AAM

FLORIDA DEPARTMENT OF TRANSPORTATION

Advanced Air Mobility Roadmap

FDOT

AVIATION

June, 2022

1. Current State of the AAM Industry

1.1. What is AAM?

Advanced Air Mobility (AAM) is defined by the National Aeronautics and Space Administration (NASA) as "an air transportation system that moves people and cargo between places previously not served or underserved by aviation – local, regional, intraregional, urban – using revolutionary new aircraft that are only just now becoming possible." (1) While AAM supports the transportation of people and goods between many geographic areas, Urban Air Mobility (UAM) focuses specifically on urban and suburban environments. The Federal Aviation Administration (FAA) envisions UAM as a "safe and efficient aviation transportation system that will use highly automated aircraft that will operate and transport passengers or cargo at lower altitudes within urban and suburban areas." (2)

UAM is widely seen as the largest component of AAM and the one that has received the largest investment to date. Beyond UAM, AAM would incorporate use cases outside of urban environments, including commercial inter-city, cargo delivery, public services, and private vehicle travel. (2) Both concepts include not only the aircraft themselves but also the framework for operation, access to airspace, infrastructure, and engagement with community members.

In this document, the AAM acronym is used to describe this transformative airborne technology defined above by NASA and the FAA, but for the Florida Department of Transportation (FDOT), the focus is on commercial passenger-carrying electric vertical takeoff and landing (eVTOL) aircraft and their support systems. eVTOL is the most discussed and reported segment of AAM to date. Innovations in distributed electric propulsion systems, electronic controllers, and battery systems have made this type of aircraft possible, which represents a move from a single rotor to multiple that increases handling and safety. With zero source emissions, they are more environmentally friendly to the air we breathe than traditional aircraft. They are also the source of a myriad of special purpose acquisition companies that have developed in recent years (3).

eVTOL aircraft have numerous motors and propellers or rotors that propel the aircraft vertically and horizontally. Designs differ substantially among developers, with some aircraft featuring wings with propellers for horizontal flight and rotors for vertical flight and others featuring rotors alone for both vertical and horizontal flight. There are three main types of eVTOL systems that can be expected in Florida in significant volume if the eVTOL original equipment manufacturers (OEMs) deliver on their promise of safe, efficient, and cost-saving aircraft:

- Multicopter – looks and flies much like a helicopter except with multiple rotors.

- Lift and cruise – uses rotors for vertical flight and transitions to propellers for horizontal flight.

- Vectored thrust – uses rotors or fans for both vertical and horizontal flight.

Most eVTOL OEMs currently seeking FAA certification are doing so in the small aircraft category (i.e., less than 12,500 pounds). The certification process involves a review of the proposed aircraft design, ground tests, and flight tests to demonstrate safety, an evaluation of the aircraft's required maintenance and operation suitability, and collaboration with other civil aviation authorities. (4)

At the beginning of 2021, the Vertical Flight Society eVTOL Aircraft Directory included over 500 entrants to the electric and hybrid-electric vertical takeoff and landing market. (5) The certification process involves a review of proposed designs, methods used to show the designs, and overall compliance with FAA regulations. The process also includes ground tests, flight tests, and an evaluation of the aircraft's required maintenance and operational suitability. Because this process is arduous and time-consuming, only a small percentage of these will likely achieve FAA certification. FAA aircraft certification procedures include three separate approvals that the eVTOL OEMs will need to achieve (6):

1. Type certification – approval of the aircraft design and all its component parts.
2. Production certification – approval to manufacture duplicate products under the approved design, which includes approval of the manufacturing facilities, personnel, and quality control systems.
3. Airworthiness certification – approval to operate the aircraft.

As of January 2022, no eVTOL aircraft had received FAA's type certification. While the timeline for certification of these aircraft is fluid, many OEMs are optimistic about entry into service in the U.S. as early as 2024. (7)

1.2 Concept of Operations

In June of 2020, the FAA released UAM ConOps (Concept of Operations) Version 1.0, which is its initial effort at describing a vision for UAM operations in the U.S. Its vision begins with operations by new aircraft that are operating within the current regulatory and operational environment. Eventually, higher tempo UAM operations occur through a regulatory evolution, UAM corridors, and collaborative aircraft separation methods. Finally, new regulations and infrastructure are put into place that allow automated air traffic management for high tempo, remotely piloted, and autonomous vehicle operations. (8 p. v)

This ConOps envisions eVTOL aircraft as the primary means of UAM. The UAM corridors proposed would connect vertiports to airports, heliports, or other vertiports. The automated system of traffic management would allow for different levels of aircraft automation:

- Human-within-the-Loop – a person is in direct control of the automated system,
- Human-on-the-Loop – a person is supervising the system and can take full control when needed, and
- Human-above-the-Loop – a person is passively monitoring the system and is notified if human intervention is necessary. (8 p. 7)

Most eVTOL OEMs seeking airworthiness certifications intend to have a pilot on board for the near to mid-term future. (7)

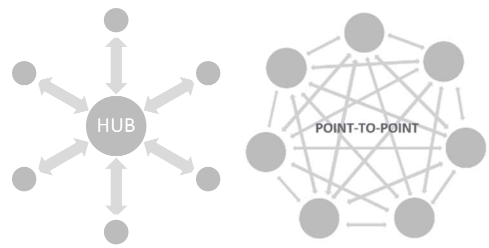
The FAA also released version two of their ConOps for Unmanned Aircraft Systems (UAS) Traffic Management (UTM) in 2020. It focuses on operating below 400 feet above ground level, which many of the eVTOL will do in urban areas. (9)

1.3. Business Use Cases

Three early business use cases for AAM are medical, cargo transport, and air taxi services, though more may come into focus as the technology develops. BETA Technology's initial plans for their eVTOL include medical (organ transplant airlifts) and cargo delivery. (10) United Therapeutics and Unither Bioelectronics are working with eVTOL manufacturers like BETA to harness the potential efficiency and safety of AAM to improve transplantable organ transportation. (11) In NASA's recent white paper on eVTOL use in the public services, eVTOL aircraft are forecasted to "become an essential tool to Public Service agencies around the world in applications such as firefighting, public safety, search and rescue, disaster relief, and law enforcement." (12 p. 2)

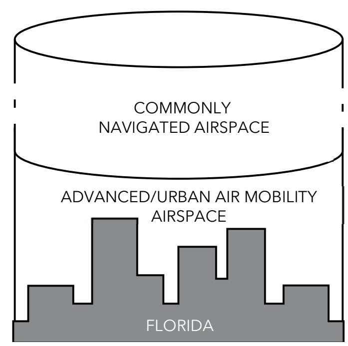
Cargo-carrying unmanned aerial systems (UAS) are already in use. United Parcel Service of America (UPS), the global shipping company, partnered with CVS for small UAS delivery of medical prescriptions in 2020. (13) The company also plans to get involved in AAM and now has orders for the larger BETA eVTOL aircraft (14). Pipistrel Aircraft, the first manufacturer to receive FAA certification for an electric airplane, is currently designing the eNuuava V300, which is a hybrid eVTOL aircraft on a lift and cruise platform with a 1,000-pound payload capacity. (15)

In large cities with significant ground congestion, eVTOL aircraft technology is well positioned for adoption. These aircraft could transport individuals via a hub and spoke network or a series of point-to-point origins and destinations, including between vertiports, heliports, airports, or some combination thereof. Many concepts include vertiports that are ubiquitous and unintrusive on parking garages or skyscraper rooftops. In states like Florida, where there are numerous large cities within a relatively short distance, AAM could act as point-to-point transportation to get from city center to city center in minutes instead of hours, bypassing airports altogether.



