the local area trends.

The Woods & Poole projections are updated annually, utilizing models which take into account specific local conditions using historic data back to 1969. While the current historic data sets from Woods & Poole cover the period from 1969 to 2016, only data back to 2007 are shown in the tables that follow; reflecting the general trends over the past 10 years. Historic socioeconomic data prior to 2007 was utilized in the various analyses of aviation activity.

Population

Both Pinellas County and the MSA have had overall and average annual population growth rates less than Florida's (**Table 3-4**). For Pinellas County, this slower growth highlights the fact that it is already the most densely populated county in Florida. According to Pinellas County's website in 2019, there are 3,347 people per square mile, with the next most densely populated county being Broward which has 1,445 people per square mile. Nonetheless, the population in Pinellas County and certainly the Bay Area MSA have experienced growth since 2007 and are expected to continue to grow through 2039.

TABLE 3-4
TOTAL POPULATION

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	918,624	2,726,780	18,367,842	301,231,167
2008	916,458	2,746,981	18,527,305	304,093,927
2009	915,330	2,763,937	18,652,644	306,771,494
2010	916,508	2,788,839	18,849,098	309,348,139
2011	917,879	2,828,665	19,096,952	311,663,290
2012	922,075	2,847,624	19,344,156	313,998,313
2013	929,085	2,871,972	19,582,022	316,204,844
2014	937,457	2,915,715	19,888,741	318,563,137
2015	948,391	2,971,086	20,244,914	320,898,756
2016	960,730	3,032,171	20,612,439	323,132,304
Overall Growth (2007 – 2016)	4.6%	11.2%	12.2%	7.3%
Average Annual Change (2007 – 2016)	0.5%	1.2%	1.3%	0.8%
Forecast				
2024	1,001,845	3,378,837	23,190,626	347,711,883
2029	1,026,531	3,612,203	24,943,522	363,960,155
2039	1,063,413	4,082,374	28,540,237	394,981,475
Average Annual Change (2016 – 2039)	0.4%	1.3%	1.4%	0.9%

SOURCE: Woods & Poole Economics, Inc., 2019.

Employment

Employment data can provide one indication of the economic stability of a geographic area. As shown in **Table 3-5**, Pinellas County employment has fluctuated since 2007, resulting in almost the exact same level in 2016, even though population has increased steadily over the same period. The MSA has had positive growth, but slower when compared to both the state and nation. It is assumed that this is attributed to the overall development being experienced in this part of the state. As Pinellas County continues to expand its population base, so too will the employment base to support the area's growth initially (such as real estate, banking, and construction) as well as afterwards (to include retail, health care, education, etc.). Woods & Poole's projections not only show employment levels continuing to increase, but at a higher rate for each over the course of the planning period.

TABLE 3-5
TOTAL EMPLOYMENT

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	576,871	1,612,951	10,557,497	179,885,716
2008	552,197	1,558,277	10,296,808	179,639,880
2009	529,173	1,490,452	9,879,407	174,233,711
2010	516,322	1,465,819	9,813,707	173,034,709
2011	515,202	1,486,964	10,048,431	176,278,642
2012	523,407	1,517,838	10,255,572	179,081,703
2013	534,019	1,559,528	10,544,029	182,408,067
2014	546,126	1,606,244	10,944,827	186,354,771
2015	563,333	1,665,078	11,371,094	190,422,800
2016	576,629	1,713,423	11,708,331	193,668,384
Overall Growth (2007 – 2016)	0.0%	6.2%	10.9%	7.7%
Average Annual Change (2007 – 2016)	0.0%	0.7%	1.2%	0.8%
Forecast				
2024	642,751	1,986,634	13,841,895	220,327,271
2029	674,843	2,134,428	15,047,136	234,964,857
2039	732,298	2,415,756	17,312,022	261,826,433
Average Annual Change (2016 – 2039)	1.0%	1.5%	1.7%	1.3%

SOURCE: Woods & Poole Economics, Inc., 2019.

Income

Personal income per capita represents the ratio of total personal income, before income taxes, to the total resident population. Adjustments are also made if the income was earned in a different area than where the person resides. While Pinellas County has slightly outpaced the MSA and state (**Table 3-6**), the nation as a whole has had the most growth in personal per capita income over the last ten years. However, Pinellas County is expected to outpace the MSA, state, and national growth, as well as overall income level, during the 20-year planning horizon.

TABLE 3-6
TOTAL PERSONAL INCOME PER CAPITA (IN 2018 DOLLARS)

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	$ 41,741	$ 37,696	$ 39,788	$ 39,821
2008	$ 41,388	$ 37,882	$ 39,655	$ 41,082
2009	$ 39,893	$ 36,719	$ 37,065	$ 39,376
2010	$ 42,133	$ 38,595	$ 38,626	$ 40,277
2011	$ 44,071	$ 40,936	$ 40,494	$ 42,461
2012	$ 43,333	$ 40,004	$ 41,000	$ 44,282
2013	$ 43,514	$ 39,708	$ 40,797	$ 44,493
2014	$ 46,127	$ 41,457	$ 43,064	$ 46,494
2015	$ 48,441	$ 43,352	$ 45,441	$ 48,450
2016	$ 49,186	$ 43,807	$ 45,953	$ 49,245
Overall Growth (2007 – 2016)	17.8%	16.2%	15.5%	23.7%
Average Annual Change (2007 – 2016)	1.8%	1.7%	1.6%	2.4%
Forecast				
2024	$ 67,928	$ 59,469	$ 63,394	$ 67,083
2029	$ 87,007	$ 75,222	$ 81,060	$ 85,316
2039	$ 144,747	$ 121,517	$ 133,745	$ 140,045
Average Annual Change (2016 – 2039)	4.8%	4.5%	4.8%	4.6%

SOURCE: Woods & Poole Economics, Inc., 2019.

Households

Households represent the number of occupied housing units, which include homes, apartments, a group of rooms, or single rooms occupied as separate living quarters. The number of households does not include facilities such as retirement homes, college dormitories, military barracks, or prisons. The overall growth in the number of households for Pinellas County has been much less than that for the local Bay Area, state, and nation (**Table 3-7**). Similarly, the projection over the next 20 years is that Pinellas County will continue to have limited growth in the number of households. This is not surprising given the current level of buildout in Pinellas County.

TABLE 3-7
TOTAL NUMBER OF HOUSEHOLDS

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	424,172	1,153,424	7,389,493	115,939,528
2008	421,309	1,154,317	7,408,025	116,538,673
2009	417,946	1,150,974	7,393,209	116,761,870
2010	415,761	1,153,245	7,435,801	116,938,345
2011	421,888	1,182,961	7,617,373	119,315,163
2012	424,777	1,199,847	7,724,395	120,466,242
2013	428,251	1,218,795	7,845,644	121,834,231
2014	429,634	1,230,241	7,926,134	122,600,297
2015	433,004	1,247,325	8,047,925	123,951,412
2016	436,197	1,265,202	8,168,607	125,177,126
Overall Growth (2007 – 2016)	2.8%	9.7%	10.5%	8.0%
Average Annual Change (2007 – 2016)	0.3%	1.0%	1.1%	0.9%
Forecast				
2024	460,735	1,412,045	9,253,593	136,189,313
2029	467,217	1,483,290	9,811,220	140,874,551
2039	471,205	1,607,939	10,837,605	148,322,939
Average Annual Change (2016 – 2039)	0.3%	1.0%	1.2%	0.7%

SOURCE: Woods & Poole Economics, Inc., 2019.

Gross Regional Product

Gross Regional Product (GRP) is based on the U.S. Bureau of Economic Analysis gross domestic product data for each state. The nation's figures represent a total for all states while the individual county data has been estimated by Woods & Poole. For the county data, this is calculated by allocating the state GRP to the counties based on the proportion of total state earnings by employees originating from a particular county. As shown by the figures in **Table 3-8**, all were impacted by the Great Recession and all have recovered since. The GRP for Pinellas County has not historically performed at the same levels as the region, state, or nation. However, over the course of the planning period, the county's GRP is expected to grow at a much greater rate.

TABLE 3-8
GROSS REGIONAL PRODUCT (IN MILLIONS OF 2009 DOLLARS)

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	$ 40,933,883	$ 118,086,546	$ 792,792,116	$ 14,820,650,470
2008	$ 38,686,874	$ 112,348,606	$ 747,833,906	$ 14,617,094,860
2009	$ 38,066,522	$ 110,976,100	$ 721,755,002	$ 14,320,114,985
2010	$ 37,618,354	$ 109,939,931	$ 723,144,418	$ 14,618,132,263
2011	$ 36,776,885	$ 108,838,059	$ 711,917,539	$ 14,792,271,677
2012	$ 37,516,950	$ 110,791,360	$ 720,061,061	$ 15,115,991,196
2013	$ 38,944,502	$ 116,767,703	$ 738,983,744	$ 15,415,631,630
2014	$ 38,968,492	$ 117,313,389	$ 764,007,807	$ 15,860,077,704
2015	$ 40,793,277	$ 123,446,531	$ 811,855,942	$ 16,447,678,589
2016	$ 41,975,606	$ 128,446,531	$ 835,867,283	$ 16,708,789,654
Overall Growth (2007 – 2016)	2.5%	8.8%	5.4%	12.7%
Average Annual Change (2007 – 2016)	0.3%	0.9%	0.6%	1.3%
Forecast				
2024	$ 47,525,422	$ 154,472,077	$ 1,024,846,337	$ 19,626,971,911
2029	$ 50,260,363	$ 169,929,457	$ 1,140,432,011	$ 21,378,635,247
2039	$ 55,164,620	$ 201,768,580	$ 1,374,073,902	$ 24,910,993,606
Average Annual Change (2016 – 2039)	1.2%	2.0%	2.2%	1.8%

SOURCE: Woods & Poole Economics, Inc., 2019.

Woods & Poole Wealth Index

Woods & Poole calculates a wealth index which provides a measure of relative total personal income per capita weighted by the source of income. In calculating the index, relative income per capita is weighted positively for income with a higher proportion from dividends, interest, and rent and negatively for income with a higher proportion from transfer payments (income where no goods or services are provided). The index is also based on weighted averages of the regional income per capita; regional income from dividends, interest, and rent; and regional income from transfer payments. Since Woods & Poole consider dividends, interest, and rent income good indicators of assets, their resulting index provides a measure of relative wealth to that of the nation as a whole (**Table 3-9**). Even though the county's index is lower than its pre-recession peak, Pinellas County is above the national average and still continues to rank among the wealthiest of Florida's 67 counties.

TABLE 3-9
WOODS & POOLE WEALTH INDEX (COMPARED TO UNITED STATES)

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	105	95	104	100
2008	102	93	101	100
2009	102	94	98	100
2010	107	98	101	100
2011	106	99	100	100
2012	99	91	97	100
2013	99	90	96	100
2014	100	90	97	100
2015	101	90	98	100
2016	101	90	97	100
Overall Growth (2007 – 2016)	-4.5%	-6.1%	-6.1%	n/a
Average Annual Change (2007 – 2016)	-0.5%	-0.7%	-0.7%	n/a
Forecast				
2024	102	89	99	100
2029	102	89	99	100
2039	103	88	100	100
Average Annual Change (2016 – 2039)	0.1%	-0.1%	0.1%	n/a

SOURCE: Woods & Poole Economics, Inc., 2019.

3.3.3 Aviation Fuel Prices

The general aviation industry was significantly impacted by both September 11th, 2001 and the Great Recession. This general period was also marked by dramatic increases in both Jet A and 100LL (AvGas) fuel prices, especially between 2003 and 2008. During this five-year period, Jet A prices increased an average of nearly 30 percent each year while 100LL increased nearly 17 percent each year. Since that time aviation fuel prices have fluctuated and overall, the general aviation industry has enjoyed lower Jet A fuel costs since 2012. For 100LL the lowest prices were prior to 2012, but have increased at much lower rates than in the past. From a production standpoint, little change is expected in refining costs during the short-term due to a growth in supply. However, IHS Markit projects oil prices to increase in the long-term as a result of growing demand and the higher costs of extraction through the long term. Using data from IHS Markit, the 2019 FAA Aerospace Forecast documents that the acquisition costs (dollars per barrel) for the crude oil required for aviation fuels will increase at an average annual rate of 2.1 percent through 2039.

In addition, the eventual phasing out of 100LL fuel will have an undetermined impact on every aircraft engine built from the 1920s until today that uses this leaded gasoline. Excluding experimental and light sport aircraft, many of which can use every day unleaded automobile gas (MoGas), the FAA's figures for 2018 show that approximately 70 percent of the nearly 213,000 active general aviation aircraft are piston and use 100LL. While the costs to retrofit piston aircraft could be substantial, the ultimate cost of an unleaded aviation fuel has the potential to be much less than the current 100LL used.

3.4 Forecast of Based Aircraft

Based aircraft are those aircraft that are operational, airworthy, and kept at the airport for a majority of the year (more than six months). Therefore, the number of aircraft owners projected to base their aircraft at SPG is an important consideration for airfield planning since it is a key indicator of the demand for facilities. Projections of based aircraft also provide an indication of the anticipated growth in general aviation activity.

Information on the aircraft based at general aviation airports is documented in the FAA's National Based Aircraft Inventory Program. Through this program the FAA determines whether the aircraft reported have a current registration. Then, a check is made to see if any of the aircraft have been reported by another airport. This creates a validated number of based aircraft for a given airport. This count includes a break out of the single-engine, multi-engine, jet, and rotorcraft models. It is worth noting that the National Based Aircraft Inventory Program does not count glider, military, or ultralight aircraft since these may not always have a tail number for registration. These categories of aircraft are included as part of the FAA Airport Master Record (Form 5010); regardless, no glider, military, or ultralight aircraft have been included on recent 5010 forms for SPG.

As part of this master planning effort, SPG has submitted information to update the FAA's National Based Aircraft Inventory Program. At the end of 2018, only 53 were included in the FAA's database. An extensive inventory of the records from the City, Sheltair Aviation (Sheltair), St. Pete

Air, and the other tenants/operators at the airport documented that 176 active aircraft were based at SPG in 2018. These included the following:

Single-Engine	159
Multi-Engine	11
Jet	0
Rotorcraft	6
Total	176

Through the first half of 2019, the FAA had validated 163 based aircraft for SPG; however, airport management is still working to get the remaining 13 based aircraft validated.

3.4.1 Historic Growth

Given the cyclical nature of the general aviation industry, historic changes in the number of based aircraft at the airport are important to consider when analyzing potential growth. Unfortunately for SPG, there is no reliable source of information for historic based aircraft counts. The first three tables of this chapter illustrated that the 2007 Airport Master Plan Update cited 200 based aircraft in 2004, the FASP called for 128 in 2015, and the 2018 FAA TAF showed 122 in 2017. As noted, there were 176 based aircraft at the end of 2018 and despite the challenges the general aviation industry has faced over the last decade, both airport and the Sheltair fixed based operator (FBO) management do not believe there has been the steady decline in based aircraft as indicated by the base years of these previous studies. In fact, the current hangar wait list maintained by Sheltair has just over 100 aircraft that are not currently based at SPG. In December of 2018, each person on the list was contacted, of which 31 have replied and reconfirmed their desire to have a hangar at SPG. Since the figures from previous studies would suggest a downward trend in the overall number of based aircraft, historic growth was not a forecast option.

3.4.2 Previous Growth Projections

The 2007 Airport Master Plan Update projected 238 based aircraft by 2018, which far exceeds the 2018 count of 176. Even though the number of based aircraft have been significantly less than what was projected in the previous master plan, that study's expected average annual growth rate of 1.3 percent was applied to the current based aircraft figure for comparison purposes. This results in an estimate of 229 based aircraft at SPG by the end of the 20-year planning period (**Table 3-10).**

As mentioned, the FASP is updated each year, and therefore incorporates changes in the industry that can ultimately affect the level of based aircraft. The most recent data for the system plan projects an average annual growth of 1.2 percent for the based aircraft at SPG. Applied to the 2018 count, this would result in 228 based aircraft by 2039 (**Table 3-10**).

The FAA's TAF is also updated annually, but as shown in **Table 3-3**, the most recent version only showed 122 based aircraft in 2017. For 2018, there were 125 based aircraft projected, which is 51 less than the current number documented. Regardless, when the 2.0 percent average annual growth rate is applied to the current based aircraft figure of 176, this yields a forecast of 265 based aircraft by 2039 (**Table 3-10**).

3.4.3 National Active Fleet Forecasts

Each year the FAA provides a long-term projection for the active general aviation fleet as part of their Aerospace Forecast. Decreases in the nation's total active fleet occurred between 2007 and 2013. Since that period, there has been an overall increase which is currently projected to continue through 2020. Afterwards, the 2019 FAA Aerospace Forecast projects a slow decline in the active general aviation fleet through 2039. Given that SPG maintains a validated hangar wait list, the FAA's projection for an overall decline in the national general aviation active fleet was not utilized to create a based aircraft forecast.

3.4.4 Regression Analysis

Regression analysis can be an effective tool to forecast the expected number of based aircraft since population, income, employment, industry data, and other variables typically generate reliable projection models. Unfortunately, due to the lack of accurate historic data, regression models could not be generated.

3.4.5 Selected Based Aircraft Forecast

For the recommended based aircraft projection, a forecast based on the average growth expected by FDOT and FAA was adopted. Even though the most recent forecasts by FDOT and FAA for SPG both suffer from not having an accurate base year for the number of aircraft at the airport, they are both based on methodologies which are updated annually. This balances the growth expected by the FAA in their overall evaluation of the nation's general aviation fleet; while also incorporating elements from FDOT's regional perspective and the local level.

As reflected in **Table 3-10**, this results in a 1.6 percent average annual growth for a total of 246 based aircraft at the end of the 20-year planning period. Within the 10-year horizon, the recommended forecast shows demand for an additional 34 aircraft to be based at SPG by 2029. Since the airport has a 100 percent hangar occupancy rate and over 30 aircraft (none of which are existing tenants) confirmed on the official hangar wait list, this is considered to be a relatively conservative projection, given that the activity forecasts should be based on an unconstrained scenario

TABLE 3-10
COMPARISON OF BASED AIRCRAFT PROJECTIONS

	Previous Master Plan[a]	Florida Aviation System Plan[a]	2018 FAA TAF[a]	Average Growth and Demand (recommended)
Base Year				
2018	176	176	176	176
Forecast				
2024	190	189	198	194
2029	202	201	218	210
2039	229	228	265	246
Average Annual Change (2018 – 2039)	1.3%	1.2%	2.0%	1.6%

[a] Applies growth projection to current based aircraft count.

SOURCE: ESA, 2019.

3.5 Forecast of Based Aircraft Fleet Mix

Projecting the types of based aircraft is necessary since different aircraft require different facilities. For the short-term, the future based aircraft fleet mix was primarily determined by the specific aircraft types on the current airport hangar wait list. For the balance of the 20-year planning horizon, the FAA's projections for the general aviation fleet was evaluated and compared to the aircraft types at SPG. While the overall growth in the nation's active fleet was not utilized to forecast based aircraft, the individual projections of aircraft types are useful in predicting the future based aircraft fleet mix. In addition, information obtained from interviews with the various airport tenants and production data from the aircraft manufacturers was also used to estimate the future mix of based aircraft.

3.5.1 The Nation's Active General Aviation Fleet

Every year, the nation's active general aviation fleet is published as part of the FAA Aerospace Forecast. In 2018 there were nearly 213,000 active general aviation aircraft. Even though the 2019 FAA Aerospace Forecast projects the nation's number of active general aviation aircraft to decline through 2039, their forecast provides detail on how the individual aircraft categories are expected to evolve over the next 20 years.

While the FAA provides counts for a number of aircraft categories, they have been simplified into the five major categories shown in **Table 3-11**. Within the single-engine grouping are the single-engine piston, experimental, and light sport aircraft categories. The multi-engine group contains both piston and turboprop models, as the rotorcraft group contains both piston and turbine models. It is assumed that single-engine turboprops are included within the multi-engine group as there is no separate category for this small segment of the fleet. The jet category covers all ranges of turbojet general aviation aircraft, from the very light jets to the heaviest business jets.

