E. Follow-On Study White Papers

Throughout the development of the Florida Aviation System Plan (FASP) 2035 Update, a significant amount of data was collected on the aviation system. During this process, additional data opportunities became apparent in which information was unavailable or data was collected and compiled in an inconsistent manner. Further, development of the FASP 2035 also led to the identification of additional projects and/or studies that would support the continued implementation of the FASP and support the Florida Department of Transportation's (FDOT's) overall transportation system. Seven project concepts were developed for future integration, including (listed in order of priority of completion):

1. Statewide airport resiliency and disaster response assessment
2. Business suitability study
3. Replace the Florida Aviation Database (FAD)
4. Detailed capacity study
5. Facility, infrastructure, and service guidelines
6. Statewide roadmap to address airport wildlife hazards for non-Part 139 airports
7. Runway protection zone (RPZ) ownership data compilation
8. Continuing Florida Aviation System Planning Process (CFASPP) boundary evaluation

Each of these project concepts are detailed in the following pages.

E.1 Statewide Airport Resiliency and Disaster Response Assessment

E.1.1 Full Title

Conduct a statewide airport resiliency and disaster response assessment, identifying those infrastructure, environmental, and planning considerations relevant to increasing an airport's resiliency and emergency response capabilities related to natural and man-made situations, climate trends, and Florida-specific considerations.

E.1.2 Introduction

Airports are confronting increasingly high levels of uncertainty stemming from natural and human-caused disasters as well as chronic stresses caused by climate change and other external factors. In addition to loss of life and injury, such scenarios can result in massive economic losses and significant disruptions across the national airspace and overall transportation system. In the wake of Hurricane Irma, FlightAware reported more than 16,700 canceled flights across the United States (U.S.); more than 10,300 of those flights originated in Florida.[1]

[1] www.usatoday.com/story/travel/flights/todayinthesky/2017/09/12/hurricane-irma-flights-resuming-florida-cancellations-now-16-700/656648001/

Airports also serve a critical role in community response to and recovery from disaster situations. Following the devastating earthquakes that rocked Haiti in 2009, Florida's airports provided lifesaving support services, including the transport of personnel and supplies to and victims from the island nation. Additionally, general aviation aircraft are able to land at smaller airports and rural areas inaccessible to large aircraft with the flexibility to provide immediate aid to the areas where it can be most needed.

Two key ways to reduce the impacts of such scenarios is by enhancing the resiliency of airports to mitigate the risk of potential threats and developing a comprehensive strategy for rapid recovery and response following an adverse situation.

E.1.3 Need and Purpose

In order to enhance the resiliency of Florida's airports against the risks posed by natural and man-made situations, climate trends, and Florida-specific considerations, the Florida Department of Transportation (FDOT) Aviation and Spaceports Office (ASO) is conducting a statewide airport resiliency assessment. The assessment will identify the infrastructure, environmental, and planning considerations necessary to help Florida's airports plan and prepare for, recover from, respond to, and more successfully adapt to adverse events. It will also address the facilities and services necessary for an airport to be effective and responsive during and immediately after a natural disaster.

This task will be designed to advance the goals of the Florida Transportation Plan (FTP) and Florida Aviation System Plan (FASP), both of which focus on the ability of the transportation system to resume normal operations following a disaster to support the needs of the state. The development of this study will also build upon the guidance and recommendations provided in the FDOT *Airport Sustainability Guidebook* (2017) and include pertinent information from FDOT's *Aviation Emergency Response Guidebook* (2011) and *Aircraft Guide for Emergency Responders* (2011).

This assessment is being undertaken because risk mitigation is less costly than recovery in terms of economic and social impacts, including the loss of property, injury, and death. Airports are also part of the state's critical infrastructure and must be operational to support emergency medical, law enforcement, disaster recovery, and other services during and after emergency situations.

E.1.4 General Approach and Tasks

There are four main phases of this project:

1. Literature review to identify threats and stressors to airport operational continuity and effectiveness and to identify related research pertaining to airport resiliency
2. Develop performance benchmarks for commercial service and general aviation airports – these benchmarks will include facility, service, and infrastructure
3. Data collection
4. Develop a statewide resiliency and disaster response assessment, including Florida-specific resiliency and disaster response guidance and prioritized implementation plan

As a key final outcome, this assessment will establish Florida-specific best practices for infrastructure, environmental, and planning considerations aimed at increasing the resiliency of Florida's airports. These best practices should address resistance to, recovery from, and response to emergency situations. Efforts will focus on those measures that can be advanced through FDOT administrative actions (e.g., policy change and funding), airport planning and procedural changes, and infrastructure modifications undertaken by the airport sponsor. The study will also include case studies highlighting commercial service and general aviation airports' experiences before, during, and after certain events such as Hurricane Irma; the Haiti earthquake of 2010; September 11, 2001; and others as appropriate.

1. **Literature Review.** The consultant will review other states' strategies for assessing, mitigating against, recovering from, and responding to natural and human-caused risks at airports, as well as relevant studies addressing aviation and community resiliency. The consultant may also research resiliency plans and guidance developed outside of the U.S. The literature review will include the following (not all inclusive):
   - Airport Cooperative Research Program (ACRP) Report 147. 2015. *Climate Change Adaptation and Planning: Risk Assessments for Airports.* Washington, DC: Transportation Research Board.
   - ACRP Synthesis 33. 2012. *Airport Climate Adaptation and Resilience.* Washington, DC: The National Academies Press.
   - Association of Bay Area Governments. 2015. *Airport Infrastructure and Resilience.* San Francisco, February 13. http://resilience.abag.ca.gov/projects/airport_infrastructure/.
   - Florida Division of Emergency Management (FDEM). 2014. *2014 - 2019 Strategic Plan.* Tallahassee: FDEM.
   - Institute of Medicine of the National Academies. 2015. *Healthy, Resilient, and Sustainable Communities After Disasters.* Washington, DC: The National Academies Press.
   - National Cooperative Highway Research Program. 2014. *A Guide to Regional Transportation Planning for Disasters, Emergencies, and Significant Events.* Washington, DC: Transportation Research Board.
   - National Research Council. 2011. *Building Community Disaster Resilience Through Public-Private Collaboration.* 2011: The National Academies Press.
   - The National Academies. 2012. *Disaster Resilience: A National Imperative.* Washington, DC: The National Academies Press.
   - The consultant will also consider the resiliency and adaptation resources compiled by the Florida chapter of the American Planning Association (APA) available at www.floridaplanning.org/sustainability-homepage/resiliency/resiliency-floridanational-studies-research-manuals.

2. **Development of Performance Benchmarks**. Based on a review of existing literature and resiliency strategies, the consultant will develop Florida-specific resiliency performance benchmarks to present to the FDOT ASO for review and input. These benchmarks will include specific measures and recommended performance thresholds by airport type (i.e., commercial service by hub size, general aviation by ASSET category). At a minimum,

benchmarks will address airport infrastructure (airside and landside), environmental and planning considerations, services, equipment, and facilities. Following FDOT approval, the resiliency benchmarks for Florida's airports will be presented to CFASPP participants and the FDEM for approval.

3. **Data Collection**. Based on the resiliency performance benchmarks, the data collection effort will gather information to determine the existing resiliency level of Florida's airports. Data collection will include surveying Florida's 26 Part 139 and 102 non-Part 139 airports via an online survey tool (i.e., SurveyMonkey) with follow-up phone calls as required to gather complete data.[2] The consultant will develop multiple versions of the survey tailored to commercial service and general aviation airports; additional versions may be required per airport classification.

   The inventory will also identify any steps airports have already taken to enhance their resiliency again natural and human-caused disasters, climate trends, and other Florida-specific considerations. These steps may include, but are not limited to, the following:

   - Assessments of the vulnerability of landside and airside facilities against chronic (e.g., climate-related stresses) and acute (e.g., weather-related extreme storm events) conditions, including but not limited to runways, taxiways, aprons, ramps, fueling stations, hangars, terminals, ground transportation access, parking, security, and emergency responses facilities
   - Design and/or implementation of:
     - Flood protection measures, including seawall, berm design, floodproofing, and elevation, to protect airport facilities including key operational support facilities such as power, water supply, sewage treatment, traffic control, and navigation systems
     - Stormwater removal and treatment facilities with increased capacity (e.g., enhanced drainage canals, stormwater pump stations, and subsurface drainage systems)
     - Natural systems to accommodate increased airport runoff (i.e., low-impact design)
     - Erosion control measures to prevent slope and pavement failure
     - Runway extensions to accommodate increased take-off distances
     - Pavement repairs and replacement using heat-resistant pavement materials
     - Enhanced uninterruptible power supply (UPS) systems
     - Addition of cooling stations for airfield workers and temperature controls for fuel facilities
     - Enhanced systems for temporary accommodation of passengers delayed or stranded by weather or man-made emergencies
   - Development of:

[2] In accordance with 14 CFR 139.25, Part 139-certified airports are required to develop and maintain an Airport Emergency Plan designed to minimize the possibility and extent of personal injury and property damage on the airport in an emergency. AC 150/5200-31C, *Airport Emergency Plan*, provides guidance and standards for the development of such a plan. The use of this guidance is mandatory for Part 139-certified airports and recommended for all other airports.

