



August 16, 2023

Docket Operations Office  
U.S. Department of Transportation  
1200 New Jersey Avenue, SE, Room W12-140  
West Building Ground Floor  
Washington, DC 20590-0001

**Re: RFI Response: Advanced Air Mobility (Docket No. DOT-OST-2023-0079)**

On behalf of the National Association of State Aviation Officials (NASAO), I appreciate the opportunity to share these general comments to the U.S. Department of Transportation in response to the Request for Information (RFI) on the development of a national strategy on Advanced Air Mobility (AAM), published on May 17, 2023.

NASAO is the nationally recognized voice for the public interest in aviation on behalf of the States and territories. NASAO represents State government officials of all 50 States, Guam, and Puerto Rico, who, as part of their many responsibilities, make decisions on funding aviation systems and airport infrastructure at our nation's more than 3,300 public-use airports.

NASAO provides the following responses to questions posed within the RFI:

**1. AAM National Strategy**

NASAO has identified the following issues that should be addressed in the AAM national strategy:

- **Whole-of-Government Approach:** The AAM strategy should be guided by a key principle that a whole-of-government approach should not just focus on the role of agencies across the federal government, but also state, tribal territorial, and local governments. State aviation agencies have a long-standing partnership with the Federal Aviation Administration (FAA) in maintaining the national aviation system. This continued partnership will be critical in the work ahead.
- **Capitalizing Synergies Between Federal Funding Programs:** Identify opportunities for federal grants and assistance to enable AAM.
- **Developing the Workforce in Areas Related to AAM:** Growing and enhancing the aviation workforce to support AAM requires collaboration. The strategy should help stakeholders coalesce around common frameworks to develop skills that can adapt to evolving demands. This includes using a common lexicon for work roles and the knowledge, skills, and certifications needed for those roles. The federal government must examine how federally supported workforce development initiatives could support this new sector, as well as address barriers that have prevented underserved and underrepresented populations from joining the aviation workforce.

- **Ensuring Equitable Access for Underserved and Rural Communities:** We must ensure that locations of vertiports do not have a disparate impact on underserved and rural communities. The federal, State, local, tribal, and territorial governments can play a key role in supporting equitable outcomes by supporting rural transportation policy and equitable access for rural communities.

## 2. **Barriers to AAM implementation.**

NASAO has identified the following as key challenges to the success of AAM implementation:

### **Funding**

It is unclear at this time how new entrants as users of the National Airspace System will contribute to the Airport and Airway Trust Fund (Trust Fund). There are a variety of potential funding mechanisms including fees, sales taxes and excise taxes. Potential fees to consider include landing fees, airspace usage fees, parking fees, access fees, aircraft registration fees and permitting fees. Tax revenues to consider will be aircraft sales tax, taxes on electricity as aviation fuel, passenger facility charges and customer facility charges. Currently, several States require aircraft registration and use those fees toward airport infrastructure improvement. NASAO recommends that new entrants contribute their fair share to the Trust Fund to support the aviation system. NASAO also recommends that the federal government should avoid prematurely closing off revenue generating opportunities for States and airport sponsors.

### **Infrastructure**

New infrastructure components or augmented current infrastructure components will be required to accommodate AAM, including:

- *Planning:* States and localities need the funds to start planning for AAM, especially to incorporate this new operation into statewide aviation system plans. State aviation agencies are responsible for developing and maintaining statewide aviation system plans, which identify the aviation system's current and future needs and directs funding for State funded projects and for the State's matching share of federally funded projects. The Advanced Aviation Infrastructure and Modernization Act (P.L. 117-328) provides some funding for AAM planning grants, but additional resources will be needed to conduct planning nationwide.

A few States are already taking steps to start planning for AAM. For example, the State of Utah initiated an AAM infrastructure and regulatory study that found that the State will need to investigate establishing an unmanned traffic management system and an aerial traffic operations center, as well as making improvements to cellular and internet broadcast receivers. The study also revealed that the State of Utah will need to consider "soft" infrastructure components, such as develop personnel, man hours, and skill sets, and conduct aerial corridor planning, adapt land-use planning, and enact policies and

processes to support AAM. These areas need to be considered when planning and developing the infrastructure for safe integration into the National Airspace System.

- *Federal, State, and Local Coordination:* The U.S. Department of Transportation's and FAA's coordination with State and local planning officials will be critical in overcoming barriers to AAM implementation. New vertiports will require State licensing and local zoning ordinances, among other things. For instance, the State of California places zoning and other land use decision making at the local government level, while requiring that public-use airports and heliports acquire and maintain permits for public-use airports and heliports as directed by the California Department of Transportation (Caltrans) Aeronautics Program.<sup>1</sup> Furthermore, AAM will need to be incorporated with other planning processes to help connect AAM with other modes of transportation for a seamless transition between modes. Without it, a viable system will be difficult to implement.
- *Power Sources:* Electric aircraft and the increasing electrification of airports will require improvements to local energy grids to ensure a secure, reliable, and sufficient supply of green electricity to facilities supporting AAM if this new technology is to meet its potential to reduce the carbon footprint of aviation.
- *Fire Safety:* Updated fire codes are needed to accommodate these new electrical aircraft. Fire codes may need to be updated to ensure structures can be protected in the event of a battery fire for vertiports built on or around buildings. Also, firefighting methods and extinguishing agents may need to be developed and updated to extinguish battery fires, which are known to be difficult to extinguish.