The FAA projects considerable growth in the jet category. While the use of business aircraft fell after 2007, jet aircraft usage by smaller companies continues to increase as various charter, lease, time-share, partnership, and fractional ownership agreements provide more cost effective options for these aircraft users resulting in higher utilization rates. More businesses also rely on general aviation because it provides safe, efficient, flexible, and reliable transportation. Fractional ownership offers consumers a more efficient use of time by providing faster point-to-point travel, the ability to conduct business while flying, and more convenient enplaning and deplaning of flights (when compared to commercial airlines).

TABLE 3-11
FAA FORECAST OF NATIONAL ACTIVE GENERAL AVIATION FLEET

	2018 Fleet Mix	2039 Fleet Mix	Average Annual Growth Rate
Single-Engine	75.1%	67.9%	-0.5%
Multi-Engine (piston & turboprop)	10.8%	11.8%	0.4%
Jet	6.9%	10.9%	2.2%
Rotorcraft	5.0%	7.2%	1.7%
Other (gliders, balloons, etc.)	2.2%	2.2%	0.2%

SOURCE: FAA 2019 Aerospace Forecast.

The continuing popularity of travel by general aviation aircraft is also due to the ability to use smaller, less-congested airports which are more convenient to the final destination. A large part of this is the result of the expanded application of GPS technologies in navigation, but more specifically, the myriad of new runway specific instrument approach procedures that have been established at even the smallest airports. In the FAA's projections, jet aircraft models (including the very light jets) are expected to replace a number of the piston aircraft in the future. This is just one of the reasons the single-engine (piston) category is on a decline and the multi-engine group shows virtually no growth. In all, jets are expected to represent nearly 11 percent of the active general aviation fleet by 2039, up from the current 7 percent of the fleet.

3.5.2 Current and Future Based Aircraft Fleet Mix

The 2018 based aircraft fleet mix at SPG is comprised of 90.3 percent single-engine, 6.3 percent multi-engine, and 3.4 percent rotorcraft. Throughout the planning period, the mix of aircraft is expected to remain predominately single-engine, but they will account for a slightly lower overall percentage of the total based aircraft. A return of a few based jets and growth in the number of turboprop aircraft at the airport are expected over the course of the 20-year planning period. This is reasonable considering that the FAA has predicted that turbojet technology has developed to the point that it is truly feasible as a replacement to the more traditional piston-powered fleet. The expected future based aircraft fleet mix in **Table 3-12** initially reflects the aircraft types that new tenants to SPG would bring once hangar space is provided. Afterwards, the future based aircraft mix is representative of the general aviation industry trends expected over the course of the 20-year planning period.

As with most airports, the single-engine category is predominantly comprised of Beech, Cessna, Mooney, and Piper models. There are also a number of single-engine turboprop aircraft such as the Pilatus PC-12 and Socata TBM 700. Multi-engine aircraft tend to include Cessna models in the 300 and 400 series as well as a number of the Piper twin-engine aircraft. As indicated previously, the national fleet of single-engine aircraft is expected to decline slightly while the multi-engine group is anticipated to increase slightly. While many of the additional single-engine aircraft are expected to be similar to those currently at SPG, the additional aircraft in the multi-engine category are expected to be turboprops.

TABLE 3-12
FORECAST OF BASED AIRCRAFT FLEET MIX

	Base Year	Forecast		
	2018	**2024**	**2029**	**2039**
Single-Engine (piston & turboprop)	159	173	185	211
Multi-Engine (piston & turboprop)	11	13	16	20
Jet	0	2	3	6
Rotorcraft	6	6	6	9
Total	**176**	**194**	**210**	**246**

SOURCE: SPG's Hangar Wait List, December 2018; FAA 2019 Aerospace Forecasts; and ESA analysis, 2019.

In the future, based jets will likely include a mix of the light to small business jet aircraft that have the ability to operate in and out of SPG. These include popular models from the Cessna Citation series, the smaller jets developed by Embraer, and the new Cirrus Vision Jet, two of which were confirmed in December 2018 on the hangar wait list.

Rotorcraft will continue to include both piston and turbine powered models, such as the popular Bell, Eurocopter, and Robinson models. Of the six helicopters currently based at the airport, four include the Robinson R44 and one the Robinson R66, which are used for both sightseeing aerial tours and traffic reporting. The current turbine powered helicopter based at SPG is the Eurocopter EC-135 operated by Med-Trans Corporation for the flight operations associated with the Johns Hopkins All Children's Hospital.

While approximately 2.2 percent of the nation's active fleet fall within the "Other" category (gliders, balloons, and ultralights), there are none currently based at SPG. Likewise, no aircraft in this category are expected to be based at the airport over the course of the planning period. Therefore, this category was not included in **Table 3-12**.

3.6 Forecast of Annual Operations

The FAA defines an aircraft operation as either a single aircraft landing or takeoff. Further, a touch and go operation is counted as two operations, since the aircraft technically lands and immediately takes off. The FAA's Operations Network (OPSNET) data provides the official activity counts based on the actual SPG airport traffic control tower (ATCT) activity logs. The FAA classifies aircraft operations into four different categories for OPSNET as well as for their other datasets, airport traffic control tower logs, and Aerospace Forecast. These categories, which include air carrier, air taxi, general aviation, and military, are defined by the FAA as:

- Air Carrier - an aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds carrying passengers or cargo for hire or compensation.
- Air Taxi - an aircraft designed to have a maximum seating capacity of 60 seats or less or a maximum payload capacity of 18,000 pounds or less carrying passengers or cargo for hire or compensation.
- General Aviation - all civil aircraft, except those classified as air carriers or air taxis.
- Military - all classes of military aircraft.

It was stated previously that general aviation encompasses all segments of the aviation industry except for the activity that is conducted by commercial airlines or the military. Given there are no commercial airlines and very limited military operations at SPG, the historic and future annual operations for SPG have been analyzed as a whole, since the activity that is not truly general aviation is relatively insignificant.

3.6.1 Historic Activity

As with the based aircraft, the historic activity at an airport is important to evaluate given the cyclical nature of the general aviation industry. The total annual operations officially recorded for SPG over the past 15 years are included in **Table 3-13**. Since the 2004 base year of the 2007 Airport Master Plan Update, the annual activity has fluctuated quite a bit, sometimes increasing or decreasing significantly in a short period of time. While general aviation activity is certainly linked to the local area economy, the major impacts to the industry described previously have also had a significant influence on these figures.

What is interesting to note is that the 2007 Airport Master Plan Update documented 106,283 annual operations for 2004 (that study's base year), while the FAA's OPSNET data recorded the activity for 2004 at 93,783 operations. Similarly, the FASP recorded 97,540 for 2004 (which was the total in OPSNET for 2003) and the FAA TAF (under a fiscal year) documented the activity for FY2004 at 97,204. Regardless, the official OPSNET counts shows that approximately 10,000 less annual operations occurred in 2018 than did in 2004.

TABLE 3-13
PAST 15 YEARS OF AIRCRAFT OPERATIONS

	Air Carrier	Air Taxi	General Aviation	Military	Annual Operations	Change over Prior Year
2004	0	3,876	86,482	3,425	93,783	-3.9%
2005	0	3,347	74,384	2,038	79,769	-14.9%
2006	0	2,994	73,550	2,675	79,219	-0.7%
2007	0	2,625	68,794	3,268	74,687	-5.7%
2008	7	2,031	79,022	3,203	84,263	12.8%
2009	0	3,132	74,657	2,766	80,555	-4.4%
2010	0	933	77,308	2,942	81,183	0.8%
2011	0	253	84,550	2,596	87,399	7.7%
2012	1	186	82,049	4,211	86,447	-1.1%
2013	23	3,565	87,835	5,404	96,827	12.0%
2014	2	4,541	88,867	3,546	96,956	0.1%
2015	14	3,199	77,498	3,363	84,074	-13.3%
2016	0	2,516	83,132	2,164	87,812	4.4%
2017	0	3,126	87,471	2,419	93,016	5.9%
2018	0	2,231	80,307	1,380	83,918	-9.8%

SOURCE: FAA OPSNET database, 2019.

Since 2004 the significant fluctuations include two years where the annual percentage of operations decreased by double digits and two years where it increased by double digits. With the exception of one year, activity at the airport declined five years in a row after 2001, presumably the results that September 11th had on the general aviation industry. This resulted in the airport's lowest recorded operations (in 2007) since the ATCT was commissioned. While activity has continued to fluctuate, there has been an overall increase in the annual operations since. Therefore, the average annual growth of 1.1 percent between 2007 and 2018 has been applied to develop one of the projections shown in **Table 3-14** for the annual operations expected through 2039.

It should be noted that over the past 15 years a few operations have been recorded in the air carrier category even though SPG is a general aviation facility. Discussions with ATCT management revealed that the occasional air carrier figures reflect operations that are being conducted by aircraft with an approved air taxi call sign or related to low approaches conducted by commercial aircraft during special events. The military activity has primarily consisted of rotorcraft operations by the United States Coast Guard Sikorsky HH-60 Jayhawks based out of St. Pete-Clearwater International Airport and U.S. Army UH-60 Blackhawks. There have also been a few other military rotorcraft operations conducted by Boeing V-22 Osprey and Boeing CH-47 Chinooks.

3.6.2 Previous Growth Projections

Overall annual operations in the 2007 Airport Master Plan Update were projected to have an average growth rate of 1.2 percent through 2024 (**Table 3-1**). When this was applied to the significantly higher count for 2004, the result was a projection of approximately 125,000 annual operations for 2018 and nearly 134,000 by 2024. Although the average annual growth rate seems reasonable, it was based on a subjective analysis of the activity and general aviation industry at that time. Therefore, the previous master plan growth rate was not utilized to develop a new forecast.

As with based aircraft, projections of aircraft operations in the FASP benefit from being updated on an annual basis. Not only does this help temper industry fluctuations, it also allows adjustments to be made to accommodate any local or regional system changes. Using 2015 as the base year, the most recent system plan forecast from FDOT projects SPG's activity to grow at an average rate 1.1 percent each year through 2035. This rate is equal to that of the historic projection and therefore results in the same projection when applied to the number of operations recorded for 2018.

The general aviation operations in the 2018 TAF utilize data from the FAA's 2018 fiscal year as the base level of activity. While the 2018 TAF also documents overall growth since the lowest activity level recorded in 2007, it only projects an average annual growth rate of 0.4 percent through 2039. This rate has been applied to the 2018 calendar year operations in order to provide a more comparable projection using the TAF's relatively flat forecast for SPG (**Table 3-14**).

3.6.3 Utilization of the General Aviation Fleet

Each year as part of their Aerospace Forecast, the FAA provides historic data and projections on the number of hours flown by general aviation aircraft. In the 2019 Aerospace Forecast, the FAA anticipates the utilization of the fleet to increase at an average annual rate of 0.8 percent between 2018 and 2039. This fairly limited growth is partly related to the long-term costs associated with aviation fuels, which the FAA documents as increasing 2.1 percent each year through 2039. As noted before, the most active aircraft types (and therefore higher utilization rates) will be those in the turbine fleet (both aircraft and rotorcraft) versus a number of piston aircraft which are not expected to be utilized as much.

The FAA's overall expectation on the general aviation hours to be flown have been applied to the base year operations for SPG to create another forecast scenario. As shown in **Table 3-14**, this results in just over 99,000 annual operations by the end of the planning period.

3.6.4 Market Share

A common methodology for forecasting aviation activity is the use of market share analysis. This approach allows a comparison to be made of the annual operations SPG has supported against a defined data set. In the Aerospace Forecast, the FAA documents and projects the operations conducted at all of the towered airports in the nation. A separate count and forecast is also included for only the general aviation operations at these towered facilities. It should be noted that while SPG's historic data depicts that operations were impacted by the Great Recession, the nation's level of general aviation operations for the same period recorded an overall decrease for all but one year between 2007 and 2016.

The aircraft operations for SPG over the past 15 years (**Table 3-13**) were evaluated against the same general aviation activity for the nation. Given the overall decline in the nation's numbers during this period, it comes as no surprise that SPG's share of the nation's general aviation operations has increased. For the nation, the FAA expects the aircraft activity to increase every year through 2039. When the expected local market share is combined with the FAA's projected increase, approximately 117,000 of those operations (**Table 3-14**) are expected to be accommodated at SPG.

3.6.5 Operations per Based Aircraft

Another forecast was generated by assigning a representative level of annual operations for each based aircraft. This methodology is not considered the most accurate if a set ratio is assigned to a group of similarly categorized airports (since no two airports operate the same). Additionally, based jets and multi engine aircraft tend to generate less operations than single engine aircraft, particularly when the single-engine are used for flight training. However, to develop an alternate estimate for the level of annual operations at SPG, this methodology can be useful if local data is utilized. In doing so, there were nearly 500 operations per based aircraft in 2018. When applied to the selected forecast of based aircraft, this methodology projects that 123,000 annual operations would occur by 2039 (see **Table 3-14**).

3.6.6 Regression Analysis

The regression models developed and tested incorporated three types of independent variables to identify correlations with historic aircraft operations. The first included a number of the socioeconomic datasets previously summarized. These were applied based on initial assumptions made for each as to their potential correlation. For example, it was assumed that the activity levels at the airport have a direct relationship to the number of people in the surrounding area. The FAA's data on fuel costs was also included as an independent variable, since this is such an important element of owning and operating any general aviation aircraft. In addition, an indicator variable was introduced to take into consideration the impacts associated with the Great Recession on the level of activity at SPG. Indicator variables are used in regression models for events such as the recession that cannot be easily quantified.

A variety of models were evaluated using the different independent variables against the historic activity data. However, no significant correlations could be derived using different combinations of the independent variables. Essentially, none of the local socioeconomic or industry data available would generate a model that could reliably explain the past activity. This is attributed to the fact that the historic number of operations at SPG has fluctuated greatly while most of the independent variables utilized had positive, linear growth during the same period. Therefore, this method to project future annual operations was not included in the final analysis.

TABLE 3-14
COMPARISON OF PROJECTIONS FOR ANNUAL OPERATIONS

	Historic and State System Plan Growth[a]	2018 FAA TAF Growth[a]	Utilization of National Fleet	Market Share Analysis (recommended)	Operations per Based Aircraft
Base Year					
2018	83,918	83,918	83,918	83,918	83,918
Forecast					
2024	89,611	85,952	88,027	92,303	97,000
2029	94,649	87,685	91,605	99,928	105,000
2039	105,592	91,256	99,203	117,118	123,000
Average Annual Change (2018 – 2039)	1.1%	0.4%	0.8%	1.6%	1.8%

[a] Applies growth projection to current based aircraft count.

SOURCE: ESA, 2019.

3.6.7 Selected Forecast of Annual Operations

Each of the projections shown in **Table 3-14** were generated using commonly accepted methods. Therefore, selection of a preferred forecast largely depends on the potential of the airport's general aviation users and the associated assumptions on future airport activity. In addition, the selection of a preferred forecast also needs to take into account the airport improvements that have been made and that more will be made in the future (unconstrained scenario). Finally, no future projection should be selected if it does not account for past and future changes in the aviation industry.

Between 2000 and 2018, general aviation operations at the nation's towered airports decreased an average of 2.2 percent each year. Activity for Florida's towered airports over the same period only had an average annual decrease of 0.2 percent. Even more significant is that since 2010 (after the Great Recession) the nation's total general aviation activity at towered airports has just recently re-established the same level (i.e. no overall growth between 2010 and 2018). General aviation operations in Florida have had an average annual growth of 2.4 percent over the same period. This demonstrates that Florida's general aviation industry has been recovering each year since 2010. Given that SPG has had an overall growth rate of 1.1 percent between the historic low in 2007 and 2018, this creates an optimistic outlook, especially when the local socioeconomic factors are considered. Although a reliable correlation could not be created using regression analysis, there is certainly a very positive economic outlook for St. Petersburg, Pinellas County, and the surrounding Bay Area throughout the course of this study's 20-year planning horizon.

Given the state's recovery in general aviation activity, the forecasts generated utilizing the 2018 TAF growth rate and the overall utilization of the nation's general aviation fleet are considered constrained for the Florida market. Operations per based aircraft does utilize local conditions to predict future activity; however, the results appear overly optimistic. This is especially true given that a majority of the based aircraft include the types of aircraft the FAA expects to have some of the lowest utilization rates in the future. Therefore, these three projections were excluded from further consideration.

While the annually updated FASP projection is a regionally focused forecast that addresses growth factors specific to Florida, this projection, as well as the corresponding historic growth projection appear somewhat limited to the airport's potential in the current general aviation market. The market share projection is considered a more reasonable projection of the expected activity at SPG. Essentially, the market share analysis creates a performance index between SPG and all of the other airports in the nation with an ATCT. The index is then utilized with the FAA's projected level of general aviation operations for all towered airports through 2039. The resulting growth is indicative of the potential the airport has in an unconstrained environment.

The overall growth in activity experienced at SPG since 2007 reflects the airport's current era resulting from the 2003 Blue Ribbon Task Force which directly resulted in the development of the new General Aviation Terminal, enhanced FBO services, a new ATCT, and other airport improvements. This current era has also been marked by significant growth in the downtown St. Petersburg area. Finally, it is worth noting that the OPSNET monthly data for January through April 2019 shows that SPG's operations are 41 percent higher than the same period in 2018. The first four months of 2019 are also nearly identical to the first four months of 2017 when the airport went on to record over 93,000 annual operations.

3.7 Categories of Aircraft Operations

The following sections present different categories or types of activity that will make up the forecasted operations. This includes a break out of the local, itinerant, and instrument operations. Further analyses include estimating activity peaks and determining the operational aircraft fleet mix. For each section, the total recommended annual operations from **Table 3-14** have been rounded to the nearest hundred.

3.7.1 Local versus Itinerant Operations

The FAA also categorizes aircraft operations as either local or itinerant. Local operations are those arrivals or departures performed by aircraft that remain in the airport traffic pattern or are within sight of the ATCT. Local operations are most often associated with training activity and flight instruction, but at SPG also include a number of medevac helicopter flights, sightseeing helicopter tours, banner tower operations, biplane rides, and military operations. Itinerant operations are arrivals or departures other than local operations, performed by either based or transient aircraft. Itinerant operations are generated by a wide range of recreational, business/corporate, and air charter/taxi flights.

The historic split between operations has averaged 52 percent local and 48 percent itinerant over the last 15 years. However, prior to the Great Recession the percentages were reversed. Similarly, in 2018 itinerant activity represented 53 percent of the operations and for the first four months of 2019, the split has been equal. Given the current operational profile of the airport, it is expected that the percentage of itinerant operations will be greater than the local and increase somewhat over the planning period; however, this shift is estimated to peak at 55 percent as shown in **Table 3-15**.

TABLE 3-15
FORECAST OF LOCAL VERSUS ITINERANT OPERATIONS

	Local		Itinerant		Total
Base Year					
2018	39,623	47%	44,295	53%	83,918
Forecast					
2024	43,400	47%	48,900	53%	92,300
2029	46,000	46%	53,900	54%	99,900
2039	52,700	45%	64,400	55%	117,100

SOURCE: FAA OPSNET database and ESA analysis, 2019.

3.7.2 Instrument Operations

A separate estimate of instrument operations conducted at SPG is important when evaluating future facility requirements. Using FAA OPSNET data, the number of instrument flight rule (IFR) operations was calculated. Over the past 15 years, instrument operations have averaged 4.4 percent of the total operations conducted. Similar to the itinerant traffic described previously, the highest percent of instrument operations were conducted just before the Great Recession; with the three years prior averaging 5.0 percent. In 2018, 5.1 percent of the annual operations were conducted as instrument flights. For planning purposes, it assumed that 5.0 percent of the operations will be conducted as instrument operations, especially given the fact that even the smallest of general aviation aircraft now have fairly sophisticated instrument capability and conduct more IFR operations than they have in the past. The resulting estimate of future instrument operations are shown in **Table 3-16**.

TABLE 3-16
ESTIMATE OF INSTRUMENT OPERATIONS

	Instrument Operations
Base Year	
2018	4,252
Forecast	
2024	4,600
2029	5,000
2039	5,900

SOURCE: FAA OPSNET database and ESA analysis, 2019.

It should be noted that the percent of instrument operations is different from the actual percentage of the year that the airport experiences IFR conditions. Unlike the weather observations addressed in the facility requirements chapter, the count and subsequent estimate of instrument operations include those conducted during actual instrument meteorological conditions as well as the ones simply under an IFR flight plan.