    - Airport websites and other systems for status notifications following disaster scenarios or adverse weather conditions
    - Processes and/or infrastructure to accommodate stranded passengers
    - Emergency procedures/emergency management plans
    - Procedures to diversify airport and aircraft supplies and resources such as fuel, electricity, water, and food
    - Communication and outreach material to educate airport personnel and the general public on emergency procedures
- Identification of funding opportunities to enhance resilience
- Completion of emergency management training for airport staff and management

Data may also be supplemented with information in the Florida Aviation Database (FAD), as necessary. The consultant should also review the Airport Climate Risk Operational Screening (ACROS) and Sea Level Scenario Sketch Planning tools for applicable information.[3] This inventory process will also collect information about past emergency situations that have occurred at Florida's airports and the scenarios that airports believe pose the most significant threats to their facilities.

The consultant will create a statewide repository of risk and resiliency data to help the FDOT ASO make informed decisions about where and how to prioritize resiliency investments. These data can be used to:

- Identify priority needs for management, operational, and infrastructure improvements
- Monitor resiliency improvements over time
- Conduct a cost/benefit analysis to compare the benefits of increasing resilience with the associated costs

4. **Development of Statewide Resiliency and Disaster Response Assessment**. Based on the information gathered during the data collection effort, performance benchmarks will be analyzed to establish a baseline of existing system performance. The assessment will be conducted at the statewide, FDOT District, CFASPP region, and FDEM region levels Based on the information gathered during data collection, the consultant will determine the resilience of Florida's airports at the statewide, FDOT District, and individual airport levels. The assessment will be used to develop resiliency best practices for FDOT and airport operators, including the identification of minimum infrastructure, equipment, facilities, and services required for an airport to effectively support disaster recovery efforts by airport type. Guidance will be specific to Florida and incorporate resiliency measures that enhance resistance to and recovery from chronic and acute emergency situations. This element will also include the development of a communications toolkit

[3] The Transportation Research Board developed the ACROS tool to assist airports plan for the long-term effects of climate change by estimating levels of risk for airport assets and operations. The tool and accompanying guidebook are available at www.trb.org/Main/Blurbs/173554.aspx. The Sea Level Scenario Sketch Planning Tool was created by the University of Florida GeoPlan Center with funding from FDOT. This tool is designed to helped identify transportation infrastructure vulnerable to current and future flood risks and is available at https://sls.geoplan.ufl.edu/.

which will comprise a PowerPoint presentation template, primer, executive summary, and language and graphics for inclusion on the ASO website.

The consultant will also identify the highest priority projects for implementation at airports to enhance resiliency, guidance for funding these projects under the Florida Aviation Grant Program or other eligible funding programs, and recommendations to the ASO regarding the implementation of initiatives. Projects do not need to be identified at the individual airport level; instead, recommendations will address specific project types for commercial service and general aviation facilities.

The consultant will also develop commercial service and general aviation airport case studies documenting specific airports' experiences before, during, and after events such as Hurricane Irma; the Haiti earthquake of 2010; September 11, 2001; and others as appropriate. The case studies will document efforts relating to preparation (as applicable), recovery, and response, as well as narrative about the airport's role in community response and recovery.

The development of the statewide resiliency assessment and guidance provided as the final outcome of the study will involve coordination with relevant entities include FDOT offices (e.g., Emergency Management, Environmental Management, ASO, and Policy Planning) and external partners such as the Federal Emergency Management Agency (FEMA), the Department of Homeland Security (DHS), FDEM, university research partners, and others, as appropriate. The project may also require coordination with host municipal governments and regional planning organizations, as necessary.

E.1.5 Benefits of Implementation

The FDOT ASO is responsible for ensuring Florida's airport system has the ability to accommodate aviation demand and provide safe, reliable, and accessible air transportation for people and goods. A statewide resiliency assessment will help the agency understand areas and airports most at-risk before, during, and after emergency situations both in terms of human life and property damage, as well as those airports well-suited for disaster preparedness, recovery, and response. This understanding will also provide important insight into airports' abilities to accommodate aviation demand following an emergency event and as climate and other long-term trends impact Florida's aviation environment.

Using the statewide repository of risk and resiliency data developed during the data collection phase, FDOT can effectively prioritize and monitor the efficacy of resiliency investments over time. In this way, resiliency is not an end goal, but instead a process of continual improvement founded in risk identification, assessment, and mitigation, followed by policy reevaluation in the wake of an adverse situation or the progression of chronic stresses.

The statewide resiliency assessment will also assist the FDOT ASO, airports, and other agencies to become better prepared to efficiently and effectively provide adequately-trained personnel and other key resources to facilitate operational up-time following an adverse event.

E.1.6 ASO Staff Responsibility

The ASO staff member responsible for managing this project could be the Aviation System Manager, Aviation Program Development Manager, Aviation Freight and Environmental Manager, or someone involved in ASO's disaster preparedness efforts.

E.1.7 Timeline and Priority for Initiation

This project should be undertaken as soon as possible and given the utmost high priority. In recent years, Florida experienced some of the deadliest and most costly emergency situations on-record. The unusual heatwaves, widespread wildfires, and record-setting hurricane season experienced in recent times are just some examples of the types of acute and chronic stresses that the aviation system should be prepared to deal with. Furthermore, recent human-caused events have highlighted the vulnerabilities of the nation's public spaces. In this light, the need for a statewide resiliency assessment is urgent to provide the FDOT ASO and airports with the tools and information to keep our skies safe, secure, and prepared to combat and overcome the uncertainties of the future.

E.2 Business Suitability Study

E.2.1 Full Title

Develop a study to determine business suitability and identify gaps and opportunities at airports, including commercial air service enhancements, and develop facility, infrastructure, and service guidelines for various types of business needs by airport size and role.

E.2.2 Introduction

Florida's airports represent critical infrastructure that are instrumental in serving the needs of residents, businesses, and visitors to Florida. These same facilities also represent a substantial opportunity for business development and economic diversification in communities throughout the state. In 2014, the Florida Department of Transportation (FDOT) Aviation and Spaceports Office (ASO) published the *General Aviation (GA) Airport Business Plan Guidebook* to assist GA airports with developing and implementing business plans in an effort to generate more revenues and decrease dependency on Federal, State, and local grants and subsidies. This project seeks to build on the *Guidebook* by assisting airports in improving business suitability statewide.

E.2.3 Need and Purpose

In recent years, there have been numerous news stories about large companies – both aviation and non-aviation – soliciting proposals for new large-scale facilities. Airbus and Boeing, the world's two largest aircraft manufacturers, have opened and expanded facilities in the southeast United States (U.S.), Amazon is currently assessing locations for new facilities, and Gulfstream continues to expand in Georgia. Though guidance has been provided by FDOT for the development and implementation of GA business plans, during the development of the

Florida Aviation System Plan (FASP) it became apparent that there is a need for the development of a statewide business suitability assessment to provide a framework for airports to develop from, especially smaller airports with limited technical capabilities and resources to dedicate to business planning and marketing efforts. As such, it is proposed that this study be completed as a follow-on to the *GA Airport Business Plan Guidebook* to develop business plan implementation strategies for airports statewide. Further, through coordination with regional and statewide economic development agencies, this information can be used to market and promote Florida's airports to businesses that may not be aware of the opportunities that are available at these facilities as well as be used to develop facility, infrastructure, and service guidelines for various types of business needs.

By conducting this follow-on study, FDOT will be an active partner in supporting airports in being as financially self-sufficient as possible, and, through that, supporting the overall goals of the Florida Transportation Plan (FTP) and the FASP. Additionally, this project will help Florida's airports' marketability and increase the state's chances of recruiting future businesses to the state.

