NOISE POLICY REVIEW

Docket FAA-2023-0855 Comment Summary

September, 2024

Executive Summary

The Federal Aviation Administration (FAA) is reviewing its civil aviation noise policy (Noise Policy Review, NPR) and considering how changes may better inform agency decision making, the types of issues it considers in making decisions, and potential improvements to how the FAA analyzes, explains, and presents changes in exposure to civil aviation noise.

As part of the NPR, the FAA is:

- Examining the current use of Day-Night Average Sound Level (DNL) as the primary noise metric for assessing cumulative aircraft noise exposure.
- Reviewing whether to continue to use DNL 65 decibel (dB) with a 1.5 dB change as the metric and threshold for determining significant noise effects in environmental reviews under the National Environmental Policy Act (NEPA) and the limit of residential land use compatibility as detailed in Title 14 Code of Federal Regulations (CFR) Part 150 (Part 150).
- Considering if and how alternative noise metrics may be used in lieu of, as a supplement, or as a companion, to DNL to better inform agency decisions and improve the FAA's disclosure of noise effects.
- Considering additional factors such as the need for additional research.

The FAA requested public written comment on the NPR through Federal Register Notice Docket ID FAA-2023-0855. The FAA received 4,857 comments: 4,608 comments from individuals and 249 from organizations including community groups, industry groups, and elected officials and government. This report describes the overarching themes, feedback, and recommendations identified from the NPR comments. The following is a summary of overarching themes:

Overflight communities: The most common comment theme is the issue of aviation (jet) noise on residences, particularly related to Performance-Based Navigation (PBN) effects on communities outside of the DNL 65 contour area or overflight communities[1]. Commentors describe the negative impact these operations have on quality-of-life, health, and sleep. Nighttime operations are frequently mentioned as a significant concern and commentors are particularly concerned about overhead flight frequency. For overflight communities, community groups recommend "N-Above Ambient" (NAA) as a decision-making metric. There is a recommendation that mitigation could include flight path changes, noise abatement departure procedures, and reduced nighttime operations (as opposed to sound insulation).

Close-in communities: For close-in communities[2], there is general agreement by many groups that DNL is an adequate metric for NEPA, Part 150 and land use planning. Many groups also report that Community Noise Equivalent Level (CNEL) is an adequate metric for this purpose.

[1] There is no formal definition of "overflight" communities. In the Federal Register Notice, the FAA defined "overflight communities" as those "communities located under the flight paths of aircraft and vehicles that are distressed by aircraft noise and are located outside of the DNL 65 dB contour". See Section 4.2 for other definitions from Community groups.

[2] There is no formal definition of "close-in" communities, but some commentors have stated these are communities within the current 65 DNL contour; others suggest it should be as far out as the DNL 55 plus Lnight 45 contour.

Further, several community groups made specific recommendations for metrics and thresholds of DNL/CNEL 55 and additional weightings for nighttime operations.

Neighborhood Environmental Survey (NES): Many community groups believe sufficient data exists to proceed with changes to policy and metrics based on NES results.

Industry groups, while not opposed to other metrics or issue thresholds, do not support policy changes without further study of the policy implication, noting in particular the lack of:

> (1) research on whether other metrics are better at predicting human response to aircraft noise, and
>
> (2) economic studies and analysis of potential policy changes. Additionally, many airport sponsors mentioned the significant investment in current Land Use Planning around DNL 65 and the potential effects of changing this threshold.

Vehicle Types: There was general agreement that the policy should apply to all vehicle types. Community groups and individuals stated concern about potential future effects of Unmanned Aircraft Systems (UAS) and Advanced Air Mobility (AAM) and stated that overland supersonic flight should continue to be banned including "low boom" technology. UAS/AAM Original Equipment Manufacturers (OEMs) and industry groups stated that while they support noise policy changes, it should not impact growth for this emerging industry. Commentors also expressed concerns about low altitude helicopter flights and general aviation flight school training operations and requested a minimum altitude restriction for these operation types.

Research Areas: Commenters identified research areas that the FAA should explore. Opinions were mixed on whether this research needs to be completed before the FAA makes final policy recommendations. Recommendations included research into appropriate thresholds (e.g., Number Above 50 (NA50) analysis), NES data as the sole High-Annoyance predictor for overflight communities, psychoacoustic research that may be helpful to improve understanding of annoyance in the long-term to reduce complaints, and Aviation Environmental Design Tool (AEDT) enhancements such as airframe noise modeling. See Section 4.10 and Appendices D through H for a full list of research recommendations. Many commenters identified the need for further clarification of the FAA's goals for the noise policy. They also emphasized the need for continued stakeholder engagement and improvements in communications.

The table below summarizes key policy recommendations:

Issue	Policy Recommendations
Key Topics	• Overflight effects on residential communities affect quality of life in neighborhoods well outside DNL 65. FAA's noise policy should address both close-in and overflight communities. Many community groups believe these affected communities should be treated differently. • Health effects are a concern to many residents and nighttime noise has an impact on health. These factors should be considered in policy making. • Before finalizing policy changes, the FAA needs to clearly outline its policy options and provide results of detailed policy analyses, including cost-benefit analysis and complete health effects research. • Noise data should be shared early, often, and clearly with the public to foster trust and a positive relationship with the FAA.
Decision-Making Metric & Thresholds	• DNL is still appropriate for close-in communities; community groups recommend a lower threshold; industry groups are open to lower threshold but believe the FAA has not provided sufficient data to support a decision. • Community groups recommend Number Above Ambient (NAA) as metric for overflight communities. Additional research is needed to determine whether there is a need for a threshold and if so, what it should be.
Alternative/Supplemental Noise Metrics	• Many community groups believe that "supplemental" metrics should be used as decision-making metrics. • Industry groups generally support event-based metrics like NA or Time-Above (TA) for communication purposes, and possibly for decision-making if research supports.
Policy for Different Vehicle Types/Operation Type	• Noise from all phases of flight and all types of traditional aircraft should be addressed by noise policy. • Some vehicles and types of operations (e.g., helicopters, flight training) may require unique policy recommendations. Some community groups recommended increased local control for some operations particularly general aviation, helicopters, drones, and operators below 2,000 feet.
Neighborhood Environmental Survey & Schultz Curve	• Community groups believe that NES results show that current FAA policy significantly underestimates aircraft annoyance and therefore health effects. • The FAA should identify alternative metrics and thresholds for overflight communities (and possibly close-in communities) but in the interim, FAA should rely on NES results to justify

Issue	Policy Recommendations
	lowering the DNL threshold for environmental reviews and impact analyses. • Some commenters expressed concerns about the context of data collection on NES and reliability of data that are quite old. • Others recommended additional analyses that should be conducted with NES data.
Health Effects and Concerns	• Many community groups expressed significant concern about the health effects of aviation noise; some recommended including health impact assessments in NEPA studies. • Many commenters identified their key issue as "quality of life," which could include health. • The FAA needs to clarify whether revised noise policy is based on annoyance or health effects. • The FAA needs to complete health effects research before finalizing any policy recommendations. • If uncertainty exists when developing a threshold for health effects, the FAA should err on the side of protecting human health and wellbeing.
NEPA/ Part 150/ Land Use/ Mitigation	• Many community groups recommended revising Part 150 to address overflight noise issues. • Community groups also support NEPA "mitigation" for overflight communities that is focused on modifying operational procedures and not sound insulation. • Several airports and industry groups recommended additional focus on compatible land use development.
Noise from Emerging Vehicle Types, Supersonics, etc	• Communities are concerned about prematurely rolling out UAS or other new emerging technology operations before a new noise policy is available that addresses true community effect, including new elements of aircraft operations such as visual pollution and hovering. • Future noise policy will need to consider all these aircraft and should take into account empirical data associated with these new entrant vehicles and the community experience/reaction to their operation.
Research Recommendations	• The FAA should repeat the NES analysis, but tie annoyance levels to N-Above data for those same communities to determine the dose-response relationship. • The FAA should further research the extent to which non-acoustic factors, such as demographic and socio-economic factors, vehicular and other non-aircraft noise, recent airport or aviation-related controversies, air emissions, and aviation

Issue	Policy Recommendations
	incidents, may play a role in annoyance levels as suggested by recent research. • The FAA should examine dose-response relationships using metrics that are not available in AEDT (e.g., loudness). • The FAA should conduct research defining an appropriate benefit-cost analysis (BCA) cost effectiveness methodology that is consistently applied in aiding decision-making related to policy.
Noise Policy Development Process	• Both community and industry groups agree that the FAA needs to clarify the purpose for NPR and explicitly identify noise effects that the policy will address (e.g., annoyance, health effects, etc.). • Most industry groups believe the FAA should complete ongoing health effects research before finalizing any policy changes. On the other hand, many community groups noted sufficient research exists to make policy changes. These groups recommend that the FAA engage the National Academy of Sciences to appoint an expert panel to identify appropriate metrics and thresholds. • Most stakeholders agree on the need for additional stakeholder engagement during this process, including an additional Federal Register Notice, before the FAA issues final policy. • Airport and industry groups stress the need for the FAA to prepare BCA and identify funding sources associated with any proposed policy changes.
Communications	• Several community groups recommended establishing an Impacted Communities National Advisory Committee, under the Federal Advisory Committee Act (FACA), to advise the FAA on current and future noise and pollution issues. • Several community groups recommended more community involvement with the FAA during the flight procedure design phase. • Revisions to noise policy should place significant emphasis on improving stakeholder engagement and providing further transparency to local communities.

Contents

1 Introduction

The Federal Aviation Administration (FAA) is reviewing its civil aviation noise policy under the Noise Policy Review (NPR) and considering how changes to the policy may better inform agency decision making, the types of effects it considers in making decisions, and potential improvements to how the FAA analyzes, explains, and presents changes in exposure to civil aviation noise. As part of the NPR, the FAA is:

- Examining the current use of Day-Night Average Sound Level (DNL) as the primary noise metric for assessing cumulative aircraft noise exposure;
- Reviewing whether to continue to use DNL 65 decibel (dB) with a 1.5 dB change as the metric and threshold for determining significant noise effects in environmental reviews under the National Environmental Policy Act (NEPA)[3] and the limit of residential land use compatibility as detailed in Title 14 Code of Federal Regulations (CFR) Part 1504 (Part 150);
- Considering if and how alternative noise metrics may be used in lieu of, as a supplement to, or as a companion to DNL to better inform agency decisions and improve the FAA's disclosure of noise effects; and
- Considering additional factors such as the need for additional research.

FAA requested[5] public written comment on the NPR. The public comment period ran from May 1, 2023 to October 13, 2023. The FAA received 4,857 comments (unique docket submissions) containing 11,236 pages of material. The intent of this report is to describe the overarching patterns, trends, and themes identified from the comments. This report is structured as follows:

Section 1: Introduction

Section 2: Comment Information and Issue Outline

Section 3: Summary of Feedback

Section 4: Comments by Key Topics

Appendix A: Federal Register Questions

Appendix B: Mapping of Organization/Government Agency to Organization Type

Appendix C: Issue Outline

Appendix D: Noise Policy Recommendations/Excerpts from Community Groups, Airport Roundtables, Airport Advisory Boards, Noise Forums, Non-Profits

Appendix E: Excerpts from Elected Officials and Government (local, state, federal)

Appendix F: Excerpts from Aviation Industry and Airport Sponsors

Appendix G: Excerpts from Consultants

[3] The National Environmental Policy Act of 1969 (83 Stat. 852) [42 U.S.C. 4321 et seq.
[4] Airport Noise Compatibility Planning, 14 C.F.R. § 150 (1984).
[5] https://www.regulations.gov/document/FAA-2023-0855-0001

2 Comment Information and Issue Outline

This section provides an overview of the comments received through the NPR Federal Register Notice and the comment evaluation process.

2.1 Comment Docket Summary

The FAA received 4,857 comments from across the country on the NPR during the public comment period (May 1 through October 13, 2023) via the Docket on Regulations.gov. The original comment closing period was June 30, 2023 but the FAA received requests to extend the comment period by members of the public; a city council member from a major metropolitan area; and from a consortium of nine industry groups representing passenger airlines, the general aviation sector, cargo airlines, airport executives; and local, regional, and state governing bodies that own and operate commercial airports in the United States and Canada. The requests for an extension ranged from 60 to 90 days. The FAA granted a comment period extension for the request for comments through September 29, 2023. FAA subsequently continued the docket until October 13, 2023 in the event any comments were delayed in the mail. The docket recorded the commenter location if the individual or organization elected to provide their location (state) upon comment submittal. Figure 1 shows the location by state for commenters who identified a location.[6]

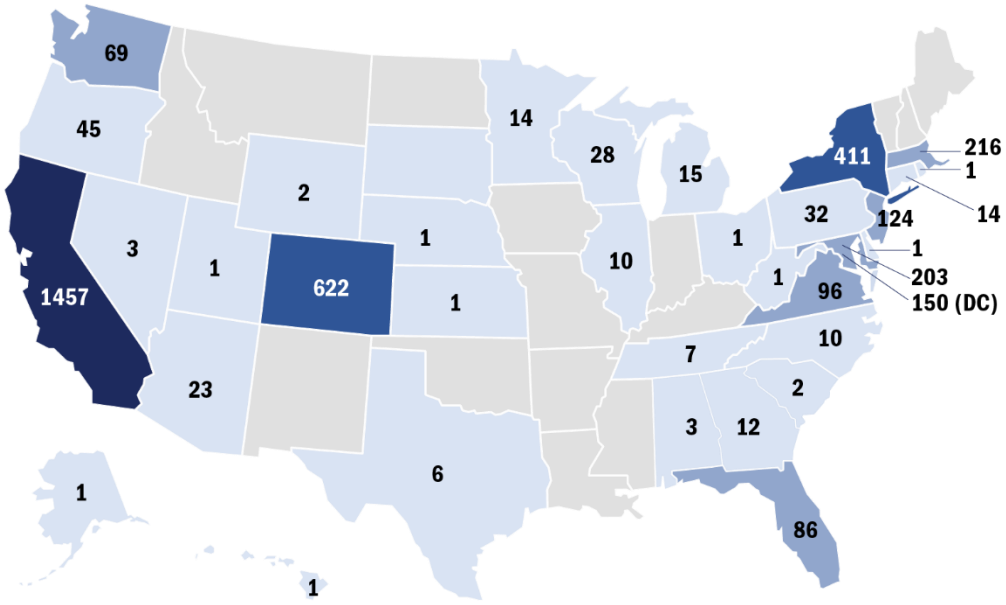

Figure 1. Commenter-Identified Location

[6] Map shows comment letters by listed commenter location information (about 75% of all comments).

Of the 4,857 comments, 3,941 (81%) came from individuals and 667 (14%) were submitted as "anonymous". The remaining 249 (5%) comments (from 220 organizations) came from a range of elected officials, governmental and non-governmental organizations, associations, and private industry. Figure 2 provides a breakdown of these 249 comment letters by type of commenting organization. Appendix B provides a tabulated categorization of the comments. The complete database of comments submitted to the Docket is available online.[7]

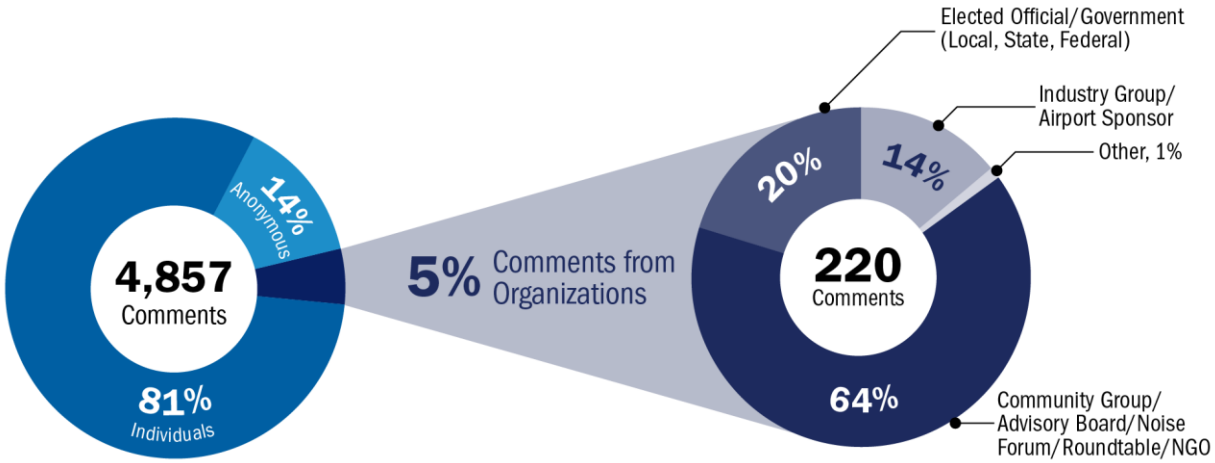

Figure 2. Categorization of comments by organization type
(Total of 249 Organizations/Comments)[8]

Additionally, 913 comments endorsed other comments in the Docket. For example, the Aviation-Impacted Communities Alliance (AICA) comment (FAA-2023-0855-2206) received 643 endorsements as part of a form letter campaign. Table 1 lists all endorsed comments and the number of endorsements. The analytics in Section 3 includes the endorsements in total count values.

Table 1. Form Letter Campaigns

Comment ID	Comment Title	# Endorsements
FAA-2023-0855-2206	Comment from Aviation-Impacted Communities Alliance (AICA)	643
FAA-2023-0855-2244	Comment from Palisades Community Association - Ken Buckley	142
FAA-2023-0855-4097	Comment from Morteza Karimzadeh	56
FAA-2023-0855-4027	Comment from Vashon Island Fair Skies	37
FAA-2023-0855-2558	Comment from DC Metroplex BWI Community Roundtable	8
FAA-2023-0855-3843	Comment from Montgomery County Quiet Skies Coalition	4
FAA-2023-0855-3885	Comment from Quiet Communities, Inc.	4

[7] https://www.regulations.gov/document/FAA-2023-0855-0001
[8] Other refers to consulting firms and comments from individuals that include recommendations.

Comment ID	Comment Title	# Endorsements
FAA-2023-0855-4119	Comment from Citizens for Quiet Skies	4
FAA-2023-0855-2553	Comment from Groton Ayer Buzz	3
FAA-2023-0855-2265	Comment from Concerned Residents of Palo Alto	3
FAA-2023-0855-3862	Comment from Arlington County Quiet Skies Coalition	3
FAA-2023-0855-2341	Comment from David and Miki Barnes	2
FAA-2023-0855-0150	Comment from Nicholas Miller	1
FAA-2023-0855-1750	Comment from The Quiet Coalition	1
FAA-2023-0855-3728	Comment from City of Brisbane	1
FAA-2023-0855-3471	Comment from City of Pacifica	1

2.2 Comment Review Methodology

Figure 3 illustrates the methodology applied in reviewing all 4,857 comments.

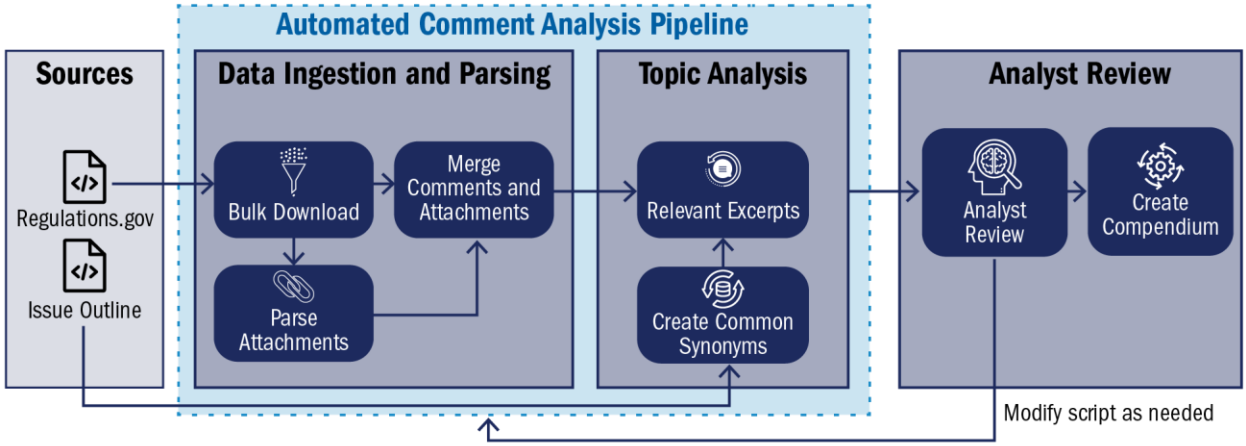

Figure 3. Methodology to create summary of comments

First, the comments were downloaded from Regulations.Gov. In the Federal Register Notice, the FAA asked the public 11 questions related to the NPR (See Appendix A for all questions). However, as shown in Figure 4, only 4% of comments[9] responded to at least one of the FAA's 11 questions.

[9] 21% when including form letter comments that endorse a comment that responds to the Federal Register Questions

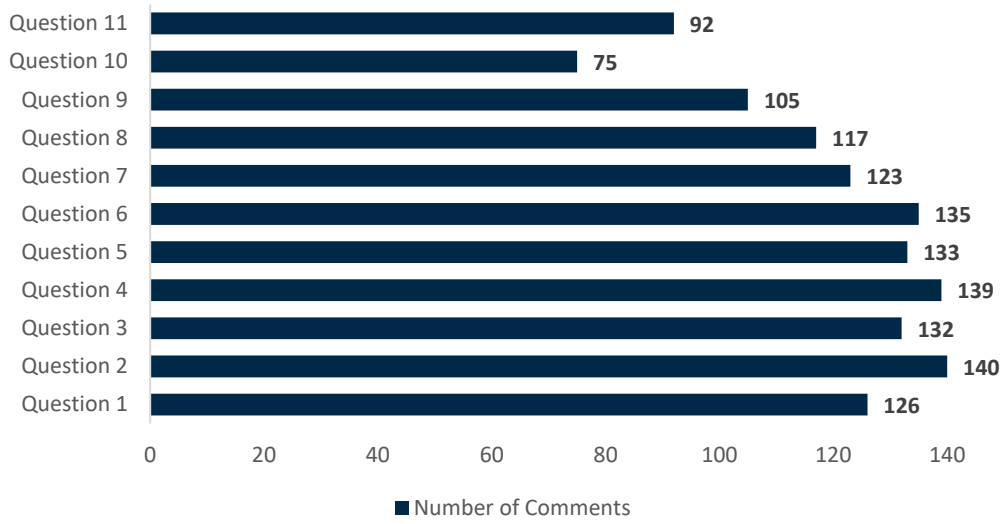

Figure 4. Breakdown of comments by Federal Register Notice question
(4% of comments responded to at least one of the eleven questions)

Creating an Issue Outline allowed compiling input from all comments in the Docket, which mapped to the 11 questions asked in the Federal Register Notice. All comments were tagged in relation to the Issue Outline. The Issue Outline serves as a comprehensive list of the issues and recommendations that frequently appear in the comments and applied in the Topic Analysis step. To summarize and analyze the comments received, the Issue Outline was used to group and categorize the questions, issues, and topics identified in the comments that were not captured in the questions.

In the Data Ingestion and Parsing step, comments were loaded into a database, and comment attachments were merged with the comments. In the Topic Analysis step, all 4,857 comments were tagged per the Issue Outline, summarized in Table 2 and documented in Appendix C, using an automated Python Script. The script flagged sentences that contain keywords or phrases often associated with or used when discussing an item in the Issue Outline. The script quickly categorized all comments per the Issue Outline. Once initially categorized, analysts reviewed the comments and conducted manual tagging, adding tags where the script missed a topic due to complexity or other reason, and removing incorrect tags (e.g., a homonym or other keyword used in a different context). In addition to tagging, analysts reviewed lengthier comments in detail given the nuances or technicality in lieu of using the tagging algorithm. When developing the statistics by issue category, tags associated with comments that were endorsed by other comments (referred to as form letters) were multiplied by the number of endorsements received. For example, the AICA comment (FAA-2023-0855-2206) was endorsed 643 times and issues tagged to this comment were multiplied by a factor of 643.

Table 2. Issue Outline Areas

Comment	Issue Area
Comment about Aviation Noise (Noise Source)	Type of Vehicle
	Type of Operation
	Aircraft Flight Phase
	Type of Receiver
	Location of Noise Effects
Comment about Aviation Noise (Noise Effect/Other)	Description of the Noise Problem (Frequency, Loudness, etc.)
	Quality of Life and Health Effects (Sleep, Health, etc.)
Recommendations for Noise Policy Review	Metric & Thresholds (Q3, Q4, Q5, Q8, Q9)
	Policy for Different Vehicle Types/Operation Type (Q1, Q2)
	Neighborhood Environmental Survey & Schultz Curve (Q7)
	Health Effects and Concerns
	NEPA/ Part 150/ Land Use/ Mitigation (Q7)
	Noise Policy Development Process
	Communication (Q6)
	Noise from Emerging Vehicle Types, Supersonics, etc. (Q9)
	Research Recommendations (Q10, Q11)

3 Summary of Feedback

This section summarizes all comments in the Docket. Section 3.1 provides a statistical analysis of comment issues; Section 3.2 shows a tabulated summary of key recommendations; and Section 3.3 includes recommendations across all groups of commenters (i.e., points or recommendations on which the majority of commentors agree). Groups of commenters included industry (airports, airlines, manufacturers, and the associations that represent them); community (individuals living near or influenced by airport noise, airport roundtables, advisory boards, noise forums and other noise groups, as well as associations of groups or individuals affected by noise); elected officials (federal, state, and local); and government (other government agencies at federal, state, and local levels). See Appendix B for a mapping of comment ID to organization name and grouping.

3.1 Issue Analytics

As described in Section 2.2, all comments were tagged according to the issues and/or recommendations raised. This section presents a summary of that analysis, first assessing the key topics raised and then various issues structured around the noise source, the location mentioned in comments, the impact of noise, and recommendations in relation to noise metrics and averaging regimes based on how frequently the issues were raised or recommendations made. This report does not include those issues that were raised less than 5%, except where those issues were explicitly related to FAA's 11 questions (e.g., metric and threshold). Some of the results shown in this section are focused on specific community campaigns, such as flight training concerns at a particular airport, and results are not necessarily indicative of a national trend. This is noted in the report when present.

Analyzing the Issue Outline groupings, 24% of the comments provided a recommendation specifically about the NPR; 55% commented on aviation noise without a specific recommendation for the NPR; and 19% endorse a comment that includes recommendations (form letter). 2% of the comments are not covered by the issue outline. This includes comments about other topics, such as aircraft emissions. This breakdown is shown in Figure 5.

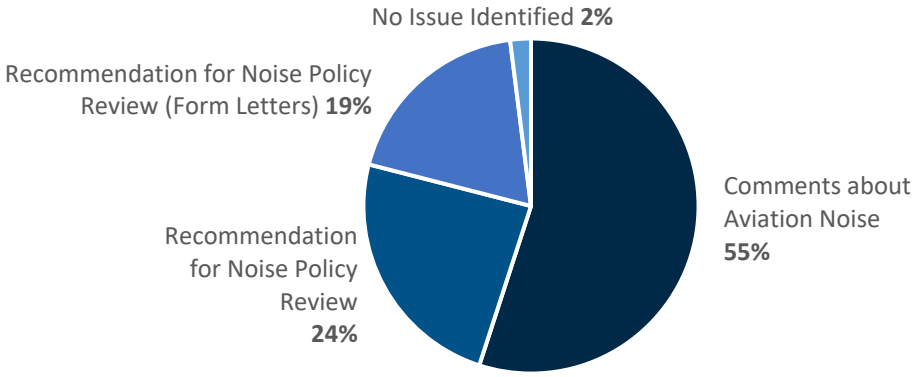

Figure 5. Breakdown in comments by type

3.1.1 Top 10 issues

Figure 6 shows the top 10 issues raised in the comments.

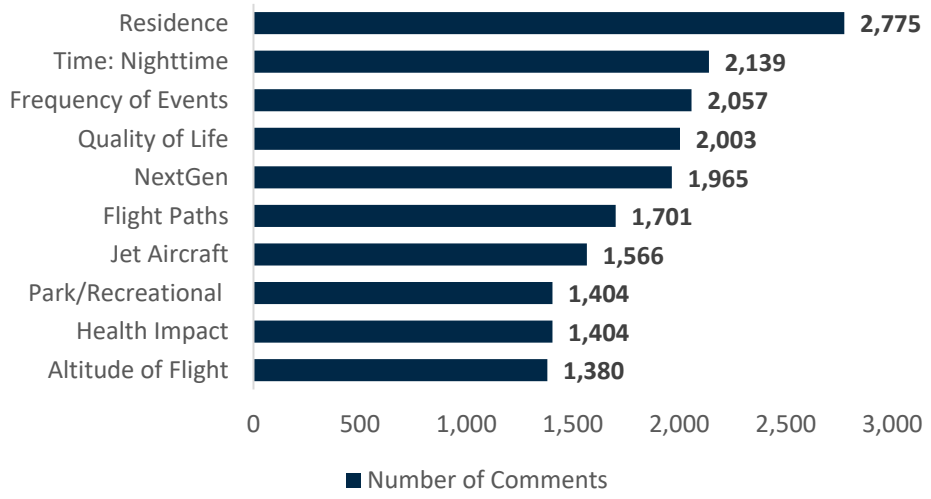

Figure 6. Top 10 issues raised in the docket

The most common comment theme is the effects of aviation (jet) noise on residences, particularly at night and the quality of life and health effects of these operations. Commentors raised concerns about overhead flight frequency, concentrated flight paths as a result of NextGen, and the potential to change flight paths to mitigate frequent flights overhead (flight paths). Commentors are also concerned about low altitude flights, particularly helicopter flights. See the Issue Outline in Appendix B for additional information.

3.1.2 Description of the source of aviation noise

Figure 7 lists the most frequently mentioned aircraft type of concern (61% of comments mentioned at least one aircraft type). The most common concerns related to noise from jets, new entrants, helicopters, and supersonic aircraft.

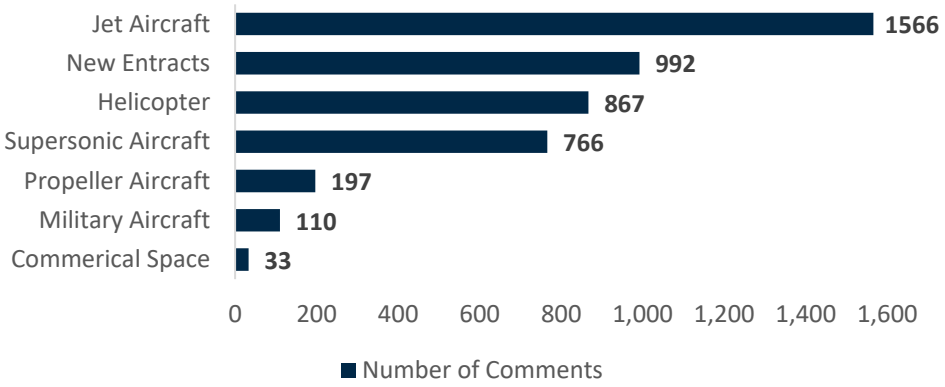

Figure 7. Frequency of mention by aircraft type
(61% of comments mentioned at least one aircraft type)

Figure 8 depicts the most frequently mentioned type of operation (26% mention at least one type of operation). Flight training was the most frequently mentioned concern, followed by tourism, air carriers, general aviation, and corporate jets. Note: The data are skewed by individuals living near (or mentioning) a single airport (Rocky Mountain Metropolitan Airport was a subject in 296 comments). Also note that although most comments did not mention an operation type, there was an implied reference to all operations close to larger commercial airports, and overflight communities, and therefore largely air carrier operations.

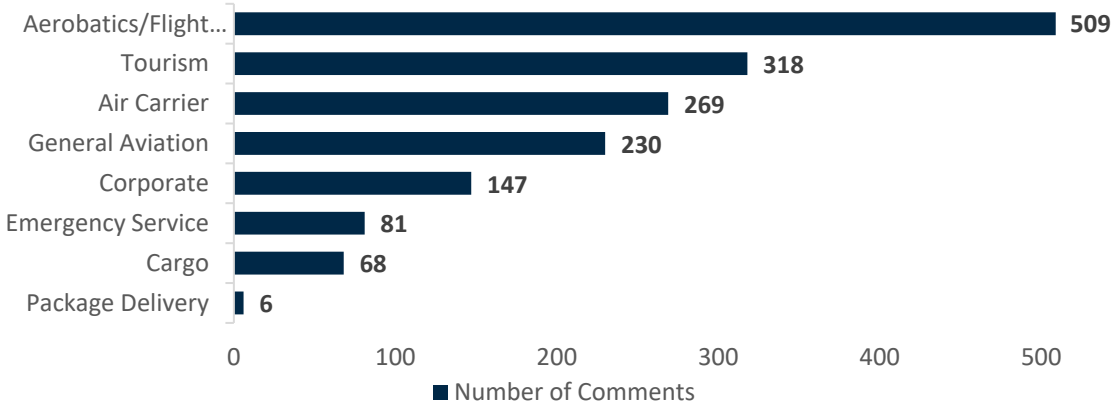

Figure 8. Frequency of mention of type of operation
(26% of comments mention at least one type of operation)

Figure 9 lists the frequency by phase of flight (35% of comments mentioned at least one phase of flight). Takeoff was the most common concern.

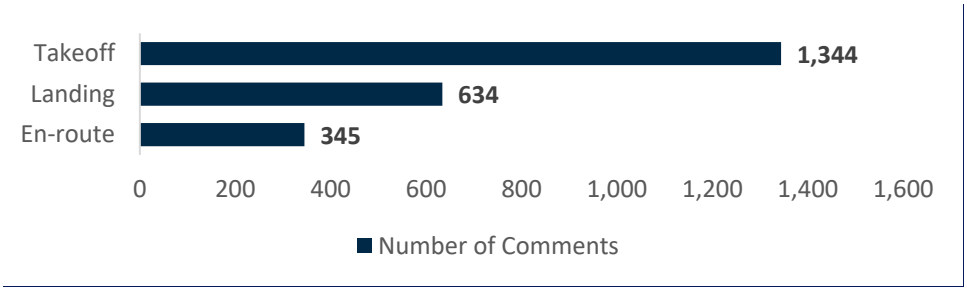

Figure 9. Frequency of mention by aircraft phase of flight
(35% of comments mention at least one type of operation)

3.1.3 Locations and land use categories mentioned in comments

Figure 10 identifies the frequency at which receiver type was mentioned in the comments (67% mentioned at least one location). Residences, park and recreational areas, and schools were the most common places mentioned as impacted by noise.

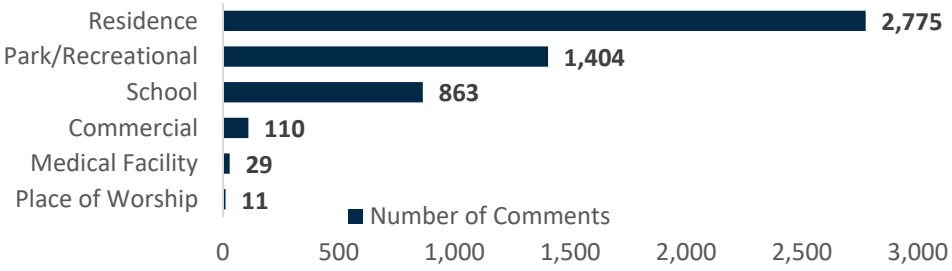

Figure 10. Locations mentioned in comments
(67% of comments mention at least one location)

Figure 11 lists the top 10 airports mentioned in the comments (48% of comments referred to a specific airport). Sacramento International Airport (SMF) is the most frequently cited airport, followed by Rocky Mountain Metropolitan Airport (BJC) and Ronald Reagan Washington National Airport (DCA).

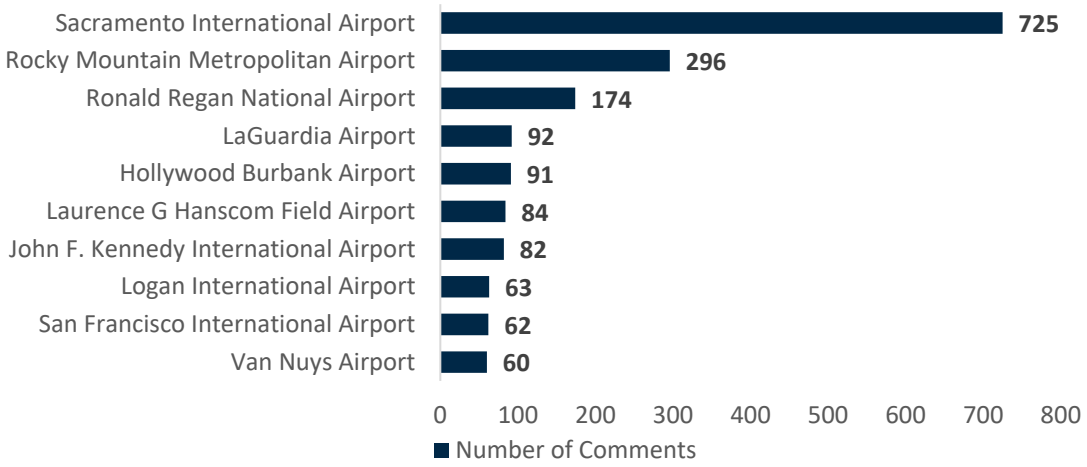

Figure 11. Top 10 airports mentioned in comments
(48% of comments mention at least one airport)

3.1.4 Description of the noise problem

Figure 12 lists the most frequently cited description of the noise problem (72% of the comments provided some description of a noise problem). Nighttime operations are the most common concern followed by frequency of events and the loudness of aviation noise events.

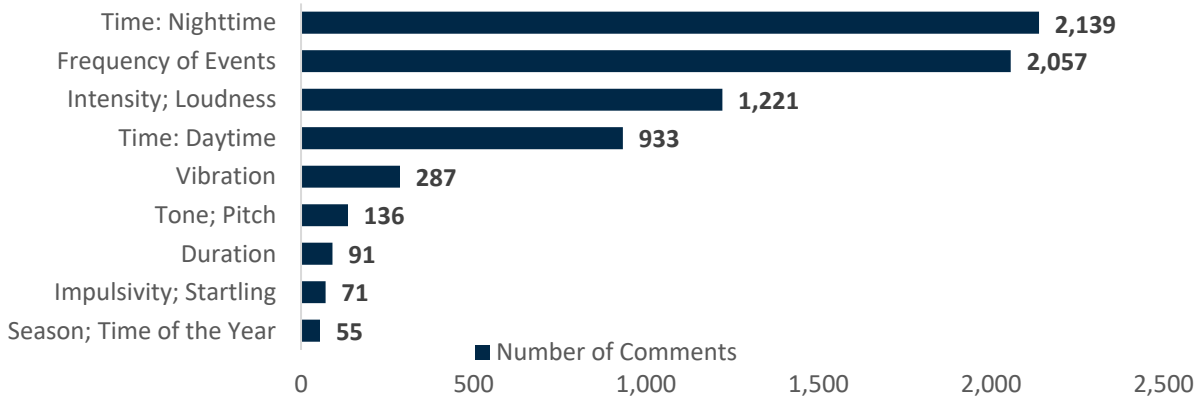

Figure 12. Description of the noise problem
(72% of the comments provided some description of a noise problem)

3.1.5 Description of the effects of noise

Figure 13 lists the top descriptions provided related to the effects of aviation noise (65% of the comment described effects). The most frequently cited effects are general quality of life, health effects, sleep effects, and speech interference.