3.7.3 Peak Activity Projections

Annual projections provide a good overview of the activity at an airport, but may not reflect certain operational characteristics of the facility. In many cases, facility requirements are not driven by annual demand, but rather by the capacity shortfalls and delays experienced during peak times. Therefore, estimates of the peak month, the average day in the peak month, and the peak hour demand for aircraft operations are needed.

Review of the monthly FAA OPSNET data since 2009 reveals that operations have peaked in five different months over the last ten years. One year it was January, another April, and two times in March. The fall had the most with four instances in October and two for November. Regardless, the peak months all reflected similar percentages with respect to the overall annual operations. On average the peak months represent 9.7 percent of the annual operations; therefore, 10 percent was applied to each of the future planning years. For the average number of days in the peak month, 31 was applied since seven of the ten occurred in months with 31 days. No historical data was available to determine the peak hour operations. Therefore, a typical industry average of 15 percent of the peak month average day was identified to represent the number of peak hour operations. With the exception of the peak hour, the resulting estimates in **Table 3-17** have been rounded to the nearest ten for the forecast years.

TABLE 3-17
PEAKS IN TOTAL AIRCRAFT OPERATIONS

	Total Annual Operations	Peak Month	Average Day of Peak Month	Peak Hour of Average Day
Base Year				
2018	83,918	9,026	291	44
Forecast				
2024	92,300	9,230	300	45
2029	99,900	9,990	320	48
2039	117,100	11,710	380	57

SOURCE: FAA OPSNET database and ESA analysis, 2019.

3.7.4 Operational Fleet Mix

Operational fleet mix is an important factor in determining the needs for airfield improvements. However, even at airports with an ATCT, it is difficult to estimate the type of aircraft conducting operations since this information is not recorded by tower staff. Instead, the current operational fleet mix percentages were based on the 2018 calendar year operational data recorded by FlightAware. Information from the 2019 FAA Aerospace Forecast as well as that obtained during the various interviews with airport tenants and customers was then utilized to predict how the operational fleet mix would change over the next 20 years.

TABLE 3-18
PROJECTED OPERATIONAL FLEET MIX

	Base Year	Forecast		
	2018	**2024**	**2029**	**2039**
Single-Engine (piston & turboprop)	67,134	73,300	78,700	91,300
Multi-Engine (piston & turboprop)	6,714	7,400	8,000	9,400
Jet	84	300	700	1,800
Rotorcraft	9,986	11,300	12,500	14,600
Total	**83,918**	**92,300**	**99,900**	**117,100**

SOURCE: 2018 FlightAware data, FAA OPSNET database, FAA 2019 Aerospace Forecast, and ESA analysis, 2019.

While the projections reflected in **Table 3-18** take the expected national trends into consideration, the activity at the airport will still continue to predominantly be the smaller aircraft in the general aviation fleet as well as a significant share of rotorcraft operations. The FAA anticipates growth and increased utilization for every aircraft category with the exception of the single-engine piston and multi-engine piston types. As described previously, the most significant growth and utilization is expected to occur in the jet and rotorcraft categories. Regardless, activity by single- and multi-engine aircraft at SPG is expected to increase given the large number of these aircraft at the airport and in Florida overall. The expected increase in jet operations will continue to include a mix of the smaller business jet aircraft to include models from the Cessna Citation, Embraer, Cirrus and other manufacturers.

3.8 Critical Design Aircraft

The airport planning criteria and design standards for various airfield elements are based on the critical design aircraft that make regular use of the airport. Regular use is defined as 500 annual operations, including both itinerant and local operations, but excluding touch and go operations. These aircraft classify airport facilities based on Approach Reference Codes (APRC), Departure Reference Codes (DPRC), Runway Design Codes (RDC), and Taxiway Design Groups defined in FAA Advisory Circular (AC) 150/5300-13A, Change 1, *Airport Design*.

3.8.1 Runway Reference and Design Codes

Approach and departure codes identify the current operational capabilities for each runway with a parallel taxiway, where no special procedures are required for landing or takeoff operations. As such, runways can have more than one APRC or DPRC code for different aircraft groups and these codes may change as airfield improvements are made. Conversely, while the APRC and DPRC designations identify existing operational limitations for each runway, the RDC is utilized to plan future runway requirements.

For all three codes, the first component is the Aircraft Approach Category (AAC) which is depicted by a letter and relates to the aircraft's landing approach speed (operational characteristic). The second component is the Airplane Design Group (ADG) which uses Roman numerals to identify the critical aircraft wingspan or tail height (physical characteristics). For APRC and RDC, a third component relates to the visibility minimums associated with the runway, or group of runways, expressed in the Runway Visual Range (RVR) values. For runways with only existing and future visual approaches, the third component should be "VIS" in lieu of the visibility minimums. The ranges for these three components are included in **Table 3-19**. An Airport Reference Code (ARC) is the overall airport designation, signifying the highest RDC for the facility, minus the third (visibility) code.

TABLE 3-19
RUNWAY REFERENCE AND DESIGN CODE COMPONENTS

Aircraft Approach Categories

Category	Approach Speeds
A	Less the 91 Knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

Airplane Design Groups

Group	Tail Height (feet)	Wingspan (feet)
I	<20	<49
II	20 – 30	49 < 79
III	30 – 45	79 < 118
IV	45 – 60	118 < 171
V	60 – 66	171 < 214
VI	66 - <80	214 - <262

Visibility Minimums

Runway Visual Range (feet)	Instrument Flight Visibility Category (statute mile)
5000	Not lower than 1 mile
4000	Lower than 1 mile but not lower than ¾ mile
2400	Lower than 3/4 mile but not lower than 1/2 mile
1600	Lower than 1/2 mile but not lower than 1/4 mile
1200	Lower than 1/4 mile
VIS	Visual

SOURCE: FAA Advisory Circular 150/5300-13A, Change 1, *Airport Design*

Runway 7-25 Critical Design Aircraft

Based on the 2018 operational data from FlightAware, the most demanding aircraft operating at SPG on a regular basis include the runway design components of A-II and B-II. These have included the Cessna 208 Caravan (A-II); Pilatus PC-12 (A-II); Beechcraft King Air 90s, 300s, and 350s (B-II); and a few Cessna Citation IIs, Vs, and 525 series aircraft (B-II). As shown in **Table 3-20**, this grouping of aircraft made regular use of the airport, conducting 990 operations in 2018. These 990 operations by A-II and B-II aircraft represented 1.2 percent of the total operations recorded in 2018. Applying this percentage to the forecast of annual operations, a conservative projection of the A-II and B-II aircraft that can be expected over the planning period was made.

TABLE 3-20
OPERATIONS BY A-II AND B-II AIRCRAFT

	A-II and B-II Operations
Base Year	
2018	990
Forecast	
2024	1,100
2029	1,200
2039	1,400

SOURCE: 2018 FlightAware data and ESA analysis, 2019.

For the master planning effort, the Pilatus PC-12 (A-II) has been selected as the representative existing critical aircraft for Runway 7-25 (**Table 3-22**). There are currently five Pilatus PC-12s based at the airport, which conducted over 500 annual operations on Runway 7-25 in 2018. In the future, the slightly faster Cessna Citation IIs, Vs, and 525 series aircraft (B-II) are expected to eclipse 500 annual operations on Runway 7-25. The Cessna Citation CJ4 (B-II) was selected as the representative future critical aircraft for Runway 7-25 (**Table 3-22**). While only a few aircraft of this size and weight operate at SPG on an annual basis, it is expected the activity of similar aircraft will increase over the 20-year planning period.

It is important to note that the Citation CJ4 and similar B-II jet aircraft have a maximum certificated takeoff weight (MTOW) greater than 12,500 pounds. This places them in a different category for runway design standards than the airfield's current small aircraft category (MTOW of 12,500 pounds or less). Finally, unless the current instrument minimums established to Runway 7 change (addressed in the facility requirements chapter and evaluated in the alternatives chapter), the future RDC for the runway is B-II-5000.

Runway 18-36 Critical Design Aircraft

A crosswind runway is recommended by the FAA when the primary runway orientation cannot provide 95 percent wind coverage. Therefore, historic wind conditions were evaluated to determine the wind coverage of the airport's current runway system. Wind coverage is based on a crosswind not exceeding 10.5 knots for aircraft with reference codes of A-I and B-I; 13 knots for reference codes A-II and B-II; and 16 knots for reference codes A-III, B-III, and C-I through D-III.

FAA AC 150/5300-13A, Change 1 recommends that ten consecutive years of wind data be examined when carrying out the evaluation. Wind coverage calculations also need to take into account the different ceiling and visibility minimums associated with aircraft operations. The most recent data (January 1, 2009 through December 31, 2018) for all weather, visual flight rules (VFR), and instrument flight rules (IFR) conditions were obtained for SPG from the FAA's online Windrose File Generator website. The data was used to calculate the 10.5, 13, and 16 knot crosswind components shown in **Table 3-21** using the FAA's online Standard Wind Analysis tool.

TABLE 3-21
WIND COVERAGE ANALYSIS

Runway	Crosswind Component (knots)		
	10.5	13	16
All-Weather			
7-25	91.04%	95.26%	98.70%
18-36	86.76%	92.62%	97.82%
Combined	97.24%	99.24%	99.81%
VFR			
7-25	91.31%	95.52%	98.95%
18-36	86.88%	92.74%	97.97%
Combined	97.33%	99.33%	99.87%
IFR			
7-25	88.55%	92.80%	96.45%
18-36	85.10%	91.26%	96.38%
Combined	96.43%	98.37%	99.35%

SOURCE: FAA Windrose File Generator and Standard Wind Analysis Tool, 2019.

The wind rose analysis documented that during all weather and VFR conditions a crosswind runway is needed for the 10.5 knot category. During IFR conditions a crosswind runway is needed for both the 10.5 and 13 knot categories.

With an overall length of 2,864 feet, Runway 18-36 is capable of supporting nearly every A-I and B-I aircraft with a MTOW of 12,500 pounds or less (small aircraft). However, since each end of the runway is bounded by water, an extension of this runway is highly unlikely. In fact, due to the proximity of the surrounding water, neither end of Runway 18-36 currently provides the full Runway Safety Areas (RSA) for B-I small aircraft. While this is addressed in detail as part of the facility requirements chapter and evaluated as part of the alternatives, it is mentioned here with respect to the future critical aircraft for Runway 18-36.

Even though Runway 7-25 does not quite provide 95 percent coverage during IFR crosswind conditions for the 13 knot category, designating Runway 18-36 to a B-II small aircraft to provide the additional 2.2 percent coverage needed is not considered reasonable. This is because the corresponding B-II small aircraft RSA would extend even further off each end of Runway 18-36 over the water. As such, the Piper PA-31 Navajo (B-I) has been selected as the representative current and future critical aircraft for Runway 18-36 (**Table 3-22**). In fact, there are two Piper Navajos currently based at SPG. Finally, unless the current instrument minimums established to either end of Runway 18-36 change (also addressed in the facility requirements chapter and evaluated in the alternatives chapter), the RDC for the runway is B-I-5000.

3.8.2 Taxiway Design Groups

When the previous 2007 Airport Master Plan Update was prepared, taxiways were designed solely based on the ADG (wingspan) of the critical aircraft they served. Now some of the taxiway design standards utilize a Taxiway Design Group (TDG) which is based on the overall width of the aircraft's main gear as well as the distance between the main gear and the cockpit. Each aircraft's TDG is determined through the use of a chart in FAA AC 150/5300-13A, Change 1.

This newer approach combines identification of proper taxiway width and separation dimensions with a better method for determining the required turning radii and edge fillets. The intent is to provide the appropriate taxiway geometry while minimizing excess pavement and limiting the potential for confusing layouts. The current and future TDGs for both runways are shown in **Table 3-23**.

TABLE 3-22
CURRENT AND FUTURE RUNWAY CODES

Runway	Critical Aircraft	Approach Reference Code (APRC)	Departure Reference Code (DPRC)	Runway Design Code (RDC)
7-25 Current	A-II Small Aircraft (Pilatus PC-12)	B-I-5000 Small Aircraft	B-I Small Aircraft	A-II-5000 (Pilatus PC-12)
7-25 Future	B-II (Cessna Citation CJ4)	B-I-5000 Small Aircraft	B-I Small Aircraft	B-II-5000 (Cessna Citation CJ4)
18-36	B-I Small Aircraft (Piper PA-31 Navajo)	B-I-5000 Small Aircraft	B-I Small Aircraft	B-I-5000 (Piper PA-31 Navajo)

SOURCE: FAA AC 150/5300-13A, Change 1, *Airport Design*.

TABLE 3-23
TAXIWAY DESIGN GROUPS

Runway	Current	Future
7-25	1A	1B
18-36	1A	1A

SOURCE: FAA AC 150/5300-13A, Change 1, *Airport Design*.

3.9 FAA Terminal Area Forecast Comparison

If an airport is included in the FAA TAF, any new forecasts need to be reviewed and approved by the agency before they can be applied to further analyses. During this review for general aviation airports, the FAA looks to see if the annual operations or based aircraft forecasts differ from the TAF by any more than ten percent in the five year and/or 15 percent in the ten year planning periods.

Regarding the review, the FAA Airport Planning and Programming division published a guidance paper entitled, *Review and Approval of Aviation Forecasts*. This guidance states: "If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used in FAA decision-making. This may involve revisions to the airport sponsor's submitted forecasts, adjustments to the TAF, or both. FAA decision-making includes key environmental issues (e.g. purpose and need, air quality, noise, land use), noise compatibility planning (14 CFR Part 150), approval of development on an airport layout plan, and initial financial decisions including issuance of LOI's and calculation of BCA's."

As shown in **Table 3-24**, the recommended forecasts for based aircraft and annual operations exceed the FAA's review criteria for consistency with the TAF. For based aircraft, the projections are considered acceptable when the base year number is adjusted. The 2019 TAF only includes 125 based aircraft at SPG for 2018, which is nearly 41 percent less than the 176 based aircraft documented. If this difference is taken into consideration (adjustment shown in **Table 3-24**), then both the five and ten year recommended based aircraft figures of this master plan are within the FAA's review criteria for consistency with the TAF.

TABLE 3-24
COMPARISON OF FORECAST TO 2018 FAA TAF

	Recommended Baseline Forecast	2018 FAA TAF[a]	Difference	Adjusted TAF[bc]	Adjusted Difference
Based Aircraft					
Base Year (2018)	176	125	40.8%[b]	176	0%
5 Year (2024)	194	142	36.3%	200	-3.2%
10 Year (2029)	210	157	33.5%	221	-5.2%
Annual Operations					
Base Year (2018)	92,300	82,094	2.2%[c]	83,918	0%
5 Year (2024)	99,900	83,787	10.2%	85,649	7.8%
10 Year (2029)	117,100	85,372	17.0%	87,269	14.5%

[a] Issued February 2019 with data based on FAA fiscal year which ends September 30th.
[b] TAF based aircraft data for 2018 is 40.8 percent or 51 aircraft less than the number documented at the airport in 2018.
[c] TAF annual operations data for fiscal year FY2018 is 2.2 percent less than actual calendar year CY2018 data used for forecasting.

SOURCE: 2018 FAA TAF and ESA Analysis, 2019.

As noted previously, there are currently 163 based aircraft validated in the FAA's National Based Aircraft Inventory Program. Airport management at SPG is working to get the remaining 13 based aircraft validated. Regardless, even if the 2019 TAF were only adjusted to the 163 based aircraft, the recommended five and ten year forecasts for based aircraft would still be within the FAA's review criteria for consistency with the TAF.

The annual operations are considered acceptable given that the base year level of annual operations recorded for calendar year 2018 were already 2.2 percent greater than the fiscal year 2018 count used in the TAF. If this difference is taken into consideration (adjustment shown in **Table 3-24**), then both the five and ten year recommended annual operations of this master plan are within the FAA's review criteria for consistency with the TAF.

3.10 Aviation Activity Forecast Summary

Table 3-25 presents an overview of the recommended forecasts. The data and methods used to forecast aviation demand for the airport are consistent with those used by the FAA, FDOT, and other airports around the nation. These forecasts are considered to reasonably reflect the activity anticipated at SPG through 2039 given the information available during this study.

TABLE 3-25
SUMMARY OF AVIATION ACTIVITY FORECASTS

	Base Year	Forecast		
	2018	**2024**	**2029**	**2039**
Based Aircraft				
Single-Engine (piston & turboprop)	159	173	185	211
Multi-Engine (piston & turboprop)	11	13	16	20
Jet	0	2	3	6
Rotorcraft	6	6	6	9
Total	**176**	**194**	**210**	**246**
Categories of Operations				
Local Operations	39,623	43,400	46,000	52,700
Itinerant Operations	44,295	48,900	53,900	64,400
Total	**83,918**	**92,300**	**99,900**	**117,100**
Instrument Operations	4,252	4,600	5,000	5,900
Operational Fleet Mix				
Single-Engine (piston & turboprop)	67,134	73,300	78,700	91,300
Multi-Engine (piston & turboprop)	6,714	7,400	8,000	9,400
Jet	84	300	700	1,800
Rotorcraft	9,986	11,300	12,500	14,600
Peaks in Total Aircraft Operations				
Peak Month	9,026	9,230	9,990	11,710
Average Day of Peak Month	291	300	320	380
Peak Hour of Average Day	44	45	48	57

SOURCE: Airport records, FAA OPSNET database, and ESA analyses, 2019.

APPENDIX A

Correspondence

APPENDIX B

Public Outreach Program

GENERAL PUBLIC SURVEY

The City of St. Petersburg is continuously working to improve the Albert Whitted Airport (SPG) for its community, tenants, customers, and the traveling public. An important part of this effort is the development of a new 20-year Airport Master Plan. We encourage your participation by sharing your experiences at SPG, ideas for the facilities, suggested improvements, desired services, and long-term vision for the airport. Please take a few minutes to complete and return this survey. Thank you!!

Name	
Address	
Phone Number	
Email Address	
Date	

1. **In general, tell us about your overall impression of the Albert Whitted Airport and your experiences when using airport facilities.**

2. **What would you like to see improved at the airport?**

3. **Looking to the future, what is your vision for the Albert Whitted Airport and what do you believe should be accomplished at the airport over the next 20-year period?**

4. **Additional Comments:**

Please visit www.albertwhittedmasterplan.com for more information about the study.

Your information is greatly appreciated!

***Please return completed survey to*:**
Douglas DiCarlo

Via Mail: ESA
4200 West Cypress Street, Suite 450
Tampa, FL 33607

Via email:
info@albertwhittedmasterplan.com

st.petersburg
www.stpete.org

ESA

TENANT AND CUSTOMER SURVEY

The City of St. Petersburg is continuously working to improve the Albert Whitted Airport (SPG) for its tenants, the traveling public, and surrounding community. An important part of this effort is the development of a new 20-year Airport Master Plan. We encourage your participation by sharing your experiences at SPG, ideas for the facilities, suggested improvements, desired services, and long-term vision for the airport. Please take a few minutes to complete and return this survey. Thank you!!

Name	
Address	
Phone Number	
Email Address	
Date	

1. **How long have you been a tenant and/or customer of the Albert Whitted Airport?** ____________________

2. **Do you rent a tie-down, lease/sublease hangar space, or own a hangar?**__________**If you sublease, do you do so on a seasonal basis?**__________**If you own or rent a hangar space, what type and what size is it?** ____________________

____

3. **Do you participate in any aviation-related organizations or airport committees?** __________ **If Yes, please list which ones below.**

____

4. **In general, tell us about your experience as a tenant and/or customer of the airport.** ____________________

____

____

____

5. **What airside improvements would help improve your services at SPG?** *(i.e., taxiway improvements)* ____________________

____

____

6. **What type NAVAIDs/instrument approaches would improve your experiences at SPG? Are there any obstructions that hinder your use of the airport?** ____________________

____

____

7. **What landside improvements would improve your experience at the airport?** *(i.e. parking, security improvements, etc.)* __________

____

____

8. **What type of additional facilities and improvements at SPG would best suit your needs?** (*Select all that apply*).