1.4. Federal Policy & Ground Infrastructure

The FAA has the exclusive authority to regulate navigable airspace, and AAM is changing what that airspace looks like. AAM has the potential to occupy airspace that has not traditionally experienced a lot of aircraft activity. While helicopters have been providing air mobility to urban areas for years, their tempo and volume have been limited as compared to the "mature state" of UAM described in NASA's vision as thousands and thousands of simultaneous operations throughout the country. (16) NASA and FAA predict UAM will serve areas not previously served by aviation, specifically urban areas.



While the FAA does not regulate land uses, the agency does certify airports that serve air carriers and provide minimum standards for landing areas serving airplanes, helicopters, and eVTOL aircraft.

In 1991, the FAA published Advisory Circular (AC) 150/5390-3, Vertiport Design, which covered airside; airspace; marking, lighting, NAVAIDs; landside; and tiltrotor facilities at airports. While the AC provided guidance related to military tiltrotor technology at the time, civil operations using this technology did not materialize. The civil tiltrotor did not make it to commercial market, and the AC was canceled July 28, 2010.

FAA AC 150/5390-2C, Heliport Design, was published in 2012, and a draft update (AC 150/5390-2D) was published in January of 2021. This update is expected to be finalized in 2022. Many OEMs have used the heliport design AC as a rough guide for eVTOL infrastructure; however, its ability to fully accommodate the variety of eVTOL aircraft being developed has not been proven. This is largely because their performance capabilities have yet to be demonstrated or sufficiently tested. Additionally, several unique design considerations exist for vertiports serving eVTOL that are not included in the heliport design AC, including but not limited to thermal runaway associated with batteries, hazardous materials from battery fires or leaks, aircraft rescue, and firefighting associated with electrical fires, electrical charging stations, and eVTOL downwash[1] and outwash[2].

The FAA began conducting research in 2020 to develop a new AC on vertiport design. (17) The goal of the research is to define a minimally developed facility for passenger and cargo operations by eVTOL. The dimensional requirements will depend on the aircraft's critical dimensions and maximum gross takeoff weight. This research included a comprehensive literature review of related documents on Airplane Design Groups (ADG), environmental impacts, and safety considerations. It also included an industry request for information (RFI) regarding VTOL aircraft design and specifications, concepts of operations, infrastructure design, and takeoff and landing profiles. The included gap analysis highlighted the need for vehicle performance data to address many of the vertiport design parameters. The FAA published Draft Engineering Brief (EB) 105, Vertiport Design, for public comment in February 2022. The final version of this document will provide interim guidance until a full AC can be developed. Comments on the EB were due April 18, 2022. Future research is set to include conceptual/operations testing and simulation of conceptual vertiports.

Currently, any sponsor of a federally obligated airport pursuing an eVTOL vertiport (or supporting infrastructure) must update their Airport Layout Plan (ALP) with the FAA, conduct the applicable environmental review required by the National Environmental Protection Act (NEPA), and submit an FAA Form 7460, Notice of Proposed Construction or Alteration, for an airspace determination. (18) Non-federally obligated airport sponsors must submit FAA Form 7480-1, Notice for Construction, Alteration and Deactivation of Airports, at least 90 days prior to construction of a vertiport. (18)

While new infrastructure, including vertiports, is likely to grow in prominence as commercial AAM operations become more common, existing infrastructure will play a large role in early AAM operations. Airports specifically will play a significant role in establishing connections between AAM, general aviation, and commercial service operations.

1.5. AAM Connections to Florida

As the third most populous state in the country (19), the eighth-most dense (20), and one experiencing significant population growth (21), Florida is a prime target for AAM. The state legislature has proposed a task force on the topic and several companies either have existing plans to launch AAM operations or some connection to aviation activity already being conducted within the state.

1.5.1. eVTOL Operators/Manufacturers

Detailed below in alphabetical order are eVTOL OEMs with direct or indirect connections to the state of Florida.

ARCHER

- United Airlines
- REEF

Archer Aviation, an eVTOL OEM based in Palo Alto, California, announced early in 2021 that they intend to launch their urban air mobility network in Miami by 2024. (22) The company will own and operate the eVTOL aircraft and envision themselves as a solution to South Florida's mobility challenges. Their eVTOL, the "Maker," is on a vectored thrust platform, capable of 150 mph, and has a range of 60 miles. (23) Archer has also teamed with Miami-based REEF Technology, the largest mobility and logistics hubs operator in the United States, which gives them access to thousands of rooftop locations across the country that may serve as vertiports in

[1] Downwash is the downward deflection of an airstream by an aircraft wing, propeller, or rotor blade.

[2] Outwash is the outward deflection of an airstream by an aircraft wing, propeller, or rotor blade.

the future. (24) On the airline side, United Airlines has committed to sharing their airspace management expertise with Archer and purchasing up to 200 of their aircraft. (25) United serves the greater parts of Florida from several airports.

BETA Technologies, located in Burlington, Vermont, is developing an eVTOL to "simplify access to the vertical dimension of mobility" (26). Their "ALIA," a lift and cruise design, seats six, has a range of 250 nautical miles, and a cruising speed of 170 mph. (27)

BETA

- BLADE
- UPS
- CAE

In addition to its agreement with BLADE, United Parcel Service of America (UPS) has an agreement with BETA to purchase up to 150 aircraft to land on-property at their UPS facilities for use in small and mid-size markets. (14) UPS received a Part 135 certificate from the FAA for a drone airline, which it is operating under now, that allows for payloads up to 7,500 pounds. (14)

BETA has plans to develop a system of charging stations up and down the east coast, with ten stations planned for Florida. Their stations also include the option for a multi-featured, modular charging pad that includes an elevated landing deck built on top of shipping containers. (28) A demonstration project of this vertiport can be found at the Springfield Beckley Municipal Airport (SGH) in Ohio.