## **Equity**

Transportation equity includes accessible and affordable transportation for all communities, such as geographic location of vertiports, frequency and volume of service to underserved areas, visual pollution, and meaningful stakeholder engagement throughout the process. It is crucial that AAM operations and vertiport placement provide both for equitable access to AAM, and the development of AAM does not adversely impact communities.

## **Community Acceptance**

NASAO agrees with the FAA's Advanced Air Mobility Implementation Plan that public engagement and education through involvement of all stakeholders will be needed to ensure that communities understand the benefits and impacts of AAM operations. Demonstrating the

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<sup>1</sup> Land use planning in the vicinity of California airports and heliports is articulated in the State Aeronautics Act that can be found within the Public Utilities Code. It is further enhanced by guidance offered in the California Airport Land Use Planning Handbook. This document is currently undergoing an update and revision that will reflect the needs of emerging AAM development.

benefits from the outset will be critical to gaining public acceptance. This will require a twofold approach: (1) start small, then gradually scale operations and (2) ensure equal access. First, use the crawl, walk, run concept in terms of making the use of small UAVs a common practice, using them for the good of most (e.g., package delivery). Focus on getting the public used to the prospect of small aircraft flying from point to point, which will help make it easier for the public to accept AAM for goods and then transporting people within the infrastructure that has been optimized by the non-passenger carrying fleets. Uses related to medical care such as supply delivery are likely to be embraced which will demonstrate the positive aspects of AAM. The second aspect is ensuring there is equitable pricing and service area. Start in underserved communities as a superior option to the current public transportation system that is often lacking.

Prior to meaningful acceptance by the general public, State and local elected officials' awareness and understanding of AAM will also be critical. The federal government must take the lead in this effort, partnering with State aviation officials as much as possible.

### **Workforce Readiness**

As advanced aviation technologies continue to revolutionize the industry, the aviation workforce will also evolve and require new training and certifications requirements.

- *Pilots/Operators*: Pilots must adapt and acquire new skill sets to navigate the complexities of emerging platforms. The FAA's pilot certification programs need to incorporate training on operating autonomous and semi-autonomous systems, as well as electric aircraft. The FAA's operator certification process should be updated to include comprehensive training on managing autonomous systems, airspace management, cybersecurity, and regulatory compliance. Operators need to understand the intricacies of operating advanced technologies, as well as the ethical considerations associated with their deployment, such as privacy and environmental impact. Additionally, specific training should be provided for AAM operations, which require pilots to understand unique navigation challenges, airspace integration, and communication protocols. The operators of AAM systems, such as urban air taxis and autonomous cargo drones, will play a pivotal role in their safe and responsible deployment.
- *Technicians*: Technicians also play a crucial role in maintaining and repairing aircraft and must acquire specialized knowledge and skills to effectively address the evolving needs of industry. The FAA's A&P training program must be updated to incorporate comprehensive coursework on electric aircraft systems, composite material repairs, and advanced avionics.
- *State Aviation Agencies/State Departments of Transportation*: Traditional State department of transportation (DOT) roles will expand from airport system planning and development, promoting safety and security, and inspecting and licensing of airports to include new innovative partnerships with industry sectors outside of aviation. This will

include the need to work with energy providers to address solutions to power grid challenges. With the increasing use of drones, State DOTs may need to hire additional staff such as a Director of UAS/AAM or data analysts to manage the large volume of new data collected by drones. The drone applications also open new opportunities for multimodal partnerships. Data collected by drones can be used by State aviation agencies for airport inspections or by a state highway department for bridge inspections or volumetrics on construction projects.

State aviation agencies across the country are facing high turnover and vacancy rates, as well as have difficulty in increasing staff sizes as some States require their State legislatures' approval, which can be a lengthy process if a State legislature only approves a new budget every two years. Therefore, State aviation agencies may be looking for other ways to address needs related to AAM. States may look to public-private partnerships (PPP) to facilitate quicker adoption of AAM. For example, MassDOT has developed a non-profit organization known as MassAutonomy to expand its network as a leader in AAM. MassAutonomy brings together industry, academia, and government to build a roadmap for the State of Massachusetts, define market opportunity, organize and run AAM challenges, and plan for the pilot implementation of AAM infrastructure.

## **Geographical and Climate**

Many areas across the country are experiencing severe weather events and have unique geography and infrastructure needs that can be barriers to fully implementing AAM to all communities. For example, Alaska's vast and diverse geography, extreme weather conditions, lack of infrastructure in remote areas, and the need for significant investment in new technologies and training are challenges the State is facing as it looks to implement AAM.

California Department of Transportation (Caltrans) compiled statewide climate change vulnerability assessments, identifying sea level rise, storm surges, wildfires, and increases in temperature extremes as its greatest climate vulnerabilities. These initial assessments focused on the state highway system but are being revised to broaden the focus to other modal facilities including airports. With several commercial service airports in California adjacent to the ocean, extreme weather events have the potential to disrupt AAM operations and other aviation-related activities at airport and vertiport facilities, such as flight curtailments due to the presence of smoke from wildfires.

