



How Will Advanced Air Mobility Benefit Communities?



Gabriel Andino
Teterboro Airport
Moderator



Yolanka Wulff
CAMI



Alex Gertsen
NBAA



Timothy Middleton, C.M.
Senior Consultant, HMMH



Danielle J. Rinsler, AICP



Yolanka Wulff
CAMI



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Yolanka Wulff, J.D.

Executive Director

Community Air Mobility Initiative





Supporting the responsible integration of the third dimension into our daily transportation needs through education, communication, and collaboration.

CAMI is a 501(c)(3) nonprofit organization dedicated to the responsible integration of advanced air mobility into communities by providing education, communication, and collaboration.

CAMI understands the importance of connecting communities and industry by working with all stakeholders to develop advanced air mobility that integrates with existing and future urban and regional transportation systems.

CAMI educates and equips state and local decision makers, planners, and the public with the information they need to set policies and design infrastructure and systems to successfully integrate aviation into daily transportation options.





What is Advanced Air Mobility?



Nothing new: regional airline travel and helicopter service (e.g., Blade) are current/historical forms of AAM in service today.

Everything new: electric aircraft make AAM safer, quieter, greener, and more economical than ever before.

Urban Air Mobility, or UAM, refers to shorter distance urban use cases. Regional Air Mobility, or RAM refers to travel over longer distances away from the urban core.

Zones of Operation:

- City Center
- Suburbs to City
- Edge City to (Edge) City
- Rural Access
- Hub Airport Access

Types of Operation:

- Airline (micro haul)
- Air Metro
- On Demand (air taxi)
- Airport Shuttle
- Emergency Services
- Goods Delivery



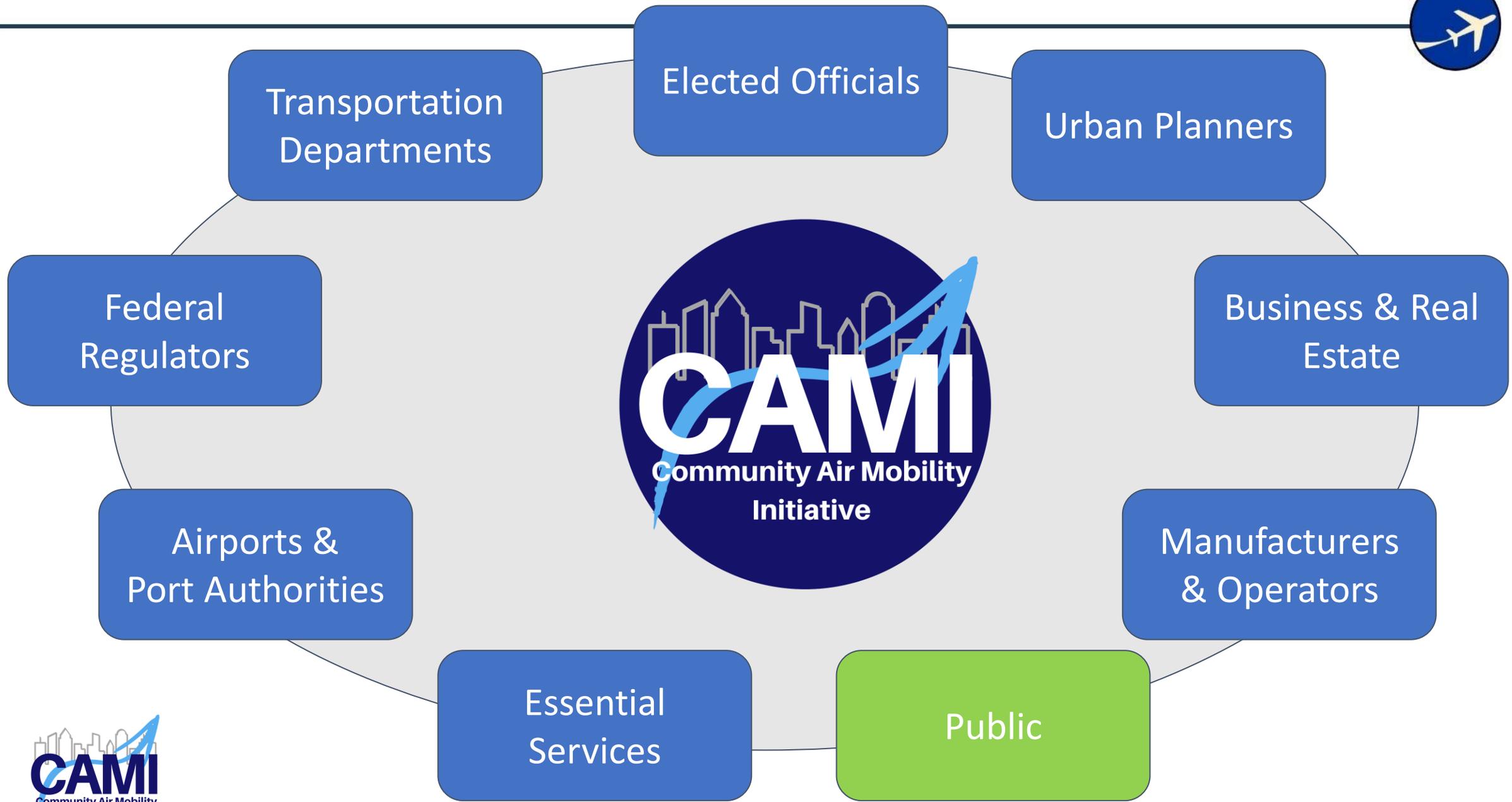
AAM: Technology Push vs Market Demand Pull

