

FLORIDA DEPARTMENT OF TRANSPORTATION AVIATION OFFICE

ADVANCED AIR MOBILITY LAND USE COMPATIBILITY AND SITE APPROVAL GUIDEBOOK

SEPTEMBER 2024





Florida continues to be the global leader in Advanced Air Mobility (AAM) integration efforts. 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. FDOT's Aviation Office has been implementing the Department of Transportation's AAM Working Group's recommendations and has established an AAM Advisory Committee to continue to receive strategic input and guidance for the deployment of electric vertical takeoff and landing (eVTOL) aircraft across Florida.

This document is an outcome of significant collaboration and forward-thinking leadership. In the Spring of 2024, FDOT hosted a series of tabletop exercises to identify gaps and solutions to facilitate the successful development of vertiports across the state. These exercises enabled FDOT to create comprehensive guidance for our local government partners to make informed decisions about AAM in their communities. This guidebook provides local governments with a background on AAM, the land use considerations for vertiport development, proactive planning steps to prepare for AAM, and a step-by-step process for vertiport site approval at the local, federal, and state level.

Florida's strategic use of innovative technology to further advance our state's aviation industry has once again set a precedent for the rest of the nation to follow. The work that we are doing is not going unnoticed; other states are watching and modeling the bold and innovative actions we are taking that have resulted in improved efficiencies in the movement of people and goods across Florida and the country. In fact, the world is taking notice as Florida's work is being applied in numerous other countries around the globe. This document is just the beginning of a new age of transportation in Florida.

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

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1. OVERVIEW OF GUIDEBOOK AND ADVANCED AIR MOBILITY

Source: Lilium Air Mobility

1.1 INTRODUCTION AND APPLICABILITY

This Advanced Air Mobility (AAM) Land Use Compatibility and Site Approval Guidebook (Guidebook) is designed for Florida's Local Governments to use in long-range planning for AAM and to assist in the evaluation of AAM takeoff and landing facilities (i.e., vertiports). Florida Statute (FS) Chapter 333 defines a political subdivision as "the local government of any county, municipality, town, village, or other subdivision or agency thereof, or any district or special district, port commission, port authority, or other such agency authorized to establish or operate airports in the state"—also referred to in this Guidebook as a "Local Government." This Guidebook is an addendum to the Florida Department of Transportation (FDOT) 2024 Airport Land Use Compatibility Guidebook.

Proper planning by local officials will play an instrumental role in the success of AAM. Compatible land use surrounding aviation infrastructure is paramount to ensure the safe ingress and egress of aircraft during takeoff and landing and to limit the impact of aviation on a community. As detailed below, AAM has the potential to provide unique multi-modal, urban, and regional transportation options to communities for passenger, cargo, and public services that can revolutionize Florida's transportation system.

Included in this Guidebook:

- Overview of AAM and references to additional reading
- Key differences between AAM and traditional aviation
- Information on types of AAM facilities (i.e., vertiports)
- Long-range planning initiatives for Local Governments to undertake in preparation for AAM
- Local, state, and federal requirements for vertiport application and approval process

The focus of this Guidebook is to provide Local Government planners and decision-makers with information on land use considerations and site approval processes for proposed AAM takeoff and landing facilities. The Guidebook provides information for public or private use AAM landing facilities developed on existing aviation facilities (such as airports or heliports) or on off-airport sites. A vertiport is considered public use if it is open for takeoffs and landings by any eVTOL aircraft capable of landing at the vertiport, without requiring prior permission from the facility owner or manager. Private use vertiports are those where the aircraft requires prior permission from the facility owner or manager to takeoff and land.

Note, the Guidebook's applicability is limited to piloted AAM aircraft operations and does not address autonomous flight. At the time of publishing this Guidebook, there are still many unknowns about AAM. Because no AAM operations have begun, there is uncertainty on the full extent of its land use impact. The community impacts of vertiports are not fully known and will vary depending on the location, size, throughput, and type of operation they support.

This Guidebook serves to supplement any FDOT or Federal Aviation Administration (FAA) guidance on the Local Governments' processes for AAM facility development. Further, the Guidebook is intended to focus on the role of the Local Government in preparing for and accommodating AAM, as well as the steps that FDOT and the FAA, take when an Applicant (a public or private entity) proposes a new vertiport facility or proposes to adapt an existing aviation facility for AAM purposes. This Guidebook intentionally does not include information on many components of AAM that are not within the purview of Local Governments, such as air traffic considerations and pilot or aircraft certification. Further FAA resources on AAM are provided.



ADDITIONAL RESOURCES

Access the following FAA resources on Advanced Air Mobility:

- Industry overview, see: FAA Advanced Air Mobility | Air Taxis
- Infrastructure design guidelines, see: <u>FAA Engineering Brief 105, Vertiport Design</u>
- Pilot certification process, see: <u>88 FR 38946</u>, Integration of Powered-Lift: Pilot Certification and Operations; Miscellaneous Amendments Related to Rotorcraft and Airplanes
- Aircraft Certification Process, see: <u>FAA Aircraft Airworthiness Certification</u>

This Guidebook also assumes that the Local Government has an existing comprehensive plan, which is mandated by Florida Statute, Section 163.3177, F.S. See FDOT's website for further guidance on <u>Transportation and</u> <u>Community Planning</u>.

This Guidebook serves as FDOT guidance on AAM land use planning and the vertiport site approval process. FDOT facilitates the Advanced Air Mobility Advisory Committee (AAMAC), which meets three times per year to discuss and revise the state's AAM focus, and was engaged to review and provide feedback for this Guidebook.

1.2 WHAT IS AAM?

Advanced Air Mobility (AAM) is a nascent mode of air transportation primarily utilizing electric vertical takeoff and landing (eVTOL) aircraft to move people and goods or provide services in an urban, regional, or rural setting. The key element of AAM is the technology's ability to move people and goods distances not previously served by or underserved by aviation. The technology behind this new mode is the advent of distributed electric propulsion (DEP) in aviation. Whether these aircraft takeoff and land vertically (VTOL), require a short runway (STOL), or takeoff and land like conventional fixed-wing aircraft (CTOL), they all use DEP.

The focus of this Guidebook is on eVTOL aircraft because they may operate not only at existing airports, but also at converted heliports, as well as newly built vertiports, the details of which are explained in the <u>AAM Infrastructure</u> section of this Guidebook.

DEP comes with the promise of increased efficiency, lower operating costs, and enhanced safety.¹ In addition to these factors, eVTOL manufacturers purport their aircraft will be significantly quieter than traditional aviation, and early research may suggest some are quieter, but more research is being conducted.²

eVTOL aircraft are based on a paradigm shift, away from manual flying to Simplified Vehicle Operations (SVO). This aims to reduce the pilot workload by using technology to automate elements of the control of the aircraft. Most eVTOL aircraft will initially be certified with a pilot on board, while others will enter the market as autonomous aircraft. Automation may have unique data and infrastructure requirements that need to be addressed by the FAA in future guidance documents.

The leading eVTOLs being developed typically are no longer or wider than 50 feet. They carry between two and six passengers (or an equivalent amount of cargo), have ranges between 60 and 200 miles, and are intended to fly at altitudes between 500 and 3,000 feet above ground level.







Given the purported advantages of eVTOL aircraft, operators envision an expansion of aviation into use cases and areas that either are underserved or not served at all by traditional aviation. eVTOL original equipment manufacturers (OEMs) and operators envision many types of operations, including those shown in **Figure 1-1**.



FIGURE 1-1: TYPES OF AAM OPERATIONS



AAM may bring aviation infrastructure closer to land use traditionally seen as incompatible. This means that Local Governments are tasked with adapting their land use, zoning, and transportation planning methods to accommodate AAM in a way that is consistent with their community's values and goals.

FDOT's Aviation Office (AO) has taken a leading role in advancing AAM in the state and has completed numerous work products to build a foundation of knowledge amongst important stakeholders. Most significant are the FDOT AAM Roadmap and the FDOT AAM Implementation and Public Outreach Plan, which inspired this Guidebook.

