The Advanced Air Mobility Comprehensive Plan

LIFTing AAM to Maturity in the United States

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Created by the Advanced Air Mobility Interagency Working Group

U.S. Department of Transportation

Advanced Air Mobility
Interagency Working Group

Table of Contents

CHAPTER 1. INTRODUCTION

Advancing the AAM National Strategy

The following Comprehensive Plan (i.e., the Plan) accompanies the Advanced Air Mobility (AAM) National Strategy, which details the challenges that must be addressed to bridge the gap between AAM's early implementation and the envisioned future: a mature, scaled, and smartly integrated AAM system. These challenges relate to technological readiness, policy, community engagement, and necessary work in planning and workforce development.

As envisioned in the *AAM Coordination and Leadership Act*, the AAM Interagency Working Group (IWG) has devised this Plan to help implement the recommendations in the AAM National Strategy and support the safe and secure introduction of AAM in the United States. The recommendations are presented as concise statements, organized into high-level implementation actions and sequenced across four distinct strategic action phases (referred to as LIFT action phases). These action phases are designed to guide AAM beyond its initial operations through purposeful, collaborative, and incremental accomplishments in research, engagement, policy development, and technical deployment. Each phase builds on the last to help transform the aviation ecosystem in the United States. Consistent with the AAM National Strategy, the goal is to provide safe, secure, efficient, and connected transportation options that integrate seamlessly with other transportation systems and benefit all Americans.

Under this Plan, Federal agencies will work closely over the next decade and in the years ahead with State, local, tribal, and territorial (SLTT) governments, as well as industry and academic leaders, to advance AAM in the United States and beyond through the following LIFT action phases:

L **Leverage existing programs to support innovation and begin operations:** This phase uses existing aviation regulatory frameworks, programs, and procedures to enable near-term operations (phase 1).

I **Initiate engagement with partners, research and development, and smart planning:** This phase brings the right people together to identify the policies, technologies, and local planning strategies that will prepare the aviation ecosystem for beneficial transformation without disrupting ongoing operations (phase 2).

F **Forge new policies and models responsive to public needs:** This phase includes actions that inform new regulations, procedures, and public programs to establish the oversight structures, funding mechanisms, and policy documents needed to guide the standard conduct and development of AAM and its supporting infrastructure (phase 3).

T **Transform the aviation ecosystem:** This phase envisions a future in which technologies and procedures are standardized and ready for mass deployment, enabling scaled operations of AAM that enhance efficiency, maintain or improve safety, and support integration with other aircraft, drones, and smart transportation systems (phase 4).

These phases involve overlapping efforts that naturally cascade actions from one step to the next. They are broadly aligned with the 2–10+-year timeline established by Congress per the *Advanced Air Mobility Coordination and Leadership Act*.

This Plan presents an optimistic vision of the future, highlighting the benefits of new technologies and investments in the United States. At the same time, it remains realistic about the challenges ahead, such as uncertain funding mechanisms, delays in achieving technological goals, and the risks of misaligned or untimely regulatory and oversight structures.

Most importantly, the Plan emphasizes the need for continued interagency collaboration in testing, research, policy development, and deployment of new technologies and operating systems. Perhaps the greatest lesson learned from developing the strategy is that a lack of such coordination can lead to unnecessary delays, as agencies may be required to interrupt policy efforts of other agencies to revise or adapt one another's policies to account for their respective responsibilities and concerns. Making adjustments after publication of a policy or regulation is always more difficult and is best avoided through early joint work and development on recognized challenges.

To that end, this Plan presents an organized and collaborative approach by partner agencies to share resources and expertise in support of a new industry while still meeting their core mission requirements. It distills the recommendations defined in the AAM National Strategy into actionable steps that are further organized into the four LIFT phases and assigns responsibilities to specific agencies.

Through appropriate interagency coordination and oversight, the Plan aims to foster a shared understanding of the challenges at hand, helping leaders and their successors design thoughtful policy solutions. These policy solutions, exercised through discrete programs and agency authorities, must be flexible enough to promote innovation and dynamic enough to respond to industry developments and public sentiments.

The Plan also identifies the resources necessary to succeed, highlights any gaps in those resources, and provides a clear framework for prioritizing and sequencing efforts. Finally, the Plan introduces mechanisms to promote accountability through tracking and measuring progress across the Federal Government.

A full version of the LIFT action phases is presented in Appendix A to align and sequence all recommended actions in the AAM National Strategy.

LIFT Action Phase Timeline

2–3 Years	4–8 Years	8+ Years

L — **Leverage** Exisiting Programs to Support Innovation and Begin Operations

I — **Initiate** Engagment with Partners, Research and Development, and Smart Planning

F — **Forge** New Policy and Models Responsive to Public Needs

T — **Transform** the Aviation Ecosystem

CHAPTER 2. INTERAGENCY COLLABORATION

Ongoing Coordination for Successful Implementation

Advancing the U.S. aviation system toward a highly complex but promising future will not only take time but also strong interagency coordination and regular industry involvement. Failing to effectively coordinate research and policy efforts ahead of deployment could lead to potentially costly and avoidable missteps, such as the following:

- ○ **Unused infrastructure investments:** Local governments may spend on infrastructure that cannot be used.
- ○ **Misaligned Federal research:** Agencies could invest years in research efforts tackling the same issues but heading in incompatible directions.
- ○ **Constrained industry design:** U.S. companies may design to specifications that limit supporting infrastructure.
- ○ **Fragmented policy development:** Agencies may develop policies to enable one aspect of AAM without other agencies being sufficiently informed or having complementary policies in place to allow the policy to work as intended.

Improved interagency coordination could also lead to significant public savings while reducing burden and expenses for U.S. innovators. For instance, gathering data needs from multiple agency policy and research offices, meeting regularly to share data needs, and jointly planning test opportunities can accelerate policy development, eliminate redundancies in taxpayer-funded research projects, and reduce the number of tests (and associated costs) aircraft manufacturers must undergo when developing new aircraft.

Because interagency collaboration is essential to AAM's successful maturity, this Plan contains specific recommendations to guide those efforts. Originally outlined in Pillar 7 in the AAM National Strategy, these recommendations are presented first in the following section to stress the continued need for interagency focus. For purposes of sequencing and tracking, these additional recommendations are also included in the full version of the LIFT action phases in Appendix A.

Overarching Recommendations

Recommendation 7.1: Develop an ongoing and consistent interagency coordination effort that ensures completion of the recommendations of this Strategy.

Lead Agency: *Executive Office of the President with support from U.S. Department of Transportation (DOT)*

NEXT STEPS:

- ○ Convene an interagency working group at the White House-level to implement a document outlining how to execute the recommendations in the AAM National Strategy (Strategy).
- ○ Develop a new charter and identify group members to oversee and coordinate implementation of the AAM Comprehensive Plan (Plan).

Recommendation 7.2: All agencies should plan to incorporate existing recommendations in the Strategy and Plan into their annual budget requests and spending plans beginning in Fiscal Year (FY) 2027.

Lead Agency: All IWG agencies

NEXT STEPS:

○   Plan future budget requests and spending plans consistent with the Strategy and Plan, beginning in FY 2027 and beyond.

Recommendation 7.3: Congress should examine existing aviation funding methods and, if necessary, update them.

Lead Agency: Congress with support from DOT

NEXT STEPS:

○   Consider a collaborative effort with aviation, fueling, and energy industries to establish fair approaches to funding. future airspace needs.
○   Determine whether any new funding mechanisms require appropriate legislation.
○   Implement any newly established funding scheme that supports National Airspace System (NAS) transformation.

Recommendation 7.4: Demonstrate global leadership in advanced aviation by removing regulatory barriers and adapting economic policies to secure investments, partnerships, and security assurances needed for a strong U.S. aviation industry.

Lead Agency: DOT, Department of State (State), and the Federal Aviation Administration (FAA) with support from the Department of Commerce (DOC)

NEXT STEPS:

○   Identify regulatory barriers and economic policy that inhibit investments in U.S. aviation companies, operators, manufacturers, and other stakeholders.
○   Determine new regulatory standards and economic rules without compromising safety, security, and/or national interest.
○   Collaborate with the International Civil Aviation Organization (ICAO) to engage directly with foreign governments to develop international standards and recommended practices that ensure global harmonization of AAM policies.
○   Promote and strengthen the international competitiveness of U.S. AAM exports through the DOC's International Trade Administration (ITA).
○   Facilitate policy development that supports AAM companies' access to international markets and global supply chain and manufacturing.

Recommendation 7.5: Proactively review regulations regarding small commercial aircraft manufacturing, operations, and infrastructure to find ways to open safe, performance-based regional, charter, and flexible service markets for AAM and other small commercial air services.

Lead Agency: FAA with support from DOT, the National Aeronautics and Space Administration (NASA), the U.S. Department of Homeland Security (DHS), and DOC

NEXT STEPS:

○   Establish Safety Risk Management reviews of regulations to conduct operations to identify barriers that can be mitigated through performance-based regulations factoring in current aircraft complexity and risk.

- Coordinate findings with partner agencies involved in security and economic licensing/investment and develop regulatory reform work plan.
- Revise or develop enabling regulations to permit growth of regional air service market ahead of AAM maturity.

Recommendation 7.6: Leverage Public-Private Partnerships and other appropriate structures to facilitate and accelerate investments in, and sustained adoption of, AAM technologies.

Lead Agency: *DOT with support from the U.S. Department of Energy (DOE) and DOC*

NEXT STEPS:

- Review available infrastructure investment and funding tools available from the Federal Government.
- Develop best practices based on taxpayer savings, project timelines, and public benefits.
- Work with Congress to promote, revise, or create an investment program that aligns with best practices.

Recommendation 7.7: Enhance Federal Government research and development efforts, with a focus on precompetitive work to advance technologies that will propel AAM (e.g., advanced batteries, airframe designs, and detect-and-avoid solutions).