E.2.4 General Approach and Tasks

There are four main components of this project:

1. Agency Coordination
2. Review of Existing Master Plans, the Florida Aviation System Plan, and other relevant documents
3. Data Collection and Existing Conditions
4. Analysis and Recommendations

1. **Agency Coordination.** Through the development of the *GA Airport Business Plan Guidebook*, it was found that in many instances, entities such as local chambers of commerce or other similar business development agencies were unaware of the opportunities that were available at airports. By coordinating this project with economic development agencies, detailed documentation of business suitability and capability will be provided, serving as an outreach tool for all of Florida's airports. As part of this agency coordination, the project team will obtain an understanding of specific data that is beneficial for economic development agencies and the manner in which it should be provided in order to be most useful. At a minimum, it is recommended that coordination meetings be held with the following:
    - Florida Economic Development Council
    - Florida Chamber of Commerce
    - Florida Department of Economic Opportunity (DEO)
    - Enterprise Florida
    - Other FDOT offices (Policy Planning, Systems Implementation, Freight, Logistics and Passenger Operations offices, etc.)
    - Relevant municipal or county agencies
    - The Florida Metropolitan Planning Organization Advisory Council
    - Any others identified by the FDOT Project Manager

2. **Review of Existing Master Plans, the Florida Aviation System Plan, and other relevant documents.** FDOT currently has on file all of the airport master plans that have been developed in the state. These plans often have a wealth of information related to business opportunities at airports, including an inventory of developable or leasable land, availability of utilities, and intermodal access points. Additionally, as part of the development of the FASP, a significant amount of data was collected that could also be used.

   Though much of the needed data is available, it is often not presented in a way that promotes an airport for development. Additionally, interested businesses may not be aware of the kinds of services they may be able to provide on such properties.

   To assess the current data, the project team will conduct a review of all master plans on file with FDOT to understand the data availability of related to business suitability. It is proposed that the following data categories be evaluated in each master plan for inclusion in the data collection and existing conditions section, these are explained in further detail in the Data Collection and Existing Conditions section.

   - Facilities and services
   - Leases and tenants
   - Environmental considerations
   - Surface transportation access
   - Airport position
   - Demographics profile

   Once the master plans have been evaluated for the above data, a thorough compilation of existing conditions can be prepared. This process will also identify any additional data that is needed from airports.

   In addition to master plans and the FASP, the consultant will evaluate other planning documents to extract relevant information about local transportation infrastructure, workforce availability and educational facilities, and other related information. Plans to be reviewed include, but are not limited to:

   - Regional long-range transportation plans
   - Related Strategic Intermodal System (SIS) documents and studies
   - Economic Development Council documents and regional profiles
   - DEO information

3. **Data Collection and Existing Conditions.** This section will document existing conditions present at each airport (i.e., infrastructure, facilities, tenant information/needs) from the available information deemed appropriate from the master plan review. It will also denote the information still needed to complete the analysis component of the business suitability project. Below is a sample list of data elements that could be collected as part of this project. Additionally, each data element is noted as to whether it would be

available in a master plan or as part of the FASP or would need to be collected as part of a new analysis. It should be noted that this list is not exhaustive, a full list of data collection need can be found in the *GA Airport Business Plan Guidebook*.

- Facilities and services
    - Airfield (MP/FASP)
    - Runways and taxiways (MP/FASP)
    - Support facilities (MP)
    - Hangars (MP)
    - Capacity (MP/FASP)
    - Approaches (MP/FASP)
- Leases and tenants
    - Understanding of current lease holder agreements (MP)
    - Availability of leasable property and its amenities (MP)
    - Utilities available at properties on the airport (MP)
- Environmental considerations
    - Identification of sensitive or undevelopable land (MP)
- Surface transportation access (MP/FASP)
- Airport position
    - Comparison to other airports based on location (MP/FASP)
        - Facilities
        - Services
        - Operation
        - Activity
- Demographics profile (using 30/45/60-minute drive times from ESRI Community Analyst)
    - Population (FASP/new analysis)
    - Income (new analysis)
    - Age (new analysis)
    - Households/housing (new analysis)
    - Education (new analysis)
    - Business (new analysis)
    - Spending (new analysis)
    - Jobs (new analysis)
    - Poverty (new analysis)
    - Retail sales (new analysis)
    - Tapestry groups (new analysis)
    - Behavioral (new analysis)
        - Travel patterns
        - Lifestyle
        - Consumer preference

It is recommended that this data, to the extent feasible, be compiled in Excel and be coded so that data can easily be grouped and summarized for a variety of different recommendations.

4. **Analysis and Recommendations.** Based on the previously collected data, this section will identify potential opportunities for business development at airports. Because this project does not want to promote any one specific airport or location, data will be presented in the same manner for each airport. Additionally, it is suggested that results be aggregated by Florida Economic Development Region.

   As appropriate, recommendations for appropriate businesses will be provided based on standardized facility, infrastructure, and service guidelines of said businesses. To the extent feasible, this will be coordinated with the guidance provided in the 'Lower-Activity GA Airports Facility, Infrastructure, and Service Guidelines' project that is also proposed to be completed. Based on the results of the previously discussed data collection, each airport in Florida will receive a business suitability brochure that will provide an overview of options for how and what could be developed at their airport. Additionally, the consultant will develop a template PowerPoint presentation that can be used to educate and inform airports, local governments, and the other entities that are involved with airports about the study and the statewide and airport-specific results and recommendations, including supporting materials

   As noted, information for the demographics of the local area will also be summarized to provide prospective businesses with an idea of the workforce that will be available in the area. A listing of schools, training facilities, or other related educational establishments will also be identified as an additional resource for prospective businesses. As noted, information for the demographics of the local area will also be summarized to provide prospective businesses with an idea of the workforce that will be available in the area. A listing of schools, training facilities, or other related educational establishments will also be identified as an additional resource for prospective businesses.

E.2.5 Benefits of Implementation

The development of a business suitability framework will provide airports and FDOT with a useful and implementable tool that will help improve the financial bottom line of airports around the state. Additionally, it will help the state and individual airports when business development solicitations are advertised nationally. When the previously completed *GA Business Plan Guidebook* was being developed, numerous airports throughout the state asked if FDOT would be willing to assist them in developing the resources that were proposed in the *Guidebook*. This project will help to fill that gap and serve airports large and small in developing and implementing strategic business opportunities.

E.2.6 ASO Staff Responsibility

The ASO staff member responsible for managing this project is the Aviation System Manager or the Aviation Program Development Manager.

E.2.7 Timeline and Priority for Initiation

This project is recommended to be completed immediately and should be initiated in CY 2018.

E.3 Replace the FAD

E.3.1 Full Title

Replace the Florida Aviation Database (FAD) with new, modernized tools and technology solutions that starts with developing an asset management framework that evaluates the value and use of various data currently maintained and data that need to be maintained for various management support activities. FL Integrated Geodata Housing Tool (FLIGHT)

E.3.2 Introduction

The Florida Aviation Database (FAD) was developed over 25 years ago to be a single repository of data and grant information for Florida's airports. Since its original development, the FAD has received numerous updates that were each completed to improve operability and streamline its use. To date, all modifications to the FAD have been done to the original framework of the FAD, without any major departures related to its general appearance, functionality, or ability to serve its intended users (airports, FDOT, and the Federal Aviation Administration [FAA]). To make new reports or changes, the Florida Department of Transportation (FDOT) Aviation and Spaceports Office (ASO) must work in the existing platform and with the current design that relies on the original coding environment. The current FAD was also not built or updated with an emphasis on Geographic Information Systems (GIS) mapping and other off-the-shelf analysis and reporting tools, which are now commonplace in the aviation industry. Because Florida has such a large and diverse aviation system, a more advanced and intuitive tool is needed to serve aviation entities statewide.

E.3.3 Need and Purpose

Based on its current status, the current FAD cannot be updated with simple modifications or leverage new capabilities in the enterprise software environment. It is recommended that the FDOT ASO replace the FAD with new, modernized tools and technology solutions. This new system, proposed to be called FLIGHT (**FL** Integrated **G**eodata **H**ousing **T**ool), starts with developing an asset management framework that evaluates the value and use of various data currently maintained, and new data that are needed for various management support and reporting activities. One of the benefits of the FLIGHT platform is its ability to be developed as a non-proprietary system which can be tailored to ASO's needs without creating a whole new coding system. This will help streamline implementation and operation as well as reduce future investments by the Department as compared to the current FAD system's maintenance and updates.