Technology Push

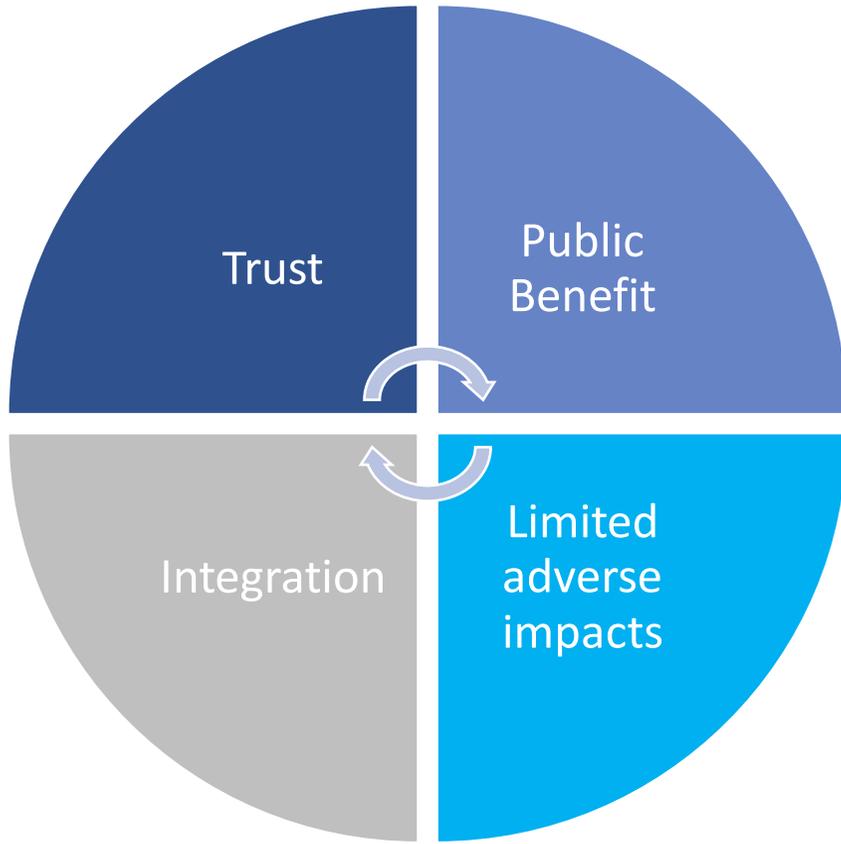


Market Demand Pull





Public Acceptance is Multifaceted



Trust

- Safe Vehicles
- Safe Infrastructure
- Secure Operations

Public Benefit

- Emergency Services
- Increased travel options
- Economic opportunities

Limited Adverse Impacts

- Noise and visual impact
- Emissions and environment
- Privacy

Integration

- Existing transit & roads
- Grid capacity
- Social Equity



Some potential public benefits may be surprising



Reduced need for vehicle traffic within urban core



Reduced emergency response times



Increased range of access to the urban core



Additional transportation demand management options



Urgency-trip pairing with commuter transit



Stronger connection of rural areas to urban opportunities



Increased utility of GA airport infrastructure



Additional disaster response capabilities



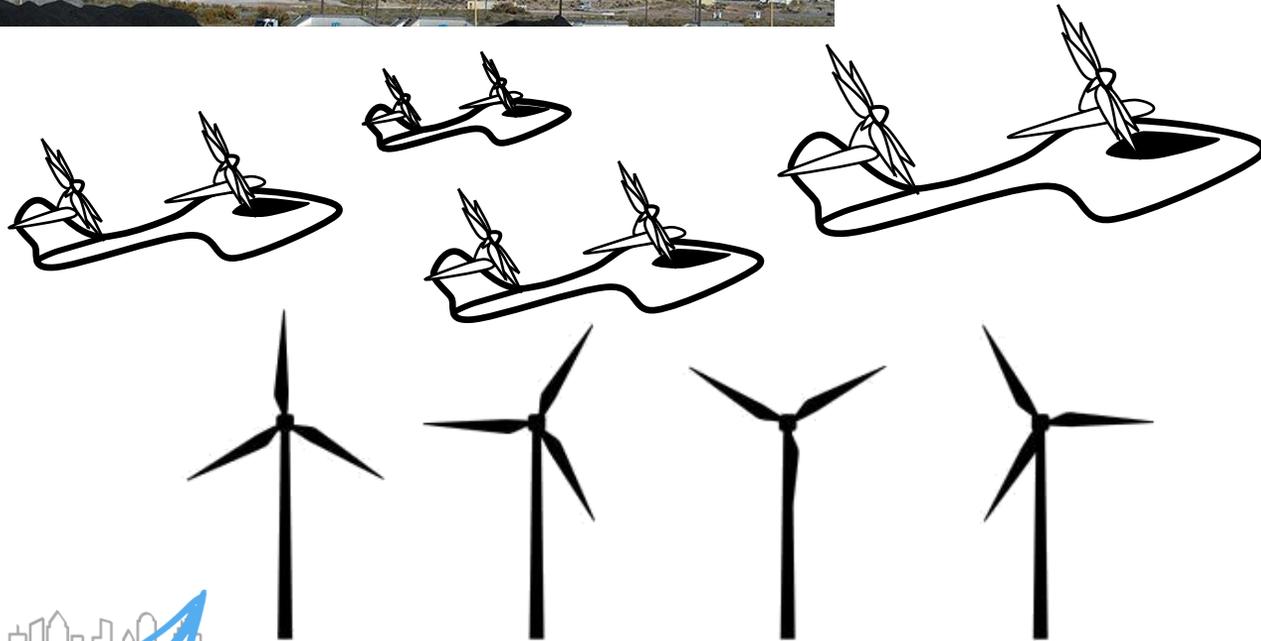
Increased electrification for lower in situ emissions



