Use Cases

What Problems or Missions Are These Aircraft Intended to Support?

Advanced Air Mobility (AAM) and unmanned aircraft systems (UAS) are often discussed primarily through the lens of passenger transportation. While passenger mobility receives significant public attention, many early and near-term aviation applications are expected to involve public-service, logistics, inspection, industrial, emergency response, and regional access missions rather than widespread urban air taxi operations.

Different use cases create different:

- operational requirements,
- infrastructure needs,
- community impacts,
- economic models,
- and governance considerations.

Understanding the intended mission is often just as important as understanding the aircraft itself. The same use case may also be supported by different aircraft, operating models, and infrastructure environments. For example, medical logistics could involve a small drone, a larger unmanned aircraft, a helicopter, a conventional aircraft, or a future powered-lift aircraft depending on distance, payload, urgency, weather, and available infrastructure. This is one reason communities should evaluate the mission first before making assumptions about the aircraft, infrastructure, or community impacts involved.

In practice, communities are likely to encounter AAM incrementally through a range of operational uses rather than through one single large-scale transformation of the transportation system.

Public Safety and Emergency Response

Public safety and emergency response applications are among the most established and immediately practical aviation use cases.

Utah already uses aviation extensively for:

- wildfire response,
- law enforcement,
- search and rescue,

- emergency medical operations,
- disaster response,
- and infrastructure assessment.

Unmanned aircraft systems are increasingly supporting:

- post-disaster inspection,
- situational awareness,
- infrastructure damage assessment,
- wildfire monitoring,
- flood monitoring,
- and emergency communications support.

Utah's geography and hazard environment make these use cases especially relevant. Earthquakes, wildfire risk, flooding, severe weather, and long regional travel distances may all create operational situations where aviation systems provide advantages that are difficult to replicate with surface transportation alone.

Many communities may first encounter AAM or UAS through public-sector emergency operations rather than through commercial passenger transportation.

Medical Logistics and Emergency Medical Support

Medical logistics is another use case receiving substantial attention throughout the aviation industry.

Potential applications include:

- medical supply delivery,
- prescription delivery,
- blood transport,
- laboratory sample transport,
- organ transport,
- and emergency medical support.

Some operations may involve:

- small unmanned aircraft systems,
- traditional helicopters,
- fixed-wing aircraft,
- or future powered-lift aircraft depending on distance, payload, urgency, and operating environment.

Utah's regional geography and rural access challenges may create situations where aviation systems improve delivery times for time-sensitive medical materials or support healthcare access in remote areas.

Medical support operations may also align more directly with public-service and public-benefit discussions than some passenger mobility concepts.

Infrastructure Inspection and Utility Support

Infrastructure inspection is already one of the most common unmanned aircraft use cases in the United States.

Aircraft and unmanned systems are currently used for:

- bridge inspection,
- utility inspection,
- pipeline inspection,
- roadway assessment,
- telecommunications infrastructure review,
- rail corridor assessment,
- and environmental monitoring.

These operations may reduce:

- roadway closures,
- inspection times,
- operational risk,
- and infrastructure access challenges.

Utility and infrastructure inspection may become especially important in:

- mountainous environments,
- remote areas,
- wildfire-prone regions,
- and locations with difficult terrain access.

Some of these operations may require little permanent infrastructure, while others may depend on operational support systems such as:

- communications networks,
- operational control systems,
- charging infrastructure,
- and detect-and-avoid capabilities.

Agriculture and Rural Operations

Agricultural aviation already plays a significant role in Utah and throughout the western United States.

Existing operations include:

- ecological monitoring
- aerial application,
- crop monitoring,
- irrigation assessment,
- livestock support,
- and land management.

Unmanned aircraft systems are increasingly being used for:

- precision agriculture,
- crop analysis,
- mapping,
- and operational monitoring.

Future aviation systems may also support:

- rural cargo movement,
- regional connectivity,
- and agricultural logistics.

Rural operating environments often differ substantially from urban environments. Infrastructure availability, emergency response capability, utility access, terrain, weather exposure, and communication systems may all influence operational feasibility.

Logistics and Cargo Operations

Cargo and logistics operations are expected to become one of the largest early AAM growth areas.

These operations may include:

- last-mile package delivery,
- industrial logistics,
- time-sensitive delivery,
- regional cargo movement,
- and mid-mile freight operations.

Not all cargo operations are the same.

A small unmanned aircraft delivering consumer goods within a suburban environment may operate very differently than a larger unmanned cargo aircraft supporting regional industrial logistics or medical supply movement.

