

FASP

Florida Aviation System Plan 2035



FLORIDA DEPARTMENT OF TRANSPORTATION
AVIATION AND SPACEPORTS OFFICE

Statewide Executive Summary

November 2017

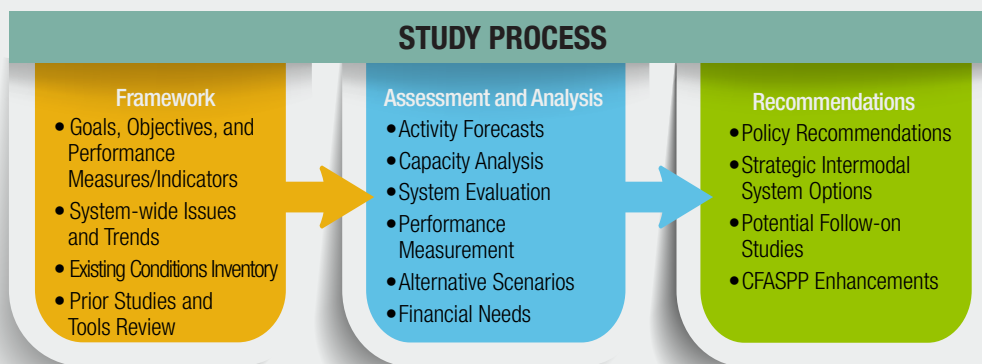
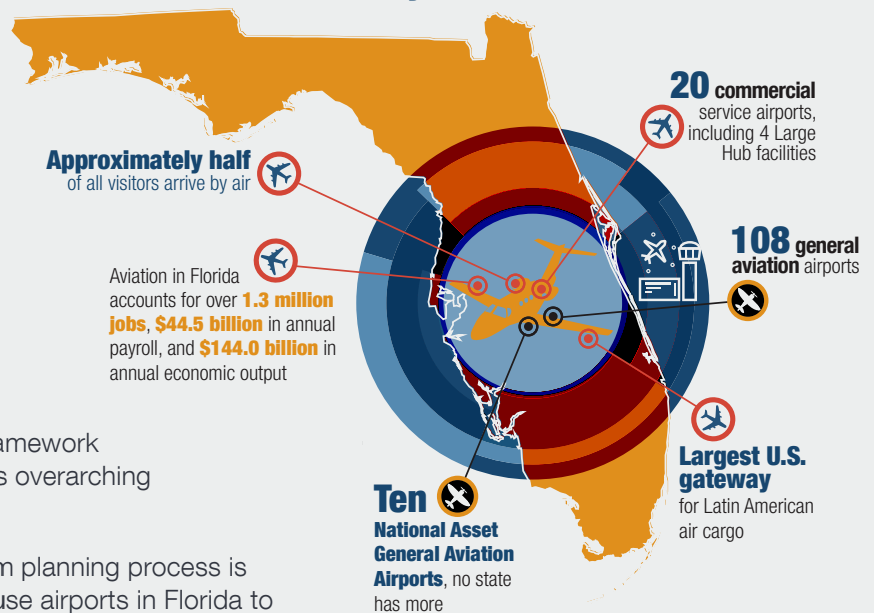
Florida Aviation System Plan 2035 Update

Florida offers the most dynamic and progressive aviation system in the United States (U.S.). The state's 128 public-use commercial service and general aviation airports supported nearly nine million aircraft operations in 2015, and that number is anticipated to continuously rise over the next 20 years. International air cargo is a multi-billion dollar industry with over \$64 billion in total air trade value in 2014. That same year, 2.7 million tons of domestic and international air cargo passed through Florida's airports. Air transportation serves as a backbone of the state's tourism economy and links rural communities to lifesaving amenities, such as emergency medical care and firefighting services.

Aviation in Florida supports the economy, as well as the safety, resiliency, and security of the state's residents, visitors, and businesses. Over the past several years, a number of major shifts have impacted the aviation industry in Florida and across the U.S. Against a background of rapidly evolving industry trends, the Florida Department of Transportation (FDOT) Aviation and Spaceports Office (ASO), with the assistance of the Continuing Florida Aviation System Planning Process (CFASPP), updated the Florida Aviation System Plan (FASP) to ensure Florida's airports continue to provide a high level of service to all users. The development of the FASP is grounded on the framework of the Florida Transportation Plan (FTP), Florida's overarching transportation planning document.¹

Known as the FASP 2035 Update, this long-term planning process is designed to comprehensively assess all public-use airports in Florida to understand the relationships between these facilities and their unique users. This integrated study is designed to assess the ability of the existing system to achieve current and anticipated future demands. The FASP 2035 Update is a tool to help FDOT maintain a safe, efficient, and reliable system, evaluate future funding decisions by identifying the facilities and services that are needed to meet future demand, and effectively expand capacity in those areas where it is most needed and beneficial. The FASP 2035 Update offers policy and development recommendations for the continuing improvement of the state aviation system.

Florida by the Numbers



The FASP 2035 Update included analyses of the facilities, aviation activities, and future demands specific to the state's nine CFASPP regions or metropolitan areas (MAs). The process encompassed a variety of interrelated technical analyses and tasks to ensure the aviation system continues to effectively serve the needs of businesses, citizens, and visitors—both today and well into the future.

¹ The FTP can be accessed at www.FloridaTransportationPlan.com.

Florida's Public-use Airports



Aviation in Florida Takes Flight

CFASPP was established by the FAA and FDOT to ensure that the state continues to meet the evolving demands placed upon its aviation system.

