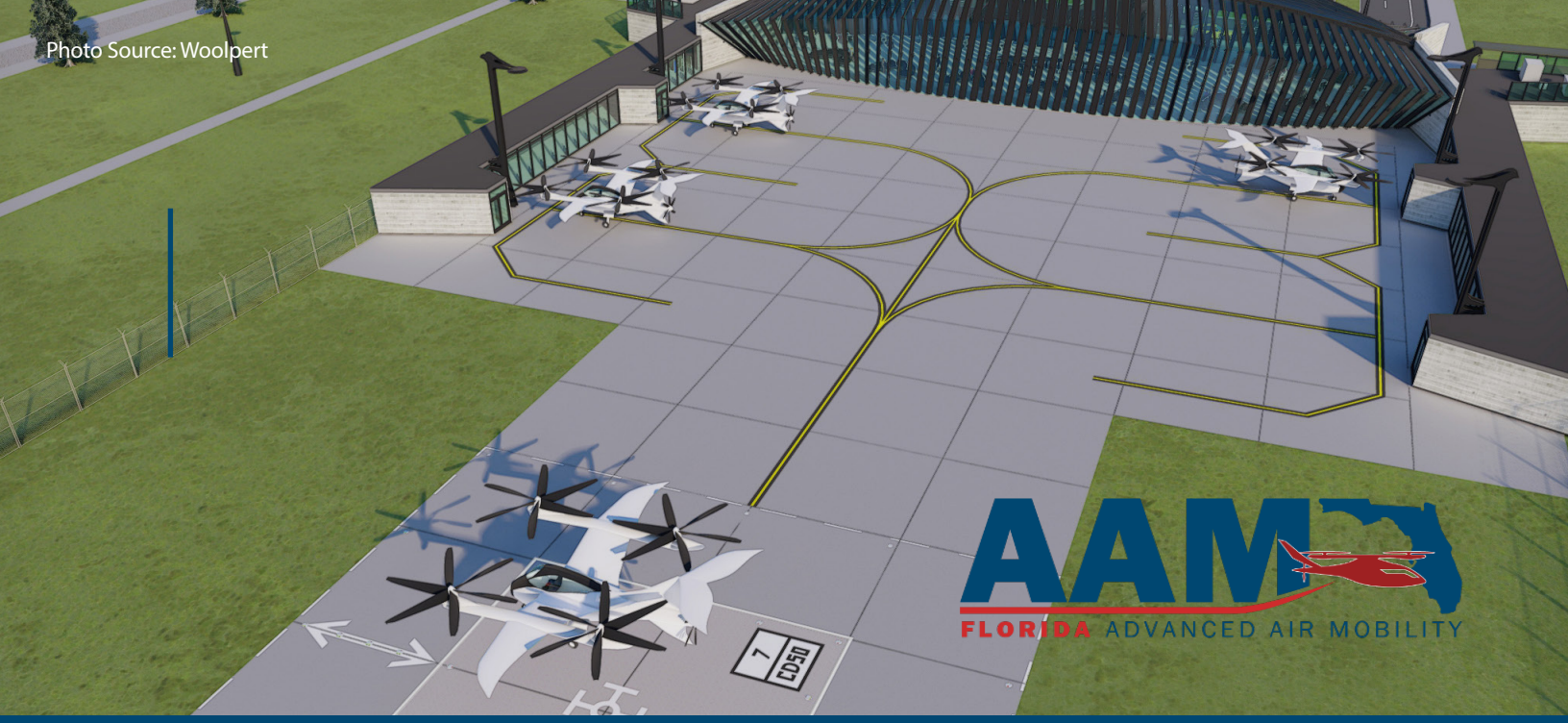


FDOT AVIATION

Report and Recommendations

FDOT ADVANCED AIR MOBILITY WORKING GROUP

August 2023

Year after year, Florida's strategic use of cutting-edge technology to further advance our state's aviation industry has set a precedent for the rest of the nation to follow. The work that we're doing is not going unnoticed– other states are watching and modeling the bold and innovative actions we're taking that have resulted in improved efficiencies in the movement of people and goods across Florida and the country.

Florida's achievements in aviation are largely attributed to the intentional collaboration and partnership with local, state, and federal government organizations, which all play a role in bringing new ideas and solutions to the table as it relates to aviation. The efforts of the Florida Department of Transportation's Advanced Air Mobility Working Group are helping to introduce this important technology to Florida's robust and evolving transportation system.

With forward-thinking experts and strong state leadership at the helm of Florida's aviation industry, I'm confident that we will continue to keep our state as a top leader in transportation and technology.

Jared W. Perdue, P.E.
Secretary, Florida Department of Transportation

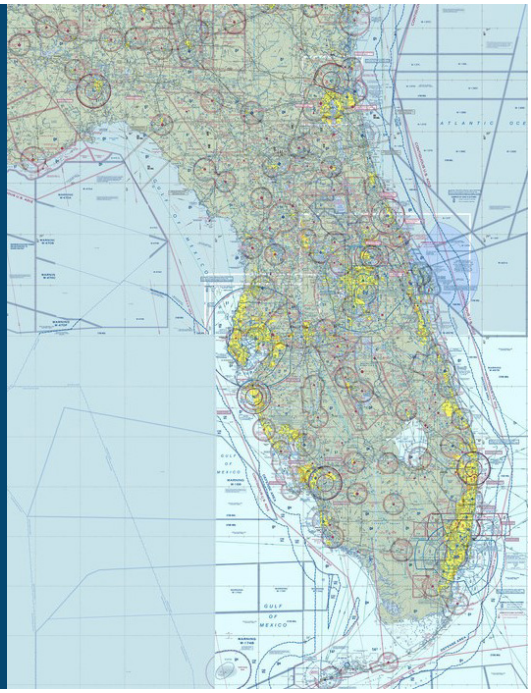
INTRODUCTION AND BACKGROUND

Advanced Air Mobility (AAM) is a nascent air transportation system primarily utilizing electric vertical takeoff and landing (eVTOL) aircraft to move people and goods or provide services in an urban or regional setting. The Florida Department of Transportation (FDOT) Aviation Office (AO) has taken a leading role in AAM and has completed numerous work products to build a foundation of knowledge within the state to advance the industry. These products include:

- **FDOT AAM Roadmap:** Completed in 2022, this report broadly outlines AAM, eVTOL aircraft, major eVTOL original equipment manufacturers (OEMs) and operators and their connection to Florida, a State AAM Policy Framework, and best practices for local government AAM integration.

- **FDOT Minimum Standards and Gap Analysis:** Completed in 2022, this document compares guidance in the Federal Aviation Administration (FAA) Engineering Brief 105: Vertiport Design, to existing minimum standards for heliports in Florida law. Additionally, the document contains an analysis of the various gaps and needs unique to eVTOL aircraft, including charging infrastructure, maintenance, repair, and overhaul (MRO) services, and Aircraft Rescue and Firefighting (ARFF).

- **FDOT Airport Compatibility Considerations:** Completed in 2023, these reports were prepared to assist in identifying location risk levels for vertiports relative to existing airports. These reports included mapping and analysis of airport traffic patterns, instrument approach procedures, controlled airspace, tall structures, and landfills for 31 Florida airports.



AAM continues to be of significant interest across the state of Florida. Recognizing the significance of this interest, FDOT AO established an AAM Working Group in 2022 composed of FAA, OEMs, airports, local governments, FDOT, and other industry stakeholders. The Working Group was established to engage critical stakeholders, to assess the current state of the AAM industry, and to garner comments and ideas which are incorporated into this report. Because aspects of AAM include involvement from the federal government, state government, and local governments, the report examines the different roles and responsibilities for these governments and bases the recommendations on those roles. While the recommendations in this report are focused on actions that can be taken at the state level, some pertain to roles and responsibilities held at the federal level. This report also captures considerations related to the importance of future decision-making at the local government level. All recommendations are included as a representation of the Working Group and not a request by the State.