Operational requirements may vary significantly depending on:

- payload,
- distance,
- operating environment,
- operational frequency,
- and infrastructure availability.

Some logistics operations may depend heavily on:

- distributed launch and recovery sites,
- operational control systems,
- utility infrastructure,
- communications systems,
- and detect-and-avoid capabilities.

Others may continue operating primarily through existing airport infrastructure.

Regional Air Mobility

Regional Air Mobility focuses on improving aviation connections between communities, airports, and regions rather than concentrating only on dense urban passenger networks. These concepts may involve conventional aircraft, electric conventional takeoff and landing aircraft, hybrid-electric aircraft, STOL/eSTOL aircraft, or future powered-lift aircraft depending on distance, airport access, payload, passenger demand, and operating environment.

Regional Air Mobility may support passenger, cargo, medical, emergency response, or public-service missions. It should not be treated only as passenger air service. In many cases, the strongest near-term value may come from connecting people, goods, services, or time-sensitive materials across longer distances where surface transportation is slower, less direct, or less resilient.

For Utah, Regional Air Mobility may be especially relevant because many communities are separated by long distances, mountain ranges, weather constraints, and limited surface transportation redundancy. Potential applications may include:

- rural community access,
- connections to medical centers,
- tourism-region connectivity,
- tribal community access,
- links between regional airports,

- and access to economic hubs.

Regional Air Mobility may also align more naturally with existing aviation infrastructure than some distributed urban vertiport concepts. Many early applications could rely on:

- public-use airports,
- general aviation airports,
- heliports,
- airport modernization investments,
- and ground access improvements

rather than requiring entirely new passenger vertiport networks.

Planning questions may include:

- airport readiness,
- runway length,
- utility capacity,
- ground access,
- intermodal connections,
- emergency response,
- workforce needs,
- and whether proposed services address real regional access needs rather than simply adding premium mobility options.

Tourism and Recreation

Tourism and recreation already play a major role in Utah aviation activity.

Aircraft and rotorcraft currently support:

- sightseeing operations,
- outdoor recreation access,
- aerial tours,
- backcountry access,
- and recreation-related transportation.

Future aviation concepts may expand or alter some of these operations, particularly in tourism-heavy regions or areas with limited surface transportation access.

Tourism-related operations may also create different community discussions related to:

- noise,
- visual impacts,
- seasonal operating intensity,

- and compatibility with recreational environments.

Passenger Mobility and eVTOL Networks

Passenger mobility concepts receive substantial public and media attention within AAM discussions, but they should be understood as one possible use case rather than the organizing principle for AAM planning.

These concepts may involve:

- powered-lift or eVTOL aircraft,
- vertiports or adapted heliport facilities,
- airport connections,
- rooftop or ground-based facilities,
- and integration with surface transportation networks.

Passenger mobility systems continue to receive significant private investment and development attention. However, many passenger concepts still face substantial questions related to:

- certification,
- operational economics,
- infrastructure readiness,
- utility requirements,
- airspace integration,
- community compatibility,
- and long-term scalability.

Utah's operating environment may also influence how quickly some passenger concepts become practical at scale. Density altitude, mountainous terrain, weather variability, and regional travel patterns may affect aircraft performance and operational feasibility differently than in flatter or denser metropolitan environments.

This does not mean passenger AAM concepts are unimportant. It does mean communities should recognize that different aviation use cases are likely to evolve at different speeds and within different operational environments.

Different Use Cases Create Different Planning Questions

Different use cases create different:

- infrastructure needs,
- operational rules,
- community impacts,
- emergency response considerations,

- utility requirements,
- and governance questions.

A public safety drone program, an agricultural aircraft operation, a hospital logistics route, a regional air mobility service, a rooftop vertiport proposal, and an airport electrification project may all require very different planning approaches.

Understanding the mission is often one of the first steps in understanding:

- what infrastructure is needed,
- what operational rules apply,
- what public concerns may emerge,
- and what role local governments may ultimately play.

Key References

- 14 CFR Part 91
- 14 CFR Part 103
- 14 CFR Part 107
- 14 CFR Part 121
- 14 CFR Part 135
- 14 CFR Part 136
- 14 CFR Part 137
- National Academies, Advancing Aerial Mobility: A National Blueprint
- APA PAS Report 606, Planning for Advanced Air Mobility
- GAO-22-105020, Transforming Aviation: Stakeholders Identified Issues to Address for Advanced Air Mobility
- NASA AAM Community Integration Considerations Playbook