Lead Agency: *NASA with support from the U.S. Department of War (DOW), DOE, and DOT/FAA*

NEXT STEPS:

- Continue to develop more sophisticated technology platforms that can be shared across agencies and with industry partners to better incubate innovative safety and efficiency technologies. Examples include:
  - Developing advanced electrified propulsion and energy storage systems,
  - Improving occupant safety and ride comfort,
  - Reducing noise and emissions footprint of aircraft operations,
  - Advancing high-rate composites manufacturing technology, and
  - Developing state-of-the-art simulation tools for use by leading AAM companies.

CHAPTER 3. A NEW NATIONAL STRATEGY

Recommendations and Action Plans

This chapter presents the recommendations and action plans across the six technical pillars in the AAM National Strategy. While the information is provided here to provide necessary context for the recommendations and their implementation actions, readers are strongly encouraged to consult the National Strategy to fully understand the rationale behind the actions presented.

Pillar 1: Airspace

> **Recommendation 1.1:** Capitalize on existing modernization efforts to transform air traffic control systems and further enable all Federal air traffic controllers to provide services that ensure the safe, secure, and efficient use of dynamic and high-tempo airspace in the future.
>
> **Lead Agency:** *FAA with support from NASA, DOW, the Federal Communications Commission (FCC), and the National Telecommunications and Information Administration (NTIA)*

NEXT STEPS:

○ Establish requirements for future air traffic control automation systems and decision-support tools to enable safe and efficient high-tempo airspace operations.

○ Plan for the development of new automation systems and decision-support tools that accommodate increased data sharing and collaboration among all airspace users, including third-party service systems with autonomy and artificial intelligence-based computing.

○ Develop a roadmap for airspace modernization, integrating new systems to support mature-state AAM operations within FAA's Automation Evolution Strategy (AES) framework.

○ Deploy systems and decision-support tools, as funding allows, under a revised AES.

> **Recommendation 1.2:** Support research, development, testing, and implementation of new surveillance solutions for low-altitude, high-density operations.
>
> **Lead Agency:** *FAA, NTIA and the FCC, with support from NASA and DOW*

NEXT STEPS:

○ Conduct research and data analysis to evaluate the suitability of current and emerging surveillance technologies for the National Airspace System (NAS), ensuring AAM and the entire NAS is prepared to safely manage increased traffic while also identifying gaps, best practices, and opportunities for consistent implementation of industry standards.

○ Establish controlled testing environments to assess surveillance technologies in a variety of settings, including urban and rural areas, and collect data through partnerships with industry and academic stakeholders.

○ Foster the development of new cooperative and/or noncooperative surveillance technologies to support AAM requirements, including research into alternative solutions such as third-party aviation traffic management services and technologies such as mobile networks or global satellite service providers as part of a new shared responsibility model between Federal air traffic controllers and third parties.

○ Perform interoperability testing on emerging AAM surveillance systems.

- Collaborate with regulatory bodies and industry groups to establish surveillance system standards that ensure security, reliability, and low latency.
- Determine the implementation path for integrating self-reported position data and information flows for data from third-party services to enhance surveillance coverage in AAM operations.
- Implement a multilayered surveillance network combining various technologies, ensuring scalability and redundancy to adapt to growing traffic as AAM expands.

Recommendation 1.3: Research new methods of communication between aircraft and air traffic management to enable air traffic to be more efficiently managed.

Lead Agency: *FAA, FCC, and NTIA with support from NASA and DOW*

NEXT STEPS:

- Conduct research and data analysis to evaluate the feasibility of different communication systems for AAM, including modernization of systems on existing spectrum allotted for such use or using commercial mobile, satellite, and/or radio services as part of a Federal/commercial collaborative approach for AAM and the NAS.
- Conduct communication technology testing in real-world scenarios, evaluating their reliability and latency with multiple AAM vehicles.
- Foster the development of scalable, secure communication systems suitable for high-density AAM operations while ensuring redundancy through fallback protocols.
- Test the interoperability between AAM communication systems and existing air traffic control networks for coordination among all AAM operational personnel.
- Address challenges, such as radio interference, spectrum management, and cybersecurity.
- Collaborate with regulatory bodies and industry groups to establish communication protocol standards that ensure security, reliability, and low latency.
- Determine how to integrate new communication systems into the existing NAS.
- Implement digital communications systems combining various technologies, ensuring scalability and redundancy to adapt to growing traffic as AAM expands.

Recommendation 1.4: Establish information exchange protocols, technology requirements, and security requirements for integrated updates to facilitate free flows of information among providers of air traffic management services in cooperative environments and other areas.

Lead Agency: *FAA with support from NASA, DOW, Department of Justice (DOJ), DHS, FCC, and NTIA*

NEXT STEPS:

- Identify information services and data exchange requirements to support NAS and AAM operations.
- Establish information exchange protocols, technology requirements, and security standards to enable data sharing between private and government AAM service providers.
- Define performance requirements, data formats, and standards for data sharing to ensure consistency and interoperability across AAM and nearby airspace operations, facilitating effective conflict management and safety in airspace transitions.
- Develop the information services and interfaces needed to support the AAM operations in air traffic services and cooperative areas.

Recommendation 1.5: Research and develop the requirements, roles, and responsibilities expected of third parties in complementary air traffic management and surveillance operations and the related regulatory framework.

Lead Agency: *FAA with support from NASA, DOW, DOJ, DHS, FCC, and NTIA*

NEXT STEPS:

- Research and develop a regulatory framework for third-party systems in AAM traffic management and surveillance operations, including roles, responsibilities, and oversight mechanisms.
- Research emergency and priority of operations to develop effective methods for accommodating emergency situations and reviewing operational priorities within the new regulatory framework.
- Define roles and responsibilities of operators, third-party service suppliers, FAA, and DOW in a federated system and establish performance requirements and certification standards.
- Determine separation standards and define cooperative area constructs and rule sets.
- Explore amendments in regulatory frameworks through rulemaking for cooperative area operations.

Pillar 2: Infrastructure

Recommendation 2.1: Use existing regulations, standards, policies, and processes, where applicable, to encourage and facilitate the use of existing or repurposed infrastructure for near- and medium-term AAM operations.

Lead Agency: *DOT and FAA with support from all IWG agencies*

NEXT STEPS:

- Review regulations, standards, practices, policies, and programs to identify ways to facilitate early growth of AAM operations.
- Use existing planning processes to revise guidance for near- and mid-term planning opportunities for AAM operations.

Recommendation 2.2: Engage with SLTT governments and industry on future models for planning and financing AAM infrastructure while funding existing programs for early operations.

Lead Agency: *DOT with support from FAA and Congress*

NEXT STEPS:

- Reauthorize and appropriate an AAM Infrastructure Pilot Program for future years.
- Analyze existing Federal grant and financing programs to determine applicability and eligibility for AAM infrastructure planning, design, and construction activities.
- Begin deliberations with SLTT governments and industry on possible future programs or funding mechanisms to provide sustained Federal support for AAM infrastructure needs, including vertiports.

Recommendation 2.3: Identify facility and equipment requirements specific to remotely piloted/supervised and autonomous AAM aircraft at airports, vertiports, and heliports and assist with demand/capacity balancing of low-altitude airspace.

Lead Agency: *FAA with support from NASA and DOW*

NEXT STEPS:

- Establish formal agreements with NASA and DOW to leverage research capabilities to address infrastructure requirements for automated takeoff, landing, and taxi functions.
- Establish/update guidance and standards as applicable based on Federal research.

Recommendation 2.4: Expand guidance on vertiport design.

Lead Agency: FAA with support from NASA and DOW

NEXT STEPS:

○ Use existing formal agreements between FAA, NASA, and DOW to leverage shared testing environments to collect aircraft performance data for AAM aircraft.

○ Continue ongoing research programs, including operational testing with AAM manufacturers (e.g., vertical and short takeoff and landing aircraft), electrification and hydrogen research, and aircraft rescue and firefighting research.

○ Publish a new performance-based Unified Vertical Lift Infrastructure Advisory Circular once sufficient operational data have been collected.

Recommendation 2.5: Research energy infrastructure needs for AAM, plan joint demonstrations that establish best practices, and work with industry to plan for ample energy distribution.

Lead Agency: DOE with support from FAA and NASA

NEXT STEPS:

○ Establish formal agreements between DOT/FAA, DOE, and NASA to expand current electrification research projects to comprehensively include all transportation electrification needs.

○ Establish demonstration sites to test electrification and hydrogen fueling requirements.

○ Engage with industry and standards organizations to develop charging/fueling methodologies and standards suitable for policy adoption.

Recommendation 2.6: Address aviation spectrum needs and spectrum bands for future airspace management transformation.

Lead Agency: FAA, FCC, and NTIA with support from DHS, DOW, and NASA

NEXT STEPS:

○ Conduct research and engage key stakeholders as soon as practicable to evaluate the aviation industry's equipage and spectrum needs, including bandwidth, throughput, and other characteristics required for spectrum-supported functions that may support AAM.

○ Evaluate whether regulatory or policy changes may be needed to support AAM and facilitate growth in use of aviation-appropriate spectrum.

○ Begin a coordinated policy effort to plan transitions and upgrades of communications, navigation, and surveillance (CNS) systems needed to support AAM and other growing integrated airspace users.

Recommendation 2.7: Develop Complementary Positioning, Navigation, and Timing (PNT) options.

Lead Agency: DOT with support from FAA, DHS, DOW, FCC, NASA, NTIA, the National Institute of Standards and Technology (NIST), and DOE

NEXT STEPS:

○ Continue coordinating with Federal agencies to implement the Complementary PNT Action Plan.

○ Identify diverse range of complementary technologies for PNT through field testing.

○ Lead policy development on geographically appropriate solutions to facilitate adoption of CPNT services.

○ Implement adoption of suitable technologies for Federal use.

Recommendation 2.8: Develop enhanced weather detection, forecasting, and reporting network capabilities for AAM operations.