Photo Source: Joby Aviation

THE EVOLVING LANDSCAPE OF AAM

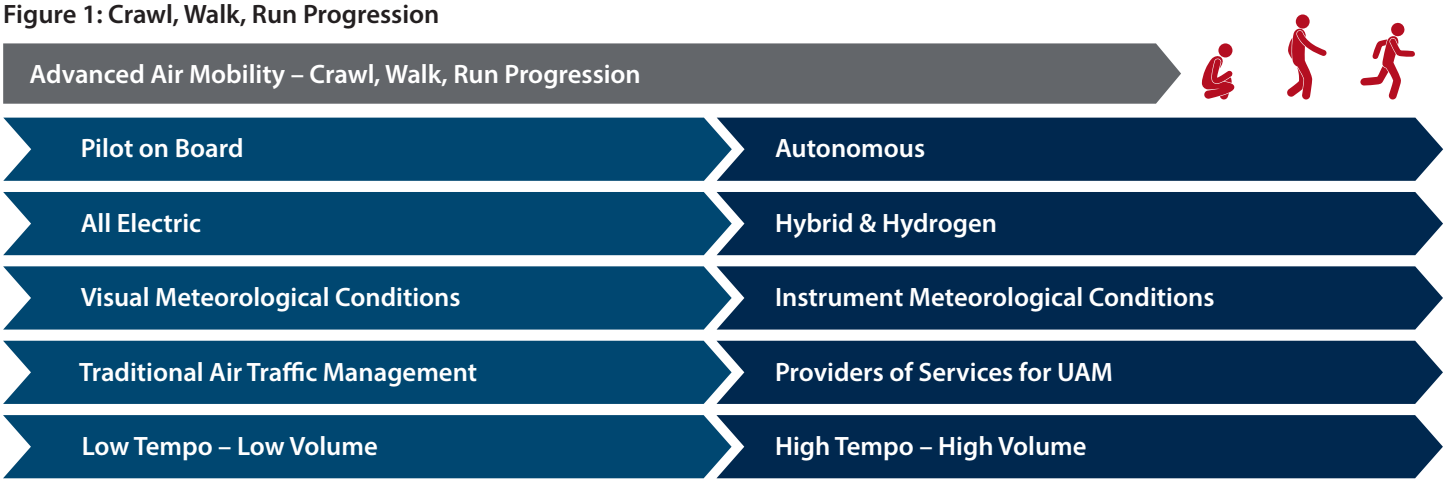
The FAA describes AAM as a derivative of Urban Air Mobility (UAM). UAM focuses on transporting cargo and passengers at low altitudes within urban and suburban areas. AAM builds upon the concept of UAM by expanding its range (e.g., inter-city and regional travel) and use cases. Advances in distributed electrical propulsion (DEP) in aviation is the key element behind these concepts, based on the idea that this system will increase efficiency, lower operating costs, and increase safety. Innovations in DEP systems, electronic controllers, and battery systems are constantly evolving to advance the capability of aviation. AAM is becoming an all-encompassing acronym for aircraft and services that use DEP and can take off and land vertically (VTOL).

It should be noted that AAM is a broad definition which can include hybrid-electric VTOLs, hydrogen VTOLs, and uncrewed aerial systems (UAS). The focus of this report is on eVTOLs, and associated planning and infrastructure needs for those vehicles. The Working Group included stakeholders representing alternative power and uncrewed systems, and the recommendations are intended to not impose harm or difficulty in the integration and implementation of those technologies.

The three stages of AAM maturity are often described as *crawl, walk, and run*. *Crawl* represents the earliest stages of AAM, which is the state of the industry at the time of this report. It includes aircraft certification testing, the ultimate certification of initial eVTOL aircraft with a pilot on board, and low volume, piloted operations under visual meteorological conditions using traditional air traffic management.

Walk represents an intermediate state of AAM maturity, including operations in the urban core, increasing levels of automation and more capability for weather tolerant operations, and an increasingly mature regulatory framework. The *Run* phase encapsulates high volume, high-tempo operations in many markets utilizing highly autonomous aircraft, including hybrid and hydrogen VTOLs, operations in instrument meteorological conditions, and providers of services (PSUs) for UAM. The initial and ultimate elements of these stages are shown in **Figure 1.**

Figure 1: Crawl, Walk, Run Progression



Numerous use cases are being explored within AAM, including air taxi, air cargo, and public services. Air taxi use cases feature passenger transportation within and around urban and regional areas, including routes which connect city centers to airports or city centers to neighboring city centers. Air cargo use cases feature cargo transportation largely supporting the middle-mile of logistics, generally seen as the leg from the cargo port to the distribution center. Last, public services, such as search and rescue, disaster relief, and air ambulance operations are all likely early use cases for eVTOL aircraft.

In 2022, the FAA issued Engineering Brief (EB) 105, which provides interim, but limited, guidance on vertiport design until a full Advisory Circular is published on the topic. This design guidance is mandatory for federally obligated airports and recommended for all other vertiport development. The EB provides guidance for landing dimensions, visual aids, approach surfaces, and electric charging infrastructure, among other details, but is limited to aircraft no longer or wider than 50 feet with a pilot-on-board operating in visual meteorological conditions. It also does not address multiple takeoff positions. Vertiport guidance is expected to evolve into a performance-based design standard as the FAA moves forward with a full Advisory Circular, expected in the mid-2020s.

A broad list of definitions pertaining to AAM can be found in **Appendix A**. More information on AAM and the FDOT AO's existing work products can be found at: **https://www.fdot.gov/aviation/advanced-air-mobility**

WORKPLAN AND PROCESS

FDOT AO utilized a Working Group format to ensure focused and deliberate discussions on the steps necessary for a successful integration of AAM into the State Transportation System. This approach allowed for key industry partners and stakeholders to offer ideas, raise issues, and develop meaningful recommendations. Participation in the Working Group included representation from a broad spectrum of critical industry partners and stakeholders. The Working Group members were identified through a collaborative effort between FDOT AO and the consultant team.

The meetings of the Working Group allowed for concentrated discussions from a variety of perspectives to identify critical steps for the successful integration of AAM. While in-person participation was strongly encouraged, Working Group members were offered both in-person and virtual meeting options to ensure active engagement and participation.

The AAM Working Group met four times to provide input and identify actionable tasks for FDOT's consideration. Meeting objectives are listed below, and small group discussion formats were facilitated throughout the meetings to foster thoughtful and engaging dialogue among members.

AAM Working Group Meeting 1

Host Airport: Tampa International Airport
November 3, 2022
Meeting Objectives:

- Provide an understanding of the purpose and role of the Working Group.
- Develop an understanding of common terms and definitions for AAM.
- Establish a baseline of AAM trends and timelines likely for aircraft/infrastructure development.
- Identify activities and challenges to be addressed in the final report.
- Develop an initial risk assessment of the associated activities and challenges.

AAM Working Group Meeting 2

Host Airport: Orlando International Airport
December 1, 2022
Meeting Objectives:

- Provide Subject Matter Expert presentations on the identified risks from Meeting 1 focused on mitigation options and best practices from other states and/or technology adoptions.
- Facilitate discussion to define the critical elements and necessary steps for AAM integration.
- Identify legislative actions to be proposed in the final report.

AAM Working Group Meeting 3

Host Airport: Palm Beach International Airport
February 2, 2023
Meeting Objectives:

- Discuss American Association of Airport Executives Airport Consortium on Customer Trust Report and Florida House Bill 349.
- Identify actionable items necessary for AAM integration.
- Review and comment on initial draft report outline.

AAM Working Group Meeting 4

Host Airport: Miami International Airport
March 2, 2023
Meeting Objectives:

- Review and comment on draft report.
- Define next steps and recommend opportunities for members to remain informed and engaged about State actions.

A final list of the Working Group members can be found in **Appendix B.**

Photo Source: Joby Aviation

KEY AREAS OF FOCUS

In the first Working Group meeting, members identified key areas of focus which could pose challenges to the implementation of AAM. Topics ranged widely amongst members, and included concerns about public education, airspace and integration into the National Airspace System, access, infrastructure, and zoning, among others. These issues were refined and grouped into four key areas of focus:

1. **Public Education and Community Engagement**

2. **Infrastructure and Zoning**

3. **System Planning and Access**

4. **Airspace and Safety**

These four key areas are broad, wide-reaching topics with overlapping subject material. During the second and third Working Group meetings, participants discussed these key areas and developed recommendations for each. While the areas of focus provide guiding direction for the Working Group, it is worth noting that these topics have significant overlap and cannot truly be insulated from each other. For example, some components of Infrastructure and Zoning and Airspace and Safety overlap. While the airport inspection process deals with infrastructure, it was grouped into the Airspace and Safety category due to the relationship of the inspection process to airport safety. Similarly, Public Education and Community Engagement is a topic which pervades many of the areas of focus, given the need to educate and raise awareness of nearly all aspects of AAM to local decision makers and the public.

