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Recommendations

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Chapter 10

Recommendations

The Florida Aviation System Plan 2043 (FASP 2043) included an extensive inventory and survey of the Florida airport system that provided a baseline for analysis of the performance of the system airports and the system as a whole. The Florida Department of Transportation Aviation Office (FDOT AO) also specified four topics for in-depth investigation and assessment. The FDOT AO will continue its oversight and monitoring of the Florida airport system using the results of this material.

FDOT District Aviation Coordinators collaborate closely with the system airports in their Districts when it comes to prioritizing airport capital projects and the associated funding. With this in mind, this chapter recommends areas where airport system improvements could be made and raises issues for discussion among the Districts and airports to facilitate the collaborative decision-making described.

These recommendations stem from the analysis and initiatives presented in earlier chapters. The analyses looked at the classifications within the National Plan of Integrated Airport Systems (NPIAS), performance of the overall airport system, subcomponents of the system, and individual system airports. The improvements for each category are explained in more detail in this chapter. With these recommended improvements based on a system-level analysis, they will need independent analysis at the individual airport level. This is particularly true since any planned airport improvement needs to be on an approved airport layout plan with sufficient justification documented to be eligible for state or federal funding assistance. Inclusion in this system plan can aid in the justification but may not be sufficient on its own.

The recommendations are based on evaluation of the NPIAS, the analysis of performance measures, geographic coverage, and the four initiatives identified by the FDOT AO.

10.1 Recommendations from NPIAS Evaluation

Chapter 3 – Airport System NPIAS Classifications evaluated the eligibility of the Florida system airports to maintain their NPIAS classification and for the eligibility of the seven non-NPIAS system airports to be added to the NPIAS.

The primary takeaway from this analysis was the importance of maintaining current based aircraft counts at both NPIAS and non-NPIAS system airports. NPIAS classifications, which the Federal Aviation Administration (FAA) uses for some types of funding allocations, relies on verified based aircraft counts. The FAA updates its NPIAS report every two years using data that it gathers in December. It is in every airport's best interest to ensure that the data the FAA gathers in December is as accurate and up-to-date as possible, especially at those airports where the based aircraft count is near the threshold of a classification. These are the key based aircraft thresholds, as taken from the FAA Order 5090.5 Formulation of the NPIAS and the Airport Capital Improvement Program, last updated September 3, 2019:

- 11 based jets (National Airport threshold)
- 1 based jet or 100 based aircraft (Regional Airport threshold)
- Reliever airports with 90 based aircraft (Regional Airport threshold)
- 15 based aircraft (Local Airport threshold)
- 10 based aircraft (Basic Airport threshold)
- 4 based helicopters (Basic Heliport threshold)

NPIAS classifications are critical for eligibility for some FAA funding allocations. It is in every airport’s best interest to routinely report based aircraft data promptly and accurately.

Since based aircraft are not the only criteria used for NPIAS classifications, airports should also endeavor to monitor the operational statistics that could govern their NPIAS classification and correct any errors expeditiously. The operational statistics that FAA uses for NPIAS classifications include:

- Instrument operations.
- International flights.
- Interstate departures.
- Enplanements.
- Landed cargo weight.
- Domestic flights over 500 miles.

Competition for funding from the FAA is only expected to increase, so it is in an airport’s best interest to remain cognizant of its NPIAS status and maintain the data that is critical for its NPIAS evaluation.

10.2 Recommendations from Performance Measures

Chapter 7 – System Analysis assessed a large number of performance measures, providing a number of metrics to assess how Florida system airports are performing. This section outlines recommendations stemming from the analysis of performance measures.

The FDOT AO intends to discuss these findings with FDOT District personnel to assist with identifying priorities for initiatives and funding decisions. To aid in that discussion, this section highlights areas of the system analysis that FDOT can influence.

