

SUBMITTED BY THE TOWN OF MIDDLETON BOARD OF SUPERVISORS, MIDDLETON, WISCONSIN on 9/6/23 electronically at <https://www.regulations.gov> regarding **Docket Number FAA–2023–0855**, FAA Request for Comments on **the Federal Aviation Administration’s Review of the Civil Aviation Noise Policy** (comment period expires on 9/29/23).

I. Executive Summary

The Problem: Disruptive, Repetitive, Loud Aircraft Overflight Noise Over Densely Populated Sensitive Noise Areas – Residences, Schools, Playgrounds, Parks etc.

Despite widespread community opposition, the City of Middleton Common Council adopted a plan in 2022 for the significant expansion of its recreational general aviation airport (“C29” or “Airport”) located in a densely populated area with thousands of residences, numerous schools, playgrounds, and parks. The City of Middleton Airport boundary also runs adjacent to two other municipalities; the town of Middleton and the town of Springfield.

As stated in the Airport Master Plan, 70% or more of the C29 airplanes fly at low altitudes (well below the safe minimum altitude for congested areas three to five miles from C29) over the towns of Middleton and Springfield. Many of these loud, recreational aircraft (Cirrus, Aviat Husky, Piper, Mooney, Cessna, etc.) make repetitive left turn loops over densely populated residential and school areas on a daily basis and at all hours,. Repetitive C29 student pilot loop overflights over densely populated residential areas have begun as early as 7 am, and have continued well into the late evening hours well after dark.

In addition, the Airport Manager has publicly and repeatedly stated that he will **not** support the implementation of a right turn pattern at C29 over vacant land. Instead, the Airport Manager, who does not live in the area, supports keeping the current disruptive left turn pattern over densely populated residential areas, schools, playgrounds, and parks for the stated reason that “Pilots fly the pattern that they feel most comfortable with.” This demonstrated lack of concern for the safety of people on the ground includes not only the families living or going to school within three to five miles of C29, but also a disregard for the safety of the daily average 10,000 vehicles per day on Airport Road that runs adjacent to the C29 landing areas. The C29 runway protection zone extends over Airport Road to the south and provides no margin of safety for the vehicles traveling on the main public roadway in and out of the area each day.

These recreational and student pilots also fly repetitive loops for “night currency” by flying in the dark with aircraft headlights illuminated. They fly so low over residences that, from the ground, it appears they are on a flight trajectory that could fly right through a second floor window or the roof of structures on the ground. In addition, these pilots fly at C29 as early as 4 am. The recently adopted C29 master plan for expansion seeks to attract freight operation flights that land, take off, and fly during the nighttime hours when families are trying to sleep, and the

City seeks to attract low, slow, and loud jets flying IFR even during adverse weather events (e.g., snow storms, ice, heavy rain etc.). In addition, disruptive, loud aircraft overflight noise interrupts conversations, reading concentration, and makes it nearly impossible for many people to work from home.

Loud C29 Aircraft Overflight noise wakes people up, causes them not to be able to sleep at night, and has an adverse impact on the physical and mental health and well-being of residents living and going to school in the entire Middleton, Wisconsin area. People don't experience disruptive aircraft overflight noise as an "average". At a minimum, the FAA should adopt the EPA Health and Welfare Standard of outdoor noise not to exceed 55 decibels and indoors not to exceed 45 decibels (See <https://www.epa.gov/archive/epa/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare.html>).

When residents report disruptive aircraft noise to the City, these residents are mocked in public meetings and elsewhere by City public officials and targeted for additional loud, accelerating directly overhead C29 aircraft flight paths in an effort to silence them. The message is loud and clear; keep making aircraft overflight noise complaints and the overflight noise and frequency will only keep increasing – despite the City feigning ignorance of such retaliatory conduct.

Meaningful new aircraft noise overflight regulations that are **not** based on averages must be implemented immediately over sensitive noise areas such as residences, schools, playgrounds, parks, hospitals etc. The FAA mission needs to return to a **balance** between the health and welfare of communities on the ground and the "needs" of a nationwide air system. The pendulum has been allowed to move so far that it is clear the FAA is not concerned about adverse impacts to community residents or the environment.

Please restore the NPIAS 2019-2023 language from document page 1, "Airports should be compatible with surrounding communities, maintaining a **balance** between the needs of aviation, the environment, and the requirements of residents;...(emphasis added)".

II. More detailed Town of Middleton, WI public comment answers to the FAA questions are provided below.

The FAA invites public comment on Questions 1-11 with subparts as follows:

Comments that focus on the issues and questions identified below will be most helpful. These questions are meant as a guide and commenters may provide their views or submit general comments related to how the FAA describes and discloses aviation noise impacts. The more specific the comments, the more useful they will be in agency deliberations. If relevant, commenters are requested to provide technical information, data, or other evidence to support the comment submission. Finally, the FAA requests that commenters identify the number of each question to which a response is submitted.

1. *Vehicle Type*. When the FAA published the ANAP ^[27] in 1976, the impacts of aviation noise were related to commercial jet service at or in the immediate vicinity of airports. What types or elements of current or future air vehicle activity (*e.g.*, unmanned aircraft systems (also known as UAS or drones), advanced air mobility, rotorcraft, subsonic fixed wing, supersonic, or commercial space) should the policy describe and disclose? How should this information be described using noise metrics? Should the FAA use this information to make decisions or for public disclosure only? Please explain your reasoning.

Answer:

Any and all of these types of current or future air vehicle activity should be evaluated for adverse noise pollution impacts to persons on the ground, particularly noise sensitive land use areas such as residential, schools, hospitals, playgrounds, parks, protected wildlife areas etc. Low altitude flight is an invasion of privacy for the people on the ground. Unfettered access to all airspace is not an acceptable “balance” to the quiet and privacy for quality of life for people on the ground. Flight that is necessary or essential versus flight that is recreational needs to be considered and better regulated for the benefit of people on the ground.