The recommendations were grouped into four main categories:

1. **Legislative:** Legislative recommendations are those which would require legislative actions by the State for their implementation.

2. **Regulatory:** Regulatory recommendations are those which are feasible under existing Florida law but require a change to FDOT regulations for their implementation or are recommendations which propose state action outside of producing informational or educational materials.

3. **Advisory:** Advisory recommendations are those which recommend FDOT produce informational, advisory, or educational material, to be distributed to appropriate stakeholders or the public.

4. **Local Government:** Local Government considerations are those which the Working Group deemed important, but the implementation of which is done at the local government level. Due to this, local government recommendations do not include timelines or implementation suggestions.

Photo Source: Joby Aviation

These recommendations were provided for each area of focus. In some cases, the Working Group determined that there was little, or no action needed at the described levels. In some instances, the Working Group identified areas where legislation could potentially stunt or slow the implementation of AAM.

The following sections detail the existing conditions of each area of focus and the recommendations provided by the Working Group.

PUBLIC EDUCATION AND COMMUNITY ENGAGEMENT

Existing Conditions

Education of the public will play a critical role in successfully integrating AAM into the existing aviation system and enabling future AAM infrastructure development. While traditional aviation has consisted primarily of operations on and around airports, AAM aims to bring aviation infrastructure and operations more directly into communities, by establishing vertiports and eVTOL operations in urban environments. There are aspects within AAM that could impact communities in new ways and create a need for public education, including but not limited to noise from eVTOL operations, visual impacts of eVTOL overflights, and the perceived risk of these operations in urban communities.

Currently, the FAA's role in public outreach is focused on how changes to airspace or levels of activity impact aviation noise on communities. In these cases, the FAA works with airports, communities, local governments, and elected officials to better understand concerns about aviation noise through the process codified in Title 14 Code of Federal Regulations (CFR) Part 150 Airport Noise Compatibility Planning. The goal of Part 150 is to identify practical measures that mitigate noise and improve land use compatibility planning in areas surrounding airports.

FDOT has a long-standing commitment to identifying stakeholders and giving opportunities for involvement in the transportation delivery process. FDOT's Public Involvement Handbook provides techniques and methods to encourage meaningful public participation throughout the transportation decision-making process. This guidebook is meant for use by FDOT staff, FDOT consultants, and any others interested in designing effective public involvement programs which meet or exceed federal and state requirements.

Much of the work regarding public outreach for any transportation mode takes place at the local level, in zoning commissions, city councils, and other elected and appointed governmental bodies. Decisions that affect airspace are typically led by the FAA.

Photo Source: Joby Aviation

Photo Source: Joby Aviation

In the Working Group meetings, members discussed the challenge of Public Education and Community Engagement at a stage where commercial operations have yet to take place. Much of the public is still unaware of eVTOLs or the potential for AAM and what it may mean for them. Many local decision-makers like city planners, while familiar with zoning and permitting, are not necessarily familiar with aviation and the unique set of rules and guidelines and their potential impacts on communities, both positive and negative. These two distinct groups, the public and local decision-makers, have different needs when it comes to education and engagement, and these needs were considered by the Working Group. The recommendations of the Working Group for the Public Education and Community Engagement area of focus follow.

Recommendations

1. Designate a subject matter expert for AAM within FDOT.

a. As AAM nears early stages of operations, FDOT can serve as a resource for local governments, eVTOL operators, and vertiport developers. It will be critical for FDOT to establish an individual who can speak about AAM, coordinate with other agencies as needed, and oversee FDOT responsibilities and outreach as they pertain to AAM. As AAM matures, a dedicated office within FDOT could evolve into a separate entity to support State AAM efforts.

b. Implementation: Establish individual(s) who can speak to AAM by first relying on consultants in the short-term. As AAM evolves, then a distinct office within FDOT could be established independently, as demand warrants.

c. Suggested task timeline: September 1, 2023 - December 31, 2023

d. Type of Recommendation: Regulatory/ Legislative

2. Develop Public Education Guidebook for local governments, which builds upon existing outreach materials.

a. FDOT has a significant repertoire of tools online which exist for FDOT staff to foster effective and meaningful public engagement. These tools include an introduction to public engagement; preparing a plan; nondiscrimination and environmental justice; identifying the public; outreach methods, public meeting/workshop/hearing preparation; and responses to public comments. The tools are substantial and are focused on public engagement requirements as they apply to FDOT projects. Many of these materials are neutral with respect to the type of project; in other words, these tools provide guidance for traditional transportation projects as well as potential AAM projects. However, given the unique nature of aviation compared to a highway project with a distinct impact area, FDOT should review these materials and assess what additional materials are warranted. These materials should be incorporated into a larger AAM guidebook for local governments which should include a host of advisory recommendations found in this report and the previous work products prepared by FDOT's AO.

b. Implementation: Review the existing FDOT tools to develop an AAM guidebook for addressing AAM specific impacts on communities. Update FDOT's AAM Roadmap with specific tools for local governments to use in engaging the public and providing information on AAM impacts. Provide this information on FDOT's AAM webpage and update as AAM evolves.

c. Suggested task timeline: October 1, 2023 - February 28, 2024

d. Type of Recommendation: Advisory

3. Lead statewide education campaign for local decision-makers.

a. There exists a need to educate both the public and local transportation officials about AAM. FDOT should conduct a thorough statewide education campaign on AAM. FDOT should first look to educate local decision-makers, and partner with organizations like the Florida League of Cities; the American Planning Association; the Florida Association of Counties; the Florida Airports Council; commercial property interest groups; industry experts; and metropolitan and transportation planning organizations, all of which have existing ties to important stakeholders. This education should include definitions of the roles and responsibilities of involved parties; discussions around workforce development programs; planning for integration of training, trade, and education programs into Florida's aviation education programs; identification of mechanisms available to address potential community noise issues; and setting and managing expectations.

b. Implementation: FDOT should hold a series of workshops throughout the state, corresponding to the FDOT Districts, in conjunction with industry and active stakeholders.

c. Suggested task timeline: October 1, 2023 - February 28, 2024

d. Type of Recommendation: Regulatory

4. Lead statewide public awareness campaign to increase understanding and familiarity with AAM.

a. The second part of this campaign involves educating the public about AAM. Partnerships with Enterprise Florida, the Florida Chamber of Commerce, and other pertinent organizations can assist with bringing AAM businesses to Florida, and direct education to the public can take place in community open tables. This effort should focus on managing and setting expectations around AAM, the benefits which AAM can bring to a community, and exercises demonstrating the passenger journey in a multimodal eVTOL air taxi service.

b. Implementation: FDOT should establish partnerships with key organizations to increase awareness of AAM to the industry and the general public. FDOT should organize public information sessions and provide materials online to introduce and address AAM in the public.

c. Suggested task timeline: March 1, 2024 - September 30, 2025

d. Type of Recommendation: Regulatory

Local Government Considerations

1. Local planning professionals are tasked with many decisions for permitting and zoning; it is critical that the education campaign and materials reach these individuals, so they can make informed decisions as they relate to AAM.
- Because many of these decisions occur at the local level, local governments should make efforts to understand AAM utilizing materials from FAA and FDOT.

2. As plans for AAM materialize at the local level, coordination with local planning officials is critical, utilizing FDOT resources to identify and mitigate community-specific concerns.
- As decisions around zoning take place, local officials should coordinate efforts with FDOT as needed.