10.2.1 FAA Airfield Design Standards

From a safety perspective, the system analysis identified a number of airports with primary runways and primary taxiways that currently do not meet FAA standards. **Table 10-1** lists the number of airports by FDOT District that have primary runways and taxiways that currently do not meet FAA standards. For the identified primary runways, most airports indicated runway protection zones (RPZs), or Part 77 surfaces, did not meet FAA standards. A small number of airports indicated that their runway safety areas (RSA) were inadequate.

Table 10-1. Florida System Airports with FAA Design Standard Issues

FDOT District	Number of System Airports in District	Airports with Primary Runways not Meeting FAA Standards	Airports with Primary Taxiways not Meeting FAA Standards	Airports with FAA Designated Hotspots
1	21	12	1	4
2	16	5	0	3
3	15	9	2	2
4	15	7	1	8
5	21	6	2	4
6	7	6	0	2
7	11	6	1	1
Total	106	51	7	24

Source: FASP 2043 Airport Survey

It is recommended that FDOT, the FAA, and individual airports continue to address these primary runway related issues with the goal of reducing, eliminating, and/or effectively mitigating them. Doing so enhances safety and, in the cases of tree obstructions penetrating Part 77 surfaces, prevents tree growth from negatively impacting operations or further degrading operations at impacted airports.

As noted in **Table 10-1**, only seven airports reported their primary taxiways not meeting FAA design standards. These taxiways fell short of taxiway safety area or taxiway object free area standards.

Finally, **Table 10-1** also shows the number of airports by FDOT District with FAA-designated hot spots.

Additional recommendations for consideration include:

- Consolidate airfield projects--A recommended strategy is to identify those hot spots that can be corrected while also addressing shortcomings in the primary runway or taxiway, thereby leveraging project dollars to the maximum extent possible.
- Continue to emphasize obstruction removal—Encourage airports to maintain clear approaches, which may be addressed with more proactive approach evaluations and on-going mitigation projects.

10.2.2 Pavement Maintenance

The system analysis demonstrated that the Florida airport system is a fairly mature, well-developed system, but the downside to a well-developed system is the effort required to maintain the system. A significant maintenance item is the upkeep of pavement at system airports. FDOT should plan to address the rehabilitation needs of the less than 20 percent of primary runways reported as having a pavement condition index (PCI) value under 70 (**Table 10-2**).

Primary taxiways and primary aprons also need maintenance consideration. More airports have primary taxiways and aprons in need of rehabilitation than primary runways, so FDOT will need to carefully consider which pavement maintenance projects to prioritize.

Table 10-2. Florida System Airports Needing Pavement Rehabilitation

FDOT District	Number of System Airports in District	Airports with Primary Runway PCI < 70	Airports with Primary Taxiway PCI < 70	Airports with Primary Apron PCI < 70
1	21	1	6	4
2	16	4	5	6
3	15	3	6	6
4	15	4	1	2
5	21	4	5	7
6	7	4	3	4
7	11	0	2	5
Total	106	20	28	34

Source: FASP 2043 Airport Survey and AVCON

10.2.3 Backup Power

The analysis of backup power systems for the airport terminal, runway lighting, and fueling found that a number of airports lacked these facilities. **Table 10-3** identifies the number of airports without backup power systems by FDOT District. It is recommended that FDOT prioritize assisting these airports with acquiring backup power systems to enhance their operational reliability during times of emergency, with hurricanes being a notable concern.

Additional recommendations for consideration include:

- Prioritize hurricane prone areas—With the prolonged power loss that frequently accompanies hurricane activity, FDOT may want to consider prioritizing those airports in coastal areas where the risk from hurricanes is greatest.
- Assess the critical component at each airport—Different airports may have different critical infrastructure. For example, an airport suited for serving as a hurricane shelter likely will prioritize backup power for the terminal over other systems. An airport that needs to operate around the clock will want airfield lighting equipped with backup power.