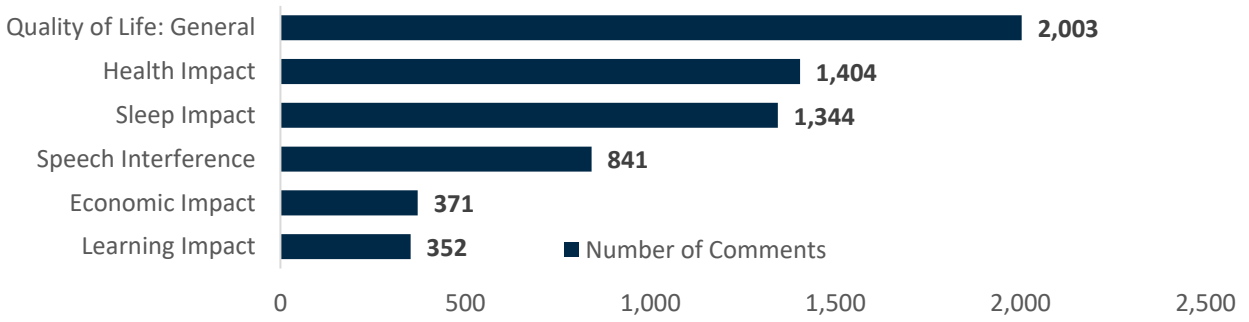

Figure 13. Effects of aviation noise
(65% of the comment described at least one effects)

3.1.6 Description of other factors

Figure 14 lists other frequently cited topics identified in the comments. The most common topics include concerns about current flight paths, such as the concentration of flight paths, and requests to change or disperse flight paths; low altitude flights; and the noise effects of NextGen due to flight path concentration.

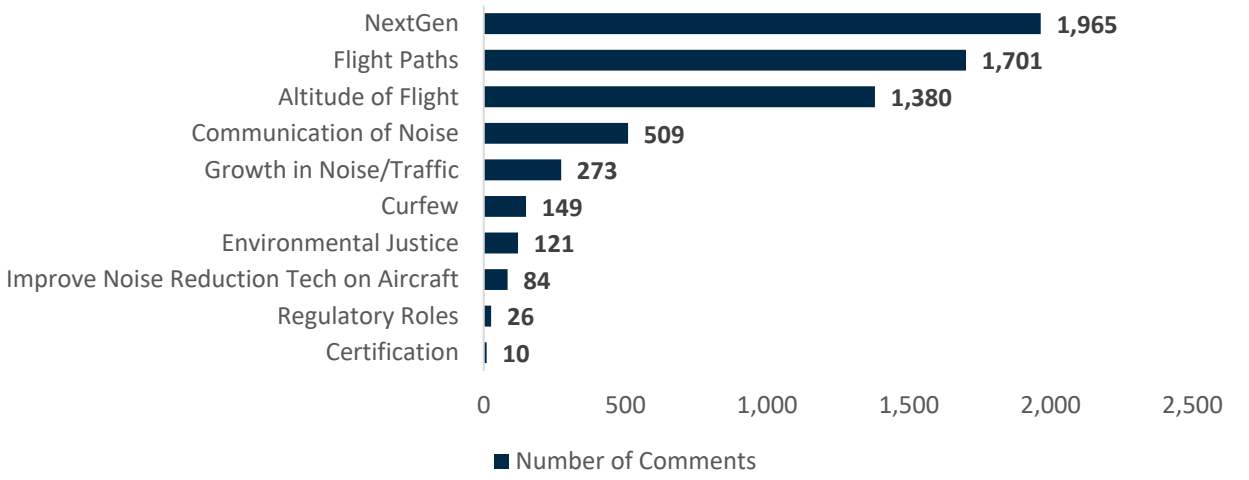

Figure 14. Other noise factors
(73% of comments mention at least one factor)

3.1.7 Recommendations

Twenty-four percent of comments included specific recommendations related to the NPR and generally provided detailed justification and evidence to support a specific recommendation. This statistical analysis of the recommendations is provided for informational purposes. Section 3.2 and Section 4 contain a written summary of recommendations related to the NPR, which is informative because it includes nuances and associated motivations.

Figure 15 lists the frequency of mentions for noise metrics along with commentor sentiment (dark blue denotes a recommendation for a metric and light blue denotes a recommendation against a

metric). The most frequently mentioned metric is DNL (where no location is mentioned). These are typically commentors that state DNL is an adequate metric but provide no further context. The chart also shows there is support for DNL as a metric for close-in communities and there is not support for DNL as a metric for overflight communities. Number Above (See NA in Figure 15) is the most frequently recommended metric, followed by CNEL (again for communities close to airports) and then recommendations for an operational or single event metric, largely without specification for the type. Few comments recommended specific thresholds. See Section 3.2 and Section 4 for recommendations on specific thresholds. Most metric recommendations shown in Figure 15 are from community groups/advisory boards/noise forums/roundtables and NGOs (66%) followed by individuals (29%). The remaining 3% are from the elected official/government (Local, State, Federal) category and the industry group/airport sponsor category. See Appendix B for definitions of these groupings in relation to the comment IDs and organization names.

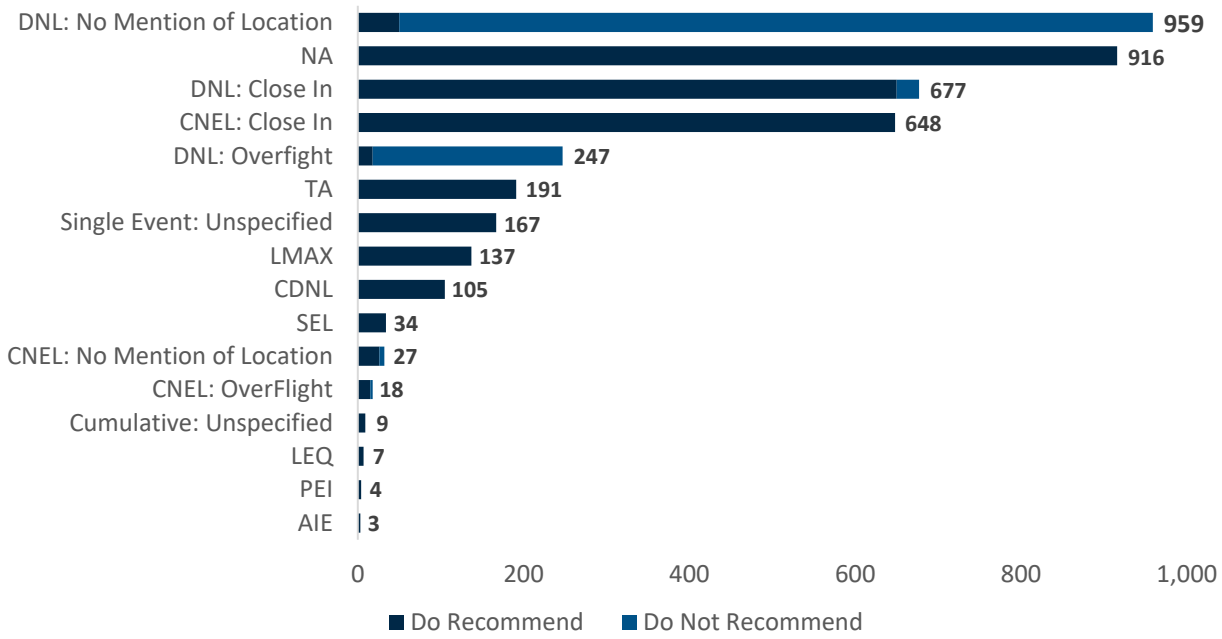

Figure 15. Mention of metrics and thresholds
(27% of comments mention a noise metric)

Figure 16 lists the frequency of mentions for weighting methods and averaging methods, along with commentor sentiment (dark blue denotes a recommendation for an averaging regime and light blue denotes a recommendation against an averaging regime). The most frequently mentioned weighting method is tone. Commentors recommended using C-weighting. The second most frequency weighting method was time of day. The negative effect of nighttime operations is one of the top 10 issues. Annual average day is the most commonly referenced averaging method in the context of DNL for close communities, not for overflight communities. Most averaging and weighting recommendations shown in Figure 16 are from community groups/advisory boards/noise forums/roundtables and NGOs (82%) followed by individuals (15%). The remaining

3% are from the elected official/government (Local, State, Federal) category and the industry group/airport sponsor category.

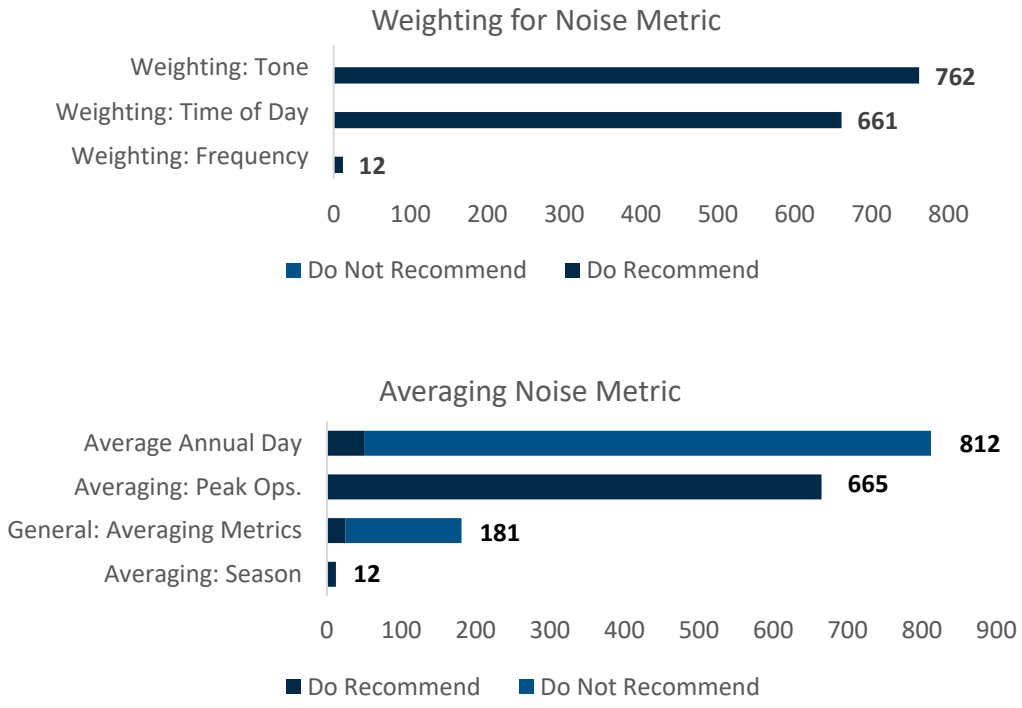

Figure 16. Mention of weighting and averaging methods

Figure 17 shows data for comments that recommend lowering FAA's current noise policy threshold (i.e., DNL 65). The chart shows that DNL 55 is the most recommended threshold. This is driven by the AICA form letter FAA-2023-0855-2206 (AICA) recommending this value.

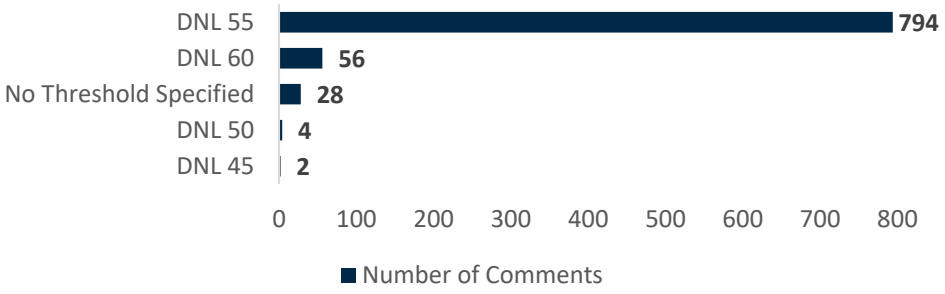

Figure 17. Mention of lowing the threshold to the current noise policy

Figure 18 shows data for comments that recommend basing the threshold on ambient noise levels. The chart shows there were 653 comments that recommended the metric NA and the threshold ambient. Most of these recommendations were those that endorsed the AICA form letter.

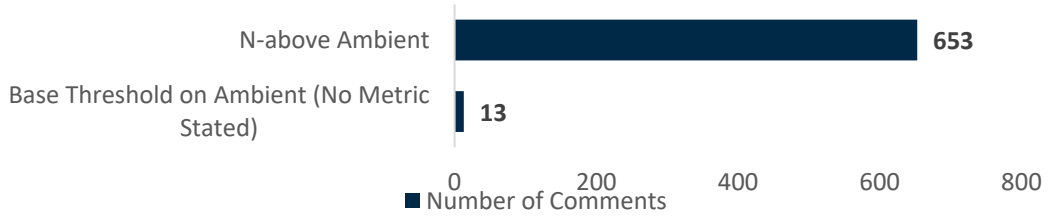

Figure 18. Mention of weighting and averaging methods

Most threshold recommendations shown in Figures 17 and 18 are from community groups/advisory boards/noise forums/roundtables and NGOs (89%) followed by individuals (9%). The remaining 3% are from the elected official/government (Local, State, Federal) category and the industry group/airport sponsor category.

3.2 Summary of Recommendations

Table 3 lists high level recommendations from stakeholder groups and shows there is only modest alignment between industry groups and community groups. In short, community groups believe that sufficient data exists to proceed with changes to policy and metrics, based on results of the NES. Further, several community groups made specific recommendations for metrics and thresholds of DNL 55 for close-in communities and NAA[10] for overflight communities. Industry groups, on the other hand, while not opposed to other metrics or issue thresholds, do not support policy changes without further study of the policy implications, noting in the lack of: (1) research on whether other metrics are better at predicting human response to aircraft noise, and (2) analysis on the economic impacts of possible policy options.

There are also several recommendations from both community and industry groups on the need for FAA to clarify its process.

Table 3: High Level Summary of Recommendations

Issue	Policy Recommendations
Key Topics	• Overflight effects on residential communities affect quality of life in neighborhoods well outside DNL 65. FAA's noise policy should address both close-in and overflight communities. Many community groups believe these affected communities should be treated differently. • Health effects are a concern to many residents and nighttime noise has an impact on health. These factors should be considered in policy making. • Before finalizing policy changes, the FAA needs to clearly outline its policy options and provide results of detailed policy

[10] This metric is defined by AICA as follows: "N-Above-Ambient (NAA) metric is defined as the count of noise events with a maximum noise level (Lmax) that exceeds ambient noise for the peak day of the year."

Issue	Policy Recommendations
	analyses, including cost-benefit analysis and complete health effects research. • Noise data should be shared early, often, and clearly with the public to foster trust and a positive relationship with the FAA.
Decision-Making Metric & Thresholds	• DNL is still appropriate for close-in communities; community groups recommend a lower threshold; industry groups are open to lower threshold but believe the FAA has not provided sufficient data to support a decision. • Community groups recommend Number Above Ambient (NAA) as metric for overflight communities. Additional research is needed to identify threshold.
Alternative/Supplemental Noise Metrics	• Many community groups believe that "supplemental" metrics should be used as decision-making metrics. • Industry groups generally support event-based metrics like NA or Time-Above (TA) for communication purposes, and possibly for decision-making if research supports.
Policy for Different Vehicle Types/Operation Type	• Noise from all phases of flight and all types of traditional aircraft should be addressed by noise policy. • Some vehicles and types of operations (e.g., helicopters, flight training) may require unique policy recommendations. Some community groups recommended increased local control for some operations particularly general aviation, helicopters, drones, and operators below 2,000 feet.
Neighborhood Environmental Survey & Schultz Curve	• Community groups believe that NES results show that current FAA policy significantly underestimates aircraft annoyance and therefore health effects. • The FAA should identify alternative metrics and thresholds for overflight communities (and possibly close-in communities) but in the interim, FAA should rely on NES results to justify lowering the DNL threshold for environmental reviews and impact analyses. • Some commenters expressed concerns about the context of data collection on NES and reliability of data that are quite old. • Others recommended additional analyses that should be conducted with NES data.
Health Effects and Concerns	• Many community groups expressed significant concern about the health effects of aviation noise; some recommended including health impact assessments in NEPA studies. • Many identified their key issue as "quality of life," which could include health.

Issue	Policy Recommendations
	• The FAA needs to clarify whether revised noise policy is based on annoyance or health effects. • The FAA needs to complete health effects research before finalizing any policy recommendations. • If uncertainty exists when developing a threshold for health effects, the FAA should err on the side of protecting human health and wellbeing.
NEPA/ Part 150/ Land Use/ Mitigation	• Many community groups recommended revising Part 150 to address overflight noise issues. • Community groups also support NEPA "mitigation" for overflight communities that is focused on modifying operational procedures and not sound insulation. • Several airports and industry groups recommended additional focus on compatible land use development.
Noise from Emerging Vehicle Types, Supersonics, etc	• Communities are concerned about prematurely rolling out UAS or other new emerging technology operations before a new noise policy is available that addresses true community impact, including new elements of aircraft operations such as visual pollution and hovering. • Future noise policy will need to consider all these aircraft and should take into account empirical data associated with these new entrant vehicles and the community experience/reaction to their operation.
Research Recommendations	• Repeat NES analysis but tie annoyance levels to N-Above data for those same communities to determine the relationship. • The FAA should further research the extent to which non-acoustic factors, such as demographic and socio-economic factors, vehicular and other non-aircraft noise, recent airport or aviation-related controversies, air emissions, and aviation incidents, may play a role in annoyance levels as suggested by recent research. • The FAA should examine dose-response relationships using metrics that are not available in AEDT (e.g., loudness). • The FAA should conduct research defining an appropriate benefit-cost analysis (BCA) cost effectiveness methodology that is consistently applied in aiding decision-making related to policy.
Noise Policy Development Process	• Both community and industry groups agree that the FAA needs to clarify the purpose for NPR and explicitly identify noise effects that the policy will address (e.g., annoyance, health effects, etc.).

Issue	Policy Recommendations
	• Most industry and trade groups believe the FAA should complete ongoing health effects research before finalizing any policy changes. On the other hand, many community groups noted sufficient research exists to make policy changes. These groups recommend that the FAA engage the National Academy of Sciences to appoint an expert panel to identify appropriate metrics and thresholds. • Most stakeholders agree on the need for additional stakeholder engagement during this process, including an additional Federal Register Notice, before the FAA issues final policy. • Airport and industry groups stress the need for the FAA to prepare BCA and identify funding sources associated with any proposed policy changes.
Communications	• Several community groups recommended establishing an Impacted Communities National Advisory Committee, under the Federal Advisory Committee Act (FACA), to advise the FAA on current and future noise and pollution issues. • Several community groups recommended more community involvement with the FAA during the flight procedure design phase. • Revisions to noise policy should place significant emphasis on improving stakeholder engagement and providing further transparency to local communities.

3.3 Common Recommendations

There are several areas of agreement across various stakeholder groups, as outlined below.

3.3.1 FAA needs to clarify its policy-making process

Both industry and community groups commented on the need for the FAA to clarify its policy-making process. There is a desire for the FAA to identify what specific noise effects the policy will address (i.e., annoyance, health effects, or some other outcome) and the need for the FAA to clarify the extent of its policy review in terms of process and timeline.

3.3.2 Decision-making metric: DNL is an adequate decision-making metric for land use compatibility for close-in communities

Community groups and industry groups support the continued use of DNL as a decision-making metric for land use compatibility for close-in communities, at least until additional research demonstrates a better option. The following comment excerpts demonstrate support for the DNL metric.

FAA-2023-0855-2206 (AICA): *Vicinity of airports should use an A- or C-weighted DNL metric with a threshold of 55 dB or lower as their primary decision-making metric based on NES, EPA recommendations, and WHO (World Health Organization) guidelines.*

FAA-2023-0855-4396 (A4A, IATA, Airports Council International - North America (ACI-NA), AAAE): *The day-night average noise level (DNL) is an effective and well-researched metric, and the FAA has not provided sufficient information to support the use of alternative decision-making metrics.*

FAA-2023-0855-3885 (Quiet Communities):
For near-airport communities:

- *End the use of the 65 DNL, known to be exposing people to harm.*
- *Use 55 DNL and 45 L-night as decision-making metrics for purposes of land use planning and for public communication.*

3.3.3 Alternative supplemental metrics are useful and might be appropriate for decision-making in some circumstances

Community groups and industry groups differ in their readiness to support using alternative metrics for decision-making. However, both agree that additional metrics – especially Number Above – could be useful in some circumstances. The focus of both groups is the use of additional metrics primarily in overflight communities, recognizing that the impact of PBN and flight concentration on communities is outside the DNL 65 contours. Community groups are ready to adopt alternative metrics and thresholds, whereas industry groups expressed the need for additional research to determine the metrics and especially thresholds.

The following excerpts demonstrate the support and differences for alternative supplemental metrics.

FAA-2023-0855-2206 (AICA): *Overflight communities should use N-Above-Ambient as their primary decision-making metric, replacing DNL.*

FAA-2023-0855-4700 (AAAE)*: FAA should consider the use of alternative decision-making metrics and thresholds to evaluate air traffic procedure and airspace changes during NEPA reviews. FAA acknowledged that overflight communities have been the predominant source of noise complaints to FAA in recent years because of NextGen implementation and procedural changes. To address the concerns, FAA should consider an alternative metric and threshold for such changes.*

FAA-2023-0855-4402 (A4A): *For the nearly 50 years of its use, DNL has proven to be a reliable metric. However, A4A does not want to prejudge the outcome of the NPR and is open to considering other metrics. A4A encourages the FAA to demonstrate how other conventional noise metrics would improve upon DNL as the existing "single, uniform, repeatable system for considering aviation noise around airport communities" and provide research that shows correlation between other metrics proposed in the Notice and annoyance (or other responses, for that matter). While all the proposed metrics are A-weighted, or highly correlated, FAA should provide data that shows how certain subject metrics are better predictors of annoyance or other responses (sleep, speech, etc.) than DNL. Further, as there is no obvious point on the NES curve (or indeed any other dose-response curve related to noise effects) that demonstrates a clear inflection point of "impact", FAA should not make changes to its decisional metrics without demonstrating a clear benefit to decision-making; to date, FAA has not provided sufficient information to support the use of alternative metrics.*

3.3.4 Communication: FAA needs to provide additional opportunities for stakeholder engagement

Community groups and industry groups agree that the FAA needs to provide additional opportunities for stakeholder engagement, not solely for this policy effort, but as an ongoing matter. AICA recommended the formation of an Impacted Communities National Advisory Committee under the FACA.

> ***FAA-2023-0855-2244 (Palisades Community Association):*** *The FAA could improve its communication with the public by using plain English rather than using acronyms and arcane taxonomy. Examine the language within this FR Notice soliciting public comment on policy that is peppered with unfamiliar terms of reference such as DNL, NEPA, ADD[11], etc.*

> ***FAA-2023-0855-4396 (Airlines for America (A4A), IATA, ACI, American Association of Airport Executives (AAAE)):*** *Community engagement is critical to successful noise management, and any revisions to existing noise policy should place significant emphasis on improving stakeholder engagement and providing further transparency to local communities.*

[11] Commentor used ADD, which is assumed to refer to annual average day (AAD)

4 Comments by Key Topics

The Federal Register Notice included 11 questions and described four areas for review. This section groups the comment responses by key topics as (1) there is significant overlap between the 11 questions (and responses), and (2) only 3% of comments responded by question number. This section presents a summary of the key topics presented in comments submitted by both community groups and industry groups, followed by specific comments on the following:

- Noise metrics, including discussion of decision-making noise metrics; averaging and time of day; the use of alternative, supplemental, and/or companion metrics; and the use of different metrics for different circumstances;
- Whether and how noise policy should address different types of operations or vehicles;
- The use of NES/Schultz data for policymaking, including comments on the NES data;
- Policy considerations for NEPA and Part 150 programs as well as land use compatibility and mitigation;
- Emerging vehicles, including UAS/UAM, commercial space, and supersonic aircraft;
- Health Effects;
- Research recommendations;
- The FAA's noise policy development process; and
- Communication.

Appendices D through H present a comprehensive review of comments excerpted from various stakeholder groups and individuals. Many of these comments provide details on specific recommendations or amplify the recommendations included in this section. Note that although over 4,800 comments were received, 74% were either a comment about aviation noise without a recommendation, or part of a form letter campaign; a further 2% were not related to aviation noise. While the FAA reviewed all comments, the set of example excerpts below are from a smaller set of comments that made recommendations related to the NPR. In many cases, the example excerpts were selected as most representative and/or comprehensive of all comments with the same sentiment(s).

4.1 Key Topics

Key topics raised by community groups, airport roundtables, airport advisory boards, and airport noise forums include the following:

- Challenges of NextGen and the effects that NextGen flight procedures have had on overflight communities, including the need for the FAA to develop different methods to design, implement, and mitigate new procedures;
- Health effects of aviation noise: many community comments focused on health effects and quality of life affected by aircraft noise – and the need for FAA policy to address those effects;

- The need for different approaches to noise depending on the situation: specifically, many community groups recommended continued use of DNL for close-in communities and adoption of Number Above (or similar metrics) for overflight communities;
- The need for the FAA to clarify its policymaking process, especially in terms of identifying policy goals (i.e., reducing annoyance or addressing health effects) and communicating these goals and policy considerations broadly; and
- Emerging vehicles: several community comments addressed these emerging vehicles, especially as related to the need for additional research and concern about future effects.

Industry groups state they understand that the FAA needs to update its noise policy to reflect best available science and are not opposed to consideration of other metrics or impact thresholds. However, they do not support policy changes without further study of the policy implications, noting the lack of: (1) research on whether other metrics are better at predicting human response to aircraft noise, and (2) data on economic consequences of possible policy options. A4A offered the following summary of recommendations:

> **FAA-2023-0855-4402 (A4A):** *FAA needs to clarify the review process: define the specific polic(ies) under review, FAA's review process, and anticipated outcomes and goals. FAA should fully comply with the Guidelines and clarify whether it intends to revise or replace the 1976 Airport Noise Abatement Policy or continue with the de facto "policy" that consists of an outdated policy statement and a collection of regulations, orders, and practices. FAA should specifically identify the statute, regulation, order, or policy document that is implicated for each.*
>
> *FAA needs to clearly outline its policy options: FAA has asked for specific input on metrics and thresholds of impacts but has not clarified what policy options are realistic. FAA should winnow down the policy options under consideration before asking for feedback.*
>
> *FAA needs to provide results of policy analyses: FAA has asked stakeholders to provide policy guidance without providing any information on the consequences of policy recommendations. To provide effective guidance on the feasibility and reasonableness of various policy options, stakeholders must be able to evaluate the consequences of each policy option. FAA should provide detailed policy analyses, including cost-benefit analysis.*
>
> *FAA needs to complete its noise effects research before finalizing policy changes: A4A believes it is premature for FAA to change noise policy before completing important research that was specifically designed to inform policy.*

4.2 Noise Metrics

Comments on decision-making metric (i.e., whether to maintain DNL or use some other metric) are further broken down according to whether the comments relate to the metric and threshold; the averaging method or time of day weighting; the use of supplemental, alternative, and/or companion metrics; and the use of different metrics for different circumstances.

4.2.1 Metric and Threshold

Community groups and airport roundtables expressed nuanced opinions about the use of DNL. They generally noted it is not useful for conveying the lived experience of people exposed to overflight noise yet agree that it is probably the best metric for land use planning and evaluating noise in the vicinity of airports, at least until a better metric has been established. They also

universally believe that a lower threshold of compatibility should be employed. In general, their comments support the notion of a "system of metrics" and not a single metric. Finally, many of these groups recommended engaging the National Academy of Sciences to recommend the system of metrics and thresholds, as discussed in Section 4.6.6.

> ***FAA-2023-0855-4086 (Town of Los Altos Hills and Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto, California):*** *The noise policy must incorporate a system of noise metrics and thresholds that allow the FAA and other stakeholders to quantify, understand, and address how different kinds of operations can impose different noise impacts on different communities. DNL may be an appropriate metric for certain purposes, for example in areas close to a large commercial service airport, but it fails to adequately define noise problems for communities farther from an airport or account for noise impacts from relatively quieter, repetitive operations from general aviation airports. In those areas a metric that accounts for the number of operations, the frequency of operations, and the level of noise above background or ambient noise would better quantify the noise impact of flight procedures. To assure transparency and confidence in this system, the FAA should engage an independent, technical panel, perhaps sponsored by the National Academy of Sciences, to recommend an appropriate system of noise metrics and thresholds.*
>
> *The FAA should leverage multiple metrics and thresholds to inform its decision making rather than rely on a single, one size-fits-all metric and threshold.*
>
> *That approach also better complies with the Aviation Safety and Noise Abatement Act (ASNA), which requires a single system of noise measurement, not a single metric. Although the FAA has relied on a single metric in the past, a new noise policy will allow the FAA to adopt a true system of noise measurement that better reflects the different ways that different noise events affect people and that better fulfills Congress's direction to create a single system of noise metrics.*

Community groups and airport roundtables also acknowledged that identifying thresholds for new metrics will take some time; communities recommend continuing to use DNL but with lower threshold(s) in the interim. These groups recommended various thresholds, including (but not limited to), 45 dB, <50 dB, 55 dB, WHO thresholds, etc.

> ***FAA-2023-0855-4097 (Karimzadeh):*** *While the FAA's 65 DNL standard is out of date and unsupported by science, the adoption of a comprehensive system to assess aviation noise with metrics for the numerous effects of aviation noise will likely take the FAA a decade to adopt. Human health and environmental impact is jeopardized in the meanwhile. EPA and other literature mentioned in this comment should act as a guide for FAA to base its decisions on science.*
>
> *In the interim, the FAA has a quick first step available to it: adopt what the intention of the originators of the 65 DNL standard long ago, a DNL metric with a lower threshold. Theodore J. Schultz, the scientist behind the Schultz Curve, whose name is most associated with the metric and threshold, wrote the Maryland Noise Abatement Plan prior to the FAA writing the Noise Abatement Plan. Its recommendation was to reduce the level to 60 DNL "when US fleet noise level is reduced 5 dB below 1975 level". Table XIII on page 100*. The noise level of the fleet has been reduced substantially, but the threshold remains the same.*
>
> *The FAA should adopt a DNL 55 dB standard based on the recommendations of the EPA in the in the EPA Levels Document, with the adjustments in Appendix D that were used to normalize the EPA response data, and incorporate background settings, as a metric and threshold to address annoyance.*

> *See our list of suggested thresholds at the end of this document. The findings of the World Health Organization guidelines, EPA, and NES results act as a guide for adopting this lower 55 dBA threshold. Combining this with a companion (for decision making), and threshold for sleep interference and for park and wild lands, would provide a start to the comprehensive system the FAA should adopt*[12].
>
> *In the long term, other metrics and companion metrics should be developed and used to assess noise impact, including time-above and n-above with different thresholds for l-max for vehicle type.*

Comments differed on the opinion of what defines "near-airport" or close-in versus overflight communities, but one recommendation included using DNL 55 plus L_{night} 45 as the decision-making metric/threshold that would define the "near-airport" vicinity and noise effects in that area.

> ***FAA-2023-0855-3885 (Quiet Communities):*** *With the exception of application to near-airport communities, the DNL, as an average 24-hour noise metric, should not be used for decision-making. It does not reflect the experience of any one individual in a population; it masks both the magnitude and nature of the problem; it may underestimate the health and environmental impacts of aviation noise.*
>
> ***FAA-2023-0855-3885 (Quiet Communities):*** *Employ different metrics for near-airport vs. overflight communities.*
> *For near-airport communities:*
> - *End the use of the 65 DNL, known to be exposing people to harm.*
> - *Use 55 DNL and 45 L-night as decision-making metrics for purposes of land use planning and for public communication.*
>
> *For overflight communities outside the 55 DNL/45 L-night boundary:*
> - *Use N-Above (ideally N-Above-Ambient) and T-Above metrics to trigger environmental review under NEPA. As mentioned, health effects in overflight communities are more closely tied to repetitive noise events than to noise averages.*
> - *Adopt N-above metrics (ideally N-above-ambient metrics) for use in decision-making about new or altered flight procedures.*
> - *Use "N-above day" and "N-above night" as companion metrics. Stop using DNL or any metric that averages the noise, except for purposes of research when it may be appropriate to compare results with prior studies that used DNL.*
>
> ***FAA-2023-0855-3885 (Quiet Communities):*** *If the FAA decides to continue using DNL while it transitions to a more relevant set of metrics, then it should recognize that DNL 45 is a more appropriate level to protect public health.*
>
> - *45 DNL is the approximate level suggested by the results of the recent Neighborhood Environmental Survey (FAA, 2021) (the level at which 12.3% of the populations studied were "highly annoyed")*
> - *45 db (daytime) and 40 db (nighttime) are the aircraft noise thresholds recommended by the 2018 World Health Organization based on an exhaustive review of scientific evidence [WHO, 2018].*
> - *Heart attack risk may start to increase at aircraft noise levels of 45 A-weighted dB [Basner, 2014]. Even lower levels can disrupt sleep [Basner, 2018; Smith, 2022].*
> - *National studies, including an extensive one by the National Academies of Science, Engineering, and Medicine, show that students in schools near airports exposed to noise 55dB and higher (at least half as loud as the 65 DNL) have lower math and reading scores, and students at schools with sound insulation have better test scores compared with those in schools with no insulation [NASEM, 2014; Collins, 2019]*

[12] Note this paragraph was underlined in the original comment

They also recommend exploring the C-weighted DNL metric.

> ***FAA-2023-0855-2206 (AICA):*** *Vicinity of airports should use an A- or C-weighted DNL metric with a threshold of 55 dB or lower as their primary decision-making metric based on NES, EPA recommendations, and WHO guidelines.*

Overflight communities: Community groups generally do not believe that DNL is adequate for evaluating or communicating noise exposure of overflight communities. In the Federal Register Notice, the FAA defined overflight communities as those "communities located under the flight paths of aircraft and vehicles that are distressed by aircraft noise and are located outside of the DNL 65 dB contour". AICA provided a specific recommendation for evaluating overflights using Number of Events Above Ambient +10 dB. AICA did not offer a recommendation for a threshold; several other community groups and airport roundtables amplified this recommendation.

> ***FAA-2023-0855-2206 (AICA):*** *N-Above (Ambient+Offset) for the peak day of the year. Notationally, for example N-Above-Ambient+10 or NAA+10 would be the number of events over Ambient + 10 dB using A-weighting or C-weighting whichever is higher. Until it is measured, ambient noise could be estimated using community characteristics (for example, ambient of 35 dB for rural, 40 dB for low-density suburban, 50 dB for medium density suburban, 60 dB for urban, etc.). Estimates should be evidence-based, e.g., informed by noise monitoring data from other communities of a similar type.*

AICA also recommended consideration of a Total Noise Index, which complements the Number Above Ambient metric described above.

> ***FAA-2023-0855-2206 (AICA):*** *TNI is the total decibels for all events above ambient. A decibel threshold would be applied to TNI. TNI sums up the differences between the maximum noise levels (with penalties applied) and ambient noise for all the noise events. The Total Noise Index (TNI) is the sum of the penalized maximum aircraft noise above ambient noise for all N-Above-Ambient (NAA) events. TNI does not require selecting an offset value above ambient because it factors in/captures all noise above ambient. The TNI value makes the impacts for all events visible. For example, 200 aircraft with maximum noise levels 20 dB above ambient noise would have a TNI of 4000 dB (= 200 x 20), and 200 aircraft with maximum noise levels 10 dB above ambient would have a TNI of 2000 dB (= 200 x 10). 4000 dB is a more severe impact than 2000 dB.*
>
> $$Total\ Noise\ Index = \sum_{n=1}^{n=NAA} (\text{Lmax} + \text{penalty}) - \text{ambient}$$
>
> *The decision-making metric would be the Total Noise Index, labeled as TNI, for the peak day of the year and is expressed in decibels. The threshold Z is a number of decibels.*

Quiet Communities similarly recommended the adoption of NAA and emphasized the need for special attention to nighttime noise.

> ***FAA-2023-0855-3885 (Quiet Communities):***
>
> - *QC suggests that the FAA publish N-Above 40 through 65 for all residential communities, and also provide information that helps residents relate these threshold noise levels to other commonplace noise sources with which people are familiar in their environments, such as vacuum cleaners and leaf blowers. That way they can ask themselves, "how do I feel about hearing a plane that is this loud every 20 minutes? What about every 90 seconds? For noise events this loud, how many am I*

likely to experience in a day, and how much will that bother me? How is this going to affect me and my family?"

- *When these noise events occur is also very critical information, so the FAA should also publish the time of day that the events at each NA level are occurring e.g. ideally, how many at each level between 5-8 AM, 8 AM-5 PM, 5 PM-10 PM, 10 PM-midnight, and midnight-5 AM.*

Other community groups recommended DNL 50 based on the NES data:

> ***FAA-2023-0855-4007 (Arlington County Quiet Skies Coalition):*** *If the FAA continues to use the DNL metric in decision-making, the threshold needs to be lowered to be consistent with the implicit 12.2% Highly Annoyed (HA) goal in current policy. The NES results suggest the threshold should be below 50. And it is unlikely that a single metric will suffice for noise policy or that a universal dose-response curve will be broadly applicable. The system of metrics and thresholds should include the N above metric, for various noise levels (50, 55, 60, 65 and 70 dB) and time periods (per month, per day, and per hour) in order to assess, describe and prevent noise during nighttime hours and peak time periods that is likely to be highly annoying and detrimental to health.*

Most industry groups (10 of the 13 comments) state that DNL has been an effective and well-researched metric. They are generally open to consideration of alternative thresholds for DNL and even additional decision-making metrics but are clear the FAA needs to: (1) articulate its policy options clearly and provide additional opportunity for dialogue, and (2) conclude ongoing research and conduct additional research before making any changes to noise policy. None of the comments from industry groups provide specific recommendations for different metrics or thresholds for decision-making purposes, claiming it is premature to do so. Industry groups did express interest in future discussions with the FAA.