The recommendations for Public Education and Community Engagement are summarized in **Table 1.**

Table 1: Public Education and Community Engagement Recommendations

Public Education and Community Engagement

No.	Recommendation	Start Date	Completion Date	Recommendation Type
1	Designate a subject matter expert for AAM within FDOT	9/1/2023	12/31/2023	Regulatory/Legislative
2	Develop Public Education Guidebook for local governments	10/1/2023	2/28/2024	Advisory
3	Lead statewide education campaign for local decision-makers	10/1/2023	2/28/2024	Regulatory
4	Lead statewide public awareness campaign	3/1/2024	9/30/2025	Regulatory

Local Government Consideration

No.	Recommendation	Recommendation Type
1	Utilizing materials from FAA and FDOT, make informed decisions as they relate to AAM	Local Government Determination
2	Coordinate with FDOT to identify and mitigate community-specific concerns	Local Government Determination

Photo Source: Wisk Aero

INFRASTRUCTURE AND ZONING

Existing Conditions
Chapter 330 Florida Statutes (F.S.) Regulation of Aircraft, Pilots, and Airports; Chapter 333 F.S. Airport Zoning; and Title 14 CFR Part 77 Safe, Efficient Use and Preservation of the Navigable Airspace are three major laws that govern airport site approvals and land use compatibility in Florida. The process for airport site approvals is outlined in the Airspace and Safety section of this report.

According to Chapter 333 F.S., any political subdivision containing an airport hazard area, or any area of land or water upon which an airport hazard or obstruction might be established, shall adopt airport protection zone regulations. At a minimum the regulations require a permit for the construction or alteration of any obstruction, marking and lighting for obstructions, and documentation showing compliance with 14 CFR Part 77 requirements in an aeronautical study. It should also be noted that the provisions of Chapter 333 F.S. are intended to protect public-use facilities and local governments may adopt airport zoning regulations that are more restrictive. The local government which has adopted airport zoning regulations serves as the permitting authority for any alteration or construction of obstructions.

To assist airports and local governments in understanding Chapter 333 F.S. and 14 CFR Part 77 requirements, FDOT published an Airport Airspace and Land Use Guidebook, along with a Primer brochure. Once adopted, local governments are to submit a copy of their airport zoning regulations to FDOT. FDOT is the permitting authority when local governments have not adopted airport protection zoning regulations.

In the Working Group meetings, the group discussed many factors related to infrastructure and zoning for AAM. A recurring theme in these discussions was the need to create a plan for the vertiport development process. While some of these questions do not have full answers, steps can be taken to provide the best information possible to stakeholders. The recommendations of the Working Group for the Infrastructure and Zoning area of focus follow.

Photo Source: Lilium

Recommendations

1. Establish pilot program for early entrants, which could involve state partnerships with cities, airports, eVTOL operators, and vertiport developers.

a. Early entrants into AAM face the daunting task of navigating a complicated regulatory framework. FDOT AO can establish a pilot program for early entrants, which should involve partnering with local governments, eVTOL operators, airports, local airport traffic controllers, and vertiport developers to guide those stakeholders through this process.

b. Implementation: FDOT should establish a pilot program for AAM operations. The program should provide the applicant access to a designated AAM FDOT representative as the applicant goes through the process. Additionally, the pilot location(s) can be evaluated through a tabletop exercise to ensure adequate guidance is available and the process works.

c. Suggested task timeline:
October 1, 2023 - May 31, 2024

d. Type of Recommendation:
Regulatory

2. Host tabletop exercise of what vertiport development looks like for a local government from beginning to end, using existing FDOT and FAA rules, regulations, and procedures.

a. As a resource for municipalities across the state, the FDOT AO should host a tabletop exercise which walks through the process of vertiport development with an early entrant municipality. The exercise should detail initial coordination between the municipality and the developer; public education; coordination with FAA and local airports; and applicable zoning requirements. This tabletop, along with the produced materials would allow for municipalities to better understand the development process and serve as a reference for future development and necessary guidance to be developed.

b. Implementation: FDOT should host a tabletop exercise with a selected early entrant development site. The tabletop should be hosted with the local government officials, nearby airports, state officials, and the development process and be open to public comment.

c. Suggested task timeline: October 1, 2023 - May 31, 2024

d. Type of Recommendation: Advisory

3. Publish guidance and best practices, including a sample ordinance, for local governments to consider with respect to zoning and infrastructure for vertiports, including definitions and flexibility to consider the unique characteristics a site may have.

a. Zoning is a critical piece of vertiport development at the local level. While the State mandates specific airport zoning guidelines for public-use airports, it will be critical for local governments to establish a zoning process to enable the development of vertiports in their communities. While there may be a role for the State to establish minimum zoning guidance for vertiports, FDOT AO can provide guidance to local governments which includes best practices for vertiport zoning, including information on noise impacts and operational tempo, as well as a zoning ordinance template to promote relative consistency amongst local government zoning codes, while allowing for flexibility within the ordinance to fit their communities. FDOT AO should also compile local vertiport ordinances and provide them publicly on their AAM webpage.

b. Implementation: FDOT should update the AAM existing deliverables to include tools and more adequate guidance on siting considerations and the licensing process.

c. Suggested task timeline: October 1, 2023 - May 31, 2024

d. Type of Recommendation: Advisory

4. Publish guidance on electrification and grid capacity to give local governments the information needed to make informed decisions.

a. One of AAM's most unique factors is its reliance on electrification, which means that any planning for AAM should include an analysis of the power grid and its capacity/ability to provide the amount of power needed for AAM, while in parallel also considering the increasing demand on the power grid from the electrification of ground vehicles. This guidance should also include the need for back-up power sources and specific siting and infrastructure considerations in the event of natural disasters, during which there may be widespread power outages when these vehicles are needed most. While charging requirements are certain to evolve as battery technology improves, or as alternative means of energy (hybrid-electric, hydrogen, etc.) come into focus, FDOT AO should partner with utility providers and vertiport developers to better understand Florida's electrical infrastructure so it can provide a community planning guide to electrical requirements for AAM.

b. Implementation: Develop electrical guidance and needs matrix. Coordinate with utility providers and OEMs to release the guidance.

c. Suggested task timeline: October 1, 2023 - May 31, 2024

d. Type of Recommendation: Advisory

5. As eVTOLs receive certification and begin to operate at vertiports, conduct review of airport hazard area regulations and update as appropriate.

a. Chapter 333 F.S. regulates land use compatibility around airports in Florida. At this time, eVTOLs are in the pre-certification and commercial operation phase, so many details about their operational performance is not fully understood. As more information about eVTOL performance is collected, the State should revisit Chapter 333 F.S. to understand how this statute applies to vertiports and whether vertiport specific zoning should be established to minimize potential hazards to eVTOL operations. If a change to statutes is warranted, this change would take place through the state legislature.

b. Implementation: Update Chapter 333 F.S. to account for vertiports and clarify definition of airport to determine whether privately owned vertiports which operate in the public interest should be included under the regulations.

c. Suggested task timeline: January 1, 2024 - December 31, 2024

d. Type of Recommendation: Legislative

Photo Source: Lilium

Local Government Considerations

1. Develop or modify existing zoning which ensures compatibility with local land uses adjacent to a vertiport, taking into consideration not only incompatible land uses but also compatible/synergistic uses while considering the noise, environmental, and land-based impacts of vertiport siting and operations.
• Ultimately, zoning happens at the local government level; therefore, local governments will be on the front lines of zoning for AAM. This zoning, guided by advisory information from FDOT and FAA, should ensure compatibility with local land uses and should evaluate the potential noise impacts of vertiport operations.

The recommendations for Infrastructure and Zoning are summarized in **Table 2.**

Table 2: *Infrastructure and Zoning Recommendations*

Infrastructure and Zoning

No.	Recommendation	Start Date	Completion Date	Recommendation Type
1	Establish pilot program for early entrants, which could involve state partnerships with cities, airports, eVTOL operators, and vertiport developers.	10/1/2023	5/31/2024	Regulatory
2	Host tabletop exercise of what vertiport development looks like from beginning to end, using existing FDOT and FAA rules, regulations, and procedures.	10/1/2023	5/31/2024	Advisory
3	Publish guidance and best practices for local governments to consider with respect to zoning and infrastructure for vertiports	10/1/2023	5/31/2024	Advisory
4	Publish guidance on electrification and grid capacity to give local governments the information needed to make informed decisions	10/1/2023	5/31/2024	Advisory
5	Conduct review of airport hazard area regulations and update as appropriate	1/1/2024	12/31/2024	Legislative

Local Government Consideration

No.	Recommendation	Recommendation Type
1	Develop or modify existing zoning which ensures compatibility with adjacent land uses to a vertiport, considering the noise, environmental, and land-based impacts of vertiport siting and operations	Local Government Determination

SYSTEM PLANNING AND ACCESS

Existing Conditions

System planning encompasses the efforts to plan the necessary infrastructure and levels of activity to support AAM within the existing transportation network. Access encompasses cost of service, geographic location of vertiports, frequency/volume of service to underserved areas, visual/noise pollution, and stakeholder engagement during planning. Access is important in transportation planning to ensure that the distribution of any potential impacts is fair and appropriate for the members of a community.