BETA Vertiport and charger at SGH; image by Woolpert

BETA also has an agreement with CAE, a major civil aviation training company, to create a "best in class" training program for their eVTOL aircraft. (29) CAE currently offers pilot training for the Citation XLS, Citation Ultra, and Beechjet 400A at their location near the Orlando International Airport (MCO). (30)

BLADE Air Mobility, Inc. is an urban air mobility platform that specializes in providing an air transportation alternative for heavily congested ground routes. (31) They operate a fleet of jets, helicopters, seaplanes, and turboprops. BLADE is planning a transition to electric vertical aircraft and, in mid-2021, announced a partnership with Eve Urban Air Mobility to use Eve's eVTOL aircraft on their East Coast markets, including South Florida. (32). BLADE currently serves the Boca Raton (BCT), Fort Lauderdale-Hollywood International (FLL), Fort Lauderdale Executive (FXE), Miami-Opa Locka (OPF), and Palm Beach International (PBI) Airports. BLADE also has an order for up to 20 eVTOL aircraft from Beta Technologies (33) and up to 30 from Wisk. (34)

BLADE

- Eve
- BETA
- Wisk
- magniX
- Lima

Under the BLADE – Eve agreement, Eve would provide up to 60,000 hours of flight time annually to BLADE across their network with up to 60 eVTOL aircraft beginning in 2026. (35) BLADE also has an agreement with magniX USA Inc. to supply the electric propulsion units that will be used to convert the Cessna Caravan's operated by Lima to all electric starting in 2023. (36) Lima, a land and sea-based charter company, is an operating partner to BLADE. Lima does business as Fly the Whale and utilizes OPF as a base of operations.

Eve Urban Air Mobility, headquartered in Melbourne, Florida, was created as an independent company by the aircraft manufacturer Embraer S.A. In addition to their partnership with BLADE, Eve has also partnered with Azorra, a commercial aircraft lessor based in Fort Lauderdale. Azorra focuses on regional, crossover, and narrowbody aircraft and provides leasing, marketing, financing, and asset management services. Under a letter of intent, Azorra will order up to 200 Eve eVTOL aircraft. (37)

EVE MOBILITY REIMAGINED

- BLADE
- Azorra
- Republic Airlines
- SkyWest Airlines
- Falko

Also applicable to Florida is Eve's partnership with Republic Airlines. In late 2021, Eve announced a Memorandum of Understanding and Letter of Intent to sell Republic up to 200 of their eVTOL aircraft. Initially, Republic will focus on deployment in Boston, New York, and Washington, D.C. but will look to future opportunities on the East Coast. (38) Currently, Republic serves the Pensacola International (PNS), Destin-Fort Walton Beach (VPS), Tallahassee International (TLH), Jacksonville International (JAX), Tampa International (TPA), Sarasota-Bradenton International (SRQ), Southwest Florida International (RSW), Palm Beach International (PBI), Miami International (MIA), and Key West International (EYW) Airports. (39)

In addition to Republic, Eve has also entered into an agreement with SkyWest Airlines, which serves Jacksonville International (JAX), Gainesville Regional (GNV), and Sarasota Bradenton International (SRQ) Airports. (40) Under this agreement, SkyWest will purchase 100 of Eve's eVTOL aircraft.

Early in 2022, Eve and Falko Regional Aircraft Limited announced a letter of intent to develop a Global Operator Network where Falco would purchase 200 of Eve's eVTOL aircraft. (41) Falco is an aircraft leasing company specializing in the regional aircraft sector whose client list includes Republic Airways and Delta Airlines (41), both of which serve Florida.

Joby Aviation is another eVTOL OEM that intends to manufacture and operate eVTOL aircraft as air taxis. Joby's design is vectored thrust with a range of over 150 miles at a cruising speed of 200 mph.

Joby

- REEF
- NPG
- Toyota

Joby has a strategic partnership with Toyota Motor Corporation, which has made multiple investments in the company. (42) Joby purchased Uber Elevate in 2020 and began their FAA Part 135 air carrier certification in 2021. (43) Mid-year 2021, they also partnered with Miami-based REEF Technology, and with their affiliate Neighborhood Property Group (NPG), based in New York City. NPG is a real estate acquisition company focused on mobility hubs. This partnership also gives Joby access to thousands of rooftop locations across the country. (44)

Kittyhawk, an eVTOL OEM backed by Google co-founder Larry Page, is focused on remotely piloted aircraft. (45) Kittyhawk has developed several eVTOL prototypes, including Cora, a passenger-carrying, remotely piloted aircraft. (45) In 2019, Kittyhawk and The Boeing Company created Wisk Aero (see below), a joint undertaking to further develop that aircraft. (45) Also, in 2019, Kittyhawk introduced another aircraft with a single-seat design that has flown more than 100 miles on a single charge and hit a speed of 180 mph. (45) In 2020, Kittyhawk joined the United States Air Force (USAF) Research Laboratory's AFWERX Agility Prime Program, which is designed to accelerate the deployment of AAM. Under this program, Kittyhawk received an airworthiness approval from the USAF. (45) In 2021, Kittyhawk conducted the first AAM beyond-visual-line-of-sight flight in coordination with the FAA, USAF, and with a radar service known as SkyVision. (45)

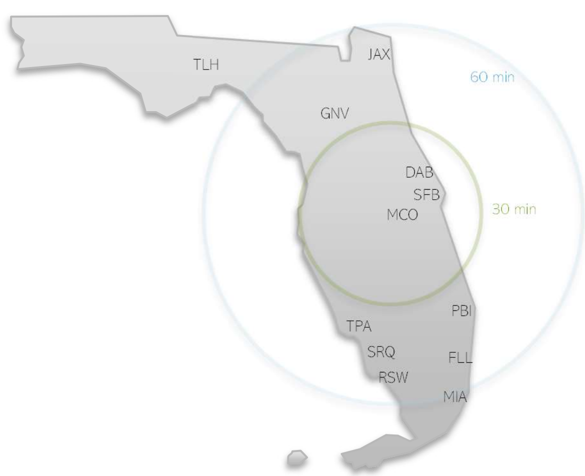
KITTYHAWK

- Boeing
- Wisk
- USAF
- SkyVision

Lilium is a German OEM focused on the development and production of an eVTOL passenger jet. As currently designed, the jet could hold six passengers and one pilot, with a cruise speed of 175 mph and a cruise altitude of 10,000 feet. (46) The company went public in 2021 and plans to offer its first commercial flights in 2025. In November of 2020, the company announced a partnership with the City of Orlando and Tavistock Development Company to open the first Lilium vertiport in Lake Nona, Florida, by 2025. (47). This would be the flagship of a network of facilities across the state. Centrally located within Florida, eVTOL flights from Orlando could reach much of the entire state in an hour or less, including Tampa, Jacksonville, Fort Myers, and Miami.