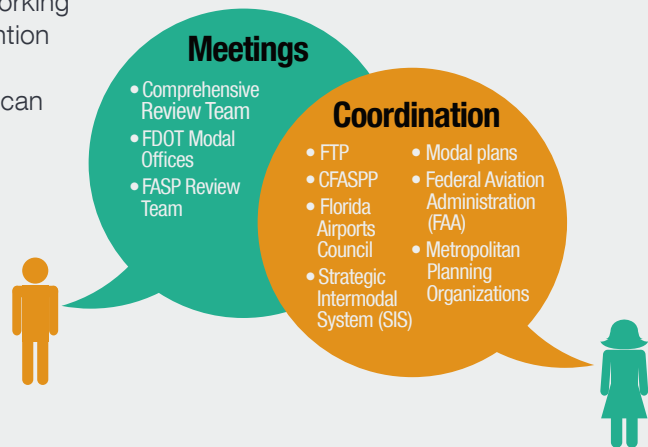
As part of this process, nine centers of aviation activity were identified in the state. Each of these CFASPP regions or MAs contributes to the aviation system by supporting different types and levels of aviation activity, driven by a unique set of social, economic, and environmental conditions impacting the area.

For more information, please visit www.cfaspp.com.

Florida's prominence as a global aviation leader is perhaps a natural outgrowth of the industry's long history in the state. In 1914, former St. Petersburg Mayor A.C. Pheil boarded Thomas Benoist's bi-wing seaplane for a 23-minute, 18-mile flight across Tampa Bay. Piloted by renowned aviator Tony Jannus, this short trip is now recognized as the first commercial flight in world history. After this inaugural trip, Benoist's "St. Petersburg-Tampa Airboat Line" began operating two flights a day at a fee of \$5.00 per one-way ticket, and the commercial aviation industry was born.

Since those early days of flight, the aviation industry in Florida has evolved in response to new technologies and changing demands, and the public-use airport system now encompasses 20 commercial service and 108 general aviation airports. Florida has become the hub of air transport in the Americas for both people and cargo, the nation's premier provider of flight instruction, and a major center for maintenance, repair, and overhaul services. Florida's airports also serve critical roles during disaster response, providing the fastest way to bring people and supplies into and out of areas. Airports also serve as staging areas from which response-recovery efforts can be launched. More than 470 aviation and aerospace companies are located in Florida, with some of the largest names in the industry such as Boeing, Embraer, FlightSafety, General Dynamics, Lockheed Martin, Northrop Grumman, Piper, Pratt and Whitney, and Sikorsky conducting major operations.

Looking ahead, the future of aviation in Florida is bright. Yet to maintain this position of leadership, the airport system must continue to meet the ever-changing demands and trends affecting the industry. FDOT, the FAA, airport sponsors, and the many communities our airports serve are jointly tasked with ensuring Florida's infrastructure and services continue to safely, efficiently, securely, and conveniently meet the needs of all users. The coming years and decades promise changes that will affect how, when, and where we fly. Working together with focused attention on the needs of today and demands of the future, we can all ensure Florida's aviation industry continues to soar.