Lead Agency: *FAA with support from the National Oceanic and Atmospheric Administration (NOAA), NASA, DOW, DHS, FCC, and NTIA*

NEXT STEPS:

○ Develop an interdependent ground-based, low-altitude, weather-sensing network that not only accurately depicts microscale weather conditions but also provides dynamic decision-support tools.
○ Leverage commercial weather technology and establish standards for weather-reporting networks that AAM communities would implement while establishing qualifications and certification requirements for third-party weather data providers.
○ Establish a research collaborative to determine requirements and criticality of weather data transmitted by an interdependent, low-altitude weather-sensing network over cooperative areas.
○ Develop algorithms and decision-support tools to enhance capabilities for aircraft to avoid microscale weather phenomena.
○ Equip aircraft with weather sensors to collect and report weather information, making each aircraft in a cooperative area a contributing beacon to the network.
○ Continue research led by NOAA on airborne weather detection technology and data transmission.
○ Implement a data link from the aircraft to ground infrastructure to transmit data as they are collected in real time.
○ Assimilate the increased number of weather observations and move from not only a networked near real-time system to a high-resolution, low-latency, short-term weather-forecasting system.

Pillar 3: Security

Recommendation 3.1: Apply existing security regulatory frameworks to initial AAM operations, where applicable, and assess risks to inform future security policy decisions.

Lead Agency: Transportation Security Administration (TSA) and FAA

NEXT STEPS:

○ Implement current vetting, screening, and prescreening requirements for AAM based on existing regulatory frameworks.
○ Continue to implement current cybersecurity requirements as part of the AAM aircraft certification process and designate certificated entities.

Recommendation 3.2: Monitor intelligence reports and conduct recurring security risk assessments, taking into account anticipated changes in AAM operations, to guide policy decisions on future security measures needed to address risks.

Lead Agency: *TSA and FAA, with support from the U.S. Intelligence Community and law enforcement partners*

NEXT STEPS:

○ Leverage input from IWG partners to submit collection requirements to the intelligence community, utilizing standard intelligence processes to request incorporation of AAM requirements in collection and analysis plans.
○ Conduct risk assessments of initial AAM operations and known use cases, led by TSA and FAA in coordination with appropriate interagency partners and subject matter experts.
○ Identify AAM industry stakeholders for future intelligence briefs and facilitate their membership to joint government–industry intelligence sharing forums.
○ Assess security gaps based on any identified risk—whether stemming from emergent threats or unique operations that could present additional vulnerabilities—and, if needed, develop and implement mitigations consistent with agency missions and authorities, ensuring industry input and interagency coordination as appropriate.

○ Implement innovative vetting and screening solutions for evolving AAM operations at scale, including through public-private partnerships.

Recommendation 3.3: Utilize existing regulatory frameworks to ensure proper vetting of AAM pilots, ground crew, and anyone entering the sterile areas of federalized airports, while continuing risk analysis to assess future vetting needs.

Lead Agency: TSA with support from FAA and the Federal Bureau of Investigation (FBI)

NEXT STEPS:

○ Continue current vetting procedures for certificated entities and current procedures for prescreening passengers entering the sterile side of Federalized airports, as applicable in the near-term AAM environment.
○ Work with AAM industry stakeholders and aircraft operators to fully understand proposed business models for the medium- to long-term and how any passenger prescreening requirements may be facilitated through Secure Flight, as well as vetting of AAM operators or other personnel as remote and autonomous operations emerge and evolve.

Recommendation 3.4: For initial AAM operations, align physical screening requirements with existing TSA regulations and security programs, unless emergent risks dictate otherwise.

Lead Agency: TSA

NEXT STEPS:

○ Work with appropriate airport authorities to submit proposals for AAM operating locations to the FAA while also engaging TSA Federal Security Directors to determine and implement viable screening options.
○ Review current or previous screening models—with relevant industry input—that may be used or modeled (e.g., Reimbursable Screening Services Program (RSSP), Screening Partnership Program, and VIP protocols) for physical screening occurring away from the airport, as well as enroute transportation from off-airport screening locations.

Recommendation 3.5: Expand and extend the current TSA Reimbursable Screening Services Program (RSSP) or establish it as a permanent program to improve access to screening for AAM operations entering the sterile areas of federalized airports.

Lead Agency: Congress and TSA

NEXT STEPS:

○ Engage Congress to provide a fulsome understanding and status of the RSSP.
○ Evaluate and issue legislation to expand and extend the pilot program or authorize transition to a permanent program.

Recommendation 3.6: Establish a working group to evaluate AAM cyber vulnerabilities, identify gaps, and develop recommendations for any required legislative, policy, or regulatory changes.

Lead Agency: TSA and FAA with support from DOE, DOJ, and the Cybersecurity and Infrastructure Security Agency (CISA)

NEXT STEPS:

○ Direct relevant IWG Security Subgroup members to review existing cybersecurity working groups for interagency discussions on aviation cybersecurity and determine if one already exists that can address recommendations 3.1–3.5 and incorporate them into existing charters.

○ Establish a new interagency working group—led by TSA and FAA and supported by CISA—if no suitable groups exist, to identify appropriate interagency members and draft a charter that addresses aviation cybersecurity and AAM.

Recommendation 3.7: Ensure agency Privacy Impact Assessments (PIAs) are updated as the AAM industry evolves and leverage best practices for cybersecurity in accordance with the National Institute of Standards and Technology (NIST) framework for protecting Personally Identifiable Information (PII).

Lead Agency: All IWG agencies

NEXT STEPS:

○ Have all relevant agencies review and update PIAs, as necessary, ensuring they remain current as AAM operations mature.

Recommendation 3.8: Leverage existing Department of Homeland Security (DHS), Department of War (DOW), and Department of Commerce (DOC) analyses on supply chain resilience in related sectors to help agencies understand AAM supply chain needs.

Lead Agency: *DHS and DOC with support from DOE, DOW, DOJ, Intelligence Community, and law enforcement*

NEXT STEPS:

○ Have relevant IWG Security Subgroup members meet with DHS and DOC supply chain centers to acclimate them to AAM supply chain issues and enable them to consider new efforts to assess vulnerabilities and develop risk mitigations for future AAM operations.

○ Relevant IWG Security Subgroup members should leverage DHS and DOC supply chain center assessments, analyses, and best practices to evaluate the need for mechanisms that will ensure supply chain resilience and mitigate the risk of exploitation, including seeking legislative proposals if such mechanisms are not already in place.

○ Relevant IWG Security Subgroup members should leverage DOW's analysis of emerging technology systems and components which may originate from a covered foreign nation and consult with DOJ/FBI to evaluate the need to implement mechanisms that will ensure the AAM supply chain does not pose any risks to U.S. national security.

Pillar 4: Community Planning and Engagement

Recommendation 4.1: Clearly communicate information and guidance on roles, responsibilities, and best practices for AAM planning to SLTT governments.

Lead Agency: FAA with support from NASA

NEXT STEPS:

○ Develop a standard information package focusing on:
  • Clarifying the roles of relevant public (i.e., Federal, Tribal, territorial, State, regional, and local) and private entities in planning and developing a system-wide network and siting takeoff and landing facilities, taking into account environmental impact (e.g., noise and visual impacts) and their potential mitigations as well as differences between private and public facilities (including those in the National Plan of Integrated Airport Systems).
  • Outlining the steps of successful AAM implementation, including but not limited to vehicle manufacturing (performed by original equipment manufacturers), aircraft certification (performed by FAA), vertiport system and facility planning, operator roles, and integration of these operations into the airspace so that communities understand the entire process.

- Identifying and providing existing resources on vertiport design and development, land use compatibility, and potential impacts, including how and where the public may be involved.
- Developing topic-specific guidance and/or fact sheets for communities to consider when reviewing, permitting, engaging with, and approving vertiport sites, covering topics such as noise, overflights, community outreach, and other environmental considerations.
- Developing an "AAM Primer" that provides needed information such as existing resources on vertiport design and development, land use compatibility, and potential impacts.

Recommendation 4.2: Develop and publish community involvement resources regarding AAM operations.

Lead Agency: FAA with support from NASA

NEXT STEPS:

○ Review current best practices to assess applicability to AAM.

○ Communicate early the roles and responsibilities for AAM operators and community leaders who are considering or have decided to pursue AAM operations using webpages, webinars, and other targeted communications to local elected officials and land use planners.

○ Make shared information available on FAA's public-facing webpage utilizing information from recommendation 4.1 and best practices from traditional aviation and previous new entrants such as drones and commercial space.

○ Publish best practices for AAM stakeholders (i.e., vehicle operators, airport operators, and local elected officials) to equip them with the knowledge and resources needed to facilitate meaningful community involvement, including effectively engaging communities, encouraging exchange of information, and soliciting community viewpoints early in the process before decisions affecting those communities are made.

Recommendation 4.3: Research and develop tools to help communities, policymakers, and aircraft developers and operators evaluate noise impacts.

Lead Agency: FAA with support from NASA and DOW

NEXT STEPS:

○ Gather nonproprietary, standardized noise data from initial AAM aircraft/operations and flight tests, develop tools to evaluate the noise exposure from their operations, and make these noise data and tools available to the public, allowing communities to make informed, fact-based decisions about how to incorporate AAM operations.

○ Conduct additional research to measure and predict noise from AAM operations, providing crucial information across all levels of government to understand and proactively plan for AAM and the approval of associated infrastructure in the context of land-use and environmental review considerations.

○ Expand research to understand how communities will respond to noise from AAM operations. This work will help SLTT governments conduct community engagement and enable communities to provide informed input into AAM planning decisions.

○ Continue coordination of aviation noise through the Federal Interagency Committee on Aviation Noise (FICAN) as well as between other Federal agencies as needed, to accelerate research across Federal agencies via expanded interagency collaboration while also engaging a broad group of stakeholders through the NASA-led Urban Air Mobility Noise Working Group (UNWG).

○ Assess modifications needed to FAA policy based on research, outreach, and coordination results.

Recommendation 4.4: Identify mission-critical AAM use cases supporting public safety, disaster response, medical transportation, and other needs and publish case studies.