_____ Regular T-Hangars
_____ T-Shelters
_____ Apron Tie-downs
_____ Large T-Hangars
_____ Clearspan Hangars (approx. 100' x 100')
_____ Other ____________________

9. **Understanding that many general aviation services are provided by private commercial service providers (FBOs), what general aviation services do you feel need improvement at the airport?**

_____ Fixed Base Operator Services
_____ Fuel Sales and Service
_____ Aircraft Maintenance Services
_____ Avionics Repair
_____ Flight Planning / Weather
_____ Aircraft Rental
_____ Counter Sales
_____ Flight Instruction
_____ Solid Waste Services and Recycling
_____ IT Infrastructure
_____ Site Drainage
_____ Ground Transportation Services
_____ Apron Tie-downs
_____ Apron Parking
_____ Vehicle Access and Parking
_____ Access to Wireless Networks
_____ Signage
_____ Food / Refreshments
_____ Concessions
_____ Security / Gate Access Control
_____ Security and Lighting
_____ Common Area Landscaping
_____ Utilities ____________________
_____ Other ____________________

Specifically, what would you like to see improved? ________________________________

____

____

10. **Looking to the future, what is your vision for SPG and what should be accomplished at the airport over the next 20-year period?**

____

____

11. **Additional Comments:** ________________________________

____

____

Please visit www.albertwhittedmasterplan.com for more information about the study.

Your information is greatly appreciated!

***Please return survey to*:**
Douglas DiCarlo

Via Mail: ESA
4200 West Cypress Street, Suite 450
Tampa, FL 33607

Via email:
info@albertwhittedmasterplan.com

ESA

Albert Whitted Airport Master Plan
Project Kick-off Meeting

January 10, 2019

Name	Representing	Phone Number	E-Mail Address
Joe Halisky	ESA	813 207 7209	jhalisky@esassoc.com
Rich Lesniak	COSP-Airport	727-893-7657	richard.lesniak@stpete.org
Dave Thompson	Advisory Comm	727 560-4980	JTHOMP64@TAMPABAY.RR.COM
Douglas DiCarlo	ESA	727-200-7326	ddicarlo@esassoc.com
Jack Tunstill	Advisory Comm	727-415-3357	JACKTCFII@AOL.COM
Joel Giles	Advisory Committee	813-229-4390	JGILES@CARLTONFIELDS.COM
Carol Everson	SFD	727-892-5705	carol.everson@stpete.org
Walt Driggers	Advisory Comm	352.804-5900	WDRIGGERS@MAC.COM
Karen DeMott	St Pete Air	727 755 1359	kdemott@stpeteair.org
Danielle Broussard	"	"	dbroussard@stpeteair.org
Mark Miller	SheltAir	727-278-0339	mmiller@SheltairAviation.com
Dave Metz	USF St. Petersburg	727 580-3370	dmetz@mail.usf.edu
Chris Ballestra	City	727-776-3636	CHRIS.BALLESTRA@STPETE.ORG

ESA

Albert Whitted Airport Master Plan
Planning Charrette

January 23, 2019

Name	Representing	Phone Number	E-Mail Address
Carol Everson	EFD	727-892-5705	carol.everson@stpete.org
Rich Lesniak	EFD-Airport	727-893-7657	richard.lesniak@stpete.org
CHRIS BALLESTRA	CITY	727·892·5960	CHRIS.BALLESTRA@STPETE.ORG
Joe Zeoli	CITY	727.892.5065	Joe.Zeoli@STPETE.org
Pete Sechler	GAI	407.210.2200	p.sechler@gaiconsultants.com
Alan DeLisle	City	727-262-8990	alan.delisle@stpete.org
Joseph Halisky	ESA		
Doug DiCarlo	ESA		
Phoebe Weiman	ESA		

ALBERT WHITTED AIRPORT MASTER PLAN PUBLIC OPEN HOUSE #1

Wednesday, July 31, 2019
5:00-7:00 p.m.
USFSP Harbor Hall Community Room
1000 3rd St. S.

The City of St. Petersburg is in the process of preparing a master plan for the Albert Whitted Airport and will be creating a new 20-year airport development program to maintain a safe, efficient, and environmentally conscious airport facility.

Join us any time during this open house to hear information about the airport, the progress of the master plan study, and to provide input. No formal presentation will be made.

st.petersburg
www.stpete.org

Albert Whitted Airport
Richard Lesniak, Airport Manager
727-893-7657
albertwhittedmasterplan.com

Albert Whitted Airport plan for the future to look at extending runway

And officials say shifting the runway east could create development opportunities for the University of South Florida St. Petersburg. Also expected to get a look: adding hangar space.

A small airplane takes off from Albert Whitted Airport recently. The city of St. Petersburg is updating its master plan for the airport. The plan will look at extending the main runway and building new hangers. SCOTT KEELER | Times

By Richard Danielson

Published Earlier Today
Updated Earlier Today

ST. PETERSBURG — Historically, a lot of conversations about the future of Albert Whitted Airport have jumped off from the idea of closing the airport and building something else on its prime waterfront property.

"Same old story: It's an ideal location," says Jack Tunstill, a longtime Albert Whitted pilot, flight instructor and chairman of the airport's advisory committee. He hears this less than he used to, thanks to a 2003 referendum in which St. Petersburg voters affirmed the airport's future as, well, an airport. Still, the idea comes up once in a while. Mayor Rick Kriseman himself floated it in 2014.

Soon, however, the talk will be less about what else could be developed at Albert Whitted and more about what might be developed nearby. The city-owned and -operated airport is putting together its first master plan since 2005. Two topics are expected to get a lot of attention: extending and shifting the main runway and finding space for more hangars.

The runway in question is known as Runway 7-25, which goes roughly from southwest, near First Street S, to northeast, out over Tampa Bay. It's 3,677 feet long and is used for about 70 percent of the takeoffs and landings at Whitted. Most planes that use it are small, carrying fewer than 10 passengers. But planes that need to use the full length of the runway can be required to reduce their weight — either by carrying less fuel, fewer passengers or both.

Adding 263 feet to the runway would help alleviate that problem, according to a feasibility study that American Infrastructure Development of Tampa did for the city in 2016.

Lengthening the runway, however, is only one possible change. Airport officials also are looking at shifting the runway to the west by 1,257 feet, or nearly a quarter mile. That would entail dredging and filling an area of Tampa Bay beyond the current eastern end of the runway at an estimated cost of $13.25 million to $15 million.

But airport officials say doing so could create development opportunities just beyond the western end of the runway, near First Street S. That's because shifting the runway to the west would allow the airport to move its "runway protection zone," a cone-shaped area that stretches beyond the end of the runway, onto the airport's property.

Currently, that protection zone is largely over the campus of the University of South Florida St. Petersburg, and it limits how tall USF can build. Moving the zone onto airport property, airport manager Richard Lesniak says, could create new development potential to the west.

USF St. Petersburg likes that idea.

“We are very excited about the opportunities presented by the proposal to extend and shift the main runway at Albert Whitted Airport," regional chancellor Martin Tadlock said in a statement. "The runway extension could benefit USF St. Petersburg in two important ways. First and foremost is safety, which is a top priority for our university. Secondly, by lifting the height restrictions, it could give us the opportunity to expand vertically — a significant advantage in a city where space is at a premium.”

Early last year, GAI Consultants of Orlando estimated for the city that shifting the runway could create up to $392 million a year from a combination of direct new spending on things like wages and indirect spending, such as when workers or businesses spend that new revenue on other things.

Sound like a lot? It's a long-range projection. It's also one that assumes the maximum amount of potential new or re-development and a huge influx of lucrative professional jobs. The consultants broke it down like this:

• Removing the protection zone limitations outside the airport could allow buildings now just one or two stories tall to be replaced by three- to 10-story buildings, expanding the total square footage available from 202,655 square feet to 830,225 square feet. That, the consultants estimated, would create space for 1,800 new workers. GAI Consultants said those new employees could bring a nearly $208 million increase in economic activity. The firm also estimates that those new jobs, which is assumes would "most likely" be professional, management, scientific, technical or consulting, would indirectly lead to the creation of another 1,320 jobs in everything from food service to real estate and health care, and another $174 million in spending.

• The size of aircraft using the airport would not be expected to change, but the type of trip they made might. With a longer runway, planes could take off with more weight, allowing them to plan for longer flights and making the airport more attractive to corporate jets. Shifting the runway also could make 3 acres on airport property available for operations growth. With some new hangar space, airport operations could be expected to grow 5 percent as a result of the change to the runway, consultants said.

• The airport would also become more attractive to new aviation providers, such as non-scheduled charters. A previous proposal for that kind of service at the airport anticipated 16 arrivals and 16 departures a week, serving about 1,500 passengers a year and generating $6 million to

$7 million in economic activity. (Tampa International Airport, by comparison, estimates the economic impact of a new international flight at more than $100 million a year.)

For the master plan, airport officials also will look at adding hangars. About 75 percent of the 180 aircraft based at the airport now have a spot in a hangar. Another 70 owners are on a waiting list.

Some new hangars could go on the 8 acres that's now home to the city's closed waste water treatment plant — if Mayor Kriseman decides to close it permanently. But that's an open question. The City Council voted to close the sewage treatment plant at Albert Whitted in 2011. The Kriseman administration carried out the plan in 2015. In the year that followed, the city's three remaining treatment plants were swamped, and the system released up to 1 billion gallons of waste water, with a fifth of it going to Tampa Bay. Now the plant is available with 10 million gallons of emergency storage capacity, and City Hall is working on a master plan for the waste water system, which is expected to cost $326 million to fix. That plan is expected to help determine the fate of the treatment plant at the airport.

The potential impact of sea level rise likely will get looked at as part of a review of sustainability and resiliency at the airport, which sees occasional airfield flooding.

The airport will hold an open house at Harbour Hall at USF St. Petersburg from 5 to 7 p.m. on Wednesday where anyone will have a chance to share their thoughts or learn more about the airport. The master plan is expected to take about a year to finish.

"The intent here is to improve the operations of the airport, its viability as a destination for both business and recreational fliers," Tunstill says. "We're not talking about commercial airlines coming in."

Meanwhile, Kriseman isn't talking about redeveloping the airport anymore.

"For as long as the airport is viable, he wants to see it optimized," Kevin King, the mayor's policy chief, said in an email. "He would like to see the runway expansion occur, if possible. He thinks the airport has the potential to catalyze future economic development."

MORE: Go here for more business news

Contact Richard Danielson at rdanielson@tampabay.com or (813) 226-3403. Follow @Danielson_Times

IF YOU GO

What: Open house updating the city of St. Petersburg's 20-year airport development program for Albert Whitted Airport.

When: 5 to 7 p.m. Wednesday. There's no formal program, so residents can visit anytime during the open house to learn about the process and share their thoughts.

Where: Community room, Harbor Hall, University of South Florida St. Petersburg, 1000 Third St. S.

More information: albertwhittedmasterplan.com

RICHARD DANIELSON
Economic Development, Port, Airport and Movers and Shakers Reporter

Albert Whitted Airport Master Plan
Technical Working Group Meeting #2
July 25, 2019 - 2:00 p.m.

Name	Representing	Phone Number	E-Mail Address
Joe Halisky	ESA	813 207 7209	jhalisky@esassoc.com
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JACK TUNSTILL	AIRPORT ADVISORY COMM	727-415-3357	JACKTCFII@AOL.COM
Doug DiCarlo	ESA	727-207-7215	ddicarlo@esassoc.com
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CHRIS BALLESTRA	CITY	727-892-5960	CHRIS.BALLESTRA@STPETE.ORG

APPENDIX C

Runway 7-25 Feasibility Study

RUNWAY 7-25 FEASIBILITY STUDY
ALBERT WHITTED AIRPORT

st.petersburg
www.stpete.org

PREPARED BY:

AMERICAN INFRASTRUCTURE DEVELOPMENT, INC.

AMERICAN INFRASTRUCTURE DEVELOPMENT, INC.
TRANSPORTATION CONSULTING

3810 Northdale Boulevard
Suite 170
Tampa, FL 33624
(813) 374-2200

IN ASSOCIATION WITH:

ENVIRONMENTAL SCIENCE ASSOCIATES

ESA

November 2016

(updated, January 2017)

TABLE OF CONTENTS

LIST OF EXHIBITS

LIST OF TABLES

ATTACHMENTS

EXECUTIVE SUMMARY

The City of St. Petersburg has conducted a preliminary study to explore improving the safety and operational utility of Runway 7-25 at Albert Whitted Airport (SPG). The study investigated runway length needs and associated safety requirements as defined by the Federal Aviation Administration (FAA) and the Florida Department of Transportation (FDOT). The intent of the study is to determine what, if any, future improvements are necessary for Runway 7-25 and identify the process necessary to achieve these improvements. The City will ultimately decide if the improvements will be further investigated and planned.

This study addressed two factors in determining the current runway length requirements to safely accommodate the existing aircraft operations and to evaluate the FAA's safety guidelines related to land uses within the Runway Protection Zone.

1. Runway Length Requirement

A runway length analysis was conducted to determine if the existing length of Runway 7-25 is adequate for the operations that are currently being conducted at the Airport. The FAA and FDOT have specific guidance that must be used to determine runway length requirements.

Runway 7-25 is designed for small aircraft operations under FAA design guidelines. Runway 7-25 is the Airport's Primary Runway and is used approximately 70 percent of the time on an annual average basis.

The runway length analysis revealed that the majority of aircraft operations being conducted at SPG consist of small aircraft under 12,500 pounds with less than 10 seats. FAA's Advisory Circular (AC) 150/5325-4B, "Runway Length Requirements for Airport Design" was used to determine the length requirements for small aircraft under 12,500 pounds. In addition, aircraft specific information was used to correlate and verify the existing length needs.

The runway length analysis used both the FAA's preferred methodology as well as the aircraft specific characteristics for one of the most demanding small aircraft currently based at and using SPG on a regular basis. The analysis revealed that 3,700 feet is necessary for the most demanding of those aircraft, including the Beech King Air B200. Runway 7-25 has reduced utility due to the use of declared distances for obstruction clearance in the approaches to Runway 7 and Runway 25.

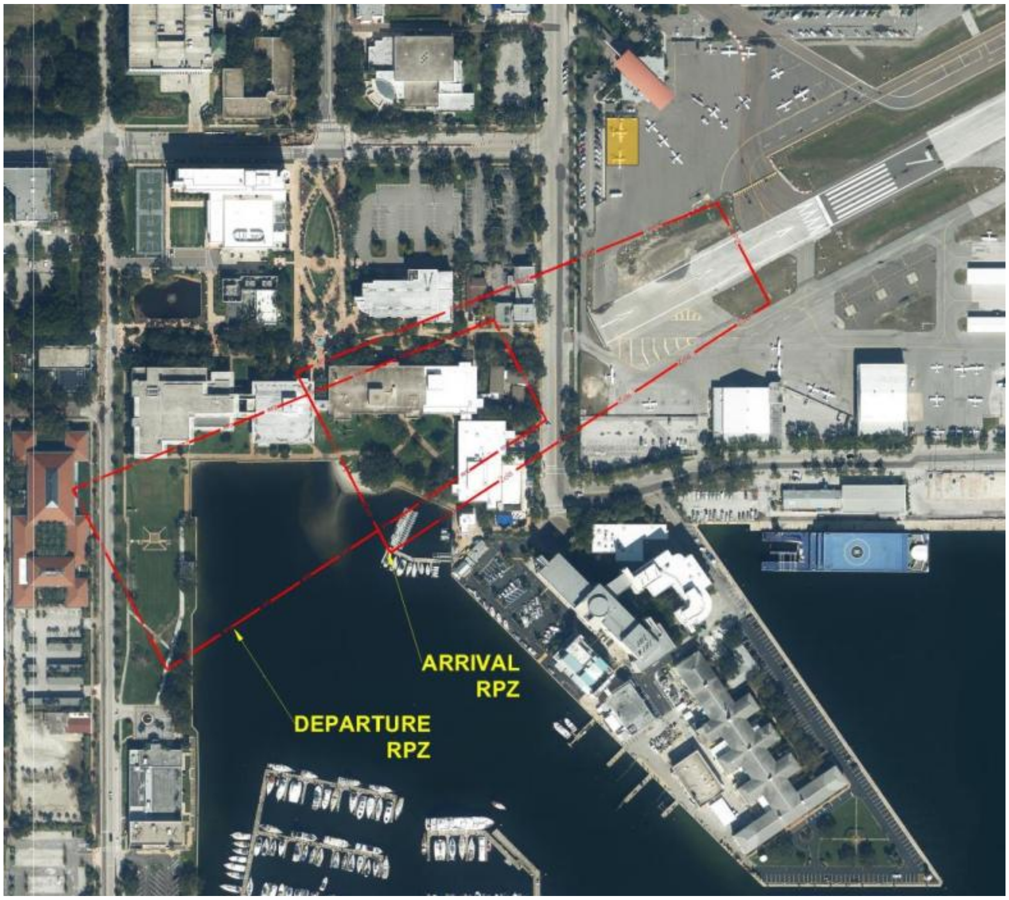
To meet the existing needs at SPG, an additional 263 feet should be added to the runway length to meet the minimum length for takeoffs. Currently, all aircraft needing the full 3,700 feet for takeoff must take a weight penalty such as a reduction in fuel, passenger load or both, to ensure the aircraft can take off on the available runway length.

2. Runway Protection Zone (RPZ) Incompatible Land Use

The RPZ is a defined area on the ground that is located prior to a runway's landing threshold and beyond the runway end that should be cleared of incompatible objects and activities. Its purpose is to enhance the safety and protection of people and property on the ground. This is accomplished through airport owner control of property within the limits of the RPZ. FAA design standards recommend that airport owners exercise control through property acquisition, but in cases where that is not possible the design standard recommends that airport owners maintain the RPZ clear of incompatible land uses and activities. Incompatible land uses include schools, hospitals, churches, office buildings, shopping centers, and other uses with similar concentrations of persons.

At SPG, Runway 7 has arrival and departure RPZs located mostly off-airport in an area occupied by several incompatible land uses and buildings that are part of the University of South Florida (St. Pete Campus) as shown in **Exhibit ES-1**. **Exhibit ES-2** provides more detailed information on the buildings located within the RPZ.

Exhibit ES-1: Runway 7 Approach and Departure RPZs



Source: American Infrastructure Development, 2016

To achieve the desired results of this RPZ Concept, Runway 7 must be displaced a total of 1,257 feet and the Runway 25 end shifted by an equal amount. This concept, as presented in **Exhibit ES-3,** would bring the RPZ entirely onto airport property thereby achieving full compliance with FAA land use guidance.

To accomplish this project, permitting will be required from a few state and federal agencies, including the Florida Department of Environmental Protection (FDEP), Southwest Florida Water Management District (SWFWMD), Florida Fish and Wildlife Conservation Commission, and the U.S. Army Corps of Engineers (ACOE). In addition, a federal dredge and fill permit will be required by ACOE.

It is estimated that it will cost approximately $12.5 million in 2016 dollars to construct these runway improvements. A Master Plan/ALP update and subsequent Environmental Assessment (EA) is the next step required by the FAA.