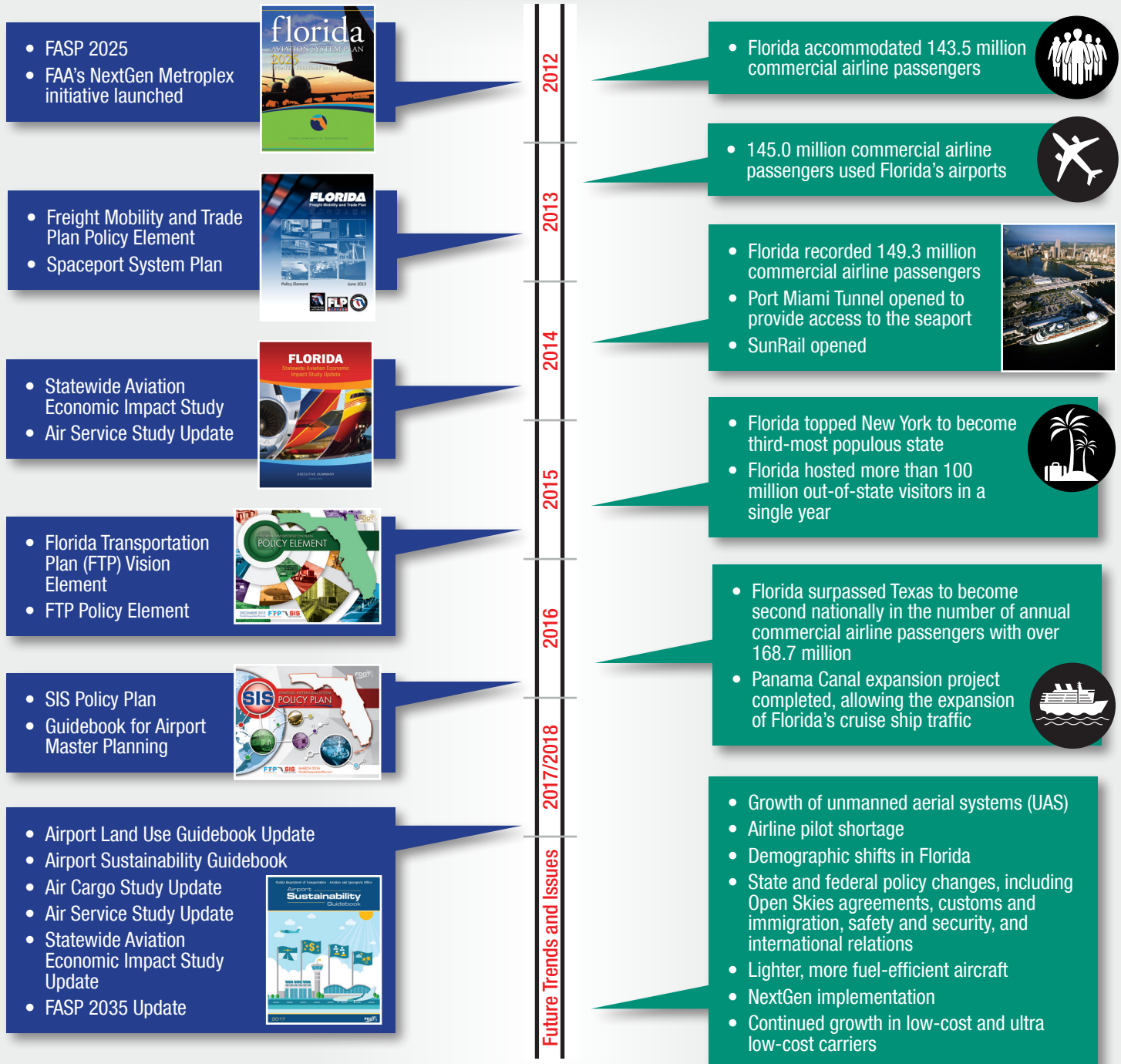


Bombardier E-9A over Tyndall Air Force Base

FDOT used a comprehensive public outreach and stakeholder engagement process to ensure the FASP 2035 Update was developed with the input of many audiences.

Florida Transportation Planning Timeline

The FDOT ASO, CFASPP regions and MAs, and other planning partners have continuously updated the state's long-term and aviation-specific planning and guidance documents to keep pace with new developments facing the industry and within the state.



Vision and Goals

The FTP is the overarching long-range transportation plan guiding the future of Florida's transportation system. The FTP addresses the management, operations, and regulation of all transportation networks in the state, including air, road, rail, and multimodal alternatives. It also provides a policy framework for the expenditure of state and federal transportation funds.








More information about the FTP is available at www.FloridaTransportationPlan.com.

The FASP serves as a mode-specific strategic plan for the aviation system. The goals established as part of this plan have been developed to complement the FTP while specifically meeting the goals of the aviation system.

Ensuring a link between the FTP and FASP enhances the understanding of FDOT's funding priorities and helps identify those projects that advance the state's vision for its aviation and transportation future.

FASP 2035 Update Goals and Recommendations

Based on a comprehensive analysis of the state's aviation system, the FASP 2035 Update offers policy and development recommendations for the continuing improvement of the state aviation system.

1. Provide safe, efficient, secure, and convenient service to Florida's citizens, businesses, and visitors. 
2. Contribute to operational efficiency, economic growth, and competitiveness while remaining sensitive to Florida's natural environment. 
3. Support and enhance the national position of leadership and prominence held by Florida's aviation industry. 
4. Protect airspace and promote compatible land uses around airports. 
5. Foster technological innovation and support the implementation of new technologies. 
6. Promote support for aviation from business, government, and the public. 
7. Foster Florida's reputation as a military- and aerospace-friendly state. 

Punta Gorda Airport



Key Industry Trends

Numerous global, national, and state-specific trends have the potential to significantly impact Florida’s aviation industry over the 20-year horizon of the FASP 2035 Update. Some of these trends, such as new technologies and the business of aviation, will be felt at broad scales. Others, like shifting demographics and increased reliance on intermodal connectivity, will be realized differently throughout Florida.

→ Technological Innovation

New technologies are revolutionizing aircraft, airports, and the National Airspace System. Aircraft such as the Boeing 787 Dreamliner are becoming larger, lighter, and capable of flying longer distances with less fuel. The growing popularity of UAS is presenting new coordination challenges as the technology becomes more advanced and accessible to the public. Regulators and airports are continuously working to implement the most effective strategies to ensure UAS and manned aircraft can safely and efficiently operate together in the sky.

NextGen is a multi-pronged FAA initiative to make air travel safer and more efficient. NextGen requires aircraft operators and airports to comply with key federal mandates impacting equipment and operations as part of the implementation process. While NextGen is an FAA-driven initiative, it requires aircraft operators to equip aircraft and pursue NextGen practices. Most acutely, many aircraft operators currently face a January 1, 2020 mandate to equip their aircraft with Automatic Dependent Surveillance-Broadcast (ADS-B) equipment, a key underlying feature of the FAA’s NextGen air traffic modernization program.

→ Demographics

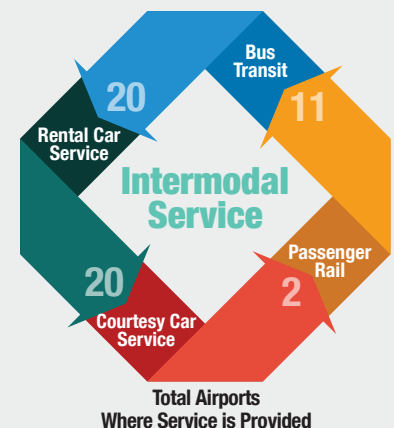
According to the U.S. Census Bureau’s latest estimates, Florida is the third-most populous state with over 20 million residents in 2016, and the in-migration rate is the highest in the country. Moreover, Florida currently has the highest percentage of residents over the age of 65 years in the nation, and older Americans will account for most of the state’s future growth. On a national scale, the millennial generation (generally encompassing people born between 1980 and 2000) accounts for the largest share of the country’s population. In Florida, the millennial generation accounts for approximately 26 percent of the total population (2016). These concurrent trends will place new demands on Florida’s airports.