Table 10-3. Florida System Airports Needing Back-Up Power Systems

FDOT District	Number of System Airports in District	Airports without Backup Power for the Terminal	Airports without Backup Power for Runway Lighting	Airports without Backup Power for Fueling
1	21	11	10	12
2	16	6	3	7
3	15	6	9	7
4	15	5	3	5
5	21	12	5	15
6	7	0	0	3
7	11	7	5	9
Total	106	47	35	58

Source: FASP 2043 Airport Survey

10.2.4 Airport Planning Studies

The FDOT AO stressed the importance of proper planning for system airports during the FASP 2043. The FDOT AO established a goal of having 80 percent of system airports with a master plan, ALP, and property maps that were less than 10 years old, acknowledging that some of the smallest airports or those with limited development may not benefit from routine updates or be financially able to support more frequent updates. **Table 10-4** shows that more than 80 percent of Florida system airports have current ALPs and property maps. More than 70 percent of airports have a current master plan. When accounting for airports that have plans in progress or plans to update, the 80 percent threshold is met for all plans. Consequently, the FDOT AO should continue to encourage airports to keep their planning documents up to date.

Table 10-4. Florida System Airports Needing Current Plans

FDOT District	Number of Airports	Airports with Master Plans More than 10 Years Old	Airports with Airport Layout Plans More than 10 Years Old	Airports with Property Maps More than 10 Years Old
1	21	9 (2)	4 (2)	1 (0)
2	16	6 (0)	2 (0)	5 (0)
3	15	0 (0)	0 (0)	2 (0)
4	15	4 (4)	4 (4)	0 (0)
5	21	10 (9)	8 (8)	9 (7)
6	7	0 (0)	0 (0)	0 (0)
7	11	2 (2)	2 (2)	1 (1)
Total	106	31 (17)	20 (16)	18 (8)

Note: Updated plans in progress, or planned, are shown in parenthesis.

Source: FASP 2043 Airport Survey

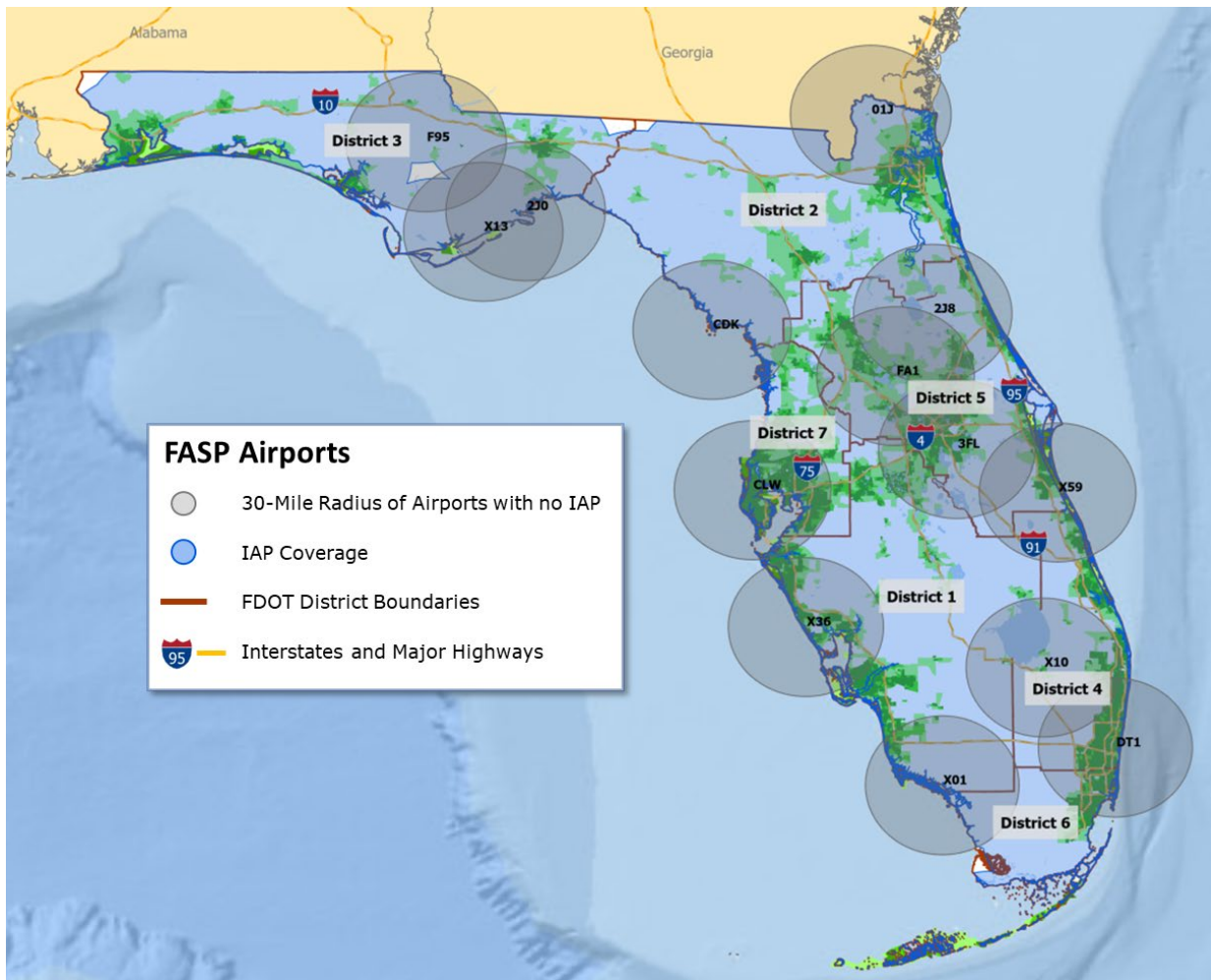
10.3 Geographic Analysis Recommendations