Utah's geography and climate could make it challenging for AAM implementation. Utah experiences all four seasons and usually spans two to four months for each season. While summer AAM operations would see only some minor summer climate changes, much of the State experiences heavy snowfall and very cold temperatures. Most of Utah's populated area will also experience hot, dry, and very low humidity during peak summer season. Its geography, like most of the western States, is very mountainous with ground transportation

moving between narrow valleys. Accessing populated areas could be hindered with elevations for these populated areas range between 6,000 ft msl and over 9,000 ft msl.

**3. To maximize the potential for successful AAM implementation in the United States, the Federal government should focus on the following:**

**a. Short-term (2-3 years)**

FAA:

- Publish an advisory circular on vertiport design
- Conduct a comprehensive review of federal regulations and advisory circulars and address any changes needed (especially to 14 CFR Part 139) to accommodate AAM
- Develop requirements and process to certify aircraft and pilots
- Improve the timeliness of FAA decisions – once there is airworthiness certification of an aircraft, there will be increased pressure to deploy them quickly

Federal Agencies:

- Leverage NASAO to communicate with State aviation agencies on ongoing efforts and to identify opportunities for joint efforts to implement AAM
- Develop a process to ensure the federal government is speaking with a unified voice on AAM and ensure information and decisions are consistently implemented and communicated at the regional level
- Partner with State, local, tribal, and territorial governments to conduct outreach and educate other parts of the public sector on what AAM is and what its impact will be on communities

\*\*Some of the short-term items will become medium- and long-term as it will take several years to implement.

**b. Medium-term (4-8 years)**

FAA:

- Address how operators will be defined and regulated
- Develop a plan on how to integrate new entrants into the airspace
- Determine and brief stakeholders on what AAM-related infrastructure projects are eligible for Airport Improvement Program
- Identify and implement ways for new entrants to pay into the Trust Fund
- Revise advisory circular on vertiport design as needed

**c. Long-term (8+ years)**

FAA in partnership with State, local, tribal, and territorial governments, OEMs, and other key stakeholders:

- Develop regional AAM networks, such as developing aerial corridors and coordinating with uncrewed aircraft at the 400 feet level

#### 4. AAM IWG Subgroup Topics

##### **Role of State Aviation Agencies**

State aviation agencies play an important role in managing the National Aviation System (NAS). Within that network, the role of States in managing and promoting aviation as a vital access point to the entire transportation network is not as widely known as that of the FAA. State aviation agencies, through NASAO, participate in several memorandums of understanding with the FAA and other federal agencies to create cooperative efforts to manage the NAS. Ten states administer block grants for FAA Airport Improvement Program (AIP) grants to general aviation airports, many others act as channeling states<sup>2</sup> for the FAA, and most states provide funds to help meet the matching requirements for FAA AIP grants. State aviation agencies will play an integral role in facilitating AAM, including in funding and financing, planning, licensing, zoning, site approval, airspace protection, and leveraging partnerships.

##### ***A. Funding and Financing***

State governments play a crucial role in funding infrastructure projects, including those related to AAM. Infrastructure development requires significant investments, and States often play a key role in financing and facilitating these projects. Here are some aspects of State roles in funding infrastructure and their relationship to AAM:

- **Funding Allocation:** State governments allocate funds from their budgets for infrastructure development. This includes transportation infrastructure, such as roads, bridges, and airports, which are critical components of AAM operations. States could prioritize funding for infrastructure projects that support the integration of AAM, such as vertiports or charging infrastructure for electric aircraft.
- **Grant Programs:** States often establish grant programs to provide financial support for infrastructure development. These grants could be used to fund research and development efforts, demonstration projects, or the construction of AAM-related infrastructure. For example, a State may provide grants to encourage the establishment of vertiports or support trials of AAM services within their jurisdiction.

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<sup>2</sup> State channeling of federal airport grants occurs in various forms within numerous states. Normally, when an airport is in a channeling act state, the sponsor submits payment request information to the state, who then submits the request to the FAA. In this case, the FAA makes payments to the state, and the state then distributes the payment to the sponsor. In some cases, the state may also provide technical oversight and review, which may include state submittal of grant applications and/or closeout requests. This is based on state enabling legislation, rather than federal law. In many cases, the state also signs the grant agreements. Channeling agreements based on state enabling legislation do not need approval from the FAA Airport District Office (ADO). AIP Handbook, Chapter 2, [https://www.faa.gov/airports/aip/aip\\_handbook/?Chapter=2](https://www.faa.gov/airports/aip/aip_handbook/?Chapter=2)

- **Public-Private Partnerships (PPP):** State governments could collaborate with private entities to fund infrastructure projects through PPPs. These partnerships bring together public funds, private investments, and expertise to accelerate infrastructure development. For AAM, States can enter into PPPs with eVTOL manufacturers, infrastructure providers, and urban mobility companies to finance and implement AAM projects.
- **Bond Financing:** States issue bonds to raise funds for infrastructure investments. These bonds are repaid over time using revenue streams generated by the infrastructure projects. Bonds could be utilized to fund AAM-related infrastructure development, such as building vertiports or upgrading existing airports to support eVTOL operations.
- **Legislative Support:** State governments could enact legislation and policies that support AAM and its associated infrastructure. This includes providing regulatory frameworks, tax incentives, or subsidies to encourage the development and deployment of AAM technologies and infrastructure within their jurisdictions.
- **Federal Funding Support:** State governments often leverage federal funding programs to support infrastructure projects. For example, federal programs like the Infrastructure for Rebuilding America (INFRA) grant program and the FAA AIP provide funding for infrastructure projects that could be utilized for AAM-related initiatives.