LILIUM

- Orlando
- AECOM
- Ferrovial
- Tavistock



The 2020 Lilium announcement was quickly followed up by another – a partnership with Madrid-based Ferrovial, a global transportation infrastructure operator, to develop a network of ten or more vertiports across Florida. (48) Ferrovial, in turn, has partnered with AECOM, an infrastructure consulting firm, to assist with the design of these facilities. (49) Along with the Lake Nona location, Lilium and Ferrovial have signed a land lease for a vertiport at Palm Beach International Airport that would eventually connect to places like Miami, the Florida Keys, Fort Myers, Florida's Suncoast, Tampa, and Melbourne. (50)

Regent Craft, while not an eVTOL OEM, this company stands to make an impact in Florida with its AAM entry. While similar to a seaplane, the Regent "seaglider" is a new class of vehicle that uses hydrofoils and distributed propulsion systems. (51) The company's vision is to transport passengers along coasts to regional destinations. Regent's first vehicle is set to hold twelve passengers, have a 180-mile range, and reach speeds up to 180 mph. (51) The company also has plans to develop a larger, fifty-seat seaglider capable of the same range and speeds. (51) Regent envisions an AAM ecosystem in which seagliders provide regional coastal mobility and eVTOLs

REGENT

- Tampa
- Southern Airways Express

provide urban connectivity. In December of 2021, Regent announced Tampa, Florida, for their seaglider demonstrator testing. (52) The company plans to test scale versions in 2022 and anticipates entrance into commercial service by 2025, with the Tampa Bay area likely being served by one of their first coastal routes. (53) In late 2021, the commuter airline Southern Airways Express announced an agreement with Regent to add seagliders to their fleet in a $250 million deal. (54) Southern Airways Express currently serves the Florida cities of Tampa, Destin, and West Palm Beach. (52)

Supernal, a division of Hyundai, is also entering the eVTOL realm with the development of its SA-1 concept vehicle. (55) The group is targeting 2028 for its entrance into service, and in March 2022, announced a memorandum of understanding with the City of Miami to explore innovative ways to introduce its AAM service. (56) Miami and Supernal are putting together a framework to support an advanced air mobility service for mass transit among cities in Florida. (57)

supernal

- Hyundai
- Miami

Vertical Aerospace is another OEM vying for the eVTOL market with the "VX4," at speeds over 200 mph, seats for five people, and a range of over 100 miles. The company's Investor Deck 2021 presentation states their eVTOL will be 100 times safer, 100 times quieter, and one-fifth the cost of a conventional helicopter with zero source emissions. (58) Vertical Aerospace has pre-orders for 1,000 of their vectored thrust aircraft from American Airlines, Virgin Atlantic, and Avolon. (58) American also plans to invest twenty-five million dollars in the company itself through a private investment in public equity (PIPE) transaction. (59) American serves the majority of Florida from several airports, while Virgin Atlantic serves the Orlando International (MCO) and Miami International (MIA) Airports (60). Avolon is a major player in the aircraft leasing industry with three Florida-headquartered airlines as clients: Miami Air International, Global X, and Spirit Airlines. (61)

VERTICAL Aerospace

- American Airlines
- Avolon
- Virgin Atlantic

Volocopter is a multicopter concept eVTOL OEM headquartered in Germany. Most of its activity has been overseas; however, along with BETA, the company has announced a partnership with the aviation training company CAE (62) referenced earlier to create an eVTOL training program for Volocopter aircraft. Volocopter's "VoloCity" air taxi seats two, has a range of approximately 21 miles, and a maximum airspeed of 68 mph. (63) Volocopter also markets a modular, prefabricated "Voloport" about the size of two tennis courts for landing and takeoff of their aircraft. (64)

VOLOCOPTER

- CAE

Wisk Aero is a joint venture between The Boeing Company and Kitty Hawk Corporation aspiring to develop an autonomous, eVTOL aircraft. Their "Cora," a lift and cruise design, seats two and has a range of approximately 100 miles at a cruising speed of about 100 mph. (65) To date, the company has completed more than 1,500 test flights. (66) In September of 2021, Wisk published a whitepaper on the importance of existing small to mid-size airports as AAM infrastructure. (67)

wisk

- Boeing

1.5.3. Local Governments

One of Florida's biggest cities, Orlando, is proactively planning for a future with AAM. Their publication "City of Orlando Urban Air Mobility Overview" was aimed at finding eVTOL partners to help solve some of the transportation challenges in the area. (68) The city's economic development website spotlights numerous sites that city officials believe are feasible for vertiport development, including the downtown GEICO parking garage at Amway Center, Lake Nona, the Orange County Convention Center, and the University of Central Florida (UCF) Downtown/Creative Village. (68)

In September of 2021, city officials announced two partnerships: 1) one with VHB, a planning, engineering, and design firm, to create an AAM Transportation Plan (69) and 2) another with NASA on how AAM can best be included in transportation plans (70). These efforts, along with Orlando's geography, weather, and economy, have led to Lilium's investment in the Orlando region, beginning with its planned vertiport in Lake Nona. (71)

In June of 2020, Miami-Dade County and CoMotion announced the launch of CoMotion LAB MIAMI, a coalition of public and private stakeholders with the goal of improving mobility and transit within the county and throughout South Florida. (72) The lab looks at how public right-of-ways in the county and adjacent areas can be used for new transport technologies. Coalition members include Joby Aviation, Skyports, and Lilium. (72) In April of 2021, CoMotion detailed their focus on UAM, including drones and eVTOLs for the delivery of goods and passenger transportation. (73) The group's goal is to put Miami-Dade county at the forefront of conversations regarding urban air mobility. (73)

In December of 2020, the Tampa Bay Area Regional Transit Authority (TBARTA) partnered with the Community Air Mobility Initiative (CAMI) to provide a webinar introducing advanced air mobility, a state of the industry, and the benefits and challenges facing AAM. (74) Additionally, the webinar examined policy, infrastructure, and socioeconomic issues arising from AAM. (74)

1.5.4. Universities

Florida's aviation-oriented universities are also looking to educate and advance their students in a future that includes AAM. Florida Institute of Technology in Melbourne, Florida, began offering a course called "Urban Air Mobility Ecosystem" in the fall semester of 2021. (75) Their Advancing Technology-Interaction & Learning in Aviation Systems (ATLAS) Lab also serves as a research hub for UAM/AAM with a project examining how human factors can affect the piloting of VTOL aircraft. (76)

Embry-Riddle Aeronautical University has a graduate engineering course in hybrid aircraft propulsion and UAM that launched in the spring of 2019. (77) The University has long been focused on research in electric propulsion and other advancements in aviation, including work on the creation of the "PAV-ER" experimental aircraft, which is a fully electric technology demonstrator vehicle aimed at helping regulators understand how eVTOL aircraft should be certified, based on thrust, lift, and control strategy. (78 pp. 12-13) Researchers at the University plan to continue to test flight control algorithms and to share test data with the aerospace community, with the goal of promoting rapid advancement of these technologies. (78 pp. 12-13)

Another university involved in research for the planning and implementation of AAM is the University of South Florida under the Center for Urban Transportation Research. The Center is involved in a series of studies on UAM, including network design, demand estimation, air traffic deconfliction, UAM modeling, and environmental impacts. (79) The University's Smart Urban Mobility Laboratory (SUM-Lab) is also focused on UAM research in the areas of network design, performance analysis, and potential demand exploration of on-demand eVTOL service. (80)

1.6. Hurdles/Challenges

AAM operations are largely expected to begin at a low tempo in a manned visual flight rules (VFR) configuration. This low-complexity operation is intended to provide new entrants a less resistant pathway to beginning operations. Florida, due to its weather and robust aviation infrastructure network, and traveling public, is poised to lead the nation in operations by the first entrants.