Elimination of transportation deserts

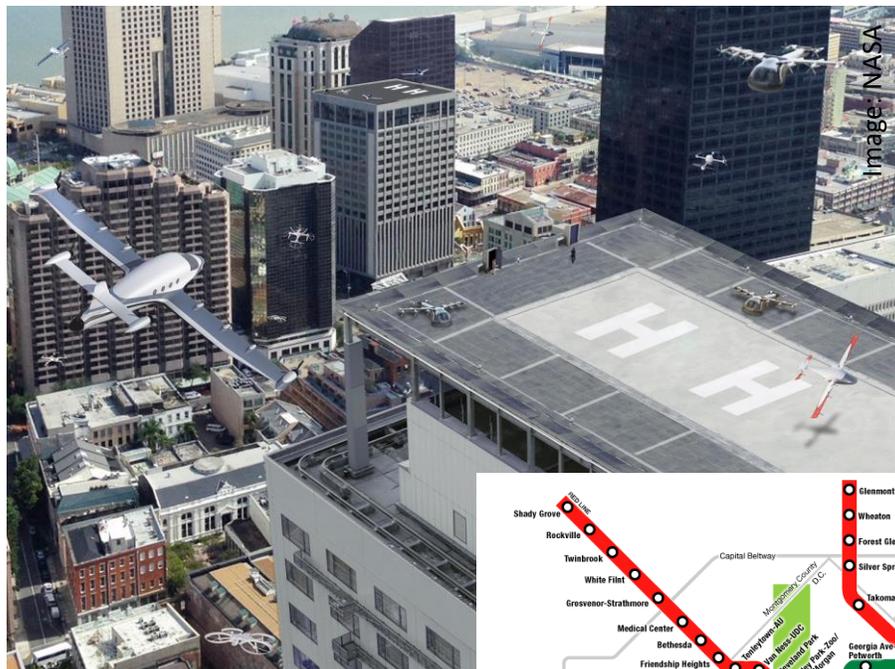


Workforce development and economic opportunities



There will be some level of undesirable impacts. Being transparent about this will help minimize them and build trust with the public.

- Electric vehicles are only as green as their grid and battery disposal
- Visual impact
- Congestion may just shift
- Risk of urban sprawl
- Noise



Integration needs to consider the existing transportation landscape, accessibility, social equity, and secondary impacts.



- Integrate with transit options to provide « urgency travel »
- AAM can address transportation deserts in underserved areas
- Social equity and broad public benefit are important, not just the most profitable locations
- Use zoning advantageously
- Ensure grid capacity

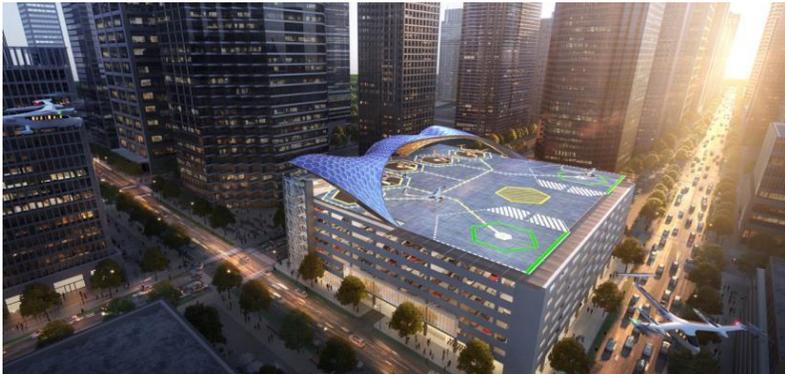


Mobility Services – The Complete Trip





AAM Infrastructure Considerations



Existing Transportation

- What are the existing and future planned forms of transportation, and what are their capacities?
- What first- and last- mile connections are needed?
- How do we prioritize public transportation, pooled vehicles and active transportation?
- How will high volume vertiports impact public transport networks? Redistribution and congestion reduction or concentration leading to insufficient capacity at peaks?

Land use / Zoning

- What defines the area where we want to place infrastructure?
- How do we integrate vertiports into nearby land uses?