1.2.1 AAM: HOW IS AAM DIFFERENT FROM TRADITIONAL AVIATION?

While AAM has all the same fundamental components of traditional aviation, it has a few differentiators that will impact land use compatibility. More information on traditional incompatible land uses can be found in the FDOT 2024 Airport Land Use Compatibility Guidebook. Figure 1-2 demonstrates four key components of AAM that differentiate it from traditional aviation and the knowns, unknowns, and takeaways for each.

FIGURE 1-2: DISTINCT COMPONENTS OF AAM



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There are several distinctions between traditional airport land use compatibility planning and the considerations for land use for AAM. The level of impact and difference are still being determined as their entry into service approaches. As a result, the full community impact, both positive and negative, is unknown compared to helicopters, other rotorcraft, or alternate transportation modes. Impacts such as downwash and outwash, noise profiles (in flight and during takeoff and landing), visual impacts, and the maneuverability of the aircraft are still being researched.

Vertiports will look and act like heliports with a few distinct differences in size and operational tempo. For AAM to be successful in areas that helicopters/heliports have not, vertiports will need to have the following characteristics:

- A lower noise signature than heliports,
- Greater public acceptance in urban areas than existing heliports,
- Proximity to population-dense areas that have traffic congestion,
- Services at a competitive price point,
- Easy access to charging, and
- Well-integrated into the existing transportation network.

Various planning considerations for vertiports are shown in **Figure 1-3**.



FIGURE 1-3: VERTIPORT PLANNING CONSIDERATIONS

Planning for vertiport infrastructure incorporates numerous factors, comparable to planning a traditional airport. Regarding the ground infrastructure itself, several considerations exist:



- **The size of the vertiport:** What is the total acreage? The number of touchdown and liftoff (TLOF) pads? The number of eVTOL parking positions? Automobile parking for passengers and staff? Areas for stormwater management?
 - 2 The anticipated throughput of the vertiport: How many flights are expected daily? What are the anticipated number of peak hour (or peak period) flights?
- **3** The access to sufficient utilities: How many charging stations are there? Will they be used concurrently? What is the expected average energy use? Peak energy use?
- **The proximity to fire stations and emergency response:** How close is the nearest fire station? Have those firefighters received training for electric vehicle fires? What is the response time for first responders?
 - Compatible land uses:
 - What routes will the aircraft approach and depart through?
 - Are there noise- or visual-sensitive areas (residential, educational/schools, parks and recreational, health, religious, cultural and historical) around the proposed vertiport?
 - Are there adjacent land uses that permit tall structures, which can impact the proposed vertiport's operations?
 - Are there adjacent land uses, such as wetlands, landfills, and nature preserves, that can attract birds and wildlife which are dangerous if near aircraft? See FAA AC 150/5200-33C, Hazardous Wildlife Attractants on or near Airports, for guidance on certain land uses that have the potential to attract hazardous wildlife on or near airports.
 - **Compatibility with land uses and zoning:** Are there already airport zoning regulations established (as required by Chapter 333, Florida Statutes, Airport Zoning)? Are vertiports compatible with existing and future land use? What zoning is a vertiport allowed under? Are there specific area plans, like community redevelopment areas, that apply?
- **Proximity to existing aviation infrastructure:** What existing airports and heliports are adjacent to or near the proposed vertiport? Will the vertiport impact existing aviation operations?
- Clear approach and departure paths: Are there tall buildings that will obstruct the approach and departure of the eVTOL to and from the proposed vertiport or create urban canyons with mechanical turbulence? Is there planned development that may limit the vertiport's usage in the future?
- Multimodal connections: Are there other modes of transportation around the proposed vertiport? Do they have the appropriate capacity? Would capital improvement planning be affected? Does the vertiport serve a purpose in the municipality's larger transportation plan?

Answers to these questions will help Local Governments understand the facility's impact on their community and plan accordingly. For more information on the characteristics of incompatible development, refer to FDOT's 2024 Airport Land Use Compatibility Guidebook.



1.2.2 AAM INFRASTRUCTURE

AAM aircraft will operate on three different types of landing infrastructure:



Initially, these aircraft may rely on existing airports and heliports, but as eVTOL operations increase, a new form of aviation infrastructure, vertiports, will likely be needed. Some airports and heliports that exist today may be able to accommodate AAM with minor infrastructure changes, while others will need significant modifications to adapt.

Who can use the facility will depend on who owns and operates it and whether it is open for public or private use. Vertiports, like airports or heliports, can be owned and operated by either a public entity (e.g., Local Government, public hospital, law enforcement, etc.) or a private entity (e.g., infrastructure developer, cargo company, etc.). The type of operation, (e.g., for-hire passenger service, air cargo, public/ emergency service, private and recreational use, etc.) will determine the actual user, (e.g., passengers or goods/service), aboard the eVTOL aircraft.

Regardless of whether these facilities are publicly or privately owned, they can be open for public use or for private use.

- A public use facility is one that allows aircraft to takeoff and land without first receiving permission. It is simply available for any aircraft to land, assuming it meets the requirements to land at the facility safely. It is similar to how public use general aviation airports are operated throughout the U.S., where a pilot may pay a landing fee, but as long as the aircraft is capable of landing at the airport, it is not restricted.
- A private use facility requires an aircraft to obtain permission prior to landing. A hospital heliport is one example; in order to land at the hospital, the heliport manager must grant permission prior to the helicopter landing. The private use heliport manager may also restrict who can land at the site.

See <u>Site Approval</u>, for how the local approval, federal review and determination, and state approval processes differ depending on use.

AIRPORTS

Charging stations for electric aircraft are already being installed at airports across the country.³ Most airports, especially underutilized general aviation and small commercial service airports, are highly adaptable to AAM operations and may serve as the launch point for many AAM services in the coming years (Figure 1-4). Commercial service airports may also serve as a launch point for AAM operations as they supply an existing customer base. However, accommodating these smaller, lighter aircraft at these busier airports will be more challenging because of the difficulties integrating slower aircraft with the larger, faster aircraft these facilities serve. In these instances, indepth siting and compatibility studies will be needed to determine if and how these airports can accommodate high-volume eVTOL traffic without impacting the capacity for the facility's existing users.



FIGURE 1-4: BETA AIRCRAFT AT DUKE AIRFIELD

Source: BETA Technologies (12)



Most publicly owned airports, like those owned by cities, counties, or airport authorities, are "federally obligated." This means that they agree to certain obligations when they accept federal grant funds or property transfers for airport purposes. One of these obligations is compliance with the official Airport Layout Plan (ALP) or record, a plan that outlines existing and proposed uses on the airport. **If a vertiport is proposed on a federally obligated airport, it must be added to the airport's ALP, and it must comply with federal design standards for vertiports.**

If an airport is not federally obligated, as is the case with private airports, there may be no ALP, and the Applicant is instead responsible for submitting the FAA Form 7480-1, Notice for Construction, Alteration, and Deactivation of Airports as required by <u>Title 14</u>, <u>Code of Federal Regulations (CFR) Part 157</u>. It is also worth noting that in Florida, aircraft operating at a public use airport are not permitted to land on an uninspected location, like an airport's aircraft parking apron. Thus, any aircraft operation at a public use airport in Florida must be conducted using the airport's existing FDOT-approved (runway or helipad) infrastructure, or by adhering to the Form 7460-1/7480-1 process to establish a new landing area. See <u>Vertiports on Existing Airports</u> section for more information.

HELIPORTS

Heliports exist throughout the state, and in many ways, these landing areas are the most comparable to a vertiport though they may not be in locations that accommodate AAM eVTOL operations. However, two important distinctions, size and throughput, may impact their ability to be adapted for eVTOL operations. Heliport standards are designed for helicopters, so some adaptation may be required based on aircraft size and operational differences. (See the following section, Vertiports, for more information). **If a heliport is adapted into a vertiport, a new site approval with the FAA and FDOT will also be needed.**

Regarding throughput, most heliports today consist of a single pad that functions as both a landing pad and a parking spot because most helicopters operate a certain mission from their home base and then return shortly after (e.g., a hospital heliport). Any single-pad heliport like this has limited potential for highvolume or high-frequency operations due to the aircraft's inability to taxi away from the landing area and make room for another operation. Instead, the aircraft must land at the landing area and remain there while enplaning, deplaning, or refueling takes place. This is very different from the AAM concept of operations for many eVTOL OEMs, which would require separate parking areas for enplaning and deplaning, charging, and longer-term parking. High-capacity heliports like this are rare and do not readily exist (see **Figure 1-5**).