→ Regulatory Changes

Regulatory changes designed to make our skies safer, more secure, and better able to meet current demands are resulting in important changes affecting all facets of the aviation industry. Some, such as Open Skies agreements, are intended to reduce barriers to international air travel and commerce. Evolving customs and immigration rules are being designed to facilitate legitimate travel while maintaining the highest standards of security and border protection. In recent years, the air traffic control system has faced intense scrutiny, with some officials advocating for the privatization of the system. The aviation industry is broadly confronting an international pilot shortage with serious effects projected in the next two decades. As the top provider of flight instruction in the U.S., this latter trend may have a particularly acute impact on Florida.

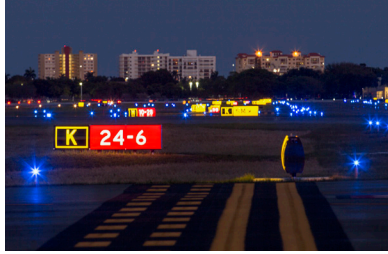
→ Intermodal Connectivity

Airports provide access to the national air transportation system, but also require links to other modes of transportation to facilitate the movement of goods and people to and from the airport. The linkages between airports and highways, passenger rail, transit, rental cars, and other modes of travel are essential aspects of an airport system’s accessibility. In Florida, the modal facilities deemed essential for statewide mobility are designated as Strategic Intermodal System (SIS) facilities. Twenty of Florida’s 128 airports are SIS or Emerging SIS facilities, including 18 commercial service and two general aviation reliever airports.

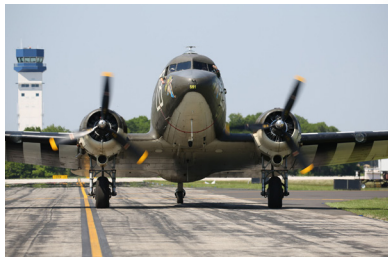


Intermodal Services at Florida’s 20 SIS Airports

System Goals and Performance



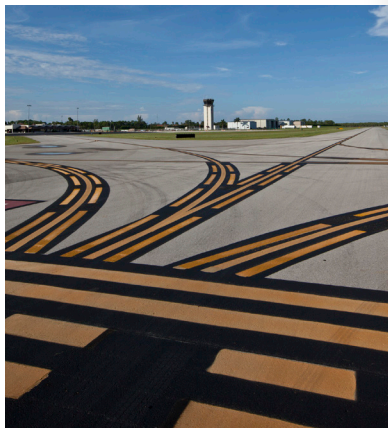
Pompano Beach Airpark



Lakeland Linder Regional Airport



St. Pete-Clearwater International Airport



Naples Municipal Airport

The seven goals established during previous FASP efforts and validated by the FASP 2035 Update are designed to ensure Florida's airports continue to meet the evolving needs of FDOT, stakeholders, and the aviation public. In conjunction with these goals, the FDOT developed a comprehensive set of FASP performance measures and performance indicators to assess progress on a series of system-wide objectives developed in association with each goal.

This analysis is used to quantify the ability of the existing system to achieve FASP goals and provides important insight to guide the development of system recommendations and, ultimately, funding and other planning decisions.

In total, FDOT identified 13 performance measures and 31 performance indicators to evaluate the system's performance. A representative sample is provided here.

Performance Measures

Performance measures quantitatively evaluate specific aspects of system performance that can be improved through funding or project implementation. Performance measures are the metrics that FDOT can influence through funding, planning efforts, or policies and procedures.

→ Electronic Airport Layout Plans (eALP)

To support NextGen implementation, the FAA is shifting its standards toward eALPs instead of the traditional static-map format. eALPs use a Geographic Information System (GIS) to allow airports and the FAA to collect and store aeronautical data, develop satellite-based approach procedures, and better manage the National Airspace System (NAS).

→ Runway Hot Spots

A runway hot spot is a safety-related problem area or intersection at an airport. Most often, a hot spot is a complex intersection between two taxiways or a taxiway and runway. The issues resulting from these confusing areas may be compounded by miscommunication between an air traffic controller and a pilot, which may cause an aircraft separation standard to be compromised.

→ Wildlife Site Visits, Assessments, and/or Management Plans

Wildlife such as birds and deer in proximity to an airfield threaten the safe and efficient operation of airfield users. Airports can perform wildlife hazard site visits, conduct wildlife hazard assessments, and/or prepare management plans to mitigate against these hazards.

Performance Indicators

Performance indicators are generally used as a reporting mechanism to gather data on those aspects of system performance that cannot be directly impacted by FDOT action.