It is important to note that the specific roles and funding mechanisms employed by States may vary depending on their governance structures and available resources. Additionally, the funding landscape for AAM infrastructure is evolving rapidly, and new funding models and sources may emerge as the industry progresses.

As AAM continues to develop and gain momentum, State governments are likely to play a critical role in funding the necessary infrastructure to support its growth. Their financial support, policy initiatives, and collaboration with private entities will contribute to the successful integration of AAM into the transportation ecosystem.

## ***B. Taskforces and Studies***

State aviation agencies could serve as a convener to address AAM implementation within their respective States. Several States have initiated studies and stood up taskforces to better understand the potential impacts, anticipated needs, and take steps toward AAM implementation. The following are summaries of actions some State aviation agencies are taking to facilitate AAM implementation, which could serve as models for other States.

**i. Georgia DOT**

Given the rapidly emerging state of AAM and emerging federal guidance, Georgia DOT (GDOT) is studying AAM to ensure the safety of the public and property, understand the basic needs of an AAM operator, assess where those operations might likely first appear, identify the gaps in infrastructure, strategically plan for new entrants, and assist with public acceptance of a new mode of transportation. The study has four main tasks: 1) an assessment of AAM activities and potential in Georgia, 2) an inventory of the State’s potential AAM aircraft landing areas and evaluate airport charging capabilities and needs, 3) a community guidebook to help local governments as they are approached by AAM providers, and 4) a statewide AAM action plan.

**Figure 1: Georgia DOT AAM Study**

| Task                                                                                                                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <p><b>TASK 1:</b><br/>Assessment of AAM Activities and Potential in Georgia</p>                                                           | <p>The primary focus of this task is to create an informed community within the Department on AAM and detail current activities in the deployment of AAM infrastructure. This task will provide an understanding of the current state of AAM and the industry’s potential impact in Georgia. In researching the actions of other State DOTs with AAM initiatives, the Consultant will provide a “best practices” approach to AAM legislation, especially considering emerging federal guidance at the time of this study.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>TASK 2:</b><br/>Inventory the State’s Potential AAM Aircraft Landing Areas and Evaluate Airport Charging Capabilities and Needs</p> | <p>Many concepts of operation suggest that initial AAM operations will utilize existing infrastructure such as heliports and smaller airports. While most airports have existing airspace and approach and departure corridors, it is unknown if Georgia’s private and public-owned heliports do. This task will provide an inventory of existing heliports in the State and identify which could safely serve AAM operations based on potential airspace conflicts, surrounding infrastructure, and other factors. While airports may have existing airspace, additional study is needed on any additional infrastructure required to service AAM aircraft, such as electric charging stations and related utilities. Location information will be combined in an easy-to-access GIS interface that can be shared across GDOT and other departments and agencies.</p> <p>The next step of this task is to develop a funding level projection to determine the estimated cost of installing electric charging stations statewide. This will allow the Department to propose an investment in Georgia’s airport infrastructure to advance AAM in the State that will appropriately align with Georgia’s NEVI Plan. In addition to installation costs, the consultant should provide research on any revenue capture methods available with electric charging and a range of fees being charged to users based on established metrics (e.g., wattage (Kwh) used, base use fee, etc.).</p> |
| <p><b>TASK 3:</b> Create a Community</p>                                                                                                  | <p>This task is to consult with the State, collaborate with AAM solution providers, and develop a community guidebook for local municipalities to work with developers, community members, and operators in AAM</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

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| <p>Guidebook and Toolkit</p>                                  | <p>wishing to build, certify, or operate AAM infrastructure. The toolkit will include State information reporting requirements, site selection factors, land use and zoning, potential economic investments, safety considerations, and public notification requirements. Equity considerations for site selection will be incorporated. Elements of the document and the toolkit will be posted on the GDOT AAM website.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>TASK 4:</b><br/>Develop a Statewide AAM Action Plan</p> | <p>This task is to develop an action plan of the recommended stages of AAM in the State from its present state to initial operations. The action plan will be a roadmap that will define the State's AAM goals and include the major steps needed to reach those goals. It will provide documented guidance on establishing AAM as a mode of safe and reliable travel and cargo operations in the aviation and transportation network and may include, but is not limited to, a potential landing area licensing and certification program, strategic initiatives surrounding multi-modal planning, and infrastructure siting. Preliminary data needs will be outlined and addressed in collaboration with other GDOT programs. The action plan will be developed through interviews with key organizational staff and potentially external stakeholders identified by GDOT. These interviews will help identify the history and the current understanding of AAM in the State. The action plan will also provide information on potential legislative needs. The plan will be developed to define a timeline of tasks that meets the GDOT vision and goals for an AAM system.</p> |