Due to this, the state has the potential to see operations and increasing tempo as early as 2024. Critical challenges for new entrants can drive the success of AAM for the long-term feasibility of operations. Challenges include the standardization of infrastructure, ingestion into existing airport environments, and compatible land use planning for the community.

With multiple use cases potentially operating across the state, infrastructure siting can be diverse and sporadic across Florida. Operators are heavily interested in private facilities to develop competitive advantages based on facility location and route efficiency. For the long-term opportunity AAM creates as a mode of transportation, at a high tempo of operations, cohesive planning and collaboration is necessary.

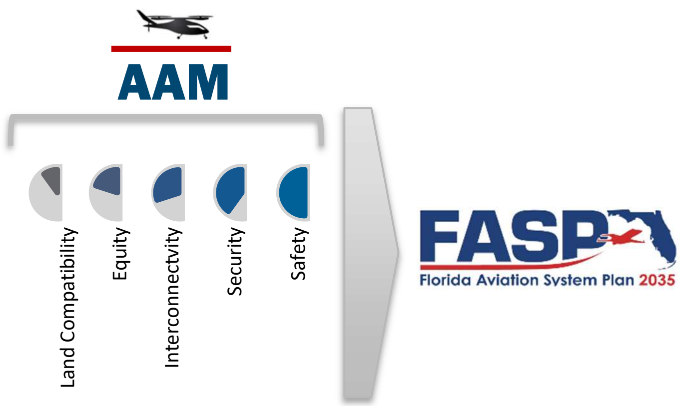
2. State AAM Policy Framework

The transformative airborne technology of Advanced Air Mobility (AAM) is considered superior to conventional aviation, and it presents a unique opportunity for the state of Florida to become the first in the nation to develop a welcoming but prudent plan for new entrants and innovation. As it develops, AAM has the potential to be a driving force for transportation and tourism, but it will also present challenges that require innovation, regulation, planning, and infrastructure improvements. This policy framework will establish the essential factors for AAM to safely and successfully integrate into the state's existing transportation system in a manner that is safe, equitable, and in alignment with local jurisdictions' land use policy.

NASA AAM Concept (1)

The maintenance and improvement of Florida's existing airport system is being guided at the state level by FDOT's Aviation Office (AO). The AO maintains the Florida Aviation System Plan (FASP) to ensure the vitality of the state's public-use commercial service and general aviation airports. The FASP is a long-term strategic planning tool designed to help FDOT maintain a safe, efficient, and reliable system; evaluate future funding decisions by identifying the facilities and services that are needed to meet future demand; and effectively expand capacity in those areas where it is most needed and beneficial. The FASP offers policy and development recommendations for the continuing improvement of the state aviation system, but it was completed prior to recent AAM advancements. This AAM policy framework is meant to support the existing and future updates of the FASP by providing policy recommendations for the emerging AAM industry as it develops in Florida. Appropriate early planning for AAM and UAM by FDOT will increase the success of this emerging industry.

AAM Relationship to FASP



Several factors are essential for the success of a fully scaled AAM industry in the United States, including highly safe and efficient aircraft, advanced air traffic control with aircraft self-deconfliction, low noise exposure, scaled manufacturing and maintenance, and physical infrastructure. FDOT can set policy that directly controls or indirectly influences some of these factors, most of which are related to the airports and vertiports these aircraft will use. FDOT's macro-level policy framework for AAM covers these essential factors for success:

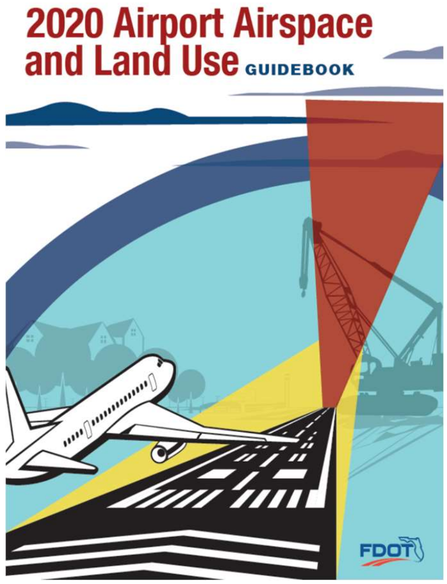
1. Land Use Compatibility
2. Equity
3. Transportation Mode Connectivity
4. Security
5. Safety

2.1 Land Use Compatibility

Land use compatibility is essential because the placement of new vertiports to serve AAM has the potential to impact communities in both positive and negative ways. The location and operation of new vertiports should consider these critical success factors:

- Existing and planned land uses surrounding a proposed vertiport site have a clear potential to benefit from the facility and its operation.
- Access and exposure to AAM are balanced, and vertiport operations do not adversely affect or favor one community over another.

- New vertiports should enact airport zoning ordinances compatible with Chapter 333, Florida Statutes, and FDOT's Airport Airspace and Land Use Guidebook.



FDOT 2020 Airport Airspace and Land Use Guidebook

2.2 Equity

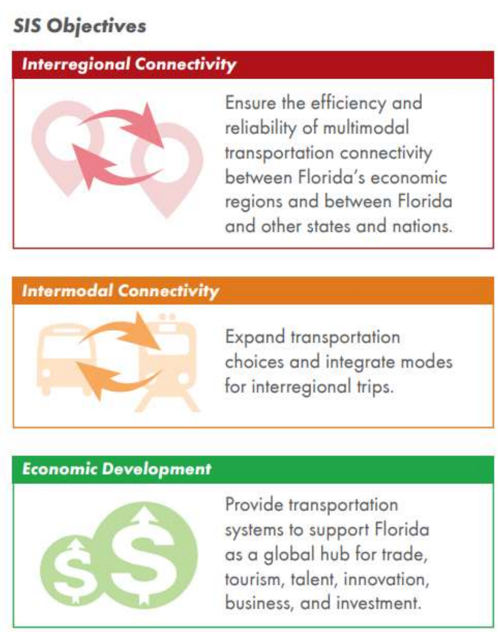
Transportation equity includes accessible and affordable transportation for all communities. Equity can be viewed from many different angles, including cost of service, geographic location of vertiports, frequency/volume of service to underserved areas, visual pollution, and meaningful stakeholder engagement during planning. Considering certain factors in the location of new vertiports will enhance the success of achieving AAM equity for Florida. New vertiport planning and placement should strive for the following:

- Engage the public to be impacted uniformly and fairly.
- Enhance transportation choices for all communities.
- Reduce surface congestion.
- Improve emergency evacuation.
- Minimize displacements or disruption of residents, businesses, and public amenities.
- Discourage human health or environmental impacts.

