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ADVANCED AIR MOBILITY POLICY TOOLKIT GUIDE

Utah Department of Transportation Aeronautics Division

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- “Key Takeaways” boxes – inside the body of the toolkit at the end of a section.
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- “Learn More” sections – outside of the body of the toolkit; standalone section that dives deeper into the topic.
- Callouts – inside the body of the toolkit; provides additional information, examples, references.

Advanced Air Mobility 101: An Introduction

What Is Advanced Air Mobility?

Advanced air mobility (AAM) is a broad term covering a range of emerging aviation markets and operational concepts aimed at providing scheduled and/or on-demand air service in urban, suburban, and rural settings. As currently envisioned, AAM will draw on new aircraft technologies—including vertical takeoff and landing (VTOL) vehicles powered by electric batteries or hydrogen—alongside both existing infrastructure (airports and heliports) and new purpose-built facilities such as vertiports.

AAM is not a single technology or a single service model. It encompasses a wide spectrum of aircraft, use cases, and business models designed to meet the needs of travelers, logistics operators, air carriers, and other stakeholders. Locally focused operations typically serve ranges of roughly 50 miles or less, while regional services may connect destinations up to several hundred miles apart, crossing urban and rural landscapes alike.

At its core, AAM is conceived as part of a broader, interconnected mobility ecosystem—one in which consumers can access aviation services alongside ridehailing, public transit, automated vehicles, and other modes through integrated digital platforms.

Historical Context: Where AAM Comes From

Short-range aviation is not a new ambition. What changes in each era is the combination of technology, economics, and public readiness that determines whether an aviation concept moves from prototype to practice.

Decades of experimentation with 'roadable aircraft'—vehicles designed to function as both car and airplane—established an early lesson that still applies: cars and aircraft have fundamentally incompatible design requirements. To date, attempts to satisfy both at once produced machines that did neither well. Today, most modern AAM design concepts are aircraft, not automobiles or “flying cars”.

Urban helicopter services in the 1950s through 1980s offered a different and more instructive model. Scheduled and on-demand helicopter operations in cities including Los Angeles, New York, and San Francisco demonstrated that time-saving air connections had real public appeal—particularly for airport access and cross-city travel where geography was challenging and surface congestion was the worst. The present period is meaningfully different from those earlier waves. Beginning in the early 2010s, the convergence of smartphone platforms, electric propulsion advances, increasing automation, and new approaches to aircraft certification[1] created conditions that had not previously existed together.

[1] Learn More (1)

Historical experience suggests that the success of emerging aviation concepts depends not only on technological capability but also on the readiness of the public, institutions, and the broader operating environment. Infrastructure, workforce capacity, governance and regulatory frameworks, public safety, community acceptance, and sustainable business models all influence whether emerging aviation services can move beyond demonstrations and achieve long-term viability. For local and regional governments, a central consideration is whether proposed AAM use cases address clearly defined transportation, economic, or public-service needs that cannot be met as effectively by existing modes of transportation.

Key Takeaways:

- Advanced Air Mobility is the result of new technology applied to familiar aviation ambitions.
- The history of AAM is a history of systems, not just aircraft. Earlier concepts struggled when technology moved faster than safety, institutional readiness, infrastructure, economics, workforce and public trust.
- Local governments should evaluate AAM for use-case fit, infrastructure readiness, and public benefit.

Aircraft Types

AAM encompasses a wide range of aircraft configurations with different performance characteristics, infrastructure requirements, and regulatory pathways. Understanding this diversity matters for local officials, airport staff and planners because aircraft type directly shapes what a community may experience—in terms of noise, land use, infrastructure demands, and emergency response needs. Table 1 summarizes the the principal aircraft categories discussed in the AAM context:

Table 1. Common AAM Aircraft Types

Conventional Takeoff and Landing (CTOL) aircraft are fixed-wing aircraft requiring dedicated runway infrastructure for both departure and arrival. While not a new technology, CTOL aircraft are relevant to regional air mobility discussions, particularly for connecting smaller airports. Some of these aircraft are being designed or retrofit with electric or hybrid electric propulsion systems (eCTOL).
Short Takeoff and Landing (STOL) aircraft operate with significantly reduced runway requirements compared to conventional aircraft. STOL concepts are of particular interest in rural and remote settings where full-length runways are unavailable, though they still require dedicated land, clear approach paths, and compatible surrounding land uses. Like CTOL aircraft, these aircraft may be fully or partially electric (eSTOL).
Vertical Takeoff and Landing (VTOL) aircraft can take off, hover, and land without a runway. Electric-powered VTOL vehicles—commonly called eVTOLs—are the most