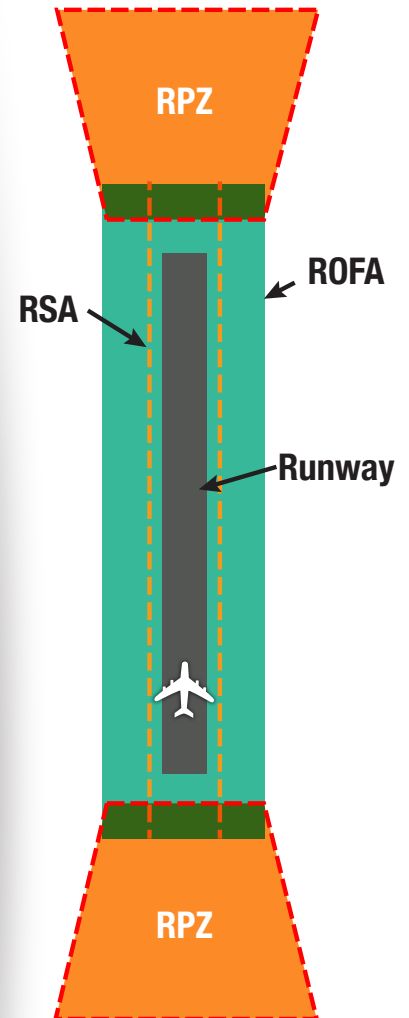
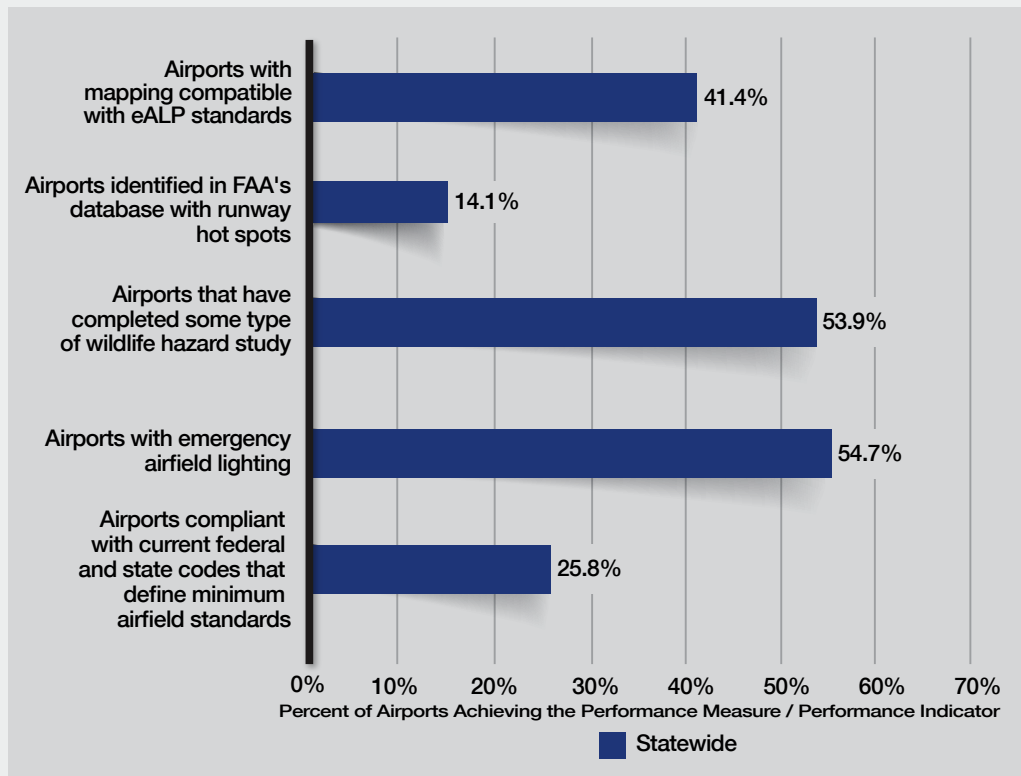
→ Emergency Airfield Lighting

The ability for an airport to remain operational through natural and man-made disasters is critical for the movement of people, goods, and equipment to ensure that the needs of the affected communities are met. Emergency airfield lighting provides for continued operations during nighttime hours or low-visibility conditions when local power is unavailable.

→ Runway Safety Areas (RSA)

According to the FAA, RSAs are “a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway.”

Measures / Indicators



The FAA defines several key safety areas on and adjacent to runways. The RSA is a rectangular box surrounding the runway based on the runway design code. The runway object free area (ROFA) is an area centered on the runway that must be free of all objects except those provided for air navigation or aircraft maneuvering purposes. The runway protection zone (RPZ) is a trapezoid-shaped area off the end of the runway designed to protect people and property on the ground if the aircraft lands or crashes off the runway end.

Statewide Forecasts

Florida enjoys a strong aviation industry due to a number of structural conditions and market opportunities. The state offers multiple gateways between the U.S. and major international markets (primarily Latin American and the Caribbean, but also Asia, Europe, and Africa), a skilled labor pool and low labor costs, a robust intermodal network, and tax incentives and regulatory conditions designed to draw high-value jobs and industries into the state.

Each of these variables can be considered an aviation driver—an external condition that has influenced the development of the aviation industry in Florida.

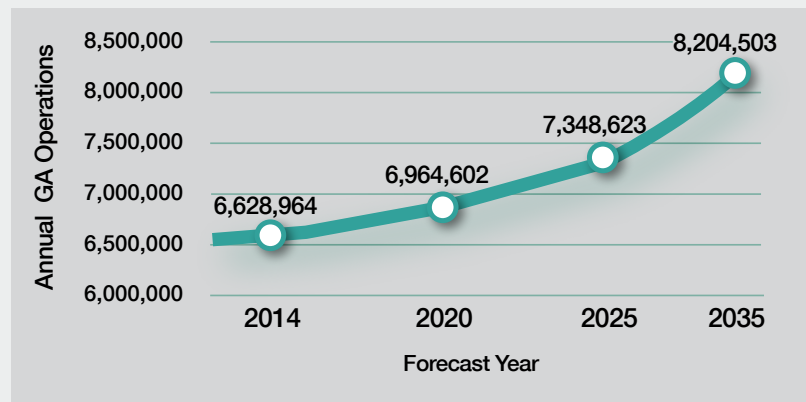


Photo courtesy of the Florida Institute of Technology.