The evaluation of geographic coverage by the Florida airport system found that this well-developed system provides excellent coverage to the people and businesses of Florida. Even the analysis of subsets of the airport system showed significant coverage. Review of flight coverage by airports with instrument approach procedures and fuel service demonstrated only a handful of opportunities to improve coverage.

10.3.1 Flight Coverage by Airports with Instrument Approach Procedures

Figure 10-1 shows that there is an opportunity to improve the geographic instrument approach coverage in the panhandle (white shaded area in the center of District 3).

Figure 10-1. Coverage by Instrument Approach Procedures and Airports without Instrument Approaches



Note: Areas shown in green denote significant population densities.

Source: Cignus and FAA Chart Supplement Southeast U.S. 10 AUG 2023 to 5 OCT 2023

Calhoun County Airport (F95), located in Florida’s panhandle, can provide complete flight coverage for a small area south of F95 that is currently outside of 30 nautical miles from an airport with an instrument approach. Carrabelle-Thompson Airport (X13) could also slightly expand flight coverage with the addition of an instrument approach by covering a small corner of the same area. **Figure 10-1** also illustrates the handful of Florida system airports that lack instrument approaches. While adding instrument approaches to these airports would not increase flight coverage from a system perspective, such improvements would improve the utility of the individual airport.

Additional recommendations for consideration include:

- Effectiveness of the instrument approach—If there are obstructions or other issues with the approach that will result in minimums that are close to visual flight rule weather minimums, then the approach will not be of much use, especially if other airports nearby have decent instrument approaches.
- Amount of traffic expected to use the approach—This factor should consider both the traffic that would use the approach to arrive and the traffic that would use the approach for training purposes.
- Capability of the airport to maintain the new approach—If the airport’s new instrument approach is subject to encroachment by vegetation growth, it is important for the airport to have the resources and tools necessary to maintain the approaches to the instrument procedure. Otherwise, the instrument approach can become degraded, or even eliminated.