E.3.4 General Approach and Tasks

There are six tasks associated with this project:

1. Review of the FAD and assessment of data
2. Coordination with FAD users (Airports, FDOT, and the FAA)

3. Assessment of potential components for FLIGHT
4. Alternatives assessment
5. Design schematics
6. Implementation

1. **Review of the FAD and Assessment of Data.** Because the FAD has been utilized for so long, there is a great deal of information that needs to be evaluated for transfer and/or inclusion in FLIGHT. All data components currently stored in the FAD will need to be evaluated for continued use. This review will focus on the age of the data component, the source of the data (airport, FDOT, FAA), and how it is used today.

2. **Coordination with Users of the FAD.** Currently, the FAD is the only option for airports, FDOT, and the FAA to use for tracking and managing data and grants. In an effort to make the FLIGHT system more user friendly, the users need to be included in the evaluation of the current system's strengths and weaknesses, and the needs and opportunities of an improved system. It is recommended that a FAD advisory committee be established to work closely with the ASO and the consultant to ensure maximum value of the FLIGHT system.

3. **Assessment for Potential Components of FLIGHT.** Prior to evaluating the alternative delivery methods and enterprise solution for FLIGHT, the components that might be included will be reviewed and assessed. Some potential components of the system that will be discussed for inclusion include:
   - Florida Aviation System Plan (FASP) 2035 GIS layers that can be utilized to track, input, and analyze multiple data elements from the project such as drive-time analyses, Strategic Intermodal System (SIS) roadways, runway protection zones (RPZs), as well as other FDOT projects.
   - Store and warehouse electronic airport layout plans (eALPs) and airports GIS (AGIS) data developed as part of master plans and airport layout plans.
   - Updated Joint Automated Capital Improvement Program (JACIP) to be more user friendly and compatible with FAA processes such as System of Airports Reporting (SOAR).
   - Tool to maintain and manage data on airport pavements from the ASO statewide airfield pavement management program (SAPMP) and airfield pavement classification number project.
   - Existing information log tool.
   - Data obtained in the FASP 2035 for the Performance Measures and Performance Indicators to allow for monitoring of the performance, including what data items are needed, timing of updates, and the source of the information (airports, FAA, Bureau of Transportation Statistics, other).
   - Web-based statewide land use compatibility tool (or similar technology solution) that includes resources for unmanned aerial systems (UAS) coordination and deconfliction
   - Online Airport Profiles tool.

4. **Alternatives Assessment.** The assessment of components is needed in order to determine the appropriate tool or suite of tools available to meet the identified goals of FLIGHT. Options such as existing FDOT-licensed tools, new business information (BI) tools, and a custom website potentially utilizing a content management system (CMS) and third party tools will be analyzed to determine the various strengths and weaknesses of the various alternatives. Additionally, all alternatives will be assessed for their compatibility with other programs that might be used by relevant parties: City Works, Sales Force, the FDOT Work Program Integration Initiative (WPII), etc. A comparison matrix will be prepared to document the differences and similarities between alternatives to assist in the evaluation. These alternatives will be discussed with the ASO as well as with other FDOT information technology (IT) representatives to evaluate the best solution for ASO.

5. **Design Schematics.** Based on the findings of the previous elements, the consultant will develop a set of design schematics to visually present how FLIGHT will be designed. This will include the development of a draft System and Software Architecture Description document for the system. This document will formalize the functional design for the system, as well as the high level architectural features of the software and hardware components. The steps included in the creation of the System and Software Architecture Description include the following:
   - Identify and document system components
   - Meet with ASO and the FDOT Office of Transportation Technology to discuss the system and review the draft design
   - Develop and document the software architecture
   - Identify and document the deployment plan, including the hardware architecture
   - Meet to discuss the deployment plan
   - Identify and document the maintenance plan

6. **Implementation.** Based on a set of approved design schematics, the project team will develop a test site for FLIGHT that will include all functional elements identified in the previous tasks. Once the test site is operational, select FDOT ASO and District staff, FAA staff, and airports will test the system for usability and functionality. It is anticipated that this testing phase could take place over the course of an entire year to ensure that FLIGHT operates as intended. To ensure that there are no glitches, it is recommended that this test period run concurrently with the regular use of the FAD so that there are no issues with airports requesting and receiving funding. Once FLIGHT has been vetted and is deemed acceptable for operation, its system can be turned on for external use and the FAD will be closed.

E.3.5 Benefits of Implementation

Leveraging an existing technology solution that can be used by ASO, airports, and the FAA that utilizes the latest tools and enterprise software will have tremendous benefits to the entire state. From improved and consistent reporting of data to time savings from a single system that can be utilized by ASO, airports, and FAA, to visualization of information, and opportunities to expand the system using a new platform that ensures reliability of data and is not proprietary, the

benefits of implementation are substantial. FLIGHT will allow ASO to maximize its relationships with District staff, airports, and FAA by providing a fresh platform that is populated with relevant, accurate, and necessary data that can provide significant benefits to the entire Florida aviation system. Throughout the development of the FLIGHT system, there will be an emphasis carefully integrating strategies that result in the lowest possible maintenance effort. One strategy for accomplishing this will be to utilize readily available data sources (such as FAA and Bureau of Transportation Statistics) that are linked to the system thereby reducing the efforts of the ASO to maintain these data points.

E.3.6 ASO Staff Responsibility

The ASO staff member responsible for managing this project is a designee from the Aviation Development Section.

E.3.7 Timeline and Priority for Initiation

This project should begin immediately with the initial phases being kicked off in early CY 2018.

E.4 Detailed Capacity Study

E.4.1 Full Title

Conduct a more detailed capacity study, looking specifically in FDOT Districts Four, Five, and Six.

E.4.2 Introduction

The Florida Aviation System Plan (FASP) 2035 Update included an evaluation of airfield operational capacity at Florida's airports. The FASP utilized the annual service volume (ASV) method to compare baseline 2014 and projected 2035 operational demand levels to determine if each system airport was either currently experiencing or was projected to experience a capacity constraint. The FASP also reviewed data from the Federal Aviation Administration's (FAA's) *Future Airport Capacity Task FACT3: Airport Capacity Needs in the National Airspace System* report, which included analysis on six Florida airports, including two general aviation airports and Florida's four large hubs. Based on this, the FASP capacity analysis results indicate a need for a more detailed evaluation to support continued effective planning and development of Florida's airport system, especially in a few key Florida Department of Transportation (FDOT) Districts.

E.4.3 Need and Purpose

The FASP showed that in base year 2014, there were five airports that exceeded the FAA's recommended 60 percent demand to capacity (D/C) ratio threshold to plan for capacity enhancements, and three airports that exceeded the 80 percent D/C threshold to start implementation for capacity enhancements. By 2035, it is projected that 11 airports will exceed the 60 percent D/C threshold, six will exceed the 80 percent D/C threshold, and three will exceed their ASV altogether (100 percent of their D/C threshold). Of the previously noted 20

airports that are projected to exceed the 60 percent, 80 percent, and 100 percent capacity thresholds, seven are designated as commercial service. The majority of airports that are projected to see D/C ratios of 60 percent or above by 2035 are concentrated in FDOT Districts 4, 5, and 6.

Since airfield capacity is critical to the success of an aviation system in meeting demand and serving customers, including the economically valuable aviation and non-aviation activities that rely on commercial service and general aviation airports throughout the state, it is important that a more detailed capacity evaluation be conducted. This analysis would provide additional in-depth evaluations that can be used in future decision-making by the airports, the FDOT Aviation and Spaceports Office (ASO), FDOT District offices, and the FAA to address the capacity constraints.

E.4.4 General Approach and Tasks

There are five main phases of this project:

1. Review of airfield capacity methodologies
2. Update activity data and compare to FASP analysis
3. Determine appropriate methodologies for use in evaluation
4. Apply methodologies to determine capacity constraints
5. Identify options for addressing capacity constraints

It is recommended that this project be considered for phasing, conducting tasks 1, 2, and 3 first to provide a better understanding of the level of detail required in applying the methodologies and identifying options in conjunction with the affected airports and FDOT District staff.

1. **Review of airfield capacity methodologies.** The FAA's current Advisory Circular (AC), 150/5060-5, *Airport Capacity and Delay*, is dated September 1983 and was updated twice through 1995. While FAA has been considering a third update to the AC, the publication date remains unavailable. The latest guidance available to airports and airport consultants in the area of airfield capacity is the Airport Cooperative Research Program (ACRP) Report 79: *Evaluating Airfield Capacity*, published in 2012. Report 79 provides a guidebook and an Excel-based tool that can be used to evaluate airfield and airspace capacity at a wide range of airports. Completed concurrently was ACRP Report 104: *Defining and Measuring Aircraft Delay and Airport Capacity Thresholds* which provides guidance on measures of delay and capacity thresholds, focused on primarily larger commercial airports.