> ***FAA-2023-0855-4378 (Small UAV Coalition):*** *DNL, the FAA's current standard noise metric, has worked well for decades, and has been applied to all aircraft types and models, as well as to all environments. The Coalition contends that DNL remains the best available noise metric and does not believe there is sufficient support in the literature to abandon DNL for a new alternative.*

> ***FAA-2023-0855-4579 (ACI):*** *ACI-NA observes that DNL (or Community Noise Equivalent Level [CNEL] applied in California) has provided a reliable tool to assess noise impacts for over 40 years and neither the NES nor any new research undermines the utility of DNL.*

> ***FAA-2023-0855-4402 (A4A):*** *For the nearly 50 years of its use, DNL has proven to be a reliable metric. However, A4A does not want to prejudge the outcome of the NPR and is open to considering other metrics. A4A encourages the FAA to demonstrate how other conventional noise metrics would improve upon DNL as the existing "single, uniform, repeatable system for considering aviation noise around airport communities", and provide research that shows correlation between other metrics proposed in the Notice and annoyance (or other responses, for that matter). While all the proposed metrics are A-weighted, or highly correlated, FAA should provide data that shows how certain subject metrics are better predictors of annoyance or other responses (sleep, speech, etc.) than DNL. Further, as there is no obvious point on the NES curve (or indeed any other dose-response curve related to noise effects) that demonstrates a clear inflection point of "impact", FAA should not make changes to its decisional metrics without demonstrating a clear benefit to decision-making; to date, FAA has not provided sufficient information to support the use of alternative metrics.*

4.2.2 Averaging and Time of Day

Most community groups do not support averaging for overflight communities. They state that it does not capture the true effect of overflights and averaging (and DNL) are difficult to communicate to the public. Industry groups generally did not offer an opinion on averaging and time of day although there were a few recommendations, including one from AAAE below. Communities focused on two issues: averaging in DNL and Annual Average Day (AAD).

Community groups offered comments on additional averaging schemes, including identifying additional noise-sensitive periods and identifying more complex nighttime weighting schemes.

> ***FAA-2023-0855-3525 (The Alliance for a Regional Solution to Airport Congestion):*** *DNL Averaging provides a cumulative description of the noise events expected to occur over the course of an entire year. By its definition this value cannot represent a worst-case period if conditions change from one part of the year to another. A variability factor is needed to evaluate the trueness of an AAD. There can be quite a variance in types and numbers of aircraft from one month to another just as there are varied distribution of arrivals and departures within any day. The AAD should be modified to represent a worst-case condition and less of an average.*
>
> ***FAA-2023-0855-2244 (Palisades Community Association):*** *By averaging daytime and nighttime noise measures, the DNL measure is watered down and basically useless. With less aircraft flying at night, the DNL waters down the level of noise. The FAA should separately measure noise at least four times daily (morning, evening, night before 12am and night after 12am).*
>
> ***FAA-2023-0855-4086 (Town of Los Altos Hills and Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto, California):*** *Revise nighttime penalties in appropriate metrics to reflect the substantial noise impacts of nighttime flights. The current way that DNL weights nighttime operations does not capture the severity of the noise impacts at night. The FAA should investigate how to weight nighttime flight activities to reflect the actual experiences of people, including how noise affects people differently at different times of night and how repetitive overflights as opposed to a few widely spaced overflights may have a particularly severe impact at night by preventing people from falling asleep and/or preventing people from getting a full night's sleep. Weighting should reflect how the cadence, pattern, timing, and volume of overflights actually affect peoples' sleep patterns.*

Regarding adequacy of AAD, several groups recommended using peak day instead of AAD. Some groups also recommended evaluating seasonal variations in activity.

> ***FAA-2023-0855-2244 (Vashon Island Fair Skies):*** *I believe this is a nuanced issue that requires some thought. For at least some overflight communities, the problem is that the representative "Average Annual Day" resembles no actual day. Many/most airports will have a different airport flow depending (mainly) on the wind, and these different flows can have very different flight patterns. This means that the overflight impact ends up depending, often with extreme contrast, on the wind direction. Having a separate set of metric results depending on flow does add complexity, but it also adds valuable information.*
>
> *Using peak annual day, or even peak weekly day could have an unintended impact on the eventuality of reintroducing pre-NextGen dispersion – depending on how it's implemented. If truly replicating the outcome of equitable noise distribution used successfully for over half a century before NextGen, but wanting to do so using NextGen technology since the FAA and airlines spent a lot of money on it, then having each operation randomly assigned one of perhaps dozens of different diffuse PBN procedures, then it would be fine. However, if the more simple approach of picking a "PBN du jour" is taken, then a peak day approach would make it look like there was no improvement to the NextGen sacrificed community, and all the communities that once again have some overflights would look to have the same impact as the sacrificed community before dispersion was re-introduced. It would not look like an improvement – for anyone. There needs to be some way for the metric to express that bad days are really bad, but, for example, about a quarter of days are not as bad.*

FAA-2023-0855-4097 (Karimzadeh): *Averaging noise over the course of the year is not appropriate for many noise impacts. This is because people experience individual instances of interference, and temporary lack of exposure does not negate the harmful effects of individual instances of interference. Sleep interference, communication and learning interference, impacts on cardiovascular health, mental health impacts, and impacts on parks and wildlands are poorly characterized by a DNL metric utilizing an Average Annual Day, and should not be used for quantifying those impacts.*

FAA-2023-0855-4086 (Town of Los Altos Hills and Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto, California): *Calculate noise levels for the peak air traffic day of the year instead of an annual average day. Over the course of a year, air traffic may vary by season, runway usage, and other factors. An Average Annual Day (AAD) does not account for such variations, masks the different noise levels experienced by residents, and underestimates the true impact of overflights. Again, people do not experience or hear an average. In contrast, the peak day represents the highest impact in a given year and therefore provides a better basis to understand how noise actually impacts people and to develop mitigation strategies that will address the actual noise impacts. Further, as air traffic volumes continue to increase, using a peak day provides a better basis to mitigate future impacts as well as current impacts.*

FAA-2023-0855-2244 (Palisades Community Association): *The ADD is another measure that gives the airlines a free pass to inflict high levels of noise during the day by not flying as much during the night. The ADD measure clearly caters to the interests of the airlines and not the taxpaying residents subjected to high level so jet noise. I am sick and tired of reporting 70+ decibel noise instances to my local FAA and MWAA (Metropolitan Washington Airports Authority) authorities only to have them spew out rhetoric that the DNL and ADD are within FAA limits. Averaging is a weak measure that masks noise distribution, outlier measures, and patterns. At a minimum, the FAA should consider using a median or mode statistical metric that would be marginally more meaningful.*

Two comments stated that airports with significant seasonal aircraft operations are in a unique position. For these airports, the FAA should consider calculating DNL based on a seasonal average rather than relying upon the annual average day.

FAA-2023-0855-4700 (AAAE)*: …we recognize that communities and individuals located near airports with significant seasonal aircraft operations are in a unique position. For these airports, FAA should consider calculating DNL based on a seasonal average—an average over the season in which people predominantly live in the area and operations are higher—rather than relying upon the annual average day (AAD). We believe this type of increased flexibility for airports with significant seasonal traffic is necessary, and we highly encourage FAA to work closely with them to determine a preferable method for describing noise impacts. This may require FAA to determine the parameters of what constitutes an airport that falls within this unique category.*

4.2.3 Alternative/supplemental/companion noise metrics

Several community groups indicated they do not support the concept of "supplemental" metrics because the metrics that have traditionally been used as supplemental metrics should be decision-making metrics.

FAA-2023-0855-2206 (AICA): *If the new noise policy is updated with decision-making metrics that reflect the lived experience of communities, then a policy change on using supplemental metrics is not needed. For example, N-Above- Ambient should be a decision-making metric, not a supplemental metric, given that it is a more valid measure for overflight communities and therefore would be communicated. As a decision-making metric, N-Above-Ambient is straightforward and would be understood by communities, unlike DNL today.*

FAA-2023-0855-4097 (Karimzadeh): *N-Above as a companion or primary decision-making metric, replacing DNL. These primary decision-making metrics used for the two noise exposure airport environments should apply*

> *for Part 150 (new noise policy should qualify inclusion of some overflight communities using NAA),NEPA, and eligibility (e.g., some overflight communities should qualify for noise monitoring).*
>
> *The companion metric to be used in conjunction with DNL should be N-Above (Ambient+Offset) for the peak day of the year. Notationally, for example N-Above-Ambient+10 or NAA+10 would be the number of events over Ambient + 10 dB using A-weighting or C-weighting whichever is higher. Number 10 is used as an example, and should be scientifically grounded as described above.*

That said, recommendations from AICA include the use of different metrics for different purposes. Vashon Island Fair Skies recommended the use of Time Above Ambient:

> ***FAA-2023-0855-2244 (Vashon Island Fair Skies):*** *In a National Park or rural area, I believe Time-Above-Ambient (TAA) is the metric that will best comply with ASNA's "highly reliable relationship" requirement. If every overflight event had the same duration, again noting that the A150.205(d) simplification has been proscribed so that we are talking about the real event duration, then TAA becomes equivalent to N-Above-Ambient (NAA). NAA is a popular potential replacement for DNL as it better measures the number of unique interruptions during a given time period, and indeed that is the largest component of the annoyance factor. The number of times per-day that one's focus, concentration, and train of thought is interrupted by an overflight that, for 60 to 90 seconds, steals that focus, concentration, and train of thought. This being said, for any given overflight event, the louder it is the more marginally annoying it is. NAA does not incorporate this aspect, but TAA does – organically – as louder planes (larger/older, lower altitude, dirty configuration, etc) will generate longer duration overflight events, thereby adding an appropriate penalty for louder events.*

Several industry groups (4 of 13) noted that additional/supplemental noise metrics could capture effects of communities outside DNL 65 and support communicating these effects. Three industry groups mentioned Number Above and Time Above as potential metrics but did not recommend thresholds. They stated the importance of basing these additional metrics on data and evidence.

> ***FAA-2023-0855-4579 (ACI):*** *For changes in flight procedures or airspace design, operational metrics such as TA or NA may be more useful as a supplemental metric to identify how the procedures could change the noise environment. However, to be considered an alternative metric, there must be a strong correlation between a given noise level and specific impacts based on empirical data in order to provide a substantive basis for a regulatory response related to significant impacts associated with the flight procedure or airspace design.*

4.2.4 Use of different metrics for different situations and to evaluate different effects

Several commentors recommended different metrics. The following commentor suggested a comprehensive approach to metrics and was selected because it summarizes the issues well. One community member posed a comprehensive range of metrics and thresholds based on health effect or other aspect of noise source (e.g., low frequency).

> ***FAA-2023-0855-4097 (Karimzadeh):*** *The FAA needs a system of thresholds based on a matrix of aviation noise effects based on specific effects and specific receivers. Quantifying sleep interference requires a different factor than annoyance. Quantifying work and communication interference require factors other than annoyance. Quantifying learning disruption caused by flight schools require factors other than annoyance. Quantifying the impact of aviation noise on parks and wildlife requires a different factor and threshold than rattle and low frequency noise impacts. Quantifying the impact of rocket launch facilities requires a different metric and threshold than a drone port. Quantifying the impact on quiet lands requires a different threshold than urban lands. Here are suggested thresholds.*

Annoyance and Community Response
Metric: EPA Normalized DNL with adjustments from Table D-7 of the EPA Levels Document.
Threshold: 55 dBA DNL-3dBA DNL (to account for non-aviation exposure).
Discussion: While the DNL metric is not the best descriptor of annoyance, the major problems with the metric is removed with a more appropriate threshold and with the use of the normalizing adjustments. Moreover, the adoption of a 55 DNL threshold is less disruptive and avoids unforeseen problems with adopting a new metric to address annoyance. It represents a minimal change to current noise policy and minimal impact on issues such as noise modeling and prediction that is part of the current regulatory process. See the EPA Levels Document and World Health Organization's Guidelines for Community Noise for further support.

Cardiovascular and Health Effects
Metric: Lnight, outside.
Threshold: 50 dBA Lnight, outside -3dBA Lnight, outside (to account for non-aviation exposure)
Discussion: The metric and threshold are recommended by the World Health Organization in Night Noise Guidelines for Europe.

Sleep Interference
Metrics: Lmax and Lnight.
Thresholds: 60 Lmax, Lnight, 45 dBA Lnight, outside -3dBA Lnight, outside (to account for non-aviation exposure).
Discussion: The metric and threshold are recommended by the World Health Organization in Guidelines for Community Noise, Table 1.

Communication Interference
Metric: dBA Lmax.
Threshold: 55 dBA Lmax
Discussion: See the EPA Levels Document Table D-1. The issue for communication interference is the number of instances of interference and the duration of that interference, which should also be presented.
**Note on flight schools and airports with touch and go operations: Research and data is severely lacking on flight school operations with repeated touch and go patterns. Community annoyance and reactions do not correlate with DNL metric whatsoever. The GA planes used in flight schools are mostly props, and therefore, do not generate larger dB levels, and instead repeated and frequent instances of interference. Immediate solution is to rely on the Communication Interference and sleep interference threshold suggested above, which also follows WHO recommendations as well. The FAA should both commission studies and call for proposals through research funding with the National Science Foundation and National Institutes of Health to calibrate time-above and N-Above thresholds that in fact correlate with community reaction for flight school operations. The replacement metric or (companion metric to be used in conjunction with DNL) should be N-Above (Ambient+Offset) for the peak day of the year, without averaging. Notationally, for example N-Above-Ambient+10 or NAA+10 would be the number of events over Ambient + 10 dB using A-weighting or C-weighting. Number 10 is used as an example, and should be scientifically grounded as described above, and as that may take time, in the meanwhile, the more protective DNL levels should be used for sleep interference and communication interference as described above.*

School and Education Interference
Metrics: dBA Lmax, dBA Leq,inside (1hr)
Thresholds: 55 dBA Lmax, 35 dBA Leq,inside (1hr) - 3dBA Leq,inside (1hr) (to account for non-aviation exposure).

Discussion: See communication interference above for the Lmax level. See the WHO Guidelines for Community Noise and the American National Standards Institute (ANSI) Classroom Acoustics Standard for the one hour Leq,inside level. While the ANSI standard allows 40 dBA for transportation noise sources, there is no scientific evidence supporting this higher level.

Hearing Loss
Metrics: dBA Lmax, dBA Leq, (24hr).
Thresholds: 115 dBA Lmax, 70 dBA Leq,(24hr, maximum day) - 3dBA Leq (24hr, maximum day) (to account for non-aviation exposure).
Discussion: OSHA regulations require no unprotected exposure above 115 dBA. Aviation noise exposure (primarily rocket launch facilities) where the levels are above would legally force any workplace within that zone to have a hearing conservation program in place due to the aviation noise. The 24 hour average levels are found in the EPA Levels Document and the WHO Community Noise Guidelines.

Parks and Wildlife
Metric: dBA Lmax,
Thresholds: Time and Events Audible in the Natural Environment, Time and Events Above 35 dBA, and Time and Events Above 52 dBA.
Discussion: For a full discussion of the metrics and thresholds in park and wildlands, see the EA's from the FAA's Air Tour Management Plans.

Environmental Justice Impacts
Metrics: Whatever the metrics used to assess specific noise impacts (for example , Lmax and Lnight for sleep interference)
Thresholds: Whatever the thresholds used to assess noise, with a 5 dBA penalty for when those impacts are imposed on lower income or minority communities.
Discussion: Rectifying environmental injustice issues resulting from aviation noise should be a high priority of the FAA. Merely using a universal threshold for all communities clearly has not prevented environmental injustice to occur. Therefore, a 5 dBA penalty for noise imposed on lower income and minority communities is needed.

Rattle, Vibration and Low Frequency Noise Impacts
Metrics: dBC and Lmax Octave Band Sound Pressure Levels in the 16, 31.5 and 63 Hz midband frequencies.
Thresholds: 10 dBC higher than whatever the thresholds used to assess noise impacts using dBA and 65 dB Lmax Octave Band Sound Pressure Levels in the 16, 31.5 and 63 Hz midband frequencies
Discussion: When the dBC – dBA is greater than 10 dBA, noise has a strong low frequency content. As the ANSI Standard S12.9 notes, "Annoyance grows quite rapidly with sound pressure level at very low frequencies." Moreover, the standard notes that , "Although windows and house walls have significant high-frequency sound transmission loss, sounds in the 16, 31.5 and 63-Hz octave bands pass through these structures to the interior with relative ease. The low-frequency sound pressure level within these structures is nearly equal to the outdoor sound pressure level because the minimal sound transmission loss of the windows and walls often is offset by modal resonance amplification in enclosed rooms."

4.3 Comments on NES/Schultz Data for policy making

Groups differed on their opinion and use of NES/Schultz Curve as a decision-making metric. AICA did not express concern about the quality or use of NES data to support policy changes though it recommended using the NES data for additional analyses. The Palisades Community Association expressed concern about the FAA's current reliance on the Schultz Curve, because of

its age. The Quiet Coalition expressed support for continued focus on annoyance as the primary indicator of community response.

> ***FAA-2023-0855-2206 (AICA):*** *An analysis should be done for the NA50 NES data as the sole predictor of High-Annoyance (i.e., not as a moderator variable to DNL65) to inform a new noise policy using NAA especially for overflight communities. The NES data showed a strong correlation between N-Above 50 dB (NA50) and the level of annoyance.*
>
> ***FAA-2023-0855-2244 (Palisades Community Association).*** *In its NES, the FAA states that its current noise policy is "informed by a dose-response curve initially created in the 1970s known as the Schultz Curve. This dose-response curve is generally accepted as a representation of noise impacts and has been revalidated by subsequent analyses over the years". The Schultz Curve, however, is not generally accepted by academics and other countries as relevant in contemporary noise studies.*
>
> ***FAA-2023-0855-1750 (the Quiet Coalition):*** *Some of my noise colleagues take issue with the FAA's continued use and sole dependence on annoyance, as measured historically by the Schultz Curve and more recently by the Neighborhood Environmental Survey, but I am comfortable using annoyance as one proxy for the impact of aviation noise, provided the FAA accepts the fact that annoyance is stressful and that stress causes cardiovascular disease and increases mortality. Annoyance is relatively easy to measure, the methods are standardized, and comparisons can be made over time.*
>
> ***FAA-2023-0855-2897 (Sky Posse Palo Alto)****: The Neighborhood Environmental Survey (NES) should be taken as confirmation that the Schultz curve was unreasonable and that it is time to retire the Schultz curve along with any assumptions made half a century ago. It also raised the issue that DNL may not be the best metric to predict annoyance which we underscore is a different analysis than the diagnostic analysis to evaluate changes in cumulative noise.*
>
> ***FAA-2023-0855-4127 (Massachusetts Port Authority Community Advisory Committee):*** *Subsequent research (the NES) has shown that many more people are highly annoyed at much lower DNL levels than was estimated in the 1970s by the Schultz curve. If the same logic was to be applied to that research (that 12.3% of the population being highly annoyed is where the regulatory threshold should be set), the regulatory DNL threshold would be set at approximately 45 DNL instead of 65 (a higher percentage of people are "highly annoyed" at that level than were at 65 DNL when the Schultz curve was created).*

A4A raised concerns about the context of data collection on NES and whether further examination of airports experiencing high rates of change in noise exposure would be appropriate. In addition, recent papers have raised questions about the NES's use of a mail survey instead of a traditional phone survey. A4A suggested that the FAA should address these concerns before relying on NES data as has been presented in the 2021 report.

> ***FAA-2023-0855-4402 (A4A):*** *There are several questions about the NES data that FAA should address before policy should be modified based on the NES data. First, the annoyance survey data that forms the basis of FAA's NES data were collected in 2015-2016. As discussed in Docket comments submitted by Nicholas Miller (the lead author of the NES), there were significant changes happening at several of the study airports. More generally, aircraft noise issues were newsworthy – especially with the implementation of NextGen procedures at various locations across the US. Since that time, FAA has improved its communications around the rollout of new procedures but has not conducted additional surveys to determine whether general annoyance levels may have decreased in the interim.*

Second, Gjestland has argued in a recent paper that the NES data should be adjusted based on both the format of the survey (mail vs. telephone/in-person) and the scale of responses. He posits that these two adjustments would result in a revised dose-response curve that would be much more consistent with historical data, including the Miedema-Vos (M&V) data that are considered the current international standard. Gjestland's revised curve shows close agreement with the M&V data below about DNL 62. FAA should review these recommendations to determine whether the NES curve should be adjusted to reflect either of these conditions.

FAA-2023-0855-4579 (ACI): *While the NES is an important first step to providing relevant information, it is only the first step in reviewing the need to update policy; the process should include additional research results on the health impacts of aviation. Not having the empirical data to provide the FAA, ACI-NA supports the ongoing, and future, efforts by the FAA to conduct research and develop the empirical data needed to inform any changes to aircraft noise policy.*

Both community groups and industry groups made specific recommendations on additional research the FAA might conduct using the extensive NES data set. These recommendations are discussed in Section 4.10.

4.4 Health Effects

Community groups expressed concern about health effects from aircraft noise. One recommended including health risk analyses in NEPA documents.

FAA-2023-0855-3843 (Montgomery County Quiet Skies Coalition of Maryland): *Residents in Montgomery County and across the Washington, DC region are suffering from psychological and physical health problems caused by airplane highways overhead. The noise from aircraft adversely affects people in communities as far as 25 miles from DCA.*

Expand the FAA's focus on annoyance to explicitly include other first line human health responses, particularly sleep disturbance, that have implications for mental and physical health. MCQSC particularly urges the FAA to focus on sleep disturbance, as evidence suggests it is particularly harmful for cardiovascular health and mental health, and has even been implicated as a trigger of acute cardiovascular mortality [Saucy, 2021]. Involve independent public health experts in the development of aviation noise policy. The scientific community has a wealth of knowledge about the public health impacts of noise, but there is a large disconnect between that knowledge and the FAA's policies and procedures.

The 65 DNL threshold is also far below the thresholds set by the World Health Organization in its Environmental Guidelines for the European Region (WHO, 1999), which states there is strong scientific evidence to reduce average exposure to 45 dB Lden, and for nighttime exposure to 40 dB Lden. These levels are at least 4 times lower than the 65 DNL (DNL is measured on a logarithmic scale).

FAA-2023-0855-3885 (Quiet Communities): *Noise is not simply an annoyance, it is a public health hazard, declared as such over 50 years ago by Surgeon General William Stewart. Annoyance is one of several "first line" responses; others include sleep disruption, interference with activities, and other emotional responses. All catalyze a cascade of physiological events that lead to serious harm. Decades of science exist to prove it. There is a gap between FAA's current noise policies and the science, and this is harming the American people.*

> *Nighttime aircraft noise is now understood to be especially hazardous when it comes to cardiovascular health. This is related to sleep disturbance, increased stress hormone level, and damage to blood vessels. The damage to blood vessels incurred by noise exposure predisposes individuals to ischemic heart disease, stroke, and death [Münzel, 2021; Hahad, 2019]. One large study found the risks of cardiovascular death from nighttime aviation noise increased by 33% for noise levels between 40 and 50 decibels and by 44% for levels above 50 decibels [Saucy, 2021].*
>
> *Include the health implications of noise metrics in Environmental Impact Statements, e.g., increased risk of hypertension and other health impacts.*
>
> ***FAA-2023-0855-4097 (Karimzadeh):** When developing a threshold for health effects, if uncertainty exists, the FAA should error on the side of protecting human and health and wellbeing. Where EPA and WHO recommendations, and national and international standards already exist, deference should be given to these recommendations unless compelling evidence suggests otherwise, leaning towards threshold's more protective of human and animal health and wellbeing.*

Industry expressed concern that the FAA should complete health effects research before finalizing any policy recommendations.

> ***FAA-2023-0855-4579 (ACI):** While the NES is an important first step to providing relevant information, it is only the first step in reviewing the need to update policy; the process should include additional research results on the health impacts of aviation. Not having the empirical data to provide the FAA, ACI-NA supports the ongoing, and future, efforts by the FAA to conduct research and develop the empirical data needed to inform any changes to aircraft noise policy.*

4.5 NEPA/Land Use/Mitigation/Part 150

There are not many specific recommendations in the comments regarding decision-making thresholds for NEPA and Part 150 (i.e., general recommendations to use a lower threshold, though not many that differentiate between NEPA and Part 150).

Community groups recommended the inclusion of NAA data in Part 150 documents and expansion of Part 150 to specifically address noise from overflights (i.e., significantly outside traditional study area of Part 150).

> ***FAA-2023-0855-2265 (Concerned Residents of Palo Alto):** Update Part 150 Guidelines for airports to report N-Above-Ambient data for Overflight Communities regardless of the communities' DNL contour.*
>
> - *The scope of 14 Code of Federal Regulations (CFR) Part 150 includes measuring current and future noise levels at airports and surrounding areas as well as reviewing airport noise exposure maps and airport noise compatibility programs.*
> - *Many Overflight Communities are excluded in Part 150 analyses and reports because such communities are located outside the 65 dB DNL contour.*
>
> ***FAA-2023-0855-2206 (AICA):** Regardless of airport DNL contours, include overflight communities significantly impacted under the new noise policy in the Part 150 analyses and reports and make such communities eligible for noise monitoring. Historically, only in the vicinity of airport communities have been included in the Part 150 analysis.*

The same group also recommended thresholds for NEPA analysis.

> ***FAA-2023-0855-2265 (Concerned Residents of Palo Alto):*** *The threshold value to define Significant Impact in environmental reviews for Overflight Communities should be based on a representative sample of actual noise events data already collected by airports and processed using a state of the art method such as Aircraft Noise Event Extraction Methodology (ANEEM).*
>
> - *Thresholds can be established using already available noise monitoring data processed using ANEEM, which is a state of the art method to detect aircraft noise events that is much more accurate than the threshold-and-duration method. The analysis to recommend thresholds could be done in a matter of weeks based on existing data. The FAA does not need additional research, including epidemiological evidence, to establish new thresholds (Q7d).*
> - *Many airports around the country have extensive noise monitoring data though few use ANEEM today to detect noise events.*
> - *SFO would be an excellent source of data because SFO operates a large network of permanent and temporary noise monitors over a broad area, has analytics capabilities, uses ANEEM, and has received a large volume of complaints since 2015 when NextGen started to be implemented in the Bay Area.*

AICA recommended extending eligibility for sound insulation and other mitigation to DNL 55.

> ***FAA-2023-0855-2206 (AICA):*** *For those in the vicinity of airports, the DNL threshold should be lowered to DNL 55 for land-use, NEPA, and for soundproofing or economic mitigation eligibility.*

Finally, AICA recommended that mitigation for overflight communities should focus primarily on operational noise abatement and not sound insulation.

> ***FAA-2023-0855-2206 (AICA):*** *The two distinct noise exposure environments of overflown communities and vicinity to airport/vertiports communities should pursue different mitigations. The Significant Impact determination for overflown communities should require mitigations such as procedure redesign (e.g., dispersion, runway use rotation, speed brakes, angle of descent, ground track, altitude, speed), nighttime procedures, dispersion and/or capacity limitations. For helicopters, the mitigation would be for routes to avoid noise-sensitive areas, offshore routes wherever possible and not voluntary, and altitude requirements over certain areas.*

Most industry organizations did not comment on the appropriateness of using different metrics for different applications, (i.e., whether to use something other than DNL for NEPA analyses). The main reason offered by these groups is that the FAA has not provided enough information from which to form an opinion on whether an alternative metric would provide a more meaningful analysis. However, AAAE recommended alternative metrics be considered for NEPA studies of flight procedures. General Aviation Manufacturers Association (GAMA) also commented on the need for a national policy, not one that varies by state or locality.

> ***FAA-2023-0855-4700 (AAAE):*** *FAA should consider the use of alternative decision-making metrics and thresholds to evaluate air traffic procedure and airspace changes during NEPA reviews. FAA acknowledged that overflight communities have been the predominant source of noise complaints to FAA in recent years because of NextGen implementation and procedural changes. To address the concerns, FAA should consider an alternative metric and threshold for such changes.*

> ***FAA-2023-0855-4100 (GAMA):*** *Multiple metrics that vary by state or location can become complex to manage and more difficult to account for impacts within the national aviation system.*

While not explicitly stating so, Aircraft Owners and Pilots Association (AOPA) pointed to the need for the FAA to focus more explicitly on the International Civil Aviation Organization (ICAO) Balanced Approach[13] and particularly on the land use management aspect of the Balanced Approach.

> ***FAA-2023-0855-3184 (AOPA):*** *Our single objective in providing these comments is to draw the attention of policymakers to a problem that has affected public airports for decades: the proliferation of incompatible land uses in their proximity.*

4.6 Noise Policy Development Process

Several of the industry groups commented on the process that the FAA is following to both solicit feedback and make policy changes. Several commenters identified the need for the FAA to clarify its policy process by providing additional information on next steps and likely timeline, as well as expected funding sources for any policy changes.

4.6.1 Need to clarify purpose for NPR and expand to update entire FAA Noise Policy

Several industry groups commented on the need for the FAA to clarify the purpose of the NPR and expand its effort to update the entire FAA Noise Policy. Organizations expressed concern about the narrow focus on the noise metric (DNL or some other decision-making metric) and threshold to the exclusion of a broader discussion of roles, responsibilities, and other policies that have been articulated through a combination of the 1976 policy and subsequent orders and regulations.

> ***FAA-2023-0855-4402 (A4A):*** *A4A has identified five questions FAA needs to address for A4A and other stakeholders to provide meaningful feedback on the CANP [Civil Aviation Noise Policy]. These include:*
>
> 1. *What is under review, or more specifically, what is the scope of the Noise Policy Review (NPR) and how is the CANP defined? FAA has not clearly defined the noise policy (i.e., what specific policy or regulation is under review by FAA) by either accurate specific citation or substantive description.*
> 2. *What is the purpose of this process? FAA has not defined the purpose or intent of this review process and the language regarding goals is unclear, contradictory, and inconsistent.*
> 3. *What is the statutory authority under which FAA is proceeding with this regulatory action? There is an inherent conflict within the regulatory requirements of existing noise law between basing decision-making on annoyance versus health impacts that FAA should resolve or clarify.*
> 4. *What regulatory process is the FAA following? FAA has not outlined the process by which recommendations or decisions will be made available for public review and comment.*

[13] International Civil Aviation Organization, Balanced Approach to Aircraft Noise Management, adopted by ICAO Assembly in its 33rd Session (2001) in *Resolution A41-20: Consolidated statement of continuing ICAO policies and practices related to environmental protection — General provisions, noise and local air quality* at https://www.icao.int/environmental-protection/pages/noise.aspx (accessed January 7, 2024).

5. *How will decisions be made? FAA has not provided the basis or rationale for how FAA will amend or revise existing policies and guidance.*

4.6.2 Need for FAA to prepare benefit-cost analysis and identify sources of funding associated with altering the noise policy

Industry groups are most concerned about the cost of potential policy changes and the funding that would be required to address mitigation identified by any policy changes. Both airports and airline organizations expressed concern about current funding constraints and the additional burden that would be posed by expanding eligibility for mitigation such as sound insulation.

> ***FAA-2023-0855-4402 (A4A):*** *Provide results of policy analyses: FAA has asked stakeholders to provide policy guidance without providing any information on the consequences of policy recommendations. To provide effective guidance on the feasibility and reasonableness of various policy options, stakeholders must be able to evaluate the consequences of each policy option. FAA should provide detailed policy analyses, including cost-benefit analysis.*
>
> ***FAA-2023-0855-4396 (A4A, IATA, ACI, AAAE):*** *Further, once such specific policy considerations have been determined, FAA must provide a robust cost-benefit analysis in order for the agency and Industry to fully understand the potential economic impacts of such revisions. This cost-benefit analysis and consideration of economic impacts should be factored into FAA's decision-making process in determining the future direction of FAA's aviation noise policy, especially without any increase in federal financial assistance.*
>
> ***FAA-2023-0855-4579 (ACI):*** *Alignment with funding sources: Airport funding is already extremely constrained, and airports should not be mandated to pay more for noise abatement and mitigation regardless of the outcome from the policy discussions without an adequate funding source.*
>
> *Sound Insulation eligibility - Communities may expect that changes in noise policy will be accompanied by expansions of residential sound insulation programs (RISPs). It is very important that the FAA understand the costs associated with such program expansions as well as what entities would be expected to bear them. Airport Improvement Program (AIP) does not have sufficient funding to support an expansions of RSIPs beyond currently-defined noise thresholds. Additionally, in areas where sound insulation has gone beyond the 65 DNL, a high number of aircraft noise complaints are still filed. Accordingly, the effectiveness in treatments for resolving community concerns is not clear.*
>
> *Regulatory Impact Analysis - In the same way that the FAA requires airports to conduct benefit-cost analyses (BCA) for justifying federal investment in AIP-eligible capital improvement projects, we urge the FAA to conduct BCA reviews of any policy changes that are considered from this round of noise policy review. For example, a revised policy that changed the threshold of significance would result in costs that include a (at minimum): additional resources expended on 14 CFR Part 150 studies, and additional expenses required to create and maintain effective noise programs at additional airports.*
>
> ***FAA-2023-0855-4402 (A4A):*** *Review of the history of the selection of DNL 65 as the impact threshold shows that it was selected as a reasonable balance between technical and economic feasibility. Policymakers still need to take both technical feasibility and economic reasonableness into consideration. FAA has not provided data on the economic impacts of any possible policy changes. For example, the cost of mitigation for a revised land use compatibility and/or NEPA impact threshold might have significant economic costs if FAA program eligibility is also modified. Any policy consideration must undertake a cost-benefit analysis.*
>
> *Further, any modifications to noise policy would need to consider ways of funding mitigation that would make implementation reasonably foreseeable. FAA is already years behind in providing mitigation*

funding under the AIP environmental set-aside, based on the current DNL 65 land use compatibility threshold. As just a single example, there are currently more than 27,500 eligible dwelling units and 89 non-residential noise-sensitive facilities (schools, churches, etc.) homes in the Port Authority of NYNJ recently approved Part 150 program alone; PANYNJ estimates the cost of this at $2.7B, approximately nine years of the total AIP environmental set-aside, assuming no other airport in the country would have access to AIP funding.

The FAA cannot raise community expectations that they will provide mitigation without reasonably identifying how those mitigation costs will be paid.

4.6.3 Need for clarity on whether noise policy addresses noise or other effects

Several groups indicated that the FAA should clarify whether its updated noise policy – including both metrics and thresholds – would be designed to address annoyance or other noise effects, such as health effects and/or quality of life. Current policy is unclear and potentially leads to some of the challenges the FAA and airports face. Further, if the FAA's focus is on something other than annoyance, the FAA should complete that research (see Section 4.6.7).

FAA-2023-0855-4579 (ACI): *The FAA needs to be clear whether its policy is based on annoyance or other health effects. The Aviation Safety and Noise Abatement Act of 1979 (ASNA) required the FAA to: "Establish a single system of measuring noise, for which there is a highly reliable relationship between projected noise exposure and surveyed reactions of people to noise, to be uniformly applied in measuring the noise at airports and at the areas surrounding such airports". The FAA states that its reliance on DNL 65 is based on annoyance as a "surveyed reaction" (i.e., Schultz), but it is possible that other "reactions" could be considered, such as sleep interference. Indeed, the FAA's own threshold for sound insulation eligibility (Leq 45 dBA) relies on speech interference. Should the FAA decide to revise its Noise Policy, the Coalition urges the FAA to publish a revised Noise Policy in draft and seek and evaluate public comment before issuing a revised Noise Policy.*

FAA-2023-0855-4402 (A4A): *There is an inherent tension within the regulatory requirements of existing noise law between basing decision-making on annoyance versus health impacts. Specifically, the Aviation Safety and Noise Abatement Act of 1979 (ASNA) requires the FAA to establish "a single system of measuring noise, for which there is a highly reliable relationship between projected noise exposure and surveyed reactions [emphasis added] of people to noise" which evolved into a de facto reliance on annoyance surveys, while the Noise Control Act of 1972 (NCA) directed the U.S. Environmental Protection Agency (EPA) to study the "implications of identifying and achieving levels of cumulative noise exposure around airports" due to Congress' determination that "inadequately controlled noise presents a growing danger to the health and welfare [emphasis added] of the Nation's population." Under the NCA, the EPA published the "Levels Document", which interpreted Congress' mandate to consider "health and welfare" to be defined as "complete physical, mental and social well-being and not merely the absence of disease and infirmity" and concluded that the land use compatibility threshold should be based on health effects and not merely annoyance. FAA should clarify how these factors drive decision-making. If it is annoyance, we submit that significant additional analysis needs to be completed before identifying a single metric and threshold; if it is health effects, we submit that it is premature for FAA to make a decision, as FAA's own research on health effects is still ongoing; if it is a combination of both, FAA should clarify how each effect is considered.*

FAA-2023-0855-4402 (A4A): *The Levels Document required by the NCA [Noise Control Act], which established Day-Night Average Sound Level (DNL) 55 dBA (A-weighted decibel) as a noise level "requisite to protect the health and welfare with an adequate margin of safety" (which subsequently led to selection of DNL 65 dBA as the economically feasible impact threshold), was clear that criteria should not be based solely on annoyance, stating:*
The phrase "health and welfare" also includes personal comfort and well-being and the absence of mental anguish and annoyance. In fact, a considerable portion of the data available on the health and welfare effects of noise is expressed in terms of annoyance. However, "annoyance" is a description of

the human reaction to what is described as noise "interference"; and though annoyance appears to be statistically quantifiable, it is a subjective reaction to interference with some desired human activity. From a legal standpoint, annoyance per se is not a legal concept. Annoyance expresses the human response or results, not its cause. For this reason, common law has never recognized annoyance as being a compensable injury, absent a showing of an interference with a personal or property right. Of the many community surveys on noise which have been conducted, speech interference emerges as the most tangible component of annoyance, whereas sleep and other kinds of activity interference are important but less well-defined contributors. Thus, although it is important to understand the importance of annoyance as a concept, it is the actual interference with activity on which the levels identified in this document are based.

4.6.4 Frequency of policy updates

Several community groups expressed the desire for more frequent policy updates.

FAA-2023-0855-2206 (AICA): *Noise policy should be reviewed every 5 years at a minimum. The policy should also be updated within 2 years of any major finding (e.g., a National Academies consensus report on public health).*

Industry groups are consistent in their desire for future policy updates to be thoughtful and focused on minimizing disruption. Airport sponsors also desire that policy changes not "undo" any prior work or require revisiting decisions that have already been made.

FAA-2023-0855-4579 (ACI): *Flexibility for the Future: Any new noise policy should be forward looking, minimize disruption, and not attempt to revise or undo previously issued Records of Decision or other FAA approvals based on current policy. Likewise, any new noise policy should minimize the need to revise, amend, or reconsider studies or projects ongoing at the time the new policy is issued. Airport sponsors and the Federal government have made considerable investments of time and treasury, and a change in policy should not jeopardize that investment by affecting the validity of already completed, or ongoing review and approval processes.*

4.6.5 Need for additional Federal Register Notice before any rulemaking/requested clarity and more information

Although community groups are eager for the FAA to revise its policy, they also emphasized the need for continued stakeholder engagement, including additional publications in the Federal Register Notice.

FAA-2023-0855-2206 (AICA): *There should be a subsequent stakeholder engagement process similar to this one after the FAA has narrowed its policy options and before issuing a new noise policy. Stakeholders, including the public, should be given a similar opportunity to this one to review the potential changes to the noise policy and relevant orders, regulations, and guidance documents.*

FAA-2023-0855-2265 (Concerned Residents of Palo Alto): *After the FAA has narrowed its policy options and before issuing a new noise policy, add another stakeholder engagement process similar to the one the FAA used for this request for comments.*

- *Stakeholders, including the public, should be given an opportunity similar to this one to review the FAA potential changes to the noise policy and relevant orders, regulations, and guidance documents before the FAA crosses all the t's and dots all the i's.*
- *This request for comments on the Noise Policy Review is for input on the core issues and does not share FAA's potential solutions. For many people, the questions are difficult to understand; the technical jargon used may also lead the FAA to misinterpret some of the input.*

- *If it takes time to analyze existing data to create a noise policy that addresses the true impacts on communities, it will be worth the effort. Hopefully, some if not most of the analyses have already been done since the NES was completed.*

Several industry groups identified the need for the FAA to further develop a range of policy options for discussion with stakeholders and then provide additional opportunities for stakeholders to provide input on those options.