FIGURE 1-5: COMPARISON OF HELIPORT CONFIGURATIONS



Source: Google Earth

Source: Google Earth

Once adapted, many existing heliports can be used by eVTOLs to supplement existing helicopter missions, like emergency response operations. However, high-throughput operations will be limited if space does not exist for separate aircraft parking and charging.



VERTIPORTS

Vertiports are landing facilities that are specifically built for the takeoff and landing of eVTOL aircraft and may include associated buildings and facilities. Vertiports will range from small, landing-area-only infrastructure to larger facilities with a terminal and multiple eVTOL aircraft parking and charging positions.

Vertiports, like airports and heliports, will fall into one of these four categories:

- **Publicly owned, public use vertiport.** Local government or other public entity constructs a vertiport open to be used by the general public (i.e., all types of operations, such as recreational use, for-hire air taxi service, business flying, public service).
- **Publicly owned, private use vertiport.** Public entity (e.g., hospital or Local Government) constructs a vertiport for a specific purpose with restricted access (e.g., only open to use for air medical operations or limiting use by manager), and not open to use by the general public.
- **Privately owned, public use vertiport.** Private entity (e.g., infrastructure developer company) constructs a vertiport open to be used by the general public.
- **Privately owned, private use vertiport.** Private entity (e.g., cargo carrier) constructs a vertiport for private use (air cargo operations) with restrictions on who can use the facility.

The FAA has released interim guidance for vertiport design. This guidance, FAA Engineering Brief (EB) 105, Vertiport Design⁴ or EB 105, is prescriptive and limited to electric eVTOL operations. One update to EB 105 is expected before a full Advisory Circular on Vertiport Design is published by the end of 2025.

Like heliports, vertiports consist of the physical landing area in addition to "imaginary surfaces" that extend upward and outward at defined slopes from the edge of the final approach and takeoff area (FATO). These surfaces need to be protected to ensure the safe arrival and departure of these aircraft. In other words, actions must be taken to ensure that obstacles (like buildings, power lines, and other objects) do not penetrate through the heights of these surfaces. If these surfaces span across administrative boundaries, coordination across Local Governments is recommended. The landing areas and imaginary surfaces are demonstrated in **Figure 1-6**.

FIGURE 1-6: VERTIPORT LANDING AREA AND IMAGINARY SURFACES



Property owners with land underneath these imaginary surfaces may be impacted by a new vertiport. In 1996, the State of Florida enacted the Bert J. Harris Jr. Private Property Protection Act that created a new cause of action for property owners who could demonstrate that a governmental action "inordinately burdens" their property, could be entitled to some form of relief. Local Governments should consult their attorneys before making decisions on vertiport development in their communities.



SUPPORTING INFRASTRUCTURE

Aside from the landing area and the imaginary surfaces, vertiports include other supporting infrastructure like weather observation technology, fire safety systems, communications equipment, and aircraft charging stations. A major component of vertiport infrastructure includes charging stations rather than traditional aviation fuel. Similar to electric vehicles (EVs), the amount of electricity and charging time an eVTOL aircraft requires to operate largely depends on the routes and travel distances.

Not unlike the charging stations found for electric vehicles (EVs) across the state, the primary electrical requirement is a reliable and sufficient power supply. The power supply must include a three-phase power source that is stable and capable of simultaneously meeting the peak power demands of multiple aircraft. An uninterruptible power supply (UPS) or backup generator can provide redundancy to ensure continuous operations in the event of a grid failure.

There is no single charging standard for eVTOL aircraft, but most industry players intend to use the combined charging standard (CCS),⁵ the same charging standard widely used for EVs today, and the standard endorsed by the General Aviation Manufacturers Association (GAMA).⁶ CCS chargers can provide power up to 350kW*, and eVTOL chargers in production today support this capability (see **Figure 1-7**).



FIGURE 1-7: ELECTRIC AIRCRAFT CHARGING

Charging requirements may increase as battery and charging technology evolves. A joint study between the National Institute of Aerospace and NASA from 2019 suggested the typical electrical requirements for electric aircraft chargers would be 600kW⁷, and the National Renewable Energy Laboratory has suggested that aircraft electrification in the future could require megawatt-level charging.⁸ The Megawatt Charging System (MCS) is in development and may enable these much faster charging speeds.⁵ Staying apprised of industry developments in charging standards and power requirements, as well as coordinating with local utilities, will help communities to adequately plan for AAM.

Many vertiport concepts will incorporate charging infrastructure, passenger terminals, car parking lots, and other amenities. These facilites would also need water/sewer infrastructure, access to a public road, and other similar infrastructure to support the vertiport's operations.

*Charging capabilities are continually being updated; some CCS chargers may be capable of greater than 350kW.



2. LONG-RANGE PLANNING

This section is intended to assist Local Governments in long-range planning for AAM. The goal of this section is to equip the Local Government planners with actionable steps to take prior to an Applicant submitting an application for an AAM takeoff and landing facility to the Local Government.

Source: Arch

2.1 PROACTIVE PLANNING FOR ADVANCED AIR MOBILITY

Before any vertiport is built, steps must be taken by the local, federal, and state governments to enable the construction of the facility. However, certain high-level, fundamental first steps can be identified and implemented at the local level that will encourage AAM's success. The following section is a checklist of items that a Local Government can take to best understand how to integrate vertiports in their community. These steps and their purposes are summarized in **Figure 2-1**.

FIGURE 2-1: STEPS TO PROACTIVELY PLAN FOR ADVANCED AIR MOBILITY

DEVELOP A SUBJECT MATTER EXPERTISE-LEVEL OF UNDERSTANDING OF AAM AND LAND USE COMPATIBILITY

EDUCATE KEY STAKEHOLDERS ON AAM



REVIEW AND UPDATE LOCAL COMPREHENSIVE PLAN AND ZONING ORDINANCES

DEVELOP A SUBJECT MATTER EXPERTISE-LEVEL OF UNDERSTANDING OF AAM AND LAND USE COMPATIBILITY

As this new form of air transportation develops and emerges, the interest around it will continue to expand. Local Governments should identify a staff member to lead the AAM dialogue for their community so they can become knowledgeable about the subject. Resources are available for the lead staff member to learn about AAM; FDOT AO has developed several documents to assist communities with understanding and implementing AAM.

This individual may be a member of a county, municipality, or special district's planning department (or another pertinent branch of the Local Government). This lead staff member's role is to be the principal spokesperson who is at the forefront of AAM in their Local Government and represents the community's best interests for AAM adoption.

The lead staff member should be equipped with knowledge of compatible or incompatible land uses for AAM and vertiports. Land uses adjacent to vertiports are important to assess from various perspectives, as these are the properties that will be most impacted. While there are unique site-specific conditions that influence a vertiport's optimal surroundings, there are key considerations that are generally common across all potential vertiport locations. The Local Government should think about how each land use category influences or is impacted by noise and visual sensitivity, hazardous wildlife attractants, tall structures, and population density.

The goal here is to equip the Local Government with the knowledge to establish suitable vertiport locations (or where vertiports shall not be sited) and a framework to engage in discussions when an Applicant submits a vertiport application. Reviewing these considerations will assist local planning to both proactively identify suitable areas for vertiports and understand the potential community impact of proposed vertiports.