“FAA records show that 66% of the nation’s private airplanes are flown primarily for ‘personal/recreational’ use. An additional 6% are used for flight instruction. Just 16% are flown primarily for business purposes.” (See ABC News, *Feds keep little-used airports in business*, 9/16/2009, at <https://abcnews.go.com/Travel/feds-airports-business/story?id=8597371>).

The FAA needs to update their policy to improve current practices, procedures, and routes in a way that addresses the adverse human health effects of noise. FAA should make it official policy that aircraft pilots, and not just helicopter pilots, are expected to “fly neighborly” over noise sensitive areas with enforcement consequences for those pilots that violate this policy. This should also include having **effective** noise abatement policies and procedures in place at each airport where there are community noise complaints, and not just having an outdated noise abatement policy on the books for meaningless public relations purposes. (https://www.faa.gov/regulations_policies/policy_guidance/envir_policy/media/FAA_NoiseComplaintPolicy_191204_FNL.pdf; https://www.faa.gov/gslac/alc/course_content.aspx?pf=1&preview=true&cID=500).

2. *Operations of Air Vehicles*.

a. What elements of aircraft operations (*e.g.*, en-route, takeoff, landing) should the noise metric evaluate and disclose? Should the FAA use this information to make decisions or disclose to the public noise impacts? Please explain your reasoning.

Answer:

All elements of aircraft operations (e.g., en-route, takeoff, landing, repetitive flight training touch and go loops and maneuvers, acrobatics) noise pollution should be evaluated and disclosed and

regulated in a more meaningful way to protect the public on the ground. Aircraft operations and overflights, particularly repetitive, low altitude touch and go general aviation operations, significantly reduce the quality of life for those living under flightpaths, impair major life activities such as hearing and communication, and can result in permanent hearing damage.

Many people who did not buy a house under a flight path may nonetheless now find themselves under a flight path due to airport operation or recreational aircraft flight path changes. In the case of repetitive recreational low altitude, loud overflights, this is particularly unjust and has unjustly caused many people to no longer be able to use their home front or backyards due to numerous disruptive, low altitude, noisy aircraft overflights.

b. What interests or concerns do communities in the vicinity of airports have? How can these concerns be addressed using noise metrics? What noise metrics would address these concerns? Please explain your reasoning.

Answer:

Despite Minimum Safe Altitude Regulations, the FAA has repeatedly advised that living within 5 miles of an airport (e.g., general aviation) is an exception so recreational pilots can legally fly as low as they want to over densely populated residential areas, schools, playgrounds, outdoor athletic fields, and parks. The aircraft noise impacts can be deafening and damaging to human hearing.

Cirrus aircraft are extremely loud. In 2011, the Chinese communist government company, Aviation Industry Corporation of China (AVIC), a state-owned umbrella company that includes subsidiary China Aviation Industry General Aircraft (CAIGA), bought Cirrus and has since raised U.S. national security concerns. (See <https://www.avweb.com/insider/the-china-chickens-come-home/>). The Cirrus SR22Tubo and Vision (SF50) noise levels can easily exceed 90 decibels. In contrast to the FAA, which stopped publicly publishing aircraft noise levels in 2012, the FAA European counterpart, EASA, still publishes data sheets for specific airplane noise levels. (See EASA SF50 (Cirrus Vision) data sheet for noise, 12/1/21, at <file:///C:/Users/CR/Downloads/TCDNS%20EASA.IM .A.615%20Issue%2002.pdf>; and outdated FAA aircraft noise data sheets last publicly published in 2012 at https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_36-3H_with_chg_1.pdf).

The FAA should immediately reinstate publicly publishing and updating decibel noise levels for individual aircraft to help inform the public.

In addition, flight schools should utilize flight simulators and other related technology for maneuvers that are repetitive in nature (such as touch and gos). It is an industry practice to promote these maneuvers. FAA requires proficiency in landings and take offs, not touch and goes. Communities have safety concerns – small plane crashes and lead and other toxic aircraft emissions concerns. The FAA has allowed industry to delay the phase out of leaded aviation fuel. 2030 is the latest date for phase out, but will the FAA just delay again? There are no advances in reducing the noise of both single and double engine piston aircraft. Again, Cirrus aircraft is a good example of aircraft getting louder with technology advances, not quieter. In

addition, a 2019 UK Civil Aviation Authority Report warns that electric planes may do little for noise. (See UK Civil Aviation Authority Report, *Emerging Aircraft Technologies and their potential noise impacts*, CAP 1766, March 2019, available here: http://publicapps.caa.co.uk/docs/33/CAP1766EmergingAircraftTechnologiesandtheir_potential_noiseimpact.pdf; and related online article by the European Union Against Aircraft Nuisances, *Electric planes could be here sooner than we think but might do little for noise*, <https://www.uecna.eu/key-issues/electric-planes-also-make-a-lot-of-noise/>).

According to the FAA in its Federal Aviation Administration (FAA) Policy on Addressing Aircraft Noise Complaints and Inquiries from the Public (last updated 12/04/2019), “The FAA seeks to efficiently and effectively respond to and address aircraft noise complaints and inquiries from the public in a clear, consistent, and repeatable manner that is responsive and applies the best use of FAA resources. In furtherance of this policy, the FAA is implementing an initiative to improve its noise complaint process.” (See Federal Aviation Administration (FAA) Policy on Addressing Aircraft Noise Complaints and Inquiries from the Public (last updated 12/04/2019), page 1, available at https://www.faa.gov/noise/inquiries/media/FAA_NCI_Policy.pdf).