   This most recent guidance from ACRP identifies tools ranging from simplistic lookup tables and ASV calculations as utilized in the FASP to an Excel-based model to simulation modeling tools that can be employed at complex airports where capacity is a significant constraint. Each of the available methodologies will be reviewed and summarized to subsequently determine the most appropriate methodology that should be employed for the airports in Florida that are projected to have a capacity concern by 2035. In documenting the methodologies, a range of potential costs to conduct the different

capacity methodologies will be identified for use in deciding the most appropriate methodology to be utilized by FDOT in this task.

2. **Update activity data and compare to FASP analysis.** Data from the FASP regarding operations and D/C ratios from the ASV methodology will be updated with the latest available operational figures. As operational activity will undoubtedly continue to change over time, it will be important to conduct a cursory comparison of the updated activity and D/C ratios from the FASP to the FAA's latest data, as available from the Terminal Area Forecast (TAF) and operational statistics from the airports. These data will be documented to update the D/C ratios and determine which airports require more detailed capacity analysis.

   The comparison and results of the updated high-level capacity analysis will be the subject of a meeting with FDOT ASO and District staff from those Districts identified as having multiple airports with existing or projected capacity constraints. This meeting will be important to discuss the issues, including if airports are identifying capacity as a concern and developing projects or conducting airport-specific analyses of capacity constraints. It is anticipated that this will involve reviewing each airport's master plan and layout plan to determine if identified projects will be sufficient in mitigating against capacity constraints.

3. **Determine appropriate methodologies for use in evaluation.** Utilizing the results of the updated activity and comparison to FASP results, the airports identified as having a capacity constraint will be reviewed in relation to the available capacity methodologies from the prior task. Each airport will be examined to determine the appropriate capacity methodology based on factors such as:
   - Availability of actual operational activity from a reliable source (such as air traffic control tower or other reliable source)
   - Projected growth in activity
   - Opportunities for enhancing airfield capacity

   An initial recommendation of the appropriate methodology will be made with the reasons for that methodology identified for each airport, including a ballpark estimate of the cost to conduct the analysis and employ the methodology. These initial recommendations will be discussed with the ASO Project Manager to discuss the reasonableness of the decision and if other steps should be undertaken before proceeding with the implementation of the methodologies for each airport. At the conclusion of this discussion, a phase 2 scope will be prepared to implement the methodology applications that are agreed upon.

4. **Apply methodologies to determine capacity constraints.** The recommended methodologies will be applied to each airport as outlined in the phase 2 scope. These methodologies will be airport-specific as determined.

   In addition to examining airport-specific capacity, the capacity in Districts where there are multiple airports and the airports have an impact on the potential options will be

evaluated. This "regional" approach is important to understand the relationships between the airports and how the capacity conditions may be affecting multiple airports in a geographic area. This analysis will include examining both the capacity-constrained and those identified as having surplus capacity available.

5. **Identify options for addressing capacity constraints.** Based on the airport-specific and regional analysis of capacity from the prior task, options will be identified for each airport and region that could be considered to improve the capacity conditions. These options will be based on reviews of proposed plans for improvement, potential physical infrastructure improvements, and any airspace or other options that may be identified.

E.4.5 Benefits of Implementation

Given Florida's high reliance on aviation to support the movement of people and goods throughout the state, identifying where capacity constraints may exist and options for improvement are key to maintaining an effective statewide air transportation system. The analysis can assist airports, as well as FDOT ASO and District staff and the FAA with identifying high priority projects that may be needed to enhance the system.

E.4.6 ASO Staff Responsibility

The ASO staff member responsible for managing this project is the Aviation Program Development Manager.

E.4.7 Timeline and Priority for Initiation

With 20 airports identified as having a potential capacity constraint by 2035, this study should be considered for implementation in the near term. If there are infrastructure options that can be employed to improve capacity constraints, these options require additional evaluation by airports and their actual construction can take many years.

E.5 Facility, Infrastructure, and Service Guidelines

E.5.1 Full Title

Develop facility, infrastructure, and service guidelines for lower-activity general aviation airports.

E.5.2 Introduction

According to the Federal Aviation Administration (FAA), 75 percent of all aircraft operations in the United States (U.S.) are conducted by general aviation aircraft; the majority of these flights occur at general aviation airports.[4] The statistics are not quite as stark in Florida where the state's

[4] FAA, *General Aviation Airports: A National Asset* (Washington, DC: U.S. Department of Transportation, 2012), 1.

general aviation airports annually experience nearly twice as many operations as commercial service facilities.[5]

Because a general aviation airport is broadly defined as one that does not support (or provides very limited) scheduled commercial service, it can support a wide range of aeronautical functions. The FAA identified several primary functions of general aviation airports as follows:[6]

- Emergency preparedness and response
- Critical community access
- Commercial, industrial, and economic activities
- Destination and special event access
- Other aviation-specific functions, including corporate and charter activities; flight instruction; and aircraft maintenance, repair, and overhaul (MRO) services

These categories encompass activities ranging from aeromedical flights and aerial firefighting, to the transportation of people and cargo, and commercial endeavors such as agricultural spraying and aerial surveying. Florida's airports lead the nation in flight training services and the state hosts the highest number of pilot certifications in four categories in the U.S. Furthermore, general aviation airports are integral to the recovery efforts following natural and human-caused disasters. In recent months, airports across the state served as staging areas for recovery efforts for Florida and Puerto Rico following hurricanes Irma and Maria. Airports in south Florida supported disaster response efforts following the 2009 earthquake in Haiti. In each of these cases, Florida's general aviation airports facilitated the transport of emergency personnel to and victims from disaster-struck areas. Small general aviation aircraft were also able to access remote locations inaccessible to larger aircraft. In summary, general aviation airports compose a critical network that supports the safety, security, mobility, and economic well-being of communities and regions in Florida and across the world.

As a result of the breadth of aviation functions supported by general aviation airports, as well as the frequency of operations, airports need a wide array of facilities, infrastructure, and services to effectively support their specific customers. For example, larger general aviation airports that primarily serve business and corporate aviation typically require at least a 5,000-foot long runway, an instrument approach procedure, hangar space for based and transient aircraft, and additional services such as jet fuel. Smaller airports that primarily serve single-engine aircraft have shorter runway needs, smaller storage facility requirements, and more limited services to effectively serve their customers.

During the planning process, it is critical for airports, airport sponsors, and funding agencies to carefully consider the facilities, infrastructure, and services warranted by the type and volume of operations that occur at their facility. While federal ASSET classifications can be a good indicator of airport operations based on national trends, it is also helpful to assess how an airport operates within its state, regional, and local contexts. Because each airport plays a different role within a

[5] According to the FASP 2035 Update, general aviation airports experienced 5.6 million operations in 2016. Commercial service airports experienced 3.0 million operations that same year. Please note that Vero Beach Regional Airport was evaluated as a general aviation airport in the study; however, the airport began to provide scheduled commercial service in mid-2016.
[6] Ibid, p. 2

broader system, the availability of facilities, infrastructure, and services must align with the specific aviation functions required by its primary customer base.

E.5.3 Need and Purpose

To support general aviation airports in the planning process, the Florida Department of Transportation (FDOT) Aviation and Spaceports Office (ASO) is developing facility, infrastructure, and service objectives that are appropriate for the state's smaller, low-activity general aviation airports. The objectives are intended to provide recommended minimum levels of development an airport should pursue to improve their abilities to serve customers and enhance the ability of the statewide system to accommodate all aviation demand. It is important to note that facility, infrastructure, and service objectives are not requirements, but instead serve as a baseline for consideration during the planning process.

This study will first identify the primary aviation activities supported by Florida's general aviation airports. Facility, infrastructure, and service objectives will then be developed for each type of activity.