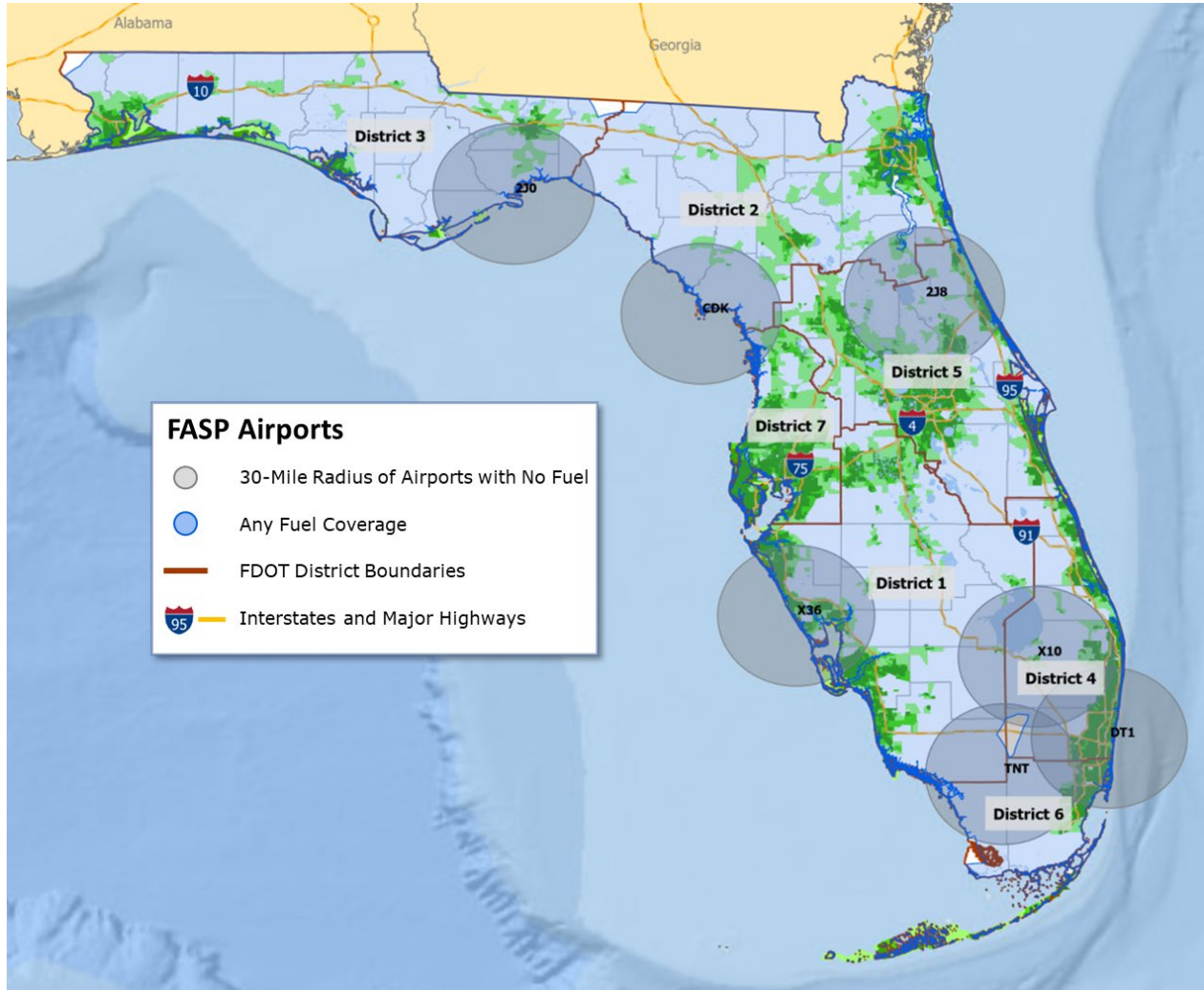
10.3.2 Flight Coverage by Airports with Fuel Service

Demand for fuel service at Florida’s airports has resulted in widespread availability of aviation fuel. **Figure 10-2** demonstrates the extensive fuel service coverage provided by Florida’s airport system. There is an opportunity to expand the fuel service coverage to an isolated area in south Florida. Fuel service at Dade-Collier Training and Transition Airport (TNT) would completely cover the small area in the Everglades that lacks coverage. Belle Glade State Municipal Airport (X10) would partially cover this same area.