The FAA does not need to improve its noise complaint process. The FAA needs to create and follow policies that allow noise to be mitigated at the source. The FAA also needs to adopt revised evidentiary standards so that the public can provide reasonably sufficient “proof” of aircraft noise disturbances or other related aberrant pilot behavior, including pilot retaliation against individual citizens for reporting noise complaints.

(See former police officer documents aircraft overflight noise complaints during Covid-19 https://www.scottsdale.org/city_news/scottsdale-man-files-over-21k-airport-noise-complaints/article_d753fd76-23c7-11ec-b73a-f784fc623cff.html; <https://www.wsj.com/articles/airplane-noise-complaints-are-skyrocketing-i-start-pushing-that-button-at-6-33-a-m-1535121271>; and <https://www.dailynews.com/2019/10/21/over-a-million-complaints-about-airplane-noise-have-come-out-of-the-south-valley-is-anyone-listening/>).

c. What interests or concerns do overflight communities ^[28] have? How can these concerns be addressed using noise metrics? What noise metrics would address these concerns? Please explain your reasoning.

Answer:

Often times people purchase a residence that is not under an aircraft flight path only to subsequently have it become a flight path residence due to aircraft or airport operational changes. This can significantly reduce quality of life and the salability and value of the property for resale purposes to the detriment of the owner of the residence. In 1974, the US EPA identified noise levels affecting health and welfare to be 55 decibels outdoors and 45 decibels indoors as preventing activity interference and annoyance. (EPA press release – April 2, 1974; <https://www.epa.gov/archive/epa/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfre.html>). At a minimum, the FAA should adopt these EPA noise standards (or lower noise standards) to protect the public health and welfare from harmful, disruptive aircraft overflight noise pollution.

According to Daniel Fink, MD, MBA, in Testimony he provided to the Maryland General Assembly in support of HB1103 and SB658 on March 8, 2022, titled, *Aircraft Noise is a Public Health Problem, Not Just An Annoyance*, Dr. Fink stated:

“The problem of aircraft noise is well recognized elsewhere in the world. For example, in 2018, the World Health Organization’s (WHO) Environmental Noise Guidelines for the European Region⁴ recommended much lower aircraft noise levels than those currently required by the FAA. Specifically, WHO recommended reducing average aircraft noise exposure below 45 decibels (dB) L den (average day-evening-night noise level) and nighttime aircraft noise exposure below 40 dB L night (average nighttime noise level). (see Appendix) Since the decibel scale is logarithmic, indicating mathematically that a 3 dB increase in sound pressure measurement denotes a doubling of sound energy, these are much lower sound energy levels than the 65 dBA standard used by the FAA.”

(Note: The above Reference number 4 refers to the World Health Organization. (2018) Environmental Noise Guidelines for the European Region.)

Dr. Fink’s March 8, 2022 Maryland Testimony, page 7, and is available in its entirety here: https://quietcommunities.org/wp-content/uploads/2022/03/FINAL-AIRCRAFT-NOISE-IS-A-PUBLIC-HEALTH-PROBLEM_DJ-Fink.pdf.

Sound is measured in decibels (dB). It is our understanding that the FAA prefers to use noise modeling based on objective measurement rather than actual noise measurements. In light of that FAA modeling preference, we ask that the FAA consider taking a typical single-prop training aircraft, and model the noise impact at a grid of locations for an actual dB average for an hour of full close pattern use, which are typically touch-and-go training operations. For example, if one assumes each aircraft is at 1,000 above ground level (AGL) in the middle downwind, and if the FAA adopts a reasonable profile for climb to that and descend from that, this type of modeling would show the public what the FAA model says the decibels are, for that hour, at points under the pattern, and at points in a half-mile grid outside the downwind. Likely, such FAA modeling would show significant aircraft noise levels, and may provide substantial evidence that does not support, for example, the current air traffic control practice at Centennial Airport in Colorado (KAPA) of allowing intensified adverse community flight training noise impacts with small loops off the downwind leg. However, please note that general aviation airports like C29 do not have an air traffic control tower, and the adverse, low altitude aircraft (*below* 1,000 AGL) training noise impacts over the community extend well beyond a half-mile from C29.

d. What interests or concerns do communities in the vicinity of commercial space transportation operations have? How can these concerns be addressed using noise metrics? What noise metrics would address these concerns? Please explain your reasoning.

Answer:

All forms of transportation noise, which is unwanted sound, should be accurately measured and studied for adverse impacts on the community, including but not limited to people on the ground,

adverse physical and mental health impacts to people and all things living, including wildlife and the entire interconnected environmental ecosystem. “An ecosystem is a geographic area where plants, animals, and other organisms, as well as weather and landscapes, work together to form a bubble of life.” (See <https://education.nationalgeographic.org/resource/ecosystem/>)

e. What interests or concerns do communities in the vicinity of UAS (drone) package delivery or other newly emerging technology operations have? How can these concerns be addressed using noise metrics? What noise metrics would address these concerns? Please explain your reasoning.

Answer:

According to the FAA, Unmanned Aircraft System (UAS) is an aircraft that is operated without the possibility of direct human intervention from within or on the aircraft. (<https://www.faa.gov/faq/what-unmanned-aircraft-system-uas>)

Noise, safety, and privacy concerns are paramount with respect to drones (UAS) to prevent the U.S. from becoming the wild west for all things flying in the air to the detriment of people living on the ground. Recreational drones are allowed to be flown by persons who are at least sixteen years of age and the drones can be flown up to 400 ft above ground. (https://www.faa.gov/uas/commercial_operators/become_a_drone_pilot:[https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title49-section44809&num=0&edition=prelim](https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title49-section44809&num=0&edition=prelim;); <https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-107>). Commercial drones over 55 pounds have different FAA requirements. (https://www.faa.gov/sites/faa.gov/files/uas/resources/events_calendar/archive/How_To_Drone_Operations_Over_55_lbs.pdf).