Lead Agency: NASA with support from DOT and DOJ

NEXT STEPS:

○ Collaborate across Federal agencies to provide examples of AAM capabilities and a framework to consider savings, benefits, and impacts in a way that can serve as a foundation for exploration and potential advocacy, benefiting both Federal agencies and localities responsible for delivering public services and stewarding public funds. The resulting framework and materials should encompass the following:

○ A documented source of real-world examples and lessons learned to support the entire AAM ecosystem.

   • Descriptions of specific use cases in an actual or realistic locations.
   • An analysis of existing costs.
   • A projection of costs to implement the AAM use case.
   • Discussion of anticipated benefits and impacts of utilizing AAM.
   • Lessons learned from actual implementers (if the use case has been implemented).

○ Consider where AAM could support public good mission delivery, including emergency/disaster response and recovery, human services and medical transportation, and law enforcement.

○ Collaborate and share information across government agencies to increase efficiency (e.g., avoid different agencies "reinventing the wheel" by leveraging work from other agencies).

Recommendation 4.5: Promote accessibility for those with disabilities in the planning and design of AAM aircraft, vertiports, and other supporting infrastructure.

Lead Agency: DOT and FAA

NEXT STEPS:

○ Identify accessibility needs for people with physical, sensory, and cognitive disabilities.

○ Compile previous efforts and conduct research on how to consider accessibility needs in the design of AAM aircraft, vertiports, and associated ground facilities.

○ Review existing accessibility and nondiscrimination authorities, policies, and guidance to determine if and how they would apply to AAM aircraft, vertiports, and associated ground facilities.

○ Consider the development of guidance, best practices, or policy to encourage the development of accessible AAM operations.

Pillar 5: Workforce

Recommendation 5.1: To support the potential growth of AAM, develop an interagency action plan to determine future workforce impacts, address future workforce needs, and provide training and workforce development resources.

Lead Agency: U.S. Department of Labor (DOL) with support from ED, DOW, and FAA

NEXT STEPS:

○ Leverage existing resources such as the Perkins Act, the Workforce Innovation and Opportunity Act, Skillbridge, Registered Apprenticeship Programs, and FAA Aviation Workforce Development Grant Programs to build workforce pipelines.

- Identify current capabilities and competency gaps in current workforce development programs.
- Collaborate across government, industry, and academia to anticipate impacts, determine training needs, and produce a transition plan to build the AAM workforce.
- Determine if emerging aviation technology needs new skill development criteria or if existing career training and education schemes meet needs to develop needed workforce.
- Identify military specialty codes which have unique and relevant skills or certifications that will easily transfer directly to the civil AAM Industry and develop programs which will enable direct and preferred hiring pathways for such qualified personnel into the AAM industry upon completion of military service.
- Develop legislative proposals and programs to address any identified gaps if existing programs are unable to meet projected workforce demand.

Recommendation 5.2: Update Standard Occupational Classification (SOC) codes to include occupational profiles for AAM-related careers.

Lead Agency: OMB and DOL with support from ED, DOW, and FAA

NEXT STEPS:

- Coordinate with industry to develop a list of occupations needed to manufacture, operate, and maintain AAM systems, potentially mirroring FAA's process for identifying unmanned aircraft systems (UAS) occupations under the UAS–Collegiate Training Initiative.
- Provide feedback to O*NET to revise existing SOC profiles to integrate AAM relevant information.
- Collaborate to develop new SOC codes (keeping in mind 2028 SOC revision deadlines) specifically tailored to AAM career fields to not only support academic, industry, and workforce programs but also foster long-term planning, ensuring the relevance and effectiveness of the U.S. AAM workforce.
- Optionally, Congress directly acts to change SOC codes as needed for the AAM industry.

Recommendation 5.3: Promote AAM and aviation in existing and emerging workforce development programs and plans at both the K–12 and post-secondary levels and engage with existing White House-level organizations to ensure AAM is considered in national strategies that promote technical innovation, excellence, and workforce development initiatives.

Lead Agency: DOT, NASA, DOL, and ED with support from FAA

NEXT STEPS:

- Participate in the Committee on Science, Technology, Engineering, and Math Education (CoSTEM), led by the Office of Science and Technology Policy to ensure science, technology, engineering, and mathematics (STEM) education programs, investments, and activities in Federal agencies are synchronized to introduce K–12 learners to careers in AAM.
- Collaborate with White House supported initiatives and programs to ensure STEM programs are aligned at the national level and address gaps discovered in AAM workforce readiness.
- Collaborate with the National Science Foundation's STEM and Advanced Technological Education programs supporting community college STEM and career and technical education (CTE) programs as well as postsecondary education.

Pillar 6: Automation

Recommendation 6.1: Without deterring existing certification efforts, develop an aviation autonomy roadmap in consultation with the AAM industry.

Lead Agency: FAA with support from NASA, DOT, and DOW

NEXT STEPS:

- Create levels of autonomy characterization in collaboration with government, academia, and industry stakeholders.
- Develop a comprehensive research, development, testing, and demonstration plan that will move toward acceptance of autonomous supporting systems (i.e., vehicle and infrastructure) and airspace operations.
- Develop a comprehensive functional architecture that describes the functions and interactions—and characterizes automation at task, system, and vehicle levels—to safely enable scalable operations.
- Position U.S. leadership in global adoption of routine autonomous AAM operations and their scaling.

Recommendation 6.2: Assess the feasibility and cost-effectiveness of virtual testing to provide data needed to understand widescale use of increasingly autonomous aircraft and scaled operations.

Lead Agency: FAA and NASA with support from DOT and DOW

NEXT STEPS:

- Develop a plan to assess the feasibility of digital engineering and virtual testing with industry partners and government. The plan should encompass the following:
    - The people, processes, and tools to reduce cost, time, and development of certified systems.
    - Quantified benefits of Federal engagement in private technology, research, and development.

Recommendation 6.3: Research, develop, and implement processes to identify benefits as well as risks of automation technologies.

Lead Agency: FAA with support from DOW, NASA, and DOE

NEXT STEPS:

- Research the risks and stated safety benefits and risks of Simplified Vehicle Operations (SVO) and Simplified Flight Controls (SFC).
- Examine pilot training, evaluation, and accessibility of SVO and SFC, including AAM flight simulator credit throughout the range of operating schemes from piloted to autonomous.
- Address the risks and incorporate means of adoption of SVO and SFC.

Recommendation 6.4: Maintain and coordinate government aircraft testing and evaluation efforts to accelerate safe AAM aircraft to market.

Lead Agency: FAA with support from DOW and NASA

NEXT STEPS:

- Coordinate existing testing resources to reduce costs and redundancies in testing new aircraft and operational concepts, such as vertiports and advanced air traffic concepts.
- Share existing resources and data needs across agencies.

LIFT PLAN

The following tables organize the AAM IWG recommendations by the four strategic LIFT action phases. The phases need to be coordinated in a continuous effort to transform the aviation system for new entrants, like AAM, to mature beyond initial operations. Some recommendations will appear in more than one phase, but they will have different actions assigned to them. This structure reflects the many multifaceted recommendations that will need to progress from research to policy development, to final implementation phases, before being considered complete and ready for integration. Each step is considered essential to reach final maturity, but timing can be accelerated or stalled based on prioritization of other essential missions to coordinating agencies, as well as direction and funds from Congress.

The action items listed for each recommendation are brief recaps of the more detailed actions and rationales found in chapters 2 and 3 of this Plan. Readers should reference the recommendations in those chapters for any clarification on specific action items.

Table Key	
SYMBOL	**DEFINITION**
	Requires new research efforts
	Requires development of new policy
	Requires new legislation or authority that Congress will need to enact
	Requires additional budgeting and funds
—	Not applicable

Phase 1—Leverage Existing Programs to Support Innovation and Begin Operations

REC.	PHASE 1 ACTION ITEMS	AGENCY	RESEARCH	POLICY	LEGISLATION	BUDGET
2.1	**Use existing infrastructure planning processes:** • Review regulations, policies and programs to facilitate early AAM operations. • Identify opportunities for near- and mid-term planning.	**Lead:** DOT, FAA **Support:** All IWG agencies	🔍	—	—	—
2.2	**Expand and fund existing infrastructure programs:** • Reauthorize and appropriate an AAM Infrastructure Pilot Program. • Analyze existing Federal financing programs for AAM infrastructure support.	**Lead:** DOT **Support:** FAA, Congress	🔍	—	—	—
2.4	**Expand guidance on vertiport design:** • Leverage shared testing environments to collect aircraft performance data. • Continue ongoing research programs such as operational testing, electrification and hydrogen research, and emergency response. • Publish a new performance-based Unified Vertical Lift Infrastructure Advisory Circular.	**Lead:** FAA **Support:** NASA, DOW	🔍	🛡	—	—
3.1	**Apply current regulatory frameworks:** • Apply current vetting, screening, and prescreening requirements for AAM. • Apply current cybersecurity requirements in the AAM aircraft certification process.	**Lead:** TSA, FAA	—	—	—	—
3.2	**Conduct recurring security risk assessments:** • Incorporate AAM in collection and analysis plans for standard intelligence processes. • Conduct risk assessments of initial AAM operations and use cases. • Engage AAM industry on anticipated operations for future intelligence briefs. • Facilitate AAM industry membership to joint government–industry intelligence forums.	**Lead:** TSA, FAA **Support:** Intelligence Community, Law Enforcement	🔍	—	—	—
3.3	**Vet aviation personnel and assess future vetting needs:** • Continue current vetting procedures for certificated entities and current procedures for prescreening passengers.	**Lead:** TSA **Support:** FAA, FBI	—	—	—	—
3.4	**Align physical screening needs with existing TSA regulations and security requirements:** • Work with stakeholders to determine airport-specific screening options.	**Lead:** TSA	—	—	—	—
3.5	**Expand and extend TSA reimbursable screening program:** • Demonstrate benefits of RSSP expansion. • Legislate expansion and extension of the pilot program or authorize a permanent program.	**Lead:** Congress, TSA	—	—	⚖	—
4.2	**Develop and publish community involvement resources:** • Review current best practices to assess applicability to AAM. • Target early communications to local elected officials and land use planners. • Use best practices from traditional aviation and previous new entrants on FAA's public-facing webpage. • Publish best practices for AAM stakeholders to facilitate meaningful community involvement.	**Lead:** FAA **Support:** NASA	—	🛡	—	—