2.3 Transportation Mode Connectivity

Advances in air mobility provide a new opportunity for travelers to reach their destination in different ways. Florida established the Strategic Intermodal System (SIS) (81) in 2003 to focus resources on the state's high priority network of transportation facilities important to Florida's economy and mobility. The SIS has several key objectives, including interregional and intermodal connectivity. FDOT understands the importance of connectivity for all forms of transportation to complete a traveler's journey. The success of AAM hinges on its ability to connect travelers directly from their origination to their ultimate destination or to another mode of transportation that completes the journey. The following factors are critical for success in connectivity:

- Vertiport location should consider the existing transportation plans established by local agencies.
- Vertiports should connect with existing transportation modes.
- AAM should allow for seamless, interconnected travel.



Florida Strategic Intermodal System Objectives (81 p. 2)

2.4 Security

AAM security concerns are generally focused on the unauthorized operation of aircraft, malicious passengers, or unauthorized access to secured areas or data, all with the intent to commit a crime. Vertiport and AAM service providers must ensure an acceptable level of physical and cyber security for all elements of their operation to achieve success:

- All vertiports should enact a security plan to safeguard airport and aviation-related assets from misappropriation or misuse.
- All vertiports and AAM service providers will meet the regulatory requirements for vehicle-level and system-level physical and cyber security.

2.5 Safety

Safety is a fundamental requirement for AAM that should include the protection of people, wildlife, and property on the ground and in the air.

- All vertiports should meet FDOT minimum standards for vertirports.
- All vertiports offering commercial services should be licensed by FDOT.
- All vertiports offering commercial services should be inspected annually.
- All vertiport approach and departure areas should be clear of obstructions.
- All municipalities with vertiports should adopt airport and airspace protection and zoning.

3. Best Practices

Societal integration and acceptance are required for AAM to succeed and be sustainable in Florida. The likelihood of success increases if consistent processes, progressive policies, and mindful public engagement are implemented early because potential issues can be addressed before they occur. These policies and engagements comprise what is known as best practices, which can be used by Florida municipalities seeking to implement AAM in their communities. The passenger-carrying sector of AAM will likely require the highest level of safety, infrastructure complexities, and public acceptance. As such, passenger-carrying AAM is the focus of the best practices recommended here; however, most recommendations are applicable to cargo operations as well.

3.1 Pre-Assessment Planning

As with any emerging technology, the potential issues and concerns that need to be addressed for AAM are still evolving. Each municipality is unique, and the issues associated with implementing AAM will be municipal-dependent. However, certain high-level, fundamental first steps can be identified and implemented that will encourage AAM's success. These steps include action items that are best taken prior to when a community receives its first local application for a proposed AAM vertiport.

1. Assign a lead staff member for AAM

   As this new form of air transportation develops and emerges, the interest and media buzz around it will continue to swell. It will be necessary for someone to extract the facts from all the industry noise and claims being made by manufacturers and operators. Municipal governments should identify a point-person to lead the AAM dialogue for a community so he/she can get up to speed. This individual may be a member of a municipal Planning Department or other pertinent department. This person can be the principal spokesperson who is in the forefront and looking out for the community's best interests, which may not always align with an AAM operator's goals or initiatives.

2. Review FDOT State of the AAM

   The Florida Department of Transportation has developed several documents to assist communities with understanding and implementing AAM; this document is one of them. Other documents include the State of the AAM Industry in Florida and the Florida State AAM policy framework. These documents serve as a resource for communities to better understand AAM and its status in Florida.

3. Review zoning ordinances

   To ensure safe, long-term AAM operations and any public investment in or public benefit from it, zoning ordinances must include airspace overlay zoning to guard against incompatible land uses and obstructions to air navigation developing over time. Most land-use zoning and control fall to local planners and elected officials. These entities often develop comprehensive plans, zoning ordinances, and land use regulations to meet their local needs and priorities. These should be done in a manner that considers the effects of community development on local aviation facilities and aviation activity and vice versa. Aviation facilities should now include vertiports and AAM services in addition to airports and heliports. 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. (Also see item #4 below.)

4. Map out aeronautical use facilities, Federal Regulation Title 14 Part 77 surfaces

   Understanding and protecting a community's existing aviation infrastructure should not be ignored as new forms of air mobility emerge and take the spotlight. While AAM is new and exciting, its capability and use cases will complement or differ from conventional aircraft, so its success should not come at the detriment of existing airports and heliports. Understanding a community's existing aviation infrastructure and airspace will allow local planners to integrate new vertiports without infringing upon existing aviation users' airspace and landing facilities.

5. Identify incompatible land uses

   When evaluating the location of a new vertiport, surrounding land uses should be taken into consideration. There are certain land uses that are inherently incompatible with vertiports. Wetlands, landfills, and nature preserves can attract birds, which can be dangerous if flying near AAM aircraft. Any wildlife attractant that has the potential to put animals and aircraft on a collision course should be avoided. (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 public-use airports.)

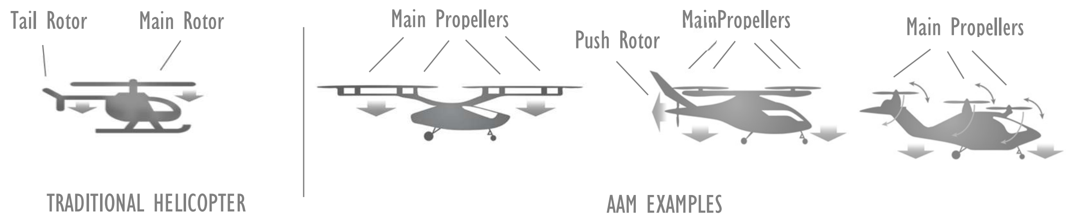
   Other land uses that may not be compatible due to noise sensitivity include residential, educational, health, and religious structures, parks, recreational areas, and cultural and historical sites. Noise-sensitive areas are those where noise interferes with normal activities associated with its use. Some of these areas may also have a visual sensitivity. At a high tempo and volume, AAM has the potential to cause a visual disturbance to the skyline and create an adversarial relationship between property owners and AAM operators. People have become accustomed to their existing skylines and views of a city or town; changes to the natural and built environment affecting those views will likely have psychological impacts. These changes can include lights from new vertiports, lights from AAM aircraft, views of aircraft in the sky where they have not historically been, and concerns for visual privacy from low-flying aircraft.

   Tall obstacles can be obstructions to approach and departure paths and are therefore incompatible land use as well. These can include antenna towers, high-rise buildings, power lines, and even flag poles. The expected standard is for a vertiport to have at least one approach and departure path in reciprocal directions. Anything that penetrates a slope of 8 feet rise to 1 foot run on that path can be considered an obstruction to the final approach and takeoff area of a vertiport.

   Finally, as stated earlier, vertiports should also be placed to be compatible with the traffic patterns of existing airports and heliports. Airports and heliports have approach and departure paths with "imaginary surfaces" under Part 77. These surfaces represent the minimum altitudes and dimensions of airspace that must be protected for the safe arrival and departure of aircraft from a runway. When new vertiports are constructed, existing airport approach and departure paths should not be infringed upon.