Aviation activity forecasts or projections for Florida’s system of airports is a necessary step in assessing the need for and phasing of future airport development. Activity projections are used in part to determine the role of airports within the Florida system, evaluate the ability of the existing system to accommodate projected aviation demand, and plan future facilities for the system. Aviation forecasts describe the anticipated levels of aviation demand over the planning horizon based on numerous factors, including historical activity, population trends, state and FAA activity forecasts, and regional and statewide aviation drivers.¹

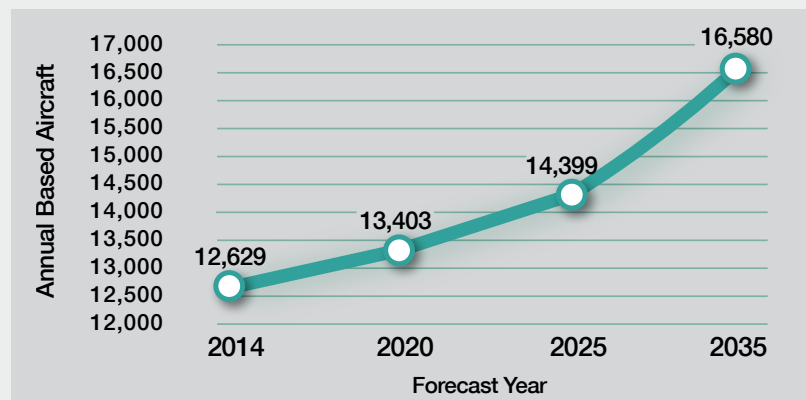
2014 - 2035 General Aviation (GA) Operations²

GA operations are anticipated to increase at an annual growth rate of 1.13 percent to reach 8,204,503 by 2035.



2014 - 2035 Based Aircraft²

The number of based aircraft in Florida is projected to increase at an annual growth rate of 1.49 percent to reach 16,580 by 2035.



¹ Note: Operations forecasts only reflect GA activity. Commercial operations were excluded from this evaluation, as drivers of commercial activity at airports can vary significantly, often due to factors that are beyond an airport’s control. Examples include airline consolidation, route restructuring, and fleet modification.

² 2014 was used as the base year in the FASP because it was the last full year of data available when the analysis was initiated in 2015. Sources: FAA Terminal Area Forecast and 5010 Airport Master Records.

Regional Results

On a more micro-level, regional conditions shape the type and volume of aviation activity that occurs across Florida. As a result, specific markets and populations may become over- or under- served by particular types of airports in terms of facilities, service levels, and aviation activities. Local and regional economies can experience a wide range of impacts associated with air service.

To understand these region-specific impacts, the FASP 2035 Update included aviation forecasts specific to each CFASPP region and MA. Understanding projected aviation activity on a more detailed level assists airports, FDOT Districts, CFASPP Regions, MAs, and the FDOT ASO identify potential opportunities for the development of facilities at local, regional, and statewide levels. These forecasts are not meant to take the place of individual airport forecasts developed during an airport's master planning process. Instead, these forecasts are used to supplement master plan forecasts and provide FDOT with high-level estimates of future demand.

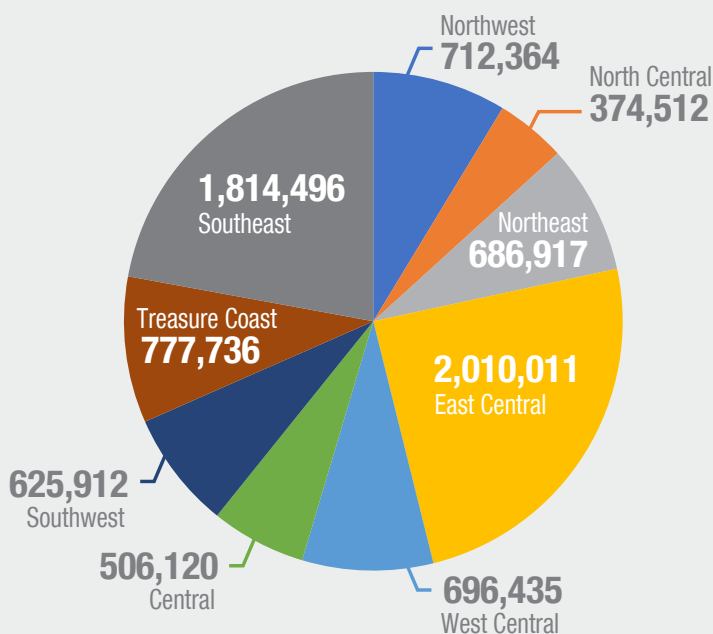


The FlightSafety Academy was established at Vero Beach Regional Airport in 1966 to take advantage of the area's near-perfect flying weather. Located within Florida's Treasure Coast, Vero Beach Regional Airport has experienced significant growth in recent years, including the addition of commercial service to two domestic destinations in 2016.

