NASA + Advanced Air Mobility (AAM)

NASA Aeronautics Research Mission Directorate

www.nasa.gov
NASA’s Advanced Air Mobility (AAM) research will transform our communities by bringing the movement of people and goods off the ground, on demand, and into the sky.
What does Advanced Air Mobility (AAM) look like?

This air transportation system of the future will include low-altitude passenger transport, cargo delivery, and public service capabilities.
According to a 2021 Deloitte study, the U.S. AAM market could reach $115 billion annually, potentially creating 280,000 jobs.

Note: NASA does not endorse any of the companies shown above. This slide is to show that there is innovation happening within U.S. industry with a few vehicle examples.
**NASA’s Role**

**Industry** is building new types of low-altitude aircraft.

**Industry** wants to get these aircraft certified by the Federal Aviation Administration.

**Industry** wants to invent a world where air taxis and drones are used routinely for passenger transport, emergency response, and in the delivery of goods.

**NASA** is delivering data to guide the industry’s development of electric air taxis and drones.

**NASA** is assisting the Federal Aviation Administration in safely integrating these vehicles into the national airspace.

**NASA** will set the stage for a flourishing industry by 2030.
NASA’s Areas of Research

COMMUNITY INTEGRATION

• How these aircraft will fly routinely in cities and rural areas
• Integration with already established transportation systems, buildings, and city policy

AIRSPACE

• Communication between aircraft and air traffic control
• Location of aircraft in the airspace while flying
• Automation of air traffic control systems for unexpected events

INFRASTRUCTURE

• Vertiport research, where the aircraft will take off and land
• Power research, how the aircraft will be powered
• Digital support for aircraft and operators

AIRCRAFT

• Safety of the aircraft design materials
• Noise of the aircraft, making sure it is quiet
• Ride quality for passengers
• Aircraft automation – software and hardware for self-flying aircraft
NASA wants to ensure the U.S. has global leadership in the Advanced Air Mobility market = U.S. economic benefit

NASA’s Value

• **Accelerate technology**: NASA is researching the total system through modeling, simulations, and flights to see how the pieces will work together in harmony (airspace, vertiports, aircraft, automation).

• **Accelerate policy and guidance**: NASA is informing standards that need to be met for these aircraft to fly to enable regulators like the FAA to establish the rules.

• **Accelerate aviation leadership**: NASA will help springboard the AAM industry to enable successful domestic industry business models.
NASA’s Advanced Air Mobility Work = Benefits to You

EMERGENCY RESPONSE
HEALTHCARE
AUTOMATION
VERTIPORTS

TRAVEL TIME
NOISE
INFRASTRUCTURE
FUTURE AIRSPACE

SAFETY
RIDE QUALITY
CARGO DELIVERY
ACCESSIBILITY
NASA’s AAM Partnerships and Collaborations

1. Domestic Research Partners
   - Academia
   - Companies working on AAM aircraft development
   - Companies working on AAM airspace
   - Companies working on AAM infrastructure
   - Other federal government agencies
   - City and state local governments
   - Standards development organizations

2. International Forum for Aviation Research (IFAR)

3. AAM Ecosystem Working Groups
   “AEWGs give NASA researchers a front row seat to industry issues needing to be solved, which helps ensure our research and development around AAM is relevant and timely.” - Davis Hackenberg, previous AAM mission integration manager

https://nari.arc.nasa.gov/aam-portal/
NASA’s AAM Space Act Agreements in Your State

Virginia (highlight state)
- Companies listed

NASA has 80+ domestic and foreign AAM partners in industry, academia, city + state governments, and other government agencies.
NASA is working with cities and states to brainstorm the ways that air taxis and drones, and the infrastructure for this new transportation system, could be integrated into city planning.

The goal is to develop a joint document to describe how this would work in various locations.

- Massachusetts Department of Transportation
- Minnesota Department of Transportation
- The North Central Texas Council of Governments Department of Transportation
- The Ohio Unmanned Aircraft Systems Center of the Ohio Department of Transportation
- City of Orlando, Florida

The team plans to illustrate this concept by using computer modeling software to analyze what elements a city would need to make this successful.
Transfer Data to the FAA

As NASA research is ongoing, the data and results are being transferred to the Federal Aviation Administration to help influence future rules and policy.

NASA is answering questions like:

- What are the design requirements for safe and quiet vehicles?
- What are the pilot training qualifications to fly these aircraft?
- What infrastructure would an airport need to include to support these aircraft?
NASA Projects Supporting AAM

- Revolutionary Vertical Lift Technology
- Transformational Tools and Technologies
- Convergent Aeronautics Solutions
- System-Wide Safety
- Air Mobility Pathfinders
- Airspace Traffic Management Exploration
- Advanced Capabilities Emergency Response Operations
NASA Centers Supporting AAM

Advanced Air Mobility research is happening at all four NASA aeronautics centers located in California, Virginia and Ohio.

- Ames Research Center: Silicon Valley, California
- Armstrong Flight Research Center: Edwards, California
- Glenn Research Center: Cleveland, Ohio
- Langley Research Center: Hampton, Virginia
Want to Learn More?

NASA’s AAM website: nasa.gov/aam

NASA’s Advanced Air Mobility Playbook series: in both English and Spanish. Video series and corresponding web articles. Season one in English is live here: https://www.nasa.gov/feature/nasa-is-creating-an-advanced-air-mobility-playbook/

OSTEM content: Students can engage with the principles of AAM in a variety of ways — including hands-on STEM activities, coding activities, math lessons, and more. https://www.nasa.gov/advanced-air-mobility-aam-stem-toolkit/

Public events: NASA participates in various air shows, conferences, and events each year. Stay tuned to social media to learn more: https://twitter.com/nasaaero
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