REC.	PHASE 1 ACTION ITEMS	AGENCY	RESEARCH	POLICY	LEGISLATION	BUDGET
5.1	**Develop interagency action plan for future workforce:** • Leverage existing resources to build workforce pipelines.	*Lead:* DOL *Support:* ED, DOW, FAA	🔍	📋	—	—
6.4	**Coordinate government aircraft testing and evaluation efforts:** • Coordinate existing testing resources to reduce costs and redundancies in testing new aircraft and operational concepts.	*Lead:* FAA *Support:* DOW, NASA	🔍	—	—	—
7.2	**Incorporate recommendations into agency budgets:** • Plan funding requests and spending plans for FY 2027 budgets and beyond.	*Lead:* All IWG agencies	—	📋	—	🥧
7.5	**Review regulations to open small air service operations:** • Establish safety reviews of regulations governing small and regional air operations to identify barriers.	*Lead:* FAA *Support:* DOT, NASA, DHS, DOC	🔍	📋	—	—
7.6	**Improve Public–Private Partnership and other programs:** • Review available Federal infrastructure investment and funding tools.	*Lead:* DOT *Support:* DOE, DOC	🔍	—	—	—
7.7	**Enhance Federal research and development efforts:** • Continue developing pre-market technologies for safety and efficiency in aviation. • Develop advanced electrified propulsion and energy storage systems. • Improve occupant safety and ride comfort. • Reduce noise and emissions footprint of aircraft operations. • Advance high-rate composites manufacturing technology. • Develop state-of-the-art simulation tools for use by leading AAM companies.	*Lead:* NASA *Support:* DOW, DOE, and DOT/FAA	🔍	—	—	🥧

🔍 = Requires new research efforts; 📋 = Requires development of new policy; ⚖️ = Requires new legislation or authority; 🥧 = Requires additional budgeting and funds; and — = Not applicable.

Phase 2—Initiate Engagement, Research and Development, and Smart Planning

REC.	PHASE 2 ACTION ITEMS	AGENCY	RESEARCH	POLICY	LEGISLATION	BUDGET
1.1	**Modernize and synchronize Federal air traffic control:** • Establish requirements for future air traffic control automation and decision-support tools. • Research and develop new systems and tools that increase data sharing and collaboration among all airspace users.	**Lead:** FAA **Support:** NASA, DOW, FCC, NTIA	🔍	—	—	📊
1.2	**Establish new surveillance solutions:** • Research suitability of surveillance technologies and industry standards. • Establish public–private testing environments to assess surveillance technologies. • Foster development of new surveillance technologies. • Execute interoperability testing.	**Lead:** FAA, FCC, NTIA, **Support:** NASA, DOW	🔍	—	—	—
1.3	**Research new communications solutions:** • Research feasibility of different communication systems for AAM. • Conduct testing of reliability and latency with multiple AAM aircraft. • Foster development of scalable, secure, and redundant communication systems. • Test the interoperability between new systems and existing air traffic control networks. • Address challenges such as radio interference, spectrum management, and cybersecurity.	**Lead:** FAA, NTIA, FCC **Support:** NASA, DOW	🔍	—	—	—
1.4	**Establish information exchange protocols:** • Identify information services and data exchange requirements to support NAS and AAM operations. • Establish information exchange protocols, technology requirements, and security standards. • Define conflict management performance requirements, data formats, and standards. • Develop information services and interfaces needed to support AAM operations in air traffic services and cooperative areas.	**Lead:** FAA **Support:** NASA, DOW, DOJ, DHS, FCC, NTIA	🔍	—	—	—
1.5	**Research and develop the requirements, roles and responsibilities of third parties in cooperative areas:** • Research roles, responsibilities, and oversight mechanisms. • Research and develop a regulatory framework for third-party systems. • Research emergency and priority of operations in cooperative areas. • Determine separation standards and define cooperative area constructs and rule sets.	**Lead:** FAA **Support:** NASA, DOW, DOJ, DHS, FCC, NTIA	🔍	—	—	—
2.3	**Identify infrastructure requirements for remote/autonomous operations:** • Research infrastructure requirements for automated takeoff, landing, and taxi functions.	**Lead:** FAA **Support:** NASA, DOW	🔍	—	—	—
2.5	**Perform a comprehensive analysis of power capacity/demand:** • Expand electrification research projects to include all transportation electrification needs. • Establish demonstration sites to test electrification and hydrogen fueling requirements.	**Lead:** DOE **Support:** FAA, NASA	🔍	—	—	—

REC.	PHASE 2 ACTION ITEMS	AGENCY	RESEARCH	POLICY	LEGISLATION	BUDGET
2.6	**Address spectrum needs for future airspace management:** • Research equipage and spectrum needs of the future aviation industry.	*Lead:* FAA, FCC, NTIA *Support:* DHS, DOW, NASA	🔍	—	—	—
2.7	**Develop options for Complementary Positioning, Navigation, and Timing:** • Implement the Complementary PNT Action Plan. • Identify complementary technologies for PNT through field testing.	*Lead:* DOT *Support:* FAA, DHS, DOW, FCC, NASA, NTIA, NIST, DOE	🔍	—	—	—
2.8	**Modernize aviation weather detection, forecasting, and reporting:** • Develop interdependent ground-based and low-altitude weather-sensing network. • Leverage commercial weather technology. • Develop algorithms and decision-support tools to avoid microscale weather phenomena. • Equip aircraft with weather sensors to collect and report weather information. • Continue research on airborne weather detection technology and data transmission.	*Lead:* FAA *Support:* NOAA, NASA, DOW, DHS, FCC, NTIA	🔍	—	—	—
3.3	**Vet aviation personnel and assess future vetting needs:** • Work with the AAM industry to understand vetting needs for proposed future business models, including for AAM passengers or AAM operators, particularly when remote and autonomous operations emerge.	*Lead:* TSA *Support:* FAA, FBI	🔍	—	—	—
3.4	**Align physical screening needs with existing TSA regulations and security requirements:** • Review alternative physical screening methods that may serve as models for expanded future AAM operations.	*Lead:* TSA	🔍	—	—	—
3.6	**Review aviation cybersecurity authorities:** • Identify cybersecurity working groups that can address AAM-specific cybersecurity topics or issues. • Establish a new working group specific to AAM cybersecurity, if none exists.	*Lead:* TSA, FAA *Support:* DOE, DOJ, CISA	🔍	—	—	—
3.8	**Leverage DHS/DOW/DOC supply chain analyses:** • Leverage DHS and DOC supply chain centers to assess vulnerabilities and develop risk mitigation for AAM. • Leverage DOW's analysis and consult with DOJ/FBI to ensure the AAM supply chain does not pose any risks to U.S. national security.	*Lead:* DHS, DOC *Support:* DOE, DOW, DOJ, Intelligence Community, Law Enforcement	🔍	—	—	—
4.1	**Prepare and disseminate information package for local AAM planning:** • Clarify roles of relevant public and private entities in AAM planning and development. • Outline steps of successful AAM implementation. • Identify and provide existing resources on vertiport design and development, land use compatibility, and potential public impacts. • Develop topic-specific guidance for consideration in approving vertiport sites.	*Lead:* FAA *Support:* NASA	🔍	—	—	—

REC.	PHASE 2 ACTION ITEMS	AGENCY	RESEARCH	POLICY	LEGISLATION	BUDGET
4.3	**Expand research and develop tools to evaluate noise and annoyance impacts:** • Adapt/develop publicly available tools to evaluate the noise exposure from AAM operations and other new entrants. • Conduct additional research to measure and predict noise generated by AAM operations. • Expand research to understand how communities will respond to AAM noise. • Coordinate through the Federal Interagency Committee on Aviation Noise and the NASA-led Urban Air Mobility Noise Working Group to accelerate research and engage stakeholders. • Coordinate through the NASA-led UNWG.	*Lead:* FAA *Support:* NASA, DOW	🔍	—	—	—
4.4	**Identify mission-critical AAM public good use cases:** • Consider and present savings, benefits, and impacts of Federal and local government use of AAM. • Identify where AAM supports or enhances public good mission delivery. • Collaborate and share information across government agencies to increase efficiency.	*Lead:* NASA *Support:* DOT, DOJ	🔍	—	—	—
4.5	**Promote accessibility in AAM:** • Identify accessibility needs for people with physical, sensory, and cognitive disabilities. • Conduct research on how to consider accessibility needs in the design of AAM aircraft, vertiports, and associated ground facilities. • Review accessibility and nondiscrimination authorities, policies, and guidance.	*Lead:* DOT and FAA	🔍	—	—	—
5.1	**Develop interagency action plan for future workforce:** • Identify current capabilities and competency gaps in workforce development programs. • Collaborate across industry, government, and academia to anticipate impacts, training needs, and transition plans. • Determine if emerging aviation technology requires new training or education. • Develop programs to enable direct and preferred hiring pathways for qualified military personnel.	*Lead:* DOL *Support:* ED, DOW, FAA	🔍	—	—	—
5.2	**Update Standard Occupational Classification codes for AAM:** • Develop a list of jobs needed to manufacture, operate, and maintain AAM systems. • Provide feedback to revise existing SOC profiles.	*Lead:* OMB, DOL *Support:* ED, DOW, FAA	🔍	—	—	—
5.3	**Ensure AAM is part of science, technology, engineering, and mathematics (STEM) education in national strategies:** • Use the Committee on STEM Education to introduce K–12 learners to careers in AAM. • Collaborate with White House-supported initiatives and programs to address gaps in AAM workforce readiness. • Collaborate with the National Science Foundation's STEM, Career and Technical Education (CTE), and postsecondary programs.	*Lead:* DOT, NASA, DOL, ED *Support:* FAA	🔍	🛡	—	—