**ii. Utah DOT**

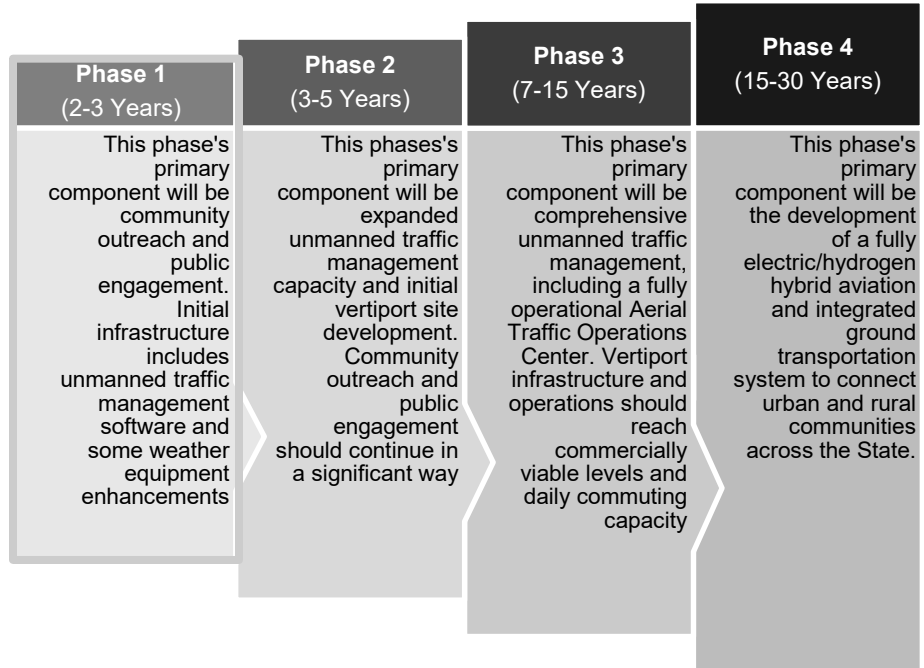
The Utah State Legislature passed legislation directing its Aeronautics Division to conduct a study on AAM development and implementation throughout the State focused on identifying:

- potential benefits and limitations of AAM implementation;
- current state assets to support AAM;
- assets needed for full implementation of AAM;
- assess the feasibility of options for the future implementation of statewide AAM system; and
- and review infrastructure funding mechanisms employed or under consideration by other States.

The Utah State Legislature also requested a review of current State laws and to identify State laws needed to facilitate AAM operations in the State.

As a result of the study, Utah Aeronautics Division is following a phased implementation plan that allows it to grow one step at time and adjust as appropriate to shifting market demands.

**Figure 2: Utah Division of Aeronautics AAM Phased Implementation Plan**



**iii. Florida DOT**

The Florida Department of Transportation (FDOT) Aviation Office (AO) has taken a leading role in integrating AAM in Florida. FDOT AO has completed numerous work products to build a foundation of knowledge within the State to advance the industry, including the FDOT AAM Roadmap, FDOT Minimum Standards and Gap Analysis, and FDOT Airport Compatibility Considerations. Since there is a significant interest in AAM across Florida, the FDOT AO also established an AAM Working Group in 2022 composed of the FAA, Original Equipment Manufacturer (OEM), local government, FDOT, and other industry stakeholders. The Working Group developed a report which examines the different roles and responsibilities of federal, State, and local governments and provided recommendations based on those roles.

The Working Group participated in four meetings to discuss the necessary steps for the successful integration of AAM into the State's transportation system. These meetings were designed to allow for concentrated discussions from a variety of perspectives to identify critical steps for the successful integration of AAM. The meetings worked to establish a baseline of AAM trends; identify challenges to be addressed in the final report; develop an initial risk assessment; facilitate discussion to define the critical elements and necessary steps for AAM integration; review and comment on the draft report; and define next steps and recommend opportunities for members to remain informed and engaged about state actions.

The Working Group identified four key areas of focus for the implementation of AAM: Public Education and Community Engagement; Infrastructure and Zoning; System Planning and Access; and Airspace and Safety. Recommendations were developed for each area of focus and grouped based on the categories: Legislative, Regulatory, Advisory, and Local Government.

#### **iv. Alaska DOT**

Alaska is preparing for AAM by conducting a comprehensive AAM Infrastructure Study. The study, which is currently concluding, takes into account all existing aviation infrastructure assets across state, public, federal, and military sources. A key component of the study is a gap analysis to identify the needs for full AAM implementation in Alaska. The study is also intended to develop an implementable step-by-step plan for AAM, considering existing assets and future technology evolution.

On completion of the AAM infrastructure study, the State has issued a Request for Proposal (RFP) for Advanced Air Mobility. The RFP seeks experienced entities to work closely with aviation partners to plan, research, develop, and deploy coordinated NextGen technologies to address multiple aviation safety issues. A crucial part of this RFP is building infrastructure vital to deploying essential air services for both civil and military use across Alaska, accommodating both crewed and uncrewed aircraft while replacing outdated hardware. The RFP also highlights deliverables such as the development of specific performance targets, solution implementation, and a comprehensive sustainment plan for the future.