widely discussed AAM aircraft type. They eliminate runway dependency but introduce requirements for landing pads, charging infrastructure, and airspace compatible with low-altitude urban operations.
Rotorcraft, including conventional helicopters and gyroplanes, are already in widespread use for emergency medical services, law enforcement, wildfire operations, and charter travel. Many near-term AAM discussions involve rotorcraft operating alongside or transitioning toward newer eVTOL designs.
Uncrewed Aircraft Systems (UAS), including small drones (sUAS), are aircraft without a pilot on board. They may take the form of one of the above aircraft types, or may be smaller. They are already operational across a broad range of public and commercial applications. In the United States, small drones—defined as aircraft weighing less than 55 pounds at takeoff—are regulated primarily under FAA Part 107 rules. Larger UAS concepts, including cargo delivery and medical logistics aircraft, operate under separate and more complex frameworks.

For all these aircraft types, electrification of the aircraft also creates the need for charging infrastructure.

Aircraft types influence everything else in the aviation system. For example, different aircraft types create different:

- Operational rules
- Infrastructure requirements
- Airspace needs
- Emergency response considerations, and
- Community impacts.

Because of this, AAM should not be considered as a single technology category. Furthermore, it underscores the importance of why a community should first assess why they might need AAM, and then consider what type of aircraft might best serve that need.[2]

Unique to Utah

Utah's operating environment may influence which aircraft concepts become practical in the state. Density altitude during hot summer conditions, mountainous terrain, winter weather, wildfire smoke, range limitations, payload limitations, and visibility issues may all affect performance, reliability, and asset utilization.

[2] Learn More (2)

Key Takeaways:

- Advanced Air Mobility is comprised of a number of different aircraft types.
- Different aircraft have different operational needs, infrastructure requirements, and regulatory pathways.
- Understanding the aircraft is often the first step in understand the planning, infrastructure, governance and safety needs.

Use Cases

AAM encompasses a diverse array of applications, often grouped into the following general categories. Each use case carries different implications for infrastructure, regulation, community impact, and potential impacts.

Emergency Response, Disaster Relief, and Humanitarian Operations

Aviation has long supported emergency response and humanitarian use. AAM concepts extend this legacy into new operational contexts, including medical evacuation from incident scenes, search and rescue, wildfire reconnaissance and support, disaster damage assessment, and the distribution of emergency supplies to areas with compromised surface access. These use cases have the potential to attract broader public support than commercial passenger mobility because they address clearly understood public needs.

Logistics and Cargo Delivery

Small UAS are already being deployed for small-package delivery, medical supply transport, and cargo logistics, particularly in settings where surface transportation is slow, costly, or unavailable. Drone delivery of medical samples, vaccines, blood products, and emergency supplies has advanced furthest internationally where several countries have integrated drones into national health logistics systems. Larger cargo delivery by eVTOL and other aircraft represents a growing area of industry investment, with potential applications ranging from last-mile e-commerce delivery to critical supply transport for remote communities.

Professional and Industrial Uses

A broad range of professional and industrial applications rely on uncrewed aircraft for tasks that are difficult, dangerous, or inefficient when performed from the ground. These include infrastructure inspection (bridges, transmission lines, pipelines), agricultural monitoring and precision application, news and media aerial coverage, and construction site documentation. For many local governments, professional uses may represent the most immediate and practical entry point into AAM-related planning, given that many public agencies are among the early adopters of drone technology for asset management and emergency operations.

Passenger Mobility

Passenger service encompasses a range of aviation use cases in which individuals or groups travel by air for personal, professional, or recreational purposes. These include on-demand air taxi trips between points within or across urban and suburban areas, shuttle-style connections between airports and surrounding communities or transportation hubs, and scheduled or on-demand intercity flights linking regions underserved by conventional transportation. Leisure and tourism-oriented flights serve travelers seeking scenic experiences or access to remote destinations, while commuter services support recurring trips between residences and employment centers where ground transportation is impractical. Temporary surge services may also emerge around major venues or special events where surface infrastructure becomes strained. Across all of these use cases, access may be provided through a variety of arrangements ranging from dedicated on-demand booking and subscription models to shared pooled flights and fixed-route scheduled operations.