Problems have already been reported with instances of a peeping Tom using a drone with a video camera to record from outside a woman in her bedroom changing clothes in northern Virginia. (https://www.insidenova.com/headlines/peeping-tom-uses-drone-to-look-in-woodbridge-womans-bedroom-window/article_2ca064b4-8813-11eb-980d-5b0cf04f6b37.html). A peeping Tom used a drone with a video camera on it to spy on a couple in Utah as the husband was in the shower about to get ready to go to work. (<https://www.youtube.com/watch?v=hoaYf1coGvY>).

For example, here is a blog on how to make your drone quieter - <https://www.droneblog.com/drone-noise-reduction-8-ways-to-make-your-drone-quieter/>.

On 5/3/23, the FAA released its updated blueprint for air taxis. (See <https://www.faa.gov/newsroom/faa-releases-airspace-blueprint-air-taxis>). Unfortunately, the revised air taxi blueprint appears to give little to no regard to the quality of life, noise and safety concerns of people living on the ground, and includes overhead passing zones for the myriad array of flying devices/aircraft and helicopters overhead. See FAA *Concept of Operations v2.0, Urban Air Mobility (UAM)*, publicly released on 5/3/23, page 21, Figure 5, use of a Vertical Common Passing Zone, Figure 6: use of Lateral Passing Zones, and page 22, Figure 7: UAM Corridor with Multiple Tracks, available at: https://www.faa.gov/sites/faa.gov/files/Urban%20Air%20Mobility%20%28UAM%29%20Concept%20of%20Operations%202.0_0.pdf).

The FAA must revise this updated blueprint for air taxis to include noise and other disruptive impacts of UAM to persons on the ground where air taxis and other flying devices/aircraft and helicopters overhead will be flying on a 24/7 basis at low altitudes. The FAA should also permit local communities to adopt airport take off, landing, and flight training curfews and lower noise standards for the benefit of the persons on the ground living in the community that is adversely impacted by aircraft operations and procedures.

3. *DNL*. What views or comments do you have about the FAA's core decision making metric, DNL? How would these views regarding DNL be resolved if the FAA employed another noise metric (either in addition to, or to replace DNL) or if the FAA calculated DNL differently? Please explain your reasoning.

Answer:

DNL is meaningless and ineffective for protecting the public from aircraft noise. The current DNL of 65 is way too high and must be lowered. Currently, this metric does nothing to protect the public from aircraft noise in any meaningful way.

4. *Averaging*. DNL provides a cumulative description of the noise events expected to occur over the course of an entire year averaged into a representative day, described as an Average Annual Day (AAD).

a. Do you believe an AAD is an appropriate way to describe noise impacts? Please explain why or why not.

Answer:

No, averaging does nothing to protect the public from disruptive single-event or cumulative aircraft noise. People on the ground experience noise as a single event, not as an average over time. The frequency, intensity, and duration of aircraft overflight noise is also not captured by the current cumulative DNL noise standard.

b. If not, what alternative averaging schemes to AAD should be considered and why? What information would the use of an alternative averaging scheme capture that AAD does not?

Answer:

The duration and intensity of a single noise event is how people actually experience noise. The pros and cons of the various methods are briefly described here:

<https://www.noisequest.psu.edu/noisebasics-metricsexistingprograms.html>

5. *Decision making Noise Metrics.* The FAA currently uses DNL as its primary decision-making metric for actions subject to NEPA and airport noise compatibility planning studies prepared pursuant to [14 CFR part 150](#).

a. Should different noise metrics be used in different circumstances for decision making?

Answer:

No. It would seem most efficient and effective to have a new, lower than 65 noise standard that in reality protects the public from hearing loss and disruptive aircraft overflight noise.

b. If the answer to Question 5.a. is “yes,” please identify: the metric, the information it provides that DNL does not, and explain when and how it should be employed by the FAA in its system (*e.g.*, should the FAA use a noise metric other than DNL to evaluate noise exposure in quiet settings, such as national parks, national wildlife and waterfowl refuges, etc.)? Should this metric be used when the FAA is making decisions that affect noise in these settings? Should this metric be used alone or in combination with another metric?

Answer:

N/A

c. If the metric should be used in combination with another metric, please describe how they should be used together for decision making.

Answer:

Noise experts should make this determination with the best interests of the public on the ground as the primary driver and objective of the analysis.

d. If the answer to Question 5.a is “no,” should DNL remain the core decision making metric or should another metric be substituted in all circumstances?

Answer:

Likely, no. A protective of the public on the ground single event noise metric should be established and enforced. However, noise experts should assist in making this determination.

e. How would the use of the metrics that you recommend support better agency decision making? Please explain and illustrate with specific examples how the use of the recommended metric(s) would benefit agency decision making.

6. *Communication.*

a. Please identify whether and how the FAA can improve communication regarding changes in noise exposure (*e.g.*, what information FAA communicates, where and with whom FAA communicates, what information methods FAA uses to communicate and the venues at which FAA shares this information). Please explain your reasoning.

