



NASA + Advanced Air Mobility (AAM)

NASA Aeronautics Research Mission Directorate



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

Strong Domestic AAM Industry Base



■ Archer



■ Beta



■ Bell



■ ElectraAero



■ Elroy Air



■ Joby



■ Reliable Robotics



■ Wisk



■ Xwing

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



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.

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.



Industry's Role



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



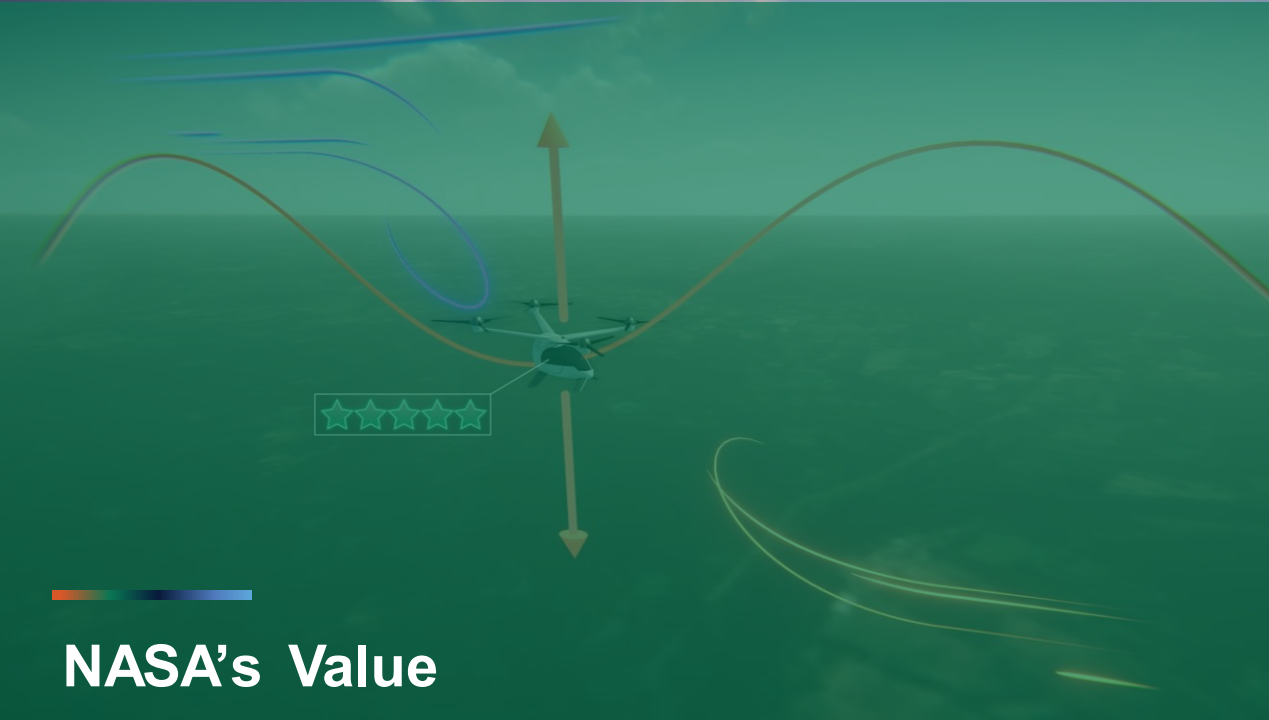
INFRASTRUCTURE