#### **v. Michigan DOT**

The State of Michigan's experience in the integration of UAS has helped it to identify key strategies in implementing AAM. In 2016, the Michigan Legislature passed the Unmanned Aircraft Systems Act that created a UAS Taskforce to develop statewide policy recommendations for the operation, use and regulation of unmanned systems in the State. This 27-member taskforce brought stakeholders from the regulatory and operations areas to work collaboratively to consider commercial and private uses of UAS, landowner and privacy rights, general rules, and regulations for safe UAS operations.

In January 2022, the State of Michigan (via the Michigan Department of Transportation (MDOT) and the Michigan Aeronautics Commission (MAC)), with support from the Michigan Office of Future Mobility and Electrification (OFME), the Michigan Economic Development Corp., and the Government of Ontario, through the Ontario Vehicle Innovation Network (OVIN), initiated a study to explore whether small drones can be flown beyond the line of sight of a pilot and be used in operations like just-in-time delivery, medical transport, or other small-scale

deployment of UAS. The information gathered from this feasibility study is being used to identify areas to begin implementation of AAM operation zones in Michigan. Specifically, the study identified:

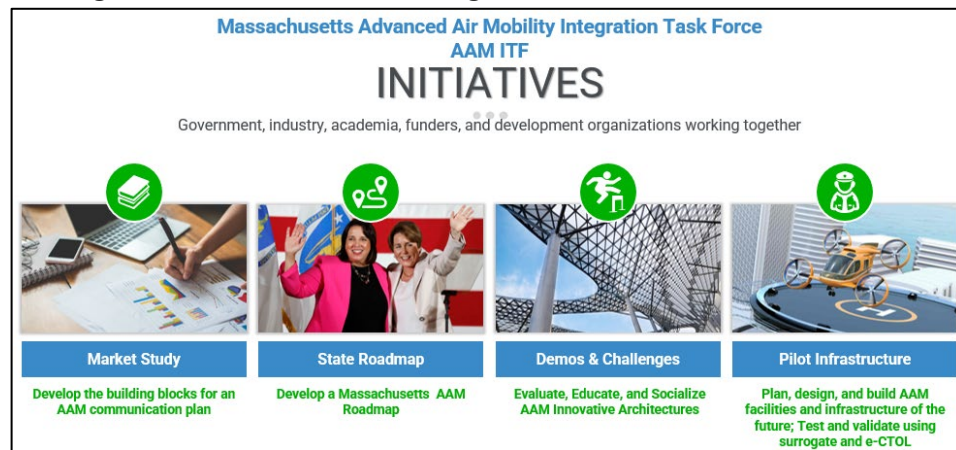
- Strategies for education and engagement with the communities surrounding the areas with and near the operational zones.
- Identification of ground risk assessments underlying the operational areas and within proximity of departing and landing facilities.
- Air risk assessments of these new and emerging operations within the national airspace systems and the identification of the physical network of equipment required to receive FAA approval for operations.
- Stakeholder engagement strategies to promote the approval and acceptance of advanced operations.

**vi. Massachusetts DOT via MassAutonomy**

The Massachusetts Department of Transportation (MassDOT) is working with their nonprofit partner MassAutonomy to accelerate the integration of new and emerging technologies to advance the State's mobility system. MassAutonomy has brought together industry, academia, government, funders and development organizations through an AAM Integration Taskforce to build a roadmap for the State, define a foundation of basic facts about the AAM market opportunity, organize AAM challenges, and plan for a pilot implementation of AAM infrastructure.

MassAutonomy is an integration accelerator harnessing disruptive technologies to advance state mobility systems. MassAutonomy

- Industry created non-profit focused on deploying autonomy to all modes of mass transportation.
- Uniquely partnered with MassDOT Aeronautics in the air domain
- Solves current transportation challenges.
- Nimble collaboration of government, industry, and academia to increase the speed of innovation, while improving solution effectiveness.
- Drives statewide economic development by advancing real-world technology solutions to operational problems.

**Figure 3: Massachusetts AAM Integration Taskforce Initiatives**

In addition, Massachusetts is working extensively with NASA and several other State partners on AAM. The first NASA effort focused on AAM Community Integration and was completed in 2022. This one-year effort produced the recently published, NASA “Advanced Air Mobility Community Integration Considerations Playbook.”

The current 2.5-year NASA effort is focused on AAM Public Good Community of Interest. This effort is delving deeply into AAM public good use cases, to include assisting NASA with iterating and building-out its Model Based Systems Engineering (MBSE) architecture to capture the important elements of an AAM systems of systems. In the future, this work is meant to support each State’s smart and safe development of their AAM ecosystems.

From a global perspective, Massachusetts is a founding international member of the UAM Initiative Cities Consortium (UIC2) of CIVITAS. The mission of UIC2 is to drive the sustainable and secure transition of urban mobility to the vertical dimension. CIVITAS is one of the flagship programs helping the European Commission (and its international partners) achieve its ambitious mobility and transport goals, and in turn those in the European Green Deal. It does this by acting as a network of cities, for cities, dedicated to sustainable urban mobility. Through peer exchange, networking, and training, CIVITAS fosters political commitment and boosts collective expertise, equipping cities to put mobility at the center of decarbonization.

In 2022, Massachusetts was selected as the inaugural Chair of the World Economic Forum (WEF) Advanced and Urban Air Mobility Cities and Regions Consortium. The Coalition is helping cities and regions plan for Advanced and Urban Aerial Mobility, which encompasses emerging aviation technologies such as vertical takeoff and landing, short takeoff and landing, alternative energy sources, uncrewed aircraft/drones, and autonomous navigation.