REC.	PHASE 2 ACTION ITEMS	AGENCY	RESEARCH	POLICY	LEGISLATION	BUDGET
6.1	**Develop an aviation autonomy roadmap:** • Create levels of autonomy with government, academia, and industry stakeholders. • Develop a comprehensive research, development, testing, and demonstration plan. • Develop a comprehensive functional architecture that describes the functions and interactions to safely enable scalable operations. • Position U.S. leadership in global adoption of routine autonomous AAM operations and their scaling.	*Lead:* FAA *Support:* NASA, DOT, DOW	🔍	🛡	—	—
6.2	**Explore advanced aviation testing and development concepts with industry:** • Develop plan to demonstrate digital engineering and virtual testing for certification purposes. • Identify people, processes, and tools to reduce cost, time, and development of certified systems. • Quantify benefits of earlier Federal engagement in private technology research and development.	*Lead:* FAA, NASA *Support:* DOT, DOW	🔍	🛡	—	—
6.3	**Assess benefits and risks of automation technologies:** • Research risks and safety benefits of SVO and SFC. • Examine related pilot training, evaluation, and accessibility needs of SVO and SFC, including AAM flight simulator credit.	*Lead:* FAA *Support:* DOW, NASA, DOE	🔍	—	—	—
6.4	**Coordinate government aircraft testing and evaluation efforts:** • Share existing testing resources and data needs across agencies.	*Lead:* FAA *Support:* DOW, NASA	🔍	🛡	—	🥧
7.1	**Develop an ongoing and consistent interagency coordination effort:** • Convene an interagency working group at the White House-level to determine how to execute the recommendations included in the AAM National Strategy. • Develop a new charter and identify group members to coordinate implementation of the Plan.	*Lead:* EOP *Support:* DOT	🔍	🛡	—	—
7.3	**Examine existing aviation funding methods:** • Consider a collaborative effort with aviation, fueling, and energy industries to establish fair approaches to funding future airspace needs.	*Lead:* Congress *Support:* DOT	🔍	🛡	—	—
7.4	**Demonstrate global leadership in advanced aviation:** • Identify regulatory barriers and economic policy. • Determine new regulatory standards and economic rules without compromising safety, security, and/or national interest.	*Lead:* DOT, State, FAA *Support:* DOC	🔍	—	—	—
7.5	**Review regulations to open small air service operations:** • Coordinate findings with partner agencies involved in security and economic licensing/investment and develop a regulatory reform work plan.	*Lead:* FAA *Support:* DOT, NASA, DHS, DOC	—	🛡	—	—
7.6	**Improve Public–Private Partnership and other programs:** • Develop best practices plan and supporting documentation.	*Lead:* DOT *Support:* DOE, DOC	🔍	—	—	—

🔍 = Requires new research efforts; 🛡 = Requires development of new policy; ⚖ = Requires new legislation or authority; 🥧 = Requires additional budgeting and funds; and — = Not applicable.

Phase 3—Forge New Policies and Models Responsive to Public Needs

REC.	PHASE 3 ACTION ITEMS	AGENCY	RESEARCH	POLICY	LEGISLATION	BUDGET
1.1	**Modernize and synchronize Federal air traffic control:** • Research and develop a roadmap for airspace modernization within FAA's AES.	**Lead:** FAA **Support:** NASA, DOW, FCC, NTIA	🔍	🛡	⚖	📊
1.2	**Establish new surveillance solutions:** • Establish standards that ensure security, reliability, and low latency. • Determine implementation path for enhanced AAM surveillance coverage.	**Lead:** FAA, NTIA, FCC **Support:** NASA, DOW	—	🛡	—	—
1.3	**Research new communications solutions:** • Establish protocol standards that ensure security, reliability, and low latency. • Determine implementation path for integrating new communication systems into NAS.	**Lead:** FAA, FCC, NTIA **Support:** NASA, DOW	—	🛡	—	📊
1.4	**Establish information exchange protocols:** • Define conflict management performance requirements, data formats, and standards.	**Lead:** FAA **Support:** NASA, DOW, DOJ, DHS, FCC, NTIA	—	🛡	—	—
1.5	**Research and develop the requirements, roles, and responsibilities of third parties in cooperative areas:** • Define Federal and private roles/responsibilities of operators and third-party service providers in a federated system. • Develop rules for cooperative area operations.	**Lead:** FAA **Support:** NASA, DOW, DOJ, DHS, FCC, NTIA	—	🛡	—	—
2.2	**Expand and fund existing infrastructure programs:** • Deliberate with SLTT governments and industry on future programs and funding mechanisms to sustain Federal support of infrastructure needs, including vertiports.	**Lead:** DOT **Support:** FAA and Congress	—	🛡	⚖	📊
2.3	**Identify infrastructure requirements for remote/autonomous operations:** • Establish guidance and standards.	**Lead:** FAA **Support:** NASA, DOW	—	🛡	—	—
2.5	**Perform a comprehensive analysis of power capacity/demand:** • Standardize charging/fueling methodologies to a point that is ready for policy adoption.	**Lead:** DOE **Support:** FAA, NASA	—	🛡	—	—
2.6	**Address spectrum needs for future airspace management:** • Evaluate regulatory or policy changes needed to support AAM growth in use of spectrum.	**Lead:** FAA, FCC, NTIA **Support:** DHS, DOW, NASA	—	🛡	—	—
2.7	**Develop options for Complementary Positioning, Navigation, and Timing:** • Develop policies on geographically appropriate CPNT services.	**Lead:** DOT **Support:** FAA, DHS, DOW, FCC, NASA, NTIA, NIST, DOE	—	🛡	—	—
2.8	**Modernize aviation weather detection, forecasting, and reporting:** • Establish standards for weather-reporting networks. • Establish certification requirements for third-party weather data providers. • Establish requirements and criticality of weather data transmitted by weather-sensing networks.	**Lead:** FAA **Support:** NOAA, NASA, DOW, DHS, FCC, NTIA	—	🛡	—	—
3.2	**Conduct recurring security risk assessments:** • Adjust security policies (such as vetting, screening, cybersecurity) as needed from emergent threats or unique operators.	**Lead:** TSA, FAA **Support:** Intelligence Community, Law Enforcement	—	🛡	—	📊

REC.	PHASE 3 ACTION ITEMS	AGENCY	RESEARCH	POLICY	LEGISLATION	BUDGET
3.7	**Ensure Privacy Impact Assessments (PIAs) are updated:** • Continuously review and update PIAs, as needed.	*Lead:* All agencies	—	📄	—	—
3.8	**Leverage DHS/DOW/DOC supply chain analyses:** • Develop policies that secure crucial supply chain elements for AAM.	*Lead:* DHS, DOC *Support:* DOE, DOW, DOJ, Intelligence Community, Law Enforcement	—	📄	—	🥧
4.1	**Prepare and disseminate information package for local AAM planning:** • Develop an "AAM Primer" that provides essential information and existing resources.	*Lead:* FAA *Support:* NASA	—	📄	—	—
4.3	**Expand research and develop tools on noise and annoyance:** • Assess modifications needed to FAA policy based on research and outreach results.	*Lead:* FAA *Support:* NASA, DOW	—	📄	—	—
4.5	**Promote accessibility in AAM:** • Consider the development of new guidance, best practices, or other policy for AAM accessibility.	*Lead:* DOT	—	📄	—	—
5.1	**Develop action plan for future workforce:** • Develop legislative proposals and programs to address gaps.	*Lead:* DOL *Support:* ED, DOW, FAA	—	📄	⚖️	🥧
5.2	**Update Standard Occupational Codes for AAM:** • Develop new SOC codes specifically tailored to AAM career fields. • Optionally, Congress changes SOC codes.	*Lead:* OMB, DOL *Support:* ED, DOW, FAA	—	📄	⚖️	—
6.3	**Assess benefits and risks of automation technologies:** • Address the risks and incorporate means of adoption of SVO and SFC.	*Lead:* FAA *Support:* DOW, NASA, DOE	—	📄	—	—
7.3	**Examine existing aviation funding methods:** • Determine whether any new funding mechanisms require appropriate legislation.	*Lead:* Congress *Support:* DOT	—	📄	⚖️	—
7.4	**Demonstrate global leadership in advanced aviation:** • Collaborate with ICAO and foreign governments to develop international standards and recommended practices, ensuring global harmonization of AAM policies. • Promote and strengthen the international competitiveness of U.S. AAM exports through the DOC's International Trade Administration (ITA) • Facilitate policy development that supports AAM companies' access to international markets and global supply chain and manufacturing.	*Lead:* DOT, State, FAA *Support:* DOC	—	📄	—	—
7.5	**Review regulations to open small air service operations:** • Revise or develop enabling regulations to permit growth of regional air service market ahead of AAM maturity.	*Lead:* FAA *Support:* DOT, NASA, DHS, DOC	—	📄	—	—
7.6	**Improve Public–Private Partnership and other programs:** • Promote, revise, and create investment programs.	*Lead:* DOT *Support:* DOE, DOC	—	📄	⚖️	—

🔍 = Requires new research efforts; 📄 = Requires development of new policy; ⚖️ = Requires new legislation or authority; 🥧 = Requires additional budgeting and funds; and — = Not applicable.