- 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

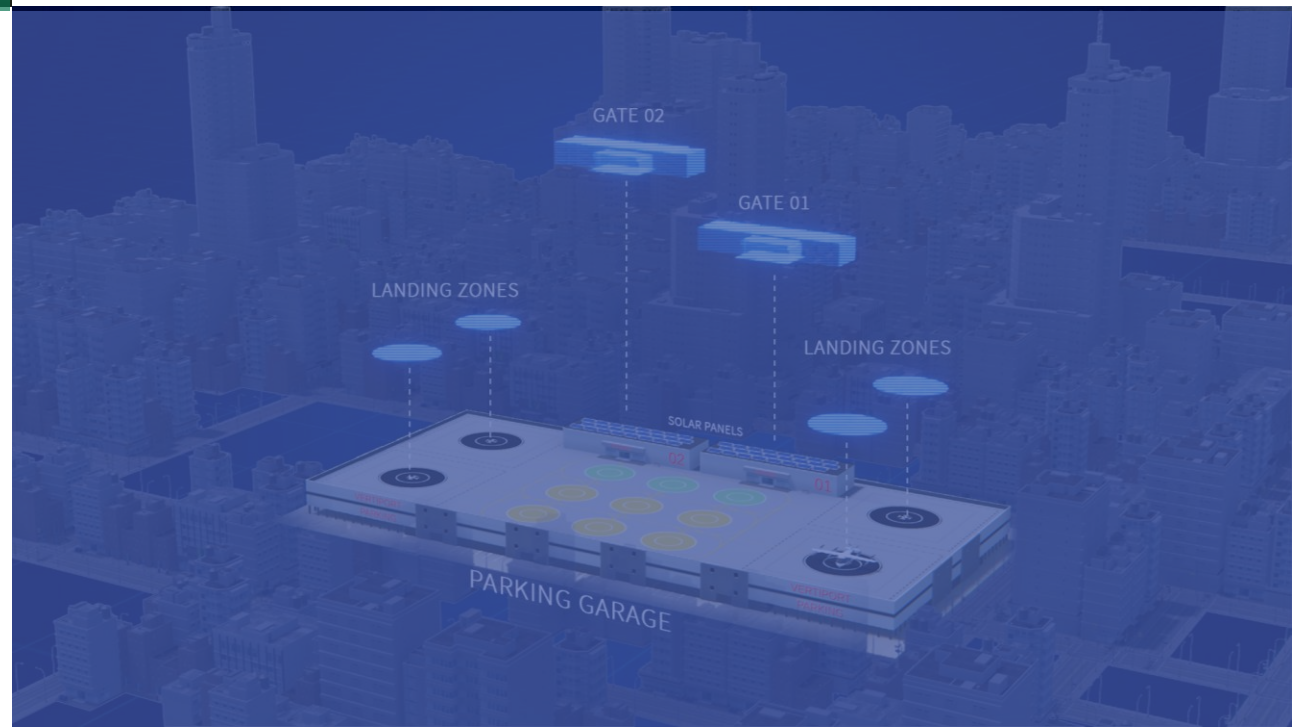
- Safety of the aircraft design materials
- Noise of the aircraft, making sure it is quiet
- Ride quality for passengers
- Aircraft automation – software and hardware for self-flying aircraft



NASA'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.

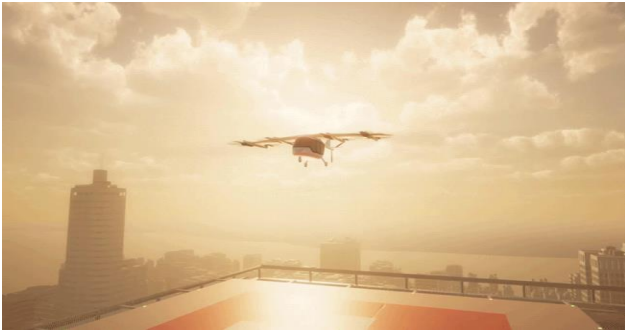
NASA wants to ensure the U.S. has global leadership in the Advanced Air Mobility market = U.S. economic benefit



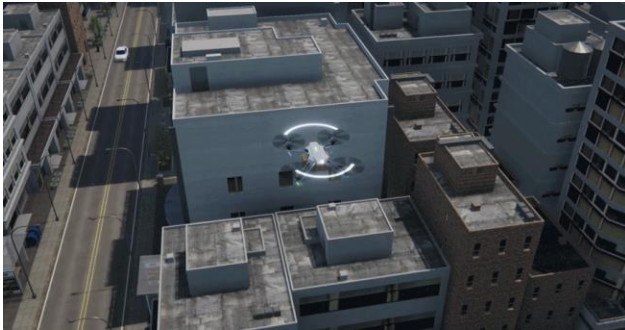
NASA's Advanced Air Mobility Work = Benefits to You