Built Infrastructure

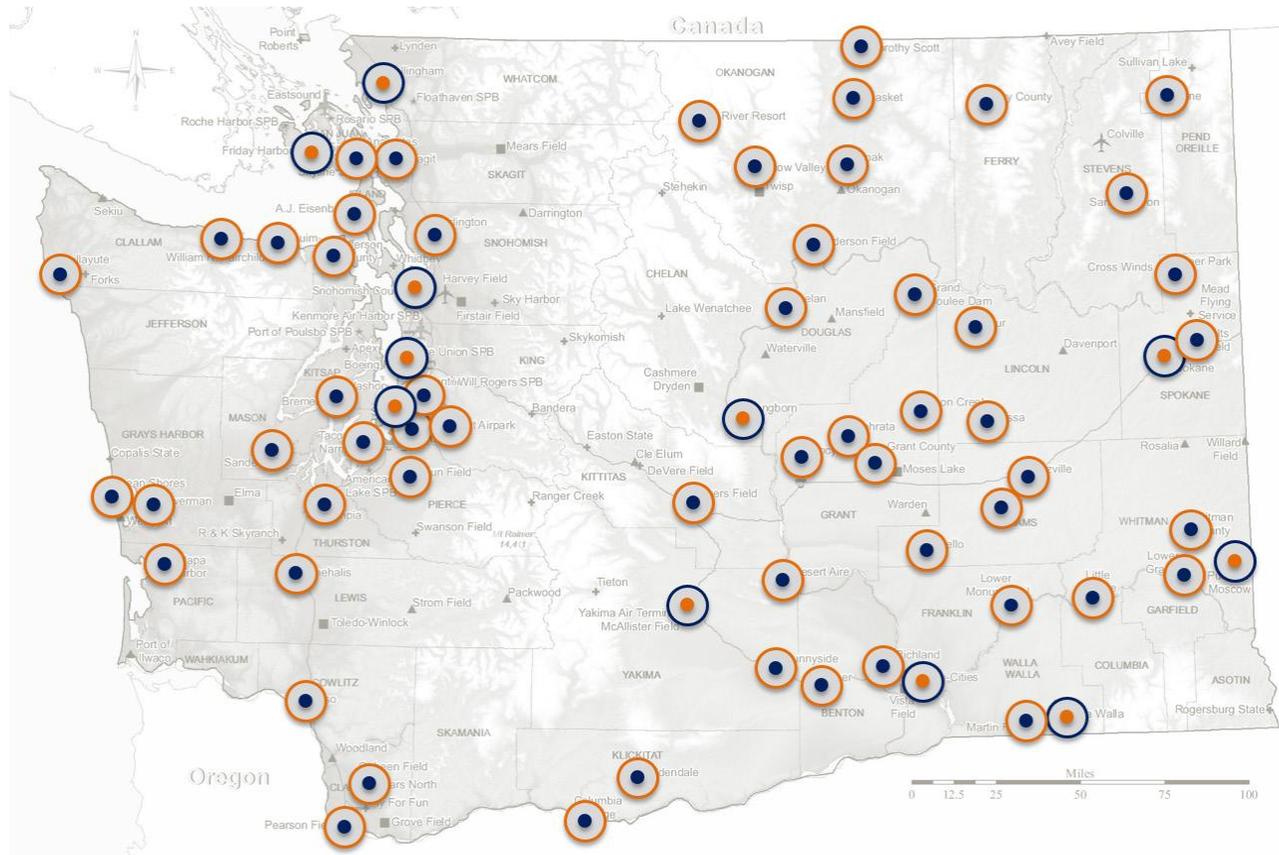
- What types of infrastructure need to be repurposed, renovated, or redeveloped to support AAM?
- How much space do we need to accommodate eVTOL vehicles, parking, passenger facilities for future scaled operations?

Fueling

- What are the anticipated forms of fuel – electricity, hydrogen, etc.
- What capacities are needed, now and in the future, for generation, transmission and storage?



AAM and the Role of the Built Environment



- Washington has about 140 public airports
- Currently 13 of these airports have scheduled service
- 82 of these airports have been determined to be capable of supporting electric aircraft (3000' runway)
- Small airports can connect communities in a clean, cost-effective manner



Systems Master Planning for Advanced Air Mobility



- Start with a system plan to incorporate electric aviation into the macro regional fabric.
- Identify existing aviation assets both for VTOL and CTOL operations and assess their current contributions
- Develop a thorough understanding of how electric aviation can enhance or hinder the movement of people and goods in the area of study
- Assess large vertiport concepts vs smaller vertiport concepts and how they would affect road and public transport systems
- Determine which airspace restrictions are applicable
- Understand what automation does to capacity of vertiports.
- Determine early opportunities to demonstrate public benefit.
- Consider the workforce development opportunities offered by AAM.
- Address equity issues upfront.
- Address environmental issues through planning and mitigation.