6. Establish a benchmark for existing ambient noise levels

   AAM utilizes advanced technology, and the aircraft designs differ vastly from traditional airplanes and helicopters, so it is difficult to predict the exact noise signature these aircraft will have. They will have multiple propellers for vertical and forward flight as compared to helicopters.



   Each motor will create source noise by the blades moving through the air. The number of blades and motors can range from four to over 30 as compared to two or three on a helicopter. While AAM is touted to be quieter than traditional aircraft, the electric motors will present a new type of noise not typically heard from the traditional aviation fleet. With multiple blades moving in an urban environment, sound propagation will also be a consideration. Therefore, it is important to understand the existing ambient noise levels where vertiports will be located, especially in urban areas. Staying informed of developments in AAM noise metrics will also be central to understanding how AAM noise will impact local communities and where vertiports would best be located.

7. Establish waste, hazardous materials, and pollution prevention requirements for AAM

   While AAM powered by electricity is viewed by many as a green alternative to the fossil fuel-powered engine, the potential for increased waste streams exists. Large lithium batteries are the initial primary source of energy for these aircraft. Waste buildup from lithium batteries that have reached the end of their lifecycle will increase the waste stream if not appropriately recycled, which is a difficult and hazardous task for this type of battery. "If not properly managed at the end of their useful life, they can cause harm to human health or the environment" (82). A municipality may best serve their community by identifying battery recycling processes for AAM batteries that have reached their useful life and establishing circular lifecycle requirements for AAM operators using batteries, essentially removing the option for outright disposal. Additionally, municipalities should coordinate with the Florida Department of Environmental Protection to identify recycling requirements under the Resource Conservation and Recovery Act with regard to lithium battery waste.

8. Establish AAM policies that put the community first

   To maximize the public benefit of AAM, policy planning should address the AAM ecosystem and how it will operate, including vertiport locations, flight paths, and compatible land uses. Because of the low altitude and urban areas in which these aircraft are expected to fly, careful consideration of how these aircraft will interact with the community is of paramount importance. Establishing community-first policies will assist in AAM integration and success. This should begin with defining the purpose for AAM in the community and what it is meant to accomplish. Examples of values in this area include the following:

   - Equitable mobility choices for all groups.

- Community-friendly routes and operation times
- Co-location and integration with existing transportation modality choices for maximum benefits
- Positive economic growth

The AAM policy should also include a public notification process for vertiport proposals. Because of the vast number of people, places, and resources that will potentially be affected by AAM activity, a notification requirement will ensure all pertinent stakeholders are alerted. An early public notification and outreach policy will improve process transparency. The policy should strive for the following objectives:

- Maximize notification and outreach to the community and nearby residents via on-site signs, electronic media, and the postal service, as vertiports are likely to be considered controversial and receive more public interest from neighbors, businesses, and the community in general.
- Ensure notification and outreach occurs earlier in the application process to allow stakeholders to provide input to the project applicant and planning staff.

9. Update Zoning Ordinances reviewed in Step 3

After relevant zoning ordinances have been reviewed, aeronautical surfaces and incompatible land uses have been identified, and community first policies have been established, a municipality should update their zoning ordinances as needed to reflect AAM best practices.

3.2 Create a vertiport application and assessment process

The application for a vertiport should include all the needed information to make an educated decision about the safety and compatibility of the AAM operations at the proposed vertiport site and its impact on the community. Suggested items to include in a vertiport application are shown below. A municipality may find other items specific to their community worthy of including in addition to these.

a. The name and address of the applicant and operator(s).
b. If the facility is to be public or private use.
c. If commercial operations (flight for hire) will occur at the facility.
d. Description of any support facilities proposed.
e. A map showing the location of the proposed vertiport and the proposed approach areas, lateral clearances, and emergency landing areas.
f. Evidence that a notice of landing area proposal has been filed with the FAA and a Determination of No Hazard has been issued (see Section 6 in 3.3 below.)
g. A complete set of plans, specifications, and security for the proposed vertiport.
h. Documentation of compliance with Florida Department of Environmental Protection permitting.
i. A noise exposure analysis demonstrating low exposure to sensitive land uses.
j. A wind analysis verifying the approach and departure areas coincide with prevailing winds, urban canyon winds, and meet aircraft performance capabilities.
k. Statement by the applicant setting forth the estimated number of daily landings proposed.

Once the vertiport application has been created and adopted, assessment requirements should be developed. These are items that the vertiport application will be measured against and should include the AAM policy (see Section 7 in 3.1) and other relevant criteria.

Like the application itself, a municipality may also find other items specific to their community worthy of measuring against.

a. The proposed site's ability to meet the community's AAM policy.
b. A valid need for a vertiport.
c. The availability and proximity of other airports, heliports, or vertiports in the area that could be used instead of the proposed site.
d. The availability and proximity of other modes of transportation for connectivity
e. The proximity of the proposed site to fire stations.
f. The development density of the area surrounding the proposed site and its proximity to areas that could be used for landing in the event of an aircraft emergency during takeoff or landing.
g. The proximity of the proposed site to tall buildings, antenna towers, power lines, and other navigation hazards.
h. The proximity of the proposed site to existing uses that would present a public safety hazard in the event of an aircraft crash.
i. The proximity of the proposed site to wildlife hazard attractants.
j. The proximity of the proposed site to residential areas, nursing homes, assisted living facilities, schools, and other potentially noise-sensitive areas.
k. The proximity of the proposed site to existing airports and heliports and their aircraft traffic patterns.
l. The benefits of a vertiport at the proposed site to the community.
m. The nuisance effect of the vertiport on surface traffic.
n. The environmental impact of the vertiport, including, but not limited to, noise pollution, visual pollution, and wildlife.
o. The proximity of the vertiport to storage facilities for combustible or explosive materials or to other hazards.
p. The effects of downwash from an aircraft to surrounding property uses.

3.3 Assessment Process Best Practices

The decision to approve a new vertiport site includes several key steps, many of which can happen concurrently. Including these steps will help community officials make informed decisions about a vertiport and its impact on a community, both positive and negative. Once an application for a vertiport site has been received, the AAM point person established in Section 3.1 and any relevant municipal staff should take the following steps:

1. Identify applicable stakeholders

   The development of a city transportation system is a matter of concern for a wide range of stakeholders. An open, transparent, and participatory process should be a fundamental part of its planning. Aviation, by its nature, is a complex industry that includes a wide range of stakeholders who come with differing opinions and objectives. It is essential to know who the stakeholders are and where they fit in the development of vertiports and the deployment of AAM services. Identifying stakeholders is vital to understanding and effectively addressing their expectations or concerns. Applicable stakeholders will vary from city to city, but the following are those considered fundamental to the process:

   a. Aviation facilities within 5 miles (public and private airports and heliports, hospital heliports, etc.)
   b. City and County Government
   c. Utility Service Providers (e.g., electric, water, communications)
   d. Community Members (e.g., businesses, residents)
   e. FAA
   f. State aeronautics office
   g. OEM/operator
   h. Special interest groups (e.g., environmental, commerce, and neighborhood groups)