ADDITIONAL RESOURCES

Access the following FDOT Aviation Office AAM implementation resources through the <u>FDOT Advanced Air Mobility</u> page:

- AAM Roadmap
- AAM Working Group Report
- AAM Implementation and Public Outreach Plan



EDUCATE KEY STAKEHOLDERS ON AAM

For AAM to be successful, there are multiple stakeholders that the Local Government should consider engaging with (See Figure 2-2). To maximize the public benefit of AAM, policy planning should address the AAM ecosystem and how it will operate, including vertiport locations and compatible land uses around them. Because of the low altitude and urban areas in which these aircraft are expected to fly, it is important to consider how these aircraft will interact with the community and affect the environment. The location of vertiports may also affect the flight path the aircraft uses between two locations. There is also the potential for impacts during the low altitude phase of flight, even if not near a vertiport. While the flight paths and airspace management is the role of the federal government, enabling the vertiport's construction and use is within the Local Government's jurisdiction. Communities should holistically look at a proposed vertiport site in accordance with the Local Government's goals and growth strategies and, if applicable,



AAM's role in the Local Government's greater transportation network. Documenting the purpose for AAM in the community is a good starting point for AAM integration.

The Local Government should develop a public notification process for proposed vertiports, as Applicants submit vertiport applications to the Local Government. A notification requirement (with consideration for Title VI requirements) in the Local Government's review and approval process will ensure all pertinent stakeholders are alerted.



- **How** can the Local Government ensure the public's input is taken to consideration when an Applicant submits a vertiport proposal?
- What are the views of local policymakers and the community on AAM?
- How can the Local Government establish AAM policies to deliver positive community impact?
- **How** can the Local Government design and conduct appropriate public outreach for input on proposed vertiports?
- Are considerations being made for the following?
 - » Mobility choices for all groups
 - » Minimizing community impact
 - » Co-location and integration with existing transportation mode choices for maximum benefits
 - » Positive economic growth



AAM will require coordination with a number of key stakeholders within the Local Government. Proactive communication and coordination with policymakers and the community, AAM subject matter experts (SMEs), airports and heliports in the Local Government, local utility providers, fire departments, and multimodal transportation departments, among other relevant stakeholders, is recommended. Coordination among the various stakeholders will assist the Local Government in establishing relationships and take an interdisciplinary approach in understanding the impact of and preparing for vertiport construction and operations. The subsequent pages describe the coordination efforts with these stakeholders and the key takeaways for a Local Government.

- Understanding of how AAM can support the community
- Guide on AAM goals and objectives for potential inclusion into the comprehensive plan
- Provide input on long-range planning for AAM

Policymakers and Community:

Educating local policymakers, such as elected and appointed officials, and the community (including special interest groups, such as local businesses, environmental advocates, etc.) on what AAM is and how it can be integrated into their Local Government will generate discussions on community needs.

AAM Subject Matter Experts and eVTOL Aircraft Providers: Engaging with SMEs in AAM will equip the Local Government

 Latest information and updates on the state of the AAM industry

- AAM's suitability for the Local
- Government
- Assistance with long-range planning for AAM

with a greater understanding of AAM in the community, and better prepare the Local Government to integrate AAM. Local Governments are encouraged to engage with state-

sponsored AAM industry events, attend conferences on AAM, and consult with industry leaders to better understand and get answers on the subject.

Airport Coordination:

Knowledge of airport master planning and ALP process
Understanding of incompatible land uses for vertiports adjacent to airports Understanding a community's existing aviation infrastructure and airspace will allow local planners to integrate new vertiports without infringing upon existing aviation users' airspace, capacity, landing facilities, and local tall structure development. Local Government officials and airport managers should meet, discuss, and identify clear roles and responsibilities of how to handle a potential vertiport application.

Airports are host to a set of complex rules and regulatory features concerning ground infrastructure, airspace, and protected surfaces. The lead staff member should coordinate with any airport within their jurisdiction to best determine how the airport can participate in the review process for any vertiport cited within the jurisdiction. The airport may be able to provide valuable insight to how the vertiport may or may not impact the operations of the airport and how any such issues could be mitigated. Additionally, this may enable an opportunity to review an existing airport's land use and role in the comprehensive plan, as well as applicable plans covering more specific areas.

The capability and use cases of eVTOL aircraft will both complement and differ from conventional aircraft; however, its success should not come at the detriment of existing airports, heliports, or future tall structure growth. Direct coordination with airports can identify ways to best accommodate AAM.



AVIATION

- Knowledge of electrical supply
 - Understanding of Local Government's utility master plan and overall utility planning process
 - An established relationship with the utility provider for proposed vertiports in the future

Utility Provider Coordination:

Utility providers have a vital role to play in providing sufficient electricity to off-airport sites and improving existing power infrastructure at existing landing facilities. Involving these providers early in the planning and development process is crucial to ensure that an adequate power supply is available. Depending on the site, it can take several years before an adequate supply can be provided, further highlighting the necessity of early engagement so that an assessment of the timeline and supply can be completed. If possible, the Local Government should consider electric requirements for AAM into any existing local plans for electricity supply, similar to how some Local Governments are planning for EV chargers. See Florida Department of Agriculture and Consumer Services' Electric Utilities for a list of Florida's electric service providers.

Fire Department Coordination:

Emergency preparedness is as important for AAM as it is for traditional aviation. First-generation eVTOLs are expected to use lithium-ion batteries, which pose different fire safety issues than that of traditional aviation fuel. Therefore, firefighting efforts to combat a potential eVTOL fire will require specific planning and guidance from fire safety officials. It is not safe to assume that traditional ARFF (Aircraft Rescue and Firefighting) or local firefighting departments have the necessary capabilities to manage these fires. The Local Government should ensure that their firefighting departments responding to electric aircraft fires develop a protocol for such fires and coordinate with the vertiport managers on the matter. The National Fire Protection Association (NFPA) has revised NFPA 418: Standard for Heliports (2024) to include considerations for vertiports, which should be adopted by Local Governments.

Multimodal Transportation Department Coordination:

Integrating AAM into the existing transportation network will require multimodal transportation planning with the departments in the Local Government that plan for roadways, pedestrians and bicycling, public transit, ferries and marine transportation, among others. If applicable, coordinate with the metropolitan transportation planning organization. It is important that the Local Government considers AAM into its long-term transportation planning initiatives and studies, and discussions are held on how best AAM fits into the existing network.



 Knowledge of Local Government's emergency response capabilities and protocols

 An established relationship with the emergency service provider(s) for proposed vertiports in the future

 Development of a multimodal transportation plan that incorporates AAM use cases into the existing transportation network

 An established relationship with other transportation mode departments for future planning

AVIATION

REVIEW AND UPDATE LOCAL COMPREHENSIVE PLAN AND ZONING ORDINANCES

Land use and zoning regulations are implemented by local planners and other Local Government staff based on the direction of elected and appointed officials. In Florida, this process begins with the Local Government's comprehensive plan, which identifies current and future land uses across the jurisdiction.

Reviewing this plan and the future land use map will allow planners to best understand where growth is expected to occur and where vertiports may best be suited or avoided. These plans should be developed with community first policies that make sense for the way the community wishes to interact with AAM. Developing baseline goals and strategies to address AAM will aid in this effort.

After reviewing and updating the comprehensive plan, Local Governments should review existing zoning ordinances and determine the types of updates that those ordinances may need to accommodate vertiports. This should be done in a manner that considers the effects of community development on traditional local airports and aviation activity and vice versa.



- Are airports mentioned in the comprehensive plan?
- What types of goals do they fulfill? Are there any goals and policies that address safety considerations, land use in the vicinity of airports, and noise contours around airports?
- Does the Local Government have existing zoning ordinances for airports or heliports?
- **Does** the Local Government's future land use map include areas designated for aeronautical use?
- What is the Local Government's process for rezoning an area for vertiport use?
- **Does** the Local Government have special-use or overlay zones that can apply to vertiports?

Zones designated for aeronautical use can be updated to include vertiports and AAM services in addition to airports and heliports. Another way to enable AAM development, in alignment with the community's transportation planning goals, is for Local Governments to identify other land use categories that could include vertiports as an allowable use.

The local plans and regulations should pay particular attention to noise impacts and mitigation, tall structure locations, landfill development, and wildlife interaction with aviation facilities and activity. To ensure safe, long-term AAM operations and any public investment in or public benefit from it, it is strongly recommended zoning ordinances include airspace overlay zoning to guard against incompatible land uses and obstructions to air navigation developing over time.