OBSTRUCTION DATA TABLE - RUNWAY 7 (20:1)

#	TYPE	TOP OF OBJECT ELEV.	EXIST APPROACH ELEVATION	ELEVATION DIFFERENCE
1	OL Blast Fence	19'	25.4'	-6.4'
2	Lowell E. Davis Memorial Hall	45.61'	39.2'	+6.41'
3	Coquina Hall	36.61'	41.3'	-4.61'
4	Ol Rod on OL Bldg	48'	43.0'	+5'
5	Ol Ant on OL Bldg	60'	59.0'	+1'
6	Bayboro Hall	50.69'	58.8'	-8.11'
7	Nelson Poynter Memorial Library	52.78'	64.6'	-11.82'
8	Poynter Institute for Media Studies	52.78'	86.4'	-33.62'

LEGEND:

SYMBOL	DESCRIPTION
ROFA	Runway Object Free Area
RSA	Runway Safety Area
RVZ	Runway Visual Zone
	Property Line
	Departure Surface
	Approach Surface

RUNWAY DESIGN STANDARDS	B-I SMALL
Runway Protection Zone (L x IW x OW)	1000'x250'x450' (8 ac)
Runway Safety Area Width	120'
Runway Safety Area Length beyond Rwy End	240'
Runway Object Free Area Width	250'
Runway Object Free Area Length beyond Rwy End	240'
Runway Centerline to:	
Hold Position Lines	125'
Parallel Taxiway or Taxilane	150'
Aircraft Parking Area	125'
Taxiway Safety Area	49'
Taxiway Object Free Area	89'
Taxilane Object Free Area	79'

REVISIONS:

REV. NO	DATE	DESCRIPTION:	EOR

ENGINEERING & CAPITAL IMPROVEMENTS DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

ALBERT WHITTED AIRPORT
RUNWAY 7-25 EXTENSION
FEASIBILITY STUDY

AMERICAN INFRASTRUCTURE DEVELOPMENT, INC.
TRANSPORTATION CONSULTING

MAGNETIC DECLINATION
4° 09' WEST (2005)
ANNUAL RATE OF CHANGE
05' WEST

0 200 400
SCALE IN FEET

JOB NO:	SPG14006
DRAWN:	RRC
DESIGN:	TC
CHECKED:	MM
DATE:	JAN, 2017

EXISTING CONDITIONS
(EXISTING B-I SMALL)

EXHIBIT ES-2

FILENAME: D:\Dropbox (AID)\1-PROJECTS\SPG\SPG16009-Runway-Feasibility-Study\03-Drawings\WIP\EXIS-SPG-PT77-RW07.dwg PLOT DATE: March 26, 2017 PLOT TIME: 9:55:33 PM

OBSTRUCTION DATA TABLE - RUNWAY 7 (20:1)					
#	TYPE	TOP OF OBJECT ELEV.	EXIST APPROACH ELEVATION	ULT APPROACH ELEVATION	ELEVATION DIFFERENCE
1	OL Blast Fence	19'	25.4'	60.0'	-41'
2	Lowell E. Davis Memorial Hall	45.61'	39.2'	73.9'	-28.29'
3	Coquina Hall	36.61'	41.3'	76.0'	-39.39'
4	OI Rod on OL Bldg	48'	43.0'	77.7'	-29.7'
5	OI Ant on OL Bldg	60'	59.0'	93.7'	-33.7'
6	Bayboro Hall	50.69'	58.8'	93.5'	-42.81'
7	Nelson Poynter Memorial Library	52.78'	64.6'	99.3'	-46.52'
8	Poynter Institute for Media Studies	52.78'	86.4'	121'	-68.22'
9	OL on Hangar	23'	10.9'	21.1'	+1.9'
10	OL Ant on OL Bldg	54'	18.5'	45.9'	+8.1'
11	OL LT Pole	32'	28.7'	63.4'	-31.4'
12	OL Rod on OL Bldg	70'	52.0'	77.4'	-7.4'

LEGEND:	
SYMBOL	DESCRIPTION
ROFA	Runway Object Free Area
RSA	Runway Safety Area
RVZ	Runway Visual Zone
	Property Line
	Approach Surface

RUNWAY DESIGN STANDARDS	B-I SMALL
Runway Protection Zone (L x IW x OW)	1000'x250'x450' (8 ac)
Runway Safety Area Width	120'
Runway Safety Area Length beyond Rwy End	240'
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Runway Object Free Area Length beyond Rwy End	240'
Runway Centerline to:	
Hold Position Lines	125'
Parallel Taxiway or Taxilane	150'
Aircraft Parking Area	125'
Taxiway Safety Area	49'
Taxiway Object Free Area	89'
Taxilane Object Free Area	79'

REVISIONS:			
REV. NO	DATE	DESCRIPTION:	EOR

ENGINEERING & CAPITAL IMPROVEMENTS DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

ALBERT WHITTED AIRPORT
RUNWAY 7-25 EXTENSION
FEASIBILITY STUDY

AMERICAN INFRASTRUCTURE DEVELOPMENT, INC.
TRANSPORTATION CONSULTING

MAGNETIC DECLINATION
4° 09' WEST (2005)
ANNUAL RATE OF CHANGE
05' WEST

0 200 400
SCALE IN FEET

JOB NO:	SPG14006
DRAWN:	RRC
DESIGN:	TC
CHECKED:	MM
DATE:	JAN, 2017

RELOCATE RPZ ON AIRPORT PROPERTY
(FUTURE B-I SMALL)

EXHIBIT ES-3

FILENAME: D:\Dropbox (AID)\1-PROJECTS\SPG\SPG16009-Runway-Feasibility-Study\03-Drawings\WIP\REP-PROP-SPG-PT77-RW07.dwg PLOT DATE: March 26, 2017 PLOT TIME: 9:57:02 PM

FEASIBILITY STUDY – RUNWAY 7-25
ALBERT WHITTED AIRPORT

TECHNICAL ANALYSIS

TECHNICAL MEMORANDUM

INTRODUCTION

The City of St. Petersburg has been exploring the feasibility of extending Runway 7-25 at Albert Whitted Airport (SPG) to enhance Runway 7-25 utility and operational capabilities. American Infrastructure Development, Inc. (AID, Inc.) was tasked with identifying the length of the extension necessary to achieve the City's goals with an overview of potential impacts. The City will determine if a runway extension should be further studied and pursued within a future Airport Master Plan Update and Airport Layout Drawing (ALD) Update.

FAA guidance states that to justify funding a runway extension, at least 500 annual itinerant aircraft operations must exhibit a need for an extension now or within the next five years. In general, an airport must document aircraft operations that are constrained as a result of runway length. A constrained operation is one that must reduce payload for takeoff, which could include fuel or passengers. If the need for an extension is justified, the project would then go through the FAA's Airport Master Plan/ALP Update process. Once the project is justified through the FAA's planning process, it would then be subject to an Environmental Assessment (EA).

The project approach and analysis used the following FAA and FDOT guidance and regulatory criteria:

1. FAA Advisory Circular (AC) 150/5300-13A, "Airport Design"
2. FAA AC 150/5325-4B, "Runway Length for Airport Development"
3. FAA Memorandum, "Interim Guidance on Land Uses Within a Runway Protection Zone"
4. FAA Order 5050.4B, "Environmental Handbook"
5. Florida Statutes, Title XXV, Aviation, Chapter 333, Airport Zoning (revised 2016)

AID began the study effort by reviewing all existing information available and coordinated with City officials to define the intent and proposed project elements. The main emphasis was to examine the existing runway length and types of operations presently occurring at the Airport. As the study parameters began to evolve, it became clear that any Runway 7-25 extension in the future would also trigger a Runway Protection Zone (RPZ) evaluation for the FAA. Therefore, the study begins with an overview of the existing conditions, an evaluation of runway length needs, followed by a brief RPZ analysis and an environmental overview of potential impacts.

RUNWAY 7-25 EXISTING CONDITIONS

Runway 7-25 is the Airport's primary runway and is 3,674-foot long and 75-foot wide. The runway meets FAA design standards to serve small aircraft not exceeding approach speeds of 121 knots, with tail heights less than 20 feet and wingspans less than 49 feet (referred to as B-I). In addition, most aircraft operating at SPG are "small aircraft" that do not exceed a maximum certificated takeoff weight of 12,500 pounds. Aircraft that are larger than 12,500 lbs. including mostly small/medium corporate aircraft such as the Hawker 400 Jet (BAE HS125), do on occasion use the Airport and must reduce their payloads due to runway length. Runway 18-36 is the Airport's crosswind runway and is 2,864 feet in length by 150 feet wide.

Runway 7 has a non-precision Area Navigation, Global Positioning Satellite (RNAV GPS) instrument approach with minimums not less than one mile (distance the pilot can see the runway end) with a 555-foot displaced threshold due to building obstructions in the approach.

The approach end of Runway 25 has a visual approach (used during clear weather conditions) and the threshold is displaced 263 feet for intermittent sailboat masts that may occur in Tampa Bay in the approach to the runway. The runway design requirements which are dimensions and areas needed for the dominant aircraft that use this runway, according to FAA AC 150/5300-13A, CHG 1, are depicted below in **Table 1**.

Table 1 – B-I Minimum Runway Design Requirements

Design Standard	Dimension (Feet)	SPG (Feet)
Runway Safety Area (RSA) Length Beyond Departure End	240	240
RSA Length Prior to Threshold	240	240
RSA Width	120	120
Runway Object Free Area (ROFA) Width	250	250
Object Free Zone (OFZ)	250	250
Runway Width	60	75

Source: American Infrastructure Development

As mentioned above, the runway thresholds where aircraft can land are displaced to allow aircraft to clear obstructions on either end. As a result, Runway 7-25 has existing declared distances available for operations. Declared Distances, as defined by the FAA, are runway distances declared by the Airport available for an aircraft's use and further defined by the takeoff run available (TORA), takeoff distance available (TODA), accelerate stop distance available (ASDA), and landing distance available (LDA). This is a notification to pilots that the full length of the runway is not available for takeoffs and landings.

The declared distances at SPG were adjusted as part of the recent Runway 7-25 Rehabilitation Project due to the placement of the Runway 7 end lights. The design placed new runway end lights within the asphalt portion of the runway approximately 3 feet in front of the previous location. This 3-foot shift affected the Runway 7 displaced threshold distance, and the Runway 25 TORA and TODA to change accordingly. **Table 2** shows the changes that occurred to the declared distances.

The LDAs and ASDAs were not affected for either direction because the safety area would still be available regardless of the location of the physical end of the runway.

Table 2: Existing Runway Utility

	EXISTING CONDITIONS	
Runway End	**7**	**25**
Total Runway Length	3,674'	3,674'
Displaced Threshold	555'	263'
TORA	3,647'	3,674'
TODA	3,647'	3,674'
ASDA	3,447'	3,437'
LDA	2,919'	3,174'

Source: American Infrastructure Development

In general, the use of declared distances at SPG on Runway 7-25 restricts the use of the runway for many twin turbine engine and jet aircraft. The runway length analysis completed as part of this study will demonstrate the extent of the impact to aircraft operating at the Airport.

RUNWAY USE

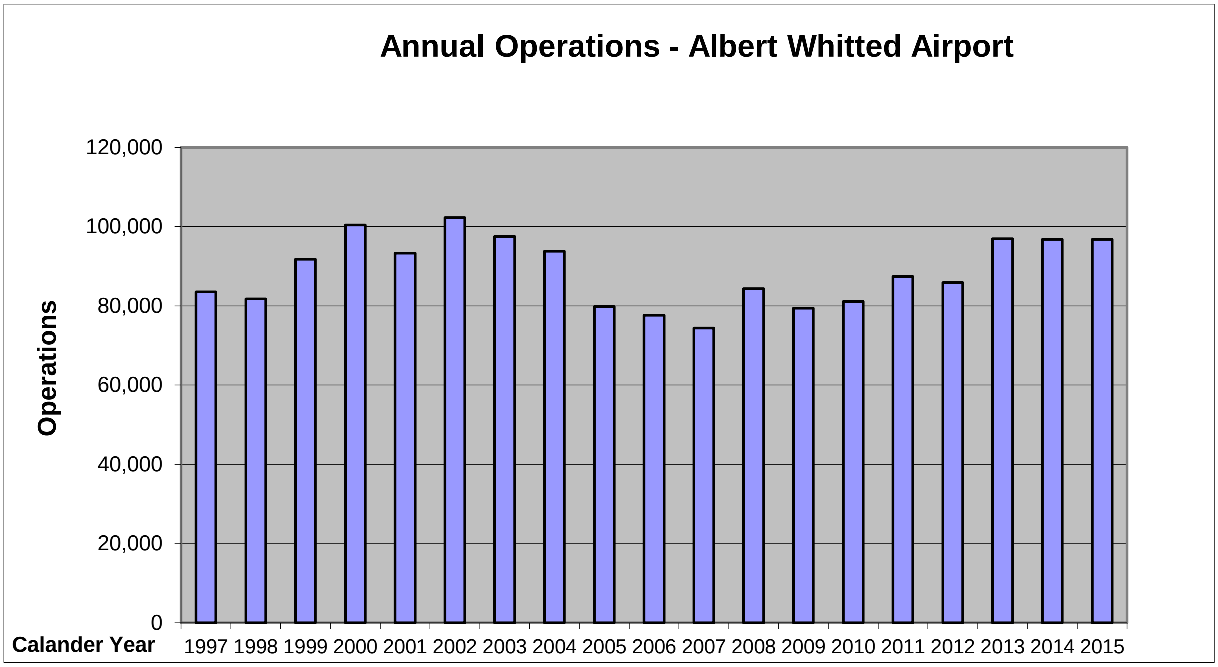
Based on a review of wind data and conversations with Airport staff, Runway 7-25 is used on average 70 percent of the time. Runway 18-36, the Airport's crosswind runway, is used the remaining 30 percent of the time when weather and winds are favorable for its use.

OPERATIONS

It is important to define the type and number of aircraft that use the Airport's runway system on an annual basis in order to evaluate the impact of alternatives examined in this feasibility study. Historical traffic counts from the past 10 years were provided by the local Air Traffic Control Tower (ATCT). SPG currently has approximately 98,000 aircraft operations annually, and on average from 2010 to 2013, has seen an annual growth rate of 5.25 percent. Operations from 2013 to 2015 remained flat, as indicated in **Exhibit 1.**

The Airport's fleet mix includes a combination of aircraft including: single-engine, twin-engine, jet and rotorcraft. According to data received from the Airport and the Fixed Base Operator (FBO), the 98,000 annual operations consist of approximately 55 percent locally based aircraft and 45 percent itinerant operations. In addition, more than 90 percent of the operations are conducted by aircraft weighing under 12,500 lbs. The split between the various aircraft groupings is shown in **Table 3.**

Exhibit 1: SPG Annual Operations



Source: SPG and Fixed Based Operator Statistics for 2015

Table 3: Aircraft Count

	Single Engine	Twin Engine	Jet	Rotor	Total
Local	150	25	1	8	184
Transient	1,320	354	35	3	1,712
Total Aircraft	1,470	379	36	11	1,896
	77.5%	20.0%	1.9%	0.6%	

Source: SPG and Fixed Based Operator Statistics for 2015

Based upon data received from the Airport and FBO, an example of the fleet mix of aircraft operating at SPG is provided in **Table 4**.

Table 4: Runway 7-25 Fleet Mix

Type	Model	Percent Mix	Engine
BE36	Bonanza	9.43%	Single
P28	Cherokee	32.08%	Single
C172	Skyhawk	28.30%	Single
C182	Skylane	13.21%	Single
PC12	Pilatus	16.98%	Single
PA31	Navajo	69.23%	Twin
PA44	Seminole	23.08%	Twin
BE20	King Air 200	7.69%	Twin
C525	Citation	1.90%	Jet

Source: SPG Airport Management and Fixed Base Operator Records

DESIGN AIRCRAFT

The design aircraft is defined by the FAA as the most demanding aircraft (in terms of approach speed, tail height, wingspan, and dimensions of the aircraft undercarriage) that is likely to use the Airport on a regular basis, or in this case specifically Runway 7-25. Since one type of aircraft may be more demanding than another, the design aircraft may be a composite of various aircraft rather than one specific aircraft. The minimum design requirements previously presented in Table 1 are dimensions and areas needed to accommodate the dominant aircraft that use the Airport's runways.

Aircraft characteristics are grouped and defined by the FAA according to three parameters. The first parameter is the Aircraft Approach Category (AAC) which groups aircraft according to their approach speed. The Aircraft Approach Category is based on the landing speed of the aircraft, which is defined as 1.3 times the stall speed of the aircraft. **Table 5** provides a listing of these categories. The category that is appropriate for SPG is highlighted in blue.

Table 5: Aircraft Approach Category

Aircraft Approach Category	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*.

The second parameter is the Airplane Design Group. This parameter addresses two elements: an aircraft's tail height and an aircraft's wingspan both measured in feet. Airplane Design Groups are defined in **Table 6**. These dimensions, along with the Taxiway Design Group (TDG), are used to ensure that the aircraft has adequate clearance to move about the airfield when landing, taking off and taxiing.

Table 6: Airplane Design Group

Group	Tail Height (feet)	Wingspan (feet)
I	Less than 20	Less than 49
II	20 to less than 30	49 to less than 79
III	30 to less than 45	79 to less than 118
IV	45 to less than 60	118 to less than 171
V	60 to less than 66	171 to less than 214
VI	66 to less than 80	214 to less than 262

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

The third and final parameter is the Taxiway Design Group (TDG). This parameter is based upon the undercarriage dimensions of the aircraft, specifically the main gear width and its distance from the cockpit. Unlike the Aircraft Approach Category and the Airplane Design Group, the Taxiway Design Groups do not fit in a simple table format.

Although FAA criteria are based upon these three parameters, aircraft weight should also be considered when assessing the adequacy of pavement strength and length of haul (trip distance from takeoff to first landing point) when assessing runway length requirements.

The design aircraft per the ALP for the taxiways is an aircraft with an Airplane Design Group I (ADG-I) and Taxiway Design Group 1A (TDG 1A) classification. **Table 7** below shows a summary of the ADG-I/TDG 1A requirements.

In addition to the smaller Group I aircraft, the Airport also has approximately 384 operations per year of a larger aircraft, the King Air B200. Because of the frequent operations of the King Air B200, which is an ADG-II /TDG-2 aircraft, the minimum taxiway design guidelines were modified to an aircraft specific design to accommodate the King Air for the recently completed Runway 7-25 Rehabilitation and South Taxiways project. The modified design guidelines used the wider, ADG-II taxiway width of 35 feet, but kept the Taxiway Design Group I Fillet dimensions as shown in the table below. Geometry and fillet design were verified using computer modeling software with the King Air B200 as the design aircraft.

Table 7: Aircraft Specific Design Criteria – For Taxiway Connectors

Taxiway Safety Area (TSA)	49 feet
Taxiway Object Free Area (TOFA)	89 feet
Taxiway Width	35 feet
Taxiway Edge Safety Margin (TESM)	7.5 feet
Taxiway Shoulder Width (if present)	10 feet
Taxiway Fillet Dimensions	Per TDG 1B

Source: American Infrastructure Development

RUNWAY DESIGN CODE (RDC)

The aircraft approach category, airplane design group, and the approach visibility minimums that have been previously discussed are combined for the RDC of a particular runway. The visibility minimums for Runway 7-25 are not lower than 1-mile and is expressed as a runway visual range (RVR) value of 5,000 feet. Therefore, Runway 7-25 has a RDC B-I-5000.

RUNWAY LENGTH ANALYSIS

AC 150/5325-4B, Paragraph 202, *Design Approach*, provides two methods to calculate a recommended runway length. Airport planners can either use the appropriate "runway length curves" in AC 150/5325-4B for the weight and characteristics of the design aircraft or a family grouping of critical design aircraft under consideration can determine the necessary runway length from an airport planning manual (APM) for a specific aircraft. This analysis uses both methods.

The procedures identified in AC 150/5325-4B are provided below in a step-by-step process. The runway length curve method is presented first.

Step 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.

At SPG, there is not one specific type of aircraft that can be identified as the critical aircraft having a minimum of 500 annual operations. The majority of aircraft operating at the Airport are in the small B-I category, or lower, and are 12,500 pounds or less. The aircraft are a mix of small single engine, multi-engine, turboprop, and small business jet aircraft. As indicated in the preceding sections, although there are not 500 annual operations, the Beech Super King Air B200 is a based aircraft and conducts on average 385 annual operations of the total annual operations and therefore was selected as being the representative design aircraft to study for runway length needs.

Step 2 - Identify the airplanes that will require the longest runway lengths at maximum certificated takeoff weight (MTOW).

All aircraft operating into and out of SPG, identified through the use of the FBO and FAA data are under 60,000 pounds MTOW. Therefore, according to the AC, when the MTOW of listed airplanes is 60,000 pounds or less, the recommended runway length is determined according to a *family grouping of airplanes* having similar performance characteristics and operating weights. As identified in step 1, at SPG this would be aircraft 12,500 pounds or less.

Step 3 - Use the Advisory Circular Table 1-1 (shown in Table 8) and the airplanes identified in Step 2 above, to determine the method that will be used for establishing the recommended runway length.

The majority of aircraft identified in the B-I grouping of aircraft, as well as the Beech Super King Air B200, operating at the Airport fall into the highlighted portions of the following table.

Table 8: 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 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 but less than 60,000 pounds</td><td>Family grouping of large airplanes</td><td>Chapter 3; Figures 3-1 or 3-2 and Tables 3-1 or 3-2</td></tr>
<tr><td colspan="3">60,000 pounds or more or Regional Jets 2</td><td>Individual large airplane</td><td>Chapter 4; Airplane Manufacturer Websites (Appendix 1)</td></tr>
</table>

Source: FAA AC 150/5325-4B

Step 4 - Select the recommended runway length from among the various runway lengths generated by Step 3 per the process identified in Chapter 2 (AC 150/5325-4B).

