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March 9, 2021

Federal Aviation Administration
Docket Operations, Room W12-140, West Building, Ground Floor
1200 New Jersey Avenue SE
Washington, DC 20590-0001

RE: Docket Number FAA-2021-0037: Summary of FAA Research Programs related to Civil Aircraft Noise

This memorandum provides comments from Fairfax County, Virginia regarding the Federal Aviation Administration's (FAA) summary of the research programs it sponsors on civil aircraft noise, which could potentially affect future aircraft noise policy. The FAA summary was posted on the Federal Register on January 13, 2021. The FAA has stated that it intends that the research results, as reflected in the programs and studies described in the notice, will be used to provide new information on how aircraft noise in communities near airports may be effectively managed and to affect future decision making related to the FAA's aircraft noise policies.

As stated by the FAA, community response to noise has historically been a primary factor underlying its noise-related policies, including the establishment of DNL 65 dB as the threshold of "significant" aircraft noise exposure. The FAA has been using a DNL of 65 dB as the basis for: (1) setting the agency's policy goal of reducing the number of people exposed to significant aircraft noise; (2) establishing the level of aircraft noise exposure below which residential land use is "normally compatible," as defined in regulations implementing the Aviation Safety and Noise Abatement Act of 1979; and (3) establishing the level of aircraft noise exposure below which noise impacts of FAA actions in residential areas are not considered "significant" under section 102(2)(C) of the National Environmental Policy Act of 1969.

The public was invited to submit comments that could assist the FAA in assessing how resources should be directed to better understand and manage the factors related to aircraft noise exposure. The FAA has stated that it will not make any determinations related to its noise policies until it has carefully considered public and other stakeholder input along with any additional research needed to improve the understanding of the effects of aircraft noise exposure on communities and that, unless and until any changes become effective, all existing FAA regulations, orders, and policies will remain in effect.

Fairfax County has one international airport within its jurisdiction (Dulles International - IAD) and is directly affected by a second (Reagan National – DCA). As such, Fairfax County has considerable interest in this FAA initiative. In its public notice in the Federal Register on January 13, 2021, the FAA stated that it is seeking public comment on the following topical areas. The county is providing responses in each of the requested areas.

Additional Investigation, Analysis, & Research

The FAA states that it may undertake additional investigation, analysis, or research in three categories as described below:

1. Effects of Aircraft Noise on Individuals and Communities, including speech interference and children's learning; health and human impacts research; impacts to cardiovascular health; and economic impacts:

As part of this portion of the FAA's research effort, the Massachusetts Institute of Technology (MIT) will conduct an assessment of the economic impacts to businesses located underneath aircraft flight paths. This assessment will take into account the economic benefits from aviation activities, as well as potential environmental and health impacts that might reduce economic productivity. The FAA has also stated that it is in the developmental stage of a research project that would build on existing work done previously by MIT that used housing value data to reveal the willingness of people to pay to avoid aircraft noise exposure. This research is intended to serve as a follow on to the Neighborhood Environmental Survey, which was released as part of the Federal Register notice.

Fairfax County Recommendations:

Fairfax County recommends that the FAA make available the results of its assessments and research efforts as they become available.

2. Noise Modeling, Noise Metrics, and Environmental Data Visualization:

For more than four decades, the FAA has worked with industry, academic, and governmental stakeholders to advance research and development in aircraft noise modeling. High-fidelity modeling allows the FAA to model aircraft noise over relatively large areas in a consistent manner with attention to the following:

- Noise Screening: Building from the noise modeling capabilities of the Aviation Environmental Design Tool (AEDT), the FAA is developing an updated noise screening tool, which will use a simplified noise modeling process to facilitate an expedited review of proposed federal actions where significant noise impacts are not expected.
- Supplemental Noise Metrics: The FAA's primary noise metric is the Day-Night Average Sound Level (DNL), which identifies aviation noise exposure. As stated by the FAA, while the DNL is focused on cumulative average noise exposure, other noise metrics may better assist in understanding noise impacts and may be useful in evaluating arrival and departure flight track changes to minimize noise impacts on the community.
- Noise Mitigation Research: To reduce the impacts of aircraft noise exposure, the primary current mitigation strategies that are employed by the federal government involve encouraging responsible land use planning near airports, the application of sound insulation treatments to

eligible homes and other noise-sensitive public buildings, such as schools and hospitals, and, in extreme cases, the acquisition of residential homes and their conversion to non-residential land uses. The FAA states that it is exploring the costs and benefits of noise mitigation strategies and technologies to better direct where and how limited mitigation resources should be applied.

Fairfax County Recommendations:

Fairfax County recommends that the FAA:

- Continue development of an updated noise screening tool.
- Continue the use of DNL values in noise analyses; involve communities near airports in the evaluation of other noise metrics that may be considered; and identify potential community-specific differences in tolerance for noise exposure.
- When completing noise analyses, calculate future buildout using realistic airport operational capacities and as well as 20-year timeframes which are typically associated with strategic planning.
- Ensure that the full geographic extent of noise-impacted areas is considered in noise modelling.
- Evaluate the noise impacts of current and projected procedural and operational alternatives.
- Continue to explore the costs and benefits of noise mitigation strategies and technologies; analyze the federal funding criteria associated with the provision of noise mitigation; and involve communities near airports in discussions as to how the FAA might change where and how limited mitigation resources should be applied.
- Construct additional continuous noise monitoring stations under the flight paths for Dulles (IAD) and National (DCA) Airports using state of the art modeling and make measurements readily accessible and comprehensible to the community.