2. Community Engagement

   After the applicable stakeholders have been identified, the engagement process should be started. The stakeholder notification requirements established under the policies identified in Section 3.1 should be followed. This process will vary from city to city, but the FAA and FDOT have established procedures to follow for applying for a public or private landing facility which can be found at the following locations:

   FAA: 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. 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.

   https://www.faa.gov/documentLibrary/media/Form/faa-form-7480-1-notice-for-construction-2020.pdf

   Questions regarding this process can be made to the FAA Orlando Airports District Office at 407-487-7220.

   https://www.faa.gov/airports/southern/

   FDOT: Florida Statute 330.30 requires takeoff and landing areas to receive site approval from FDOT prior to site acquisition or construction, or establishment of the proposed facility. Florida Administrative Code (FAC) Chapter 14-60.005 explains the requirements for applying for and obtaining an Airport Site Approval Order. The FDOT process can be found here:

   https://www.fdot.gov/aviation/establishinganewairportheliportorseaplanebase

Questions regarding this process should be directed to:

Public-Use Airports – David Smith, Public Airport & Safety Manager, at 850-414-4515

Private-Use Airports – Alice Lammert, Private Airport & Compliance Manager, at 850-414-4503

3. Research and identify incompatible surrounding land use and zoning of site parcel

   Vertiport application evaluation will include identifying the existing zoning of the proposed site, and any incompatible land uses in proximity to it. (See First Steps #4.) Potential incompatible sites include the following:

   a. Noise sensitive areas
   b. Visual sensitive areas
   c. Wildlife attractants
   d. Obstructions/obstacles

   If the proposed site is not zoned for the appropriate use, the steps needed to rezone must be identified and initiated if the site is compatible. This process should include the following:

   e. Identifying the property's existing and proposed land use within a city or neighborhood plan
      i. Application for rezoning
      ii. Submittal of application prior to the planning commission meeting
      iii. Public notification of rezoning request

4. Review proposal for alignment to industry standards

   Multiple industry standards will be applicable to vertiports because of their advanced features. Their vertical takeoff and landing capabilities would allow vertiports to be located on buildings, parking garages, or at ground level. Regardless of the location, the FAA's foundational standards established for vertiports should be required at the local level.

   FAA: While the FAA standards for vertiports continue to develop, the agency has developed initial guidance for vertiport design in Engineering Brief (EB) 105, Vertiport Design. This EB was initially written for vertical takeoff and landing (VTOL) powered aircraft with electric motors and utilizing distributed electric propulsion (in contrast to propulsion systems built solely around fossil fuel) that meet the performance and design characteristics identified in the EB. This EB will likely cover most of the early adopters of AAM. Vertiport facilities proposed to serve aircraft that do not meet the performance criteria and design characteristics must coordinate with the FAA Office of Airports directly on their proposals.

   The EB details specific guidelines for the safety critical elements of the physical landing area itself:

   Touchdown and liftoff area (TLOF): The TLOF is a load-bearing, generally paved area centered in the FATO, on which the aircraft performs a touchdown or liftoff.

   Final approach and takeoff area (FATO): The FATO is 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.

Safety Area: The Safety Area is a defined area surrounding the FATO intended to reduce the risk of damage to aircraft accidentally diverging from the FATO.

It also provides some guidance on charging and electrical infrastructure and site safety elements like firefighting considerations, security, downwash, turbulence, and weather information. The EB will be updated as the FAA continues research on these aircraft. Sometime in the mid- 2020s, an Advisory Circular (AC) will be developed for vertiport design that will replace the EB. The EB, and eventual AC, guidelines are mandatory for any vertiport project receiving federal grant-in-aid-funds from the FAA.

Building Code/Fire Code: The Florida Fire Prevention Code can be found on the Division of State Fire Marshall website located here:

https://www.myfloridacfo.com/division/sfm/bfp/floridafirepreventioncodepage.htm

Vertiports will potentially be located on buildings. Many local municipalities adopt the National Fire Protection Association (NFPA) standard in their local building codes. The current NFPA standards are based on conventional liquid fuel and its dangers and risks. The NFPA is updating Section 418, Standards for Heliport, to include vertiport standards, which will include what fire safety measures will be needed to accommodate AAM aircraft using electric, hydrogen, or hybrid power sources.

The 2020 Florida Building Code, Building, 7th edition can be found on the Florida Department of Business & Professional Regulations website:

https://floridabuilding.org/bc/bc_default.aspx

It includes standards for heliports and helistops. To date, it does not include vertiport standards. The Florida Building Code was based on the International Code Council's (ICC) International Building Code (IBC), which, to date, also does not include vertiport standards. This code will also eventually be updated to include vertiports.

Questions to consider when a vertiport is proposed on a building:

- Does adding a vertiport change the building from a low-rise or mid-rise structure to a high-rise building?
- Is adding height permissible based on occupancy type, materials of construction, and fire protection?
- Does the building comply with structural loading for live loads?

5. FAA Non-Objectionable Airspace Determination ☑

A vertiport should not be approved by a local municipality unless it has received a non-objectionable airspace determination from the FAA. This determination is part of the FAA Title 14 Code of Federal Regulations Part 157 process described in Section 2 of 3.3. The FAA issues an airspace determination with this process, not a vertiport physical facility approval. The FAA does not inspect a takeoff and landing facility for physical standards unless it is operated under 14 CFR Part 139, Certification of Airports, and receives airline service, which is not anticipated to be applicable for vertiports at this time. The FAA will issue one of three determinations:

1. "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.
2. "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.
3. "Objection" to the proposal - An "objection" determination will specify the FAA's reasons for objection to the proposal.

6. FDOT Site Approval and License/Registration

A vertiport should also not be approved by a municipality unless it meets the minimum requirement for vertiports set by FDOT. The FDOT site approval process requires a vertiport to have zoning approval before the applicant submits their Site Approval Application. The local municipality may desire to make any local approval given contingent upon ultimately receiving FDOT site approval.

FDOT has slightly different processes for public and private use facilities, with public facilities being "licensed" and private facilities being "registered." Public license occurs after site approval is granted and includes a public announcement and physical inspection process. Private registration occurs after site approval and consists of a public announcement and self-certification process. If a private airport has ten (10) or more based aircraft, it may choose to go through the licensing process in lieu of the registration. A license is valid for one year, and renewal is subject to a new inspection by FDOT.

3.4 Closing

The best practices described in this chapter should not be considered all-inclusive, as each municipality will have unique government structures and community challenges that will require a tailored fit. When considering a vertiport, municipalities should always reference the latest guidance from the FAA and any relevant documents from FDOT or state law. Additionally, the steps described in this document do not, and often will not, occur chronologically, as some will happen concurrently with others or in a different order altogether. The purpose of this document is to establish a baseline set of best practices for communities to reference as AAM continues to grow.

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