Phase 4—Transform the Aviation Ecosystem

REC.	PHASE 4 ACTION ITEMS	AGENCY	RESEARCH	POLICY	LEGISLATION	BUDGET
1.1	**Modernize and synchronize Federal air traffic control:** • Deploy systems and decision-support tools under a revised AES.	**Lead:** Congress **Support:** FAA, NASA, DOW, FCC, NTIA	—	—	⚖️	🥧
1.2	**Establish new surveillance solutions:** • Implement a multilayered surveillance network combining various digital technologies, ensuring scalability and redundancy to adapt to growing traffic as AAM expands.	**Lead:** Congress **Support:** FAA, NASA, DOW	—	—	⚖️	🥧
1.3	**Research new communications solutions:** • Implement a multilayered communications network combining various technologies, ensuring scalability and redundancy to adapt to growing traffic as AAM expands.	**Lead:** Congress **Support:** FAA, FCC, NTIA, NASA, DOW	—	—	—	🥧
1.4	**Establish information exchange protocols:** • Develop information services and interfaces needed to support the AAM operations in air traffic services and cooperative areas.	**Lead:** FAA **Support:** NASA, DOW, DOJ, DHS, FCC, NTIA	—	—	⚖️	🥧
2.2	**Expand and fund existing infrastructure programs:** • Deliberate with SLTT governments and industry on future programs and funding mechanisms to sustain Federal support of infrastructure needs, including vertiports.	**Lead:** Congress **Support:** DOT, FAA	—	—	⚖️	🥧
2.6	**Address spectrum needs for future airspace management:** • Coordinate policy efforts to transition and upgrade future aviation Communicating, Navigation, and Surveillance systems.	**Lead:** Congress **Support:** FAA, FCC, NTIA, DHS, DOW, NASA	—	—	⚖️	🥧
2.7	**Develop options for Complementary Positioning, Navigation, and Timing:** • Implement adoption of suitable technologies for Federal use.	**Lead:** Congress **Support:** DOT, FAA, DHS, DOW, FCC, NASA, NTIA, NIST, DOE	—	—	⚖️	🥧
2.8	**Modernize aviation weather detection, forecasting, and reporting:** • Implement an aircraft-to-ground infrastructure data link to transmit data as they are collected in real time. • Implement a high-resolution, low-latency, short-term weather-forecasting system.	**Lead:** Congress **Support:** FAA, NOAA, NASA, DOW, DHS, FCC, NTIA	—	—	⚖️	🥧
3.2	**Conduct recurring security risk assessments:** • Implement innovative vetting and screening solutions and other risk mitigation strategies for evolving AAM operations at scale, including through Public-Private Partnerships.	**Lead:** TSA, FAA **Support:** Intelligence Community, Law Enforcement	—	🛡️	⚖️	🥧
7.3	**Examine existing aviation funding methods:** • Implement any newly established funding schemes to support NAS transformation.	**Lead:** Congress **Support:** DOT	—	🛡️	⚖️	—

🔎 = Requires new research efforts; 🛡️ = Requires development of new policy; ⚖️ = Requires new legislation or authority; 🥧 = Requires additional budgeting and funds; and — = Not applicable.

RESEARCH PLAN

The following table details all identified research activities needed to support the recommendations of the AAM National Strategy. The responsible agencies and desired outcomes of each research topic are listed. It is important to note that each research topic is likely to require multiple research projects to be conclusive enough for use in policy development or establishment of safety assurance. Also, inclusion of a topic in this table does not guarantee that the needed research has been planned, fully budgeted, or approved by any member agency as of publication.
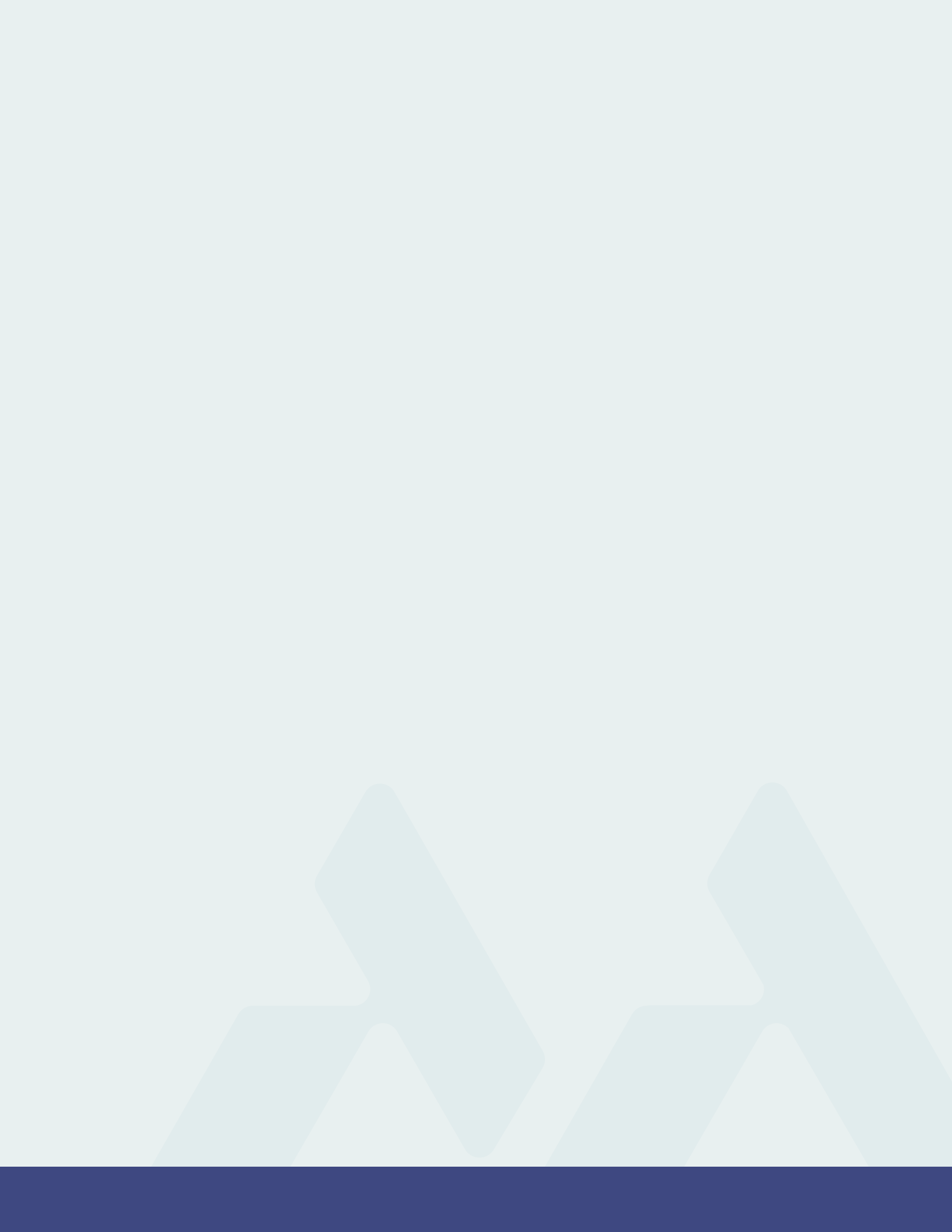
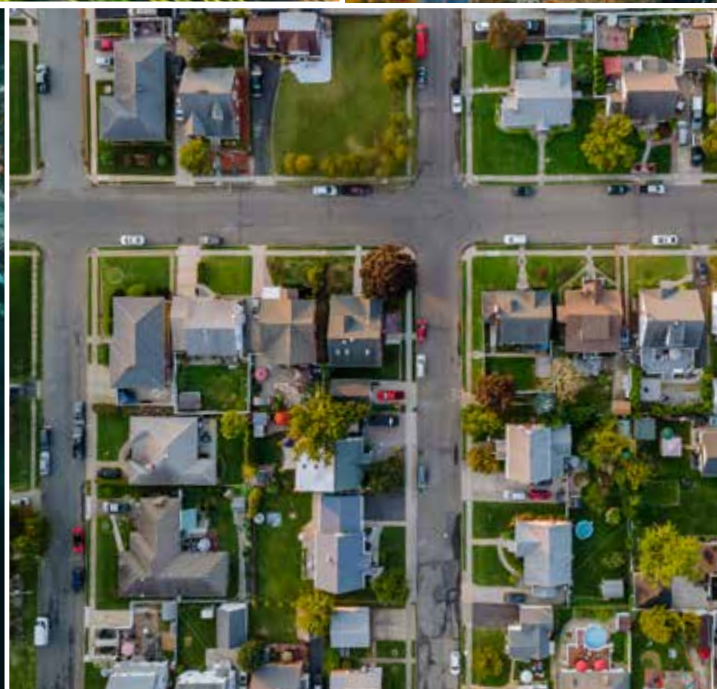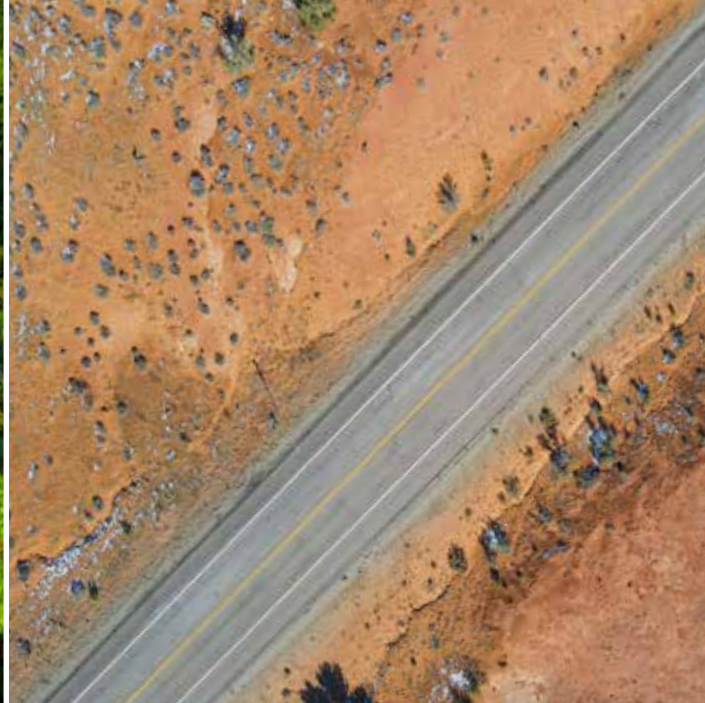**Research Activities Supporting the AAM National Strategy Recommendations**