E.5.4 General Approach and Tasks

There are three main phases of this project:

1. Literature review
2. Identification of primary aviation activities occurring at Florida's general aviation airports
3. Development of general aviation facility, infrastructure, and service objectives

1. **Literature review.** A review of relevant literature and guidance documents will be conducted. This will include the following (not all inclusive):

Literature Review	
FAA Advisory Circulars (ACs)	
AC 150/5070-6B	*Airport Master Plans*
AC 150/5230-4A	*Aircraft Fuel Storage, Handling, and Dispensing at Airports*
AC 150/5300-13A, change 1	*Airport Design*
AC 150/5360-9	*Planning and Design of Airport Terminal Facilities at Non-Hub Locations*
AC 150/5070-6B	*Airport Master Plans*
AC 150/5390-2C	*Heliport Design*
AC 150/5395-1A	*Seaplane Bases*
Airport Cooperative Research Program (ACRP)	
ACRP Synthesis 3	*General Aviation Safety and Security Practices*

Literature Review	
ACRP Report 1	*Airports and the Newest General of General Aviation Aircraft— Volume 2: Guidebook*
ACRP Report 16	*Guidebook for Managing Small Airports*
ACRP Report 47	*Guidebook for Developing and Leasing Airport Property*
ACRP Report 113	*Guidebook on General Aviation Facility Planning*
Other	
FAA	*General Aviation Airports: A National Asset*
FAA	*ASSET 2: In-Depth Review of 497 Unclassified Airports*
National Business Aviation Association (NBAA)	*Airports Handbook*
NBAA	*Business Aviation Fact Book*

The task will also include a review of other states' facility, infrastructure, and service objectives. Specific states will be determined in coordination with the FDOT ASO.

2. **Identification of Primary Aviation Activities.** In order to apply the facility, infrastructure, and service objectives developed during the final phase of this study, it is necessary to first identify those activities that are of primary value to Florida in terms of economic impact; public safety and security; mobility and access; and/or other criteria determined in coordination with the FDOT ASO. The criteria should also be designed to advance the goals of the Florida Aviation System Plan (FASP) 2035 and the Florida Transportation Plan (FTP). These activities may include (not all inclusive):
   - Aerial firefighting
   - Aerial photography
   - Agricultural spraying
   - Air cargo
   - Aircraft manufacturing
   - Aircraft MRO services
   - Blood, tissue, and organ transportation
   - Business and corporate travel
   - Emergency preparedness and disaster response
   - Flight training
   - Intermodal connectivity
   - Law enforcement, including customs and immigration and national security
   - Medical air transportation, including medical evacuation services
   - Military training
   - Personal transportation
   - Recreational flying
   - Search and rescue operations
   - Scientific research
   - Sport activities, including skydiving

- Tourism
- Utility surveying

This preliminary list will be refined in coordination with the FDOT ASO to those activities deemed significant to Florida's airports, residents, visitors, and businesses. Input will also be sought from representatives of aviation organizations that are likely to understand the activities and the needs of these operators including NBAA and Aircraft Owners and Pilots Association (AOPA). The CFASPP meetings will also be used to obtain additional input and feedback via in-person meetings and/or an online survey (i.e., SurveyMonkey). The final activities selected for inclusion in the next phase of the study will then be presented to the FDOT ASO for approval.

The number of activities identified for assessment will be determined during the course of the study. The list must ensure comprehensiveness and equitable representation of aviation functions occurring across the state. The activities must reflect those activities occurring at Florida's lower-activity general aviation airports.

3. **Development of general aviation facility, infrastructure, and service objectives.** The consultant will establish recommended facility, infrastructure, and service objectives for each aviation activity based on Florida-specific considerations, including climate; frequency and type of aircraft operations; and tourism, demographic, and regions-specific trends. Objectives may be established for the following categories (not all inclusive):

Facilities	Infrastructure	Services
Approach capability	Airport Reference Code (ARC)	Aircraft maintenance
Visual aids	Apron	Aircraft rental
Airfield lighting, signage, and navigational aids	Runway length/width	Aircraft rescue and firefighting (ARFF)
Operations/maintenance hangar	Taxiway	Air taxi/charter service
Auto parking	Lighting	Fueling services
Terminal/pilot's lounge	Runway surface	Flight instruction
Fencing	Box and T-hangars	Avionics sales and service
Security	Heliport	Fixed-base operator (FBO)
Automobile parking		Deicing
Aircraft wash facilities		Ground transportation
		On-/off-site rental car
		Oxygen
		Phone access

		U.S. Customs
		Weather reporting

The development of facility and service objectives will be guided by a technical advisory committee comprised of general aviation stakeholders. The committee may include airport sponsors and staff, CFASPP regions/metropolitan area representatives, the FAA, local and regional planning organizations, and aviation activity user groups (such as NBAA and/or AOPA). The consultant will organize a minimum of two meetings to first inform the committee about the project and its responsibilities, then gain feedback on draft facility, infrastructure, and service objectives. A third meeting may also be necessary at the end of the process to present the final outcomes of the study. These meetings may be conducted via teleconference, as deemed appropriate by committee members and the FDOT ASO.

In addition to the technical advisory committee, a broader outreach effort will be conducted to the general aviation community to ensure outcomes reflect the needs of users. This outreach process will include industry, trade, and/or enthusiast groups or businesses representing specific aviation activities. Examples of such groups include skydiving clubs, general aviation pilots associations (e.g., AOPA), Civil Air Patrol, utility companies, flight training schools, charter and aerial tourism operators, first responders, state and federal agencies, and agricultural sprayers—among many potential others. At a minimum, the consultant will meet with at least one group representing each aviation activity selected for inclusion in the study. Additionally, the consultant will meet with the FAA Airports District Office (ADO) for additional input into the facility, infrastructure, and services recommended to support Florida's general aviation activities.

Based on the feedback received from the technical advisory committee, additional outreach efforts, and the FDOT ASO, the consultant will prepare proposed objectives to present to during the CFASPP. Any additional input will be integrated as appropriate. The facility, infrastructure, and service objectives will then be provided to the FDOT ASO for final approval.

E.5.5 Benefits of Implementation

It is important to align facility, infrastructure, and service offering with the aircraft, frequency, and type of operations that occur at each airport. This alignment provides a number of key benefits to airports, including the ability to:

- Effectively support airport users and the broader community
- Maximize funding resources
- Minimize duplication of services within a regional context
- Balance regional demand and capacity to the greatest extent possible

- Provide guidance during the master planning process and Capital Improvement Plan development

These facility, infrastructure, and service objectives will provide guidance to airports as they identify projects for inclusion in their capital improvement plans. The study will also provide guidance to and maintain consistency across FDOT Districts during project evaluation and selection and other decision-making processes.

E.5.6 ASO Staff Responsibility

The ASO staff member responsible for managing this project is the Aviation System Manager or the Aviation Program Development Manager.

E.5.7 Timeline and Priority for Initiation

Because of this study's utility during the development of capital improvement plans and FDOT District decision-making processes, this project should be initiated in CY 2018. While the selection of the activities for inclusion in the study is anticipated to be a straightforward process, engagement with the technical advisory committee and the aviation public will likely be more time intensive. Additionally, the development of the objectives must coincide with the CFASPP meeting round and are thus dependent on its meeting schedule.

E.6 Statewide Roadmap to Address Airport Wildlife Hazards for Non-Part 139 Airports

E.6.1 Full Title

Developing a roadmap for addressing airport wildlife hazards for non-Part 139 airports at a statewide level

E.6.2 Introduction

Part 139-certificated airports are mandated by the Federal Aviation Administration (FAA) to conduct wildlife hazard studies and, in some cases, develop wildlife hazard mitigation plans. The FAA has increasingly been encouraging general aviation (GA) airports to conduct wildlife studies through either wildlife site visits (WSV) or wildlife hazard assessments (WHA). The FAA supports this by providing Airport Improvement Program (AIP) funds for GA wildlife hazard projects on a case-by-case basis.

E.6.3 Need and Purpose

There are 102 public-use, non-Part 139 airports in Florida. As of 2016, only 26 (25%) had conducted a WSV or WHA. These 102 airports are home to over 8,000 based aircraft and handle nearly 5 million annual aircraft operations. In 2015, there were 2.04 reported wildlife strikes per 100,000 GA aircraft operations. The prominence and importance of GA in Florida warrants that additional consideration be given to wildlife hazard mitigation at Florida's GA airports.