Additional recommendations for consideration include:

- Sufficient demand for infrastructure—Fuel service should only be considered where sufficient demand justifies the expense of necessary infrastructure. For example, there are 11 system airports that offer only avgas fuel. The recommendation is that these airports assess the demand and cost-benefit of providing jet fuel in addition to avgas.
- Location relative to demand—TNT is isolated, lacks many facilities found at typical general aviation airports, and is unmanned. It is unlikely to have much demand for fuel, making X10 a better candidate for fuel service that expands flight coverage.

Figure 10-2. Coverage by Airports with Aviation Fuel



Note: Areas shown in green denote significant population densities.

Source: Cignus and FASP 2043 Airport Survey

As pointed out in the geographic analysis, Florida has airports that cater to the emerging market of unleaded and sustainable fuels. One obstacle to the broad adoption of these new fuels is the infrastructure needed to deliver them. Even in cases where the fuel is a drop-in replacement that can be safely mixed with an existing fuel, such as unleaded avgas replacing leaded avgas, fuel providers may defer to customer concerns over the new fuel and refuse to offer the new fuel unless it can be kept apart from the existing fuel. This approach requires an independent fuel distribution system for the new fuel, which is an expense that can be difficult to fund, and adds to the cost of the new fuel, making it less economically competitive. FDOT may want to consider ways to make new fueling infrastructure more affordable for airports looking to promote unleaded or sustainable fuels.

Additional recommendations for consideration include:

- Future use of the fueling system—As the fuel market evolves, FDOT may consider future uses for additional fueling infrastructure since service for multiple fuel types is likely a transitory condition. The general aviation market is not large enough to support excessive types of fuel, so it is likely that the market will force a consolidation of fuels, leaving airports with additional fueling infrastructure that should be put to use, ideally as additional capacity for the prevailing fuel.
- Fuel distribution method—Having the fuel available is only part of the fuel distribution equation. FDOT may want to discuss with stakeholders the options for getting the fuel into aircraft, which may involve fueling trucks or self-service fuel pumps that may, or may not, be available 24 hours per day.

10.4 Recommendations for FDOT AO Initiatives

The FDOT AO identified four topics that warranted additional research and investigation:

- Alternative Weather Reporting.
- Airport Electrification.
- Hangar Vacancy.
- Stormwater Management Plans.

The recommendations for each of these initiatives are detailed below, along with FDOT AO considerations going forward.

10.4.1 Alternative Weather Reporting

The FASP 2043 found that a significant number of system airports are equipped with some type of automated weather reporting system, generally an automated surface observing system (ASOS), or automated weather observing system (AWOS).

