Comment to FAA REDAC Committee

November 10, 2022

AICA
AVIATION-IMPACTED COMMUNITIES ALLIANCE

The community's expectation for REDAC and the FAA is to conduct rigorous, transparent, and independent research on the real and potential negative impacts of Advanced Air Mobility (AAM) and to identify unacceptable community and environmental impacts to avoid altogether. The perspective of directly and substantially affected communities who will or could experience the negative impacts of Advanced Air Mobility must be adequately represented. Research cannot focus solely or be over-weighted on the advancement of the aviation industry despite their $10B investment to date[1]. An Advanced Air Mobility environment must work for all, and FAA research needs to support this.

In response to the November 7, 2022 Federal Register Notice, we request that the REDAC recommends the following research proposals to the FAA:

1. **A peer-reviewed report on a System to measure aviation noise impacts and annoyance to address the expected Advanced Air Mobility environment.**

   Research for a System of the most suitable metrics and thresholds to capture noise levels and concentration of Advanced Air Mobility e.g., N-above ambient noise where N is 50+ on a peak-day and decibels above ambient are 3dB, 5dB, and 10+dB. The System includes Unmanned Aircraft Systems (UAS) and Advanced Air Mobility, cumulative impacts from General and Commercial Aviation impacts, and noise thresholds that are unacceptable to the annoyance, health, and environmental equity of affected people. Along with maximum decibel levels, the when, why, who, and how many are equally important parameters for assessing human and environmental effects.

   Recent Environmental Assessments (EAs) of drone package delivery operations, e.g. Zipline International Inc. in NC and UPS Flight Forward in FL, conclude a Finding of No Significant Impact (FONSI) to people and the environment based on NEPA, CEQ regulations, and the FAA's implementation of the law and the regulations. The FAA's implementation of the law uses the same 65DNL noise threshold to determine significant noise, this time with aircraft vehicles which have much less loudness, but with the potential for much more frequency (frequency here refers to counts, not sound). The FAA's Neighborhood Environmental Survey study showed that the 65DNL threshold for aviation noise annoyance is invalid. This makes it invalid for AAM too, but what is a valid metric? We do not know but can hypothesize that it is counts of events above 3 decibels increase in ambient noise. For each package delivery, the same individuals will be exposed to outbound and inbound noise events. Does this factor into individuals' reaction to their exposure to these aviation events? We do not know. Is the most appropriate metric B weighted or should it be A or C? We do not know.

[1] Source: SMG Consulting AAM Reality Index (last accessed 11/10/22)

Communities need peer-reviewed research that will answer these questions, and others, about environmental impacts of AAM.

2. **A noise exposure and contour study based on Advanced Air Mobility early pilot implementations.**

   Pilot projects are underway in several states. A noise exposure and contours study would include all pilot implementations with existing and future forecasted flight paths and infrastructure scale such as Vertiport/Vertihub placement for takeoff and landing, safety and emergency response, and travel impacts for passengers getting to and from Veriports. Computations would be performed for all locations showing N-above ambient noise where N is 50+ on a peak-day and decibels above ambient are 3dB, 5dB, and 10+dB. This study would include noise monitoring to measure actual noise from the pilot projects underway.

3. **A cost benefit analysis of Advanced Air Mobility.**

   A comprehensive analysis including: the current forms of transportation that will be replaced with AAM and the tradeoffs, new usages and users, social equity and environmental justice implications of consumer affordability for AAM services and the new locations experiencing negative impacts due to noise, congestion shift and increase, urban sprawl, grid capacity expected and implications, visual impacts (e.g., ruining views from hundreds of AAM overhead), and infrastructure placement and expansion (e.g. Commercial and General Aviation airports, highways, new 5G towers, etc.). When substituting non-electrical forms of transportation, analyze the tradeoff for emissions and environmental impacts. Who are the winners and losers?

4. **A study on the Environment Impacts of Advanced Air Mobility.**

   A study on environmental impacts to understand implications of electric aviation vehicles – the level of green for the electrical grid capacity and battery disposal. Is there an emissions savings if the overall demand for new AAM increases and/or the infrastructure needed to support AAM negates any benefits?

5. **A study on the Governance options and implications for Advance Air Mobility.**

   A June 2022 report by Brent Skorup at George Mason University, "Is Your State Ready for Drone Commerce? The 2022 State-by-State Scorecard", states that commercial drone "progress in the United States has been slow, in part because of a lack of clarity about federal and state roles in drone and airspace management." Skorup scores only three states' "drone readiness" at 70 or greater out of one hundred. With state governments' lack of readiness, cities and towns obviously are even further behind. What are the economic, human, and environmental monetary and non-monetary costs associated with the integration of AAM that will be borne by states, cities, and towns and the residents who live there? Is the cost-shifting justified by the "common good" or are the costs unfairly shifted from the industry to local governments? Are costs shared equitably? What law enforcement training requirements are needed? What laws are required for governance of non-monetary costs, including injury and property damage among others, and who is responsible for enforcement?

6. **A study on Communities' Security and Privacy Concerns of Advanced Air Mobility**

   Drone technology can bring many benefits to communities although there are concerns regarding misuse and abuse. An analysis is needed of the potential security concerns, their implications, and how to mitigate them. This includes: the right to privacy for drones doing surveillance, gathering data and photos, vulnerability, and implications of hacking to replace the original controller, retrieval of private information to unauthorized parties, and the corruption of files. How will people know if a drone is a friend or foe?

7. **A study of the Public Health Impacts of Advance Air Mobility**

   A recent study of noise-induced stress from urban air mobility sound[2] showed that participants experienced greater stress reaction as simulated noise increased. More importantly, participant's "EEG data showed higher levels of stress among the participants. But once the participants were exposed to loud noise, their stress levels did not decrease - even after the noise level dropped. This may suggest that while most people think they can become accustomed to loud noise, it may actually be causing them stress without noticing it."[3] Please recommend that the FAA studies the negative physical and mental health effects of AAM noise events on people on the ground.

Additional Note

We hope that REDAC will take a balanced, independent, and inclusive research perspective to sufficiently represent the local community stakeholders who could be substantially and negatively affected by Advanced Air Mobility.

What will REDAC do to ensure this? How can we support you?

Respectfully Submitted,

Aviation-Impacted Communities Alliance

info@aviationimpactedcommunities.org

Cindy L. Christiansen, PhD and Darlene Yaplee, Co-founders

[2] https://www.jstage.jst.go.jp/article/tjam/3/6/3_81/_article/-char/en (last accessed 11/10/22)

[3] Airport Noise Report, Volume 34, Number 36 Oct 28, 2022, p146