FAA-2023-0855-4402 (A4A): *Clearly outline its policy options: FAA has asked for specific input on metrics and thresholds of impacts but has not clarified what policy options are realistic. FAA should winnow down the policy options under consideration before asking for feedback.*

FAA-2023-0855-4396 (A4A, IATA, ACI-NA, AAAE): *In addition, if FAA develops a new policy, the agency must provide an opportunity for stakeholders to evaluate and comment on the policy, including any research and cost- benefit analysis that supports the proposal, before FAA initiates changes to orders, regulations, etc. The potential impacts on industry from a change in policy strongly warrant a thorough review and engagement process with affected stakeholders.*

4.6.6 Recommendation to Convene an Expert Panel

As discussed in Section 4.6.76.7, many community groups believe sufficient data exists to proceed with policymaking. Most also recommend enlisting the National Academy of Sciences to produce an "independent, unbiased, and peer-reviewed" analysis and recommendations on noise metrics and thresholds to address aircraft annoyance.

FAA-2023-0855-4086 (Town of Los Altos Hills and Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto, California): *In developing a suite of metrics and thresholds, the FAA should ask an expert panel to consider whether different metrics are appropriate for different circumstances, such as:*

- *Evaluating noise impacts in communities very close to airports.*
- *Evaluating noise impacts in communities below arrival and departure paths.*
- *Evaluating noise impacts in communities affected by changes in flight procedures.*
- *Evaluating noise impacts from nighttime operations.*
- *Evaluating noise impacts in wilderness or historic areas.*
- *Evaluating noise impacts from general aviation operations, including in particular repetitive operations.*
- *Evaluating noise impacts from helicopters and other rotorcraft.*
- *Evaluating noise impacts from new aircraft models or types (including helicopters, UAV (Unmanned Aerial Vehicle), and AAM vehicles).*

Each of these different scenarios may require a different metric and/or a different threshold to measure how noise will affect residents. Moreover, it may be appropriate to use more than one metric to gain a more complete understanding of noise impacts. For example, DNL may be appropriate to predict an overall level of community annoyance, but different metrics applying different thresholds will better illustrate how specific operations will impact people on the ground.

FAA-2023-0855-2265 (Concerned Residents of Palo Alto): *The FAA should commission an independent, unbiased, and peer-reviewed consensus report from the National Academies Division of Medicine on aviation impacts on public health.*

Enter into an agreement for an independent, unbiased, and peer-reviewed consensus report from the National Academies (with participants from the 3 divisions) to recommend noise decision making metrics and thresholds. A consensus report is not new research. It surveys the existing body of research and makes recommendations.

- *Because of inadequate past FAA reports and conclusions on metrics and thresholds, a consensus report from the National Academies is critical.*
- *The FAA does not need to wait for the noise policy review comments to be compiled to enter into such an agreement. This request has already been made in NES comments.*
- *See introduced bill H.R.2561 Peer-Reviewed Report on Measuring Metrics and Thresholds.*

4.6.7 Need for Additional Research

Several community groups state that there is no need to conduct additional research on effects (including the sleep study currently underway) or wait for research to be completed before establishing a new noise policy regarding annoyance.

FAA-2023-0855-2206 (AICA): *There is no need to conduct any additional research on impacts (including the sleep study currently underway) or wait for research to be completed before establishing a new Civil Aviation noise policy regarding annoyance. Even though the noise policy should address all types of air vehicles, current and future, it is urgent to define the new noise policy for current air vehicles (e.g., subsonic fixed wing, rotorcraft, and commercial space). Ample, peer-reviewed research and data (including noise monitoring data) on aircraft noise impacts, including sleep interruptions, already exist. The FAA should integrate new research findings or changes in air vehicle types in a periodic update of its noise policy.*

Industry groups agree that the FAA needs to finish ongoing research on health effects and conduct additional research – primarily on costs of policy proposals – before making any specific policy recommendations. These should be included with a subsequent stakeholder engagement process.

FAA-2023-0855-4402 (A4A): *Complete its noise effects research before finalizing policy changes: A4A believes it is premature for FAA to change noise policy before completing important research that was specifically designed to inform policy.*

FAA-2023-0855-4579 (ACI): *Any change in metrics or threshold should be based on empirical data measuring the impacts of noise on health and other objective impacts, such as sleep disturbance, speech interference, learning interference, or other health impacts.*

FAA-2023-0855-4579 (ACI): *Levels of annoyance are subjective and are not sufficient to provide the sole basis for revising the national noise policy. Any new policy must be based on reliable, peer-reviewed research regarding how aircraft noise affects people and communities. ACI-NA believes that any new noise policy should be based on a clearly defined set of goals or objectives founded on objective, empirical factors. While the NES is an important first step to providing relevant information, it is only the first step in reviewing the need to update policy; the process should include additional research results on the health impacts of aviation. Not having the empirical data to provide the FAA, ACI-NA supports the ongoing, and future, efforts by the FAA to conduct research and develop the empirical data needed to inform any changes to aircraft noise policy.*

FAA-2023-0855-4700 (AAAE): *FAA should define its goal or intended outcome of the noise policy review and conduct further research on the impacts of any potential changes to decision-making noise metrics and thresholds used during Part 150 studies and NEPA reviews. We believe there should be a*

strong connection between the defined outcome of FAA's policies; any research conducted; and any proposed change in noise metrics or thresholds.

4.7 Communication

Community groups expressed the need for frequent and transparent communication. AICA also called for forming a national advisory committee under FACA.

FAA-2023-0855-2206 (AICA): *To ensure communities have a voice in new and updated noise policy, we request an Impacted Communities National Advisory Committee (under the Federal Advisory Committee Act, FACA) to advise the FAA on current and future noise and pollution issues. Regionally, communities have little influence or voice on FAA decisions; nationally, they have virtually none. Aviation noise will continue to be a problem for communities. We do not know what the noise impacts from advanced air mobility will be. Congressman Lynch's Impacted-Communities Advisory Committee, H.R.2565 mandates a national FACA-based advisory committee to provide a community voice and to deal with current and future aviation noise problems. The FAA's Noise Policy should require this advisory committee, as laid out in H.R.2565, be formed immediately.*

FAA-2023-0855-2244 (Palisades Community Association): *The FAA could improve its communication with the public by using plain English rather than using acronyms and arcane taxonomy. Examine the language within this FR Notice soliciting public comment on policy that is peppered with unfamiliar terms of reference such as DNL, NEPA, ADD, etc.*

FAA-2023-0855-3885 (Quiet Communities): *As a start, the FAA should start to report historic aviation noise exposure information to the public nationwide in an accessible, interactive format. This way, when changes need to be made, relevant historic data will already be publicly available. One example that's already publicly available is this National Transportation Map, however it is not as interactive as current technology allows.*

- *QC envisions an FAA noise reporting system that is accessible to anyone in the public via the internet. Ideally, the FAA would produce interactive noise maps on which anyone could find their home, school, or place of work associated with meaningful aviation noise information such as N-Above (and/or N-Above-Ambient if possible) at various decibel levels from 40 to 65. An excellent example can be found here: http://kentsj.com/DCA/DCA-DNL-2015-16.html. It shows the percentage of people who are highly annoyed by aircraft in neighborhoods around the Washington, DC region based on the results of the FAA's Neighborhood Environmental Survey (NES).*
- *Such noise maps should be based as much as possible on real-world noise data, collected in the environment, not on modeled data. AEDT modeling is not accurate beyond a few miles from the airport, and often considerably underestimates real-life aircraft noise. For example, much of the noise from aircraft, particularly descending aircraft, is now due to airframe noise rather than engine noise. QC concurs with the recommendations about improving the accuracy of noise modeling in AICA's submission (FAA-2023-0855-2206, p. 7).*

FAA-2023-0855-3738 (PWM (Portland International Jetport) Noise Advisory Committee): *The FAA needs a new way to notify the public of changes to aviation policy. The public should not have to check the FAA Registry on a regular basis just in case the FAA has posted a request for comment. Most people don't even know what the FAA Registry is. Deadlines pass without anyone knowing or understanding the impact of policy change until it happens. The FAA should organize/attend community meetings, mail letters, have announcements in local newspapers and on radio/TV of affected areas, and increase the time allowed to respond. This should be done for policy regarding any type of aircraft or operation.*

The Concerned Residents of Palo Alto provide several recommendations for improving communication. While this is a longer excerpt, it is included in full because it summarizes the issues well.

FAA-2023-0855-2265 (Concerned Residents of Palo Alto): *Institute a process for a meaningful dialogue with communities to address past or future changes in noise impacts, including but not limited to engaging directly with impacted communities that are not members of a Roundtable or Noise Forum on noise abatement solutions.*

- *A meaningful dialogue means that the FAA should be proactive, transparent, and timely in its communication with communities.*
- *It also means adopting a problem-solving approach where both parties collaborate in finding potential solutions. In the rare occasions when it engages with communities, the FAA appears to expect the public to accept impacts. For example, Environmental reviews and Part 150 analyses are rubber stamping exercises for the foregone conclusion of no significant impact.*
- *Be specific and use layman terms in communicating with communities, in environmental reviews or other documents, procedure or vector changes and the associated noise impacts, namely:*
- *Describe the change, or combination of changes, in plain English, not technical jargon on navigation charts.*
- *Show the cities/towns/areas potentially impacted on Google maps.*
    - *Use updated altitude thresholds to identify potentially affected communities as described in recommendation 37.*
    - *At a minimum, include all overflown communities within 10,000 ft AGL for arrivals and 15,000 ft AGL for departures.*
- *Disclose the total noise impact for each Overflight Community:*
    - *Total noise impact is for all aviation noise sources, meaning all air vehicles from commercial aviation (passengers and cargo), general aviation, or military operations, regardless of their types and including supersonic aircraft and space operations, to and from multiple origins or destinations (e.g., one or more flight paths –procedure or vectors– from all airports, helipads, launch pads, drone pads), for all air vehicle operations (from being at the gate to taxiing to taking off to cruising to landing, and including specialized operations such as pilot training and air shows). Do not limit the evaluation to one air vehicle type using one procedure or vector.*
    - *Report N-Above-Ambient to characterize noise impacts for all aviation noise sources using both A-weighting and C-weighting.*
- *Specify the level of ambient noise that was used in the analysis and how ambient noise was determined (actual noise monitoring, assumption based on community characteristics).*
- *For areas impacted by helicopters and specialized operations such as flight training and air shows, report Time-Above-Ambient and how Time-Above-Ambient values were converted into N-Above values.*
    - *Provide a breakdown of the NAA data by vehicle type, aviation group (commercial, general, military), and origin or destination.*
    - *Report the values of the decision making metric (Total Noise Index for Overflight Communities) that was used to determine Significant Impact (using either A-weighting or C-weighting, whichever shows greater impact).*
    - *Report any other relevant metric. However, to prevent potential confusion, do not label additional metrics as "supplemental metrics". If additional metrics are reported, state clearly that these additional metrics are for information only (see recommendation 30).*
- *Compare the total noise impact before and after the change for each Overflight Community, and break down the data (vehicle type, aviation group, origin/destination).*
- *Describe all assumptions made, data sources and models used, and results of any noise monitoring tests that were performed.*

- *Disclose N-Above-Ambient (in total and broken down by vehicle type, aviation group, origin or destination) for all Overflight Communities in all analyses and reports, including but not limited to Environmental Reviews, Noise Exposure Maps (NEMs) created by airports, and FAA analyses and reports on noise impacts. DNL is meaningless for Overflight Communities.*
- *Specify the level of ambient noise used and how ambient noise was established (actual noise monitoring, assumption based on community characteristics).*
- *Provide information in a proactive, transparent, and timely manner to all potentially impacted communities using multiple channels (website, email, Roundtable or Noise Forum meetings, community meetings, webinars). For example,*
- *Notify all potentially impacted communities (Cities, Townships, Counties, Roundtables members, Noise Forums members) of upcoming changes, early in the process, and as soon as an Initial Environmental Review is initiated.*
- *Post information on an FAA website and implement a subscription notification process for users to become aware of new information postings.*
- *Work with cities and towns to hold Community meetings with the FAA outside Roundtables or Noise Forums for participants who are not represented in such organizations.*
- *Have FAA Subject Matter Experts attend Community meetings, Roundtables or Noise Forums,*
- *Provide materials in advance of meetings for the public to have adequate time to familiarize themselves with the content.*

Several industry groups recommend additional communication through various platforms, including working groups, public meetings, and stakeholder engagement.

FAA-2023-0855-3184 (AOPA): *Convene a joint FAA-Industry working group, to include AOPA, to facilitate the creation of the updated noise policy and subsequent outreach and education plans.*

FAA-2023-0855-4700 (AAAE): *FAA needs to ensure its staff, especially within the Air Traffic Organization (ATO), is working closely with airports to create consistent, proactive messaging for local communities on noise-related issues. This includes partnering with airports to develop and implement engagement strategies and having consistent FAA representation that understands, listens, and tries to respond to airport community concerns.*

FAA-2023-0855-4700 (AAAE): *Addressing aircraft noise-related concerns in any future FAA policy should remain a shared responsibility among federal, state, and local governments, airport operators, airline and aircraft operators, and local community members in accordance with the 1976 "Aviation Noise Abatement Policy." This framework has played a major role in drastically reducing the number of people exposed to significant aircraft noise.*

FAA-2023-0855-4396 (A4A, IATA, ACI, AAAE): *Community engagement is critical to successful noise management, and any revisions to existing noise policy should place significant emphasis on improving stakeholder engagement and providing further transparency to local communities.*

Elected officials and government request that the FAA share information early and often using plain language and clear visual representations of flight procedure changes and companion metrics through various channels and platforms. Many reported feeling blindsided by the actual effects of NextGen and requested that the FAA communicate with and solicit input from affected communities prior to finalizing policies. They request that the FAA be proactive and comprehensive when gaining public input and providing the effects they will notice ahead of time.

> ***FAA-2023-0855-1624 (City of Mendota Heights, Minnesota):*** *There remains an opportunity for the FAA to share information with the public early and often using plain language, clear visual representations of proposed flight procedure changes and companion metrics to help communicate impacts to communities.*
>
> ***FAA-2023-0855-1947 (City of Park Ridge):*** *The FAA needs to be more transparent and timelier. Utilizing such organizations such as the O'Hare Noise Compatibility Commission, local political subdivisions and school districts clearly need to be in the mix. When hot-issue topics are addressed, public forums are a must. The FAA has done a good job at utilizing such things as social media but that needs to be expanded. The number one thing we face in dealing with residents is misinformation. Clearly more and better communication could rectify that.*
>
> ***FAA-2023-0855-2348 (City of Newport Beach):*** *Public notice mechanisms can play a crucial role in addressing community concerns. Timely and comprehensive information about upcoming launches, expected noise levels, and schedules can enable communities to prepare, plan and minimize potential disruptions. By providing clear and accessible information through various channels, including online platforms, public meetings and local media, the FAA can ensure that communities are well-informed about commercial space operations and their associated noise impacts.*

Elected officials and government request that the FAA improve its response policy and relayed that their residents do not feel their concerns have been heard or addressed.

> ***FAA-2023-0855-0555 (Town of Bedford, MA (Massachusetts)):*** *We also encourage FAA to improve its response policy for individuals who submit noise complaints. Currently, a resident can submit a complaint to the local airport authority (in our case, Massport) and/or directly to the FAA, and receive a notification that their complaint has been received. There is no easy way, however, for a complainant to receive additional information or ask further questions about the causes of the complaint, and FAA rarely reports that any action has been taken in response to a complaint. Residents have told us they do not feel their concerns about aviation noise in their neighborhoods are truly heard or addressed by Massport or FAA.*

Elected officials and government groups want the FAA to acknowledge that NextGen has negatively impacted residents and request that retroactive action be taken.

> ***FAA-2023-0855-3731 (Milton, MA (Massachusetts) Select Board):*** *As it revises the Policy, the FAA has an opportunity to reverse the public's negative perception and mistrust of the FAA, but that will happen only if the new Policy actually solves the noise problems that NextGen foisted upon overflight communities with no meaningful notice or public input. It is imperative that changes to the Policy, including the establishment of one or more noise metrics, be applied retroactively as well as prospectively.*

Elected officials and government groups strongly advocated for the factors that contribute to decision-making to be comprehensive and accessible to the public so they can understand and be a part of the decision. The public wants to see data to help them understand the reasoning behind the FAA's decisions and decide where to live and work. This will help the public trust the FAA and foster a positive relationship.

> ***FAA-2023-0855-1947 (*City of Park Ridge*):*** *The FAA should use all available metrics and data capturing methods to make informed decisions. To ensure full transparency these factors in decision making should also be made available for public disclosure. Public disclosure ensures transparency in the regulatory*

process. It will allow the public to understand and participate in the decision-making process. By disclosing the data and information about proposed FAA noise regulations, including the objective, potential impacts, and reasoning, the FAA can foster trust and confidence amongst the public.

FAA-2023-0855-2348 (City of Newport Beach): *The FAA should not only use this information for public disclosure, but also as a basis for making informed decisions. For example, empirical data can be used by the FAA to establish evidence-based regulations and policies that effectively manage and mitigate aviation noise from these aircraft types. This approach ensures that decisions are grounded in scientific research and real-world observations. Lastly, the City would like to stress that public disclosure is vital and the FAA should reveal what it is doing with regard to new aircraft types. By sharing information, the FAA can engage with stakeholders and the public, allowing for meaningful discussions and input. This approach enhances trust, facilitates community involvement, and enables a more collaborative and inclusive decision-making process.*

FAA-2023-0855-4086 (Town of Los Altos Hills, Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto): *Communication regarding noise impacts begins with developing a system of noise metrics that realistically describe noise impacts in a manner the average person can understand. For all of the reasons discussed above and as made clear in the NES, DNL tends to obscure and understate noise impacts. The FAA's reliance on DNL has undermined the public's confidence in how the FAA reports and describes noise. Developing a system of noise metrics that describes how noise will actually affect people is critical to how the FAA communicates about aircraft noise. In addition, the Cities believe the FAA should develop a communications policy that allows the FAA and airports to provide information about noise proactively, in a timely manner, and that represents the true impacts of noise on communities.*

Additionally, there were comments about the FAA Noise Ombudsman and Community Engagement Officers; the comment below is representative of these concerns:

FAA-2023-0855-4218 (City of Naples Airport Authority and City of Naples): *The Community Engagement Officer (CEO) role needs to be restructured and include supporting staff identified for each Terminal Radar Approach Control (TRACON). Some community members are aware of the role but do not receive feedback or timely responses. This position should be renamed and elevated to a higher-level position. This position, with support from TRACON, should help bridge the gap among ATO, Office of Airports, sponsors, communities, and other stakeholders. The person serving in this role should be well educated regarding noise policy and federal laws to coordinate with airport sponsors for improved and accurate messaging from the FAA. The position has also experienced a high level of turnover, further leading to inconsistent and incorrect messaging and misinformation provided to the community. The FAA needs to understand what is causing the rapid turnover and should seek to improve and stabilize this position to provide consistent, meaningful dialogue with citizens and local governments.*

We also recommend that FAA send representatives into the community on a more regular basis outside of a Part 150 study process. FAA should be present and seen including at Board, Roundtable or Community meetings (where applicable). The Authority hosts countless community meetings, where FAA presence

4.8 Policy in Relation to Vehicle Types and Operation Types

For purposes of discussion, this section addresses comments on traditional aircraft. Comments on noise policy regarding emerging vehicles are discussed in Section 4.9.

Communities believe that the FAA should require and include aviation noise measures from all sources for decision-making purposes. "All sources" means all air vehicle types from commercial, general, and military aviation for all procedures and vectors, to and from multiple origins and destinations, and all phases of operations (takeoff, landing, etc.) including elements of aircraft operations like continuous flight training maneuvers, hovering, and Vertical Take-Offs and Landings (VTOL) instead of limiting the assessment to one procedure to or from one airport at a time or one vehicle type.

> ***FAA-2023-0855-2206 (AICA):*** *Require and include aviation noise measures from all sources for decision-making purposes, total noise impacts. "All sources" means all air vehicle types, from commercial, general, and military aviation, for all procedures and vectors, to and from multiple origins and destinations, and all phases of operations (takeoff, landing, etc. and including elements of aircraft operations like continuous flight training maneuvers, hovering, and VTOL) instead of limiting the assessment to one procedure to or from one airport at a time or one vehicle type. Please see our answer to Question #10, re: miscellaneous.*
>
> *Noise thresholds for low-frequency events beyond commercial space transportation vehicles should be addressed in decision-making noise threshold(s) and metric(s). An evaluation should be performed for A-weighted and C-weighted to determine which has the higher noise level that reflects the true experience for all vehicle types and operations (e.g., backblast). The higher noise level of A versus C-weighted should be used for decision making.*
>
> *Allow some local control such as: Allow local governments to establish local noise ordinances for civil rotorcraft (e.g., helicopters and drones for local law enforcement, commercial and personal activities – passenger or packages) for air traffic flying below 2000 ft.*
>
> *Require a minimum 2,000 ft cruising altitude for all civil helicopters when transporting individuals except for medical emergencies.*
>
> *The FAA should order all domestic aircraft's Flight Management Systems (FMS) to upgrade in order to allow the FMS to accommodate multiple departure, approach, and arrival instrument paths for the purpose of rotating path usage in order to disperse aviation noise more equitably.*
>
> ***FAA-2023-0855-4097 (Karimzadeh):*** *In addition to en-route, takeoff, and landing, the FAA should address flight school operations (flying patterns and touch and go operations) that severely affect local communities, acrobatic operations, air taxi operations, all aspects of drone operations, rocket launch and reentry operations, all aspects of any flying car operations, operations over parks and wildlands, and low altitude operations those below 3,000 feet, that due to their proximity to communities, have a greater impact. Each of these operations has a unique impact on local communities for which the communities have limited or no means of regulating the noise. Consequently, the FAA Noise Abatement Policy needs to address each of these concerns separately.*

A joint letter from several cities in the California Bay Area recommended increased local control for some operations, particularly general aviation, helicopters and drones, and operators below 2,000 feet.

> ***FAA-2023-0855-4086 (Town of Los Altos Hills and Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto, California):*** *The new noise policy should allow a greater amount of local control over some aspects of aircraft noise. In particular, local communities and airport sponsors should have greater authority to establish local noise ordinances to regulate local general aviation operations, civil rotorcraft (e.g., helicopters and drones) operations below 2000 ft, and to provide incentives for aircraft operators to use quieter aircraft or use noise abatement flight procedures. Although the Cities recognize that the FAA has an interest in managing the overall National Airspace System in the national interest, local operations, particularly at general aviation airports, often impose*

severe impacts on communities that are out of proportion to the national interest. The noise policy should allow for greater local authority over local operations to address local noise problems.

4.9 Emerging Vehicles

This section addresses comments on emerging vehicles including considerations for noise policy on UAS/UAM, commercial space, and supersonic aircraft.

Industry groups were largely silent on the issue of emerging vehicles but stated that the FAA should consider the full range of current and future vehicle types in its revised policy.

FAA-2023-0855-1706 (Air Line Pilots Association (ALPA)): *It is ALPA's believe that there should be an equivalent level of acceptable noise that applies to all vehicular operation in the National Airspace System and FAA should not allow for the creation of different noise standards that would apply only to certain operations in the NAS.*

FAA-2023-0855-4579 (ACI): *Based on experiences with aircraft noise, ACI-NA expects that communities will have reactions to all of the contemplated future vehicle types noted in the FAA's question. Accordingly, future noise policy will need to consider all of these aircraft and should take into account empirical data associated with these new entrant vehicles and the community experience/reaction to their operation.*

One individual advised the FAA set a "no net increase in noise" policy in relation to noise from emerging (identified here as "novel") vehicles.

FAA-2023-0855-4097 (Karimzadeh): *The FAA's Noise Abatement Policy's goal, in addition to accurately and adequately protecting the public from the health and wellbeing impacts of noise, should be a no net increase in noise.*

The EPA in the Level's Document identified novel noise sources as 5 dBA LDN more problematic than existing noise sources (see Appendix D).

4.9.1 UAS/UAM

Community groups did not provide direct recommendations regarding policy for unmanned aircraft but expressed concern that policy be developed before problems arise.

FAA-2023-0855-3885 (Quiet Communities): *In the near future: The FAA needs to also determine how to protect public health from unmanned drones, air taxis, and personal use low altitude aircraft and private jets.*

- *The FAA should establish noise policies that address the altitude, duration of hovering over residential areas, and number of aircraft over a particular area.*
- *In addition, policies should protect privacy and limit nighttime operations.*

FAA-2023-0855-2206 (AICA): *Communities are concerned about the premature rollout of UAS or other newly emerging technology operations before a new noise policy is available and that addresses the true impacts to communities, including new elements of aircraft operations such as visual pollution and hovering. Innovate 28 (I28) should require that "collecting data" include the count of aviation events above ambient (N-Above- Ambient), environmental impacts, the type of AAM vehicles, and community engagement reports. State and local governments laws should control, within their boundaries, all aspects of AAM that create noise impacts including locations of flights, low altitude airspace, land use, infrastructure, and aircraft operations (e.g., EVTOL helicopters and drones for local law enforcement, commercial and personal activities–passenger or packages). The evaluation and*

decision-making for environmental impacts, including AAM, should relate to and represent the layperson's lived experience by using the realistic metric of N-Above in Lmax bands, some reasonable threshold(s) for significant impacts, and ambient noise consideration. Categorical Exclusions should not be used. Changes to airspace design and/or new routes for AAM should be published. Community as a key stakeholder should be included early and in all high-level activities of the AAM Integrated Master Schedule. The current plan involves Community only in "Phase 5: Post -implementation". AAM is an incremental impact and therefore should not further burden communities already highly impacted. Total impacts (noise and visual) should include ALL current aviation impacts from (see recommendation in Question #10 Miscellaneous):

FAA-2023-0855-3885 (Quiet Communities): *Special concerns include close proximity noise - the sharpness or roughness of the noise, the frequency spectrum of the noise, the presence of tonal components, in addition to loudness and repeated noise, whether or not it permeates indoors, how people - especially those vulnerable to noise like children, seniors, those with sensory deficit disorders, autism spectrum disorder, hearing problems, and other neurological conditions - will respond and be affected. At present, all of this is unknown. Metrics are needed to capture the characteristics of the noise emitted from these aircraft that represent the lived experience of near-airport and overflight communities. In addition, these communities will have concerns about the visual impact of numerous low-flying aircraft, as well as privacy concerns. While these are not noise issues, the FAA should take them into consideration.*

4.9.2 Commercial Space Vehicles

Community groups expressed concern about noise from commercial space operations, including a recommendation to form a National Community Advisory Committee for space transportation noise concerns.

FAA-2023-0855-3885 (Quiet Communities): *People in the vicinity of commercial space transportation operations presumably have the same concerns about health and quality-of-life impacts as people in the vicinity of overflight and near-airport communities. In this case, it is likely that the loudness of episodic events may be more important than more continuous noise (affecting near-airport communities) and repetitive noise (affecting overflight communities). Noise metrics that address loud episodic noise and affect auditory and non-auditory health are needed.*

Experience from the years when sonic booms were permitted in the U.S. strongly suggests that these events are extremely disturbing and therefore likely cause not just annoyance but also health impacts. The FAA should proactively consult about appropriate noise thresholds with communities that will be impacted, i.e., those able to hear the noise from launch and reentry of commercial space transportation vehicles. The FAA may elect to form a National Community Advisory Committee for space transportation noise concerns.

FAA-2023-0855-4097 (Karimzadeh): *The impacts of aviation include sleep interference, communication interference, learning interference and impairment, cardiovascular impacts, annoyance, community reaction, quality of life impacts, property value impacts, environmental justice impacts, as well as impacts on parks, wildlands, and wildlife. Communities near rocket launch facilities are concerned about each of these impacts, as well as hearing loss and vibration and low frequency noise impacts. These impacts cannot be addressed with one noise metric.*

4.9.3 Supersonic Vehicles

Communities expressed concern about noise from supersonic aircraft, proposing both continuation of current overland ban on supersonics and specific noise limits for supersonic activity.

FAA-2023-0855-2206 (AICA): *Do not allow extreme noise impact of sonic boom of (SEL) 90 dBA for civil aircraft and penalize startle responses to sonic boom or take-off noise (exceeding Programmed Lapse Rate thrust) and military sonic booms.*

Supersonic aircraft should continue to comply with the noise certification standards in place for subsonic aircraft at the time of aircraft certification. Supersonic aircraft are another concern because sonic booms are very disruptive both from a noise and vibrations perspective. People are startled and frightened. Sonic booms disrupt sleep, rest, concentration, work, and interfere with communication. In 1973, the FAA banned sonic booms over land for supersonic civilian aircraft (14 CFR Part 91.817). This ban is still in effect and should remain in effect. No sonic boom, even muffled, should be allowed over the United States land and territorial sea: supersonic aircraft should operate as subsonic aircraft over the United States land and territorial sea. In terms of engine noise, supersonic aircraft should be held to the same noise standards as subsonic aircraft (e.g., Stage 5 currently). Absent sonic booms, the noise impacts of supersonic aircraft will be captured through the same decision metrics of all other air vehicles.

FAA-2023-0855-4086 (Town of Los Altos Hills and Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto, California): *The current ban on supersonic flights over US land and US territorial sea to prevent sonic boom should be maintained. In addition, the FAA should apply the same FAA noise standards to supersonic and subsonic aircraft.*

4.10 Research Recommendations

Both community groups and industry groups made recommendations on additional research that the FAA should conduct. Some community groups believe that current research is sufficient to develop policy, whereas industry groups noted specific policy-related research that is needed before policy can be finalized. Although there was not agreement from community groups about the need for additional research, research recommendations are included below for those community groups that considered further research appropriate. While some of the excerpts below are longer (e.g., FAA-2023-0855-4579), they were selected because they summarize the issues well.

Specific research recommendations are outlined here.

FAA-2023-0855-3885 (Quiet Communities):

- *Repeat the analysis of the National Environmental Survey but tie annoyance levels to N-Above data for those same communities to determine the relationship.*
- *Report N-Above and T-Above nation-wide going forward so that the public can understand their exposure.*
- *To facilitate independent research, publish N-Above and T-above data and going back in time at least to the beginning of the implementation of PBN procedures (approx 10-12 years) so that scientists can use the data for retrospective studies.*
- *Discontinue research that ties health effects to DNL (to date, it's all tied to DNL) and instead fund research that examines health effects in relation to other metrics that better capture health impacts from repetitive noise.*
- *Provide research grants for scientists to reanalyze existing health studies that used DNL, but this time using N-Above and T-Above (historical data on NA and TA should be readily available).*
- *Fund a review of scientific literature on other types of events that cause repetitive, intermittent stress to see whether this improves understanding of the effects of repetitive, intermittent aviation noise.*

FAA-2023-0855-4579 (ACI): *Use of objective, peer-reviewed research as a foundation: Any changes to federal policy on noise must be based on the latest science with strong correlation between aircraft*

noise and the specific area of concern. Results from the underlying FAA research projects should be made public in a usable form.

ACI-NA recommends that the FAA conduct the following research, and make that research available to stakeholders, as it considers changes to aircraft noise policy:

- *While "annoyance" appears to be correlated to DNL, the FAA should further research whether there is a more precise cause of such annoyance, such as the frequency of overflights, changes in flight patterns, the loudness of individual overflights, or some other acoustic or non-acoustic factor(s).*
- *Similarly, the FAA should further research the extent to which non-acoustic factors, such as demographic and socio-economic factors, vehicular and other non-aircraft noise, recent airport or aviation-related controversies, air emissions, aviation incidents, may play a role in levels of annoyance, as suggested by recent research.*
- *The FAA noted in the NES Federal Register Notice that aircraft noise generally results in higher levels of annoyance than other sources, including ground transportation. Further research is appropriate to understand why that is, and why people indicate high levels of annoyance with aircraft noise that is far quieter than many other sources of noise that people accept and, in some cases, choose.*
- *The feasibility of phasing out noisier aircraft and accelerating introduction of quieter engines and airframes.*
- *Further integrating consideration of noise impacts into the design and implementation of flight procedures and routes that are not limited to just geographic location (performance, speed, climb and descent rates, etc.).*
- *The FAA noted in its February 22, 2021 presentation that "noticeable" flight event characteristic, (i.e., the number of events having a maximum sound level at or above 50 dB, NA50Lmax), demonstrated marginal significance and should be investigated further because of the high correlation of NA50Lmax with DNL. ACI-NA believes that research regarding the specific kinds of noise events that cause higher levels of annoyance will yield important information to guide future policy development.*
- *Additional research should include determination of quantifiable impacts of aircraft noise – such as health impacts, sleep disturbance, learning interference, life expectancy, property values is necessary to put the "annoyance" data in context and also to identify critical environmental impacts that new policies can (and should) address. ACI-NA understands that the FAA is currently pursuing a number of research projects related to aircraft noise, several of which have been underway for a number of years. ACI-NA would like to understand whether there are ways in which the studies could be accelerated with increased funding or other methods. The acceleration of ongoing studies relates to our request to understand the road map to updating policy. As pieces of research similar to the NES are released, our airport members will be required to manage continued uncertainty while waiting for policy updates.*
- *Research on the change in both noise and operational metrics correlated to the change in annoyance to aid in better understanding the significance of a change.*
- *In the Federal Register NES, the FAA stated that "Recent academic research and internal assessments have raised questions about the benefits of sound insulation relative to the costs." ACI-NA's members would like to learn more about the internal assessments that the FAA has conducted and conclusions reached in those assessments. Further research on the cost-benefit of noise mitigation measures may also help inform future aircraft noise policy.*
- *ACI-NA recognizes the likelihood of including benefit-cost analyses as a means to aid in deciding appropriate policy decisions. Accordingly, we recommend that the FAA conduct research defining an appropriate BCA cost effectiveness methodology that is consistently applied in aiding decision-making related to policy. ACI-NA also recommends the findings be documented and coordinated with stakeholders and results be made available to the members.*
- *The Airport Cooperative Research Program has undertaken several research road maps, including an Environmental Research Road Map. There are several noise items identified in that road map as areas where further research is needed, which we would highlight and request the FAA consider adding to their research portfolio:*

  - *Assessing Community Annoyance of Noise from Unmanned Aerial Systems*
  - *Best Practices for Effective Sound Insulation*
  - *Best Practices for Stakeholder Engagement and Assessment and Reporting on Multiple Noise Metrics – We would be particularly interested if the dataset from the NES would provide new areas of knowledge related to noise metrics*
- *As noted in the Federal Register notice, the FAA has continually developed its high-fidelity modeling capabilities. As AEDT becomes more and more complex, it becomes more of a "black-box" to community members. Research on the soft skills of how to explain the model and make public its results would be helpful to our members.*

FAA-2023-0855-4402 (A4A): *FAA could also evaluate noise metrics that are not available in existing tools. FAA's own research has suggested that there are other measures that better predict annoyance, e.g., loudness:*
From the psychoacoustic tests conducted it was found that loudness is the most dominant factor and tonalness is the next dominant factor in annoyance due to the aircraft noise. Roughness was found to contribute slightly to the annoyance. The importance of tonalness and roughness increased when loudness did not vary very much. Given the importance of tonalness in annoyance, it is important to include a measure of tonalness in metrics used to quantify environmental noise impact on communities. None of the metrics or models that are currently used to quantify aircraft noise annoyance incorporate measures of loudness, tonalness, and roughness together. A Modified Psychoacoustic Annoyance model developed in this research includes effects of loudness, tonalness, and roughness together. The Modified Psychoacoustic Annoyance Model performed very well when compared to the performance of other annoyance models or metrics that are currently used for quantifying aircraft noise annoyance [emphasis added].

This hypothesis has not been tested in a real environment, or against current annoyance data, i.e., NES. A4A acknowledges that this is a significant undertaking, but FAA should examine dose-response relationships using such models. In short, it is not appropriate to invite recommendations of changes to noise metrics without data showing a reliable relationship. The FAA should detail if the dose-response relationship for the proposed alternative or supplemental metrics provides a better statistical fit to the data.

FAA-2023-0855-4100 (GAMA): *More psychoacoustic research may be helpful to improve the understanding of annoyance in the long-term to reduce complaints and restrictions.*

FAA-2023-0855-2206 (AICA): *Airframe noise should be addressed both in the AEDT modeling tool and in the FAA Aircraft Source Noise Reduction plans. The Aircraft Source Noise Reduction plans should go beyond engine noise to include airframe noise, which is the dominant noise for 50% of airport arrivals.*

FAA-2023-0855-4097 (Karimzadeh): *The FAA should both commission studies and call for proposals through research funding with the National Science Foundation and National Institutes of Health to calibrate time-above and N-Above thresholds that in fact correlate with community reaction for flight school operations. The replacement metric or (companion metric to be used in conjunction with DNL) should be N-Above (Ambient+Offset) for the peak day of the year, without averaging. Notationally, for example N-Above-Ambient+10 or NAA+10 would be the number of events over Ambient + 10 dB using A-weighting or C-weighting. Number 10 is used as an example, and should be scientifically grounded as described above, and as that may take time, in the meanwhile, the more protective DNL levels should be used for sleep interference and communication interference as described above.*

FAA-2023-0855-2206 (AICA): *An analysis should be done for the NA50 NES data as the sole predictor of High-Annoyance (i.e., not as a moderator variable to DNL65) to inform a new noise policy using NAA especially for overflight communities. The NES data showed a strong correlation between N-Above 50 dB (NA50) and the level of annoyance.*

Measured and monitored data relevant to NAA is available and should be analyzed to determine new noise policy for overflight communities. The FAA, airports primarily, consultants, and researchers should make existing data publicly available. Analyses should be performed for overflight communities including NAA, offsets above ambient (e.g., ambient + 10dB or other offset, ambient levels, thresholds for number of events, and maximum noise levels for different time periods (e.g., peak day, fractional hours). Complaint data should be used as indicators of Significant Impact for Overflight communities.

Complaints by community locations can indicate the relationship of complaints to higher exposure. During the Coronavirus Disease (COVID-19) lockdown the Stanford MONA group found an obvious correlation in the reduced complaint volume, down 50% while the traffic decreased to 55% of its original level.

Airports that do noise monitoring have ambient noise data but typically do not publish it. Collect and analyze existing data on community ambient noise levels from current or past noise monitoring by some airports. Alternatively, if not already available, data could be collected through temporary noise monitoring for a few weeks. Until it is measured, ambient noise could be estimated using community characteristics (for example, ambient of 35 dB for rural, 40 dB for low-density suburban, 50 dB for medium density suburban, 60 dB for urban, etc.). Estimates should be evidence-based, e.g., informed by noise monitoring data from other communities of a similar type.