CAMI's Online Resources

CAMI Notes

Videos

Guidebooks

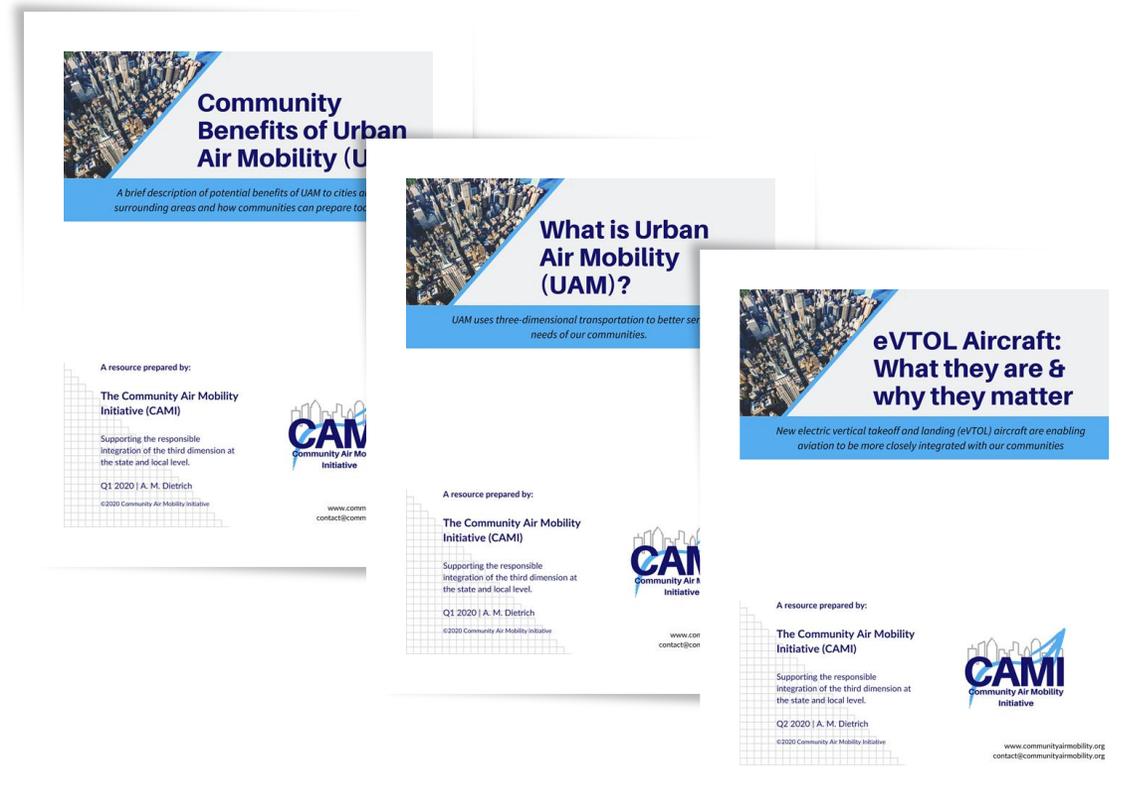


UAM Urban Air Mobility
101

An introduction to Urban Air Mobility for state and local decision makers

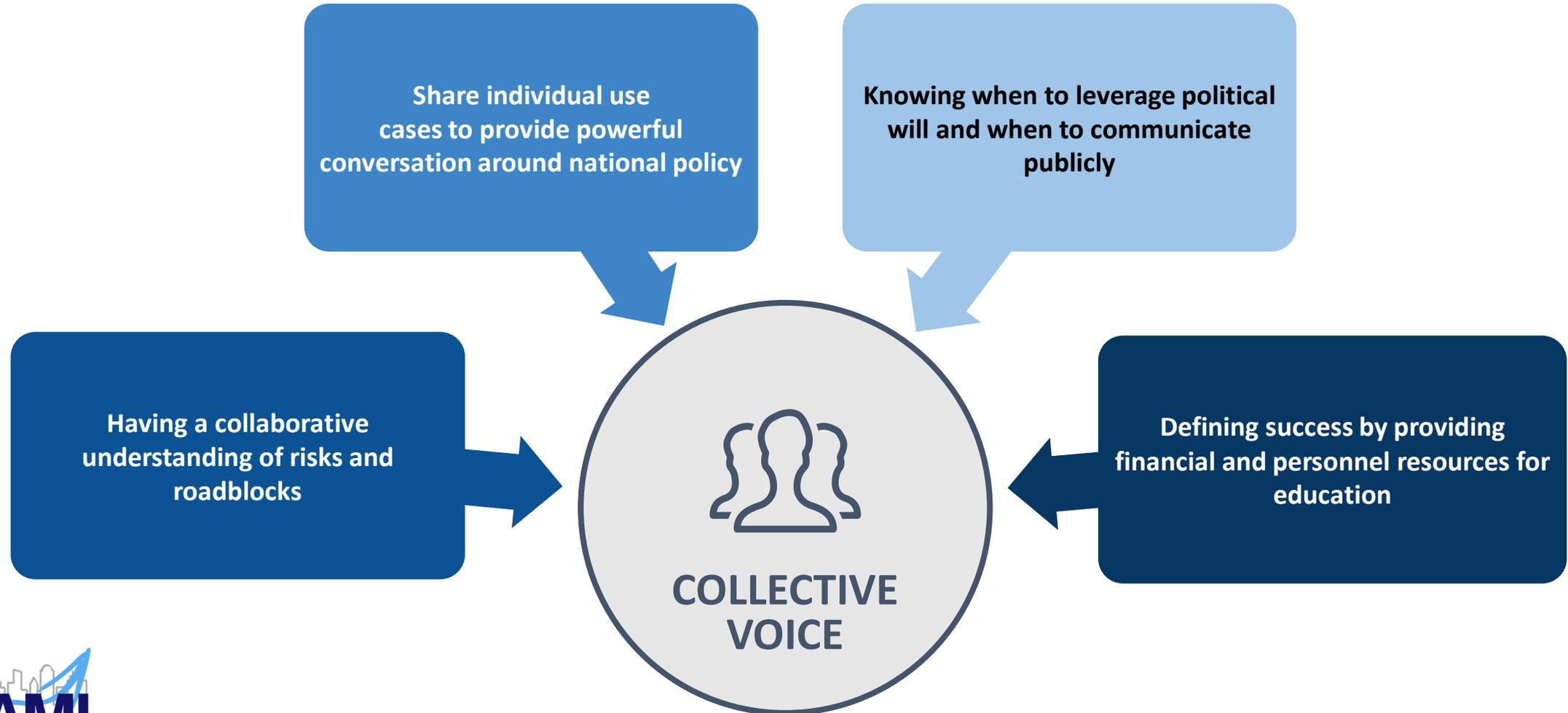
March 16, 2020 13:00 - 17:00 EDT
An online event!