Some projects under the jurisdiction of the FAA, including vertiport construction through Title 14 CFR Part 157 Notice of Construction, Alteration, Activation, and Deactivation of Airports, may be subject to environmental review under the National Environmental Policy Act (NEPA). The NEPA process is triggered when a federal agency, such as the FAA, decides to take an action. NEPA requires evaluation of the environmental and related social and economic effects of a proposed action in a manner that is transparent and open to the public. Once the FAA has developed a proposed action, the agency conducts a preliminary review to determine the appropriate level of environmental review. The environmental review under NEPA can involve three different levels of analysis: Categorical Exclusion, Environmental Assessment, or an Environmental Impact Statement.

While much of AAM's focus is currently on urban areas and the surrounding metropolitan areas, considerations include access to AAM for rural and/or underserved communities. There are state programs in Florida that support and connect rural communities. The Rural Economic Development Initiative provides a coordinated effort among state and regional agencies to provide programs and services for rural areas. The Regional Rural Development Grant under the Florida Department of Economic Opportunity encourages local communities to leverage limited resources through economic development organizations to develop plans and strategies to grow and attract business and to support rural leaders in decision-making roles. There are likely other pertinent state programs which may be able to assist in the further deployment of AAM across the state.

Photo Source: Joby Aviation

In the Working Group meetings, discussions of System Planning and Access revolved around three components: standardization and multimodal planning to create a unified system; ensuring fair distribution of AAM around the state; and ensuring access to AAM infrastructure and services. The recommendations of the Working Group for the System Planning and Access area of focus are included below.

Recommendations

1. Conduct a review of existing Florida rural economic development initiatives and determine if any are applicable and could support AAM.

a. As noted in the Existing Conditions section of this area of focus, there are existing Rural Economic Development and Support Initiatives. FDOT AO should conduct a review of these initiatives to better understand if they can be applied to AAM.

b. Implementation: Collaborate with relevant departments to understand applicable initiatives and provide links and information on AAM FDOT webpage.

c. Suggested task timeline: December 1, 2023 - February 28, 2024

d. Type of Recommendation: Regulatory

2. Conduct a cross department review of how the State can utilize AAM for public good and develop a report for the necessary supporting infrastructure.

a. Beyond air taxi services, there are many public service use cases which may provide significant value to the State of Florida, including medical transportation, emergency services, law enforcement, and hurricane/disaster relief. There are also numerous departments across the state which own and operate aircraft and may benefit from eVTOLs. Those departments, as well as departments utilizing UAS, should be included in this review. Specific considerations for the supporting infrastructure needed for eVTOL operations for hurricane/disaster relief should be identified, given the potential for the primary power grid to go down in such a situation.

b. Implementation: Spurred by legislation, the State should conduct a cross department review of how it can utilize AAM for public good and develop a report for the necessary supporting infrastructure.

c. Suggested task timeline: October 1, 2023 - September 30, 2024

d. Type of Recommendation: Advisory

3. Conduct a statewide review of public assets, including heliports, park and ride facilities, transit stations, and other state-owned assets which could be used to support AAM.

a. While many early entrants into AAM plan to operate at privately-owned facilities, the State should conduct a review of assets across the state which could be developed to support AAM.

b. Implementation: Conduct a study to identify public assets which could support AAM.

c. Suggested task timeline: March 1, 2024 - September 30, 2024

d. Type of Recommendation: Advisory

4. Incorporate AAM into state transportation planning documents.

a. FDOT publishes numerous state transportation planning documents, including the Florida Transportation Plan, the Florida Aviation System Plan, and the Strategic Intermodal System, among others. AAM should be incorporated into these documents so that state priorities around AAM can be incorporated. Integrating AAM into planning documents allows for a wide range of stakeholders to better understand and prepare for AAM in Florida.

b. Implementation: Review existing state transportation plans and add AAM elements as applicable.

c. Suggested task timeline: March 1, 2024 - September 30, 2024

d. Type of Recommendation: Advisory/Legislative

5. Explore a plan to bring AAM to rural or underserved communities.

a. As a market-driven industry, early entrants into AAM, especially those operating as an air taxi service, are likely to operate by transporting individuals to and from high population centers. Focusing on these areas allows operators to be profitable and operate without government subsidies. Eventually, there may be a state interest in promoting vertiport development in underserved areas. Prior to any legislation to establish such a program, the State should assess the demand for such a service and the appropriate stage at which such a program should be introduced.

b. Implementation: Prior to any legislation to establish such a program, the State should assess the demand for such a service and the appropriate stage at which such a program should be introduced.

c. Suggested task timeline: January 1, 2025 - December 31, 2026

d. Type of Recommendation: Legislative

Photo Source: Wisk Aero

Local Government Considerations

1. Establish local programs and a development application process which promote access and accounts for impacts to members of the community.
• No two local governments are the same, and AAM will look different in every community. Local governments are tasked with many of the intricacies of how AAM develops, especially in terms of ground infrastructure and zoning. Local governments should work to engage the public uniformly and fairly, discourage negative impacts to human health or environmental impacts, and strive to enhance transportation choices for all the residents of the community.

The recommendations for System Planning and Access are summarized in **Table 3.**

Table 3: *System Planning and Access Recommendations*

System Planning and Access

No.	Recommendation	Start Date	Completion Date	Recommendation Type
1	Conduct review of existing Florida rural economic development initiatives and determine if any are applicable and could support AAM.	12/1/2023	2/28/2024	Regulatory
2	Conduct a cross department review of how the State can utilize AAM for public good and develop a report for the necessary supporting infrastructure.	10/1/2023	9/30/2024	Advisory
3	Conduct a statewide review of public assets, including heliports, park and ride facilities, transit stations, and other state-owned assets which could be used to support AAM.	3/1/2024	9/30/2024	Advisory
4	Incorporate AAM into state transportation planning documents.	3/1/2024	9/30/2024	Advisory/Legislative
5	Explore the idea of a plan to bring AAM to rural or underserved communities.	1/1/2025	12/31/2026	Legislative

Local Government Consideration

No.	Recommendation	Recommendation Type
1	Establish local programs and a development application process which promotes access and accounts for impacts to members of the community.	Local Government Determination

AIRSPACE AND SAFETY

Photo Source: Wisk Aero

Existing Conditions

Integrating AAM into Florida's air transportation system requires early compatibility planning to help assure it does not affect the ability of the state's existing airport system to meet legacy aviation demands and capacity requirements.

Federal law and the FAA provide guidelines which govern the use of airspace. First, Title 14 CFR Part 77 Safe, Efficient Use and Preservation of the Navigable Airspace, establishes the regulations which govern objects that may affect navigable airspace. Airports and heliports have defined approach and departure areas under 14 CFR Part 77. These areas represent minimum altitudes and dimensions of airspace that should be clear of penetrating objects and protected for the safe arrival and departure of aircraft from a landing area.

Second, Controlled Airspace is a specifically defined area where Air Traffic Control services are provided to flights and are established to increase flight safety by decreasing the potential for mid-air collisions. Not all airspace is controlled, and aeronautical operations are generally allowed in this space with few restrictions. Additional flight operations within controlled airspace increase the demand on air traffic controllers, and this would be especially true for future high-tempo, mature-state AAM, regardless of careful planning of ground infrastructure.

Some organizations are designing alternatives to traditional air traffic systems which may be able to mitigate much of this workload and better accommodate AAM aircraft, as well as future autonomous vehicles. The National Aeronautics and Space Administration has published Concept of Operation reports which outline the AAM ecosystem at various stages of maturity. These reports reference Providers of Services for UAM (PSUs), which are entities that support UAM operators with meeting UAM operational requirements by providing a communication bridge between UAM actors. Theoretically, PSUs would help to enable higher tempo and more autonomous operations in a mature state of AAM.