3. Reduction, Abatement, and Mitigation of Aviation Noise:

The FAA stated that, since 1983, more than 250 airports have considered changes to local land use planning and zoning, sound insulation, acquisition of homes and other noise-sensitive property, aircraft noise abatement routes and procedures, and other measures with more than \$6 billion in funding provided for noise compatibility programs and noise mitigation. The FAA and industry are developing technologies to create aircraft and engines with lower noise and emissions and improved fuel efficiencies. Recent advances in aircraft navigation enable aircraft to fly on any desired flight path within the coverage and capabilities of navigation systems. Research is examining the effectiveness of current procedures and identifying means of improving their use to, among other things, control flight paths and move them away from noise-sensitive areas; determine how changes in aircraft performance could be safely managed to reduce noise; and how the use of systematic departure flight track dispersion can be implemented to abate noise concerns.

Fairfax County Recommendations:

Fairfax County recommends that the FAA:

- Analyze and make recommendations on construction techniques, building materials, and noise mitigation measures for noise-sensitive uses, including residences and schools.
- Analyze which sound insulation treatments are most effective for interior spaces; compare the cost of insulation and higher Sound Transmission Class (STC) ratings for the applicable building components with their expected benefits; identify rating levels needed for individual building components to achieve a particular noise level reduction.

- Continue to refine and use voluntary Noise Abatement Departure Procedures in the vicinity of airports to reduce community noise.
- Explain the level of additional noise reduction, if any, that could be expected due to future advances in aircraft engine and shell technology.

Factors Affecting Annoyance

A significant component of the FAA's research is a Neighborhood Environmental Survey (NES), a multi-year effort, which quantified the impacts of aircraft noise exposure on communities around commercial service airports in the United States. The NES generated an aircraft dose-response curve, which quantified the relationship between aircraft noise exposure and perceived community annoyance. In comparison to prior studies on this topic, the NES national curve shows more people highly annoyed for a given DNL aircraft noise exposure level. The FAA defines annoyance as a *"summary measure of the general adverse reaction of people to noise that causes interference with speech, sleep, the desire for a tranquil environment, and the ability to use the telephone, radio, or television satisfactorily."*

The FAA recognizes that a range of factors may be driving the increase in annoyance shown in the NES survey which may include changes in commercial aircraft operations; population distribution; how people live and work; and societal response to noise.

The FAA noted that the number of commercial enplanements has increased from approximately 200 million in 1975 to approximately 930 million in 2018. In recent years, as aviation growth has led to an increase in operations, the number of people and the size of the areas experiencing significant aircraft noise has expanded. The introduction of Performance Based Navigation (PBN) procedures, as needed to safely and efficiently modernize the national air transportation system, has also provided noise benefits by allowing new and more efficient flight paths, but has in some places resulted in community concerns, particularly related to an increased concentration of flights. In response, the FAA has developed and begun implementing a comprehensive and strategic approach to transform and enhance FAA community involvement practices, including the use of airport community roundtables, to equitably discuss opportunities to shift or, when possible, reduce aircraft noise exposure.

Fairfax County Recommendations:

In order to address concerns of its citizens regarding airport noise, Fairfax County recommends that the FAA:

- Consider that communities differ considerably from one another in the prevalence of annoyance induced by the same levels of noise exposure. As such, any criteria established by the FAA should reflect community-specific differences in tolerance for noise exposure as well as whether complaints have arisen from changes in flight paths.
- Determine the reasons for community complaints regarding airport noise, to include the presence of direct overflights, the number of aircraft operations, and the time of the operations, as well as whether homes in the community were constructed to attenuate noise.
- Determine whether advances in avionics and other technologies have resulted in a concentration of flight activities; determine whether routing changes would be likely to decrease noise impacts.
- Consider and propose operational changes that would minimize community annoyance, to include altered departure and approach routes, engine settings during climbs and descents, lateral displacement from impacted areas; and visual barriers, including buildings and trees.

- Involve local communities in decision making regarding operational changes that could minimize noise complaints while still considering the economic value of the airport to the jurisdiction.

Additional Categories of Investigation, Analysis, or Research

The FAA stated that it might undertake additional categories of investigation, analysis, or research to inform noise policy, related to the following:

- Changes to where people are choosing to live, including increasingly urban environments;
- Growth and changes to the makeup of suburban communities;
- Working and living conditions, including an increased number of in-home businesses and the increased use of teleworking;
- Changes in expectations regarding time spent outdoors versus indoors;
- The rise of social media, the internet, and other information sources, leading to an increased awareness and perception of noise issues; and
- Overall societal response to noise.

Fairfax County Recommendations:

Fairfax County recommends that the FAA:

- When investigating these additional categories, consider community perceptions related to providing housing opportunities proximate to airports.
- Complete a Safety Risk Analysis (SRA) to determine what controls or mitigations can be undertaken to reduce risks on the ground from the takeoff, initial climb, final approach, and landing phases of flight.

Conclusion:

Fairfax County appreciates the ability to provide input into this FAA effort and respectfully requests that the FAA continue to involve Fairfax County in any further research efforts as well as the development of any subsequent policy changes. If you have any questions regarding these comments, please contact Joseph Gorney at 703-324-1380 or joseph.gorney@fairfaxcounty.gov.

Sincerely,



Jeffrey C. McKay, Chairman
Fairfax County Board of Supervisors

cc: Members, Fairfax County Board of Supervisors
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