Advisory Circular 150/5325-4B describes the procedures for determining the runway length needs of aircraft weighing 12,500 pounds or less with approach speeds of 50 knots or more and having less than 10 passengers. The less than 10 passenger seats category is further broken down based on two percentages of fleet: "95 percent of the fleet" or "100 percent of the fleet" categories. These categories are based on the Airport's location and the amount of existing or planned aviation activities.

The Airport serves a community (i.e. City of St. Petersburg) on the fringe of a metropolitan area (i.e. Tampa). The Airport has the potential for higher levels of aviation activities as evidenced in yearly operational data in years past. Therefore, the "100 percent of the fleet" category has been used for the analysis.

Using the 100 percent of the fleet curve, on a 92-degree day the aircraft operating at the Airport need a runway length of 3,700 feet (see **Exhibit 2**). The AC indicates that individual Airplane Flight Manual performance information and criteria contained in Part 135 for *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board such Aircraft*, can be used to develop the runway length curves. However, operations at SPG in the summer months during very hot and wet conditions generally need additional runway length to operate fully loaded and in these weather conditions. Therefore, the second method of using individual aircraft planning manuals was also used and is described in the following paragraphs.

According to the Advisory Circular, *"airport designers can, instead of applying the small airplane design concept, determine the recommended runway length from airplane flight manuals for the airplanes to be accommodated by the airport in lieu of the runway length curves depicted in the AC's runway length curves for small aircraft. For example, owners of multi-engine airplanes may require that their pilots use the airplane's accelerate-stop distance in determining the length of runway available for takeoff".*
The accelerate-stop distance is defined as the distance it takes an aircraft to accelerate to liftoff speed, experience the failure of one engine, and brake to a complete stop on the remaining runway. During the heat of the summer, with higher density altitudes and temperatures, it is possible that the total accelerate-stop distance will exceed the length of the available runway. If this is the case, the choices are to reduce takeoff weight or delay the flight until the temperature cools enough to improve performance.

For this analysis, the Airplane Flight Manual (AFM) for the Beech Super King Air B200 was obtained to ascertain the required accelerate-stop distance requirement. It is important to note, that the takeoff and landing distances presented in the manufacturer-supplied AFM reflect performance in a flight test environment with a brand new aircraft and therefore represents optimal flight operations. It represents the best performance the airplane is capable of for the conditions.

According to the performance charts contained in the Super King Air B200 manual, the accelerated-stop distance needed at SPG on a 92-degree day, at sea level and maximum takeoff weight at 12,500 pounds, is approximately 3,700 feet in dry runway conditions (see **Exhibit 3**).

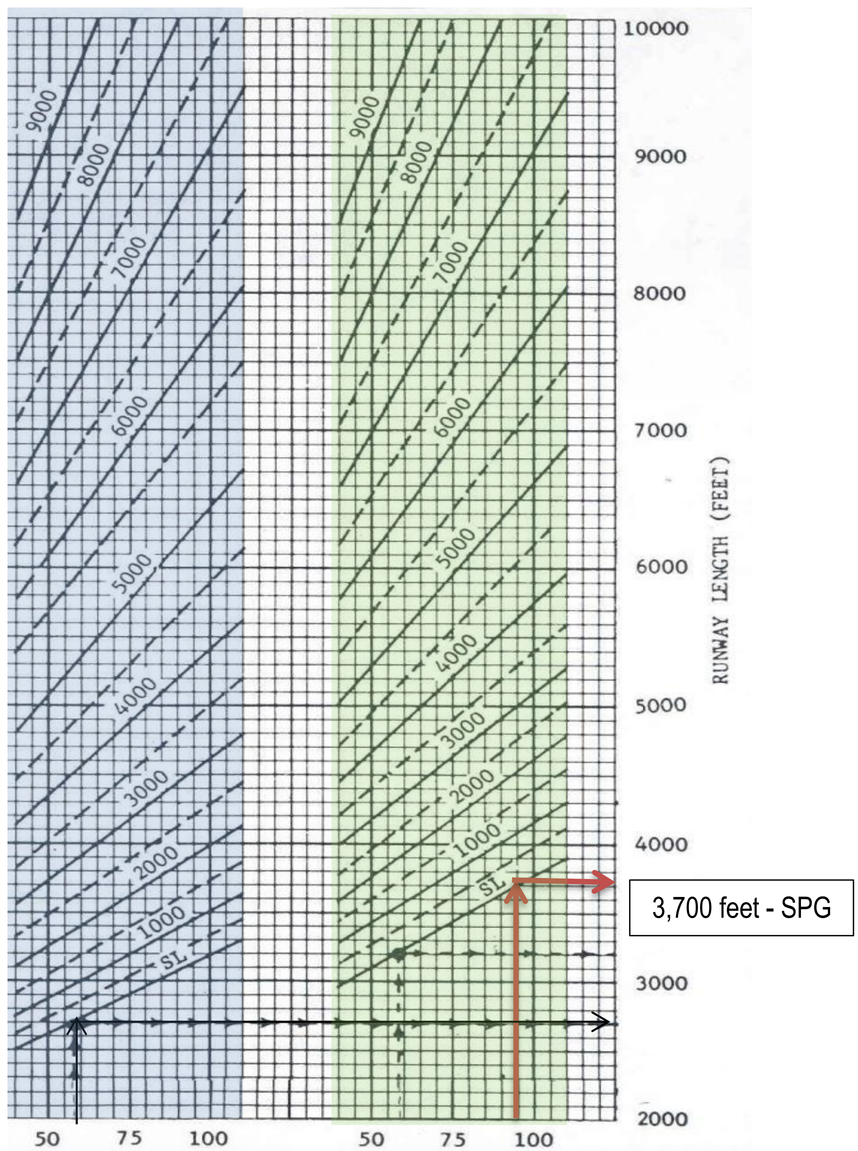
Exhibit 2: Small Airplanes with Fewer than 10 Passenger Seats

(Excludes Pilot and Co-pilot)

95 Percent of Fleet

100 Percent of Fleet

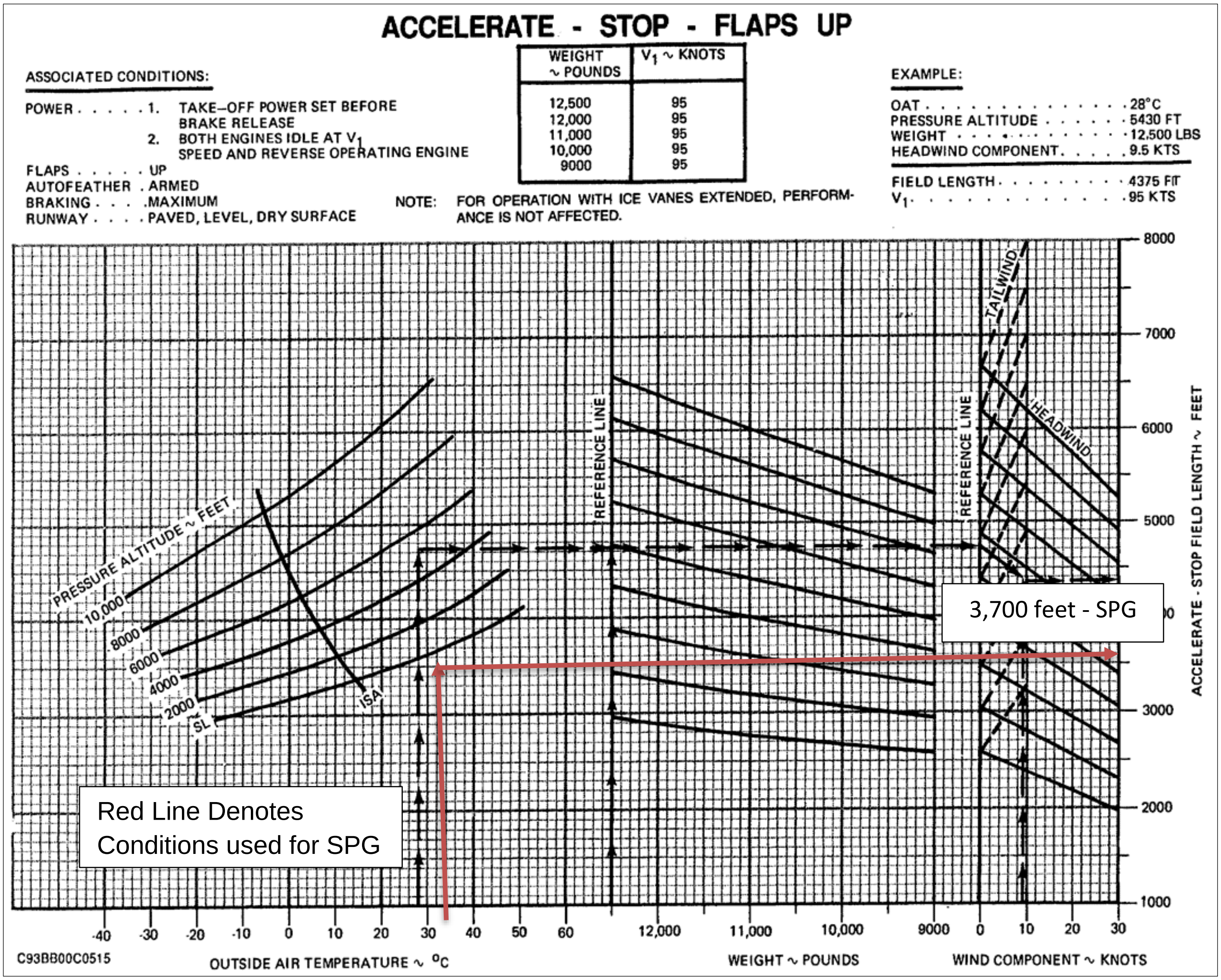
Airport Elevation (feet)



Mean Daily Maximum Temperature of the Hottest Month of Year (Degrees F)

Source: FAA AC 150/5325-4B, Runway Length for Airport Development

Exhibit 3: Super King Air B200 Takeoff Requirements



Source: Super King Air B200 Airplane Flight Manual

The existing utility of Runway 7-25 requires that the Beech Super King Air B200 aircraft and others with similar characteristics, take payload penalties when operating in these conditions. These conditions occur at a minimum from May through September and can occur at other times sporadically throughout the year. **Table 9** provides a summary of length deficits that appear to be present at SPG.

The existing ASDA on Runway 7 is 3,447 feet, and 3,437 feet on Runway 25. Therefore, using the recommended curve in AC 150/5325-4B as well as the King Air AFM to determine runway length needs, a minimum of 263 additional feet should be provided. The majority of aircraft that use SPG can land within the LDA of 2,919 feet on Runway 7.

Table 9: Existing Runway Utility

	EXISTING CONDITIONS	
Runway End	**7**	**25**
Total Runway Length	3,674'	3,674'
Displaced Threshold	555'	263'
TORA	3,647	3,674'
TODA	3,647	3,674'
ASDA	3,447'	3,437
LDA	2,919'	3,174

Source: American Infrastructure Development Runway 7-25 and South Taxiways Rehabilitation Project (August 2016)

AC 150/5325-4B, *Runway Length Requirements for Airport Design* also states that the airport designer should consider and at least assess and verify the impacts of expansions to accommodate airplanes of more than 12,500 pounds (5,670 kg). The FAA indicates that *"failure to consider this change during an initial development phase may lead to the additional expense of reconstructing or relocating facilities in the future".* Although an in depth analysis of this type typically takes plan in the Master Planning process, the Team reviewed the requirements for a B-I design group jet that operates on occasion at SPG. The Cessna C-510 Citation Mustang was selected to serve as this example. The Cessna C650 does occasionally use SPG; however, it belongs in the C-II design category of aircraft.

The Cessna C-510 Citation Mustang, FAA approved, airplane flight manual was used to determine the runway length requirements at SPG for MTOW, at 30 and 35 degrees centigrade and under various pressure altitude scenarios. The flight manual *provides* charts for operating conditions under dry and wet conditions. The following **Table 10** presents the runway length information for the C-510.

Table 10: C510 Mustang Runway Length Requirements Maximum Takeoff Weight in Hot Conditions (35 degrees C)

Temperature	Pressure Altitude	Runway Length (feet) Dry Conditions	Runway Length (feet) Wet Conditions
30C / 86F	0	4,370	4,570
35C / 95F	0	4,790	5,050

Source: C-510, Citation Mustang, FAA Approved Airplane Flight Manual, November 2008.

The runway length requirements are shown for 30C and 35C because the manual does not provide values for the Centigrade equivalent of 92F (i.e., the Airport's mean max hot day temperature). The analysis reveals that the C-510 requires a runway length in the range of 4,370 feet in dry conditions to 5,050 feet in wet conditions.

Such length requirements cannot be justified until the number of C-510 or other group of business jet aircraft increases to a minimum of 500 annual operations. However, the City should, in the next Airport Master Plan Update, conduct an in-depth operations activity count and Aviation Demand Forecast to determine the appropriate length needed in the future and timing for implementation.

SUMMARY

The runway length analysis used both the FAA's preferred methodology, as well as the aircraft specific characteristics for one of the most demanding small aircraft currently based at and using SPG on a regular basis. The analysis revealed that 3,700 feet is necessary for the most demanding of those aircraft including the Beech King Air B200. Runway 7-25 has reduced utility due to the use of declared distances for obstruction clearance in the approach to Runway 7 and Runway 25.

Table 11: Runway Requirements

	EXISTING CONDITIONS		EXISTING NEEDS	
	7	25	7	25
Total Runway Length	3,674'	3,674'	3,700'	3,700'
Displaced Threshold	555'	263'	N/A	N/A
TORA	3,647	3,674'	3,700	3,700
TODA	3,647	3,674'	3,700	3,700
ASDA	3,447'	3,437	3,700	3,700
LDA	2,919'	3,174	3,700	3,700

Source: American Infrastructure Development Runway 7-25 and South Taxiways Rehabilitation Project (August 2016), Super King Air B200 Airplane Flight Manual

In order to meet the existing needs at SPG, a minimum of 263 additional feet should be added to the runway to meet the critical ASDA requirements for all small aircraft under 12,500 lbs. having fewer than 10 seats. Currently, all aircraft needing the full 3,700 feet for takeoff must take a weight penalty such as a reduction in fuel, passenger load or both, to ensure the aircraft is able to take off on the available runway length.

Although there are business jet aircraft such as the Cessna Mustang C-510 that use the Airport, their frequency of use is not enough to reach 500 annual operations as stated in FAA planning and design guidelines.

RUNWAY PROTECTION ZONE ANALYSIS

There has been a strong focus from the FAA in regards to land uses within a Runway Protection Zone (RPZ). According to FAA guidance, land uses prohibited in the RPZ include buildings, residences, and places of public assembly (i.e. churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons).

In 2012, the FAA published interim guidance about land uses within RPZs. If the existing development around the Airport does not allow for an RPZ clear of buildings, structures, roadways, transportation facilities, or other development, then a RPZ Alternative Analysis following FAA guidelines is required. The FAA's Interim Guidance on Land Use within a Runway Protection Zone is provided as **Attachment 1** of this report.

A triggering event is a change in the runway end, such as a runway extension or relocation, or the change in a GPS approach or airport classification that could change the dimensions of the RPZ. When the triggering event for this type of analysis is anticipated within five years, the Airport sponsor is required to submit an alternative analysis to the FAA Airports District Office to obtain a determination. This determination needs to be completed prior to initiating the required environmental documentation for a project.

The RPZ is a defined area on the ground that is located prior to a runway's landing threshold and beyond the runway end that should be cleared of incompatible objects and activities. Its purpose is to enhance the safety and protection of people and property on the ground. This is accomplished through airport owner control of property within the limits of the RPZ. FAA design standards recommend that the Airport owner exercises control through property acquisition, but in cases where that is not possible, the design standard recommends that airport owners maintain the RPZ clear of incompatible land uses and activities. The size of an RPZ varies depending on the type of aircraft that operate at the Airport and the approach minimums to the runway. **Table 12** presents the dimensions of the current approach and departure RPZs on Runway 7-25.

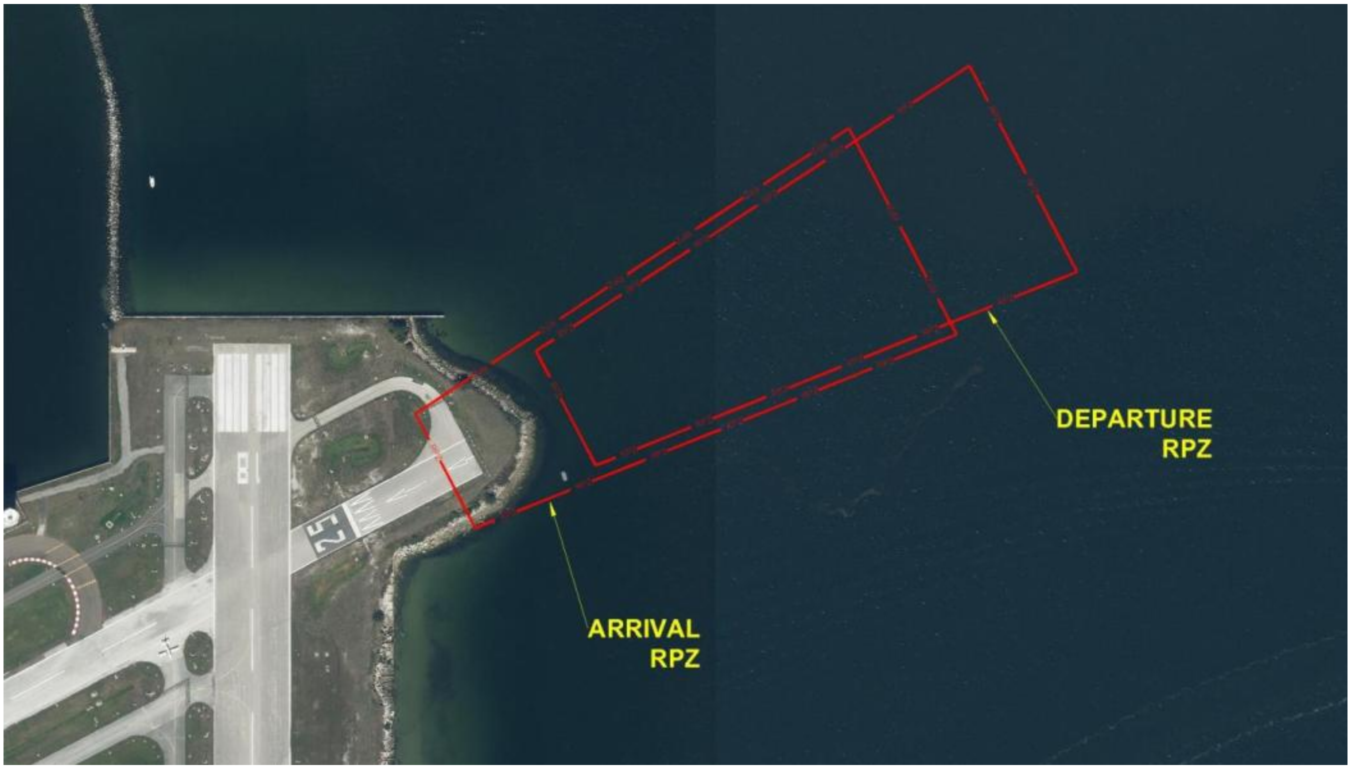
Table 12: Runway 7-25 Approach and Departure RPZ Dimensions

Runway	Design Code	Item	Dimension (feet)
7-25	B-I	Length	1,000
		Inner Width	250
		Outer Width	450

Source: American Infrastructure Development, 2016

At SPG, Runway 7-25 has Arrival RPZs and Departure RPZs due to the declared distances in use on the runway. The Runway 25 RPZs do not contain any incompatible land uses as RPZs are located over Tampa Bay for the most part as depicted in **Exhibit 4**.