Enabling Infrastructure

The deployment of AAM at scale will require a network of infrastructure including take-off and landing facilities and energy systems. The nature and type of AAM infrastructure can vary considerably by use case and aircraft types. Understanding the infrastructure required for their deployment helps communities evaluate feasibility, identify gaps, prioritize investments, and guide development in ways that can support broader policy objectives, such as land use compatibility, equity, multimodal connectivity, and environmental stewardship.

Understanding Facility Types

Facility names describe the type of aviation activity a site is intended to support, but they do not by themselves determine what infrastructure may be required. Infrastructure needs depend on the aircraft and use case. Common facility types include:

Commercial Service Airport: A commercial service airport supports scheduled passenger airline service and may also accommodate cargo operations, general aviation activity, military operations, and other aviation uses. These airports typically have extensive infrastructure, including passenger terminals, security facilities, aircraft rescue and firefighting capabilities, air traffic services, utility infrastructure, parking, and ground transportation connections.

General Aviation Airport: A general aviation (GA) airport primarily supports non-airline aviation activities. These may include business aviation, flight training, emergency medical operations, aerial firefighting, agricultural aviation, law enforcement, recreational flying, aircraft maintenance, and charter services. General aviation airports are often more numerous and geographically distributed than commercial service airports.

Heliport: A heliport is a facility designed for helicopter operations. Heliports may be located at airports, hospitals, public safety facilities, industrial sites, private properties, or rooftop locations.
Hospital Landing Facility: A hospital landing facility is a helicopter landing area associated with a medical facility and used primarily for emergency medical transportation and patient transfer operations.
Vertiport: A vertiport is a facility intended to support vertical takeoff and landing aircraft.
STOLport: A STOLport is a facility designed to support Short Takeoff and Landing (STOL) aircraft. These facilities typically require shorter operating areas than conventional airports but may still include many traditional airport infrastructure elements.
Droneport: A droneport is a location used to support UAS operations. Droneports may range from simple launch-and-recovery sites to more complex facilities supporting logistics, inspection, public safety, infrastructure monitoring, or beyond-visual-line-of-sight (BVLOS) operations.
Temporary Operating Site: A temporary operating site is a location used for aviation activities on a limited-duration basis. Examples may include emergency response operations, construction support, and special events. These sites often require little permanent infrastructure but may still be subject to operational, safety, and regulatory requirements.

Building on Existing Aviation Facilities

In many places, existing airports, heliports, and related sites provide a strong starting point for AAM. These locations already have runways or helipads, weather reporting, communications, emergency access, and utilities. Some communities may first encounter AAM through airport modernization rather than through new vertiport development. Adapting existing airports and helipads may be more practical and cost effective than building new facilities. Examples of airport modernization may include:

- Electric aircraft charging infrastructure
- Utility upgrades
- Electric ground support equipment
- Enhanced weather and communications systems
- Data systems

In particular, electrification may introduce planning considerations that have not historically been major aviation concerns, including:

- Electrical capacity
- Grid resilience
- Charging standards
- Energy redundancy

- Utility coordination
- Potential substation upgrades

Some emerging aircraft and use cases may require substantially more electrical capacity than existing facilities currently provide.

Different Facility Types and Their Needs

Terms such as vertiport, heliport, or drone facility describe the general intent of a site, but the actual infrastructure depends on the operations it will support. A hospital landing area, an urban rooftop site, a regional service stop, or a logistics hub will each have distinct requirements for safety, access, energy, and surrounding uses. For instance, passenger-focused vertiports often need attention to passenger flow, emergency access, energy supply, and compatibility with nearby residential or noise-sensitive areas. Simpler uncrewed operations may need less permanent infrastructure, especially if they are temporary or low-frequency. Local governments should focus on the proposed operations and the specific support they require.

Understanding infrastructure capabilities helps communities evaluate:

- What types of use cases are practical
- What supporting infrastructure may be required
- Where infrastructure gaps exist
- How future aviation technologies may interact with existing transportation systems, utilities, and land uses

//Callout Begin//

Infrastructure elements that could support AAM operations may include:

Physical Infrastructure

- Take-off and landing areas
- Markings and visual aids
- Lighting systems
- Fueling, charging, and energy systems
- Maintenance and support facilities
- Surface transportation access

Operational Support Systems

- Communications systems
- Navigation and flight procedures
- Weather monitoring and reporting
- Surveillance and detect-and-avoid capabilities
- Emergency response and public safety systems
- Airspace protection and obstruction management

Not every site will need all of these elements. The specific requirements depend on the aircraft involved, the frequency and purpose of operations, local conditions, and safety standards.