Improve AEDT to accurately model impacts and in the meantime display the error bars in modeled assessments. AEDT is not accurate beyond a few miles from the airport, especially for arrivals. These AEDT limitations have been on-going. AEDT is based on a Noise Power Distance (NPD) model, which assumes that airframe and engine noise correlate with thrust. The NPD model is not as sophisticated as the Airplane Noise Prediction Program (ANOPP) model that simulates aircraft noise based on various aircraft components. Airframe noise is the dominant noise source on arrivals, not engine noise. Recent MIT (Massachusetts Institute of Technology) research, sponsored by the FAA Center of Excellence for Alternative Jet Fuels and Environment (ASCENT) project 44, shows that delayed deceleration techniques could potentially reduce noise by 3 to 6 dB on average across different aircraft types in areas beyond 8 nautical miles from an Airport.

Appendix A: Federal Register Questions

The following list of questions appeared in the FAA's Federal Register Notice,[14] posted by the FAA on May 1, 2023:

1. *Vehicle Type.* When the FAA published the Aviation Noise Abatement Policy (ANAP)[15] 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.

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.

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.

c. What interests or concerns do overflight communities[16] have? How can these concerns be addressed using noise metrics? What noise metrics would address these concerns? Please explain your reasoning.

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.

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.

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.

[14] FAA-2023-0855-0001

[15] The ANAP was issued by the Secretary of Transportation and the FAA Administrator on November 18, 1976. This document is available on the FAA website at https://www.faa.gov/regulations_policies/policy_guidance/envir_policy/.

16 The phrase "overflight communities" in this Notice refers to communities located under the flight paths of aircraft and vehicles that are distressed by aircraft noise and are located outside of the DNL 65 dB contour.

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 Annual Average Day (AAD).

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

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?

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?

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?

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

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?

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.

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.

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.

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

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[17]), 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[18], a nationally representative dataset on community annoyance in response to aircraft noise. The Neighborhood Environmental Survey results show a 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[19] established using the DNL metric or to establish new FAA noise thresholds using other cumulative noise metrics? Please explain your reasoning.

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.

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[20] 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.

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[17] See Schultz, T.J. 1978, "Synthesis of Social Surveys on Noise Annoyance," Journal of the Acoustical Society of America 64(2): 377–405. The Schultz Curve in this document refers to the curve generated from a meta-analysis of social surveys which set forth a widely accepted relationship between DNL and the percentage of the population who are highly annoyed by noise. This meta-analysis was later validated by interagency government committees focused on aircraft noise issues. See, e.g., Federal Agency Review of Selected Airport Noise Analysis Issues, 1992.

[18] Miller, Nicholas P., et al. Analysis of the neighborhood environmental survey. No. DOT/FAA/TC–21/4. 2021 available at: https://www.airporttech.tc.faa.gov/Products/Airport-Safety-Papers-Publications/Airport-Safety-Detail/ArtMID/3682/ArticleID/2845/Analysis-of-NES. See also FAA, Overview of FAA Aircraft Noise Policy and Research Efforts: Request for Input on Research Activities to Inform Aircraft Noise Policy, 86 FR 2722 (Jan. 13, 2021).

[19] As explained in this Notice in footnote 24, infra, when FAA refers to "noise thresholds" collectively, it means both the definition of the level of significant noise exposure for actions subject to environmental review requirements set out in FAA Order 1050.1F as well as the definitions of the levels of noise exposure that are deemed to be "normally compatible" with airport operations, as set forth in Table 1 of Appendix A to Part 150.

[20] *Id.*

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[21] either using the DNL metric or another cumulative noise metric? Please explain your response.

e. Should the FAA consider using factors other than annoyance to establish FAA noise thresholds[22] 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.

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[23] 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.

9. *FAA Noise Thresholds for Low-Frequency Events.* Should FAA establish noise thresholds[24] 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.

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[25], or FAA's method of communicating the change in noise exposure? Please explain your response.

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

[21] *Id.*
[22] *Id.*
[23] *Id.*
[24] *Id.*
[25] *Id.*

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.

Appendix B: Mapping of Organization/Government Agency to Organization Type

This appendix lists the categorization of comments received from organizations. The comment meta data provided the organization name for post process categorization.

Category	Organization	Document ID
Airport sponsor	Centennial Airport	FAA-2023-0855-4409
Airport sponsor	City of Phoenix Aviation Department (Phoenix Airport (PHX), Phoenix Deer Valley Airport (DVT) and Goodyear Airport (GYR))	FAA-2023-0855-3663
Airport sponsor	Clark County Department of Aviation (Harry Reid International Airport)	FAA-2023-0855-3704
Airport sponsor	Jackson Hole Airport Board	FAA-2023-0855-4349
Airport sponsor	Juneau International Airport	FAA-2023-0855-1487
Airport sponsor	Maryland Department of Transportation	FAA-2023-0855-3483
Airport sponsor	Massachusetts Port Authority	FAA-2023-0855-2634
Airport sponsor	Memphis-Shelby County Airport Authority	FAA-2023-0855-2168
Airport sponsor	Metropolitan Nashville Airport Authority	FAA-2023-0855-3818
Airport sponsor	Nantucket Memorial Airport (ACK)	FAA-2023-0855-2686
Airport sponsor	Port of Seattle/Seattle-Tacoma International Airport	FAA-2023-0855-3849
Airport sponsor	Raleigh-Durham Airport Authority	FAA-2023-0855-3758

Category	Organization	Document ID
Airport sponsor	San Antonio Aviation Department	FAA-2023-0855-4428
Airport sponsor	San Diego County Regional Airport Authority - San Diego, CA	FAA-2023-0855-2122
Airport sponsor	Truckee Tahoe Airport District	FAA-2023-0855-1799
Airport sponsor	Lee County Port Authority	FAA-2023-0855-3100
Airport sponsor	City of Naples Airport Authority and City of Naples	FAA-2023-0855-4218
Community group/advisory board/noise forum/roundtable/NGO	Noise Advisory Committee for the Portland International Jetport	FAA-2023-0855-3738
Community group/advisory board/noise forum/roundtable/NGO	Aspen Airport Advisory Board, Aspen/Pitkin County Airport (ASE), Colorado	FAA-2023-0855-0895
Community group/advisory board/noise forum/roundtable/NGO	Citizens Noise Advisory Committee Portland, Or.	FAA-2023-0855-2121
Community group/advisory board/noise forum/roundtable/NGO	Community Noise Forum (of Louisville Regional Airport Authority)	FAA-2023-0855-1593
Community group/advisory board/noise forum/roundtable/NGO	Massport Community Advisory Committee	FAA-2023-0855-0639
Community group/advisory board/noise forum/roundtable/NGO	Massport Community Advisory Committee	FAA-2023-0855-4127
Community group/advisory board/noise forum/roundtable/NGO	Minneapolis-St. Paul International Airport (MSP) Noise Oversight Committee (NOC)	FAA-2023-0855-1528
Community group/advisory board/noise forum/roundtable/NGO	O'Hare Noise Compatibility Commission	FAA-2023-0855-2226
Community group/advisory board/noise forum/roundtable/NGO	Hanscom Field Advisory Commission	FAA-2023-0855-1869

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	Town Village Aircraft Safety Noise Abatement Committee	FAA-2023-0855-0021
Community group/advisory board/noise forum/roundtable/NGO	DC Metroplex BWI Community Roundtable	FAA-2023-0855-2558
Community group/advisory board/noise forum/roundtable/NGO	LAX/Community Noise Roundtable	FAA-2023-0855-2746
Community group/advisory board/noise forum/roundtable/NGO	New York Community Aviation Roundtable (NYCAR)	FAA-2023-0855-4605
Community group/advisory board/noise forum/roundtable/NGO	SFO Airport/Community Roundtable	FAA-2023-0855-1254
Community group/advisory board/noise forum/roundtable/NGO	The Charlotte Airport Community Roundtable	FAA-2023-0855-2447
Community group/advisory board/noise forum/roundtable/NGO	Coalition to Transform East Hampton Airport Long Island NY	FAA-2023-0855-2613
Community group/advisory board/noise forum/roundtable/NGO	Hawthorne Quiet Skies	FAA-2023-0855-4292
Community group/advisory board/noise forum/roundtable/NGO	National Organization to Insure a Sound-Controlled Environment	FAA-2023-0855-4227
Community group/advisory board/noise forum/roundtable/NGO	Quiet Collier, Inc.	FAA-2023-0855-3408
Community group/advisory board/noise forum/roundtable/NGO	Quiet Parks International	FAA-2023-0855-3177
Community group/advisory board/noise forum/roundtable/NGO	Quiet Skies Lake Arrowhead	FAA-2023-0855-3348
Community group/advisory board/noise forum/roundtable/NGO	Skyridge HOA	FAA-2023-0855-2965
Community group/advisory board/noise forum/roundtable/NGO	Advocates for Viable Airport Solutions	FAA-2023-0855-3748

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	Bay Area Jet Noise	FAA-2023-0855-4708
Community group/advisory board/noise forum/roundtable/NGO	Bentley Square Homeowners Association	FAA-2023-0855-4750
Community group/advisory board/noise forum/roundtable/NGO	Citizens For Airpark Safety	FAA-2023-0855-4036
Community group/advisory board/noise forum/roundtable/NGO	Eastern Queens Alliance, Inc.	FAA-2023-0855-4701
Community group/advisory board/noise forum/roundtable/NGO	Keep It Down Up There	FAA-2023-0855-3344
Community group/advisory board/noise forum/roundtable/NGO	Old Sterling Gable HOA	FAA-2023-0855-1464
Community group/advisory board/noise forum/roundtable/NGO	PPC	FAA-2023-0855-4731
Community group/advisory board/noise forum/roundtable/NGO	Quiet Florida https://quietflorida.org/	FAA-2023-0855-0310
Community group/advisory board/noise forum/roundtable/NGO	Quiet Florida https://quietflorida.org/	FAA-2023-0855-0009
Community group/advisory board/noise forum/roundtable/NGO	Residents for the preservation of Old Town Berthoud, Colorado	FAA-2023-0855-1348
Community group/advisory board/noise forum/roundtable/NGO	San Mateo Climate Action Team	FAA-2023-0855-3455
Community group/advisory board/noise forum/roundtable/NGO	Save Our Skies Alliance saveourskiesalliance. com	FAA-2023-0855-3418
Community group/advisory board/noise forum/roundtable/NGO	Simmons Acres HOA	FAA-2023-0855-4693
Community group/advisory board/noise forum/roundtable/NGO	South Beach Civic Association Inc.	FAA-2023-0855-0508

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	South Beach Civic Association Inc.	FAA-2023-0855-1921
Community group/advisory board/noise forum/roundtable/NGO	South Midwood Residents' Association	FAA-2023-0855-4296
Community group/advisory board/noise forum/roundtable/NGO	Springfield/Rosedale Community Action Association, Inc.	FAA-2023-0855-4659
Community group/advisory board/noise forum/roundtable/NGO	STOP Jet Noise NOW! SFOAK North S.F. Bay Area	FAA-2023-0855-3305
Community group/advisory board/noise forum/roundtable/NGO	Sundance Lake HOA	FAA-2023-0855-0697
Community group/advisory board/noise forum/roundtable/NGO	Sundance Lake Home Owners Assn. 95834	FAA-2023-0855-1708
Community group/advisory board/noise forum/roundtable/NGO	The Southern Maryland Fair Skies Coalition	FAA-2023-0855-3819
Community group/advisory board/noise forum/roundtable/NGO	West 79th Street Block Association Inc.	FAA-2023-0855-2848
Community group/advisory board/noise forum/roundtable/NGO	Quiet Skies CA	FAA-2023-0855-2631
Community group/advisory board/noise forum/roundtable/NGO	TANS - Taxpayers for Air Craft Noise Solutions www.parkridgeboro.com/committees/tans	FAA-2023-0855-3657
Community group/advisory board/noise forum/roundtable/NGO	Hyannis Park Civic Association (Yarmouth, MA)	FAA-2023-0855-3399
Community group/advisory board/noise forum/roundtable/NGO	Aviation-Impacted Communities Alliance (AICA) Letter 1	FAA-2023-0855-0514
Community group/advisory board/noise forum/roundtable/NGO	Aviation-Impacted Communities Alliance (AICA) Letter 2	FAA-2023-0855-2206
Community group/advisory board/noise forum/roundtable/NGO	Boston Airport (BOS) Fair Skies	FAA-2023-0855-2379

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	Citizens for Quiet Skies	FAA-2023-0855-3915
Community group/advisory board/noise forum/roundtable/NGO	Citizens for Quiet Skies	FAA-2023-0855-3922
Community group/advisory board/noise forum/roundtable/NGO	Citizens for Quiet Skies	FAA-2023-0855-4119
Community group/advisory board/noise forum/roundtable/NGO	Concerned Residents Against Airport Pollution (C.R.A.A.P.)	FAA-2023-0855-3022
Community group/advisory board/noise forum/roundtable/NGO	Donaldson Run Civic Association (Exec Committee)	FAA-2023-0855-4280
Community group/advisory board/noise forum/roundtable/NGO	FAiR Chicago, IL	FAA-2023-0855-3242
Community group/advisory board/noise forum/roundtable/NGO	HICOP (Hawaii Island Coalition Malama Pono)	FAA-2023-0855-2252
Community group/advisory board/noise forum/roundtable/NGO	Keystone Point Neighborhood Association	FAA-2023-0855-3043
Community group/advisory board/noise forum/roundtable/NGO	Logan Aircraft Noise Working Group	FAA-2023-0855-3103
Community group/advisory board/noise forum/roundtable/NGO	Los Angeles Area Helicopter Noise Coalition	FAA-2023-0855-3227
Community group/advisory board/noise forum/roundtable/NGO	Los Angeles Area Helicopter Noise Coalition	FAA-2023-0855-3230
Community group/advisory board/noise forum/roundtable/NGO	Organization: Kings County International Airport Community Coalition, WA (Washington)	FAA-2023-0855-3839
Community group/advisory board/noise forum/roundtable/NGO	Quiet Communities, Inc.	FAA-2023-0855-3885
Community group/advisory board/noise forum/roundtable/NGO	Quiet Skies La Jolla, Inc.	FAA-2023-0855-2588

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	Quiet Skies Maui	FAA-2023-0855-2254
Community group/advisory board/noise forum/roundtable/NGO	Quiet Skies Puget Sound and Quiet Skies Coalition	FAA-2023-0855-3247
Community group/advisory board/noise forum/roundtable/NGO	Quiet Skies Santa Monica Mountains	FAA-2023-0855-4087
Community group/advisory board/noise forum/roundtable/NGO	Quiet Skies, AL	FAA-2023-0855-2632
Community group/advisory board/noise forum/roundtable/NGO	Reduce Jet Noise Naples	FAA-2023-0855-2615
Community group/advisory board/noise forum/roundtable/NGO	Save Coldwater Canyon!, Inc.	FAA-2023-0855-3490
Community group/advisory board/noise forum/roundtable/NGO	Save Our Skies Santa Cruz	FAA-2023-0855-4453
Community group/advisory board/noise forum/roundtable/NGO	The Quiet Coalition	FAA-2023-0855-1750
Community group/advisory board/noise forum/roundtable/NGO	Trenton Threatened Skies	FAA-2023-0855-3462
Community group/advisory board/noise forum/roundtable/NGO	UproarLA	FAA-2023-0855-3459
Community group/advisory board/noise forum/roundtable/NGO	West Adams for Quiet Skies	FAA-2023-0855-3798
Community group/advisory board/noise forum/roundtable/NGO	Airport Working Group of Orange County (AWG)	FAA-2023-0855-2621
Community group/advisory board/noise forum/roundtable/NGO	Alliance for a Regional Solution to Airport Congestion (ARSAC)	FAA-2023-0855-3525
Community group/advisory board/noise forum/roundtable/NGO	Aspen Fly Right	FAA-2023-0855-1718

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	Brambleton Community Association	FAA-2023-0855-2486
Community group/advisory board/noise forum/roundtable/NGO	Concerned Citizens of Brisbane	FAA-2023-0855-4080
Community group/advisory board/noise forum/roundtable/NGO	Los Angeles Area Helicopter Noise Coalition	FAA-2023-0855-3239
Community group/advisory board/noise forum/roundtable/NGO	Montgomery County Quiet Skies Coalition	FAA-2023-0855-3843
Community group/advisory board/noise forum/roundtable/NGO	NextGenNoise.Org	FAA-2023-0855-3822
Community group/advisory board/noise forum/roundtable/NGO	NextGenNoise.Org	FAA-2023-0855-3830
Community group/advisory board/noise forum/roundtable/NGO	NextGenNoise.Org	FAA-2023-0855-3581
Community group/advisory board/noise forum/roundtable/NGO	Vashon Island Fair Skies	FAA-2023-0855-4027
Community group/advisory board/noise forum/roundtable/NGO	NextGenNoise.org	FAA-2023-0855-2776
Community group/advisory board/noise forum/roundtable/NGO	NextGenNoise.Org	FAA-2023-0855-2785
Community group/advisory board/noise forum/roundtable/NGO	Howard County Citizens Association	FAA-2023-0855-1363
Community group/advisory board/noise forum/roundtable/NGO	Howard County Citizens Association	FAA-2023-0855-1364
Community group/advisory board/noise forum/roundtable/NGO	Sky Posse Palo Alto	FAA-2023-0855-2897
Community group/advisory board/noise forum/roundtable/NGO	Citizens of Ebey's Reserve	FAA-2023-0855-3672

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	Safe Skies Clean Water Wisconsin	FAA-2023-0855-3772
Community group/advisory board/noise forum/roundtable/NGO	Loudoun Aircraft Noise Mitigation Committee	FAA-2023-0855-3508
Community group/advisory board/noise forum/roundtable/NGO	Reduce Jet Noise Naples	FAA-2023-0855-2617
Community group/advisory board/noise forum/roundtable/NGO	Quieter Skies La Jolla	FAA-2023-0855-0877
Community group/advisory board/noise forum/roundtable/NGO	Arlington County Quiet Skies Coalition	FAA-2023-0855-3862
Community group/advisory board/noise forum/roundtable/NGO	Arlington County Quiet Skies Coalition (ACQSC)	FAA-2023-0855-4007
Community group/advisory board/noise forum/roundtable/NGO	Atlanta (ATL) Neighbors Needing Quiet Skies (ANNQS)	FAA-2023-0855-2572
Community group/advisory board/noise forum/roundtable/NGO	BOS Fair Skies	FAA-2023-0855-4691
Community group/advisory board/noise forum/roundtable/NGO	Citizens Against Gillespie’s Expansion and Low Flying Aircraft (CAGE LFA)	FAA-2023-0855-2074
Community group/advisory board/noise forum/roundtable/NGO	Cassell Community	FAA-2023-0855-2067
Community group/advisory board/noise forum/roundtable/NGO	Concerned Residents of Palo Alto	FAA-2023-0855-2265
Community group/advisory board/noise forum/roundtable/NGO	Encino Skies	FAA-2023-0855-3447
Community group/advisory board/noise forum/roundtable/NGO	Encino Skies	FAA-2023-0855-3446
Community group/advisory board/noise forum/roundtable/NGO	FumeFighters United VNY (Van Nuys Airport)	FAA-2023-0855-2332

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	Groton Ayer Buzz	FAA-2023-0855-2553
Community group/advisory board/noise forum/roundtable/NGO	GRRift (Gilpin Residents Refuse Increased Flight Traffic)	FAA-2023-0855-3004
Community group/advisory board/noise forum/roundtable/NGO	H.A.R.N.E.S.S. Oregon (Helping Aviation Respect Neighbors, Environments, Sustainability and Silence)	FAA-2023-0855-4719
Community group/advisory board/noise forum/roundtable/NGO	Health Care	FAA-2023-0855-2793
Community group/advisory board/noise forum/roundtable/NGO	Historic Jefferson Park Block Club- Prescott Square	FAA-2023-0855-0154
Community group/advisory board/noise forum/roundtable/NGO	Howard County Citizens Association	FAA-2023-0855-2853
Community group/advisory board/noise forum/roundtable/NGO	Logan Aircraft Noise Working Group	FAA-2023-0855-2650
Community group/advisory board/noise forum/roundtable/NGO	Long Beach SANER Group	FAA-2023-0855-3569
Community group/advisory board/noise forum/roundtable/NGO	Metro Area Governors Island Coalition (MAGIC)	FAA-2023-0855-4117
Community group/advisory board/noise forum/roundtable/NGO	Moving Forward Unidos	FAA-2023-0855-2862
Community group/advisory board/noise forum/roundtable/NGO	North Natomas Community Association	FAA-2023-0855-1392
Community group/advisory board/noise forum/roundtable/NGO	North Orange County Corridor Cities (NOCCC)	FAA-2023-0855-1524
Community group/advisory board/noise forum/roundtable/NGO	Oakland Mills Community Association	FAA-2023-0855-1303
Community group/advisory board/noise forum/roundtable/NGO	Oregon Aviation Watch	FAA-2023-0855-4352

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	Palisades Community Association - Ken Buckley	FAA-2023-0855-2244
Community group/advisory board/noise forum/roundtable/NGO	Plane Sense 4 Long Island	FAA-2023-0855-2365
Community group/advisory board/noise forum/roundtable/NGO	Plane Sense 4LI	FAA-2023-0855-2085
Community group/advisory board/noise forum/roundtable/NGO	Quiet Skies San Diego	FAA-2023-0855-2990
Community group/advisory board/noise forum/roundtable/NGO	Quite Florida https://www.facebook.com/groups/912277166352933/	FAA-2023-0855-1864
Community group/advisory board/noise forum/roundtable/NGO	Santa Monica Canyon Civic Assocation	FAA-2023-0855-4780
Community group/advisory board/noise forum/roundtable/NGO	Save My Sunny Sky, Cupertino, Sunnyvale	FAA-2023-0855-2257
Community group/advisory board/noise forum/roundtable/NGO	Scottsdale Coalition for Airplane Noise Abatement (SCANA)	FAA-2023-0855-2260
Community group/advisory board/noise forum/roundtable/NGO	SkyPosseLosAltos	FAA-2023-0855-2777
Community group/advisory board/noise forum/roundtable/NGO	South Beach Civic Association	FAA-2023-0855-0063
Community group/advisory board/noise forum/roundtable/NGO	Still Protecting Our Newport (SPON)	FAA-2023-0855-4859
Community group/advisory board/noise forum/roundtable/NGO	STOP Jet Noise NOW! SFOAK North S.F. Bay Area	FAA-2023-0855-2487
Community group/advisory board/noise forum/roundtable/NGO	Stop the Chop NY/NJ	FAA-2023-0855-4635
Community group/advisory board/noise forum/roundtable/NGO	Studio City For Quiet Skies	FAA-2023-0855-3327

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	Sundance Lake Home Owners Assn. 95834	FAA-2023-0855-1709
Community group/advisory board/noise forum/roundtable/NGO	Town of Hempstead Town Village Aircraft Safety and Noise Abatement Committee	FAA-2023-0855-4567
Community group/advisory board/noise forum/roundtable/NGO	Vashon Island Fair Skies	FAA-2023-0855-2614
Community group/advisory board/noise forum/roundtable/NGO	W. 83rd St. Block Association	FAA-2023-0855-4676
Community group/advisory board/noise forum/roundtable/NGO	Citizens League for Airport Safety and Serenity (CLASS)	FAA-2023-0855-1468
Community group/advisory board/noise forum/roundtable/NGO	Bucks Residents for Responsible Airport Management	FAA-2023-0855-3214
Community group/advisory board/noise forum/roundtable/NGO	Advocates for Viable Airport Solutions	FAA-2023-0855-2422
Community group/advisory board/noise forum/roundtable/NGO	Stop the Chop NY/NJ	FAA-2023-0855-3993
Community group/advisory board/noise forum/roundtable/NGO	Auburndale Improvement Association, Inc.	FAA-2023-0855-2982
Community group/advisory board/noise forum/roundtable/NGO	Board of Directors of Clara Barton Center for Children	FAA-2023-0855-4081
Community group/advisory board/noise forum/roundtable/NGO	Clara Barton Center for Children	FAA-2023-0855-2240
Community group/advisory board/noise forum/roundtable/NGO	NY/NJ Baykeeper	FAA-2023-0855-2835
Community group/advisory board/noise forum/roundtable/NGO	Friends of Liberty State Park	FAA-2023-0855-4421
Community group/advisory board/noise forum/roundtable/NGO	Special Metro Airports Analysis Center	FAA-2023-0855-2099

Category	Organization	Document ID
Community group/advisory board/noise forum/roundtable/NGO	350 Seattle	FAA-2023-0855-2619
Community group/advisory board/noise forum/roundtable/NGO	Save Coldwater Canyon!, Inc.	FAA-2023-0855-3433
Community group/advisory board/noise forum/roundtable/NGO	American Public Health Association	FAA-2023-0855-4434
Community group/advisory board/noise forum/roundtable/NGO	National Parks Conservation Association	FAA-2023-0855-4150
Community group/advisory board/noise forum/roundtable/NGO	Noise Pollution Clearinghouse	FAA-2023-0855-4160
Community group/advisory board/noise forum/roundtable/NGO	Anglers of the Au Sable Inc.	FAA-2023-0855-2735
Community group/advisory board/noise forum/roundtable/NGO	Friends of Governors Island	FAA-2023-0855-2951
Community group/advisory board/noise forum/roundtable/NGO	Hudson River Waterfront Conservancy	FAA-2023-0855-3681
Community group/advisory board/noise forum/roundtable/NGO	Oregon Aviation Watch	FAA-2023-0855-2326
Community group/advisory board/noise forum/roundtable/NGO	Port Richmond/North Shore Alliance	FAA-2023-0855-1406
Elected official/government (Local, State, Federal)	State Senator Patricia Canzoneri-Fitzpatrick	FAA-2023-0855-3740
Elected official/government (Local, State, Federal)	Congressman Don Beyer's Office	FAA-2023-0855-1585
Elected official/government (Local, State, Federal)	City of Huntington Beach, California	FAA-2023-0855-1586
Elected official/government (Local, State, Federal)	Arlington County	FAA-2023-0855-4105

Category	Organization	Document ID
Elected official/government (Local, State, Federal)	Attorney for City of Culver City	FAA-2023-0855-3021
Elected official/government (Local, State, Federal)	Boulder County	FAA-2023-0855-4299
Elected official/government (Local, State, Federal)	Cities of Pleasanton, Livermore and Dublin, California	FAA-2023-0855-4210
Elected official/government (Local, State, Federal)	City of Brisbane	FAA-2023-0855-3728
Elected official/government (Local, State, Federal)	City of Cambridge MA	FAA-2023-0855-0987
Elected official/government (Local, State, Federal)	City of Cambridge (CCD)	FAA-2023-0855-3820
Elected official/government (Local, State, Federal)	City of Centennial, Colorado	FAA-2023-0855-4225
Elected official/government (Local, State, Federal)	City of Des Moines	FAA-2023-0855-4809
Elected official/government (Local, State, Federal)	City of Des Moines	FAA-2023-0855-4814
Elected official/government (Local, State, Federal)	City of Greenwood Village, Colorado	FAA-2023-0855-1413
Elected official/government (Local, State, Federal)	City of Laguna Niguel	FAA-2023-0855-1554
Elected official/government (Local, State, Federal)	City of Malibu, California	FAA-2023-0855-4606
Elected official/government (Local, State, Federal)	City of Mendota Heights, Minnesota	FAA-2023-0855-1624
Elected official/government (Local, State, Federal)	City of Mesa	FAA-2023-0855-1333

Category	Organization	Document ID
Elected official/government (Local, State, Federal)	City of Middleton, WI	FAA-2023-0855-4312
Elected official/government (Local, State, Federal)	City of Minneapolis	FAA-2023-0855-2545
Elected official/government (Local, State, Federal)	City of Monterey Park	FAA-2023-0855-4655
Elected official/government (Local, State, Federal)	City of Newport Beach	FAA-2023-0855-2348
Elected official/government (Local, State, Federal)	City of Pacifica	FAA-2023-0855-3471
Elected official/government (Local, State, Federal)	City of Palo Alto - Mayor	FAA-2023-0855-2952
Elected official/government (Local, State, Federal)	City of Park Ridge	FAA-2023-0855-1947
Elected official/government (Local, State, Federal)	City of Sacramento	FAA-2023-0855-4138
Elected official/government (Local, State, Federal)	City of Sacramento, District 1, Office of Councilmember Lisa Kaplan	FAA-2023-0855-3842
Elected official/government (Local, State, Federal)	City of Weston	FAA-2023-0855-1525
Elected official/government (Local, State, Federal)	City of Weston	FAA-2023-0855-1558
Elected official/government (Local, State, Federal)	Councilman for Ward D Jersey City Heights	FAA-2023-0855-4751
Elected official/government (Local, State, Federal)	Culver City	FAA-2023-0855-4851
Elected official/government (Local, State, Federal)	Los Angeles Mayor Karen Bass	FAA-2023-0855-4389

Category	Organization	Document ID
Elected official/government (Local, State, Federal)	Loudoun County, VA (Virginia)	FAA-2023-0855-1572
Elected official/government (Local, State, Federal)	Mayor, City of Millbrae, SFO Roundtable Member, Chair, Ground Based Noise Committee, OneShoreline Sea Level Rise JPA	FAA-2023-0855-4267
Elected official/government (Local, State, Federal)	Metropolitan Council	FAA-2023-0855-1839
Elected official/government (Local, State, Federal)	Milton, MA Select Board	FAA-2023-0855-3731
Elected official/government (Local, State, Federal)	Town of Bedford (MA)	FAA-2023-0855-0555
Elected official/government (Local, State, Federal)	Town of Concord, Massachusetts, Select Board	FAA-2023-0855-2534
Elected official/government (Local, State, Federal)	Town of Los Altos Hills, Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto	FAA-2023-0855-4086
Elected official/government (Local, State, Federal)	Town of Middleton	FAA-2023-0855-2159
Elected official/government (Local, State, Federal)	Town of Milton	FAA-2023-0855-4226
Elected official/government (Local, State, Federal)	Village of East Hills	FAA-2023-0855-4162
Elected official/government (Local, State, Federal)	Pennsylvania Department of Conservation and Natural Resources (DCNR)	FAA-2023-0855-4815
Elected official/government (Local, State, Federal)	Assemblymember Linda B. Rosenthal	FAA-2023-0855-4497
Elected official/government (Local, State, Federal)	New York State Assembly, Assembly District 22	FAA-2023-0855-4131
Elected official/government (Local, State, Federal)	NY State Senator John C. Liu	FAA-2023-0855-4183

Category	Organization	Document ID
Elected official/government (Local, State, Federal)	Office of Assemblymember Robert Carroll, 44th Assembly District, New York State Assembly	FAA-2023-0855-4165
Elected official/government (Local, State, Federal)	Office of Senator Hoylman-Sigal	FAA-2023-0855-4412
Elected official/government (Local, State, Federal)	State Representative Sally P. Kerans (13th Essex)	FAA-2023-0855-4266
Elected official/government (Local, State, Federal)	Congressional Quiet Skies Caucus	FAA-2023-0855-3644
Elected official/government (Local, State, Federal)	Congressional Quiet Skies Caucus	FAA-2023-0855-3716
Industry group	Embraer S.A. / Eve	FAA-2023-0855-3474
Industry group	Joby Aviation	FAA-2023-0855-4369
Industry group	Lilium GmbH	FAA-2023-0855-4362
Industry group	Whisper Aero	FAA-2023-0855-4405
Industry group	Wing Aviation LLC	FAA-2023-0855-4433
Industry group	Airlines for America (A4A), International Air Transport Association (IATA), Airports Council International-North America (ACI-NA), American Association of Airline Executives (AAAE)	FAA-2023-0855-4396
Industry group	A4A, IATA, ACI-NA, AAAE, Regional Airline Association (RAA), National Air Carrier Association (NACA), Cargo Airline Association (CAA), National Business Aviation Association (NBAA)	FAA-2023-0855-0585
Industry group	ACI-NA	FAA-2023-0855-4579

Category	Organization	Document ID
Industry group	Air Line Pilots Association, Int'l	FAA-2023-0855-1706
Industry group	Aircraft Owners and Pilots Association	FAA-2023-0855-3184
Industry group	Airlines for America	FAA-2023-0855-4402
Industry group	Airport Consultants Council	FAA-2023-0855-4397
Industry group	American Association of Airport Executives (AAAE)	FAA-2023-0855-4700
Industry group	General Aviation Manufacturers Association	FAA-2023-0855-4100
Industry group	Helicopter Association International	FAA-2023-0855-4112
Industry group	National Business Aviation Association (NBAA)	FAA-2023-0855-4711
Industry group	Small UAV Coalition	FAA-2023-0855-4378
Industry group	Commercial Drone Alliance	FAA-2023-0855-4104
Industry group	First Person View Freedom Coalition	FAA-2023-0855-1520
Consulting firm	GetNOISY LLC	FAA-2023-0855-4283
Consulting firm	Air Experts Consulting	FAA-2023-0855-3729
Consulting firm	Coffman Associates, Inc.	FAA-2023-0855-4041

Appendix C: Issue Outline

This appendix documents the issue outline used to tag all comments and create the charts shown in Section 3.

Area	Topic	Subtopic
Address question 1-11	Address question 1-11	Q1
Address question 1-11	Address question 1-11	Q2
Address question 1-11	Address question 1-11	Q3
Address question 1-11	Address question 1-11	Q4
Address question 1-11	Address question 1-11	Q5
Address question 1-11	Address question 1-11	Q6
Address question 1-11	Address question 1-11	Q7
Address question 1-11	Address question 1-11	Q8
Address question 1-11	Address question 1-11	Q9
Address question 1-11	Address question 1-11	Q10
Address question 1-11	Address question 1-11	Q11
Provides Context: Description of the source of the noise	Type of vehicle	Commercial Space
Provides Context: Description of the source of the noise	Type of vehicle	Military
Provides Context: Description of the source of the noise	Type of vehicle	New entrants
Provides Context: Description of the source of the noise	Type of vehicle	Rotorcraft
Provides Context: Description of the source of the noise	Type of vehicle	Jet

Area	Topic	Subtopic
Provides Context: Description of the source of the noise	Type of vehicle	Propeller
Provides Context: Description of the source of the noise	Type of vehicle	Supersonic
Provides Context: Description of the source of the noise	Type of operation	Air Carrier
Provides Context: Description of the source of the noise	Type of operation	Cargo
Provides Context: Description of the source of the noise	Type of operation	Corporate
Provides Context: Description of the source of the noise	Type of operation	General Aviation
Provides Context: Description of the source of the noise	Type of operation	Aerobatics/Flight Training
Provides Context: Description of the source of the noise	Type of operation	Package Delivery
Provides Context: Description of the source of the noise	Type of operation	Tourism
Provides Context: Description of the source of the noise	Type of operation	Emergency Services
Provides Context: Description of the source of the noise	Aircraft flight phase	En-route

Area	Topic	Subtopic
Provides Context: Description of the source of the noise	Aircraft flight phase	Landing
Provides Context: Description of the source of the noise	Aircraft flight phase	Takeoff
Provides Context: Description of the entity impacted by the noise	Type of receiver	Business/Commercial
Provides Context: Description of the entity impacted by the noise	Type of receiver	Hospital/Nursing Home/Medical Facility
Provides Context: Description of the entity impacted by the noise	Type of receiver	Park/Recreational
Provides Context: Description of the entity impacted by the noise	Type of receiver	Place of Worship
Provides Context: Description of the entity impacted by the noise	Type of receiver	Residence
Provides Context: Description of the entity impacted by the noise	Type of receiver	School
Provides Context: Location of the entity impacted by the noise	Location of commenter	Close to Airport (0-3 miles)
Provides Context: Location of the entity impacted by the noise	Location of commenter	Overflight (3+ miles)
Description of the noise problem	Commenter Description of the Noise Problem by Characteristic	Duration
Description of the noise problem	Commenter Description of the Noise Problem by Characteristic	Impulsivity; Startling

Area	Topic	Subtopic
Description of the noise problem	Commenter Description of the Noise Problem by Characteristic	Intensity; Loudness
Description of the noise problem	Commenter Description of the Noise Problem by Characteristic	Number of Events; Frequency of Events; N-Above; Concentration
Description of the noise problem	Commenter Description of the Noise Problem by Characteristic	Season; Time of Year
Description of the noise problem	Commenter Description of the Noise Problem by Characteristic	Time of Day Daytime (7am - 10pm)
Description of the noise problem	Commenter Description of the Noise Problem by Characteristic	Time of Day Nighttime (after 10pm - before 7am)
Description of the noise problem	Commenter Description of the Noise Problem by Characteristic	Tone; Pitch
Description of the noise problem	Commenter Description of the Noise Problem by Characteristic	Vibration
Description of the impact of noise	Quality of life	Economic Impact
Description of the impact of noise	Quality of life	Health Impact
Description of the impact of noise	Quality of life	Sleep Impact
Description of the impact of noise	Quality of life	Learning Impact
Description of the impact of noise	Quality of life	Quality of Life: General
Description of the impact of noise	Quality of life	Speech Interference
Description of other factors	Communication of noise	Communication of Noise
Description of other factors	Regulatory Roles of FAA vs. External Parties	Regulatory Roles
Description of other factors	Concern about NextGen	NextGen

Area	Topic	Subtopic
Description of other factors	Certification Process	Certification
Description of other factors	Environmental Justice Concerns	Environmental Justice Concerns
Description of other factors	Concern about Flight Paths	Flight Paths
Description of other factors	Concern about future growth in noise/traffic	Concern about Future Growth in Noise/Traffic
Description of other factors	Concern about altitude of flight	Concern about Altitude of Flight
Description of other factors	Curfew	Curfew
Description of other factors	Noise Reduction Technology	Improve Noise Reduction Tech on Aircraft
Makes Recommendation	Recommended additional/supplementary Noise Metric	Additional Metric
Makes Recommendation	Recommended Decision making Noise Metric	Decision Metric
Makes Recommendation	Recommend No change to current policy	No Change to Policy
Makes Recommendation	Recommended Noise Metrics for policy	Cumulative: Unspecified
Makes Recommendation	Recommended Noise Metrics for policy	Cumulative: CNEL
Makes Recommendation	Recommended Noise Metrics for policy	Cumulative: DNL
Makes Recommendation	Recommended Noise Metrics for policy	Cumulative: LEQ
Makes Recommendation	Recommended Noise Metrics for policy	Concussion-Weighted Day-Night Average Sound Level (CDNL)
Makes Recommendation	Recommended Noise Metrics for policy¬	Operational or Single Event: Unspecified

Area	Topic	Subtopic
Makes Recommendation	Recommended Noise Metrics for policy	Operational or Single Event: LMAX
Makes Recommendation	Recommended Noise Metrics for policy	Operational or Single Event: NA
Makes Recommendation	Recommended Noise Metrics for policy	Operational or Single Event: SEL
Makes Recommendation	Recommended Noise Metrics for policy	Operational or Single Event: TA
Makes Recommendation	Recommended Noise Metrics for policy	Operational or Single Event: AEI
Makes Recommendation	Recommended Noise Metrics for policy	Operational or Single Event: PEI
Makes Recommendation	Recommended method for Weighting of Noise Metric (for metric in topic 7)	Weighting: Frequency
Makes Recommendation	Recommended method for Weighting of Noise Metric (for metric in topic 7)	Weighting: Tone
Makes Recommendation	Recommended method for Weighting of Noise Metric (for metric in topic 7)	Weighting: Time of day
Makes Recommendation	Recommended method for Weighting of Noise Metric (for metric in topic 7)	Weighting: Season
Makes Recommendation	Recommended method for Averaging of Noise Metric (for metric in topic 7)	Airport config.
Makes Recommendation	Recommended method for Averaging of Noise Metric (for metric in topic 7)	Average Annual Day
Makes Recommendation	Recommended method for Averaging of Noise Metric (for metric in topic 7)	Peak Operations

Area	Topic	Subtopic
Makes Recommendation	Recommended Averaging Noise Metric	Averaging Metrics
Makes Recommendation	Recommended Thresholds for Noise Metric (for metric in topic 7)	Threshold: Exceed Ambient
Makes Recommendation	Recommended Thresholds for Noise Metric (for metric in topic 7)	Threshold: Lower Thresholds to current noise policy
Makes Recommendation	Recommended Thresholds for Noise Metric (for metric in topic 7)	Threshold: Number Above Thresholds
Makes Recommendation	Recommended Thresholds for Noise Metric (for metric in topic 7)	Threshold: Time Above Thresholds
Makes Recommendation	Recommended Thresholds for Noise Metric (for metric in topic 7)	Threshold for Low-frequency Events (i.e., space transportation)
Makes Recommendation	Noise Policy Development Process	Another Federal Register Notice before any Rulemaking/more information
Makes Recommendation	Noise Policy Development Process	Clarity on Next Steps
Makes Recommendation	Noise Policy Development Process	Request Extension
Makes Recommendation	Noise Policy Development Process	Stable Noise Policy
Makes Recommendation	Noise Policy Development Process	Funding associated with Altering the Noise Policy
Makes Recommendation	Noise Policy Development Process	Duration of the Policy Review and Editing Process
Makes Recommendation	Policy should be different for different types of NEPA projects	1. Airport Infrastructure Change (e.g., Runway Extension, Terminal Expansion) 2. Airspace or Flightpath Change (e.g., Metroplex, PBN, Nextgen) 3. Approval of New Air Service or New Operator Approval (e.g., UAS) 4. Helipad or Vertiport 5. Land Use Compatibility or P150

Area	Topic	Subtopic
Makes Recommendation	Policy should be based on specific effects or concerns	Annoyance (e.g., Schultz, NES) Health Quality of Life Sleep Disruption Speech Interference
Makes Recommendation	Recommendation to Conduct Additional Research	Research into Economics
Makes Recommendation	Recommendation to Conduct Additional Research	Research into Health Impacts
Makes Recommendation	Recommendation to Conduct Additional Research	Research into Sleep
Makes Recommendation	Recommendation to Conduct Additional Research	Research into Learning
Makes Recommendation	Recommendation to Conduct Additional Research	Research into Metrics and Thresholds for Noise Metrics
Makes Recommendation	Recommendation to Conduct Additional Research	Collect More Data/AEDT Enhancements
Makes Recommendation	Recommendation to NOT Conduct Additional Research	No Need for More Research
Makes Recommendation	Miscellaneous	Miscellaneous
Makes Recommendation	Literature Review/Evidence cited/ Data	Literature
Makes Recommendation	Focus on compatible land use	Land Use
Makes Recommendation	Centralized metric; not different metrics for state/local	Centralized Metric; Not Different Metrics for State/local
Makes Recommendation	Include Ambient Noise	Include Ambient Noise
Makes Recommendation	Same Metric for all aircraft types	Same Metric for All Aircraft Types
Makes Recommendation	Different Metric for all aircraft types	Different Metrics for All Aircraft Types
Makes Recommendation	FAA needs to state goals of noise policy	FAA Needs to State Goals of Noise Policy
Makes Recommendation	Stakeholders defined	Stakeholders Defined

Area	Topic	Subtopic
Makes Recommendation	NES Curve	NES Curve should be Used
Makes Recommendation	Schultz Curve	Schultz Curve should be Used
Makes Recommendation	Noise Policy Should Reflect All Vehicle Types	All Vehicle Types
Makes Recommendation	Noise Policy Should Consider All Operations	All Operations
Makes Recommendation	Different Metric for all aircraft operations	Different Metrics for All Aircraft Operations
Makes Recommendation	Same Metric for all aircraft operations	Same Metric for All Aircraft Operations

Appendix D: Excerpts from Community Groups, Airport Roundtables, Airport Advisory Boards, Noise Forums, and Non-Profits

This appendix encompasses key excerpts from the comments submitted by the organizations listed above. The passages included are quotes pulled directly from the comments and they are representative of other similarly worded points. Due to space constraints, the table below may not include an excerpt from each of these organizations but their general ideas are represented. There are nine umbrella areas included in the table to organize the excerpts included: Decision-Making Metric, Thresholds, and Supplemental Metrics; NES and Schultz Curve; Health Impacts and Concerns; NEPA/Part 150/Land Use/Mitigation; Noise Policy Development Process; Communication; Policy for Different Vehicle Types/Operation Type; Noise from Emerging Vehicle Types, Supersonics, etc. and Recommended Research.