EMERGENCY RESPONSE



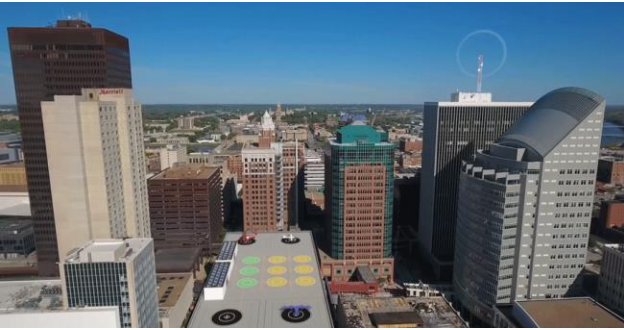
HEALTHCARE



AUTOMATION



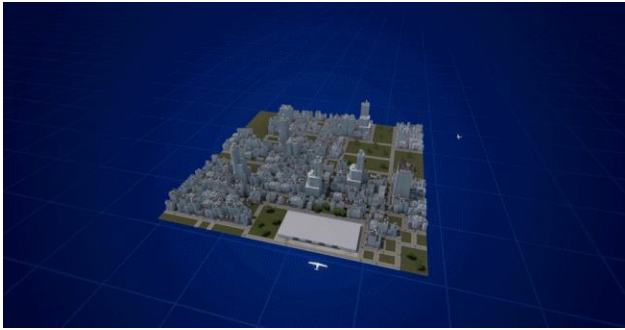
VERTIPTS



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/>

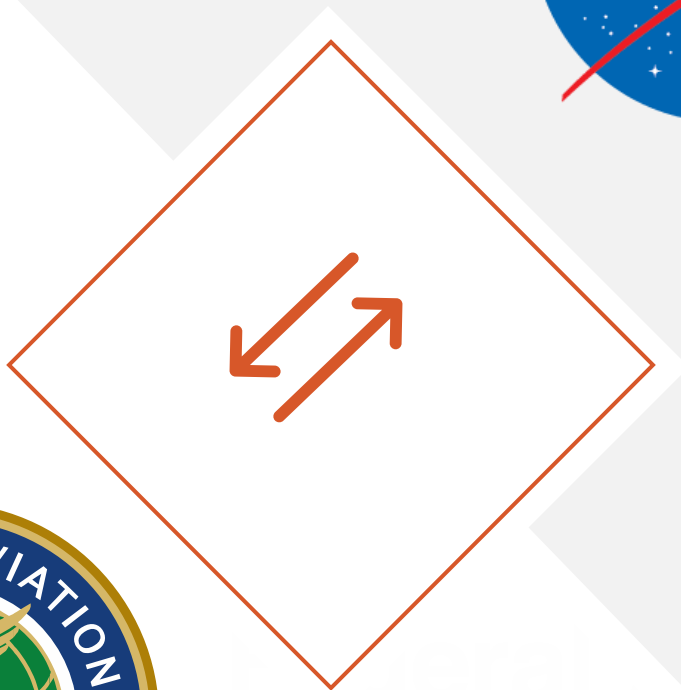
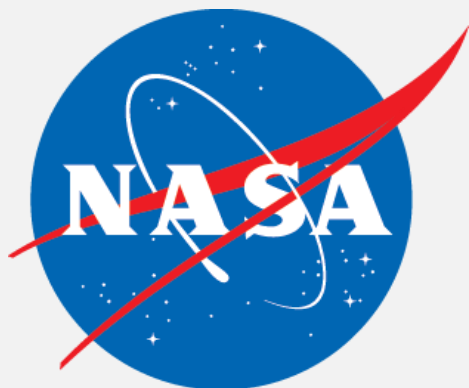
City and State Partnerships

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.

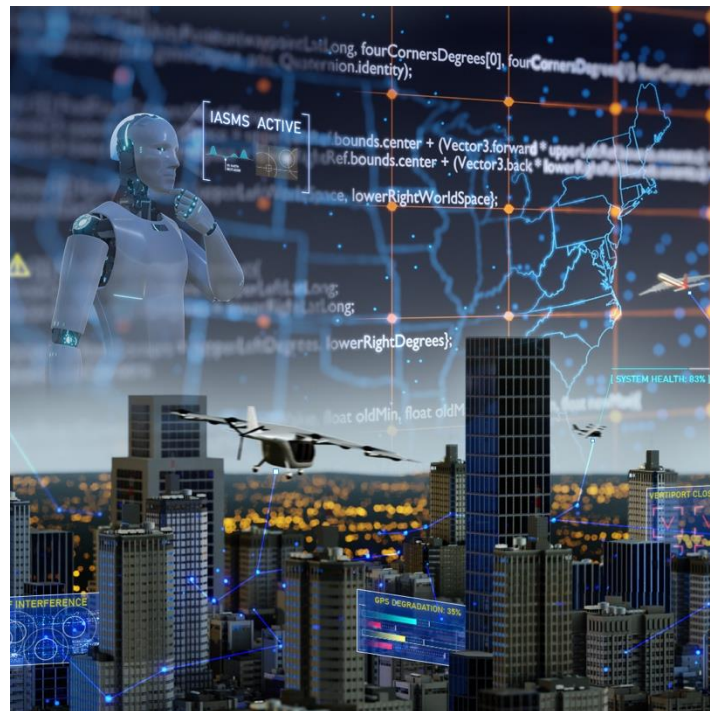


Transfer Data to the FAA

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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AAM

Advanced Air Mobility

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