Student and Government rates available
communityairmobility.org/events





Urban Air Policy Collaborative - Using a Collective Voice





Supporting the responsible integration of the third dimension into our daily transportation needs through education and advocacy.

Yolanka Wulff, J.D.
Executive Director

yolanka@communityairmobility.org

www.communityairmobility.org





Timothy Middleton, C.M.
Senior Consultant, HMMH

Growing Urbanization

Cities are becoming more dense



In 2016, 54.5% of the world's population lived in urban areas. By 2030, that number is projected to be 60%

5 billion people



Urban Air Mobility has emerged as one way to enhance mobility options to, from, and within city centers

transportation solutions

1 in 3

By 2030, 1 in 3 people will live in cities with at least 1 million inhabitants

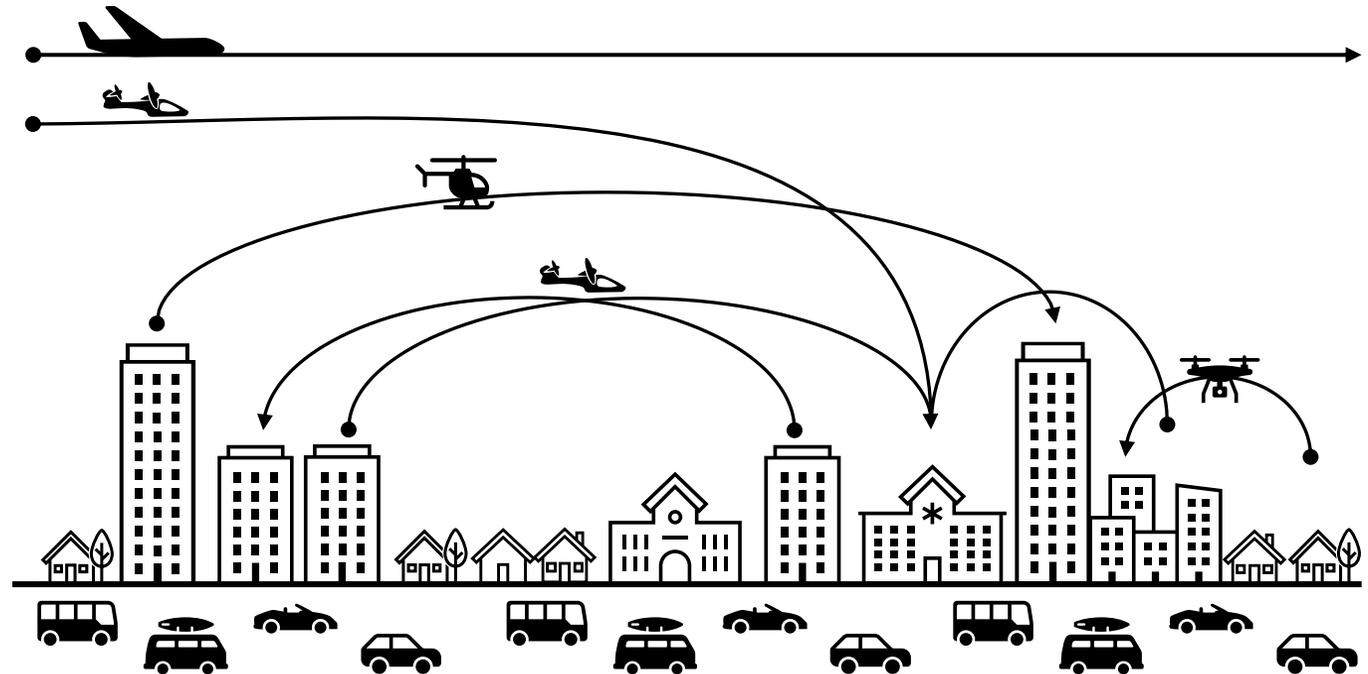




What are the key challenges to AAM implementation?

5 Pillars

- Vehicle Design
- Vehicle Operation
- Infrastructure
- Airspace Management
- Community Integration





AAM ORIGINAL EQUIPMENT MANUFACTURERS

AAM OPERATORS

AIRPORT SPONSORS

FAA OFFICIALS

LOCAL GOVERNMENT, GENERAL PUBLIC

UAM/AAM Integration Into New Areas

Successful integration will require different messaging to different audiences



Legacy Airport Engagement

- Collaborate with existing airport industry stakeholders on potential noise & annoyance issues
- Assist stakeholders in planning for the integration of UAM/AAM into the aviation system
- Engage legacy airports as advocates for UAM/AAM
- Organizations to engage:
 - Airport Orgs. (ACI, AAAE, ACC, etc.)
 - Transportation Research Board
 - NASA Noise Working Groups
 - NBAA
 - GAMA





Public Acceptance from the Ground Up

Did you know?

Only 30% of aircraft noise annoyance correlates with the physical properties of the aircraft?

The rest?