TOPIC	DESCRIPTION	ENABLES …	LEAD AGENCY	RESEARCH STARTED?
PILLAR 1: AIRSPACE				
Surveillance for low-altitude, high-density operations	While surveillance is the primary tool used by air traffic controllers to provide conflict and separation management in the airspace, new solutions are needed in instances where radar will not work.	Air traffic management in cooperative areas where AAM operations seek to fly in greater numbers with smaller separation.	FAA, NASA, DOW	Yes
Automation methods for aircraft communications	Automated flight information sent over data links that take less bandwidth than voiceover communications and provide more information.	More precise and timely coordination between multiple aircraft in a given area.	FAA, NASA, DOW	Yes
Requirements, roles, and responsibilities of third parties in air traffic management	Clear responsibilities must be established for third parties expected to assist in managing cooperative airspace.	Regulations and enforcement mechanisms to assure air traffic safety in cooperative areas	FAA, NASA	Yes
Wake categories for AAM aircraft	AAM aircraft have different performance characteristics than airplanes or helicopters and require wake studies.	Knowledge of minimum safe distances for other aircraft from AAM aircraft in operation.	FAA	Yes
Separation standards	Assessing AAM aircraft performance characteristics and analyzing the cumulative efficiency of CNS technologies.	Safe proximity limits and separation minima between aircraft in a cooperative environment.	FAA	Yes
Emergency management and operational prioritization	Methods for effectively accommodating emergency situations and determining operation priorities.	Dynamic flight environments capable of adjusting to priority flights.	FAA, NASA	No
Cybersecure networks that facilitate protected information flows to third parties and air traffic control	Information exchange protocols, technology requirements, and processes to facilitate information flows between third parties and air traffic control.	A network that supports traffic coordination and demand management in, through, and out of cooperative areas for all aircraft.	FAA, NASA	No
New air traffic control automation and decision-support tools	Existing Federal automation systems and decision-support tools that support air traffic management need streamlined update processes to ensure compatibility with and adequacy for managing mature AAM operations.	Existing air traffic controllers to connect, manage, and oversee operations managed within cooperative areas and transitioning to air traffic control.	FAA	No
PILLAR 2: INFRASTRUCTURE				
Performance characteristics of AAM aircraft for takeoff and landing clearances	Operational testing of aircraft that can be aggregated to determine minimum design dimensions, support equipment, as well as safety and operating standards.	Detailed guidance for industry, and SLTT governments to implement safe planning of vertiports.	FAA	Yes

TOPIC	DESCRIPTION	ENABLES …	LEAD AGENCY	RESEARCH STARTED?
Remote and Autonomous flight-enabling infrastructure	Identify data, technologies, and procedures required to aid air traffic management flow and demand capacity balancing for automated flight using infrastructure.	Standards, guidance, and possible regulatory requirements for the installation of navigational aids designed to assist autonomous and remote flight.	FAA, NASA	No
Mapping power needs to capacities	Working across agencies and levels of government to project power needs against power supply down to local levels.	Planning to increase energy supply where needed to open more AAM markets.	DOE	No
Demonstration projects to determine optimal energy strategies for vertiports	Studies to determine the available technologies, environmental impact, geographic restrictions, optimal charging constructs, and expected power generation for energy supply and distribution.	Planning to increase energy supply where needed to open more AAM markets.	DOE	No
Suitable spectrum for CNS of future AAM operations	Research, modeling, and forecasts on possible AAM demands for existing spectrum used for CNS, current CNS capacity limits, spectrum suitability, and technologies to maximize spectrum efficiency without sacrificing aviation safety. Research should also explore appropriate cybersecurity and resilience measures that could be included with identified efficiency technologies.	Higher amounts of AAM air traffic to operate in urban areas and share airspace with drones and other aircraft.	FAA, FCC, NTIA	No
VHF spectrum analysis and forecast	Peak demand analyses of forecasted AAM operational markets to guide assessments of spectrum needs for initial piloted operations.	Forecasting on current spectrum limits to time transformation efforts.	FAA, FCC, NTIA	Yes
Ground-to-ground communications options between remote pilots and air traffic controllers	Exploration of alternate communications paths to enable more efficient use of available aircraft bandwidth.	Safe, reliable communications with remote operators.	FAA, FCC, NTIA	Yes
Service concept and technical standards to advance "Aircraft to Everything" and other advanced CNS concepts	Ongoing research on new systems to achieve conflict management through rapid, frequent sharing of digitally transmitted information to networks and directly to aircraft.	Prevention of collisions between densely trafficked aircraft, drones, and obstacles, while balancing demand for and capacity of infrastructure such as vertiports and charging units.	FAA, FCC, NTIA	Yes
Development of complementary PNT systems	Development of complementary PNT specifications and standards, establishment of resources and procedures for complementary PNT testing and evaluation; and creation of a Federal PNT services clearinghouse.	Safe and reliable PNT systems for use in cases of global positioning system outages or denials of service.	DOT	Yes
Advanced weather detection and transmission	Research on airborne technologies that can detect and transmit microscale weather status information.	Technology to assist aircraft in avoiding hazardous weather.	FAA, NOAA	Yes
Localized aviation weather networks	Establishment of options for leveraging commercial weather technology and standards for weather-reporting networks supported by third-party weather data providers.	Real-time "nowcast" weather information readily available for localized flight planning	FAA. NOAA	Yes
Enhanced numerical weather predictive guidance	Assimilation of enhanced weather reports from prior research to advance from "nowcast" to highly accurate, data-driven forecasts of aviation weather hazards in local cooperative areas.	Advanced planning and forecast information to enable farther reaching and high-confidence local weather forecasts for flight planning.	FAA, NOAA	Yes

TOPIC	DESCRIPTION	ENABLES …	LEAD AGENCY	RESEARCH STARTED?
Microscale weather information and decision-support tools	Collection and dissemination of accurate, timely, and pertinent microscale weather information that can be intuitively displayed to support relevant operating areas.	Weather-related regulations and policies for AAM.	FAA, NOAA	Yes
PILLAR 3: SECURITY				
Future screening needs	Analysis of screening alternatives and off-airport screening models.	Passenger security protections in the future.	TSA, FAA	No
Future vetting needs	Analysis of future requirements for vetting of pilots, crew, and aviation workers in AAM.	Vetting of future aviation professionals delivering AAM services.	TSA, FAA	No
RSSP	Evaluation of the TSA RSSP pilot program to determine measures of success indicating: (1) the RSSP program provides the same level of security as standard TSA screening, (2) RSSP does not detract from TSA's ability to ensure the same level of security screening is maintained at the standard TSA checkpoint, without degradation, and (3) RSSP has not caused any other negative unintended consequences that have not been sufficiently remedied.	Operators to fund expansion of passenger screening services to select locations.	TSA	No
Cybersecurity vulnerabilities of support infrastructure	Analysis of electric charging stations or other emerging transportation infrastructure that may exist outside the airport perimeter or in contexts not addressed by current regulations.	Prevention of cyber threats to aviation entering the system from support infrastructure.	TSA, FAA	Yes
Continuous security threat assessments	Threat and risk assessments on AAM operations as industry use cases become better understood.	Appropriate security polices to AAM operations as they grow.	TSA	Yes
Supply chain	Ongoing analysis of threats that would create supply chain disruption of critical components for AAM manufacturers, operators, and maintainers.	Continuous supply of needed materials to keep AAM operations running.	DHS, DOC	Yes
Privacy protections	Risk analysis of communication and data links with AAM aircraft inform any necessary changes in protections to ensure secure communications with privacy policies in place at any point of data collection.	Secure handling of PII throughout AAM vetting and screening processes.	FAA, FCC	No
PILLAR 4: COMMUNITY PLANNING AND ENGAGEMENT				
Community roles resources	Potential impacts of AAM that concern communities.	Guidance to help communities plan for AAM operations	FAA	No
Noise impacts of AAM	Collaborative research effort to understand both the noise generated by AAM operations and the associated community response to noise.	Revised noise guidance and estimation tools to help communities plan AAM sites with community input.	FAA, NASA	Yes
Federal use cases for AAM	Performance requirements for AAM that are relevant to Federal agency missions as well as analysis and research to derive projected costs and benefits for future AAM use cases.	Public good mission profiles for AAM and help with Federal sustainability goals in aviation.	NASA, all IWG agencies	No

TOPIC	DESCRIPTION	ENABLES …	LEAD AGENCY	RESEARCH STARTED?
Accessibility in AAM	Identification of safe solutions to accommodate the needs of people with disabilities, including impaired mobility, audio/visual deficits, and cognitive impairments, in the use of AAM aircraft and support infrastructure.	Safe access to transportation benefits for anyone wishing to use AAM.	DOT/ FAA, NASA	No
PILLAR 5: WORKFORCE				
Future workforce needs	Collaborative research to identify needed job skills that are unique to AAM and attempts to forecast needed labor force to fill needs.	Development of new job classifications, workforce training and development initiatives, and model curricula.	DOL, ED, FAA, NASA	Yes
Available STEM activities to incorporate AAM	Analysis and research on the best opportunities for promoting AAM skills in early education curricula.	Federal focus on promoting job opportunities within AAM careers.	OSTP, DOL, ED, FAA, NASA	Yes
PILLAR 6: AUTOMATION				
Autonomous operations	Validation and verification methods for autonomous operations of aircraft, including methods for artificial intelligence and machine learning.	Safe certifications and operations of increasingly automated aircraft designed to fly in integrated airspace.	NASA, FAA, DOW, DHS	No
Advanced testing capabilities	Further research on distributed testing through immersive, high-definition, virtualization, and validation capabilities	Testing platforms that remove safety risks, resource constraints, and geographic barriers from flight test while reducing costs to industry, government and public. Integrating multiple transportation test environments would allow for holistic testing of systems for compatibility prior to live deployments of new technologies.	DOW, NASA, DOT, DHS	No
SFC	Human factors and flight safety research on simplified flight control schemes designed to ease pilot burden, reduce pilot errors, and simplify flight training requirements.	Pilot training to be more accessible and successful to more aspiring pilots.	FAA, NASA	No

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