Area	Public Comments
Decision-Making Metric, Thresholds, and Supplemental Metrics	**AICA (FAA-2023-0855-2206)** Vicinity of airports should use an A-or C-weighted DNL metric with a threshold of 55 dB or lower as their primary decision-making metric based on NES, EPA recommendations, and WHO guidelines. Overflight communities should use N-Above-Ambient as their primary decision-making metric, replacing DNL. N-Above (Ambient+Offset) for the peak day of the year. Notationally, for example N-Above-Ambient+10 or NAA+10 would be the number of events over Ambient + 10 dB using A-weighting or C-weighting whichever is higher. Until it is measured, ambient noise could be estimated using community characteristics (for example, ambient of 35 dB for rural, 40 dB for low-density suburban, 50 dB for medium density suburban, 60 dB for urban, etc.). Estimates should be evidence-based, e.g., informed by noise monitoring data from other communities of a similar type. TNI is the total decibels for all events above ambient. A decibel threshold would be applied to TNI. TNI sums up the differences between the maximum noise levels (with penalties applied) and ambient noise for all the noise events. The Total Noise Index (TNI) is the sum of the penalized maximum aircraft noise above ambient noise for all N-Above-Ambient (NAA) events. TNI does not require selecting an offset value above ambient because it factors in/captures all noise above ambient. The TNI value makes the impacts for all events visible. For example, 200 aircraft with maximum noise levels 20 dB above ambient noise would have a TNI of 4000 dB (= 200 x 20), and 200 aircraft with maximum noise levels 10 dB above ambient would have a TNI of 2000 dB (= 200 x 10). 4000 dB is a more severe impact than 2000 dB.

Area	Public Comments
	$\text{Total Noise Index} = \sum_{n=1}^{n=NAA} (\text{Lmax} + \text{penalty}) - \text{ambient}$ The decision-making metric would be the Total Noise Index, labeled as TNI, for the peak day of the year and is expressed in decibels. The threshold Z is a number of decibels. If the new noise policy is updated with decision-making metrics that reflect the lived experience of communities, then a policy change on using supplemental metrics is not needed. For example, N-Above- Ambient should be a decision-making metric, not a supplemental metric, given that it is a more valid measure for overflight communities and therefore would be communicated. As a decision-making metric, N-Above-Ambient is straightforward and would be understood by communities, unlike DNL today. **Oakland Mills Community Association (FAA-2023-0855-1303)** We suggest that the threshold for NEPA should be reduced to 50 DNL if only one alternative metric is used in the future. **Arlington County Quiet Skies Coalition (FAA-2023-0855-4007)** If the FAA continues to use the DNL metric in decision-making, the threshold needs to be lowered to be consistent with the implicit 12.2% Highly Annoyed (HA) goal in current policy. The NES results suggest the threshold should be below 50. And it is unlikely that a single metric will suffice for noise policy or that a universal dose-response curve will be broadly applicable. The system of metrics and thresholds should include the N above metric, for various noise levels (50, 55, 60, 65 and 70 dB) and time periods (per month, per day, and per hour) in order to assess, describe and prevent noise during nighttime hours and peak time periods that is likely to be highly annoying and detrimental to health. AWG recommends use of CNEL 55db for the macro impact and Leq for daily maximum allowed noise exposure during defined times (4-hour time blocks suggested above). The Leq should be based on recent noise history data for each airport during these periods with an improvement db reduction target set annually to incentivize the industry to incorporate quieter equipment in their fleets. Lmax, N above and TA are additional metrics which may be introduced to get a complete data view of the airspace environment in the overflight community, but more analysis would be required to see how to apply these equitably.

Area	Public Comments
	For the reasons above, the use of these 3 metrics is an area that appears appropriate for more study and analysis, perhaps at a single airport with a single participating carrier. **The Alliance for a Regional Solution to Airport Congestion (FAA-2023-0855-3525)** Ground noise per Aviation Safety and Noise Assessment Act of 1979 and NEPA 1969 must change from straight CNEL to include additional supplemental metrics and reduce CNEL from 65dB to 55dB because of the increased sensitivity found in the NES. Requirements should account for the intensity, duration, frequency, and tone of noise-producing activity, as well as the time of occurrence. DNL Averaging provides a cumulative description of the noise events expected to occur over the course of an entire year. By its definition this value cannot represent a worst-case period if conditions change from one part of the year to another. A variability factor is needed to evaluate the trueness of an AAD. There can be quite a variance in types and numbers of aircraft from one month to another just as there are varied distribution of arrivals and departures within any day. The AAD should be modified to represent a worst-case condition and less of an average. **Aspen Fly Right (FAA-2023-0855-1718)** We recommend and request that the outmoded 65 dB DNL residential standard be reduced to ≤50 and that the metric be made time-sensitive like the European Lden or Californian CNEL. **Concerned Citizens of Brisbane (FAA-2023-0855-4080)** The N-Above Ambient (NAA) metrics better represent overflight communities such as ours. NAA is the counting of noise events with a peak noise level Lmax. In 1974, the Environmental Protection Agency (EPA) recognized the importance of setting a low level of 55 DNL but that recommendation by the EPA was not accepted by the FAA. It should be reconsidered now with the new data about health impacts of noise. Perhaps DNL is adequate for certain communities near the airport in the 65 DNL contour, but Overflight Communities need different decision-making metrics. The FAA also should consider using and reporting a C-weighted metric (dBC)

Area	Public Comments
	Montgomery County Quiet Skies Coalition of Maryland (FAA-2023-0855-3843) For overflight communities that receive hundreds of aircraft noise exposures per day, discontinue use of the DNL metric for public communication and for FAA decision-making. Make decisions about flight procedures and report noise information using metrics that will reflect public health impacts. The N-Above (NA) metric, or preferably N-Above-Ambient (NAA) (as described in the comments by the Aviation-Impacted Communities Alliance, Comment ID FAA-2023-0855-2206) and the Time-Above metric, avoid many of the pitfalls that occur with the DNL. **The Arlington County Quiet Skies Coalition (FAA-2023-0855-3862)** The DNL 65 threshold criterion which the FAA uses to determine the significance of noise impacts has been shown through myriad studies, including the Neighborhood Environmental Survey (NES), to underestimate the percentage of the population exposed to highly annoying aircraft noise by a wide margin. If the FAA continues to use the DNL metric in decision-making, the threshold needs to be lowered to be consistent with the implicit 12.2% HA goal in current policy. The NES results suggest the threshold should be below 50. It is unlikely that a single metric will suffice for noise policy or that a universal dose-response curve will be broadly applicable. The system of metrics and thresholds should include the N above metric, for various noise levels (50, 55, 60, 65 and 70 dB) and time periods (per month, per day and per hour) in order to assess, describe and prevent noise during nighttime hours and peak time periods that is likely to be highly annoying and detrimental to health. Spectral analysis is an established method for assessing environmental noise. Metrics that use spectral analysis to describe the tonal properties of sound should be considered. **The Howard County Citizens Association (FAA-2023-0855-1364)** This can be accomplished with a combination of Equivalent Sound Level and Time Above. Time Above will consider the amount of time the sound event is taking place and impacting people. Adding this factor to ESL will give a view not just of how loud but how long an area is affected by noise. **Vashon Island Fair Skies (FAA-2023-0855-4027)**

Area	Public Comments
	In a National Park or rural area, I believe Time-Above-Ambient (TAA) is the metric that will best comply with ASNA's "highly reliable relationship" requirement. If every overflight event had the same duration, again noting that the A150.205(d) simplification has been proscribed so that we are talking about the real event duration, then TAA becomes equivalent to N-Above-Ambient (NAA). NAA is a popular potential replacement for DNL as it better measures the number of unique interruptions during a given time period, and indeed that is the largest component of the annoyance factor. The number of times per-day that one's focus, concentration, and train of thought is interrupted by an overflight that, for 60 to 90 seconds, steals that focus, concentration, and train of thought. This being said, for any given overflight event, the louder it is the more marginally annoying it is. NAA does not incorporate this aspect, but TAA does – organically – as louder planes (larger/older, lower altitude, dirty configuration, etc) will generate longer duration overflight events, thereby adding an appropriate penalty for louder events. **Concerned Residence of Palo Alto (FAA-2023-0855-2265)** The new FAA noise policy should address, separately, two different types of communities: the communities in the vicinity of airports and the overflight communities. This distinction requires using different metrics and thresholds than today's DNL 65 dB given that the impacts and mitigation solutions are not identical. If DNL remains the decision making metric for communities in the vicinity of airports, the FAA should lower the DNL threshold for these communities to be consistent with the World Health Organization guidelines, EPA recommendations, and NES results. For Overflight Communities, replace DNL with the decision-making metric Total Noise Index for the peak day of the year. Option A: N-Above-Ambient + X dB with a threshold of Y events • Under option A, the decision-making metric is N-Above (Ambient + Offset) for the peak day of the year and is expressed as the number of events. • N-Above-Ambient+10 or NAA+10 would be the number of events with a maximum noise exceeding (Ambient + 10 dB). Option B: Total Noise Index with a threshold of Z decibels

Area	Public Comments
	• This method sums up the differences between the maximum noise levels (with penalties applied) and ambient noise for all the aircraft noise events. The Total Noise Index (TNI) is the sum of the penalized peak aircraft noise above ambient noise for all N-Above-Ambient (NAA) events. • Under option B, the decision making metric is the Total Noise Index, which is calculated for the peak day of the year and expressed in decibels. Notation: TNIPeak Day. • Period of time (Q4a, Q4b): the peak day of the year should be used for decision making purposes. Apply nighttime and evening penalties to the Lmax of noise events before calculating N-Above-Ambient. The current nighttime penalties should, however, be revised because they are too simplistic and do not capture the severity of night impacts, which is a function of the time of occurrence (when did the overflights occur between 10 pm and 7 am) and the overflights cadence (how frequent were the overflights). Revisions should be made based on existing data, including existing sleep research data. An Average Annual Day (AAD) does not account for traffic seasonality or changes on runway configurations due to weather conditions. AAD underestimates the true impact on Overflight Communities. In contrast, peak day for decision making purposes represents the highest impact in a given year. Given that air traffic has steadily increased for decades, except during the COVID-19 years, using peak day is reasonable: the volume of air traffic on peak day, and its associated impacts, will very likely be repeated in the future on many days because of traffic growth. Other periods of time can be used for non-decision-making purposes. For example, airports could report data for the peak day of the month or the daily average for the month. **Arlington County Quiet Skies Coalition (FAA-2023-0855-2617)** Eluate two separate noise exposure environments: areas adjacent to the airport AND overflight communities. **BWI Roundtable (FAA-2023-0855-2558)** The DNL metric should be retained to provide continuity with past policy, but it should be augmented with additional metrics that typical people can more easily associate with their lived experience, such as L-Max, N-Above, T-Above, and Time of day.

Area	Public Comments
	The BWI Roundtable uses N-Above 55 (NA55) as our standard of significance for our Monthly Reports, but that is probably too high. N-Above 50 dB or lower may have a better correlation with the level of annoyance. NA55 or NA50 should also take into account a community's ambient noise level, which has a profound impact on noise impacts. The FAA should strongly consider developing this metric for overflight areas. **Charlotte Airport (CLT) Community Roundtable (FAA-2023-0855-2447)** N70 – To adjust for both the frequency of flights and the noise created by the aircraft, calculate the number of flights over 70 dB. This is a measure which the Airport Community Roundtable (ACR) has utilized in evaluating potential Slate recommendations. The FAA could consider lower levels as well, such as N65. Define Multiple Ranges of Noise Effects – The ACR developed a hybrid approach that addressed a level of annoyance based on whether residents either experience (A) higher dB flights, (B) higher frequencies of flights, or (C) both high dB flights and High Frequencies of flights. An example of how the FAA could use this same approach would be to identify multiple tiers of annoyance, each of which would have its own set of mitigating actions to take. **New York Community Aviation Roundtable (FAA-2023-0855-4605)** We are suggesting "Noise Episodes," which would include an average of the decibels during which an episode lasted, as well as the length of time of the episodes. Any annual summary should speak to the number and length of episodes with an average of over 55 DBs. A standard needs to be set for number of episodes. Ten-point penalties in DBs need to continue to be added for evening and night flights. **Noise Advisory Committee (NAC) for the Portland International Jetport (FAA-2023-0855-3738)** No single metric is adequate. We need to lower the DNL threshold to 50 or 55 and we need one or more supplemental metrics to address overflight communities. DNL is an invalid metric for overflight communities. It should be replaced with Number-Above-Ambient for the peak day of the year using A-weighting or C-weighting whichever is higher. This will count the noise events with a peak noise level Lmax that exceeds ambient noise. A higher weighting should be given to areas such as national parks and residential areas experiencing intermittent loud noise from aircraft during nighttime hours. We need to lower the DNL threshold to 50 or 55 and we need one or more supplemental metrics to address overflight communities.

Area	Public Comments
	The Community Noise Forum (FAA-2023-0855-1593) We support the continued use of DNL as the primary metric for determining significant noise exposure. However, DNL should be supplemented with metrics that provide for additional methods of considering the cumulative and single event effects of aircraft noise. These supplemental metrics should consider the disproportional impact of nighttime noise similar to the 10 dB penalty for noise between the hours of 10:00 p.m. and 6:59 a.m. that is currently integrated into the DNL metric. Consideration should be given to a metric that is relatable and easy for the general public to understand. The Community Noise Forum (CNF) recommends supplementing DNL with additional metrics such as "Number Above (NA) and/or Time Above (TA)" with a multiplier penalty for sensitive time periods. **O'Hare Noise Compatibility Commission (FAA-2023-0855-2226)** The FAA should rely on a single system that incorporates noise intensity, the duration, the frequency of flights, the time of the occurrence. FAA uses a single metric but not a single system. The FAA should consider that those communities that are away from airports but in the flightpath receive a similar number of noise events per day. The FAA should reconsider 65 DNL as the threshold based on NES findings and the National Curve annoyance levels. Consider several metrics and factors when updating and revising the noise policy. Some metrics could be the following: • N-Above – Number Above • T-Above – Time Above • Ldn—the primary metric used currently in the calculation of 65DNL. An average sound level over a 24-hour period. It considers both the duration and the intensity of the noise event. • Lmax--representing the maximum instantaneous sound level reached during a noise event. Captures the peak noise levels. • N70—the number of events above 70dB within a certain period. It provides an indication of the frequency and intensity of noise events above a certain threshold. • NNI—Noise and Number index which provides several noise events and their loudness to provide a more comprehensive assessment of noise exposure. It can be used to compare different noise scenarios or evaluate the effectiveness of noise mitigation measures.

Area	Public Comments
	• ANEC—Average Noise Exposure Category which is a classification system that categorizes different areas based on their average noise exposure. It helps identify areas with varying levels of noise impacts and can guide land use planning, noise abatement measures, and community development policies. **Massachusetts Port Authority Community Advisory Committee (FAA-2023-0855-4127)** We recommend using NAbove Ambient (day/night) +10 with a threshold of 50 noise events per 24 hours. If ambient noise cannot be estimated, use NAbove 55/40 (day/night from measurement Lmax dBA) with a threshold of 50 noise events per 24 hours. Any new metric(s) that emerge from this noise policy review must mitigate the negative health impacts of aviation noise. Annoyance, as noted earlier, is simply a proxy for negative health impacts. The goal of this noise policy review must be to avoid negative health outcomes as well as to reduce annoyance. **Aspen Airport Advisory Board, Aspen/Pitkin County Airport (ASE), Colorado (FAA-2023-0855-0895)** The Airport Advisory Board (AAB) would highly recommend that DNL continue to be used as a Noise Metric but we would also applaud reporting the actual number of days the DNL is exceeded as a very understandable way for communities to measure improvement over time. It is our understanding that the current FAA reporting of noise is done with modeling logarithms. ASE is planning to expand our measuring of noise capabilities as a way to validate modeling used in current understanding of the amount of noise generated at the airport. **BWI Roundtable (FAA-2023-0855-2558)** Part c. If the metric should be used in combination with another metric, please describe how they should be used together for decision-making. This question is framed improperly. The proper framing is to ask 1. What objectives are the FAA seeking to achieve with the Noise Policy, and 2. What metrics most effectively achieve those objectives. Whether the objectives are achieved by combining multiple metrics is beside the point. For example, reasonable objectives might be: (1) Protect human health. (2) Protect quality of life in communities subject to aviation noise. (3) Protect the natural environment.
Neighborhood Environmental	**AICA (FAA-2023-0855-2206)**

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Survey and Schultz Curve	An analysis should be done for the NA50 NES data as the sole predictor of High-Annoyance (i.e., not as a moderator variable to DNL65) to inform a new noise policy using NAA especially for overflight communities. The NES data showed a strong correlation between N-Above 50 dB (NA50) and the level of annoyance. **Concerned Citizens of Brisbane (FAA-2023-0855-4080)** Please implement the Neighborhood Environmental Survey findings immediately and refrain from further study (delay). **Los Angeles Area Helicopter Noise Coalition (FAA-2023-0855-3239)** Based on the old Schultz Curve, the FAA established a threshold for significance (at 65 DNL) which allowed that 12.3% of the population would be highly annoyed. If the same standard (12.3% highly annoyed) is applied to the NES Curve, it would correlate to a significance threshold of 46 dB DNL. **Montgomery County Quiet Skies Coalition of Maryland (FAA-2023-0855-3843)** Indeed, the NES results show that 12.3% of the population is highly annoyed at about 45 DNL, not 65 DNL. The Neighborhood Environmental Survey (NES) results provided important new evidence about aircraft noise annoyance that should be promptly incorporated into FAA aircraft noise policies. The NES results show that current FAA policy significantly underestimates aircraft annoyance and therefore health impacts. Specifically, the NES results show that a much greater proportion of people are highly annoyed by aircraft noise across all levels of DNL than was previously thought, and the scientific literature shows that high annoyance (ie., stress) leads to a cascade of health impacts. **Concerned Residence of Palo Alto (FAA-2023-0855-2265)** Two tectonic changes occurred in the FAA world in the last ten years or so: NextGen and the Neighborhood Environmental Survey (NES). These two changes should be reflected in the new noise policy because: NextGen drastically increased aircraft concentration over communities and changed where and how aircraft fly. In particular, communities away from airports have been severely impacted by NextGen. Many of these communities did not have an aircraft noise problem before NextGen. Many do now.

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	The NES established that many more people are annoyed by aircraft noise at DNL levels way below 65 dB (DNL stands for Day Night Average Sound Level). This means that people in communities away from airports and affected by NextGen changes are highly annoyed even though their DNL levels are lower than 65 dB and will never rise to that level (as shown on page 4 of this document, Palo Alto would need 4,880 overflights/day to be considered Significantly Impacted under the current noise policy). **BWI Roundtable (FAA-2023-0855-2558)** The FAA's current policy is typically expressed in terms of the Schultz curve, that the noise limit should be 65 DNL. This is a mistake. The Schultz curve should be interpreted to mean that it is unacceptable to “highly annoy” more than 20% of the population with aviation noise. This policy to keep the number of “highly annoyed” people under 20% should be retained, but it should be evaluated under the Neighborhood Environmental Survey curve instead of the Schultz curve. The NES should immediately replace the Schultz curve. The DNL threshold should be lowered based on the NES. If it was not acceptable to "highly annoy" more than 20% of an impacted community 50 years ago, it is not acceptable to do so now, and the fact that we can more accurately measure annoyance today is not a justification for annoying more people today. **Noise Advisory Committee (NAC) for the Portland International Jetport (FAA-2023-0855-3738)** The Neighborhood Environmental Study (NES) established an up-to-date survey, proving that many more people are annoyed by aircraft noise at DNL levels far below DNL 65, and the FAA has acknowledged to Congress (page 3 of 4/14/20 report) that no single metric is adequate. We need to lower the DNL threshold to 50 or 55 and we need one or more supplemental metrics to address overflight communities. **Massachusetts Port Authority Community Advisory Committee (FAA-2023-0855-4127)** Subsequent research (the NES) has shown that many more people are highly annoyed at much lower DNL levels than was estimated in the 1970s by the Schultz curve. If the same logic was to be applied to that research (that 12.3% of the population being highly annoyed is where the regulatory threshold should be set), the regulatory DNL threshold would be set at approximately 45 DNL instead of 65 (a higher percentage of people are “highly annoyed” at that level than were at 65 DNL when the Schultz curve was created).

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Health Impacts and Concerns	**Concerned Citizens of Brisbane (FAA-2023-0855-4080)** Health experts should address the Noise Policy Review health questions. An independent, unbiased, and peer-reviewed consensus report should be commissioned from the National Academy of Sciences Division of Medicine on aviation impacts on public health. **Los Angeles Area Helicopter Noise Coalition (FAA-2023-0855-3239)** According to the Helicopter Association International (HAI) Training CD published in 2005, the "acceptable noise level differs between low and high ambient noise environments." We agree. This is common sense. A helicopter flight that causes 65 dB on the ground has a more significant impact on a 45 dB ambient noise area than a 55 dB area. In general, we believe noise above the ambient level on the ground should be considered significant. According to the ANSI, the acceptable level of background noise in the classroom is 35 dB (A), and for efficient communication, the relation between background noise and the vocal signal emitted by the teacher must be more than 15 dB. The World Health Organization also recommends that the background noise in school classes not exceed 35 decibels. In addition, in 2018 the World Health Organization (WHO) published Environmental Noise Guidelines for the European Region which included the following: "For average noise exposure, the Guideline Development Group (GDG) strongly recommends reducing noise levels produced by aircraft below 45 dB Lden, as aircraft noise above this level is associated with adverse health effects." **Montgomery County Quiet Skies Coalition of Maryland (FAA-2023-0855-3843)** Residents in Montgomery County and across the Washington, DC region are suffering from psychological and physical health problems caused by airplane highways overhead. The noise from aircraft adversely affects people in communities as far as 25 miles from DCA. Expand the FAA's focus on annoyance to explicitly include other first line human health responses, particularly sleep disturbance, that have implications for mental and physical health. MCQSC particularly urges the FAA to focus on sleep disturbance, as evidence suggests it is particularly harmful for cardiovascular health and mental health, and has even been implicated as a trigger of acute cardiovascular mortality [Saucy, 2021]. Involve independent public health experts in the development of aviation noise policy. The scientific community has a wealth of knowledge about the public health impacts of noise, but there is a large disconnect between that knowledge and the FAA's policies and procedures. The 65 DNL threshold is also far below the thresholds set by the World Health Organization in its Environmental Guidelines for the European Region (WHO, 1999), which states there is strong scientific evidence to reduce average

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	exposure to 45 dB Lden, and for nighttime exposure to 40 dB Lden. These levels are at least 4 times lower than the 65 DNL (DNL is measured on a logarithmic scale). **The Arlington County Quiet Skies Coalition (FAA-2023-0855-3862)** Should the FAA consider using factors other than annoyance to establish FAA noise thresholds 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? ACQSC response: Yes. The FAA should consider evidence of health effects compiled by the WHO and other health researchers, especially evidence of sleep disturbance. Abundant environmental research shows the importance of spectral analysis for noise impact evaluation. **Vashon Island Fair Skies (FAA-2023-0855-4027)** Aviation noise impacts on physical health, especially intermittent type noise impacts has been a growing area of research. As the body of work has grown, so has the alarm. Apart from the PTSD-like psychological damage caused by around 250 interruptions in your thought process/focus per day, in an otherwise/peaceful rural community, more recent research shows this kind of intermittent manmade noise, especially transportation noise and most significantly aviation noise, leads to higher levels of cardiovascular disease, stroke, and premature death. Research by the University of Basel last year, "Transportation noise exposure and cardiovascular mortality: 15-years of follow-up in a nationwide prospective cohort in Switzerland", is among recent research showing this correlation. Perhaps most alarming, the cardiovascular disease and stroke risks don't depend on being annoyed – or even consciously aware – of the noise. It is the result of autonomic hormonal reactions the body has to this kind of intermittent noise, which would historically (in an evolutionary sense) indicate some kind of threat. Having this threat response triggered around 250 times a day takes a toll on the human body. A deadly toll. **Concerned Residence of Palo Alto (FAA-2023-0855-2265)** Define "annoyance" as a proxy to represent the noise impacts caused by aviation, which include but are not limited to productivity loss, lower quality of life, stress, and sleep interruptions. **BWI Roundtable (FAA-2023-0855-2558)** The FAA might consider the cost of exposure to hazardous chemicals as a regulatory model. Another possible example that is more within the FAA's domain of expertise is the risk to a member of the flying public. If there is a risk level for the health of commercial air travelers based on epidemiological evidence, then the same risk level (at a minimum)

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	could be applied to residents of communities impacted by noise. There is enough scientific evidence and research for the FAA to conclude that aviation noise is a significant health risk. **New York Community Aviation Roundtable (FAA-2023-0855-4605)** It is imperative that any noise policy provision consider the impact of aircraft on those bombarded with constant noise over 55 decibels in a day or cluster of days. Fifty-five decibels of repetitive noise is the threshold that the EPA has recognized as unhealthy. This type of noise has real health consequences as is cited by quite a body of research that currently exists. Constant repetitive noise is not well-tolerated; rather it creates stress, sleep interruption, loss of concentration, is all-consuming and totally interruptive with everyday life. **Massachusetts Port Authority Community Advisory Committee (FAA-2023-0855-4127)** As mandated by Congress in the Noise Control Act of 1972 and before the implementation of NextGen technologies, the Environmental Protection Agency calculated that the safe noise level to prevent outdoor activity interference and annoyance was Ldn =<55 dB and to prevent indoor activity interference and annoyance in residential areas was only Ldn =< 45 dB (Ldn = DNL). We strongly recommend a National Academies Division of Medicine consensus report on aviation noise effects on public health to provide an independent, scientific, expert opinion. There is voluminous research indicating that health effects occur as a result of transportation noise at levels much lower than the FAA's current noise threshold of 65 DNL. Much of this research is appended to this comment letter as Appendix 2. Epidemiological studies generally report statistically significant associations between aircraft noise and adverse cardiovascular outcomes. Sleep disturbance, associated with nighttime noise, has been shown to be a risk factor for cardiovascular disease given associations with inflammatory markers and metabolic changes. Aircraft noise has been shown to impair reading comprehension in children ages 9-10. Chronic aircraft noise exposure in children is associated with impairment of reading and long-term memory. There is a statistically significant association between exposure to aircraft noise and risk of hospitalization for cardiovascular diseases among older people living near airports. The FAA must examine all of this research to determine at what threshold the adverse health impacts of noise will be mitigated. Any new metric(s) that emerge from this noise policy review must mitigate the negative health impacts of aviation noise. Annoyance, as noted earlier, is simply a proxy for negative health impacts. The goal of this noise policy review must be to avoid negative health outcomes as well as to reduce annoyance.

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NEPA/ Part 150/ Land Use/ Mitigation	**AICA (FAA-2023-0855-2206)** Regardless of airport DNL contours, include overflight communities significantly impacted under the new noise policy in the Part 150 analyses and reports and make such communities eligible for noise monitoring. Historically, only in the vicinity of airport communities have been included in the Part 150 analysis. For those in the vicinity of airports, the DNL threshold should be lowered to DNL 55 for land-use, NEPA, and for soundproofing or economic mitigation eligibility. The two distinct noise exposure environments of overflown communities and vicinity to airport/vertiports communities should pursue different mitigations. The Significant Impact determination for overflown communities should require mitigations such as procedure redesign (e.g., dispersion, runway use rotation, speed brakes, angle of descent, ground track, altitude, speed), nighttime procedures, dispersion and/or capacity limitations. For helicopters, the mitigation would be for routes to avoid noise-sensitive areas, offshore routes wherever possible and not voluntary, and altitude requirements over certain areas. **Arlington County Quiet Skies Coalition (FAA-2023-0855-4007)** DNL should not be the core decision-making metric. Other noise level metrics (such as N above) have been shown to be more suitable for evaluating the impact of aircraft noise on residential areas. Noise spectral analysis should be added as well. Each airport should be evaluated separately through a Part 150 B-type program for the appropriate noise metric or combination of noise metrics that would best serve the community. **The Alliance for a Regional Solution to Airport Congestion (FAA-2023-0855-3525)** The policies and procedures that implement the requirements of NEPA i.e. DNL threshold for Part 150 of 1.5 dB at 65dB needs adjustment. Add in frequency and duration of events limitations in determining impacting conditions. **Brambleton Community Association (FAA-2023-0855-2486)** We recommend that the FAA establishes a required interval for an interface between the airport sponsor and all appropriate land use authorities in its surrounding area, as well as promulgate assessments for failure to comply with this requirement. It is our recommendation, based on our experience with one of the largest airports in the nation, that this requirement be coordinated with the regular Airport Master Planning Process, but that an update be required every

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	ten years. We further recommend that the FAA's Grant Assurance Language regarding 'compatible land use' be amended to reflect this requirement to review flight patterns against noise contours. **The Arlington County Quiet Skies Coalition (FAA-2023-0855-3862)** Each airport should be evaluated separately through a Part 150 B-type program for the appropriate noise metric or combination of noise metrics that would best serve the community. NEPA decision-making should not rely solely on DNL as a metric to evaluate noise. Alternate metrics as stated above should instead be used, including spectral analysis. It is our opinion that the FAA's NEPA procedures would be better served by being developed through an EPA-led Noise Office, rather than within the FAA. **The Howard County Citizens Association (FAA-2023-0855-1364)** The FAA should use existing and additional ground sound monitors with virtual monitors to determine the decibel readings for areas around the airport to apply the Schultz Curve with a ESL\TA calculation for DNL and combine that with the NES findings to assess what the critical decibel threshold should be around airports. PART 150 and NEPA should be adjusted to factor in this range of 50 to 55 decibels to be the critical threshold. This would ensure future appropriate land use zoning and existing neighborhood support for sound mitigation and propose flight path changes for areas that are now impacted by repeated over flights. **Concerned Residence of Palo Alto (FAA-2023-0855-2265)** The new FAA noise policy should address separately two different types of communities: the communities in the vicinity of airports and the overflight communities. This distinction requires using different metrics and thresholds than today's DNL 65 dB given that the impacts and mitigation solutions are not identical. Communities adjoining airports are impacted because of their proximity to runways and gates; noise reduction solutions typically consist of land use policies, soundproofing, and actions on the airport grounds. On the other hand, overflight communities suffer from high volume, high concentration, low-altitude traffic; for such communities, solutions such as noise abatement procedures and dispersion can be pursued and implemented given that they are away from the airport. The FAA currently relies on a noise screening process when conducting an Initial Environmental Review (IER) and typically limits the analysis to incremental changes (e.g. one procedure or vector change at a time). As a result of this

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	superficial and narrow assessment, the FAA issues Categorical Exclusions (CATEX) for the vast majority of proposed changes (99%+) even when a ground track is changed, which will shift noise. A simplistic assumption is, for example, the current FAA NEPA guidance that prescribes that no further review beyond the Initial Environmental Review is required for proposed flight path changes above 7,000 ft AGL (Above Ground Level) for arrivals or 10,000 ft AGL for departures even though flights at these altitudes create noise impacts on the ground. Determine new evidence-based altitude thresholds for the NEPA guidance for arrivals and departures changes that do not require further review beyond the Initial Environmental Review, and use these new altitude thresholds to identify potentially impacted communities (see recommendation 29). Current guidance specifies that changes above 7,000 ft AGL for arrivals and 10,000 ft AGL for departures do not need reviews beyond an Initial Environmental Review. These altitude thresholds do not take into account ambient noise levels. For example, many arrivals at 10,000 ft AGL or departures at 15,000 ft AGL cause noise impacts for communities with low levels of ambient noise. Improve the Initial Environmental Review (IER) to be fact-based, rigorous, transparent, and timely in sharing the findings. Except for administrative changes such as the renaming of a waypoint, require Environmental Assessments for all new procedures. **Sky Posse Palo Alto (FAA-2023-0855-2897)** What really matters is the threshold. If the threshold level for DNL was 50 it would mean less CATEX and more higher level reviews. With the 65 DNL threshold everything is CATEX, and noise concerns are no longer an agency concern for the particular action being evaluated, including the level of long term impact that it causes or in combination with other prior or future actions. Part 150: FAA and Airport “land use” and “compatibility” language needs to be called an “Insulation Eligibility Program”: These terms or terminology predominantly refer to if/when a house is built in the 65DNL contour, it is considered “incompatible” and eligible for insulation. That is what the billions of Part 150 dollars go to - an insulation program. It is very rarely a pathway to achieve noise reduction with operational changes and IF it is, it’s only for airport contours. This is extremely confusing language which needs to change or be accompanied by stating what this funding does not refer to.