Per Chapter 333, Florida Statues, Airport Zoning (amended effective July 1, 2016), a Local Government with an airport hazard area (any area where an airport hazard/obstruction might be established) within its territorial limits should already have adopted, administered, and enforced airport zoning regulations.¹⁰ To assist political subdivisions in identifying and complying with the changes to Chapter 333, F.S., the FDOT AO has published resources in the <u>2024 Airport Land Use Compatibility Guidebook</u>.



ADDITIONAL RESOURCES

The American Planning Association published PAS Report 606, Planning for Advanced Air Mobility, which presents case studies of integrating AAM into local and regional planning. See the case studies presented in Chapter 6 Integrating Advanced Air Mobility into Planning Practice.

The case studies include elements covered in this Long-Range Planning section of the Guidebook, such as comprehensive planning, stakeholder engagement, and local zoning code and land use updates.



3. VERTIPORTS IN YOUR COMMUNITY

The following section outlines the overall steps that are necessary to approve a vertiport. Guidance for a vertiport at an on-airport site is provided in **Section 3.2**.

3.1 OFF-AIRPORT VERTIPORT SITE APPROVAL

This section outlines the site approval process for a new vertiport not located at an existing airport. According to Chapter 330 Florida Statutes (F.S.) Regulation of Aircraft, Pilots, and Airports, an airport is defined 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." Whether a landing facility is an airport, a heliport, or a vertiport, it falls under Florida's definition of an "airport."

Applicants must follow the same site approval process as traditional airports under Florida law. It's important to note that while the process for a new vertiport mirrors the current airport or heliport approval process, this section will use the term vertiport instead of airport so that the unique considerations for a vertiport are not confused with those of a traditional airport.

Regardless of public or private ownership, the requirements for establishing a new vertiport vary depending on whether it is intended for private or public use. In both cases, the vertiport must

FIGURE 3-1 SUMMARY OF NEW VERTIPORT APPROVAL DIFFERENCES BY PUBLIC AND PRIVATE USE



obtain local zoning and building approval, and the Applicant must submit FAA Form 7480-1. The FAA will only protect the approach and departure airspace for public use vertiports; the exception being if a private use vertiport has an established instrument approach procedure. State law also requires airspace protection in the form of local airport hazard area zoning for public use vertiports, but there is no state requirement for the same enforcement at private use vertiports.

Pursuant to Section 330.30, FS, establishing a new vertiport requires a site approval from FDOT. This statute outlines the site approval requirements, effective period, and revocation. Florida Administrative Code Chapter 14-60.005 explains the requirements for applying for and obtaining an Airport Site Approval Order. Public use vertiports receive a license and are subject to annual inspections, while private use facilities receive an airport registration and must maintain that registration through online submittal every two years. A summary of approval differences by use are shown in **Figure 3-1**.

Numerous levels of government and private sector entities are involved in AAM. These responsibilities are sometimes quite distinct, like the management of the airspace by the federal government, whereas others, like community engagement, overlap between Local Governments, infrastructure developers, and service providers. **Figure 3-2** shows the roles and responsibilities of the local, federal, and state government as it relates to the construction of a vertiport.

FIGURE 3-2: ROLES AND RESPONSIBILITIES FOR VERTIPORT CONSTRUCTION

LOCAL APPROVAL

- LOCAL GOVERNMENT ENGAGES IN LONG RANGE PLANNING STEPS.
- LOCAL GOVERNMENT ENGAGES IN PRE-APPLICATION MEETING.
- LOCAL GOVERNMENT RECEIVES AND PROCESSES APPLICATION.
- IF APPROVED, CONSTRUCTION MAY BEGIN.*

FAA REVIEW AND DETERMINATION

- APPLICANT FILES FAA 7480-1 FORM TO BEGIN AIRSPACE EVALUATION.
- FAA EVALUATES AND ISSUES A FINDING OF NO OBJECTION, CONDITIONAL NO OBJECTION, OR OBJECTION.

FDOT APPROVAL

- PROCESS BEGINS AFTER LOCAL ZONING APPROVAL AND FAVORABLE FAA AIRSPACE DETERMINATION.
- FDOT RECEIVES AIRPORT SITE APPROVAL ORDER APPLICATION FROM APPLICANT.
- A SITE APPROVAL ORDER IS ISSUED.
- CONSTRUCTION MAY BEGIN AND FACILITY IS INSPECTED PRIOR TO LICENSE/REGISTRATION.

*The FDOT Site Approval process begins after the vertiport sponsor obtains local zoning and after the FAA provides a favorable airspace determination. A local government may choose to make the zoning approval contingent on FDOT Site Approval.

Some steps can be taken concurrently and may be expedited as the AAM industry matures. The site approval process begins at the local level and progresses through the federal and state government process. Making the zoning approval for a vertiport contingent on the approval of the site by FDOT ensures that the vertiport has received a favorable determination from the FAA.

3.1.1 LOCAL APPROVAL

The primary roles of the Local Government in AAM are to determine how AAM fits into their community and to develop appropriate zoning ordinances that allow for vertiport development in line with the comprehensive plan and values of their community.

PRE-APPLICATION MEETING

Local Governments should coordinate with a potential Applicant as early as possible, to provide the Applicant with guidance on pre-application expectations, the various local and state approval and federal review processes and requirements, and the communication protocols between the Applicant and Local Government throughout the entire process. This will ensure a clear understanding of expectations between the Applicant and the Local Government and a smooth application review process. This initial coordination culminates with a pre-application meeting between the Applicant and the Local Government. Each Local Government's expectations and needs may vary. Typically, the potential Applicant should have an initial site plan to present. The factors and considerations when constructing a vertiport listed in the <u>AAM: How is AAM different from traditional aviation?</u> section may serve as a starting point for what the Applicant should prepare for the pre-application meeting.

DIFFERENT SCENARIOS OF LOCAL GOVERNMENT'S APPROVAL PROCESS

Several scenarios may apply depending on the Local Government's existing processes for zoning and site development applications. This section will outline two scenarios for vertiport development and the local process for each. It is worth noting that many communities may process a new vertiport under a "conditional use permit" (also called a special exception) as certain uses have been determined to require additional standards to ensure compatibility with adjacent uses. These details can be worked out between the Applicant and the Local Government in the pre-application meeting.

Sections 3.1.2 and **3.1.3** document the responsibilities of both federal and state authorities in constructing a new vertiport. The Applicant is required to go through the FAA and FDOT processes for the construction of a vertiport, and it is recommended that the Local Government sets a requirement in their zoning code that the Applicant must receive a favorable evaluation from the FAA and a site approval order from FDOT, to receive the Local Government's approval.



SCENARIO 1: COMPREHENSIVE PLAN AND ZONING ALLOW VERTIPORTS

FIGURE 3-3: SCENARIO 1 LOCAL PROCESS



If a Local Government has already completed an update to the comprehensive plan that designates districts or overlay zones where vertiports are permitted by right, and if the parcel's zoning and future land use designation already allows vertiports (See **Figure 3-3**), the local approval process is relatively simple. First, the developer and the Local Government will have a pre-application meeting in which the developer presents a conceptual plan and a description of the proposed vertiport. The Local Government will then provide feedback and an application for the developer. The application will contain a list of requirements the Applicant must provide to complete the application process. <u>Appendix: Sample Heliport/Vertiport Zoning Ordinances</u> includes examples of local heliport/vertiport ordinances existing in Florida Local Governments. These ordinances may serve as a starting point for Local Governments when developing their ordinance.

The application review process for a vertiport will vary somewhat between Local Governments, but the process may include a cross-agency review, in which affected departments can review and comment on the application. The Local Government should reengage with the stakeholders identified in the <u>Proactive Planning</u> for Advanced Air Mobility section of this Guidebook, especially airports, utilities, and fire departments. The Local Government may also require a public hearing for the vertiport, and the application may go before a technical review committee, a planning board, or a city council or county commission.