Third, vertiports which are developed on existing airports must be depicted on the given airport's Airport Layout Plan, submit a Form 7460-1 for an airspace determination prior to development, and adhere to the design criteria in FAA EB 105. On-airport or near-airport vertiports must be developed with careful planning and coordination with the airport sponsor. Key considerations when siting a vertiport in these locations include wake turbulence separation standards, parallel and converging approach paths to vertiports and runways, and the distinctions between planning and operating standards when operating under visual flight rules (VFR) versus instrument flight rules (IFR). For development of non-federally funded standalone vertiport sites, the proponent must submit FAA Form 7480-1, Notice for Construction, Alteration and Deactivation of Airports, at least 90 days in advance of the day that construction work is to begin on the takeoff and landing area.

While federally obligated airports are required to adhere to the FAA's Advisory Circular on Airport Design, 5300-13B, the State of Florida also sets minimum standards for airports in the state, defined in Chapter 330, F.S. This rule defines an airport as "an area of land or water used for, or intended to be used for, landing and takeoff of aircraft, including appurtenant areas, buildings, facilities, or rights-of-way necessary to facilitate such use or intended use." The minimum standards apply to any licensed airport in Florida, and set minimums for runway dimensions and landing surfaces, the latter of which is based on 14 CFR Part 77 regulations and FAA Advisory Circulars.

Chapter 330, F.S. also provides the site approval process required for both public-use and private-use airports, of which vertiports are considered under state law. Site approval for a public-use airport is granted after FDOT has determined that there is adequate area allocated for the airport as proposed; that the airport will conform to state licensing or registration requirements and local government land development and zoning requirements; that all affected airports, local governments, and property owners have been notified and comments submitted have been given consideration; and FDOT conducts the inspection and approves the site. A private-use airport receives site approval after receipt of documentation in a form and manner the department deems necessary to satisfy the conditions listed prior.

Once approved, public-use airports are licensed by the State and adhere to the minimum standards set forth in Florida Administrative Code Rule 14-60. FDOT inspects these airports annually to ensure compliance with Florida airport minimum standards. Private-use airports must register via a recertification website but do not receive a physical inspection. Local governments in Florida do not have authority to license airports or control their location except by zoning requirements.

In the Working Group meetings, the discussion centered around several items. One was ensuring that relevant officials understand the roles and responsibilities of each level of government in the regulation of airspace. The FAA has near total jurisdiction of airspace and thus the ability of state and local governments to influence this aspect of AAM is limited. These governments should not pass, or attempt to pass, legislation which preempts the FAA's authority of airspace. However, the State does have a role in site approval and licensing or registering new airports, and local governments have some authority over the siting of airports through the zoning process. The recommendations of the Working Group for the Airspace and Safety area of focus are included below.

Recommendations

1. Resolution supporting updates to federal rules to support eVTOL integration into the National Airspace System.

a. A significant portion of successfully integrating AAM involves airspace design and procedures, which are largely managed and controlled by the FAA. State and local governments have a very limited role in these considerations. Given that airspace is the jurisdiction of the FAA, the Working Group supports a resolution which affirms their support for rule changes which will support the integration of eVTOLs into the National Airspace System.

b. Implementation: Develop and pass a resolution affirming the support for investment and continued policy advancement for eVTOL operations.

c. Suggested task timeline: January 8, 2024 - March 8, 2024

d. Type of Recommendation: Legislative

2. Review and continue to update Rule 14-60 to account for vertiports in the airport licensing/registration and inspection process.

a. FDOT is currently updating Rule 14-60 to ensure that vertiports are included under the same regulations that airports and heliports are subject to for registration/licensing and inspections. FDOT should continue this update. Additionally, as vertiports are constructed and eVTOLs are certified for commercial flights, FDOT should consider reviewing these regulations to ensure that the existing process of registration for private-use facilities, and licensing and inspection for public-use facilities, is adequate for ensuring a safe aviation system.

b. Implementation: Update Rule 14-60.

c. Suggested task timeline: October 1, 2023 - February 28, 2024

d. Type of Recommendation: Regulatory

3. Increase Florida legislative appropriations to ensure adequate funding to FDOT to support AAM.

a. Airport inspections play a critical role in supporting a safe system of airports which adhere to FDOT's minimum standards for public use airports. Public-use vertiports will also be subject to inspections, as FDOT is currently in the process of updating administrative code to include public-use vertiports in the inspection process. Many vertiport operators intend for their facilities to be private-use, means they will be required to undergo a state-level registration process but will not be inspected. Should a significant number of public-use vertiports be constructed, FDOT may need additional staffing or resources to accommodate the additional workload for these inspections. For this reason, FDOT will require additional funding from the State legislature. Should a significant number of Airport Site Approval Order Applications be submitted, regardless of use, additional staffing may be needed.

b. Implementation: One additional full-time employee should be planned for FDOT AO to accommodate AAM facility site approvals and inspections.

c. Suggested task timeline: January 8, 2024 - March 8, 2024

d. Type of Recommendation: Legislative

4. Provide information for local governments which contains a general framework of airspace and aeronautical factors as they relate to AAM vertiport development.

a. While there are numerous aspects of AAM which will be familiar to local planners, airspace is a variable in AAM planning which many local planners are not familiar with. FDOT should produce informational material which contains a general overview of airspace; FAR Part 157 and Part 77; information on the differences between public-use and private-use facilities; coordination with local airports; on-airport vertiport development versus off-airport vertiport development; the implications of IFR approaches at vertiports; and other aeronautical variables. The goal of this information is to provide guidance to local planners who are not familiar with aviation so that they can make informed decisions about vertiports in their communities.

b. Implementation: Produce informational material for local governments outlining airspace and aeronautical factors for AAM.

c. Suggested task timeline: March 1, 2024 - September 30, 2024

d. Type of Recommendation: Advisory

Local Government Considerations

1. Local governments should incorporate AAM and electrification for AAM into their comprehensive city and airport master planning processes.

a. Local governments routinely create and update planning documents for areas under their jurisdiction. Most airports also create and update an airport master plan. AAM considerations should be included in these documents, both from a land use and development perspective, and also from an electrification perspective, due to the significant power needed for eVTOL charging stations. Local planning documents should include a review of publicly owned parcels which could be utilized to support AAM.

2. Local governments should coordinate with emergency services and vertiports to ensure that procedures related to fire safety account for electric aircraft.

a. Currently, airport and aircraft firefighting protocols are designed to extinguish fires from traditional aircraft, operating with internal combustion engines. Because eVTOLs operate using lithium-ion batteries, local governments should coordinate and facilitate communication with emergency service providers and vertiport operators to ensure that emergency plans, especially regarding fire safety, are established with electric fire considerations in mind.

The recommendations for Airspace and Safety are summarized in **Table 4.**

Table 4: Airspace and Safety Recommendations

Airspace and Safety

No.	Recommendation	Start Date	Completion Date	Recommendation Type
1	Resolution supporting updates to federal rules to support eVTOL integration into the National Airspace System.	1/8/2024	3/8/2024	Legislative
2	Review and continue to update Rule 14-60 to account for vertiports in the airport licensing/registration and inspection process.	10/1/2023	2/28/2024	Regulatory
3	Increase Florida legislative appropriations to ensure adequate funding to FDOT to support AAM.	1/8/2024	3/8/2024	Legislative
4	Provide information for local governments which contains a general framework of airspace and aeronautical factors as they relate to AAM vertiport development.	3/1/2024	9/30/2024	Advisory

Local Government Consideration

No.	Recommendation	Recommendation Type
1	Local governments should incorporate AAM and electrification for AAM into their comprehensive city and airport master planning processes.	Local Government Determination
2	Local governments should coordinate with emergency services and vertiports to ensure that procedures related to fire safety account for electric aircraft.	Local Government Determination

NEXT STEPS

This report lists numerous recommendations, including several clear steps the State should take next. The following sections detail the implementation plan and master timeline of recommendations from the Working Group.