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	Arlington County Quiet Skies Coalition (FAA-2023-0855-2617) Radically change the Part 150 to, at a minimum, take into consideration communities within 5 miles of an airport. **BWI Roundtable (FAA-2023-0855-2558)** The FAA's procedures under NEPA should require documentation of a fuller set of community impacts, with additional, more restrictive policies for granting Finding of No Significant Impact (FONSIs) and categorical exclusions when impacts are present at lower than 65 DNL. Impacts should be evaluated in terms of the most effective metric for doing so, which might not be DNL. As an example, the FAA should not treat N-Above as a supplemental metric to 65 DNL, but as a decision-making metric, especially in the case of overflight communities. **CLT Airport Community Roundtable (FAA-2023-0855-2447)** Actions to Take based on Thresholds Met/Exceeded, or Actual/Potential Noise Increases The ACR suggests 7 broad types of actions to take when noise metrics exceed thresholds and/or changes (actual/planned) occur which could cause increases (or negative changes) in noise based on such metrics: • Purchase/Insulate Homes, Businesses – Within certain thresholds, require purchase/insulation/noise mitigation activities for homes, facilities, etc. • Report to Local Municipalities – Within certain thresholds, require that noise levels or actual/potential changes in noise levels be communicated to local municipalities for their consideration in making modifications to land use, zoning, or other policies, regulations, and ordnances. • Publicize Noise Levels – On a periodic basis, FAA/airport must communicate (using targeted public notices) to locally publicize noise levels exceeding pre-determined thresholds. • Update/Amend Part 150 Noise Abatement Policy – Depending on the locations where the noise issues/changes exist, it would be required that the Part 150 be amended/updated to address noise abatement procedures and land use controls around the airport to try to minimize negative noise effects. **New York Community Aviation Roundtable (FAA-2023-0855-4605)** Any changes in the noise metrics and how they will address the decision-making process should be spelled out in the NEPA guidelines. Any revisions in metrics, as well as how the FAA determines “significant impact’ needs to be

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	clearly communicated. The definition of "Significant impact" needs to be clarified. What was taken into account? Health impacts as well as annoyance? How was significance calculated? For example, what makes a 1.5 Db change significant vs. 1.4Db change? Aircraft noise should never be classified or evaluated just in terms of mainly an annoyance. It is a national public health problem. **Noise Advisory Committee (NAC) for the Portland International Jetport (FAA-2023-0855-3738)** Design new noise policy that has multiple paths so that air traffic can be distributed more equitably over different communities. No one community should have to carry an unfair burden of having an airport when the entire region is benefiting from having that airport. Design new noise policy that avoids and/or effectively discourages nighttime air traffic over communities. **The Community Noise Forum (FAA-2023-0855-1593)** NEPA and Land Use Noise Thresholds Established Using DNL or for Another Cumulative Noise Metric: The use of DNL must be supplemented with additional metrics that help explain the overall (real world) noise environment. Impacts can extend far beyond current significant impact thresholds. Potentially impacted communities should not be based entirely on current NEPA standards. The NEPA review should include communities that perceive changes in impacts even if the impacts do not meet or exceed currently established thresholds.
Noise Policy Development Process	**AICA (FAA-2023-0855-2206)** Noise policy should be reviewed every 5 years at a minimum. The policy should also be updated within 2 years of any major finding (e.g., a National Academies consensus report on public health). There should be a subsequent stakeholder engagement process similar to this one after the FAA has narrowed its policy options and before issuing a new noise policy. Stakeholders, including the public, should be given a similar opportunity to this one to review the potential changes to the noise policy and relevant orders, regulations, and guidance documents. There is no need to conduct any additional research on impacts (including the sleep study currently underway) or wait for research to be completed before establishing a new Civil Aviation noise policy regarding annoyance. Even though the noise policy should address all types of air vehicles, current and future, it is urgent to define the new noise policy for current air vehicles (e.g., subsonic fixed wing, rotorcraft, and commercial space). Ample, peer-reviewed research

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	and data (including noise monitoring data) on aircraft noise impacts, including sleep interruptions, already exist. The FAA should integrate new research findings or changes in air vehicle types in a periodic update of its noise policy. **Oakland Mills Community Association (FAA-2023-0855-1303)** We suggest that the Aviation Cooperative Research Program at the National Academy of Sciences explore these and other options/alternative metrics. **The Alliance for a Regional Solution to Airport Congestion (FAA-2023-0855-3525)** It's very critical to us that the FAA consider how changes to the civil aviation noise policy may better inform agency decision-making, the types of impacts it considers in making decisions (e.g., community annoyance, certain types of adverse health impacts highly correlated with aviation noise exposure), and potential improvements to how the FAA analyzes, explains, and presents changes in exposure to civil aviation noise. **Montgomery County Quiet Skies Coalition of Maryland (FAA-2023-0855-3843)** Quickly and decisively update the FAA noise policies to protect the public from aviation noise pollution. As mentioned elsewhere in our comments, an Advisory Panel of community members impacted by aviation noise could help to inform the FAA about the concerns of such communities on an ongoing basis, especially as the industry develops. The input of health experts is also essential. **Logan Aircraft Noise Working Group (FAA-2023-0855-2650)** Provide a timely roadmap for changing current noise regulations and utilize National Environmental Survey results as the new basis for evaluation of community impacts (including the Environmental Review Process and Part 150). Appoint an independent Blue-Ribbon Commission of multi-disciplinary experts (e.g., environmental scientists, public and medical health professionals, engineers) to identify metrics and thresholds that define “significant impact” based on NES results as well as the actual experiences of human beings, local noise environments, nighttime noise, and current scientific knowledge.

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	Commission the National Academies to form independent committees within (1) the Division of Medicine to produce a consensus report on the health effects of noise and pollution and (2) the Division of Sciences to produce a consensus report on ultrafine particles based on existing scientific studies and knowledge. **The Arlington County Quiet Skies Coalition (FAA-2023-0855-3862)** Aircraft noise policy needs to define significant (unacceptable) noise in terms of a percentage of the population to be protected from exposure to highly annoying aircraft noise (the %HA goal); establish a system of metrics that accurately predicts how much aircraft noise is likely to be highly annoying and detrimental to health; establish default thresholds for acceptable noise for each metric consistent with the %HA goal; and allow local communities to tailor thresholds for each airport. Aircraft noise is currently evaluated using manufacturers specifications to model estimated noise levels. The FAA noise policy should be revised to allow airports to use noise monitoring systems to evaluate the level of aircraft noise. ACQSC response: The FAA should recognize that the evidence from health research will never be 100 percent conclusive and that, at some point, a decision has to be made to update policy based on the available evidence and judgment that errs on the side of safety. Cries of "not enough evidence" are often used to postpone policy changes. But the evidence is increasing on the mechanism and plausibility for diverse health impacts caused by noise. **Concerned Residence of Palo Alto (FAA-2023-0855-2265)** The FAA should also hold another stakeholder engagement similar to this request for comments (including the FAA webinars) before finalizing the new noise policy. Review the noise policy every 5 years and update the policy within 2 years of any major research publication (including reports from the National Academies) to integrate the new findings. Give airports some discretion on providing incentives to airlines for noise abatement purposes, including but not limited to noise-based landing fees at nighttime. This may require asking Congress to modify 14 CFR Part 161 to allow Airports to have more discretion. **Sky Posse Palo Alto (FAA-2023-0855-2897)**

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	Part 161: There was no mention in the noise policy review framing paper about Part 161; the FAA process to pursue access restrictions with six statutory criteria that disregard human health including that a restriction "not create an undue burden on interstate or foreign commerce." This needs to change to address nighttime operations and we support the suggestions made by the SFO Roundtable. **Aviation Impacted Communities Alliance (FAA-2023-0855-2206**) The FAA does not have the expertise to develop a noise policy that captures the impact of aviation noise (and pollution) on the public's health. Health experts should address the Noise Policy Review health questions. An independent, unbiased, and peer-reviewed consensus report should be commissioned from the National Academies Division of Medicine on aviation impacts on public health. Congressman Lynch's Air Traffic Noise and Pollution Expert Consensus Act, H.R.2562 addresses this. A consensus report is NOT new research. It reviews the existing body of research (such as the literature review comments submitted for Question #11). The consensus report has an outcome of policy recommendations. The National Academies is a group of independent experts, separate from industry and government, whose work is peer-reviewed. The FAA should take the responsible step and support and initiate an independent peer-reviewed consensus report on aviation noise and health. **Noise Advisory Committee (NAC) for the Portland International Jetport (FAA-2023-0855-3738)** Have an interdisciplinary team that includes environmental health, statistical, medical, public health, sleep, and psychological experts. **Noise Advisory Committee for the Portland International Jetport (FAA-2023-0855-3738)** Representatives from affected communities along with experts in healthcare and avia>on noise (such as consultants from Vianair, Inc.) should be included in the development of any new noise policy. As much as we want a new noise policy in place quickly, we do not want a policy developed for expediency that does not accurately reflect the true impact of aircraft operations on our communities. Have an interdisciplinary team that includes environmental health, statistical, medical, public health, sleep, and psychological experts. **Massachusetts Port Authority Community Advisory Committee (FAA-2023-0855-4127)**

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	Because the results of this noise policy review are so important, we would also recommend that the FAA report back on the responses, once tabulated, to each question in table format. Additionally, as noted above, the Government Accountability Office had several recommendations, including how the FAA can improve communication with communities, that the Massachusetts Port Authority Community Advisory Committee MCAC supports.
Communication	**AICA (FAA-2023-0855-2206)** To ensure communities have a voice in new and updated noise policy, we request an Impacted Communities National Advisory Committee (under the Federal Advisory Committee Act, FACA) to advise the FAA on current and future noise and pollution issues. Regionally, communities have little influence or voice on FAA decisions; nationally, they have virtually none. Aviation noise will continue to be a problem for communities. We do not know what the noise impacts from advanced air mobility will be. Congressman Lynch's Impacted-Communities Advisory Committee, H.R.2565 mandates a national FACA-based advisory committee to provide a community voice and to deal with current and future aviation noise problems. The FAA's Noise Policy should require this advisory committee, as laid out in H.R.2565, be formed immediately. **BWI Roundtable (FAA-2023-0855-2558)** Communication would be greatly improved if more noise data were publicly available for independent analysis. The most effective approach for the gathering and dissemination would be for the FAA to delegate the task to airport operators. The FAA should establish a policy requiring airport operators to gather and periodically publish noise information using consistent inputs, both on a per-flight basis, and for all primary and supplementary noise metrics used by the FAA. The metrics chosen after consideration of Question 5 should be included. **O'Hare Noise Compatibility Commission (FAA-2023-0855-2226)** The Ombudsman position has been an invaluable point of contact for our organization. We encourage the FAA to strengthen this office and make this role a priority in community outreach. • Create dedicated channels, such as a comprehensive website where the FAA can provide up-to-date information on its activities, incentives, and regulatory changes. • Develop user-friendly interfaces to facilitate easy access to relevant information, including aircraft noise data, flight path changes, community outreach programs, and ongoing research efforts. • Engage in regular community meetings.

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	• Organize regular community meetings in affected areas to provide updates on FAA initiatives, address community concerns, and seek public input. • Encourage open dialog and two-way communication to foster understanding and collaboration between the FAA and the public. • Leverage social media platforms to disseminate information, answer questions, engage with the public in real-time. Use these platforms to share updates, provide notifications and address usual questions. • Publish newsletters and information bulletins. Highlight success stories, highlight noise reduction efforts, and share best practices from airports and airlines. • Collaborate with local government and stakeholders. Participate in local events, community fairs and conferences to engage with stakeholders and address concerns directly. • Enhance transparency and data sharing. Provide access to information such as noise monitoring reports, flight tracks, noise exposure maps in an easily understandable format. Share rationale behind policies, and incorporate public feedback. • Utilize traditional media such as newspapers, radio, and television to communicate FAA initiatives updates and concerns. • Establish Feedback Mechanisms such as online surveys, dedicated email, or hotline numbers to capture concerns. Ensure timely responses to public inquiries, addressing their concerns and providing relevant information. Training and Education such as providing training and educational materials to FAA staff and representatives on effective communication strategies, public engagement techniques and conflict resolution skills.
Policy for Different Vehicle Types/Operation Type	**AICA (FAA-2023-0855-2206)** Require and include aviation noise measures from all sources for decision-making purposes, total noise impacts. “All sources” means all air vehicle types, from commercial, general, and military aviation, for all procedures and vectors, to and from multiple origins and destinations, and all phases of operations (takeoff, landing, etc. and including elements of aircraft operations like continuous flight training maneuvers, hovering, and VTOL) instead of limiting the assessment to one procedure to or from one airport at a time or one vehicle type. Please see our answer to Question #10, re: miscellaneous. Noise thresholds for low-frequency events beyond commercial space transportation vehicles should be addressed in decision-making noise threshold(s) and metric(s). An evaluation should be performed for A- weighted and C-weighted

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	to determine which has the higher noise level that reflects the true experience for all vehicle types and operations (e.g., backblast). The higher noise level of A versus C- weighted should be used for decision making. Allow some local control such as: Allow local government to establish local noise ordinances for civil rotorcraft (e.g., helicopters and drones for local law enforcement, commercial and personal activities –passenger or packages) for air traffic flying below 2000 ft. Require a minimum 2,000 ft cruising altitude for all civil helicopters when transporting individuals except for medical emergencies. The FAA should order all domestic aircraft's Flight Management Systems (FMS) to upgrade in order to allow the FMS to accommodate multiple departure, approach, and arrival instrument paths for the purpose of rotating path usage in order to disperse aviation noise more equitably. **Arlington County Quiet Skies Coalition** (**FAA-2023-0855-4007**) All elements of aircraft operations (en-route, takeoff, landing), as well as engine noise on runways, before takeoff and after landing, and unplanned operations such as wave offs, should be addressed. **Concerned Citizens of Brisbane (FAA-2023-0855-4080)** Helicopters as a regular transportation method for convenience or tourism should be regulated by the FAA considering minimum altitudes, effect on the experiences of the citizens in the ground and bans for nighttime use. **Los Angeles Area Helicopter Noise Coalition (FAA-2023-0855-3239)** What is really needed is a regulation establishing a required minimum altitude for helicopter overflights, preferably at least 2,000 feet above ground level as recommended by FAA Advisory Circular 91-36D. **Los Angeles Area Helicopter Noise Coalition (FAA-2023-0855-3239)** To summarize, for helicopter overflight not near airports, we recommend the FAA use Number-Above-Ambient as its metric and multiple thresholds depending on the numbers of flights and their noise levels. These metrics/thresholds would be better suited than DNL for assessing helicopter noise impacts in neighborhoods not adjacent to airports. Also, they are easier than DNL for the FAA to explain and for the public to understand.

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	Concerned Residence of Palo Alto (FAA-2023-0855-2265) N-Above-Ambient applies to all aviation noise sources, meaning all air vehicles in all community environments (quiet or loud, rural, suburban, urban, national parks or wildlife refuges, etc.). In particular, NAA can be used for helicopters, drones, and specialized operations as long as a representative analysis of air traffic (using Noise and Operations Systems or noise monitoring data) is done or simple, realistic assumptions are used such as: Require a minimum 2,000 ft cruising altitude for all civil helicopters when transporting individuals except for medical emergencies. Supersonic Vehicles: Maintain the current supersonic ban Continue to apply the same FAA noise standards to supersonic and subsonic aircraft.
Noise from Emerging Vehicle Types, Supersonics, etc.	**AICA (FAA-2023-0855-2206)** Communities are concerned about the premature rollout of UAS or other newly emerging technology operations before a new noise policy is available and that addresses the true impacts to communities, including new elements of aircraft operations such as visual pollution and hovering. Innovate 28 (I28) should require that "collecting data" include the count of aviation events above ambient (N-Above- Ambient), environmental impacts, the type of AAM vehicles, and community engagement reports. State and local governments laws should control, within their boundaries, all aspects of AAM that create noise impacts including locations of flights, low altitude airspace, land use, infrastructure, and aircraft operations (e.g., EVTOL helicopters and drones for local law enforcement, commercial and personal activities–passenger or packages). The evaluation and decision-making for environmental impacts, including AAM, should relate to and represent the layperson's lived experience by using the realistic metric of N-Above in Lmax bands, some reasonable threshold(s) for significant impacts, and ambient noise consideration. Categorical Exclusions should not be used. Changes to airspace design and/or new routes for AAM should be published. Community as a key stakeholder should be included early and in all high-level activities of the AAM Integrated Master Schedule. The current plan involves Community only in "Phase 5: Post -implementation". AAM is an incremental impact and therefore should not further burden communities already highly impacted. Total impacts (noise and visual) should include ALL current aviation impacts from (see recommendation in Question #10 Miscellaneous):multiple airports/helipads/drone launching & landing pads, multiple vehicle types (including new AAM), multiple flight paths - procedure or vector, and multiple elements of aircraft operations (e.g., hovering). Do not allow extreme noise impact of sonic boom of (SEL) 90 dBA for civil aircraft and penalize startle responses to sonic boom or take-off noise (exceeding Programmed Lapse Rate thrust) and military sonic booms.

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	Supersonic aircraft should continue to comply with the noise certification standards in place for subsonic aircraft at the time of aircraft certification. Supersonic aircraft are another concern because sonic booms are very disruptive both from a noise and vibrations perspective. People are startled and frightened. Sonic booms disrupt sleep, rest, concentration, work, and interfere with communication. In 1973, the FAA banned sonic booms over land for supersonic civilian aircraft (14 CFR Part 91.817). This ban is still in effect and should remain in effect. No sonic boom, even muffled, should be allowed over the United States land and territorial sea: supersonic aircraft should operate as subsonic aircraft over the United States land and territorial sea. In terms of engine noise, supersonic aircraft should be held to the same noise standards as subsonic aircraft (e.g., Stage 5 currently). Absent sonic booms, the noise impacts of supersonic aircraft will be captured through the same decision metrics of all other air vehicles. **Airport Working Group of Orange County (FAA-2023-0855-2621)** The policy and derivative metrics should be for all current air vehicles (e.g., subsonic fixed wing, rotorcraft, supersonic, and commercial space). The policy should also establish the framework for inclusion of any new airspace mobile equipment to come forward in the next decades. Of immediate concern are electric / battery-powered air vehicles which present an additional noise monitoring hurdle, as it is less about the high dB level annoyance than it is about the sound frequency they produce, which can be highly annoying. The FAA must formulate metrics to measure this and its community impact. **The Alliance for a Regional Solution to Airport Congestion (FAA-2023-0855-3525)** Almost every urban community will ultimately include UAS (drone) package delivery or other newly emerging technology operation at lower air altitudes of 1500’ and below. In addition to noise annoyances and health impacts this will impact privacy and cause new potential safety issues. Additionally, if aircraft have to fly through these zones there can be other safety issues. We don’t have any details about noise levels of these items at this time, but based on frequency, time of day, etc. they can be a source of new kinds of annoyances. **Concerned Citizens of Brisbane (FAA-2023-0855-4080)** Supersonic Aircraft: We oppose supersonic flight over the land of the United States and the US Territorial Sea (12NM offshore) regardless of any purported “quiet sonic boom” technology.

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	Emerging Aircraft: Low altitude autonomous aircraft, whether designed to act as "air taxis" (eVTOLs) or to deliver packages, should be strictly regulated in conjunction with local elected officials and the public in the areas that they traverse. **Concerned Residence of Palo Alto (FAA-2023-0855-2265)** Allow local governments to establish local noise ordinances for civil rotorcraft (e.g. helicopters and drones for local law enforcement and commercial or personal operations –passenger or packages) for air traffic flying below 2000 ft. **BWI Roundtable (FAA-2023-0855-2558)** The same issues as noted in Question 2 parts a, b & c. BUT IN ADDITION: the number of such UAS (drone) vehicles flying at lower altitudes over the communities' homes and businesses, the visual, impact, and privacy concerns - think sunbathers laying out in their backyard, around their pool, on decks, and so on. **Massachusetts Port Authority Community Advisory Committee (FAA-2023-0855-4127)** The MCAC recommends that noise and other impacts of future air vehicle activity be rigorously evaluated regarding noise and regulated by the FAA. Unmanned aircraft systems are already beginning to fly over cities for commercial purposes and their usage is likely to increase dramatically over the next few decades. It is critical that the noise from these systems is measured and regulated. Additionally, eVTOLs are being piloted in airports across the country to travel the final miles to and from the airport. From a safety and noise perspective, these flights must be understood and included in the noise impact analysis by FAA. Without more information, it is difficult to recommend appropriate metric/metrics that would be sufficient to control noise from these systems. At a minimum, the FAA should consult with and distribute the results to the general public for a more robust and informed dialogue. At the present time, there is not enough known about these technologies or how they will be implemented in the future to make specific recommendations. A "future technologies" working group which would include members of communities near airports around the country who bear the disproportionate impact of these new technologies should be created in order to ensure that any new regulations accurately reflect the experience of people on the ground. With respect to supersonic flight, we oppose supersonic flight over the land of the United States regardless of any "quiet sonic boom" technology. If, in the future, Congress determines that supersonic flight will be allowed over land, then such flight should be strictly regulated. No takeoff, landing, or overflight of such supersonic aircraft should take place over any portion of the land area of the United States or within 12 nautical miles offshore during the hours of

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	10:00 p.m. to 7:00 a.m. local time. We also note that although hypersonic technology is not yet available, similar restrictions would likely be appropriate for that type of travel as well.
Research Recommendations	**AICA (FAA-2023-0855-2206)** Airframe noise should be addressed both in the AEDT modeling tool and in the FAA Aircraft Source Noise Reduction plans. The Aircraft Source Noise Reduction plans should go beyond engine noise to include airframe noise, which is the dominant noise for 50% of airport arrivals. An analysis should be done for the NA50 NES data as the sole predictor of High-Annoyance (i.e., not as a moderator variable to DNL65) to inform a new noise policy using NAA especially for overflight communities. The NES data showed a strong correlation between N-Above 50 dB (NA50) and the level of annoyance. **Airport Working Group of Orange County** (**FAA-2023-0855-2621)** More studies would just delay implementation of a needed and improved policy and procedure change. Move forward now with a schedule inclusive of public comment and communication, and with the admission that adjustments may be necessary every "X" year (5?), based on changes to the aviation technology landscape. A new metric implemented within the next 18 months would give guidance to local officials and equipment OEMs on what environmental requirements must be met. Delays could allow technology to leapfrog regulatory and administrative controls to the detriment of local communities. Some technologies may be irreversible and the potential negative impacts not even currently anticipated. **The Alliance for a Regional Solution to Airport Congestion (FAA-2023-0855-3525**) We encourage the FAA to 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 has indicated that it will evaluate whether any of these impacts are statistically significant and to identify the metrics that are best suited to disclose these impacts. **Vashon Island Fair Skies (FAA-2023-0855-4027)** CFR Appendix A to Part 1502 - "Noise Exposure Maps: Part C - Mathematical Descriptions, Sec. A150.205(d)" contains:

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	"The time interval should be sufficiently large that it encompasses all the significant sound of a designated event. The requisite integral may be approximated with sufficient accuracy by integrating LA(t) over the time interval during which LA(t) lies within 10 decibels of its maximum value, before and after the maximum occurs." This approximation is predicated on the logarithmic nature of the SEL summation such that the wide shoulders on either side of the noise peak does not materially impact the overall SEL value and thus the final DNL result. Two very important observations follow: • The fact that this approximation "works" in the sense that the SEL value is effectively unchanged by ignoring over a minute of significantly disruptive noise above ambient powerfully indicts a simplistic cumulative metric, such as DNL, as completely failing the requirement of ASNA. • For precisely the same reason the approximation "works" for computing SEL, i.e. large values dominate in a logarithmic calculation, it spectacularly fails when used to compute ambient noise from a physical noise monitor. The shoulders of the overflight events completely dominate the real ambient noise. **Vashon Island Fair Skies (FAA-2023-0855-4027)** The Aviation Environmental Design Tool (AEDT) relies on Noise Power Distance (NPD) curves generated as part of aircraft certification as its primary source input data for noise generated by aircraft. However, these NPD curves have historically been based on typical procedure stages in direct proximity of the airport and not those of overflight communities newly impacted by NextGen in general and Performance Based Navigation (PBN) in specific. This is especially true when a poor Optimized Profile Descent (OPD) design backfires and results in extended low altitudes level-offs that in the past has been avoided with a conventional arrival that, ironically/tragically, had a more optimized profile descent. This is an active area of research. For example, ASCENT's NPD Re-evaluation Project and a paper last year from MIT's International Center for Air Transportation: "A Data-Driven Approach to Departure and Arrival Noise Abatement Flight Procedure Development". It's also a difficult area of research compared to modeling flight stages where engine noise predominates. Further, for historical comparisons when you only have flight track and aircraft type data, it can be anywhere from challenging to impossible to reverse-engineer the control surface configuration changes during an arrival, which are paramount in airframe noise generation.

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	A more stark example, even when you have access to all the Flight Data Recorder telemetry in addition to the flight track data, is the arrival of an A320 series aircraft not knowing if it has Vortex Generators installed or not. For background, A320 series aircraft have small Fuel tank Over Pressure equalization Ports (FOPP) under the wings: These holes create a whistling tone, analogous to blowing over the top of a bottle, which can add up to 9dB additional noise at certain sweet spots of elevation and speed, according to a study by Airbus: Vortex Generators are small palm size pieces of metal installed forward of the ports which deflect the airflow and eliminate the extra noise. Due to the repetitive nature of a PBN, the exact same location on the ground will get the brunt of this extra noise for every single arrival of such an A320 series aircraft. As AEDT knows nothing about Vortex Generators, it cannot model the above expression of noise. For these reasons, it is critical that actual real noise measurements be used when possible. Modeling instead of measurement should be used as a last resort, not the first choice. Even when using modeling to evaluate the impact of a procedure change, AEDT should first be used against the existing procedure together with actual noise measurement to understand the errors involved in the tool for that specific application. **Concerned Residence of Palo Alto (FAA-2023-0855-2265)** Perform and publish the analysis of the N-Above 50 dB (NA50) data from the NES. Enter into an agreement for an independent, unbiased, and peer-reviewed consensus report from the National Academies (with participants from the 3 divisions) to recommend noise decision making metrics and thresholds. A consensus report is not new research. It surveys the existing body of research and makes recommendations Because of inadequate past FAA reports and conclusions on metrics and thresholds, a consensus report from the National Academies is critical. The FAA does not need to wait for the noise policy review comments to be compiled to enter into such an agreement. This request has already been made in NES comments. See introduced bill H.R.2561 Peer-Reviewed Report on Measuring Metrics and Thresholds. In addition, sufficient health research exists today for the National Academies to make policy recommendations on aviation impacts on public health. No new epidemiological research needs to be conducted. The FAA should commission an independent, unbiased, and peer-reviewed consensus report from the National Academies Division of Medicine on aviation impacts on public health (Q7c, Q7d). As health experts, the National Academies, not the FAA, should address the health questions Q7c and Q7d in the Noise Policy Review questions.

Area	Public Comments
	AEDT lacks accuracy beyond a few miles from the airport, especially for arrivals. AEDT is based on a Noise Power Distance (NPD) model, which assumes that airframe and engine noise correlate with thrust. The NPD model is not as sophisticated as the ANOPP (Aircraft Noise Prediction Program) model that simulates aircraft noise based on various aircraft components. Airframe noise is the dominant noise source on arrivals, not engine noise. Recent MIT research, sponsored by the FAA ASCENT project 44, shows that delayed deceleration techniques could potentially reduce noise by 3 to 6 dB on average across different aircraft types in areas beyond 8 nautical miles from an airport. Under delayed deceleration, airplanes maintain higher speeds while flying in a clean configuration at low thrust levels. The AEDT model uses descent profiles that underestimate the use of flaps or slats over Overflight Communities, especially 10 or more miles away from the airport. This means that noise impacts of arrivals are typically underestimated for communities away from airports. AEDT has not been calibrated against actual noise monitor measurements beyond a few miles from an airport. No error bar or 95% confidence interval is provided on modeled noise results. The FAA Chief Technology Office's (CTO's) office has been aware for years of the AEDT limitations on modeling arrivals noise for Overflight Communities. Replace the current Noise Power Distance (NPD) model in AEDT with the NASA ANOPP model. Validate and publish AEDT's modeled results against actual noise measurements in communities located at various distances away from airports (for example: at 5, 10, 15, 20 miles) for both departures and arrivals. **BWI Roundtable (FAA-2023-0855-2558)** To address this distrust, modeled data should be calibrated with physical noise monitor data, and the FAA should define policy that this be done and standards for doing so. **CLT Airport Community Roundtable (FAA-2023-0855-2447)** Conduct Research to Identify Alternative Mitigations

Area	Public Comments
	The FAA/airports will conduct additional research to determine non-noise effects of improvements considered; this research will focus on proving the effects of noise-improvement recommendations on environmental, economic, or other potential factors. If there are negative quantifiable significant impacts on such factors, the FAA/airports will identify alternative changes/mitigations to positively affect noise without significantly negatively affecting the other factors being considered. **Massachusetts Port Authority Community Advisory Committee (FAA-2023-0855-4127)** We strongly recommend a National Academies Division of Medicine consensus report on aviation noise effects on public health to provide an independent, scientific, expert opinion. **O'Hare Noise Compatibility Commission (FAA-2023-0855-2226)** Contract with the National Academies of Medicine to include environmental health, statistical, measurement theory, medical, public health, sleep, psychological, and pediatric experts.

Appendix E: Excerpts from Elected Officials and Government (local, state, federal)

This appendix encompasses key excerpts from the comments submitted by the organizations listed above. The passages included are quotes pulled directly from the comments, and they are representative of other similarly worded points. Due to space constraints, the table below may not include an excerpt from each of these organizations, but their general ideas are represented. There are nine umbrella areas included in the table to organize the excerpts included: Decision-Making Metric, Thresholds, and Supplemental Metrics; NES and Schultz Curve; Health Impacts and Concerns; NEPA/Part 150/Land Use/Mitigation; Noise Policy Development Process; Communication; Policy for Different Vehicle Types/Operation Type; Noise from Emerging Vehicle Types, Supersonics, etc. and Recommended Research.

Area	Public Comments
Decision-Making Metric, Thresholds, and	**City of Park Ridge (FAA-2023-0855-1947)** I do agree that DNL metrics provide a standardized approach to measuring and assessing aircraft noise. This does allow for consistency in noise evaluations across different airports, regions, and jurisdictions, facilitating comparisons and regulatory decision-making but as with all summations, they rely on an overemphasis on averaging: By relying

Area	Public Comments
Supplemental Metrics	solely on DNL metrics, this may place excessive emphasis on the average noise level while neglecting extreme noise events or periods of concentrated aircraft operations. The metric may not adequately account for the effects of specific noise events or the cumulative impact of frequent flights during certain times of the day. An event-based metric like NA50 might better represent the annoyance felt from airport noises. The long-term averaging of DNL can smooth out the actual impact felt. The non-random pattern of noise complaints outside of DNL contours shows the shortcomings of DNL as the only metric. This metric could be used in combination with others, including DNL and N75 (for conversation disruption), Based on the NES, the public has said that DNL is incomprehensible and does not accurately reflect their displeasure. DNL alone is too permissive. Using DNL in combination with metrics such as NA50 that measure discrete noise events and N75 to indicate disruption of conversation would better model the impact of airport noise in a way that the broad brush of DNL does not. The nature of airport noise can depend not only on average noise, but also on repetition, time of day (ex. More cargo flights at night, so bigger planes but sharper climbs), and even days of the week (daytime noise more annoying on weekends). DNL represents these differences poorly. **Attorney for City of Culver City (FAA-2023-0855-3021)** Different noise metrics should be used in ALL circumstances. As Government Accountability Office (GAO) concluded, the DNL metric is manifestly misleading in its calculation of aircraft noise impacts because it is based on a 24-hour average which incorporates the relatively lightly traveled night hours, and that masks the actual impact of both numbers of aircraft overflights and individual noise signatures. However, if accommodation to individual circumstances were appropriate, additional metrics such as Time Above, and SENEL should be used in environmentally sensitive areas around airports, including parks and historic districts at minimum, while CNEL, a variant of DNL, could still be used in heavily populated areas where evening noise between 7-10 p.m. has a strong impact. The dispositive benefit of the use of CNEL over DNL is CNEL's sensitivity to evening hours, when many working people are more likely to be heavily impacted by noise impacts than during the daytime hours. **Congressional Quiet Skies Caucus (FAA-2023-0855-3716)** We hear from constituents frequently about the negative impact of aircraft noise on their quality of life, health and the structural integrity of their homes. The FAA's most recent Neighborhood Environmental Survey report demonstrates that the Day-Night Sound Level (DNL) and corresponding Schultz Curve created in the 1970s have outlived their

Area	Public Comments
	usefulness. This validates the reports about aircraft noise we have been hearing from our constituents for years and requires the FAA to take aircraft noise more seriously than it has thus far. As the FAA renews its commitment to address aircraft noise, especially regarding the DNL, we recommend the following: DNL metrics should incorporate seasonal shifts in operations. DNL metrics should incorporate the frequency of noise events over communities. Consistent noise, even at lower levels, can have serious heath and quality of life impacts for residents. The FAA should count and keep record of the number of Aviation Noise Events at individual airports. Independent body of aviation experts should be convened to identify appropriate metrics and thresholds that redefine impact. In addition to the above, the FAA should consider several metrics and factors when updating and revising its noise policy: Some metrics could include the following: • N-Above – Number Above • T-Above – Time Above • Ldn—the primary metric used currently in the calculation of 65DNL. An average sound level over a 24-hour period. It considers both the duration and the intensity of the noise event. • Lmax—representing the maximum instantaneous sound level reached during a noise event. Captures the peak noise levels. • N70—the number of events above 70dB within a certain period. It provides an indication of the frequency and intensity of noise events above a certain threshold. • NNI—Noise and Number index, which provides several noise events and their loudness to provide a more comprehensive assessment of noise exposure. It can be used to compare different noise scenarios or evaluate the effectiveness of noise mitigation measures. • ANEC—Average Noise Exposure Category, which is a classification system that categorizes different areas based on their average noise exposure. It helps identify areas with varying levels of noise impacts and can guide land use planning, noise abatement measures, and community development policies. In addition to the above, the FAA should consider several metrics and factors when updating and revising its noise policy: Some metrics could include the following: • N-Above – Number Above • T-Above – Time Above

Area	Public Comments
	• Ldn—the primary metric used currently in the calculation of 65DNL. An average sound level over a 24-hour period. It considers both the duration and the intensity of the noise event. • Lmax—representing the maximum instantaneous sound level reached during a noise event. Captures the peak noise levels. • N70—the number of events above 70dB within a certain period. It provides an indication of the frequency and intensity of noise events above a certain threshold. • NNI—Noise and Number index, which provides several noise events and their loudness to provide a more comprehensive assessment of noise exposure. It can be used to compare different noise scenarios or evaluate the effectiveness of noise mitigation measures. • ANEC—Average Noise Exposure Category, which is a classification system that categorizes different areas based on their average noise exposure. It helps identify areas with varying levels of noise impacts and can guide land use planning, noise abatement measures, and community development policies. **New York State Senator (FAA-2023-0855-4183)** Finally, the third bill would establish the use of Community noise Equivalent Level (CNEL) instead of the Day-Night Average Sound Level (DNL) as a uniform metric of measuring noise impact from air traffic noise. **City of Newport Beach (FAA-2023-0855-2348)** The City appreciates the opportunity to respond to issues related to the use of CNEL as its primary decision making metric in California for actions subject to the National Environmental Policy Act (NEPA) and airport noise compatibility planning studies prepared pursuant to 14 Code of Federal Regulations (CFR) Part 150. The City believes that different noise metrics should be used in certain circumstances for decision-making. The use of a single metric may not effectively capture the diverse range of noise impacts experienced in various settings and situations. Alternative noise metrics add clarity when communicating noise exposure and they can aid in decision making, particularly related to proposed flight procedure changes. Metrics such as TA and NA, as well as maximum sound levels, both augment the benefits of CNEL and communicate more effectively to concerned residents who feel an average level is not representative of their experience. Using other metrics sets a more realistic expectation of noise exposure for residents outside published CNEL contours.
Neighborhood Environmental	**Milton, MA Select Board (FAA-2023-0855-3731)**

Area	Public Comments
Survey and Schultz Curve	The FAA's Neighborhood Environmental Survey has shown that the Schultz Curve is outdated and not an appropriate method for representing community response to aircraft noise. We were not surprised to read in the Request for Comments that the FAA's ''Neighborhood Environmental Survey results show [a] higher percentage of people who self-identify as 'highly annoyed' by aircraft noise across all DNL levels studied in comparison to the Schultz Curve." That study demonstrates that, as a result of PBN, the Schultz Curve is outdated as a method for representing community response to aircraft noise. The Schultz Curve should be replaced by the National Curve. **City of Park Ridge (FAA-2023-0855-1947)** The FAA should favor the National Curve over the Schultz Curve if for no other reason than the NES Curve is more relevant to today's environment. The criteria for the Schultz Curve, while at the time was the best available, would appear flawed compared to what was used for the NES Curve. For example, the Schultz Curve took all transportation noise and included multiple countries while the NES Curve was just aviation noise with the data coming from residents around 20 U.S. airports. **City of Middleton, WI (FAA-2023-0855-4312)** In regards to what information the FAA should use to inform decisions about an updated noise policy, it is important to focus on collected, analyzed, and thoroughly vetted research rather than the results of the Neighborhood Environmental Survey. The survey provides anecdotal information regarding the perceived values of noise on specific community areas or populations, however, it does not provide grounded scientific research that is important to the determination of the overall actual impact of noise. Although it is important to measure the auditory effects of aircraft noise, it is essential to consider additional scientific evidence. Meticulous measurement and study should be conducted for the effects on children's learning, sleep disturbances, cardiovascular health, mental well-being, and socioeconomic impacts. The analytics should be the gold standard for informing policymakers on the best use of resources, techniques, and procedures to minimize aircraft noise in communities. **Congressional Quiet Skies Caucus (FAA-2023-0855-3716)** The FAA's most recent Neighborhood Environmental Survey report demonstrates that the Day-Night Sound Level (DNL) and corresponding Schultz Curve created in the 1970s have outlived their usefulness. This validates the reports about aircraft noise we have been hearing from our constituents for years and requires the FAA to take aircraft noise more seriously than it has thus far.

Area	Public Comments
Health Impacts and Concerns	**City of Brisbane (FAA-2023-0855-3728)** Studies have shown that irregular, unpredictable noises make it difficult for our brains to wholly focus, interrupting concentration on work/school tasks or waking people from sleep. And, although numerous moderate-level noise events don't contribute a lot to total decibel levels on the FAA's DNL scale, they are seen as some of the most irritating to the human brain. To describe these health consequences as "annoyance" is a misrepresentation of the real and cumulative effects on our community. Aircraft noise at night, which repeatedly prevents or disturbs sleep, has been shown to have long-term cognitive and cardiovascular health issues and can interfere with learning in children at critical stages of development. **Town of Middleton (FAA-2023-0855-2159)** 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." 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. **City of Minneapolis (FAA-2023-0855-2545)** Chronically disturbed sleep is associated with numerous negative health outcomes such as obesity, diabetes, and high blood pressure. Nighttime airplane noise has been linked to hypertension and cardiovascular disease. Chronic aircraft noise exposure in children is associated with impairment of reading and long-term memory and it's hypothesized that sleep disruption is the mediating factor. As a city, we are very concerned about the impacts of nighttime noise on resident health and well-being. **City of Sacramento (FAA-2023-0855-4138)** FAA's revised noise policy should require a Health Risk Assessment be conducted in conjunction with every FAA project under NEPA, in order to analyze how FAA projects are going to impact the health and well-being of the residents of the communities. 18 The EPA uses Health Impact Assessments (HIA) as a tool to promote sustainable and

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	healthy communities. EPA has long concluded that the foundation of a healthy community is strongest when built on a decision-making process that balances environmental, social, and economic factors to promote the health and well-being of its members. An HIA is a tool designed to investigate how a proposed program, project, policy, or plan may affect health and well-being and inform decision-makers of these potential outcomes before the decision is made. **Congressional Quiet Skies Caucus (FAA-2023-0855-3716)** We hear from constituents frequently about the negative impact of aircraft noise on their quality of life, health and the structural integrity of their homes. **New York State Senator (FAA-2023-0855-4183)** Constituents in northeast Queens often describe their experience living within such close proximity to NYC's airports as enormously stressful to emotionally and physiologically vulnerable populations such as senior citizens and children, and prohibitive to work, learning and concentration. The FAA cannot continue to ignore the emotional, physical and mental health impact of excessive airplane noise as they corrode the health and well-being of our entire communities.
NEPA/ Part 150/ Land Use/ Mitigation	**Loudoun County, VA (FAA-2023-0855-1572)** Loudoun County requests that the FAA not lower the sound exposure threshold of 65 Day-Night Average Sound Level (DNL), which is currently the maximum sound exposure whereby residential development is deemed normally compatible with aviation noise. Decades of land use planning and actual development have followed this as a guiding principle. Lowering the limit below this level will significantly increase the volume of aviation related noise complaints to localities and the FAA. We are requesting the FAA consider issuing guidance whereby airports, meeting some appropriate operational threshold that would include IAD, be required to perform and publish two airport noise exposure studies. The first, would be a study that is considered a long-range land use planning tool to give guidance to localities for defining locations were land uses not compatible with aviation noise should and should not be located. The interval for a study of this nature could be as high as once every 15 to 20 years. A study of this type would be based on ultimate buildout of the airport layout plan and the airport operating at full FAA regulation compliance capacity. **Metropolitan Airports Commission (FAA-2023-0855-1839)** Any changes to the FAA noise policy will have implications for land use planning surrounding airports, as such, it is important any changes to existing policy be based on both robust research and public feedback.