E.6.4 General Approach and Tasks

There are three main phases of this project:

1. Data collection
2. Literature review
3. Development of statewide guidance and a roadmap for statewide wildlife management

1. **Data collection.** Data collection will include the surveying of Florida's 102 non-Part 139 airports to determine what wildlife hazard management steps have been taken and the reasons further steps have not been. Data will also be collected regarding the frequency, species types, and locations of wildlife strikes at Florida's airports. This will be collected both from survey responses as well as from data contained in the FAA's National Wildlife Strike Database.
2. **Literature Review.** A review of relevant literature and guidance documents will be conducted. This will include the following (not all inclusive):

Literature Review
FAA Advisory Circulars

Literature Review	
70-1	Outdoor Laser Operations
150/5200-32	Reporting Wildlife Aircraft Strikes
150/5200-33	Hazardous Wildlife Attractants On or Near Airports
150/5200-34	Construction or Establishment of Landfills near Public Airports
150/5200-36	Qualifications for Wildlife Biologist Conducting Wildlife Hazard Assessments and Training Curriculums for Airport Personnel Involved in Controlling Wildlife Hazards on Airports
150/5200-38	Protocol for the Conduct and Review of Wildlife Hazard Site Visits, Wildlife Hazard Assessments, and Wildlife Hazard Management Plans (to be issued)
150/5220-25	Airport Avian Radar Systems
FAA CertAlerts	
16-03	Recommended Wildlife Exclusion Fencing (PDF)
14-01	Seasonal Mitigation of Hazardous Species at Airports: Attention to Snowy Owls (PDF)
13-01	Federal and State Depredation Permit Assistance (PDF)
06-07	Requests by State Wildlife Agencies to Facilitate and Encourage Habitat for State-Listed Threatened and Endangered Species and Species of Special Concern on Airports (PDF)
98-05	Grasses Attractive To Hazardous Wildlife (PDF)
Airport Cooperative Research Program (ACRP) Guidance	
Report 32	Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports
Report 122	Innovative Airport Responses to Threatened and Endangered Species
Report 125	Balancing Airport Stormwater and Bird Hazard Management
Report 145	Applying an SMS Approach to Wildlife Hazard Management
Synthesis 23	Bird Harassment, Repellent, and Deterrent Techniques for Use on Airports
Synthesis 39	Airport Wildlife Population Management
Synthesis 52	Habitat Management to Deter Wildlife at Airports
Legal Research Digest 20	Airport Responsibility for Wildlife Management

3. **Development of statewide guidance and a roadmap for statewide wildlife management.** Once the data collection and literature review have been completed, the consultant will develop statewide wildlife hazard management and mitigation guidance to GA

airport operators. This guidance will be specific to Florida and will include considerations specific to the state that may impact an airport's wildlife management and mitigation efforts. Guidance will be provide both for wildlife management as well as habitat management. Guidance will also include direction on reporting wildlife strikes to the National Wildlife Strike Database. This element will also include the development of a communications toolkit which will be comprised of a PowerPoint presentation template, a primer, an executive summary, and language and graphics for inclusion on the ASO website.

The consultant will also develop a roadmap for statewide wildlife hazard management that will include, at a minimum, a timeline for implementation, items specific to the FDOT airport licensing and inspection program, guidance for funding under the Florida Aviation Grant Program, and recommendations to ASO regarding prioritization and implementation of statewide initiatives. Specific consideration will be given to recommendations related to ASO's licensing inspection and safety program, to include a requirement for airports to report strikes, a standardized collection and reporting process, licensing inspection items, and others as identified during the project scoping and data collection elements.

Both elements of the development of statewide guidance and a roadmap for statewide wildlife management phase will involve coordination with relevant entities including FDOT offices (Environmental Management, Policy Planning, etc.) and external partners (FL Department of Environmental Protection, FL Fish and Wildlife Conservation Commission, EPA, FWS, FL water management districts, universities engaged in relevant research, and others as appropriate).

E.6.5 Benefits of Implementation

By developing statewide guidance and resources, ASO will provide GA airports with the tools, knowledge, and resources that they need to minimize wildlife hazards throughout the state. This directly ties into the mission of FDOT and ASO, the goals of the Florida Transportation Plan (FTP) and the Florida Aviation System Plan (FASP), and the intent of ASO's licensing inspection and safety program. Minimizing wildlife hazards at GA airports will increase the safety for our airport users and visitors. It will also support the efforts and performance measures of the FTP and the FASP, both from a safety and an environmental awareness perspective. Additionally, the FAA estimates that the economic loss attributable to aircraft wildlife strikes could be as high as $957 million per year nationally. As aviation is an economic engine in Florida, accounting for $144.0 billion in annual economic impact throughout the state, the financial benefits of reduced wildlife hazards mist also be taken into account, in addition to the safety and environmental ones.

E.6.6 ASO Staff Responsibility

The ASO staff member responsible for managing this project is the Aviation Environmental and Freight Manager. Alternatively, it could fall under the responsibility of the Airport Inspection and Safety Manager.

E.6.7 Timeline and Priority for Initiation

This project should be undertaken as soon as possible and given high priority. With quieter, smaller, and faster aircraft entering the market, there is an increasing trend in the rate of wildlife strikes throughout the nation. That increasing strike rate combined with Florida's forecasted growth in GA operations calls for rapid action at the state level to give airport operators the tools they need to reduce wildlife hazards statewide.

E.7 RPZ Ownership Data Compilation

E.7.1 Full Title

Inventory RPZ Land Uses and Ownership Data

E.7.2 Introduction

Florida is home to nearly 800 aviation facilities, 128 of which are currently identified as state system airports and are included in the Florida Aviation System Plan (FASP) 2035 Update. These 128 airports are open for public use and are identified as being essential to Florida's aviation network. More than 200 runways exist throughout the public-use system that cumulatively support nearly 24,000 daily aircraft operations.

To protect these aircraft operations and the people that live in the vicinity of airports in the event of runway overshoots or underruns, the Federal Aviation Administration (FAA) delineates safety areas off the end of each runway known as Runway Protection Zones (RPZs). Airport sponsors are responsible for the protection of RPZs from development or land uses incompatible with aircraft operations. This can be particularly challenging for airport sponsors who do not own or have control over the land within their RPZs. As part of the FASP 2035 Update, a desktop analysis was conducted to determine if incompatible land uses were present in RPZs. This evaluation was completed by overlaying RPZs over 2-D aerial images provided in Google Earth; however, based on the large data needs, the FASP 2035 Update was unable to evaluate the ownership and designated land use/zoning of parcels that are located in RPZs. As such, it is proposed that an additional analysis be completed to determine ownership of land and designated land uses that fall within RPZs. Once compiled, existing data related to airport zoning authority can be included so that all data and information is provided in one location.

E.7.3 Need and Purpose

The mission of the Florida Department of Transportation (FDOT) Aviation and Spaceports Office (ASO) is to "provide a safe and secure air transportation system that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities." As such, it is important to have more information regarding the ownership and control of land within RPZs at FASP airports to help support a safe and secure state aviation system through guidance, policy, and funding.

An inventory of existing "incompatible land uses," land ownership, and zoning will help airports and FDOT better understand the presence of incompatible uses throughout the system and the controlling entities over these critical airport safety areas, as well as help to support funding decisions or action plans for land acquisition. Some of the data for this analysis was developed for the FASP 2035 Update, so efficiencies may be possible during implementation.

E.7.4 General Approach and Tasks

There are four tasks associated with this RPZ inventory project:

1. Verify inventory data
2. Conduct inventory
3. Develop recommendations for funding and action plans for RPZ compatibility
4. Document process/plan for data maintenance

1. **Verify Inventory Data.** For the FASP 2035 Update, existing RPZ dimensions were taken from airport master plans and airport layout plans on file with the FAA and FDOT and easily identifiable incompatibilities were identified. Prior to beginning this analysis, the dimensions of the RPZs should be verified for each airport to ensure that this project accurately identifies ownership issues. The most recent statewide parcel ownership and zoning data will be accessed from the Florida Geographic Data Library (FGDL) utilizing data from the Florida Department of Revenue and County Property Appraisers. Example data points that could be used in the inventory of RPZ land ownership include the ownership type (fee simple, easement, etc.), date of ownership, and designated land use/zoning (industrial, commercial, etc.). Defining these parameters before conducting the inventory will result in a more organized inventory. It will also be important to review the age of the data, especially zoning information, to ensure it is current.
2. **Conduct Inventory.** Using the data points and parameters identified in the previous task, the consultant will develop a statewide database of RPZ parcel data. This will also include an expanded evaluation of the incompatible land uses determined during the FASP 2035 Update. For each airport, a summary report of incompatible land uses, land ownership, land use/zoning, and zoning authority for each of the RPZs will be developed. Once these have been developed, the project team will distribute the information to airport sponsors and hold meetings to discuss and verify the findings. As part of these discussions, any additional data available from 'Exhibit A' documents or other land ownership repositories will be discussed and included in the report findings, as needed. Following these meetings, the airport summaries will be finalized and a geodatabase will be provided to FDOT ASO.
3. **Develop Funding Guidance and an Action Plan for RPZ Compatibility.** Upon completion of the inventory, the Consultant will develop guidance related to funding land acquisition for RPZ mitigation as well as develop a roadmap for ASO's action plan for RPZ mitigation. The extent of this may include the development of cost estimates by airport for the land acquisition associated with the RPZs.
4. **Document Process/Plan for Data Maintenance.** Once the inventory has been completed and the data organized for all system airports, the consultant will document the inventory

process in a summary report for the FDOT ASO. This summary report will include the methodologies used so FDOT ASO staff can continually update the inventory database in a consistent manner. It will also include a recommended timeline for updates.