The WEF launched the Advanced and Urban Aerial Mobility Cities and Regions Coalition in March of 2022 to ensure that next-gen aviation systems are safe, clean, efficient, and equitable worldwide. The Coalition builds on the work of the Urban-Air-Mobility Initiative Cities Community (UIC2) of the European Union's Smart Cities Marketplace. As a founding Coalition member, UIC2 represents 39 European cities and regions. Other founding Coalition members include Amsterdam, Incheon (South Korea), Massachusetts, Neom (Saudi Arabia), Orlando, Los Angeles, Île-de-France (Paris region), and Sao Paulo.

Recent AAM announcements in Massachusetts include the creation of an AAM Sandbox by MassAutonomy and US Air Realty. The sandbox is located in the City of Lynn, MA at the former GE Gear Plant, next to the GE Engine manufacturing complex. This Sandbox is located less than 10-miles from Boston and is modeled after the Paris Region AAM Sandbox in Pontoise, France. The Massachusetts AAM Sandbox is bringing together AAM stakeholders to advance the AAM state of the art in concrete, practical ways.

Massachusetts also announced the completion of its first airport electrification project at Marshfield Airport. This three-year effort was made possible through a collaboration led by Shoreline Aviation, with team members Beta Technologies, Eversource, and the MassDOT Aeronautics Division. The electrical infrastructure supports both EV and electric aircraft at Marshfield Airport.

In September of 2023, MassDOT will kick-off the U.S. Department of Transportation SMART (Strengthening Mobility and Revolutionizing Transportation) Grant planning effort focused on the planning phase for a Smart Microgrid at the Hyannis Cape Cod Gateway Airport. Planning a robust infrastructure for the electrification of ground vehicles and aircraft at Cape Cod Gateway Airport provides a powerful clean energy transportation model for other airports in the Commonwealth and across the nation.

Power from the smart grid will be generated by facilitating the charging of electric ground vehicles, including buses, and in the future, electric aircraft. In collaboration with the airport and the Cape Cod Regional Transit Authority, the initiative aims to increase clean energy independence while helping to support the disadvantaged community living near the airport in Hyannis.

**vii. California DOT (Caltrans)**

There are several initiatives underway in California that pertain to AAM. These include:

- In August 2022, Caltrans and the University of California at Berkeley hosted the Future of Aviation Conference at San Francisco International Airport, bringing together federal, State, local, and tribal governments, OEMs, international stakeholders, aviation consultants, and others to

discuss key topics on integration of AAM. This included a day long basic training regarding AAM and airport and local area tours that included potential vertiport sites adjacent to the Millbrae Station area.

- Given the limited studies surrounding AAM implementation, Caltrans sponsored research conducted by the San Jose State University/Mineta Transportation Institute, "[Land Use Analysis on Vertiports Based on a Case Study of the San Francisco Bay Area](#)". The study provided a framework for a systematic approach to vertiport site selection and recommendations for how a region might plan its AAM network, regulations, or best practices.
- To support planning efforts within the State, Caltrans is revising and updating the "California Airport Land Use Planning Handbook" and the "California Aviation System Plan" with enhancements to sections related to AAM.
- To increase industry awareness on AAM implementation needs and share best practices, Caltrans staff have spoken at numerous AAM focused conferences including Amsterdam Drone Week, the California Chapter of the American Planning Association, The National Symposium on Aviation System Planning sponsored by the Transportation Research Board, the Association of California Airports, and the **Monterey Bay Drone Automation and Robotics Technology (DART) Symposium**.

#### **viii. Colorado DOT**

The Colorado DOT Division of Aeronautics is conducting a study to evaluate where and how new aircraft technologies could be deployed across Colorado using Transportation Demand Modeling (TDM) tools from the National Renewable Energy Laboratory (NREL).

TDM tools will help Colorado DOT Division of Aeronautics identify intrastate travel patterns and current demand, which will help with evaluating where these new aircraft technologies could be deployed in Colorado, and identify potential infrastructure, policy and regulatory implications. The intent is to inform planning, development, and funding conversations among stakeholders as this technology matures. The goal will be to have Colorado's aviation system as prepared as possible to leverage the benefits of these new aircraft technologies when they enter widespread service in the next 10-15 years.

#### **ix. Kansas DOT**

Kansas Department of Transportation (KDOT) was tasked by its State legislature in 2016 to establish a Director of Unmanned Systems for the purpose of increasing economic development from emerging aviation

technologies. Shortly thereafter, the Division of Aviation founded the Kansas UAS Joint Task Force comprised of 44 state, university and industry partners gathered to assess and tie current and future needs of the unmanned systems industry to infrastructure already established within the state. In 2017, and again in 2020, Kansas was selected by the FAA as one of five states to conduct beyond-line-of-sight operations that will be used to inform rulemaking for AAM. Aerospace innovation and manufacturing represent long-standing relationships across this industry as demonstrated by the Kansas delegation sponsorship of the Advanced Air Mobility Coordination and Leadership Act in 2021. Today, Kansas continues to partner with FAA to gather the necessary data to support effective rulemaking for AAM.