Answer:

The FAA should stop passing the buck by telling communities that aircraft noise is a local issue while at the same time the municipal airport owner tells the community that aircraft noise is a federally pre-empted FAA issue. The FAA noise ombudsman program is also in need of significant improvement (<https://www.faa.gov/noise/inquiries>). If one sends a noise complaint email to the FAA, you get an anonymous nonresponsive reply email from someone or something (artificial intelligence?) that tells you that you are limited to making only one similar noise complaint per year with no assistance whatsoever. This is a completely unacceptable system and use of federal taxpayer money and needs to be clarified and fixed. “Shared” jurisdiction between federal and local jurisdictions results in a completely ineffective, non-responsive noise complaint system that is a waste of taxpayer money. Moreover, local noise complaints regarding general aviation recreational aircraft overflight noise oftentimes results in a retaliatory *increase* in aircraft overflight noise in the vicinity of the complaining person(s) residence.

The FAA definition of “community” also must be expanded to include all those persons on the ground impacted by airport operations and not just those who live in the community that owns the airport, especially if it involves a general aviation airport. There are many who live in communities adjacent to the airport who suffer the highest number of aircraft overflights and disruptions yet have absolutely no voice in the matter. For example, at Middleton, Wisconsin’s C29 general aviation airport, the City of Middleton (airport owner) has gone so far as to ban public input at Airport Commission Meetings and prohibit the adjacent affected communities from even having a seat on the C29 Airport Commission despite the majority of aircraft overflights and noise disruptions taking place over the two adjacent municipalities.

b. Should the FAA consider revisions to its policy on the use of supplemental noise metrics in the FAA's NEPA procedures? Please explain how this policy should be modified to improve FAA communication of noise changes when the FAA is making decisions that affect noise.

Please explain your reasoning.

Answer:

Communication is oftentimes used by airport officials as a means to “educate” the public into submission so they will quit complaining about aircraft overflight noise and just passively accept

it. Such misuse of “communication” is inappropriate overreach and an abuse of government authority.

See also *Aircraft Noise, FAA Should Improve Efforts to Address Community Concerns*, US GAO Testimony Before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives, Statement of Heather Krause, Director, Physical Infrastructure, March 17, 2022, available at: <https://www.gao.gov/assets/gao-22-105844.pdf>

NEPA is only a procedural federal statute and should be amended to also be a substantive federal statute in order to protect the environment. (<https://www.law.cornell.edu/cfr/text/42/137.287>). Despite this, NEPA should be protected and improved as highlighted here: <https://protectnepa.org/what-is-the-threat-to-nepa/>

The FAA should also start viewing the local communities as a genuine partner that should strive for mutually agreeable aircraft noise solutions.

c. What information about the change in noise resulting from civil aviation operations (e.g., UAS or drones, helicopters, fixed wing aircraft, rockets/commercial space transportation vehicles, and new entrant technologies) should the noise metric communicate to the public? Please explain your reasoning.

Answer:

The FAA should also start viewing the local communities as a genuine partner that should strive to develop mutually agreeable aircraft noise solutions.

d. Please explain how the public will benefit if the FAA implements your proposal in response to Questions 6.a and 6.b.

Answer:

The public would start to have a genuine voice and meaningful input into the regulatory rulemaking process as opposed to either being ignored or “educated” after the fact. To date, the FAA seems more concerned with documenting check box procedures instead of having an honest dialog with beneficial information sharing and potentially positive outcomes on how to effectively reduce aircraft noise, especially general aviation airports whose recreational aircraft can have a significantly adverse impact on local communities.

7. *NEPA and Land Use Noise Thresholds Established Using DNL or for Another Cumulative Noise Metric.* The FAA has several noise thresholds that are informed by a dose-response curve (Schultz Curve ^[29]), which historically provided a useful method for representing the community response to aircraft noise. Two of the noise thresholds informed by the Schultz Curve are the FAA's significant noise impact threshold for actions being reviewed under the National Environmental Policy Act and the land use compatibility standards established in [14 CFR part](#)

[150, Appendix A](#). Both of these rely on the cumulative noise metric DNL and are referred to collectively in this question and questions 8–10 as “the FAA noise thresholds.” On January 11, 2021, the FAA published the results of the Neighborhood Environmental Survey,^[30] a nationally representative dataset on community annoyance in response to aircraft noise. The Neighborhood Environmental Survey results show higher percentage of people who self-identify as “highly annoyed” by aircraft noise across all DNL levels studied in comparison to the Schultz Curve.

a. How should the FAA consider this information (*i.e.*, the Schultz Curve and Neighborhood Environmental Survey findings) when deciding whether to retain or modify the FAA noise thresholds ^[31] established using the DNL metric or to establish new FAA noise thresholds using other cumulative noise metrics? Please explain your reasoning.

Answer:

As stated by Jamie Banks, PhD, MSc, the Founder and President of Quiet Communities, Inc., in Testimony at March 10, 2022 legislative hearings on Maryland bills SB658 and HB1103, Dr. Banks stated, “The FAA’s common reference to noise as “an annoyance” trivializes its serious health impacts. No one affected by aviation noise refers to it as “an annoyance” but rather, uses words like “assault,” and “torture.” The impacts they describe are consistent with what has been reported in the scientific literature and include deteriorating mental and physical health, anxiety, depression, anger, exhaustion, fear; disrupted sleep, work, concentration, and communication.”