If the application is approved (ideally, contingent on a favorable determination from the FAA and the appropriate site approval order from FDOT), the Applicant moves forward with their proposal. The FAA process can occur during the local application process (see <u>Federal Review and Determination</u>), but the FDOT process (see <u>State Approval</u>) begins once the Applicant has received conditional local approval and a favorable determination from the FAA.

SCENARIO 2: COMPREHENSIVE PLAN DOES NOT INCLUDE VERTIPORTS, ZONING DOES NOT ENABLE VERTIPORTS

FIGURE 3-4: SCENARIO 2 LOCAL PROCESS



If a Local Government has not updated its comprehensive plan, it can still accept, process, and approve applications for a vertiport. If the zoning of the parcel of the proposed vertiport does not allow for a use like a vertiport (See **Figure 3-4**), the Applicant would have to request for a change to zoning that does allow for vertiport use (this may require an amendment to the comprehensive plan if the future land use in the comprehensive plan does not allow for vertiports). This could be done by rezoning the property to one that does, or by developing a specific ordinance for vertiports. Both processes are summarized below in **Figure 3-5**.

In this instance, the developer would apply for a change to zoning by following the process shown in **Figure 3-5**. If that request is ultimately approved, the Local Government and the developer would meet for a pre-application meeting as described in Scenario 1 and follow that process from then on.

FIGURE 3-5: LOCAL ZONING CHANGE PROCESSES IN FLORIDA

STEP	DESCRIPTION	AMENDMENT REQUIREMENTS TWO PUBLIC HEARINGS BEFORE THE ADOPTION OF A NEW LAND DEVELOPMENT REGULATION; SOMETIMES ADDITIONAL PUBLIC WORKSHOPS ARE INCLUDED			
LAND DEVELOPMENT REGULATION	LOCAL STATUTES (ZONING) THAT GUIDE THE IMPLEMENTATION OF THE COMPREHENSIVE PLAN AND OFTEN INCLUDE ADDITIONAL RULES FOR ALLOWABLE DEVELOPMENT (SETBACKS, MINIMUM PARKING SPOTS, ETC.)				
DEVELOPMENT ORDER Source: (9)	CHANGES TO ZONING, VARIANCES, AND SUBDIVISION PLAT APPROVALS	ALL REQUIRE PUBLIC NOTIFICATION AND A PUBLIC HEARING			



3.1.2 FEDERAL REVIEW AND DETERMINATION

The federal process for a new vertiport follows the same process required for a new airport or heliport. (See **Figure 3-6**.)

FIGURE 3-6: SUMMARIZED FEDERAL AIRPORT APPROVAL PROCESS



Title 14 Code of Federal Regulations Part 157 requires that the FAA be notified at least 90 days before construction, alteration, activation, deactivation, or change to the status or use of a civil or joint-use (civil/ military) takeoff and landing area.¹¹ The vertiport sponsor is responsible for the submission of FAA Form 7480-1, Notice for Construction, Alteration, and Deactivation of Airports (See **Figure 3-7**). It is not the role nor responsibility of the Local Government to submit this form unless they are the sponsor of the vertiport.

This notification serves as the basis for the FAA's evaluation of how the proposed site affects the safe and efficient use of airspace by aircraft, as well as the safety of persons and property on the ground.¹¹ The FAA evaluation does not necessarily involve an evaluation of the physical site itself, compliance with federal design standards, or an inspection of the site.

Form 7480-1 is submitted to the FAA Airports District Office (ADO) of the region where the vertiport will be built. For Florida, the appropriate ADO is the Orlando ADO. Form 7480-1 is filled out with details including the following information:

- Vertiport owner (name and contact info)
- Vertiport manager (name and contact info)
- Purpose of notification (construction of a vertiport, in this instance),
- Name, use, and type of landing area (vertiport name, location, public/private use/ownership, and airport, heliport, or vertiport)
- Data about the landing area (dimensions of TLOF, FATO, lighting, ingress/egress, elevation, etc.)
- Operational data (number and type of based aircraft, average number of monthly landings)



Upon evaluation of the vertiport, the FAA will issue one of three determinations:

• "No Objection" to the proposal:

A "no objection" determination concludes that the proposal will not adversely affect the safe and efficient use of airspace by aircraft and will not adversely affect the people or property on the ground.

• "Conditional No Objection" to the proposal:

A "conditional no objection" determination concludes the proposal will not adversely affect the safe and efficient use of navigable airspace by aircraft, provided certain conditions are met. This determination will clearly set forth the conditions for the "no objections," which can include restricting use during certain weather conditions or specifying a specific aircraft traffic pattern.

"Objection" to the proposal:

An "objection" determination will specify the FAA's reasons for objection to the proposal.

A favorable determination is required under the FDOT Airport Site Approval Process for any new landing facility. Note a no objection determination does not indicate the facility is necessarily "safe" or "efficient."

Δ	PDF of FAA	Form 7	7480-1 car	he found	online	here F	A Form	7480-1

A user guide for how to complete the form digitally can be found online, here: FAA Form 7480-1 User Guide

3.1.3 STATE APPROVAL

The FDOT Airport Site Approval process incorporates both the zoning for the vertiport at the local level and the airspace determination from the FAA.

In Florida, as well as many other states, the state DOT establishes minimum standards for the construction of a new vertiport (or any airport). In Florida, these minimum standards are one of several components of how FDOT will evaluate whether to approve a new vertiport. These minimum standards will state that to gain site approval and ultimately an airport license or registration, vertiports in Florida must be built to the federal design standards in FAA EB 105 (See: <u>Vertiports</u>), as amended or superseded. Conditioning local site approval on FDOT approval gives Local Governments confidence that an approved vertiport will be built to these federal design standards without having to know the complexity of the standards themselves. The FDOT Site Approval process is summarized in **Figure 3-8**.

FIGURE 3-7: FAA FORM 7480-1

Federal Aviat	ion Administration					EXPIR	ATION	DATE: 11/30/2
	NOTICE FOR CON	STRUCTION, ALTERA	TION AND	DEACTIVA	TION OF A	IRPORTS	5	
A. Airport Owner Check if this is also the Property Owner B. Airport Manager (Complete if different than the Airport Owner)								
1. Name and Addre	ss Check if this is th	e Airport's Physical Address	1. Name and	d Address	Ched	k if this is the	Airport's	Physical Addre
2. Phone	3. Email		2. Phone		3. Email			
C. Purpose of Noti	fication (Answer all question	s that apply)	D. Name, Lo	ocation, Use a	nd Type of La	nding Area		
1. Construct or Establish an:	Airport Ultralight F Heliport Seaplane	lightpark Balloonport Base Other	1. Name of L	anding Area			2. Lo	c ID (for existing
2. Construct, Alter or Realign a:	Runway Helipad(s) Taxiway (Public Use Airpo	Other ts only)	3. Associated	d City and Stat	9		4. Dis	stance from Ci (nm)
3. Change Status From/To:	VFR to IFR Private Use to Public U	IFR to VFR se Public Use to Other	5. County (P	hysical Locatio	n)		6. Dir	ection from C
4. Change Traffic	DIRECTION: ALTITUDE (Choose type.	List altitude if nonstandard.)	7. L o	Latitude	" °	. Longitude		9. Elevatio
Pattern	Turbo: std. nonstd Helo: std. nonstd	Prop: std. nonstd Other. Describe in box C6.	10. Current Use:	Private	Public	Private Use	e of Publ	ic Lands
5. Deactivate:	Airport RWY	TWY	11. Ownershi	ip: Private	Public	Military (Bra	inch)	
6. Description:	ata (List any Proposed New	or Unregistered Runways, H	12. Airport Type:	Airport Helipo Fire Pro	Ultralig t (If applicable, s lection) Sea	ht Flightpark elect: Amb plane Base	k Ba ulance Othe	alloonport Law Enforceme er
1. Airport, Seaplane	Base or Ultralight Flightpark	(use second page if needed)	2. Heliport, E	Balloonport or c	ther Landing A	rea (use seco	ond page i	f needed)
RWY ID	RWY ID / / Helipad ID							
Lat. & Long.	Show on attachment(s)	Show on attachment(s)		Lat. & Long.	Show on attac	hment(s)	Show o	n attachment
Surface Type			s	Surface Type				
Length (feet)			TLOF	Dimensions				
Width (feet)			FATO	Dimensions				
Lighting (if any)			Lie	ighting (if any)				
Right Traffic (Y/N)	1	/	Ingress/Egr	ess (Degrees)				
Elevation (AMSL)	Show on attachment(s)	Show on attachment(s)	Elev	vation (AMSL)	Show on attac	hment(s)	Show o	n attachment
VFR or IFR	1	/	Elevated	Height (AGL)				
F. Operational Dat	a (Indicate if the number prov	ided is Actual or Estimated)						
		2.	Average Numb	per of Month	ly Landi	ngs		
	Present or Estimated	Estimated in 5	rears	Present or	Estimated	E	stimated	in 5 Years
Single Engine						_		
Multi Engine								
Jet								
Heiicopter						-		
Glider								
will tary						+		
3. What is the Most	Demanding Aircraft that oper	ates or will operate at the Air	port? (Provide	approach spe	ed, rotor diame	ter, etc. if k	nown)	
4. Are IFR Procedu	res for the Airport Anticipated	? Yes No. If Yes,	within	years				
G. CERTIFICATION	I: I hereby certify that all of the	ne above statements made b	y me are true a	and complete t	the best of m	y knowledge	э.	
1. Name, title of per	son filing this notice (type or pri	nt) 2. Signature (in ink):						