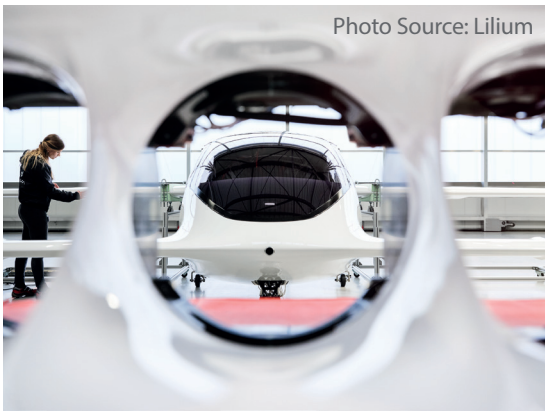


Photo Source: Lilium

Implementation Plan: FDOT will reasonably begin to implement the recommendations in this report and continually engage the Working Group in an advisory fashion, on a quarterly basis. FDOT, leveraging their support and subject matter experts, will develop a formal implementation plan by July 31, 2023, and initial outreach and guidance plans will be shared with the Working Group by the end of 2023.

As AAM continues to evolve, the implementation plan and recommendations may change with industry needs. The expanded Working Group will meet a minimum of twice per year to review the implementation plan for suggested updates and/or reprioritization. The following section provides a master timeline and prioritization of recommendations to be incorporated into the implementation plan.

Master Timeline: Across the four areas of focus, a total of eighteen recommendations were developed, with another six local government considerations identified. Many of these recommendations are distinct projects and actionable tasks which FDOT could undertake. Others, such as recommendations for local government guidebooks, are similar proposals highlighting different areas of AAM, and if implemented may ultimately be coalesced into a single, overarching guidebook.

All the recommendations, listed by order of suggested completion date, are listed in **Table 5**. Each row displays the Reference Label, which is the area of focus and identifying number in that section of the report, as well as the top-line recommendation, timeline for completion, and type of recommendation. **Figure 2** displays the master timeline for each of these recommendations.


Photo Source: Joby Aviation

Table 5: *Master Recommendation List*

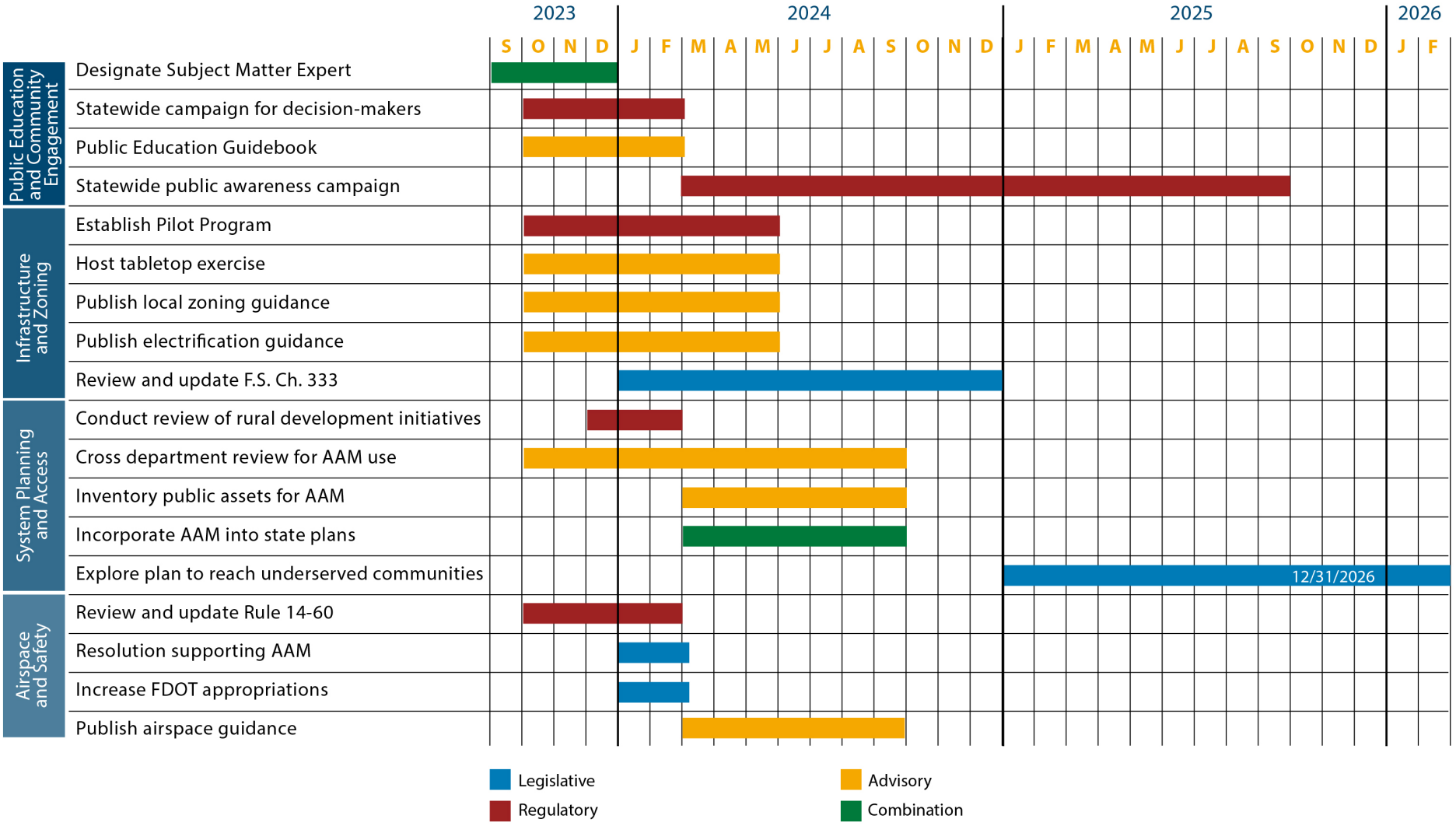
Reference Label	Recommendation	Start Date	Completion Date	Recommendation Type
Public Education and Community Engagement - 1	Designate a subject matter expert for AAM within FDOT	9/1/2023	12/31/2023	Regulatory/Legislative
Public Education and Community Engagement - 2	Develop Public Education Guidebook for local governments	10/1/2023	2/28/2024	Advisory
Public Education and Community Engagement - 3	Lead statewide education campaign for local decision-makers	10/1/2023	2/28/2024	Regulatory
Airspace and Safety - 2	Review and continue to update Rule 14-60 to account for vertiports in the airport licensing/registration and inspection process.	10/1/2023	2/28/2024	Regulatory
System Planning and Access - 1	Conduct review of existing Florida rural economic development initiatives and determine if any are applicable and could support AAM.	12/1/2023	2/28/2024	Regulatory
Airspace and Safety - 3	Increase Florida legislative appropriations to ensure adequate funding to FDOT to support AAM.	1/8/2024	3/8/2024	Legislative
Airspace and Safety - 1	Resolution supporting updates to federal rules to support eVTOL integration into the National Airspace System.	1/8/2024	3/8/2024	Legislative
Infrastructure and Zoning - 1	Establish pilot program for early entrants, which could involve state partnerships with cities, airports, eVTOL operators, and vertiport developers.	10/1/2023	5/31/2024	Regulatory
Infrastructure and Zoning - 2	Host tabletop exercise of what vertiport development looks like from beginning to end, using existing FDOT and FAA rules, regulations, and procedures.	10/1/2023	5/31/2024	Advisory
Infrastructure and Zoning - 3	Publish guidance and best practices for local governments to consider with respect to zoning and infrastructure for vertiports	10/1/2023	5/31/2024	Advisory
Infrastructure and Zoning - 4	Publish guidance on electrification and grid capacity to give local governments the information needed to make informed decisions	10/1/2023	5/31/2024	Advisory

Table 5: *Master Recommendation List (continued)*

Reference Label	Recommendation	Start Date	Completion Date	Recommendation Type
System Planning and Access - 2	Conduct a cross department review of how the state can utilize AAM for public good and develop a report for the necessary supporting infrastructure.	10/1/2023	9/30/2024	Advisory
System Planning and Access - 3	Conduct a statewide review of public assets, including heliports, park and ride facilities, transit stations, and other state-owned assets which could be used to support AAM.	3/1/2024	9/30/2024	Advisory
System Planning and Access - 4	Incorporate AAM into state transportation planning documents.	3/1/2024	9/30/2024	Advisory/Legislative
Airspace and Safety - 4	Provide information for local governments which contains a general framework of airspace and aeronautical factors as they relate to AAM vertiport development.	3/1/2024	9/30/2024	Advisory
Infrastructure and Zoning - 5	Conduct review of airport hazard zone regulations and update as appropriate	1/1/2024	12/31/2024	Legislative
Public Education & Community Engagement - 4	Lead statewide public awareness campaign for general public	3/1/2024	9/30/2025	Regulatory
System Planning & Access - 5	Explore the idea of a plan to bring AAM to rural or underserved communities.	1/1/2025	12/31/2026	Legislative

Note: This table provides a summary and timeline for each recommendation in the report. As these recommendations are implemented, some may be consolidated to prevent duplicative efforts.