Dr. Banks further stated as follows:

- Aircraft noise disrupts activities and sleep and causes stress responses that increase high blood pressure, and the risks of heart disease, stroke, and mortality (6-8). Seniors affected by aircraft noise are more likely to have heart disease and be hospitalized (9). Low frequency noise and nighttime aviation noise are especially hazardous (10). A recent study showed that quieter skies during the pandemic improved cardiovascular health (11).
- Aircraft noise can contribute to anxiety and depression (12, 13).
- Aircraft noise negatively affects children’s learning and cognitive development (14, 15). A ten-year study of students Aircraft noise can contribute to anxiety and depression (12, 13).
- Aircraft noise negatively affects children’s learning and cognitive development (14, 15). A ten-year study of students from 6000 schools near 46 major US airports by the National Academies of Science, Engineering and Medicine found that aircraft noise was responsible for lower standardized test scores. Installing sound insulation in a subset of those schools reversed the effect (16).
- Noise has been associated with the development of dementia (17).
- Noise is an environmental stressor, diminishing environmental quality, damaging fragile ecosystems, and contributing to loss of biodiversity (18).
- All of these impacts come with substantial economic costs. Cardiovascular disease and stroke cost the nation \$350 billion annually in direct medical costs and work productivity losses (19). While not all of these costs can be attributed to noise, lowering environmental noise just 5-decibels generates annual savings of \$4 billion in medical costs by reducing the prevalence of hypertension and coronary artery disease (20).

Dr. Banks's March 10, 2022 Maryland Testimony, pages 1 and 2, and is available in its entirety here: https://quietcommunities.org/wp-content/uploads/2022/03/Maryland-SB658-and-HB1103_Jamie-Banks-written-testimony.pdf

(Note: The above References in Dr. Bank's Testimony refers to the following:

6. Tawakol A, Ishai A, Takx RA, Figueroa AL, Ali A, Kaiser Y, et al. Relation between resting amygdalar activity and cardiovascular events: a longitudinal and cohort study. *Lancet*. 2017 Feb 25;389(10071):834-845. doi: 10.1016/S0140-6736(16)31714-7. Epub 2017 Jan 12. Erratum in: *Lancet*. 2017 Feb 25;389(10071):804. Erratum in: *Lancet*. 2017 Feb 25;389(10071):804.
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In accord, Daniel Fink, MD, MBA submitted Testimony on March 8, 2022 indicating the current FAA noise policies are contributing to disease and death, and stated the following:

“For decades, the Federal Aviation Administration (FAA) has relied on the Schultz Curve^{12,13} to document aircraft noise annoyance, but the recent FAA-funded Neighborhood Environmental Survey found that a much greater proportion of people are highly annoyed by aircraft noise across all day-night noise levels (DNL) than was previously acknowledged. ¹⁴ Previous studies had found that only 12.5% of respondents were highly annoyed by aircraft noise, but the new study found that 42% of respondents were highly annoyed.

Annoyance isn’t just a human emotion; being annoyed is stressful. In 2017, Tawakol et al. reported that stress causes vascular inflammation, which in turn is associated with cardiovascular disease and death.¹⁵ Further work by Tawakol’s group found that people exposed to aircraft noise had increased risk of heart attack and stroke regardless of other cardiac risk factors.¹⁶ Even before the precise mechanisms by which stress from aircraft noise caused cardiovascular disease were understood, causality had been established. The multiplicity of studies, in human and animal subjects, using a wide variety of techniques, meets the Bradford-Hill criteria for epidemiologic causality.¹⁷

...

Generally, aircraft noise has direct involuntary physiological effects on stress hormones, heart rate, and blood pressure, and also causes sleep disturbance and interferes with activities and communication, causing annoyance, leading to an indirect stress response, causing vascular dysfunction. Both in turn cause cardiovascular disease and death. Multiple studies have confirmed these relationships.

Nighttime aircraft noise has more serious adverse cardiovascular health effects than daytime noise. This appears to be related to the evolutionary role of hearing as necessary for survival, with noise indicating danger and causing a physiologic stress response, and also to sleep deprivation. In fact, nighttime aircraft noise exposure has been shown to trigger heart attacks.²⁰”

Dr. Fink’s March 8, 2022 Maryland Testimony, pages 2, 3, and 6, and is available in its entirety here: https://quietcommunities.org/wp-content/uploads/2022/03/FINAL-AIRCRAFT-NOISE-IS-A-PUBLIC-HEALTH-PROBLEM_DJ-Fink.pdf.

(Note: The above References in Dr. Fink's Testimony refers to the following:

12. Schultz, T.J. (1978) Social surveys on noise annoyance. *J. Acoust. Soc. Am.* 64(2):377-405. <https://doi.org/10.1121/1.382013>
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16. Osborne, M.T., Radford, A., Hassan, M.Z.O., et al.(2020) A neurobiological mechanism linking transportation noise to cardiovascular disease in humans. *European Heart Journal* 41:772-782 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7006229>
17. Fedak, K.M., Bernal, A., Capshaw, Z.A., Gross, S. (2015) Applying the Bradford Hill criteria in the 21 st century: how data integration has changed causal inference in molecular biology. *Emerg Themes Epidemiol* 21:14. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4589117>.
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20. Saucy, A., Schaffer, B., Tangerman, L., et al. (2021) Does night-time aircraft noise trigger mortality? A case-crossover study on 24,886 cardiovascular deaths. *Eur Ht J* 42(8):835-843 <https://doi.org/10.1093/eurheartj/ehaa957>).

b. Should the FAA consider other or additional information when deciding whether to retain or modify the FAA noise thresholds that were established using the DNL metric or to establish new FAA noise thresholds using other cumulative noise metrics? Please describe the reason for the recommendation and identify the data, information, or evidence that supports the recommendation.

Answer:

You should start listening to the feedback and comments you get from the public on aircraft noise and work to make significant improvements.

c. How should research findings on auditory or non-auditory effects (e.g., speech interference, sleep disturbance, cardiovascular health effects) of noise exposure caused by civil aircraft and vehicles be considered by the FAA when it decides whether to retain or modify the FAA noise thresholds ^[32] that were established using the DNL metric? How should the FAA consider this same research when deciding whether to establish new FAA noise thresholds using other cumulative noise metrics? Please explain your response.

Answer:

You should protect the public living on the ground. The findings of high quality, independent research should inform the FAA, not the voices of the aviation lobby .