E.7.5 Benefits of Implementation

The development of a comprehensive RPZ land use and ownership database will allow the FDOT ASO to better understand patterns of use, ownership, and zoning control, and identify focused solutions based on inventory findings (guidance, policy, funding, etc.). This project will also help prioritize RPZ protection needs across the system.

E.7.6 ASO Staff Responsibility

The ASO staff member responsible for managing this project is the Airspace and Land Use Manager.

E.7.7 Timeline and Priority for Initiation

This project should be undertaken when feasible, pending the priority of other FASP 2035 recommended projects.

E.8 CFASPP Boundary Evaluation

E.8.1 Full Title

Evaluate the Boundaries of the CFASPP

E.8.2 Introduction

Florida has the most established continuous system planning process in the nation. Instituted in the 1980s, the Continuing Florida Aviation System Planning Process (CFASPP) provides the Florida Department of Transportation (FDOT) Aviation and Spaceports Office (ASO), Federal Aviation Administration (FAA), airports, and aviation and non-aviation stakeholders the opportunity to offer input, obtain information, and coordinate activities that are relevant to implementing the Florida Aviation System Plan (FASP) and maintaining the statewide airport system. The goal of establishing CFASPP was to continue the statewide planning effort conducted by ASO to preserve a viable statewide aviation environment. CFASPP utilizes an extensive outreach program, including a comprehensive website and an annual series of meetings held at the regional and statewide levels to discuss FDOT's planning efforts, processes, and results, as well as airports' needs and issues. The program allows for the continuous monitoring of the aviation environment, which helps determine the development requirements needed across the state to meet projected aviation demands.

Through a committee structure comprised of airport representatives, the state has identified nine centers of aviation activity. Each center is referred to as a CFASPP "region" or "metropolitan area" (MA). A CFASPP region is an area containing several communities with common aviation

ties to each other due to geographic and economic characteristics. A CFASPP metropolitan area (MA) is an area of the state with interrelationships between airports that have a common economic base due to contiguous urban development. The CFASPP contains five regions and four MAs. The determination of which airports are within each region or MA is currently made by each airport sponsor who can petition to change from one region or MA to another based on their ties to other areas, whether due to economic activity or geographic characteristics. There is also a statewide committee comprised of the chairs of each of the Regions/Mas. This statewide committee meets after the regional meetings have occurred to discuss items of statewide significance.

E.8.3 Need and Purpose

During the FASP 2035 Update, an evaluation of other regional boundaries was conducted. A comparison of FDOT District and Florida Economic Development Council (FEDC) Regions to CFASPP boundaries was made to evaluate how a change in the boundaries would affect the airports within each division. The evaluation of Districts to CFASPP regions started with recognizing there are seven Districts compared to nine CFASPP regions. While there are many overlaps between the boundaries of each, the primary differences between the boundaries include:

- All Central CFASPP airports are in District 1
- All Southwest CFASPP airports are included in District 1
- Treasure Coast CFASPP airports are included in Districts 1 and 4
- All Northeast CFASPP airports are in District 2
- North Central CFASPP airports are included in Districts 2, 5, and 7
- All Northwest CFASPP airports are in District 3
- Southeast CFASPP airports are included in Districts 4 and 6
- All East Central CFASPP airports are in District 5
- All West Central CFASPP airports are included in District 7

Overall, the North Central and Southeast CFASPP boundaries would be most affected if FDOT District boundaries were used to define CFASPP boundaries.

For the FEDC regions, which would organize Florida's airports based on commonalities between economic conditions and opportunities, it was noted there are eight FEDC regions compared to nine CFASPP areas. While similar to both CFASPP and FDOT District boundaries, there are also a number of differences with FEDC boundaries, specifically:

- Central CFASPP airports are in the South Central and Tampa Bay FEDC regions
- All but one East Central CFASPP airports are in the East Central FEDC region (Flagler Executive is in the Northeast FEDC)
- All but two North Central CFASPP airports are included in the North Central FEDC region (Crystal River-Captain Tom Davis Field and Inverness Airport are in the Tampa Bay FEDC region)
- All Northeast CFASPP airports are in the Northeast FEDC region
- All Northwest CFASPP airports are in the Northwest FEDC region

- All Southeast CFASPP airports are included in the Southeast FEDC region
- Southwest CFASPP airports are included in the South Central, Southwest, and Tampa Bay FEDC regions
- Treasure Coast CFASPP airports are included in the South Central and Southeast FEDC regions
- All West Central CFASPP airports are included in the Tampa Bay FEDC region

Overall, the Southwest and Treasure Coast CFASPP boundaries would be most impacted if FEDC boundaries were utilized for the CFASPP.

While this analysis is helpful, any reorganization or redefining of boundaries requires the agreement of the airports in all CFASPP regions as airports can currently choose the CFASPP region in which to participate. Therefore, the general approach and related tasks for this analysis are primarily outreach related, with an upfront documentation of the existing condition.

E.8.4 General Approach and Tasks

There are three main phases of this project:

1. Document the existing condition including current boundaries and the benefits and concerns with continuing with the existing CFASPP boundaries
2. Conduct outreach to airports to solicit feedback on changing the boundaries
3. Develop a recommended implementation plan for boundary changes if determined to be appropriate

1. **Document existing condition.** The consultant will document the existing condition related to the CFASPP boundaries and other boundaries that could be considered for use. The FASP 2035 Update contains a review of CFASPP, FDOT District, and FEDC boundaries and identifies the impacts to various airports. To further evaluate the existing condition, coordination is needed with the following to provide a comprehensive understanding:
   - FDOT ASO Central Office and District Office personnel
   - Current CFASPP Executive Statewide Committee members
   - Current CFASPP Administrator

   This coordination will focus on obtaining input on the benefits and concerns related to keeping or changing the CFASPP boundaries.

2. **Conduct outreach.** Utilizing the results of the existing condition evaluation, additional outreach will be conducted utilizing a presentation during the standing CFASPP regional meetings and/or a statewide meeting and through an online survey. The presentation will focus on the potential new boundaries, detailing the benefits and drawbacks identified through prior discussions with FDOT ASO staff, CFASPP Executive Statewide Committee members, and the CFASPP Administrator, and seek input on additional benefits and concerns of CFASPP meeting attendees. To ensure that all airports are afforded the opportunity to participate, an online survey will also be prepared to request information regarding benefits and concerns not previously identified.

3. **Develop a recommended implementation plan**. Assuming the prior two steps have determined that a shift in CFASPP boundaries is feasible and desired, a recommended implementation plan will be developed. Most importantly, the timing of implementing new boundaries needs to be determined relative to the meeting schedule to ensure communication to effectively transition boundaries and maintain the CFASPP process. The recommended implementation plan will also detail any changes that are made to the CFASPP process including:
    - Number of meetings
    - Election for positions in new regions
    - Regional change requests by airports

E.8.5 Benefits of Implementation

The most significant benefit to FDOT ASO would result if the District boundaries were selected to be the CFASPP boundaries. This would mean two fewer meetings (seven Districts instead of nine CFASPP regions) each round and would enable District staff to participate in only one CFASPP meeting per round. It would also better facilitate communication between the District aviation personnel and the airports in the region, providing another outlet to discuss issues and concerns specific to the District. Furthermore, it would allow future FASP updates to focus on one set of regional boundaries in the regional level analyses, including project and funding recommendations that are directly relevant to FDOT Districts who administer state funding to Florida's system airports.

A benefit of aligning the CFASPP committees with the FEDC regions is that the planning process for one of Florida's largest economic drivers—aviation—would mirror the composition of the state's economic development efforts. Regional partners and stakeholders, goals, priorities, opportunities, and initiatives would align between the FEDC and CFASPP regions, allowing for closer coordination and alignment of efforts.

E.8.6 ASO Staff Responsibility

The ASO staff member responsible for managing this project is the Aviation System Manager.

E.8.7 Timeline and Priority for Initiation

This project should be undertaken at FDOT ASO's earliest convenience and should be planned around the timing of a CFASPP round. While the documentation should be a relatively quick task, the coordination with various representatives as previously noted can be time intensive. Outreach efforts should also coincide with an upcoming CFASPP round and therefore are dependent on the CFASPP meeting schedule.