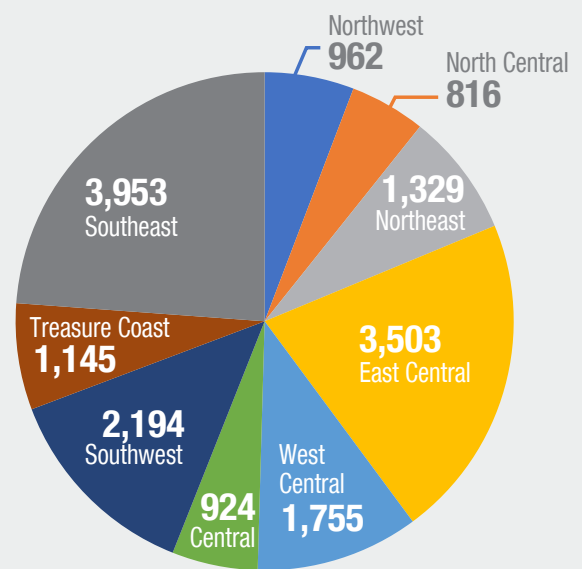
2035 GA Operations and Based Aircraft

Over the next 20 years, Florida's aviation industry will continue to grow in all areas of the state to significantly exceed national growth trends. Key factors influencing this growth include a rapidly growing population and flourishing flight instruction industry fueled by an international pilot shortage. From 2014 to 2035, it is anticipated that over 3,950 new based aircraft will be located at Florida's airports and an additional 1.6 million general annual aviation operations are forecast statewide.

2035 GA Operations by CFASPP Region/MA



2035 Based Aircraft by CFASPP Region/MA

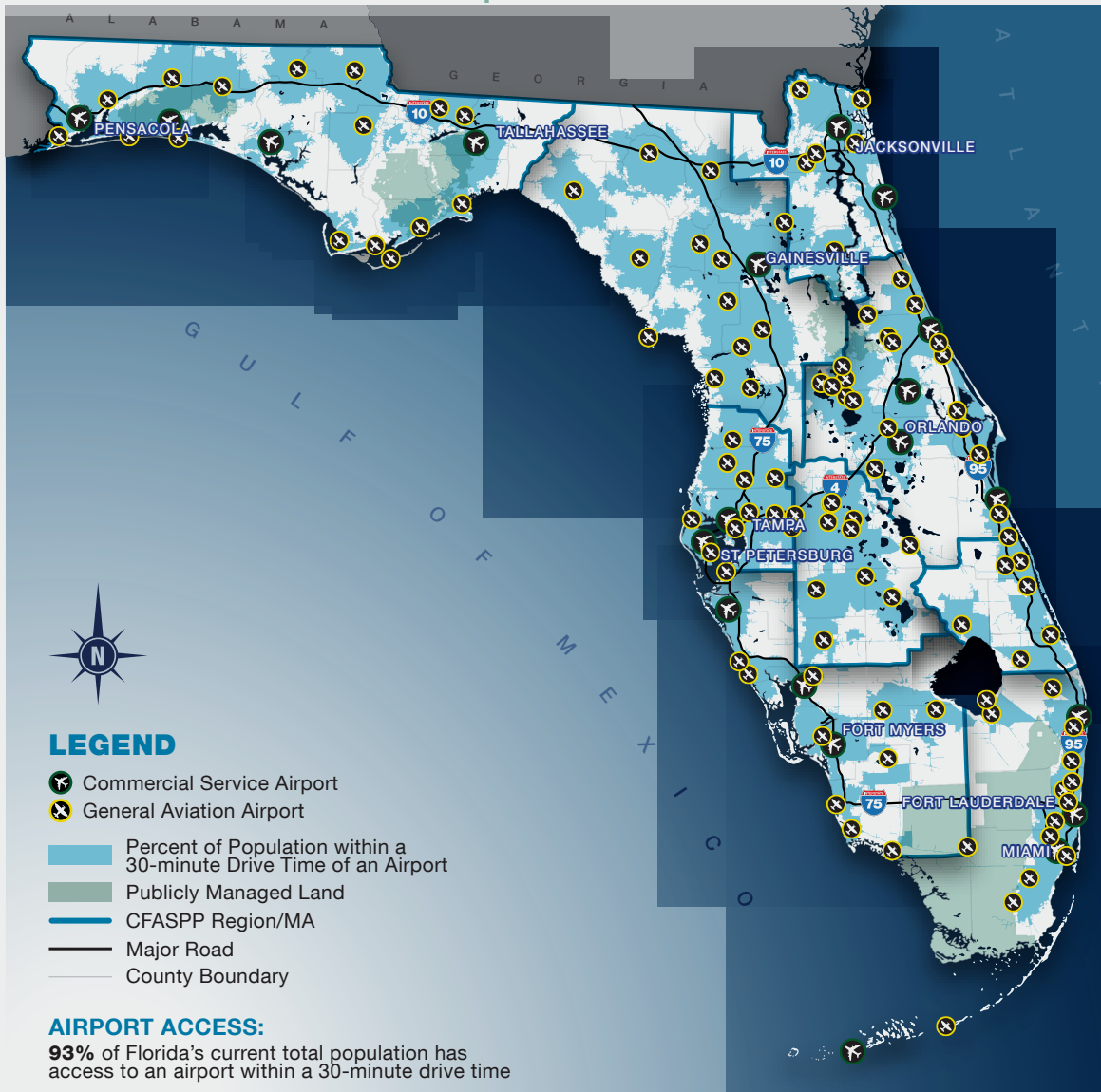


Accessibility Analysis

A functional airport system that meets the state's safety, economic, and accessibility objectives must be accessible from the ground as people travel to airports, as well as from the air for pilots seeking particular airport characteristics. The FASP Update 2035 conducted an analysis to determine the percent of Florida's population that can access different types of airports within a 30-minute drive time. The results of this analysis demonstrate how well Florida's residents are served by the state aviation system and help pinpoint areas of potential service redundancy and opportunities for new facilities or services. The analysis shows there is no need for additional airports in Florida, rather that the existing system should be leveraged.