As stated by Daniel Fink, MD, MBA, “The problem of aircraft noise is well recognized elsewhere in the world. For example, in 2018, the World Health Organization’s (WHO) Environmental Noise Guidelines for the European Region 4 recommended much lower aircraft noise levels than those currently required by the FAA. Specifically, WHO recommended reducing average aircraft noise exposure below 45 decibels (dB) L den (average day-evening-night noise level) and nighttime aircraft noise exposure below 40 dB L night (average nighttime noise level). (see Appendix) Since the decibel scale is logarithmic, indicating mathematically that a 3 dB increase in sound pressure measurement denotes a doubling of sound energy, these are much lower sound energy levels than the 65 dBA standard used by the FAA.”

Dr. Fink’s March 8, 2022 Maryland Testimony, page 7, and is available in its entirety here: https://quietcommunities.org/wp-content/uploads/2022/03/FINAL-AIRCRAFT-NOISE-IS-A-PUBLIC-HEALTH-PROBLEM_DJ-Fink.pdf.

d. In examining whether to change its metrics and thresholds for noise, the FAA needs reliable information to support any changes. One type of information that the FAA can rely on is epidemiological evidence. This means the study (scientific, systematic, and data-driven) of the distribution (frequency, pattern) and determinants (causes, risk factors) of health-related states and events (not just diseases) in specified populations (neighborhood, school, city, state, country, global). What amount of epidemiological evidence is sufficient to provide the FAA with a sound basis for establishing or modifying the FAA noise thresholds ^[33] either using the DNL metric or another cumulative noise metric? Please explain your response.

Answer:

You already have enough research. According to Daniel Fink, MD, MBA,

“There is more than enough science 17-29 to support immediate action to reduce aircraft noise, solely on the basis of its adverse health impacts on Americans living near airports and under aircraft flight paths... research done in Europe does not need to be replicated by American researchers on American populations. Many of the articles cited in this testimony have appeared in American medical or scientific journals, and others have appeared in well-respected peer-reviewed European journals. The populations of Western Europe and those in the United States descended from European immigrants are genetically and physiologically similar. As far as is known, the enzymes and chemical reactions in human cells are the same the world over. The research not done in the United States has been done by reputable scientists at respected European universities and government agencies, using accepted research methodologies and standards. Assertions that research done in Europe must be replicated and validated in the U.S. are merely a delaying tactic that has no scientific merit.”

Dr. Fink's March 8, 2022 Maryland Testimony, pages 7 and 8, and is available in its entirety here: https://quietcommunities.org/wp-content/uploads/2022/03/FINAL-AIRCRAFT-NOISE-IS-A-PUBLIC-HEALTH-PROBLEM_DJ-Fink.pdf.

(Note: The above References in Dr. Fink's Testimony refers to the following:

17. Fedak, K.M., Bernal, A., Capshaw, Z.A., Gross, S. (2015) Applying the Bradford Hill criteria in the 21st century: how data integration has changed causal inference in molecular biology. *Emerg Themes Epidemiol* 21:14. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4589117>
18. Babisch, W. (2014) Updated exposure-response relationship between road traffic noise and coronary heart disease: a meta-analysis. *Noise Health* 16:1-9. <https://doi.org/10.4103/1463-1741.127847>
19. Munzel, T., Schmidt, F.P., Steven, S., et al. (2018) Environmental noise and the cardiovascular system. *J Am Coll Cardiol* 71(6):688-97 <https://doi.org/10.1016/j.jacc.2017.12.015>
20. Saucy, A., Schaffer, B., Tangerman, L., et al. (2021) Does night-time aircraft noise trigger mortality? A case-crossover study on 24,886 cardiovascular deaths. *Eur Ht J* 42(8):835-843 <https://doi.org/10.1093/eurheartj/ehaa957>

e. Should the FAA consider using factors other than annoyance to establish FAA noise thresholds ^[34] using the DNL metric or other cumulative noise metrics? What revisions to existing FAA noise thresholds or new noise thresholds do you recommend be established and why? Please explain your response.

Answer:

Yes. Independent research from experts that do not have conflict-of-interests and are not in any way connected to the aviation industry can provide expert advice on this topic.

8. *FAA Noise Thresholds Using Single-Event or Operational Metrics.* As the FAA learned from the results of the NES, people are bothered by individual aircraft noise events, but their sense of annoyance increases with the number of those noise events. Should the FAA consider employing new FAA noise thresholds ^[35] using single-event or operational metrics? If the answer is "yes," which metrics should be used to establish the FAA noise thresholds? What should be the relevant noise exposure level for the new noise thresholds you propose? Please explain your reasoning. If the answer is "no," please explain your reasoning.

Answer:

Please stop inferring the people on the ground are to blame for being "bothered" or having a "sense of annoyance". This is also a favorite tactic of local airport officials trying to blame the public for being "too sensitive to noise", which is a disrespectful and inappropriate approach to finding a solution to aircraft noise disruptions and adverse physical and psychological effects on the public, including children.

Yes, the FAA should consider using new FAA noise thresholds using single-event or operational noise metrics. Independent noise experts should be utilized to propose the details related to this question.

9. *FAA Noise Thresholds for Low-Frequency Events*. Should FAA establish noise thresholds ^[36] for low-frequency events, such as those associated with the launch and reentry of commercial space transportation vehicles authorized by the FAA Office of Commercial Space Transportation? If the answer is “yes,” which metrics should be used to establish the noise thresholds? What should be the relevant noise exposure level for the new noise thresholds you propose? Please explain your reasoning. If the answer is “no,” please explain your reasoning.