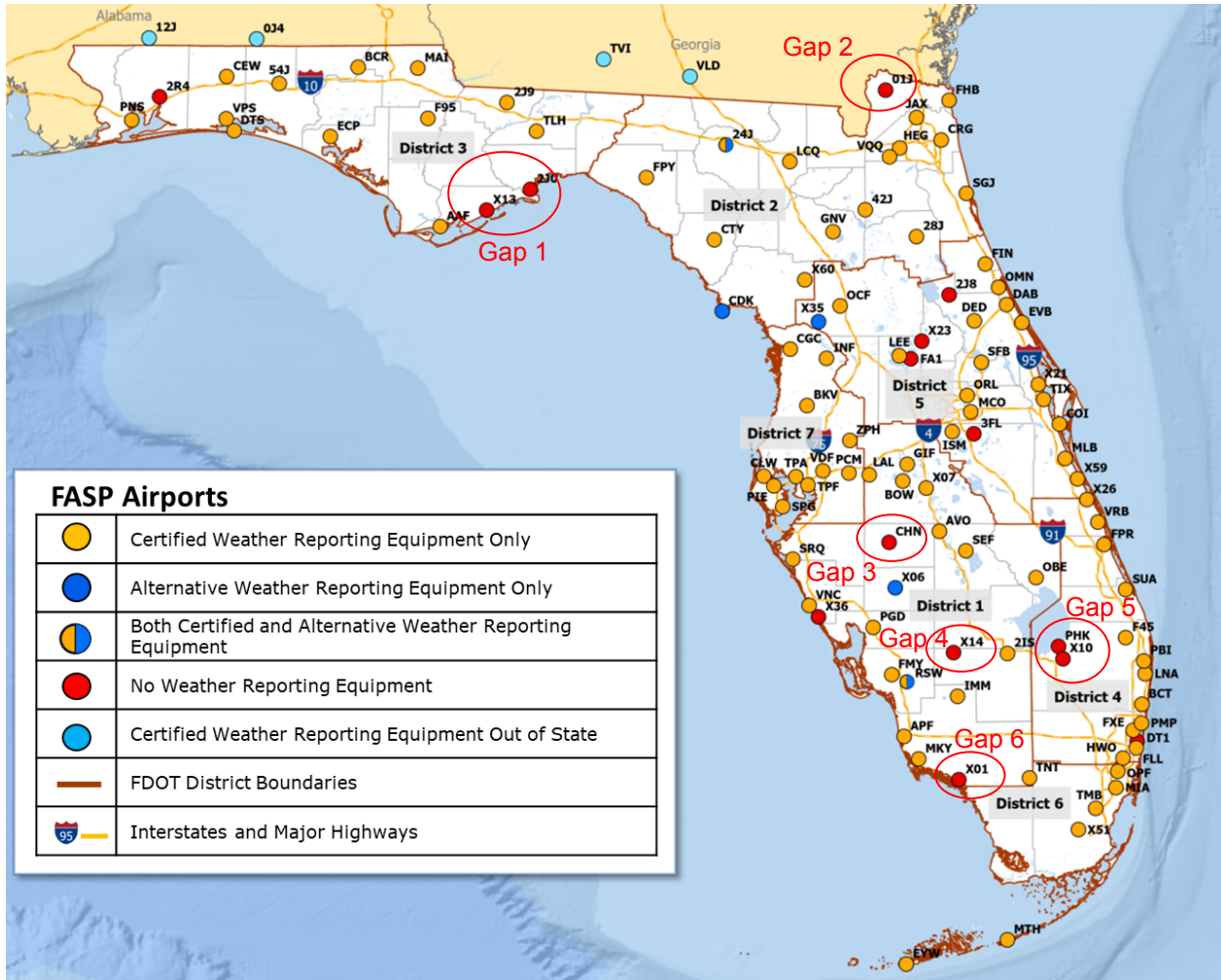
However, a detailed evaluation determined that certain airports, lacking any type of weather reporting capability, were found in areas up to 15 miles from the nearest airport with a weather reporting system. **Figure 10-3** shows the gaps where these airports are located. To enhance system weather coverage, it is recommended that these airports consider obtaining weather reporting equipment.

Additional recommendations for consideration include:

- Costs versus benefits—Equipping these airports with certified weather reporting equipment (i.e., ASOS or AWOS) is more costly than using a non-certified system, but provides needed weather reporting to support commercial operations, such as charter flights.
- Accessibility compared with certified weather reporting systems—Using non-certified weather reporting equipment is less costly, and supports visual flight rule (VFR) operations, which may be sufficient for some of these airports. However, these systems are typically

not tied into the FAA and National Weather Service reporting system, which somewhat limits the accessibility of this weather information.

Figure 10-3. Weather Reporting Gaps in System Coverage



Source: 2043 FASP airport survey, 2023; Mead & Hunt, Inc., 2023

10.4.2 Airport Electrification

The FASP 2043 found that many of Florida’s airports are currently accommodating electric automobiles and electric ground service equipment (GSE). Additionally, many airports are planning to accommodate these vehicles, along with electric aircraft in the future. The resulting electrification of airports may have far-reaching consequences. Proper planning for such a transition should follow a process similar to other types of facility planning. FDOT may choose to identify the existing electric infrastructure, anticipate the demands for future electricity, consider where investment in electric upgrades will have the greatest impact, and prepare a capital plan that considers the expenditures and potential revenues.