FIGURE 3-8: SUMMARIZED FDOT AIRPORT SITE APPROVAL PROCESS



In addition to the FAA process described previously, the process for establishing a vertiport in Florida involves a series of steps that the vertiport sponsor must also take to obtain the necessary approvals and licenses:

- 1. Obtain confirmation of local zoning or approval (may be conditional) from local authorities that the airport will be a compatible land use and that the airport, as designed, meets the local zoning requirements.
- 2. Receive an FAA airspace no objection determination (by filing an <u>FAA Form 7480-1</u> and receiving a favorable airspace determination), which can be initiated electronically.
- 3. Submit an Airport Site Approval Order Application with the FDOT, which is a paper process for public use airports and an online process (through <u>floridaprivateairport.com</u>) for private use airports. The application requires the following supporting documentation:
 - a. Proof of property ownership or lease.
 - b. A facility diagram.
 - c. A geodetic location map.
 - d. A zoning determination from each zoning authority having jurisdiction.
 - e. A list of nearby aviation facilities.
 - f. A copy of FAA Form 7480-1, filed with FAA and all FAA documents issued in response.
 - g. Among other items, see FDOT AO website (<u>Establishing a New Airport, Heliport, or Seaplane</u> <u>Base</u>) for a complete listing of supporting documentation.
- 4. Once a public use facility sponsor has submitted a complete application with all required documentation, a site inspection will be conducted to finalize the application. After a favorable site inspection, a recommendation for approval will be submitted to the State Aviation Manager.
- 5. Once a private use facility sponsor has certified that all supporting documentation has been obtained and/or provided, reviewed, and the Aviation Office is satisfied that the sponsor can reasonably meet conditions necessary to ensure safety for aircraft and protect public health, safety, and welfare, a recommendation for approval will be submitted to the State Aviation Manager.
- 6. After FDOT grants approval, a notice of the Airport Site Approval Order will be submitted into the Florida Administrative Register and advertised for 21 days. The public can formally request an administrative hearing. If there is no request for an administrative hearing, the site approval order will become valid 45 days after it is approved by FDOT. That site approval order is valid for 2 years (unless an extension is granted) and construction of the airport may start.



- 7. Once construction is completed and prior to operations, a public use facility sponsor must contact the Public Airport and Safety Manager to schedule a licensing inspection. A private use facility sponsor must register the airport in the FAA's Airport Data and Information Portal (ADIP). Once the Location ID and Site Number are obtained, then the private use facility can be registered at <u>floridaprivateairport.com</u>.
- 8. Once a favorable licensing inspection has been completed for a public use facility, the sponsor must register the airport in the FAA's ADIP. Once these are obtained, a license can be issued.
- 9. Aircraft operations can begin for both public use and private use facilities. Public use vertiports will need to renew their airport license annually. Private use vertiports will need to renew their registration, which will be valid for another two years.

An official list of these steps can be found on the FDOT website, here: <u>Establishing a New Airport, Heliport, or Seaplane Base</u>.

The FDOT AO encourages Local Governments and vertiport Applicants to reach out with any questions on the state approval process.



FOR FURTHER QUESTIONS...

Questions regarding this process should be directed to **FDOT Staff**:

- Public Use Airports: Public Airport & Safety Manager, at 850.414.4515
- Private Use Airports: Private Airport & Compliance Manager, at 850.414.4503

3.2 VERTIPORTS ON EXISTING AIRPORTS

Prior sections of this Guidebook focus on off-airport vertiports; this section provides the key differences in the process for approving a vertiport if an Applicant desires to build a landing facility on-airport or onheliport.

FEDERALLY OBLIGATED AIRPORTS

The overall process to construct a vertiport at a federally obligated airport is summarized in Figure 3-9.

FIGURE 3-9 VERTIPORT DEVELOPMENT AT FEDERALLY OBLIGATED AIRPORTS





Ideally, planning a vertiport at an existing airport begins with the airport master planning process. An airport master plan is a planning document created by an airport to guide development to accommodate existing and future aviation demand. If an airport is incorporating AAM into this process, the airport should look holistically at how AAM may impact the airport and what infrastructure would be needed to support it. Airports with substantial excess airfield capacity may be able to integrate eVTOL operations directly into their flow of traffic using their existing runways and may not require dedicated landing infrastructure for eVTOLs. Instead, these airports may focus on the charging infrastructure and fire safety protocols that will be needed to support these aircraft.

Busier airports, especially large, commercial service airports, may find there is a need for dedicated landing infrastructure for eVTOL aircraft to minimize the impact of these smaller, slower aircraft on their traffic flow. In these cases, an update to the master plan is even more essential, as a thorough analysis (or a standalone vertiport siting study) can be conducted to identify locations on airport that minimize the impact to the airport while maximizing connectivity for the passengers or goods onboard the eVTOL.

The FAA reviews the updated master plan to ensure it is conducted according to industry standards, but the overall plan is not formally approved by the FAA. Some airports may be required to present the findings of the master plan to their sponsor (city council, county commission, etc.) and gain approval from those entities as well.

As part of a master plan, or as a standalone process, an Airport Layout Plan (ALP) is produced. The ALP is the primary mechanism to plan for a vertiport at an existing federally obligated airport. An ALP depicts the current and future uses of airport property, as well as critical airport design standards. If a vertiport is to be built on an existing federally obligated airport, the infrastructure or equipment must be depicted on the airport's current ALP. An ALP may typically receive a conditional approval from the FAA, but in some instances may also obtain a full approval. The FAA's Standard Operating Procedures (SOPs) 2.0 "Standard Procedure for FAA Review and Approval of Airport Layout Plans" states the following:

The ALP Drawing must be stamped and signed indicating conditional, unconditional, or mixed approval... Conditional approval is given for ALPs that have not yet completed an environmental analysis under the National Environmental Policy Act (NEPA). Unconditional approval is given only when NEPA has been completed. Mixed approval is given when some elements of the ALP have had a completed NEPA review while others haven't. Those elements are approved and can be implemented. Other elements not covered by the NEPA document are conditionally approved and cannot be unconditionally approved until the NEPA process is completed.¹³

Engineering Brief 105 also states that for "vertiport development on federally obligated airports, the infrastructure or equipment must be depicted on the ALP and a Form 7460-1 is submitted for an airspace determination prior to development.⁴" The FAA must conduct a review of the ALP as well as provide its airspace determination before the start of construction.⁴

Because aircraft landing at public use airports in Florida are not permitted to land on uninspected areas like airport aprons, FDOT must also conduct an inspection to add the vertiport to the airport license prior to the start of operations.

The airport sponsor may need to update its rules and regulations and/or minimum standards to account for the vertiport and may choose to lease out the site to a private entity to construct and operate the facility. A local building permit is needed prior to the development of the site.