Non-acoustical factors like annoyance toward the noise source

- UAM/AAM operators must establish relationships in communities so stakeholders perceive UAM/AAM favorably
- Local officials must work closely with constituents and the UAM/AAM industry to avoid issues like the ones that arose from the FAA's implementation of NextGen aircraft procedures
- One approach: work with community representatives in proposed UAM/AAM markets to understand “hot button” issues and identify sub-communities that tend to react most negatively to noise issues
- Reach out to neighborhoods, homeowner associations, community groups, community events



Develop tailored communication strategies

- Communication strategies should recognize different roles, needs, and interests of each group.
 - Example: Strategies in a neighborhood where a vertiport will be built will be different than a neighborhood with existing airport.
- **Outreach methods:** press releases, interviews with local media, establishing social media channels, outreach to schools, establishing citizen science project(s), noise auralization and visualization, videos, brochures – **all with plain language and effective graphics**
- Community forums should be organized where elected officials, community members, and other stakeholders can engage with operators and other UAM proponents in significant, meaningful dialogue.





FAA Engagement

FAA has authority over the following areas:

-  UAM/AAM VEHICLE CERTIFICATION
-  INTEGRATION AND/OR SEPARATION WITH NATIONAL AIRSPACE SYSTEM
-  EVALUATION OF OPERATIONAL & ENVIRONMENTAL EFFECTS



FAA Engagement Responding to Communities



- Extensive engagement, communication, and training for the FAA's Noise Ombudsmen and Office of Environment and Energy (AEE) staff will be required to assist the FAA in responding to concerns raised by airports, communities, and other stakeholders
- Our experience with the FAA's implementation of Performance Based Navigation (PBN) and associated air traffic procedure and flight path changes indicates that early, proactive engagement is critical



Noise Issues to Consider

- FAA Order 1050.1F Requirements
- Advanced Acoustics Model (AAM) v. Aviation Environmental Design Tool (AEDT)



Image source: Airbus



Noise Issues to Consider



How loud will these aircraft be?

- dB levels may be “quieter” than existing helicopters
- Significant lack of data on the noise of the proposed eVTOL and other aircraft
- Multiple propellers will generate a unique noise signature
 - The noise of them may be bothersome and annoying to residents (subjective)
 - Community understanding could lead to acceptance



Further Issues to Consider

What flight paths will UAM/AAM use and where will they fly?

- New flight paths, new aircraft, new flights
- Some will use existing routes, i.e., helicopter routes,
- Most will need to develop new routes in/out of the airport
- Lessons learned from NextGEN
 - How getting out in front of issues before they are a problem is vital
 - Include land use planners, local jurisdictions, and the FAA
 - Engage with the community early





Resources

- [Advanced Air Mobility \(AAM\) | NASA](#)
- [Advanced Air Mobility \(AAM\) Mission | NASA Aeronautics Research Institute](#)
- [Advanced Air Mobility \(AAM\) | NBAA - National Business Aviation Association](#)
- [Advanced Air Mobility Reality Index \(aamrealityindex.com\)](#)
- [Community Air Mobility Initiative \(CAMI\)](#)
- [Urban Aerial Mobility: The Path to Scale | World Economic Forum \(weforum.org\)](#)
- [Urban Air Mobility and Advanced Air Mobility \(faa.gov\)](#)



Danielle J. Rinsler, AICP



Planning for UAM/AAM

- Airport and heliport planning – master planning, facility plans, noise and land use compatibility plans, airspace planning, environmental review
- Airport system planning – metropolitan and state system planning
- City plans – zoning and municipal codes (fire, life safety, building)
 - Defined process for permitting new facilities
- Regional transportation plans – integrating aviation system plans into transportation improvement plans
 - Rethinking the traditional scope of these plans to incorporate aviation and other forms of mobility
- State permitting – coordination with federal regulators and city permitting authorities
- Federal standards and guidance
 - Infrastructure and operational standards and policies
 - Facility funding and financing
 - Environmental policy considerations
- Global standards and policy – harmonized approach to integrating new technologies
 - Standards developing organizations activities
 - Eventually, revisions to ICAO standards



Role of national regulators

- Guiding policy frameworks/roadmaps and collaborative R&D
- Examining airspace integration approaches
- Developing infrastructure and operational safety standards
- Collaborating with industry and communities to define noise and land use compatibility standards and associated metrics and measurement tools
- Establishing environmental policy
- Providing funding and financing to support eligible planning and pilot programs
- Supporting public engagement



Key integration considerations and policy approaches

- Infrastructure siting
- Land use and municipal zoning
- Permitting and environmental review
- Energy grid requirements
- Workforce opportunities
- Social license/public acceptance