The FAA uses a 30-minute criterion to determine the airports that are eligible for inclusion in the National Plan of Integrated Airport Systems. This same threshold is often used by businesses that operate general aviation aircraft as a decision-making factor when seeking locations to build or relocate their facilities.

Airport Access



In addition to providing air transportation for people and goods, airports provide quality-of-life benefits such as access to specialized or emergency medical care, law enforcement, disaster response, and aerial firefighting services. Airport access is particularly important for rural areas without the ability to obtain these and other services in their local communities.

Demand/Capacity Analysis

As part of the regional aviation forecasting effort, the FASP 2035 Update assessed the ability of Florida's airports to meet current and projected levels of aircraft operations in 2035. This analysis identified the ratio of aircraft operations at individual airports to Annual Service Volume (ASV). The capacity evaluation specifically assessed each airport's ASV, an indicator of relative operating airfield capacity that accounts for differences in various operating conditions that would be encountered over a year's time. Some examples of these conditions include runway use, airfield configuration, aircraft mix, and weather conditions.

Based on this analysis, 11 airports are anticipated to exceed the 60 percent threshold, six are anticipated to exceed the 80 percent threshold, and three are anticipated to reach the 100 percent threshold by 2035. Of these 20 airports, seven are designated as commercial service.

Demand/Capacity Analysis



The FAA recommends planning for capacity improvements when the ratio of aircraft operations to ASV reaches 60 percent, and implementation of these improvements should occur when this ratio reaches 80 percent.

Statewide Recommendations

Goal 1



Provide safe, efficient, secure, and convenient service to Florida's citizens, businesses, and visitors.

- Preserve existing infrastructure or replace when necessary.
- Conduct a more detailed capacity study, looking specifically in FDOT Districts Four, Five, and Six.
- Monitor Future Airport Capacity Task (FACT) studies as they are developed.
- Prioritize funding for projects that address state licensing standards per Rule 14-60, Florida Administrative Code (FAC).
- Compile Runway Protection Zone (RPZ) ownership data.
- Promote state funding for projects that address state and federal standards for protection and compatibility, including compatible land uses within RPZs.
- Coordinate with state and local Emergency Operations Centers (EOCs) on airport emergency power needs.
- Develop a roadmap for addressing airport wildlife hazards at a statewide level for non-Part 139 airports.
- Track the implementation of projects to correct the identified taxiway deficiencies.
- Develop facility, infrastructure, and service guidelines for lower activity general aviation airports.
- Update the FDOT General Aviation Security Assessments.

Goal 2



Contribute to operational efficiency, economic growth, and competitiveness while remaining sensitive to Florida's natural environment.

- Coordinate with local, regional, and state business and tourism partners to support and encourage economic growth; communicate the benefits of the aviation industry; and foster social responsibility.
- Develop a study to identify business suitability and leverage opportunities at airports, including commercial air service enhancements.
- Coordinate with Metropolitan Planning Organizations and other modal partners to support and improve intermodal connectivity.
- Continue to maintain a database of current master plans and Airport Layout Plans (ALPs) and develop a database to track sustainability and business plans on file.
- Support efforts related to Florida's aviation education, flight training, and workforce development.
- Recommend modifications to existing SIS airport criteria to better leverage the economic competitiveness and strategic nature of Florida's airports.
- Continue to update and communicate the FDOT *Airport Sustainability Guidebook*.

Support and enhance the national position of leadership and prominence held by Florida’s aviation industry.

- Monitor and promote the return on investment (ROI) of state funds invested in Florida’s airports.
- Continue to update the *Statewide Aviation Economic Impact Study* in conjunction with the FASP.

Goal 3



Protect airspace and promote compatible land uses around public airports.

- Provide continuous training on the latest requirements of Chapter 333, Florida Statutes (F.S.), Airport Zoning.
- Provide resource materials for developing and implementing zoning ordinances, land use compatibility, and airport protection.
- Develop a web-based statewide land use compatibility tool that includes unmanned aircraft systems information.
- Develop a statewide database of eALP files provided by airports during the master planning process.

Goal 4



Foster technological innovation and support implementation of new technologies.

- Develop an implementation plan for maximizing NextGen approach procedures at Florida airports.
- Continue to work with and support partners in the space industry to advance NextGen technologies.
- Monitor technological advances that could impact airport development needs.

Goal 5



Promote support for aviation from business, government, and the public.

- Leverage Airport Cooperative Research Program (ACRP) information to develop Florida-specific resources and tools to gain support from businesses, public, and government representatives.
- Continue to fund and provide statewide Pavement Condition Index (PCI) inspections and training.
- Improve Capital Improvement Plan (CIP) management and coordination to better manage financial resources for the Joint Automated Capital Improvement Program (JACIP).

Goal 6



Foster Florida’s reputation as a military- and aerospace- friendly state.

- Ensure that military personnel are invited and encouraged to participate in planning processes, such as the *Statewide Aviation Economic Impact Study*, FASP, CFASPP planning efforts, and airport master plans.
- Coordinate and support the efforts of the U.S. military in Florida through FDOT/EOC coordination.

Goal 7



FLORIDA AVIATION SYSTEM PLAN 2035



FLORIDA DEPARTMENT OF TRANSPORTATION
AVIATION AND SPACEPORTS OFFICE
www.fdot.gov/aviation



Goodyear Airship Base at the
Pompano Beach Airpark



Gainesville Regional Airport