//Callout End//

Compatibility with Communities and Land Uses

Aviation facilities and operations do not exist in isolation. Their effects on communities are often experienced through interactions with surrounding land uses, transportation networks, utilities, and emergency services. For local governments, the primary planning question is not simply whether aviation activity can occur at a site, but whether the proposed operation is compatible with surrounding land uses and community objectives.

Compatibility considerations may vary significantly depending on the type of operation. A low-frequency public safety drone program may raise different planning concerns than a passenger vertiport, a cargo operation, or an airport expansion project. Several factors commonly influence whether aviation-related activities are considered compatible with surrounding land uses:

- **Safety and Risk Management:** Safety considerations extend beyond the facility itself and include flight operations, emergency procedures, obstacle management, and interactions with people and property on the ground. Communities may evaluate whether proposed operations are compatible with surrounding development patterns and whether emergency response capabilities are sufficient to support the intended activity.
- **Utilities and Infrastructure Capacity:** Some AAM operations may require substantial electrical capacity, communications infrastructure, or other utility upgrades. Understanding existing utility constraints and future infrastructure needs can help communities evaluate long-term feasibility and potential investment requirements.
- **Noise and Community Impacts:** Aircraft operations may generate noise that affects nearby residents, businesses, schools, hospitals, parks, and other noise-sensitive uses. The extent of these impacts depends on factors such as aircraft type, flight frequency, operating hours, flight paths, and local environmental conditions. While many emerging AAM aircraft are being designed with noise reduction as a priority, actual community experience will depend on operational practices and site-specific conditions.
- **Visual and Environmental Considerations:** Facilities and aircraft operations may influence community character through their physical presence, lighting, and activity levels. Environmental considerations may include wildlife interactions, stormwater management, air quality, and impacts on natural or cultural resources.
- **Transportation and Access**: Passenger and cargo facilities can affect local transportation networks through changes in vehicle traffic, curbside activity,

parking demand, transit connections, and freight movements. Facilities should be evaluated for their connections to roads, transit, airports, logistics centers, medical facilities, and other key destinations.

- **Equity and Accessibility:** Communities may evaluate how the benefits and burdens of proposed aviation operations are distributed across different populations and geographic areas. Considerations may include who is likely to use or benefit from the service, whether costs or access requirements create barriers to participation, the distribution of infrastructure investments, and whether operational impacts such as noise, traffic, or visual effects disproportionately affect certain communities. Equity considerations may vary substantially depending on the use case, service model, location, and community context.

Roles and Responsibilities Overview

AAM governance involves multiple levels of governance, each with distinct authorities and responsibilities. Understanding who is responsible for what is essential context for public agencies.

Learn More Modules

1. Both the Federal Aviation Administration (FAA) and the National Aeronautics and Space Administration (NASA) generally envision a phased approach to deployment of AAM, emphasizing safety oversight, public engagement, infrastructure planning, workforce development, and coordination among the federal, state, regional, local, tribal and private-sector stakeholders. [Say more…]

2. [Insert table that cross-references aircraft types with benefits, use cases, etc. See longer document]

Aircraft Type	Use Cases	Infrastructure needed	Characteristics of new AAM aircraft	Benefit to Utah
CTOL, eCTOL	GA, charter, cargo, agricultural, business, regional	Airport Runway Charging	Lower operating noise, different maintenance requirements, new charging infrastructure, different operational economics	Regional air mobility
STOL / eCTOL	GA, charter, cargo, agricultural, business, regional	Defined operating area Approach & departure paths Charging	Limited infrastructure, rural access needs, mountainous terrain, regional connectivity challenges, constrained operating environments	Regional air mobility
VTOL / eVTOL				
Rotorcraft	Emergency medical transport, public safety operations, utility inspection, aerial firefighting, cargo movement, charter transportation	Heliports, hospital landing, rooftop pads, temporary operating areas, airports		
Uncrewed Aircraft Systems – small (sUAS)	Public safety, infrastructure inspection, mapping, surveying,	Temporary launch sites, vehicles, rooftops,	Charging systems, communications systems, operational control centers, detect-and-avoid technologies, supporting data infrastructure	

	photography, agriculture, utility inspection, logistics testing	logistics sites, airports		
Uncrewed Aircraft Systems – large (UAS)	Regional logistics, industrial cargo, medical supply transport, rural access, mid-mile freight operations	Airports, dedicated logistics infrastructure, protected operating sites, larger launch/recovery areas,		

3.