Exhibit 4: Runway 25 Approach and Departure RPZs



Source: American Infrastructure Development, 2016

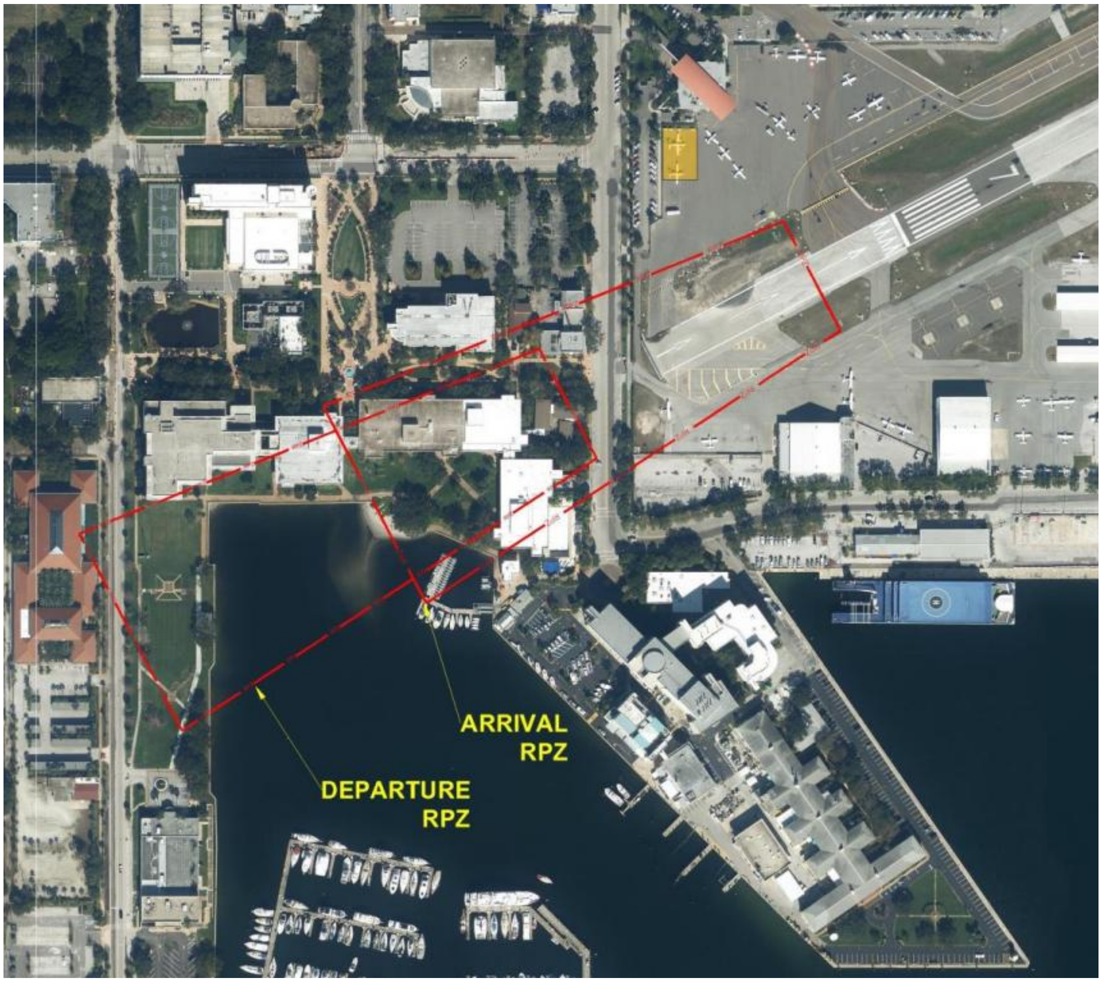
The Runway 7 RPZs are located mostly off-airport in an area occupied by several incompatible land uses and buildings that are part of the USFSP. **Exhibit 5** depicts the approach and departure RPZs for Runway 7.

The Team met with the University of South Florida Administrative and Facilities Services officials to discuss the Airport and the existing land uses that are present within the RPZs as well as the Runway 7 Approach and Departure surfaces.

University officials indicated that the overflights to the Runway 7 threshold are low, noisy, and prevent the upward expansion of any facilities on their property. Although they do understand the transportation and economic benefits the Airport offers to the community, the overflights have been cause for concern for many years. Bayboro Hall, Coquina Hall, Davis Hall and the Science and Technology Building are all located within the limits of the RPZs.

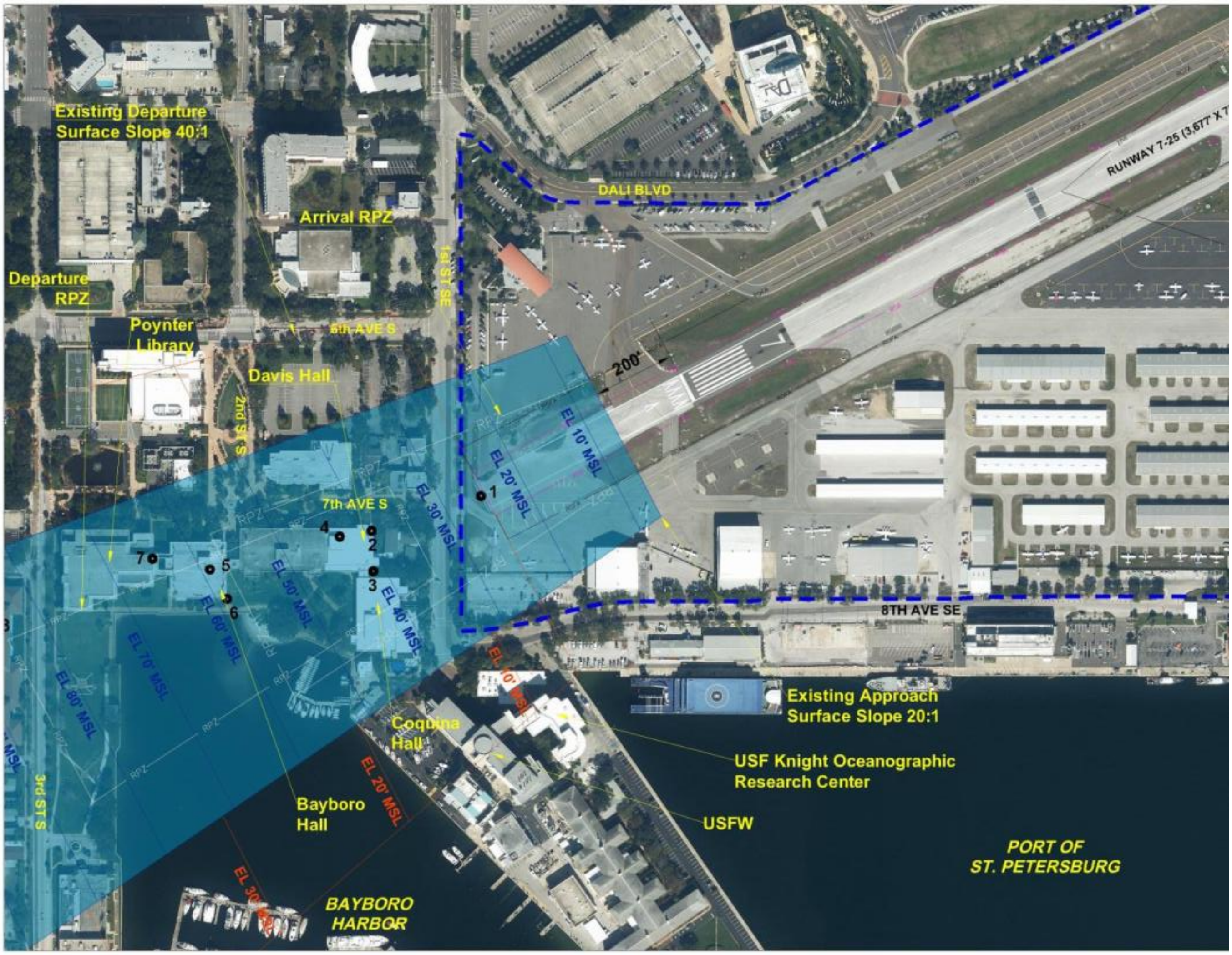
Each of these buildings contain administrative and educational offices, classrooms, and many student services, such as the Office of Campus Computing, the University Cashier's Office located in Bayboro Hall. These buildings and their use are typically incompatible with an airport RPZ. **Exhibit 6** identifies several of the USFSP buildings and where they are located in relation to the RPZs and runway approach.

Exhibit 5: Runway 7 Approach and Departure RPZs



Source: American Infrastructure Development, 2016

Exhibit 6: Property and Buildings Located in Runway 7 Approach and Departure RPZs



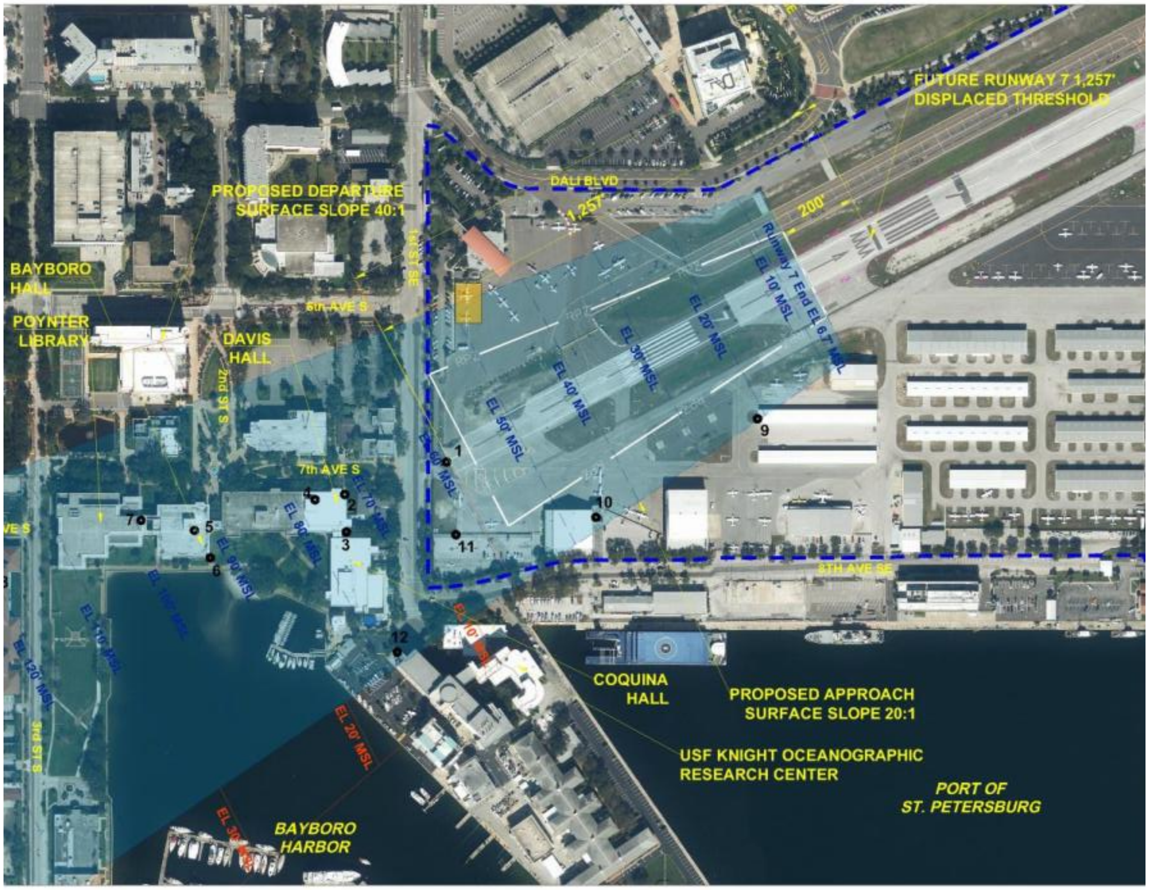
Source: American Infrastructure Development, 2016

The Team investigated methods and alternatives to mitigate or lessen the incompatible land uses found in the Runway 7 Approach and Departure RPZs. It would be the University and City's ultimate desire to be able to remove the incompatible land uses from the RPZ limits. In order to accomplish that goal, there are only two ways to achieve it:

1. Purchase and relocate all of the USFSP facilities located within the RPZ – not feasible and cost prohibitive as previously determined in the past by the City of St Petersburg, or
2. Relocate the RPZ such that the USFSP facilities are no longer located within its boundaries.

The second option, was the only feasible concept to investigate at this point in time. **Exhibit 7** depicts the results of relocating the Runway 7 approach and departure RPZs onto the Airport. The USFSP buildings are no longer located in the Runway 7 RPZs.

Exhibit 7: Relocate Runway 7 Approach and Departure RPZs onto Airport Property



Source: American Infrastructure Development, 2016

However, to achieve the desired results of this concept, Runway 7 must be displaced a total of 1,257 feet and the Runway 25 end extended by an equal amount to maintain (at a minimum) the existing length of 3,674 feet as depicted in **Exhibit 8**. Essentially, the runway would be shifted by 1,257 feet to the east. This concept would bring the RPZ on the west end of the runway entirely on airport property, thereby achieving full compliance with FAA's RPZ land use guidance.

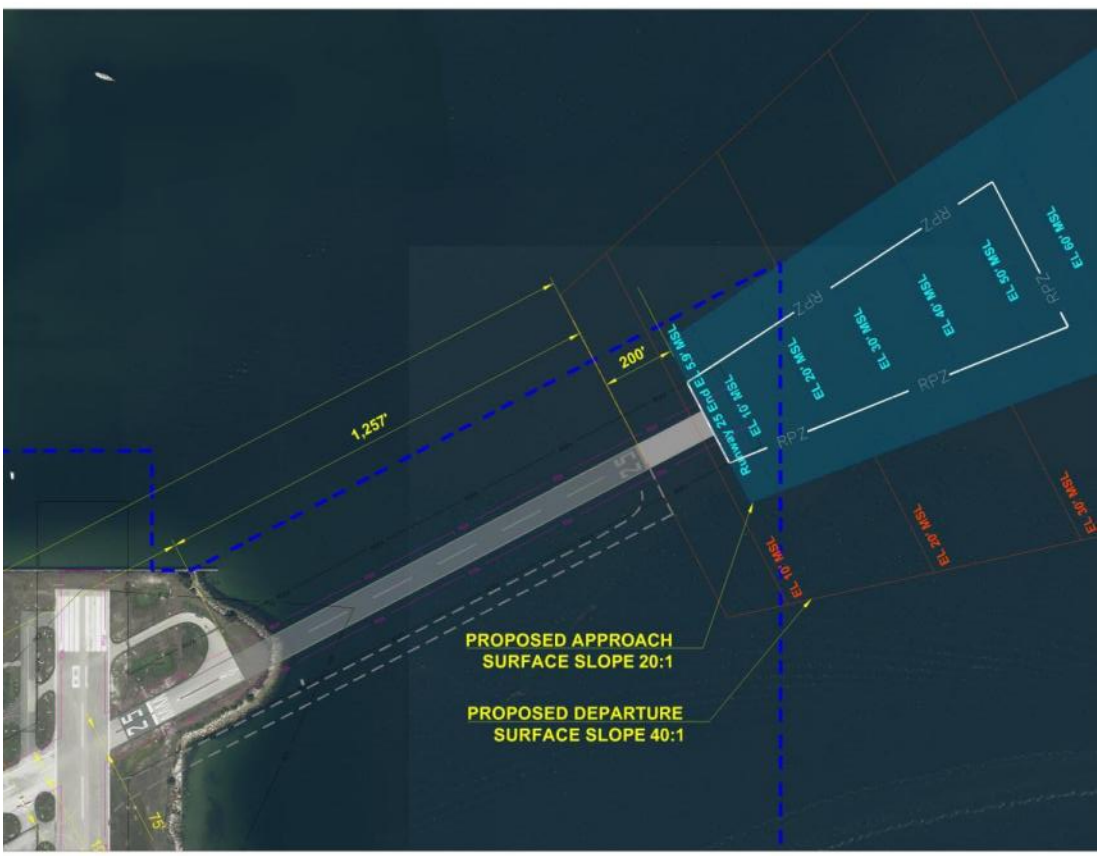
There is a new hangar that is being constructed, which is located just south of the existing Terminal Building. The hangar which is 42 feet in height would be located outside the relocated RPZ, but within the Runway 7 approach surface. However, based upon the information available at this time, the hangar would not penetrate the approach surface at this location.

Properties located to the west of the Airport would benefit from aircraft arriving on Runway 7 being approximately 30 feet higher over the buildings located under the approach path to the Airport due to the increased length of the displaced threshold.

The shift to the east would also open up an area on the airfield previously restricted to any objects or development by a FAA design standard called the Runway Visibility Zone (RVZ). The amount the RVZ is shifted would be commensurate with the ultimate length of a runway shift. In this case, the RVZ shift provides approximately 3 acres that could be used for aeronautical development in the future.

Shifting Runway 25 to the east by 1,257 feet may appear to be a simple solution; however, the exact length of a runway shift and its impacts to on-airport facilities as well as environmental impacts of the project would need to be assessed in a future Master Plan Update and Environmental Assessment. An environmental overview is provided in the following section. **Exhibits 9 and 10** provide a full view of the existing and future conditions being discussed in this study.

Exhibit 8: Shift Runway 25 1,257 Feet to the East



Source: American Infrastructure Development, 2016

OBSTRUCTION DATA TABLE - RUNWAY 7 (20:1)

#	TYPE	TOP OF OBJECT ELEV.	EXIST APPROACH ELEVATION	ELEVATION DIFFERENCE
1	OL Blast Fence	19'	25.4'	-6.4'
2	Lowell E. Davis Memorial Hall	45.61'	39.2'	+6.41'
3	Coquina Hall	36.61'	41.3'	-4.61'
4	OI Rod on OL Bldg	48'	43.0'	+5'
5	OI Ant on OL Bldg	60'	59.0'	+1'
6	Bayboro Hall	50.69'	58.8'	-8.11'
7	Nelson Poynter Memorial Library	52.78'	64.6'	-11.82'
8	Poynter Institute for Media Studies	52.78'	86.4'	-33.62'

LEGEND:

SYMBOL	DESCRIPTION
ROFA	Runway Object Free Area
RSA	Runway Safety Area
RVZ	Runway Visual Zone
	Property Line
	Departure Surface
	Approach Surface

RUNWAY DESIGN STANDARDS	B-I SMALL
Runway Protection Zone (L x IW x OW)	1000'x250'x450' (8 ac)
Runway Safety Area Width	120'
Runway Safety Area Length beyond Rwy End	240'
Runway Object Free Area Width	250'
Runway Object Free Area Length beyond Rwy End	240'
Runway Centerline to:	
Hold Position Lines	125'
Parallel Taxiway or Taxilane	150'
Aircraft Parking Area	125'
Taxiway Safety Area	49'
Taxiway Object Free Area	89'
Taxilane Object Free Area	79'

REV. NO	DATE	DESCRIPTION:	EOR

REVISIONS:

ENGINEERING & CAPITAL IMPROVEMENTS DEPARTMENT CITY OF ST. PETERSBURG

APPROVED BY:

ALBERT WHITTED AIRPORT RUNWAY 7-25 EXTENSION FEASIBILITY STUDY

AMERICAN INFRASTRUCTURE DEVELOPMENT, INC.
TRANSPORTATION CONSULTING

MAGNETIC DECLINATION 4° 09' WEST (2005)
ANNUAL RATE OF CHANGE 05' WEST

0 200 400
SCALE IN FEET

JOB NO:	SPG14006
DRAWN:	RRC
DESIGN:	TC
CHECKED:	MM
DATE:	JAN, 2017

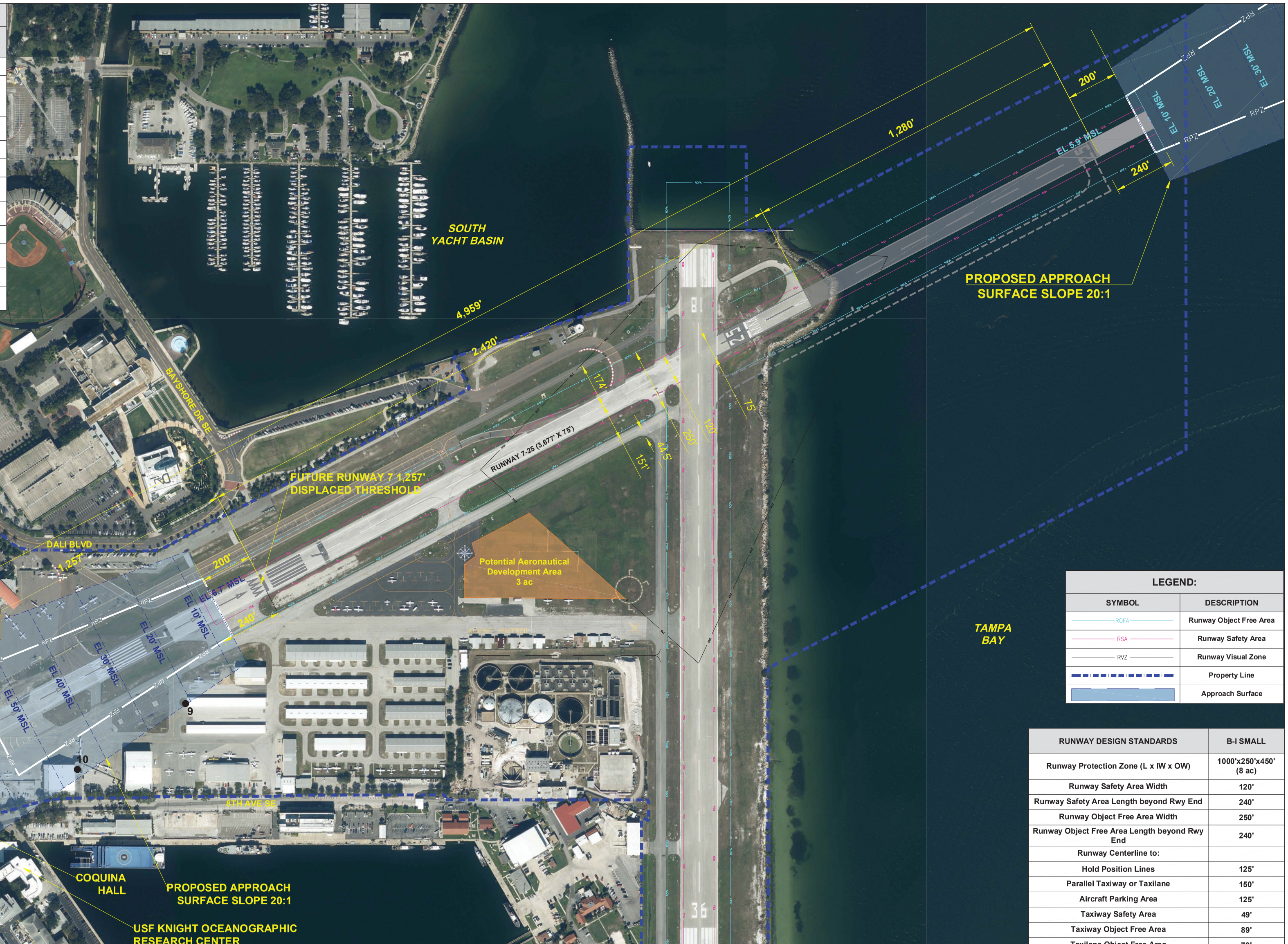
EXISTING CONDITIONS
(EXISTING B-I SMALL)

EXHIBIT 9

FILENAME: D:\Dropbox (AID)\1-PROJECTS\SPG\SPG16009-Runway-Feasibility-Study\03-Drawings\WIP\EXIS-SPG-PT77-RW07.dwg PLOT DATE: March 26, 2017 PLOT TIME: 9:47:16 PM

OBSTRUCTION DATA TABLE - RUNWAY 7 (20:1)

#	TYPE	TOP OF OBJECT ELEV.	EXIST APPROACH ELEVATION	ULT APPROACH ELEVATION	ELEVATION DIFFERENCE
1	OL Blast Fence	19'	25.4'	60.0'	-41'
2	Lowell E. Davis Memorial Hall	45.61'	39.2'	73.9'	-28.29'
3	Coquina Hall	36.61'	41.3'	76.0'	-39.39'
4	Ol Rod on OL Bldg	48'	43.0'	77.7'	-29.7'
5	Ol Ant on OL Bldg	60'	59.0'	93.7'	-33.7'
6	Bayboro Hall	50.69'	58.8'	93.5'	-42.81'
7	Nelson Poynter Memorial Library	52.78'	64.6'	99.3'	-46.52'
8	Poynter Institute for Media Studies	52.78'	86.4'	121'	-68.22'
9	OL on Hangar	23'	10.9'	21.1'	+1.9'
10	OL Ant on OL Bldg	54'	18.5'	45.9'	+8.1'
11	OL LT Pole	32'	28.7'	63.4'	-31.4'
12	OL Rod on OL Bldg	70'	52.0'	77.4'	-7.4'



LEGEND:	
SYMBOL	DESCRIPTION
ROFA	Runway Object Free Area
RSA	Runway Safety Area
RVZ	Runway Visual Zone
	Property Line
	Approach Surface

RUNWAY DESIGN STANDARDS	B-I SMALL
Runway Protection Zone (L x IW x OW)	1000'x250'x450' (8 ac)
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Runway Object Free Area Length beyond Rwy End	240'
Runway Centerline to:	
Hold Position Lines	125'
Parallel Taxiway or Taxilane	150'
Aircraft Parking Area	125'
Taxiway Safety Area	49'
Taxiway Object Free Area	89'
Taxilane Object Free Area	79'

REVISIONS:			
REV. NO	DATE	DESCRIPTION:	EOR

ENGINEERING & CAPITAL IMPROVEMENTS DEPARTMENT
CITY OF ST. PETERSBURG

APPROVED BY:

ALBERT WHITTED AIRPORT
RUNWAY 7-25 EXTENSION
FEASIBILITY STUDY

AMERICAN INFRASTRUCTURE DEVELOPMENT, INC.
TRANSPORTATION CONSULTING

MAGNETIC DECLINATION
4° 09' WEST (2005)
ANNUAL RATE OF CHANGE
05' WEST

0 200 400
SCALE IN FEET

JOB NO:	SPG14006
DRAWN:	RRC
DESIGN:	TC
CHECKED:	MM
DATE:	JAN, 2017

RELOCATE RPZ ON AIRPORT PROPERTY
(FUTURE B-I SMALL)

EXHIBIT 10

FILENAME: D:\Dropbox (AID)\1-PROJECTS\SPG\SPG16009-Runway-Feasibility-Study\03-Drawings\WIP\REP-PROP-SPG-PT77-RW07.dwg PLOT DATE: March 26, 2017 PLOT TIME: 9:58:38 PM

OVERVIEW OF KNOWN ENVIRONMENTAL IMPACTS AND REQUIREMENTS

AID, in conjunction with its environmental subconsultant, Environmental Science Associates (ESA), reviewed existing and available environmental documentation to provide an overview of the environmental requirements necessary to program and implement the project. Information collected includes: project area wetland quality and quantity, potential listed species occurrence(s), existing and prior permit(s) within the project area, environmental constraints and/or permit(s) required, environmental authorizations/actions, and a brief mitigation discussion.

ENVIRONMENTAL CONSIDERATIONS AT SPG

Water quality issues associated with a runway shift into the bay would have to be studied to determine the impact on tidal flushing. Water with increased sediments could impact biota and possibly affect existing channel depths.

Mitigation for in-water impacts will be the key issue for any runway shift into Tampa Bay. This will require coordination with a number of local stakeholders including Tampa Bay Estuary Program, Tampa Bay Watch and the USFSP Campus and will likely be of heightened public interest.

It is likely a future FAA NEPA document will require public meetings or more public engagement. Stakeholder outreach and development of a favorable mitigation plan will be critical to this project. Specific to the FAA NEPA process, for any runway shift that would extend into Tampa Bay for safety/RPZ improvements, the following NEPA category issues are preliminarily discussed:

- Air quality – impacts would be minor
- Biological resources (including fish, wildlife, and plants)
    - Impacts to species under the regulation of NOAA Fisheries will need to be addressed. This may include an Essential Fish Habitat (EFH) Assessment for species including, but not limited to, Smalltooth Sawfish (*Pristis pectinata*).
- Climate – impacts minor Green House Gas (GHG) emissions review
    - Coastal resources – will require coordination with NOAA related to fill within the coastal barrier and requires a consistency determination by FAA under Coastal Zone Management Act (CZMA)
- Department of Transportation Act, Section 4(f) - minor or not applicable
- Farmlands – not applicable
- Hazardous materials, solid waste, and pollution prevention
    - This area of environmental investigation may require sediment sampling within the project area along with discussions of material to be used for in-water fill and construction
- Historical, architectural, archeological, and cultural resources
    - Future studies will require some level of investigation for submerged resources within project limits of the Runway shift to the east
- Land use – consistency with local plan
- Natural resources and energy supply - minor

- Noise and compatible land use
  - A complete noise analysis of any potential changes in flight patterns and use will be required to determine if any surrounding communities would be adversely affected by the runway shift
- Socioeconomics, environmental justice, and children's environmental health and safety risks
  - At this time, it is known that there would be a reduced incompatible land use impact (from existing) to the USFSP education facilities
- Visual effects (including light emissions)
  - This will be reviewed for both impacts to surrounding uses and for lighting related to sea turtle nesting beaches
- Water resources (including wetlands, floodplains, surface waters, groundwater, and both wild and scenic rivers)
  - Waters of the U.S. impacts will require mitigation
  - Floodplain impacts must be evaluated
  - Water quality assurances need to be reviewed, including state water quality certification
  - Impacts to seagrass will require avoidance, minimization, and mitigation (if unavoidable)
  - NPDES compliance demonstration is required
  - Listed species evaluations and agency concurrence is required (may include incidental take)

In addition to a thorough evaluation through the NEPA process, the proposed project will require several permits and authorizations. From an environmental standpoint, this includes:

- Listed species coordination (NOAA Fisheries/USFWS) – sea turtle, Essential Fish Habitat (EFH) species, smalltooth sawfish
- Environmental Resource Permit (ERP) from Southwest Florida Water Management District (SWFWMD) / water quality certification
- Section 404 / 10 Permit from the Army Corps of Engineers (ACOE)
- State Lands / Board of Trustees concurrence regarding sovereign submerged lands
- Local government concurrence from the City of St. Petersburg and Pinellas County
- Shifting Runway 7-25 to the east and into Tampa Bay may include navigation coordination related to the in-water activities with the U.S. Coast Guard, and Marine Patrol

COST ESTIMATES

As part of this feasibility study, a conceptual estimate of construction costs was developed. It is estimated that it will cost approximately $12.5 million in 2016 dollars to construct the 1,257-foot extension of Runway 7-25. **Attachment 2** provides a detailed breakdown of the anticipated construction costs.

In general, permitting will require the approval of a few state and federal agencies, including the Florida Department of Environmental Protection (FDEP), SWFWMD, Florida Fish and Wildlife Conservation Commission, and the ACOE. Coastal construction permits, environmental resource permits, and sovereign submerged land authorizations have been organized into a single review process under the 1995 Joint Coastal Permit (JCP) program. The JCP facilitates efficient and simultaneous reviews between FDEP and ACOE and covers all construction projects in Tampa Bay. FDEP may delegate all or a portion of these reviews to the local water management district SWFWMD. In addition to the JCP, a federal dredge and fill permit will be required by ACOE.

INTERPRETATION OF REPORT FINDINGS

This extensive analysis revealed that 3,700 feet is necessary for the most demanding group of aircraft that use SPG (those weighing less than 12,500 lbs. with less than 10 passenger seats). Further, at its current length, Runway 7-25 has reduced utility due to the use of declared distances for obstruction clearance in both of its approaches. The recommended curve in FAA AC 150/5325-4B, as well as the King Air B200 AFM, determined that a minimum of 263 additional feet should be provided on Runway 7-25.

The study reviewed all of the FAA airport design criteria for the current fleet mix, as well as the potential environmental issues and safety concerns for off airport land uses. It is suggested that Runway 7-25 be increased from 3,674 feet to a full and useable length of 3,700 feet. In addition, to achieve RPZ compliance, shifting the runway by 1,257 feet to the east will remove all incompatible land uses from the west end of Runway 7 to the extent practicable. An additional 23 feet of pavement on the Runway 25 end will be necessary to achieve the full useable 3,700 feet. A Master Plan/ALP Update and subsequent Environmental Assessment (EA) is the next step required by the FAA.

Attachment 1

FAA's Interim Guidance on Land Uses within a Runway Protection Zone

Federal Aviation Administration

Memorandum

Date: SEP 27 2012

To: Regional Airports Division Managers
610 Branch Managers
620 Branch Managers
ADO Managers

From: Benito De Leon
Benito De Leon, Director
Office of Airport Planning and Programming (APP-1)

Michael J. O'Donnell, Director
Office of Airport Safety and Standards (AAS-1)

Subject: Interim Guidance on Land Uses Within a Runway Protection Zone

Background

The FAA Office of Airports (ARP) has identified the need to clarify our policy on land uses within the Runway Protection Zone (RPZ). This memorandum presents interim policy guidance on compatible land uses within Runway Protection Zones (RPZ) to address recurrent questions about what constitutes a compatible land use and how to evaluate proposed land uses that would reside in an RPZ. While Advisory Circular 150/5300-Change 17(Airport Design) notes that "it is desirable to clear all objects from the RPZ," it also acknowledges that "some uses are permitted" with conditions and other "land uses are prohibited."

RPZ land use compatibility also is often complicated by ownership considerations. Airport owner control over the RPZ land is emphasized to achieve the desired protection of people and property on the ground. Although the FAA recognizes that in certain situations the airport sponsor may not fully control land within the RPZ, the FAA expects airport sponsors to take all possible measures to protect against and remove or mitigate incompatible land uses.

ARP is developing a new guidance document for the Regional Office (RO) and Airport District Office (ADO) staff that clarifies our policy regarding land uses in the RPZ. This new guidance document will outline a comprehensive review process for existing and proposed land uses within an RPZ and is slated for publication in 2013. We also intend to incorporate RPZ land use considerations into the ongoing update to the Land Use Compatibility Advisory Circular (AC) which is slated for publication in 2014.

This memorandum outlines interim guidance for ARP RO and ADO staff to follow until the comprehensive RPZ land use guidance is published.

Interim Guidance

New or Modified Land Uses in the RPZ

Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400 (who will coordinate with the Airport Engineering Division, AAS-100), when any of the land uses described in **Table 1** would enter the limits of the RPZ as the result of:

1. An airfield project (e.g., runway extension, runway shift)
2. A change in the critical design aircraft that increases the RPZ dimensions
3. A new or revised instrument approach procedure that increases the RPZ dimensions
4. A local development proposal in the RPZ (either new or reconfigured)

Table 1: Land Uses Requiring Coordination with APP-400
• Buildings and structures (Examples include, but are not limited to: residences, schools, churches, hospitals or other medical care facilities, commercial/industrial buildings, etc.) • Recreational land use (Examples include, but are not limited to: golf courses, sports fields, amusement parks, other places of public assembly, etc.) • Transportation facilities. Examples include, but are not limited to: o Rail facilities – light or heavy, passenger or freight o Public roads/highways o Vehicular parking facilities • Fuel storage facilities (above and below ground) • Hazardous material storage (above and below ground) • Wastewater treatment facilities • Above-ground utility infrastructure (i.e. electrical substations), including any type of solar panel installations.

Land uses that may create a safety hazard to air transportation resulting from wildlife hazard attractants such as retention ponds or municipal landfills are not subject to RPZ standards since these types of land uses do not create a hazard to people and property on the ground. Rather, these land uses are controlled by other FAA policies and standards. In accordance with the relevant Advisory Circulars, the Region/ADO must coordinate land use proposals that create wildlife hazards with AAS-300, regardless of whether the proposed land use occurs within the limits of an RPZ.

Alternatives Analysis

Prior to contacting APP-400, the RO and ADO staff must work with the airport sponsor to identify and document the full range of alternatives that could:

1. Avoid introducing the land use issue within the RPZ
2. Minimize the impact of the land use in the RPZ (i.e., routing a new roadway through the controlled activity area, move farther away from the runway end, etc.)

3. Mitigate risk to people and property on the ground (i.e., tunneling, depressing and/or protecting a roadway through the RPZ, implement operational measures to mitigate any risks, etc.)

Documentation of the alternatives should include:

- A description of each alternative including a narrative discussion and exhibits or figures depicting the alternative
- Full cost estimates associated with each alternative regardless of potential funding sources.
- A practicability assessment based on the feasibility of the alternative in terms of cost, constructability and other factors.
- Identification of the preferred alternative that would meet the project purpose and need while minimizing risk associated with the location within the RPZ.
- Identification of all Federal, State and local transportation agencies involved or interested in the issue.
- Analysis of the specific portion(s) and percentages of the RPZ affected, drawing a clear distinction between the Central Portion of the RPZ versus the Controlled Activity Area, and clearly delineating the distance from the runway end and runway landing threshold.
- Analysis of (and issues affecting) sponsor control of the land within the RPZ.
- Any other relevant factors for HQ consideration.

APP-400 will consult with AAS-100 when reviewing the project documents provided by the RO/ADO. APP-400 and AAS-100 will work with the Region/ADO to make a joint determination regarding Airport Layout Plan (ALP) approval after considering the proposed land use, location within the RPZ and documentation of the alternatives analysis.

In addition, APP-400 and AAS-100 will work with the Region/ADO to craft language for inclusion in the airspace determination letter regarding any violations to ensure that all stakeholders (including tenants, operators, and insurers) are fully apprised of the issues and potential risks and liabilities associated with permitting such facilities within the RPZ.

Existing Land Uses in the RPZ

This interim policy only addresses the introduction of new or modified land uses to an RPZ and proposed changes to the RPZ size or location. Therefore, at this time, the RO and ADO staff shall continue to work with sponsors to remove or mitigate the risk of any existing incompatible land uses in the RPZ as practical.

For additional information or questions regarding this interim guidance, please contact either Ralph Thompson, APP-400, at ralph.thompson@faa.gov or (202) 267-8772 or Danielle Rinsler, APP-401, at danielle.rinsler@faa.gov or (202) 267-8784.

Attachment 2

Conceptual Cost Estimate

ALBERT WHITTED AIRPORT

CITY OF ST. PETERSBURG, FLORIDA

RUNWAY 7-25 EXTENSION FEASABILITY

CONCEPTUAL ESTIMATE OF PROBABLE CONSTRUCTION COSTS

Item	Description	Quantity	Unit	Average Unit Cost	Total Cost
1	Runway Extension (Incl. subgrade prep, grassed shoulders, minor drainage improvements, 2-Inches AC, 6-inches Limerock, 75' wide x 1,257' long)	10,500	SY	$ 68.00	$ 714,000.00
2	Parallel Taxiway (Incl. subgrade prep, grassed shoulders, minor drainage improvements, 2-Inches AC, 6-inches Limerock, 35' Wide)	5,700	SY	$ 55.00	$ 313,500.00
3	Service Road - (Incl. subgrade prep, grassed shouldrs, 1.5-Inches AC, 5-inches Limerock, 15' Wide)	6,000	SY	$ 30.00	$ 180,000.00
4	Seawall (including temporary sheet piling, demo of old and new rubble rip rap around perimeter)	4,000	LF	$ 985.00	$ 3,940,000.00
5	Structural Fill in Dredged Areas (barge operations)	270,000	CY	$ 10.00	$ 2,700,000.00
6	Embankment (land operations)	135,000	CY	$ 18.00	$ 2,430,000.00
7	Runway and Taxiway Marking (including removal of existing and remarking of entire runway)	60,000	SF	$ 4.00	$ 240,000.00
8	NAVAID Relocation (incl. new PAPI's, Flight Check and Vault Mods)	1	LS	$ 180,000.00	$ 180,000.00
9	Airfield Lighting and Signage	1	LS	$ 160,000.00	$ 160,000.00
10	Erosion Control	1	LS	$ 60,000.00	$ 60,000.00
11	Safety and Security	1	LS	$ 100,000.00	$ 100,000.00
12	Mobilization	1	LS	$ 550,000.00	$ 550,000.00
	Subtotal Construction and Design				$ 11,567,500.00
	Total Estimated Construction Cost				$ 11,567,500.00
	Design and Environmental Permitting				$ 550,000.00
	Construction Administration/RPR				$ 405,000.00
	TOTAL PROJECT COST				**$ 12,522,500.00**

ESA