Figure 2: *Master Implementation Timeline*



CONCLUSIONS

There are numerous takeaways from the efforts of the Working Group. By taking a leading position on AAM, FDOT's AO is in a unique position to facilitate the integration of AAM in the State. Whereas the federal government has control over issues relating to airspace and federal vertiport design guidance and local governments are tasked with overseeing public engagement and zoning and permitting for vertiports, the State can play a role in facilitating those interactions by serving as a single point of contact between those entities to provide guidance and information to all stakeholders. This position is reflected in the Working Group's recommendations.

Photo Source: Joby Aviation

AAM is a broad, constantly evolving topic which will impact numerous levels of government and the private sector. The recommendations in this report are reflective of the time and development AAM had reached as of April 2023. These recommendations range from specific requests to the legislature to regulatory updates to advisory and educational materials. The Working Group recognizes that the broad, intergovernmental aspects of AAM positions FDOT to play a significant role. Many other agencies and organizations, from the FAA to local governments, also have a role to play. FDOT is taking the contents of this report under consideration to inform decisions and actionable steps to integrate AAM in the state transportation system.

FDOT would like to thank the members of the Working Group for their participation. It is the intent of FDOT to continually engage the Working Group in an advisory function as they undertake the next phases of AAM planning.

Photo Source: Lilium

APPENDIX A: DEFINITIONS

14 CFR Part 77. Title 14 Code of Federal Regulations Part 77 establishes standards and notification requirements for objects affecting navigable airspace.

Advanced Air Mobility (AAM). An air transportation system primarily utilizing eVTOL aircraft to move people and goods or provide services in an urban or regional setting.

Advanced Air Mobility (AAM). An air transportation system primarily utilizing eVTOL aircraft to move people and goods or provide services in an urban or regional setting.

Air Taxi. An aircraft operating under an air taxi operating certificate for the purpose of carrying passengers, mail, or cargo for revenue in accordance with FAR 121 or FAR Part 135.

Air Traffic Control (ATC). A service provided by ground-based controllers who direct aircraft on the ground and in the air. The primary purpose of ATC systems is to separate aircraft to prevent collisions; to organize and expedite the flow of traffic; and to provide information and other support for pilots when able.

Airside. The portion of an airport that contains the facilities necessary for the operations of aircraft.

Approach/Departure Path. The approach/departure path is the flight track that aircraft follow when landing at or taking off from a vertiport.

Categorical Exclusion (CatEx). A level of NEPA review that is applicable for an established list of actions that do not, individually or cumulatively, have a significant impact on the environment.

Controlled Airspace. Airspace of defined dimensions within which ATC service is provided to IFR and VFR flights in accordance with the airspace classification. Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E Airspace.

Controlling Dimension (D). The diameter of the smallest circle enclosing the VTOL aircraft projection on a horizontal plane, while the aircraft is in the takeoff or landing configuration, with rotors/propellers turning, if applicable.

Design VTOL Aircraft. The design vertical take-off and landing (VTOL) aircraft is the largest electric, hydrogen, or hybrid VTOL aircraft that is expected to operate at a vertiport. This design VTOL aircraft is used to size the TLOF, FATO, and Safety Area.

Environmental Assessment (EA). An EA is a level of NEPA review that evaluates and documents the environmental effects of a proposed federal action to determine if there is a significant impact.

Environmental Impact Statement (EIS). An EIS is a level of NEPA review that describes and discusses the significant environmental impacts the no action, proposed action, and its reasonable alternatives would cause.

eVTOL. Electric vertical take-off and landing (aircraft)

Federal Aviation Administration (FAA). An agency of the U.S. Department of Transportation with authority to regulate and oversee all aspects of civil aviation in the U.S.

Federal Aviation Regulation (FAR). The general and permanent rules established by the executive departments and agencies of the federal government for aviation which are published in the federal register. These are the aviation subset of the U.S. Code of federal Regulations (CFR).

Final Approach and Take-off Area (FATO). A defined, load-bearing area over which the aircraft completes the final phase of the approach, to a hover or a landing, and from which the aircraft initiates takeoff.

7460-1, Notice of Proposed Construction or Alternation. Federal law requires filing a Notice of Proposed Construction or Alteration (Form 7460) for all structures over 200 feet AGL or lower if closer than 20,000 feet to a public use airport with a runway over 3,200 feet in length.

Form 7480-1, Notice of Landing Area Proposal. Submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification for project involving the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport.

Imaginary Surface. Airspace surfaces defined in 14 CFR Part 77 which are in relation to the airport and each runway. The size of these imaginary surfaces is based on the category of each runway for current and future airport operations. Any objects which penetrate these surfaces are considered an obstruction and affects navigable airspace.

Instrument Flight Rules (IFR). Procedures for the conduct of flight in weather conditions below VFR weather minimums. The term IFR is often also used to define weather conditions and type of flight plan under which an aircraft is operating. IFR is defined as the weather condition that occurs whenever the cloud ceiling is at least 500 feet above ground level, but less than 1,000 feet and/or visibility is at least one statue mile, but less than 3 statute miles.

Instrument Meteorological Conditions (IMC). Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for VMC. IMC are defined as period when cloud ceiling are less than 1,000 feet above ground and/or visibility less than three miles.

Instrument Meteorological Conditions (IMC). Meteorological conditions expressed in terms of specific visibility and ceiling conditions that are less than the minimums specified for VMC. IMC are defined as period when cloud ceiling are less than 1,000 feet above ground and/or visibility less than three miles.

Obstruction to Air Navigation. An existing or future object that is of a greater height than any of the heights or surfaces defined in 14 CFR Part 77.23 and 77.25 for a given airport. (Note that obstructions to air navigation are presumed to be hazards to air navigation until an FAA study has determined otherwise.)

OEMs. Original Equipment Manufacturers.

National Environmental Policy Act (NEPA). NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions and consider alternative ways of accomplishing their actions, which are less damaging to and protective of the environment.

Regional Air Mobility (RAM). An air transportation primarily utilizing eVTOL aircraft to carry passengers, cargo, or provide services in a regional setting.

Touch-down and Lift-Off (TLOF). A load bearing, generally paved area centered in the FATO, on which the aircraft performs a touchdown or liftoff.

Urban Air Mobility (UAM). An air transportation primarily utilizing eVTOL aircraft to carry passengers, cargo, or provide services in an urban setting.

Vertiport. An area of land, or a structure, used or intended to be used for electric, hydrogen, and hybrid VTOL aircraft landings and takeoffs and includes associated buildings and facilities.

Vertistop. A vertistop is a term generally used to describe a minimally developed vertiport for boarding and discharging passengers and cargo (i.e., no fueling, defueling, maintenance, repairs, or storage of aircraft, etc.).

Visual Meteorological Conditions (VMC). Meteorological conditions expressed in terms of specific visibility and ceiling conditions which are equal to or greater than the threshold values for IMC.

Visual Flight Rules (VFR). Procedures for the conduct of flight in weather conditions above VFR weather minimums. The term VFR is often also used to define weather conditions and type of flight plan under which an aircraft is operating. VFR is defined as the weather condition whenever the cloud ceiling is at least 1,000 feet above ground level and visibility is at least three statue miles.

VTOL. Vertical take-off and landing (aircraft).

Photo Source: Joby Aviation

APPENDIX B: WORKING GROUP

Working Group Member	Affiliation
Aileen Boucle	Miami-Dade Transportation Planning Organization
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Matthew Land	Eve Urban Air Mobility
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