Source: Choose Paris Region

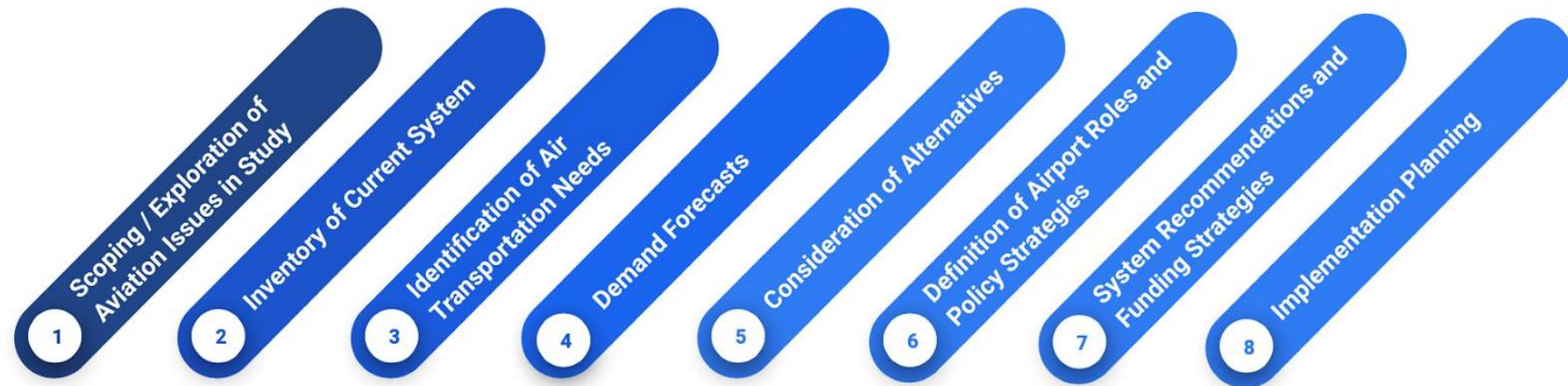
The seven UAM principles

	Safety New forms of air transport must achieve levels of safety performance consistent with conventional aviation operations
	Sustainability UAM must improve environmental outcomes and embrace innovation to achieve more sustainable behaviours
	Equity of access There should be equitable access to mobility for disadvantaged communities
	Low noise Noise disturbances should be measured and mitigated by a community-first approach
	Multimodal Connectivity UAM should connect to existing, high-quality transport options, offering seamless travel
	Local workforce development UAM is expected to increase jobs on the ground and in the air
	Purpose-driven data sharing Data sharing should help providers quickly respond to passenger need and market demand

Image: World Economic Forum



Adapting airport and transportation system planning processes to incorporate AAM



Source: Adapted from FAA Advisory Circular 150/5070-7, The Airport System Planning Process, 2015



Alex Gertsen, C.M., ACE

National Business Aviation Association



Leveraging General Aviation Airport Infrastructure



NBAA Membership

Over 11,000 Member Companies



PISTON ENGINE AIRCRAFT



TURBOPROP AIRCRAFT



JET AIRCRAFT



HELICOPTERS



UNMANNED AIRCRAFT SYSTEMS (UAS)



ADVANCED AIR MOBILITY (AAM)



Value of Existing Airport Infrastructure

Over 3,000 Federally Funded and 5,000 Public Use Airports





Value of Existing Airport Infrastructure

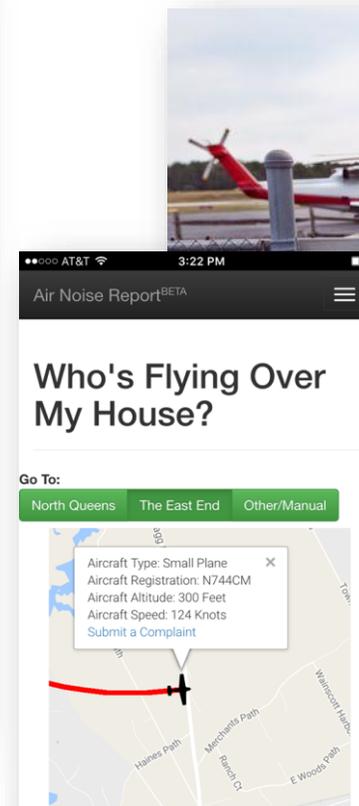
Santa Monica Airport





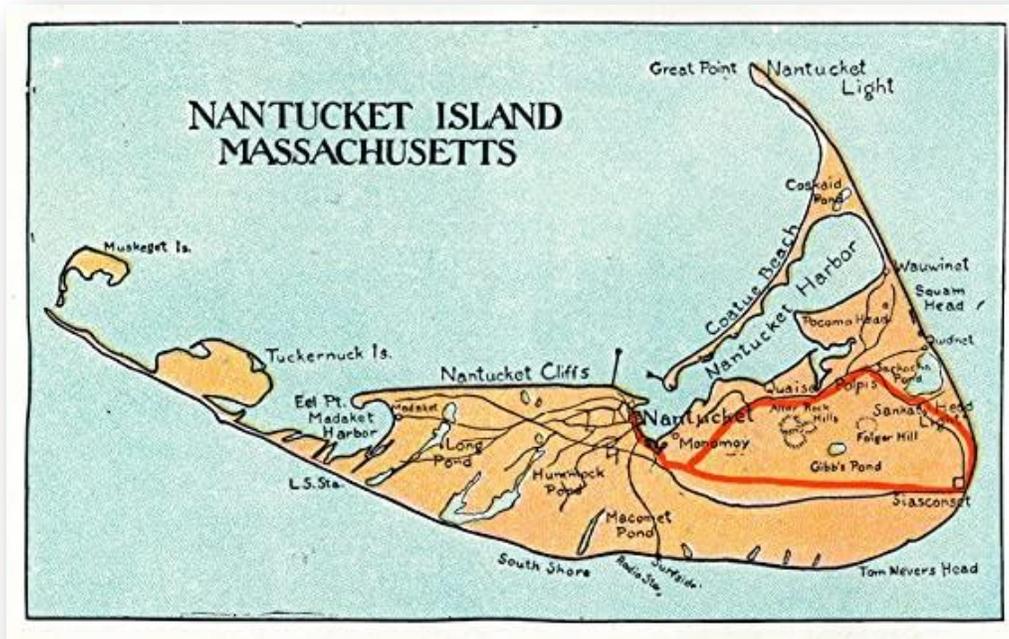
Value of Existing Airport Infrastructure

East Hampton Airport





Remote Locations Relying on Air Transportation





How Will Advanced Air Mobility Benefit Communities?

Thank You for Your Attention