Airports are encouraged to coordinate with FDOT and the <u>FAA Orlando Airports District Office</u> early in the planning process for an on-airport vertiport.



NON-FEDERALLY OBLIGATED AIRPORTS AND HELIPORT-TO-VERTIPORT CONVERSION

The overall process to construct a vertiport at a non-federally obligated airport, or to convert an existing heliport into a vertiport is summarized in **Figure 3-10** below.

FIGURE 3-10: VERTIPORT DEVELOPMENT AT NON-FEDERALLY OBLIGATED AIRPORTS



Non-federally obligated airports may or may not have a master plan or ALP since they are not typically required by the FAA to have either. For vertiport development on these airports and for the conversion of an existing heliport into a vertiport, in compliance with Title 14 CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports, the Applicant must submit FAA Form 7480-1, at least 90 days in advance of the day that construction work is to begin on the takeoff and landing area; the same notification required for an off-airport vertiport.

Upon a favorable determination from the FAA, the FDOT AO updates the airport/heliport's registration. If the airport is not federally obligated but is open to the public, FDOT AO would add the vertiport to the airport's license, after a favorable inspection.

Given the nascence of the AAM industry, the FAA highly encourages that engagement with the appropriate ADO begin before the submission of Form 7480-1, but an FAA evaluation is predicated on the submitted Form 7480-1. Coordination with FDOT early in the process is also advisable. Environmental review under NEPA is not typically required to develop a non-federally obligated facility. However, a vertiport manager licensed by the FAA to operate commercially may require FAA approval to operate in a new facility. This approval and the resulting change in activity could be subject to environmental review under NEPA.



4. APPENDIX A: SAMPLE HELIPORT/VERTIPORT ZONING ORDINANCES AND COMPREHENSIVE PLAN UPDATES

This section provides links to several existing zoning ordinances and comprehensive plan language related to heliports/vertiports. Local Governments are encouraged to use these examples and the information in this Guidebook as a starting point as they develop ordinances and make comprehensive plan updates that best fit their community.

Source: Lilium Air Mobility

SAMPLE ZONING ORDINANCES

CITY OF ORLANDO VERTIPORT ORDINANCE

4P. - VERTIPORTS | Code of Ordinances | Orlando, FL | Municode Library

CODE OF THE CITY OF ORLANDO, FLORIDA

Chapter 58 – ZONING DISTRICTS AND USES

PART 4. – OTHER SPECIFIC USES AND STRUCTURES

4P. – VERTIPORTS

Section 58.850. – Design and Specification of Vertiports.

Section 58.851. – Standards for the Approval of Vertiports.

Section 58.852. – Procedural Requirements.

Section 58.853. – Submittals.

Section 58.854–58.859. – Reserved.

CITY OF MIAMI HELIPORT ORDINANCE

ARTICLE 9. - GENERAL AND SUPPLEMENTARY REGULATIONS | Ordinance 11000 (Previous Zoning Code) | Miami, FL | Municode Library

ZONING ORDINANCE CITY OF MIAMI, FLORIDA

Article 9. - General and Supplementary Regulations

Section 933. – Criteria for Special Exception Approval of Helistops.

CITY OF TAMPA HELIPORT ORDINANCE

DIVISION 5. - SPECIAL USE PERMITS PROCEDURES | Code of Ordinances | Tampa, FL | Municode Library

CHARTER AND RELATED LAWS CITY OF TAMPA, FLORIDA

Chapter 27 - ZONING AND LAND DEVELOPMENT

ARTICLE II. – ADMINISTRATION AND GENERAL PROCEDURES

DIVISION 5. – SPECIAL USE PERMITS PROCEDURES

Section 27-132. – Regulations governing individual special uses.

Heliport, helistop.

COMPREHENSIVE PLAN LANGUAGE

CITY OF MIAMI COMPREHENSIVE NEIGHBORHOOD PLAN (SEE POLICY LU-1.1.17 ADDED TO GOAL LU-1 AND ESTABLISHED NEW GOAL LU-7)

MIAMI COMPREHENSIVE NEIGHBORHOOD

MIAMI COMPREHENSIVE NEIGHBORHOOD PLAN

FUTURE LAND USE

Goal LU-1

Objective LU-1.1

Policy LU-1.1.17

Goal LU-7



5. APPENDIX B: CHECKLIST FOR LOCAL GOVERNMENT

This section provides key questions to guide discussions between the Local Government and the potential Applicant seeking approval for a vertiport. The checklist questions can be used to guide discussions between the Local Government and the potential Applicant seeking approval for a vertiport, at the discretion of the Local Government. The checklist is not intended to replace a site application.

CHECKLIST OF DISCUSSION QUESTIONS FOR LOCAL GOVERNMENT AND APPLICANT

- $\sqrt{}$ Is the facility intended to be open for public use or private use?
- ✓ What is the anticipated frequency of operations in the short (1-5 years), medium (6-10 years), and long (11-20 years) terms?
- $\sqrt{}$ Will commercial operations (flight for hire) occur at the facility?
- $\sqrt{}$ What are the support facilities proposed for the vertiport?
- $\sqrt{}$ What is the timeline for submitting the Form 7480-1 or 7460-1 to the FAA?
- $\sqrt{}$ Has the Applicant provided evidence of consistency with the local comprehensive plan?
- $\sqrt{}$ Does the proposed development represent a change in the use of the property for zoning standards?
- V Has a noise exposure analysis been conducted and demonstrated compatibility with surrounding land uses and zoning ordinances?
- ✓ Does the proposed site require any intergovernmental coordination (e.g., special district, adjacent city, county, TPO, coastal commission, as applicable)? Has the Applicant engaged with any of these jurisdictions?
- V How have community impacts been considered? Have any community meetings been held regarding the proposed development? If so, please provide a summary of those meetings.
- V Have the associated environmental impacts been identified (e.g., traffic, noise, air quality, etc.) and are there plans to mitigate these impacts?
- Are there airports, heliports, other vertiports, or military installations nearby? How have airspace impacts to/ from those facilities been considered?
- $\sqrt{}$ Does the proposed approach and departure surface coincide with prevailing winds?
- $\sqrt{}$ What are the anticipated vehicle traffic impacts associated with the proposed vertiport operations?
- ✓ What are other modes of transportation nearby? Is there an opportunity for intermodal connections between the vertiport and other transportation modes?
- V How far is the nearest fire station to the vertiport? Please describe your emergency response and site safety plan (with specific emphasis on electric battery incidents).
- Has an alternative approach and departure procedure been identified, in the instance of an emergency or a missed approach?
- V Have discussions been held with adjacent property owners, especially as it relates to height restrictions along the approach and departure path(s)?
- ✓ Is the facility located within an independent or dependent special district? What are the implications of that for the vertiport developer, and is additional agency coordination required?
- ✓ Will the site require power accessibility upgrades and what coordination has occurred with the local utility company regarding these upgrades?



6. APPENDIX C: GLOSSARY OF TERMS

AAAAR

Advanced Air Mobility (AAM). An air transportation system primarily utilizing eVTOL aircraft to carry passengers, cargo, 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.

Aircraft Rescue and Fire Fighting (ARFF). A special category of firefighting that involves the response, hazard mitigation, evacuation and possible rescue of passengers and crew of an aircraft involved in (typically) an airport ground emergency.

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 VTOL aircraft follow when landing at or taking off from a vertiport.

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.

Downwash. The downward deflection of an airstream by an aircraft wing or helicopter rotor blade.

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

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

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.

Form 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.

Greenfield Site. An undeveloped area for development.

Helipad. A small, designated area, usually with prepared surface, on a heliport, airport, landing/takeoff area, apron/ ramp, or movement area used for takeoff, landing, or parking of helicopters.

Heliport. An area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters.

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 Approach Procedure (IAP). A series of predetermined maneuvers for the orderly transition of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually.



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.

OEMs. Original Equipment Manufacturers.

Outwash. The flow field created when high-velocity downwash exits the plane or the rotor, impinges on the ground, changes direction, and accelerates radially.

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.

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



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