Answer:

Yes, all transportation noise can have adverse health and environmental impacts, including low-frequency noise. Your mission should include protecting the public on the ground and not just from flying modes of transportation crashing into them from the sky.

10. *Miscellaneous*. What other issues or topics should the FAA consider in this review regarding noise metrics, the method of calculating them, the establishment of noise thresholds, ^[37] or FAA's method of communicating the change in noise exposure? Please explain your response.

Answer:

Ambient noise levels also should be taken into consideration as they are often much lower in rural and semi-rural areas. “...semi-rural areas are often the most sensitive to aircraft noise, whereas more urban developments are less sensitive to aircraft noise due to the inherent nature of more noisy urban areas.” *Enhancing Airport Land Use Compatibility, Volume 1: Land Use Fundamentals and Implementation Resources (2010)*, page 40, (See <http://nap.nationalacademies.org/22960>).

“Aircraft noise effects are of concern as they can affect the quality of life for residents in their homes, and affect those using or residing in noise-sensitive facilities near airports. These include schools, places of worship, hospitals, parks and recreational facilities.” *Airport Land Use Compatibility Planning*, FAA AC No.: 150/5190-4B, 9/16/2022, 2.2.1.3, page 2-2.

An informative chart titled the *Physical Manifestations of Noise Stress* can be found at <https://www.healthline.com/health-news/loud-noises-bad-for-your-health> and lists the following adverse impacts of noise stress as follows:

- Delayed cognitive development in children
- Psychological triggers for individuals with PTSD
- Lower threshold for noise resulting in sleep disturbance
- Increased heartrate

- Changes in immune system
 - Anxiety
 - Annoyance, mood shifts
 - Elevation of cortisol production
 - Hypertension
 - Myocardial infarction
 - Vasoconstriction
 - Elevated blood pressure
 - Elevated adrenaline levels.
- In contrast, the health benefits of silence can include:
 - Lowering blood pressure
 - Improving concentration and focus
 - Calming racing thoughts
 - Stimulating brain growth
 - Reducing cortisol
 - Stimulating creativity
 - Improving insomnia
 - Encouraging mindfulness

See: *8 Physical and Mental Health Benefits of Silence, Plus How to Get More of It*, <https://www.healthline.com/health/mind-body/physical-and-mental-health-benefits-of-silence>

- There approximately 220,000 general aviation aircraft registered in the U.S., which includes legacy aircraft purchased on the used market. (See https://download.aopa.org/hr/Report_on_General_Aviation_Trends.pdf, page 2)
- *Aircraft Noise, FAA Should Improve Efforts to Address Community Concerns*, US GAO Testimony Before the Subcommittee on Aviation, Committee on Transportation and Infrastructure, House of Representatives, Statement of Heather Krause, Director, Physical Infrastructure, March 17, 2022, available at: <https://www.gao.gov/assets/gao-22-105844.pdf>

11. *Literature Review*. In this review, the FAA will examine the body of scientific and economic literature to understand how aviation noise correlates with annoyance as well as environmental, economic, and health impacts. The FAA also will evaluate whether any of these impacts are statistically significant and the metrics that may be best suited to disclose these impacts. A bibliography of this body of research is available for review in the Background Materials tab in the Docket and as Appendix 1 to the FAA framing paper entitled, *The Foundational Elements of the Federal Aviation Administration Civil Aircraft Noise Policy: The Noise Measurement System, its Component Noise Metrics, and Noise Thresholds*. This framing paper is available at: <https://www.faa.gov/noisepolicyreview/NPR-framing>. Please identify any studies or data regarding civil aviation noise not already identified by the FAA in the bibliography that you

believe the FAA should evaluate. Please explain the relevance and significance of the study or evidence and how it should inform FAA decisions regarding the policy.

Answer:

Please consider adding these to your Appendix 1: Bibliography as follows:

“Aircraft noise exposure is an environmental stressor and has been linked to various adverse health outcomes, such as annoyance, sleep disturbance, and cardiovascular diseases. Aircraft noise can trigger both psychological (annoyance and disturbance) and physiological stress responses (e.g. activation of the cardiovascular system and release of stress hormones)...constant exposure to aircraft noise can cause a continuous state of stress.” These adverse aircraft noise impacts are relevant for the general population, but also vulnerable groups such as children and the elderly. (Benz, S., Kuhlmann, J., Jeram, S., Bartels, S., Ohlenforst, B., Schreckenberger, D. (2022). *Impact of Aircraft Noise on Health*. In: Leylekian, L., Covrig, A., Maximova, A. (eds) *Aviation Noise Impact Management*. Springer, Cham. https://doi.org/10.1007/978-3-030-91194-2_7, Abstract.

A review of the current state of scientific knowledge regarding the adverse effects of aircraft noise emissions on the public can be found at: *Noise Health*, 2017 Mar-Apr; 19(87); 41-50, at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5437751/>.

An informative chart titled the *Physical Manifestations of Noise Stress* can be found at <https://www.healthline.com/health-news/loud-noises-bad-for-your-health> and lists the following adverse impacts of noise stress as follows:

- Delayed cognitive development in children
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- Increased heartrate
- Changes in immune system
- Anxiety
- Annoyance, mood shifts
- Elevation of cortisol production
- Hypertension
- Myocardial infarction
- Vasoconstriction
- Elevated blood pressure
- Elevated adrenaline levels.
- In contrast, the health benefits of silence can include:
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 - Calming racing thoughts
 - Stimulating brain growth
 - Reducing cortisol

- Stimulating creativity
- Improving insomnia
- Encouraging mindfulness

See: *8 Physical and Mental Health Benefits of Silence, Plus How to Get More of It*,
<https://www.healthline.com/health/mind-body/physical-and-mental-health-benefits-of-silence>