Additional recommendations for consideration include:

- Electric grid capacities—The condition of the existing electric grid may make it challenging to upgrade an airport’s electric service to the desired level. Airports will need to engage electric service providers in discussions about what the best course of action is for meeting future electrical capacity needs.
- Rates and charges—The growth of electric aircraft is expected to undercut a major revenue source for airports – aviation fuel sales. FDOT may need to assist the airports in planning for how the current structure of their rates and charges will need to be revised to accommodate changes resulting from an increase in electric vehicles. For example, automobile parking lots that provide for vehicle charging may need to consider how to best recoup that cost. Also, hangars that historically have included electric charges in the fixed rent may need to account for the cost of charging an electric aircraft while it is stored.
- Availability of electric aircraft—Part of the electrification of airports is contingent upon the anticipated growth of electric conventional takeoff and landing aircraft (eCTOL) and electric vertical takeoff and landing (eVTOL) aircraft. Given the challenges these aircraft face in getting FAA certification, FDOT should consider monitoring the progress these aircraft manufacturers are making toward final certification, and plan accordingly to schedule projections of when they plan to achieve final certification to support installation of necessary electrical service infrastructure in a timely manner.

10.4.3 Hangar Vacancy

Stakeholders throughout Florida have known anecdotally that hangar space is in short supply. The FASP 2043 undertook an effort to document the extent of this situation. Based on the existing inventory and forecasted demand for hangar space, the FASP 2043 concluded that more than 1,500 new T-hangars and 276 box hangars are needed currently, or will be in the long term, to meet the need expressed at Florida’s airports by 2043.

Recommendations for consideration include:

- Hangar development—FDOT should discuss the pros and cons of having airports build and manage the hangars themselves, versus using a ground lease to allow a private developer to build and manage the hangars. The best solution will likely vary by airport based on their particular circumstances.
- Adequate space for hangar development—Not all airports reported having space for development. Those that did indicated that, more often than not, challenges existed to developing the space available. Consequently, FDOT may need to discuss additional funding for more robust site development that goes beyond the typical prep for just the hangar slab or foundation.
- Charging for utilities—With the development of electric aircraft, airports will face the issue of how to replace lost aviation fuel revenue. One approach is to recoup this lost revenue by billing hangar occupants for charging their electric aircraft in their hangars. To do this,

airports will need to have each hangar unit on its own electric meter so that proper billing can occur, which may result in initial up-front costs to install appropriate meters or independent electrical service. Changes to leases, and billing procedures, may also need to occur.

10.4.4 Stormwater Management Plans

The analysis of stormwater management plans (SWMP) at Florida’s system airports found that nearly half lacked a current SWMP. Florida is vulnerable to stormwater damage due to its extensive coastline, rainy summers, history of hurricane events, rapid growth, and low elevations. Given the safety implications from poorly managed stormwater and efforts to improve stormwater management across Florida, FDOT may want to consider steps to increase compliance with current SWMPs at system airports.

Additional recommendations for consideration include:

- Funding options at non-NPIAS airports to generate a SWMP—None of the non-NPIAS airports have a SWMP, so federal funding is not available for a SWMP at these sites.
- Prioritizing the most vulnerable airports—Airports that are more prone to stormwater related impacts that do not have a current SWMP may need more immediate attention than airports less susceptible to mismanaged stormwater.

10.5 Summary

This chapter provided a series of recommended airport improvements, along with possible issues that the FDOT AO could discuss with the FDOT Districts and stakeholders who may support the implementation of these recommendations. These recommendations were based on evaluation of the NPIAS, the analysis of performance measures, geographic coverage of the airport system, and the four initiatives identified by the FDOT AO.