This year, Kansas formed the Kansas Airport Joint Task Force to assess current and future needs for all 140 public-use airports across the State. This taskforce is comprised of three working groups that will set the foundation for the future viability of airport infrastructure. Individual working groups will examine the following: 1) airport categories, missions, and pavement; 2) on-airport vertical construction & economic development; and 3) airport technology/equipment updates to improve safety, sustainability, or cost efficiency. The results of this study will establish a strong baseline of infrastructure requirements and provide both a “get-well” and sustainment strategy that will drive resourcing decisions for years to come.

### ***C. Zoning***

For public-use facilities, many States provide that the State aviation agency has the authority for the approval and denial of aviation facilities, including their location and safety standards set forth in the licensing regulations. Many States may provide for zoning statutes to provide additional protections, such as height and land use controls surrounding public-use facilities. With the vast number of AAM facilities forecasted, State aviation agencies can play a role in creating a standard that not only addresses safety concerns, but quality of life standards for adjacent areas.

### ***D. Site Approval***

It will be important for State aviation agencies to be involved early in discussions about potential aviation facilities. There are some State aviation agencies that have exclusive authority to approve or deny all aviation facilities, including the site approval process (which encompasses both the licensing standards and zoning standards). The concept of exclusive authority for approvals by State aviation agencies assures enforceable and reasonable state-wide standards in lieu of multiple regulations that vary from community to community. This site approval process can vary from State to State but includes, for example, statewide airport zoning, statewide airport land use regulations, requirements for

licensing and compatibility reviews – with the ultimate goal of an aviation system coexisting with local communities.

### ***E. Licensing***

Licensing will vary from State to State, but typically State aviation agencies have licensing standards that facilities must meet for public use. Most standards will include that public use facilities must have a licensed facility manager and a safety plan.

### ***F. Airspace Protection***

The States' role in airspace protection is a similarly important, yet often misunderstood responsibility. Many States currently supplement FAA's airspace evaluation process with enforceable regulations on tall structures proposed near aviation facilities. These regulations may take the form of stringent height standards, zoning regulations, or requirements of local entities to ensure proper zoning near aviation facilities. Continued dialogue with State aviation agencies can help ensure the safe ingress and egress from facilities intended to serve the AAM community.

### ***G. Partnering with Economic Development Agencies***

Economic development agencies (EDAs) are playing a key role in supporting the integration of AAM in States across the country. Some EDAs are offering economic incentives to AAM companies to locate facilities in their respective states. Others are working with their local test ranges to market their services to AAM companies. Still others are acting as convenors to bring together stakeholders to ready their respective States for AAM.

These efforts are helping to create a more favorable environment for AAM development and deployment. By offering incentives, EDAs are making it more attractive for AAM companies to set up shop in their states. EDAs also play a key role in creating an AAM ready workforce by working with both education and employment agencies. By working with test ranges, EDAs are helping to ensure that AAM companies have the testing infrastructure they need to test and develop their vehicles. By convening stakeholders, EDAs are helping to build consensus driven regulation and policies, creating an entire transportation and infrastructure ecosystem, and bringing together diverse stakeholders around AAM.

Michigan DOT Office of Aeronautics (MDOT Aeronautics) is creating a multi-agency group with its business development agency to coordinate its AAM efforts. MDOT Aeronautics has collaborated with the Michigan Economic Development Corporation (MEDC), specifically their Office of Future Mobility and Electrification (OFME), to enhance emerging aviation technologies and businesses. MEDC OFME works across government, academia, and private industries to support start-ups and scale ups for mobility

and electrification efforts. This is an ongoing initiative with the vision to create a stronger state economy through safer, more equitable and environmentally sound transportation for all Michigan residents. MEDC OFME and MDOT launched the Michigan Mobility Funding Platform to provide grants to mobility and electrification companies looking to deploy their technology solutions in Michigan. Over time, the platform will evolve to enable Michigan-based organizations (public and private) to launch their own mobility and electrification funding initiatives.

#### **H. Promoting Air Service**

There are some State aviation agencies that support air service within communities across the State and could potentially play a role in supporting access to AAM operations for underserved communities. For example, Wyoming DOT (WYDOT) Aeronautics Division has a long history of promoting and supporting commercial air service throughout the State. Wyoming DOT Aeronautics Division is granted funding by the State legislature every biennium to enter into minimum revenue guarantees with several airlines. This funding ensures uninterrupted service by a reliable airline in areas of the State that might not otherwise attract an airline to serve their communities. It also allows communities with established air service to add additional routes or seasonal service. Funding is also set aside for airports to promote air service in their communities.

#### **I. Public Utilities and Electricity**

A few States are exploring ways to partner with the utility companies to develop a plan to distribute electricity to airports. Power generation and transmission will need to be increased to be able to charge a network of electrical aircraft. States can partner with utility companies to ensure infrastructure is in place to install aircraft charging systems at airports and vertiports.

It is critical that the U.S. Department of Energy consider access to electrical grids for aviation in its criteria for strengthening the nation's overall electrical supply system.

Thank you for the opportunity to provide input on behalf of the States on AAM. NASAO looks forward to continuing the dialogue on the AAM strategy and other issues related to AAM.

Sincerely,



Gregory Pecoraro  
NASAO President and CEO