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	Second, an overarching comment relates to the FAA's intent on reviewing its noise policy to consider revisions every three to five years. While a regular review of best available data and consideration of supplemental metrics to inform decision-making could be useful, regular and frequent noise policy changes to metrics and thresholds of significance will likely disrupt active or proposed processes – such as land use planning, noise mitigation measures, airport long-term plans and environmental reviews – which require time to establish and/or complete. These processes, particularly corrective and preventative land use management, require a stable noise metric and policy. Substantial time, effort and investment has gone into corrective and preventative land use management around MSP. Over 19,000 homes around the airport have been offered noise relief through Metropolitan Airports Coalition's (MAC's) Airport Noise Mitigation Program and the communities have conducted land use planning and zoning efforts based on the DNL metric. A change to the metric and threshold used for determining compatible land use and mitigation eligibility would take time to adopt into practice for both the airport and surrounding communities. Revisions to noise policy to determine compatible land use and noise mitigation eligibility every three to five years would be problematic for the airport and communities to easily and readily adopt. Additionally, frequent changes could add to public confusion and weariness about the definition of acceptable and unacceptable aircraft noise levels. The NOC encourages the FAA to establish a new noise policy that is stable, well-understood and well-researched to limit disruptive and confusing changes for our communities. One way to do this is to complete and incorporate findings from the FAA's aforementioned research initiatives. **Milton, MA Select Board (FAA-2023-0855-3731)** With the implementation of NextGen/PBN beginning at least a dozen years ago at some airports, the FAA's decision-making metric for actions that are subject to NEPA and airport noise compatibility planning studies pursuant to 14 CFR part 150 is long overdue for an overhaul. DNL makes absolutely no sense as the FAA's metric when flight paths are concentrated over fewer people who experience hundreds of overflights on days that an RNAV path is in use. We reiterate that Milton often experiences overbearing, incessant noise from several hundred airplanes from early in the morning (i.e., approximately 5:00 a.m.) until well after midnight. On such days, there is no relief whatsoever. Yet DNL averages the 18 or more hours of constant noise on such days with the lack of noise that the same people experience when there are no overflights. The average result is misleading and in no way reflects the reality that people on the ground experience. **Congressional Quiet Skies Caucus (FAA-2023-0855-3716)**

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	The FAA should consider several metrics and factors when updating and revising its noise policy: ANEC—Average Noise Exposure Category, which is a classification system that categorizes different areas based on their average noise exposure. It helps identify areas with varying levels of noise impacts and can guide land use planning, noise abatement measures, and community development policies.
Noise Policy Development Process	**Loudoun County, VA (FAA-2023-0855-1572)** Loudoun County encourages the FAA to create funding programs to award grants to residential and commercial landowners who are impacted by aviation related noise. Despite the efforts of localities, like Loudoun County, to manage growth with consideration of aviation noise, conflicts still arise in some instances, and localities cannot address the issue through land development after it has been permitted. Changes in aviation operations have led to changes in sound exposure for some communities, thus exposing previously approved development to noise conditions that were not anticipated. Having funding programs to implement noise abatement will assist with protecting communities from the adverse health effects of aviation noise. We are requesting the FAA consider issuing guidance whereby airports, meeting some appropriate operational threshold that would include IAD, be required to perform and publish two airport noise exposure studies. The second, would be a more frequently (every 5-7 years) prepared airport noise study that reports on airport noise based on relatively current operations using airport development as it exists on the ground, existing activity, and fleet mix. **City of Park Ridge (FAA-2023-0855-1947)** The Mayor and City Council believe the FAA Noise Policy Review should be expedited as quickly as possible with the outcome being an updated noise policy that more clearly reflects the needs of residents and catches up with 47 years of aviation innovation. **Congressional Quiet Skies Caucus (FAA-2023-0855-3716)** Periodic Review and Updates. The FAA should conduct periodic reviews of its policy and methodologies to ensure they align with the latest scientific research and advancements to noise assessment techniques. This would enable the agency to incorporate new knowledge and best practices into its policies, leading to continuous improvement over time.
Communication	**Congressional Quiet Skies Caucus (FAA-2023-0855-3716)**

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	Community Engagement: The FAA should take the following steps to engage with communities impacted by airplane noise: • Engage in regular community meetings. • Organize regular community meetings in affected areas to provide updates on FAA initiatives, address community concerns, and seek public input. • Develop user-friendly interfaces to facilitate easy access to relevant information, including aircraft noise data, flight path changes, community outreach programs, and ongoing research efforts. • Strengthen the FAA ombudsman position and make this role a priority in community outreach. • Collaborate with local government and stakeholders. Participate in local events, community fairs, and conferences to engage with stakeholders and address concerns directly. **City of Mendota Heights, Minnesota (FAA-2023-0855-1624)** There remains an opportunity for the FAA to share information with the public early and often using plain language, clear visual representations of proposed flight procedure changes and companion metrics to help communicate impacts to communities. **City of Park Ridge (FAA-2023-0855-1947)** The FAA needs to be more transparent and timelier. Utilizing such organizations such as the O'Hare Noise Compatibility Commission, local political subdivisions and school districts clearly need to be in the mix. When hot-issue topics are addressed, public forums are a must. The FAA has done a good job at utilizing such things as social media but that needs to be expanded. The number one thing we face in dealing with residents is misinformation. Clearly more and better communication could rectify that. **City of Newport Beach (FAA-2023-0855-2348)** Public notice mechanisms can play a crucial role in addressing community concerns. Timely and comprehensive information about upcoming launches, expected noise levels, and schedules can enable communities to prepare, plan and minimize potential disruptions. By providing clear and accessible information through various channels, including online platforms, public meetings and local media, the FAA can ensure that communities are well-informed about commercial space operations and their associated noise impacts. **Town of Bedford MA (FAA-2023-0855-0555)**

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	We also encourage FAA to improve its response policy for individuals who submit noise complaints. Currently, a resident can submit a complaint to the local airport authority (in our case, Massport) and/or directly to the FAA, and receive a notification that their complaint has been received. There is no easy way, however, for a complainant to receive additional information or ask further questions about the causes of the complaint, and FAA rarely reports that any action has been taken in response to a complaint. Residents have told us they do not feel their concerns about aviation noise in their neighborhoods are truly heard or addressed by Massport or FAA. **City of Huntington Beach, California (FAA-2023-0855-1586)** FAA has consistently failed to meaningfully engage or to even acknowledge that Metroplex created a significant noise burden over Huntington Beach. **City of Park Ridge (FAA-2023-0855-1947)** The FAA should use all available metrics and data capturing methods to make informed decisions. To ensure full transparency these factors in decision making should also be made available for public disclosure. Public disclosure ensures transparency in the regulatory process. It will allow the public to understand and participate in the decision-making process. By disclosing the data and information about proposed FAA noise regulations, including the objective, potential impacts, and reasoning, the FAA can foster trust and confidence amongst the public. **City of Newport Beach (FAA-2023-0855-2348)** The FAA should not only use this information for public disclosure, but also as a basis for making informed decisions. For example, empirical data can be used by the FAA to establish evidence-based regulations and policies that effectively manage and mitigate aviation noise from these aircraft types. This approach ensures that decisions are grounded in scientific research and real-world observations. Lastly, the City would like to stress that public disclosure is vital and the FAA should reveal what it is doing with regard to new aircraft types. By sharing information, the FAA can engage with stakeholders and the public, allowing for meaningful discussions and input. This approach enhances trust, facilitates community involvement, and enables a more collaborative and inclusive decision-making process. **Town of Los Altos Hills, Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto (FAA-2023-0855-4086)**

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	Communication regarding noise impacts begins with developing a system of noise metrics that realistically describe noise impacts in a manner the average person can understand. For all of the reasons discussed above and as made clear in the NES, DNL tends to obscure and understate noise impacts. The FAA's reliance on DNL has undermined the public's confidence in how the FAA reports and describes noise. Developing a system of noise metrics that describes how noise will actually affect people is critical to how the FAA communicates about aircraft noise. In addition, the Cities believe the FAA should develop a communications policy that allows the FAA and airports to provide information about noise proactively, in a timely manner, and that represents the true impacts of noise on communities. **Town of Middleton (FAA-2023-0855-2159)** 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.
Policy for Different Vehicle Types/Operation Type	**City of Newport Beach (FAA-2023-0855-2348)** When describing this information, it would be beneficial to use noise metrics that accurately capture the characteristics and potential effects of each aircraft type on the community. Noise metrics can include single event noise levels, tonal characteristics, and other novel approaches. It is also crucial to consider both the immediate noise effects and the potential cumulative effects of these aircraft types to provide a comprehensive understanding of their noise footprint. **Town of Los Altos Hills, Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto (FAA-2023-0855-4086)** Each of these different scenarios may require a different metric and/or a different threshold to measure how noise will affect residents. Moreover, it may be appropriate to use more than one metric to gain a more complete understanding of noise impacts. For example, DNL may be appropriate to predict an overall level of community annoyance, but different metrics applying different thresholds will better illustrate how specific operations will impact people on the ground.

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Noise from Emerging Vehicle Types, Supersonics, etc.	**City of Brisbane (FAA-2023-0855-3728)** We oppose supersonic flight over the land of the United States and the US Territorial Sea (12NM offshore) regardless of any purported "quiet sonic boom" technology. For emerging technologies and civil rotorcraft and for air traffic flying below 2000 ft., we also request allowing local governments such as ours to establish local noise ordinances. **Town of Los Altos Hills, Cities of East Palo Alto, Los Altos, Menlo Park, Mountain View, and Palo Alto (FAA-2023-0855-4086)** The current ban on supersonic flights over US land and US territorial sea to prevent sonic boom should be maintained. In addition, the FAA should apply the same FAA noise standards to supersonic and subsonic aircraft. **Milton, MA Select Board (FAA-2023-0855-3731)** However, for the reasons stated below, at a minimum, DNL should not be the metric for determining acceptable levels of noise from drones and AAM. We expect that, similar to the problems created by PBN flightpaths, the frequency of drone/AAM noise events, not the loudness/intensity of the event, should be the primary factor captured by the noise metrics used for decision-making about drone/AAM noise exposure. Additionally, we encourage the FAA to use C-weighted measurements and estimates. **Attorney for City of Culver City (FAA-2023-0855-3021)** Communities in the vicinity of UAS (drone) package delivery and other newly emerging technology have the same concerns as set forth above, although at a greater level. Most property owners are reluctant to entertain flying vehicles, no matter how small, at low altitudes over their properties, at as yet unknown single-event noise levels. Moreover, the noise from UAS is not amenable to the type of averaging used to create the DNL metric, because the numbers of flights, their altitudes and single-event noise levels are not constrained by airport facilities in the manner that limits the operation of commercial aircraft. The creation of a metric incorporating these operations has not yet occurred and will be a challenge, at best. **City of Newport Beach (FAA-2023-0855-2348)** The City understands that last-mile delivery, using drones (or UASs), is of growing concern across the U.S. The City is also aware of emerging aircraft technologies (e.g., electric vertical take-off and landing) that could have an impact on

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	communities. As a community already subject to aviation noise from nearby SNA (John Wayne Airport), we are concerned with the potential noise impacts that UAS package delivery or other newly emerging technology operations may have on our community. We are also concerned about privacy, security and safety associated with these technologies. Noise metrics can be used to evaluate the noise emissions of UAS and other emerging technologies. Metrics that consider the duration and frequency of operations, as well as the specific sound characteristics, can provide valuable insights. Additionally, metrics that assess noise propagation and the potential for noise concentration in certain areas would be essential to communities. With regard to privacy, it is essential to ensure that emerging aircraft technologies are conducted in designated areas away from residential communities and sensitive facilities. Further, the FAA should prioritize safety and security measures and robust operational guidelines to protect the public from accidents. By establishing clear rules and regulations for UAS and other emerging technologies, the FAA can ensure safe operations while minimizing noise impacts. Regular monitoring, compliance checks, and public reporting of safety records (among other practices) can contribute to building trust and addressing community concerns. Further, communities like ours will want to have a voice on how and where these types of aircraft operate. Prior to implementation, our community would like to have input on where drones are flying and where vertiports are located. We do not want these vehicles to operate in our community without the necessary notification and public engagement that we would expect from the FAA. We hope that the FAA considers our concerns and strives to implement robust public engagement and outreach prior to considering the use of UAS for package delivery or facilities to support the operation of other emerging technologies (e.g., vertiports) in our neighborhoods.
Research Recommendations	**City of Brisbane (FAA-2023-0855-3728)** Please implement the Neighborhood Environmental Survey findings immediately and refrain from further study (delay). **Town of Middleton (FAA-2023-0855-2159)** You already have enough research. According to Daniel Fink, MD, M.B.A., “There is more than enough science 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

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	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." **Arlington County (FAA-2023-0855-4105)** Arlington County urges the FAA to complete its current research efforts. Data from ongoing research, such as auditory and non-auditory effects and epidemiological studies currently underway by the FAA, are crucial elements in the portfolio of scientific evidence on the impact of aviation in the community. Scientific evidence resulting from the FAA's studies on children's learning, impacts on cardiovascular health, sleep disturbance, and economic impacts is necessary to inform policymakers on the best use of resources and techniques available to minimize aircraft noise impact on our communities. **Metropolitan Airports Commission (FAA-2023-0855-1839)** Rather than resting only on the results of the Neighborhood Environmental Survey and subsequent public comments, the NOC would encourage the FAA to complete its current research efforts. Data from ongoing research, such as auditory and non-auditory effects and epidemiological studies currently underway by the FAA, are crucial elements in the portfolio of scientific evidence on the impact of aviation in the community. Scientific evidence resulting from the FAA's studies on children's learning, impacts to cardiovascular health, sleep disturbance and economic impacts is necessary to inform policymakers on the best use of resources and techniques available to minimize aircraft noise impact on our communities.

Appendix F: Excerpts from Aviation Industry and Airport Sponsors

This appendix encompasses key excerpts from the comments submitted by the organizations listed above. The passages included are quotes pulled directly from the comments, and they are representative of other similarly worded points. Due to space constraints, the table below may not include an excerpt from each of these organizations, but their general ideas are represented. There are nine umbrella areas included in the table to organize the excerpts included: Decision-Making Metric, Thresholds, and Supplemental Metrics; NES and Schultz Curve; Health Impacts and Concerns; NEPA/Part 150/Land Use/Mitigation; Noise Policy Development Process; Communication; Policy for Different Vehicle Types/Operation Type; Noise from Emerging Vehicle Types, Supersonics, etc. and Recommended Research.

Area	Public Comments
Decision-Making Metric, Thresholds, and Supplemental Metrics	**A4A, IATA, ACI-NA, AAAE (FAA-2023-0855-4396)** The day-night average noise level (DNL) is an effective and well-researched metric, and the FAA has not provided sufficient information to support the use of alternative decision-making metrics. **A4A (FAA-2023-0855-4402)** FAA has not provided any policy analyses that suggest that any of the other metrics that FAA has suggested as alternatives or supplements would provide meaningfully different decision-making processes and/or science-based results. For the nearly 50 years of its use, DNL has proven to be a reliable metric. However, A4A does not want to prejudge the outcome of the NPR and is open to considering other metrics. A4A encourages the FAA to demonstrate how other conventional noise metrics would improve upon DNL as the existing "single, uniform, repeatable system for considering aviation noise around airport communities" and provide research that shows correlation between other metrics proposed in the Notice and annoyance (or other responses, for that matter). While all the proposed metrics are A-weighted, or highly correlated, FAA should provide data that shows how certain subject metrics are better predictors of annoyance or other responses (sleep, speech, etc.) than DNL. Further, as there is no obvious point on the NES curve (or indeed any other dose-response curve related to noise effects) that demonstrates a clear inflection point of "impact", FAA should not make changes to its decisional metrics without demonstrating a clear benefit to decision-making; to date, FAA has not provided sufficient information to support the use of alternative metrics. **ACI (FAA-2023-0855-4579)**

Area	Public Comments
	ACI-NA observes that DNL (or Community Noise Equivalent Level [CNEL] applied in California) has provided a reliable tool to assess noise impacts for over 40 years and neither the NES nor any new research undermines the utility of DNL. **AAAE (FAA-2023-0855-4700)** FAA should consider the use of alternative decision-making metrics and thresholds to evaluate air traffic procedure and airspace changes during NEPA reviews. FAA acknowledged that overflight communities have been the predominant source of noise complaints to FAA in recent years because of NextGen implementation and procedural changes. To address the concerns, FAA should consider an alternative metric and threshold for such changes. …we recognize that communities and individuals located near airports with significant seasonal aircraft operations are in a unique position. For these airports, FAA should consider calculating DNL based on a seasonal average—an average over the season in which people predominantly live in the area and operations are higher—rather than relying upon the annual average day (AAD). We believe this type of increased flexibility for airports with significant seasonal traffic is necessary, and we highly encourage FAA to work closely with them to determine a preferable method for describing noise impacts. This may require FAA to determine the parameters of what constitutes an airport that falls within this unique category. FAA should consider the use of alternative decision-making metrics and thresholds to evaluate air traffic procedure and airspace changes during NEPA reviews. FAA acknowledged that overflight communities have been the predominant source of noise complaints to FAA in recent years because of NextGen implementation and procedural changes. To address the concerns, FAA should consider an alternative metric and threshold for such changes. **GAMA (FAA-2023-0855-4100)** Multiple metrics that vary by state or location can become complex to manage and more difficult to account for impacts within the national aviation system. **Port of Seattle/Seattle-Tacoma International Airport (FAA-2023-0855-3849)**

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	(1) Near-airport communities immediately outside the 65 DNL noise contour, especially those directly in the flight path; (2) Overflight communities further from the airport but located at a higher surface elevation such that the flight path is vertically closer to them despite their distance from the airport; and **(3)** Overflight communities further from the airport located under a concentrated, "NextGen" flight path. Each of these concerns could be addressed by different changes to the noise metric. For example, the first category would benefit mainly from an expansion/lowering of the current DNL decibel level; in addition, as referenced directly above, a greater weighting of overnight noise would include some of these individuals into the 65 DNL contour. Another potential change would be "facility-specific" metrics for some near-airport facilities – for example, a metric that would allow for sound insulation in schools because of the importance of quiet for learning. The second group would benefit from additional inputs into the metric that more heavily weight topography into the Average Annual Day calculation. For those communities that are both physically elevated and also directly in the landing or take-off path, other inputs like frequency or concentration – including possibly the use of single event level measurements and/or equivalent sound level (LEQ). Finally, the third group would benefit from frequency or concentration metrics; the FAA could consider using these metrics specifically for areas under NextGen concentrated flight paths. **Centennial Airport (FAA-2023-0855-4409)** The same noise metrics should be used for decision making. It has been our experience that 65 DNL falls short of accurately representing the noise exposure experienced by the community surrounding Centennial Airport. DNL simply does not capture the frequency in which communities experience aircraft operations over their homes. The FAA should use metrics, including single event, number above, Lmax and C- weighting. Centennial Airport received over 12,000 noise complaints in 2022 and believe the threshold should be below 65 DNL (for communities close to airport). **Nevada Department of Aviation (FAA-2023-0855-3704)** The FAA's Noise Policy should address the range of tangible, objective impacts that noise exposure has on people, including speech and sleep disruption, interference with education, disruption of outdoor activities, and other adverse

Area	Public Comments
	health impacts. The noise policy should correlate those impacts to specific noise exposure levels so that the FAA and airport sponsors can evaluate how best to prevent or mitigate the adverse impacts of aircraft noise. That is consistent with the FAA's current interior noise level standard for AIP eligibility for acoustic treatment, which is set at 45 DNL because that level was determined to prevent interference with speech. **San Antonio Aviation Department (FAA-2023-0855-4428)** DNL has been successfully used at the San Antonio Aviation Department to understand and plan for land use compatibility and environmental planning. As indicated earlier, if there are opportunities to plan or study for single-event noise events that affect surrounding communities or seasonal use of runway directions (changes in wind direction}, we would welcome the research. The use of the 65 (decibel) DNL metric has been the useful planning and understanding noise impacts for the communities surround the San Antonio International Airport. However, there are increasing numbers of community concerns about noise beyond the 65 dB DNL boundaries that reflect annoyance at levels below 55 dB DNL. **Embraer S.A. / Eve (FAA-2023-0855-3474)** For UAM operations, current recommendations, and metrics, suggested by FAA regulations, can be used as a reference for impact quantification and decision-making, until data driven alternatives are discovered from experimental studies and insight perception surveys. Single-event metrics, in turn, should not be used for decision-making, as an inadequate understanding can generate restrictions, threatening the viability of operations and affecting exposure and practical experimentation of the new UAM concept. **Joby Aviation (FAA-2023-0855-4369)** Joby believes that different noise metrics will be required in different circumstances, because people’s sensitivity to noise varies with the environment. Once again, we don’t think we can point to a single new metric that will solve the problem, rather, we would suggest the process of research, test and refinement, both to find the most applicable metric and threshold, and to support messaging about having done so.

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	Joby's view is that DNL forms the foundation for a well-established system for managing changes in land use around large airports and should be limited to that function. The best metrics (old, new, or some combination of both) for predicting citizens' responses to novel sources of aviation noise will need to be determined through systematic testing across various urban and suburban environments. This is how the FAA can best serve the aviation industry and the citizens of the United States. Average Annual Day (AAD) using power summation has traditionally been used. As with DNL, this has become so entrenched in land use planning that it's probably best left alone – but, may not be applicable for new sources. AAD is based on an empirical relationship first clearly described by Fechner more than 150 years ago, that has been the subject of debate for decades. Once again, this approach and others can be validated by suitable psychological testing. There is still an open question about what communities would like to measure, when people are sensitive to noise and when exceedances are more or less acceptable. Single-Event or operational metrics have been employed by other agencies besides the FAA and we were encouraged to see SIE and AIE noted in the FAA's noise principles document. Yet, those metrics are still ignorant of the ambient soundscape and do not consider the potential for sounds to blend into the environment. The Federal Interagency Committee on Aviation Noise (FICAN) published studies suggesting a correlation between indoor sound exposure level and increase in awakenings. The value of 95 dB SEL outdoors has been used in some heliport studies, assuming 15 dB building transmission loss, as a value associated with 10% increase in awakenings. Some kind of single-event metric should be included in guidance for NEPA studies. Operational metrics are used in some other countries, such as the UK's (United Kingdom) Noise and Number index. However, there is wide scatter in the correlation values among these noise impact studies referenced to human subject studies, suggesting that the metrics are not well matched to the problem. The FAA should encourage the development of new supplemental metrics (ideally, sensitive to the concept of noise blending into a soundscape), perhaps by providing a set of comparison noise files that can be analyzed by human listeners and algorithms to find the best fit. The time has come to assay a novel set of metrics that draw on exposure indexes like the PEI and AIE. These avenues should be pursued empirically because they can potentially better characterize how citizens will be affected by the introduction of new sound sources, like the addition of a vertiport and all associated operations.

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	Lilium GmbH (FAA-2023-0855-4362) Until new metrics are developed, the FAA should continue to use existing metrics to evaluate the impact of new eVTOL operations. eVTOL aircraft are not fully captured by existing noise metrics or measurement techniques, and their noise profiles should considered as new techniques and tools are developed. Any noise metrics for eVTOL operations should be tailored to new eVTOL operations (both in terms of absolute noise levels and the unconventional characteristics of that noise) and take into account the ambient noise already present in the relevant environment either through a net assessment or by providing the ambient context. While having a common language and consistent measurement techniques and metrics will be helpful to communities when assessing whether or not a given operation's noise impact is justifiable, it should be left up to the community to decide whether or not a given operation should be permitted. **Whisper Aero (FAA-2023-0855-4405)** The EPNL metric used so far to evaluate the effects of airplane noise on human beings is suitable and we recommend the FAA continue its use. We agree with the use of DNL as the FAA's core decision making metric for understanding noise exposure to communities in the vicinity of large airports that have experienced commercial operations over the decades. In these cases, there is years worth of noise data available as a result of historical operations. The implementation of performance-based navigation (PBN) at these airports has been a step in the right direction, although further reporting on how its implementation can reduce noise emissions would be helpful. While PBN allows aircraft to fly more precise approach paths and concentrate noise over smaller areas, it may allow for the increase in number of operations over a given area, increasing noise events but not necessarily increasing DNL. Introducing a supplemental noise metric that allows for the reporting of this nuanced change would greatly benefit communications between the FAA and communities in the vicinity of large airports. If a new metric is adopted, it is crucial for it to consider tonality, and comprehensive human factors studies should be conducted to better comprehend the correlation between tonal characteristics and human reactions to aircraft noise.

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	In the case of novel operations in the AAM space, such as UAM, drone delivery, or Regional Air Mobility operations, it is likely that DNL will fall short of appropriately determining noise exposure, and we recommend the FAA work to find a noise metric that can better tell the story. This is in part due to the fact that these operations will most often occur in closer proximity to people, and be more disaggregated over the land than the vast majority of today's commercial operations. Whisper believes that different noise metrics should be used in different circumstances for decision making, especially once AAM operations become more commonplace. To ensure that noise regulations and mitigation efforts effectively address the concerns of affected communities, it is crucial for the FAA to develop a noise metric that accurately reflects the effect of single noise events on people's well-being. Such a metric would provide a more nuanced understanding of the impact of AAM operations and guide noise abatement strategies that prioritize the comfort and quality of life of those living in proximity to these operations. Single event or operational metrics, as defined in the FAA's 'Foundational Elements of Civil Aviation Noise' document, help fill gaps that the DNL noise metric is unable to address, and should be used in combination with the DNL noise metric to further guide NEPA and Land Use Thresholds. **Wing Aviation LLC (FAA-2023-0855-4433)** Wing proposes that the FAA continue to adhere to this standard that, unlike any other existing metric, has been thoroughly studied over the course of decades and proven to be consistently effective in evaluating noise levels. Wing supports the continued use of existing, proven metrics as a threshold for significance of noise exposure, specifically 65 DNL. Wing also supports expanded use of acceptable and cost-effective measurement tools, as outlined above, to demonstrate compliance with that noise threshold. **ACI (FAA-2023-0855-4579)** For changes in flight procedures or airspace design, operational metrics such as TA or NA may be more useful as a supplemental metric to identify how the procedures could change the noise environment. However, to be considered an alternative metric, there must be a strong correlation between a given noise level and specific impacts based on empirical data in order to provide a substantive basis for a regulatory response related to significant impacts associated with the flight procedure or airspace design.

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	Centennial Airport (FAA-2023-0855-4409) The same noise metrics should be used for decision making. It has been our experience that 65 DNL falls short of accurately representing the noise exposure experienced by the community surrounding Centennial Airport. DNL simply does not capture the frequency in which communities experience aircraft operations over their homes. The FAA should use metrics, including single event, number above, Lmax and C- weighting.
Neighborhood Environmental Survey and Schultz Curve	**A4A (FAA-2023-0855-4402)** There are several questions about the NES data that FAA should address before policy should be modified based on the NES data. First, the annoyance survey data that forms the basis of FAA's NES data were collected in 2015-2016. As discussed in Docket comments submitted by Nicholas Miller (the lead author of the NES), there were significant changes happening at several of the study airports. More generally, aircraft noise issues were newsworthy – especially with the implementation of NextGen procedures at various locations across the US. Since that time, FAA has improved its communications around the rollout of new procedures but has not conducted additional surveys to determine whether general annoyance levels may have decreased in the interim. Second, Gjestland has argued in a recent paper that the NES data should be adjusted based on both the format of the survey (mail vs. telephone/in-person) and the scale of responses. He posits that these two adjustments would result in a revised dose-response curve that would be much more consistent with historical data, including the Miedema-Vos (M&V) data that are considered the current international standard. Gjestland's revised curve shows close agreement with the M&V data below about DNL 62. FAA should review these recommendations to determine whether the NES curve should be adjusted to reflect either of these conditions. **ACI (FAA-2023-0855-4579)** While the NES is an important first step to providing relevant information, it is only the first step in reviewing the need to update policy; the process should include additional research results on the health impacts of aviation. Not having the empirical data to provide the FAA, ACI-NA supports the ongoing, and future, efforts by the FAA to conduct research and develop the empirical data needed to inform any changes to aircraft noise policy. **Centennial Airport (FAA-2023-0855-4409)**

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	Many of the FAA's previous assumptions are based on outdated inaccurate information. Now that the NES data shows the high level of annoyance at lower levels of noise and that residents far outside the 65 DNL contours are highly annoyed, the FAA noise policy should be completely revised. However, if you do continue to use this DNL metric, we would urge a level below 65 DNL and the use of additional metrics such as single event, number above, Lmax and c-weighting.
Health Impacts and Concerns	**ACI (FAA-2023-0855-4579)** While the NES is an important first step to providing relevant information, it is only the first step in reviewing the need to update policy; the process should include additional research results on the health impacts of aviation. Not having the empirical data to provide the FAA, ACI-NA supports the ongoing, and future, efforts by the FAA to conduct research and develop the empirical data needed to inform any changes to aircraft noise policy.
NEPA/ Part 150/ Land Use/ Mitigation	**AOPA (FAA-2023-0855-3184)** Our single objective in providing these comments is to draw the attention of policymakers to a problem that has affected public airports for decades: the proliferation of incompatible land uses in their proximity. **Port of Seattle/Seattle-Tacoma International Airport (FAA-2023-0855-3849)** One change – not directly related to metrics – that the FAA could make for these communities would be allowing for eligibility for homes with "failed" noise packages. We are increasingly hearing from members of the community who have received noise insulation but now feel like their federally funded enhancements are no longer providing the same level of protection. Currently, the FAA does not provide federal funding for a second sound insulation installation in homes with noise packages newer than 1993, but the increasing number of aging insulation treatments may require a reconsideration of this policy. That having been said, we want to be clear that our point about "whether noise insulation could actually make a difference in noise exposure at distances further from the airport" is incredibly important in your final decision-making – not only because you want limit your insulation investments to those that are impactful, but also because of the significant disappointment that would be created in communities that become eligible but find that their eligibility doesn't actually address their concerns. So much of this conversation about changing metrics is really about whether or not a home or building will receive federally funded noise insulation that can meaningfully lower existing internal

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	noise levels; if sound insulation can't change the experience of that individual, then it is not right to create unrealistic hope and expectations. And so, we do not believe that anyone who expresses noise annoyance should be eligible for federally funded noise insulation. Instead, we suggest that the FAA balance the considerations outlined in our response to Question 3. **Nevada Department of Aviation (FAA-2023-0855-3704)** Impact on NEPA Document Production and Review. Clark County Department of Aviation (CCDOA) is concerned that a new noise policy that establishes new noise metrics and thresholds will increase the level of NEPA review required for airport projects and the amount of costly, time-consuming technical analysis required to analyze potential noise impacts. Although CCDOA recognizes that new noise policy may require changes in how airports and the FAA conduct NEPA reviews of airport projects, CCDOA urges the FAA to take into account how a new policy would impact the overall cost and duration of NEPA review, including in particular the increased burden of FAA staff reviewing NEPA documents. CCDOA notes that it has recently experienced lengthy delay in obtaining FAA approval of CatEx documents and is aware of projects by other sponsors being delayed because of a backlog of NEPA documents awaiting FAA review and approval. With the large number of new projects moving forward using Bipartisan Infrastructure Law and other federal, state, and local funds, CCDOA is concerned that this problem will only get worse if the Noise Policy requires new complex noise analysis. This backlog, coupled with the recent statutory revisions to NEPA in the Fiscal Responsibility Act of 2023 (P.L. 118-5, Title 3 (June 23, 2023)) that now codify deadlines for environmental reviews, makes it all the more imp01iant for FAA to thoroughly consider the implications on future NEPA reviews before adopting any significant changes. **Raleigh Durham Airport Authority (FAA-2023-0855-3758)** We strongly urge FAA to follow the same rulemaking process if it decides to propose any changes to FAA Order 1050.lF, which outlines the agency's policy and procedures for studying potential noise impacts during NEPA reviews. Updates to either policy would have a significant impact on the airport industry, which necessitates a thorough review and engagement process with affected stakeholders. **Joby Aviation (FAA-2023-0855-4369)** Some kind of single-event metric should be included in guidance for NEPA studies.

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	Whisper Aero (FAA-2023-0855-4405) For years, the FAA has recognized DNL 65 dBA as the threshold of significant noise exposure, below which residential land uses are compatible. Nonetheless, the noise experience has evolved from what it was decades ago, when the 65 dB DNL limit was set. While the percentage of the population that is exposed to DNL 65 has decreased over time, the number of people expressing concerns about their exposure to aircraft noise is at an all time high, as was revealed in the 2021 Neighborhood Environmental Survey (NES) performed by the FAA. This study found that 70% of people subjected to a DNL of 65dB self-identify as 'highly annoyed', in contrast to the 12.3% originally estimated by the Schultz Curve developed in the 1970s and re-validated in 1992. This indicates that the way people experience noise today is changing, and that perhaps the 65 DNL threshold of significant noise exposure needs to be updated to better reflect that. Additionally, basing the 65dB DNL solely on annoyance overlooks the broader range of effects that noise can exert on individuals and communities. Single event or operational metrics, as defined in the FAA's 'Foundational Elements of Civil Aviation Noise' document, help fill gaps that the DNL noise metric is unable to address, and should be used in combination with the DNL noise metric to further guide NEPA and Land Use Thresholds. **City of Naples Airport Authority and City of Naples (FAA-2023-0855-4218)** The Part 150 Study process provides unclear timelines related to FAA review periods and often results in frustration for airport sponsors and their communities. For example, 14 CFR Part 150 does not provide a review period for the Noise Exposure Map determination. In order to avoid delays for the Noise Compatibility Program (NCP), a 60-day review period for FAA determination seems reasonable. The NCP does have a regulatory review period of 180 days due to coordination among multiple FAA lines of business. The issue with this review is that the FAA will not "accept" the Final NCP until it's been through an administrative review process. Presently, the Authority submitted the Final NCP in June, and it has still not been accepted by FAA to begin the 180-day review process, even though the FAA had the opportunity to review and comment on the Draft NCP prior to publication. Our community members and elected officials do not understand how FAA's "180-day review" could take more than a year, depending on how long the FAA reviews the report prior to formally accepting and issuing the Federal Register Notice beginning the official 180-day review.

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Noise Policy Development Process	**A4A, IATA, ACI, AAAE (FAA-2023-0855-4396)** Further, once such specific policy considerations have been determined, FAA must provide a robust cost-benefit analysis in order for the agency and industry to fully understand the potential economic impacts of such revisions. This cost-benefit analysis and consideration of economic impacts should be factored into FAA's decision-making process in determining the future direction of FAA's aviation noise policy, especially without any increase in federal financial assistance. In addition, if FAA develops a new policy, the agency must provide an opportunity for stakeholders to evaluate and comment on the policy, including any research and cost- benefit analysis that supports the proposal, before FAA initiates changes to orders, regulations, etc. The potential impacts on industry from a change in policy strongly warrant a thorough review and engagement process with affected stakeholders. **AOPA (FAA-2023-0855-3184)** Convene a joint FAA-Industry working group, to include AOPA, to facilitate the creation of the updated noise policy and subsequent outreach and education plans. **A4A (FAA-2023-0855-4402)** A4A has identified five questions FAA needs to address for A4A and other stakeholders to provide meaningful feedback on the CANP [Civil Aviation Noise Policy]. These include: What is under review, or more specifically, what is the scope of the Noise Policy Review (NPR) and how is the CANP defined? FAA has not clearly defined the noise policy (i.e., what specific policy or regulation is under review by FAA) by either accurate specific citation or substantive description. • What is the purpose of this process? FAA has not defined the purpose or intent of this review process and the language regarding goals is unclear, contradictory, and inconsistent. • What is the statutory authority under which FAA is proceeding with this regulatory action? There is an inherent conflict within the regulatory requirements of existing noise law between basing decision-making on annoyance versus health impacts that FAA should resolve or clarify. • What regulatory process is the FAA following? FAA has not outlined the process by which recommendations or decisions will be made available for public review and comment.

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	• How will decisions be made? FAA has not provided the basis or rationale for how FAA will amend or revise existing policies and guidance. It is unclear whether FAA's purpose under this Notice is to (a) develop ways to more effectively communicate changes in aircraft noise exposure, (b) re-consider all foundational elements of aviation noise policy, (c) focus on input regarding key metrics and thresholds, (d) determine how noise policy should be updated based on recent research, or (e) determine the information to be developed for decision-making purposes. If FAA intends to review all these aspects, the statement regarding "initial priority" indicates that FAA has developed an internal theory regarding what elements of noise policy should or will be prioritized for review, which should be shared with the public and the regulated community so that we may weigh-in accordingly. Provide results of policy analyses: FAA has asked stakeholders to provide policy guidance without providing any information on the consequences of policy recommendations. To provide effective guidance on the feasibility and reasonableness of various policy options, stakeholders must be able to evaluate the consequences of each policy option. FAA should provide detailed policy analyses, including cost-benefit analysis. Review of the history of the selection of DNL 65 as the impact threshold shows that it was selected as a reasonable balance between technical and economic feasibility. Policymakers still need to take both technical feasibility and economic reasonableness into consideration. FAA has not provided data on the economic impacts of any possible policy changes. For example, the cost of mitigation for a revised land use compatibility and/or NEPA impact threshold might have significant economic costs if FAA program eligibility is also modified. Any policy consideration must undertake a cost-benefit analysis. Further, any modifications to noise policy would need to consider ways of funding mitigation that would make implementation reasonably foreseeable. FAA is already years behind in providing mitigation funding under the AIP environmental set-aside, based on the current DNL 65 land use compatibility threshold. As just a single example, there are currently more than 27,500 eligible dwelling units and 89 non-residential noise-sensitive facilities (schools, churches, etc.) homes in the Port Authority of NYNJ recently approved Part 150 program alone; PANYNJ estimates the cost of this at $2.7B, approximately nine years of the total AIP environmental set-aside, assuming no other airport in the country would have access to AIP funding.

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	The FAA cannot raise community expectations that they will provide mitigation without reasonably identifying how those mitigation costs will be paid. There is an inherent tension within the regulatory requirements of existing noise law between basing decision-making on annoyance versus health impacts. Specifically, the Aviation Safety and Noise Abatement Act of 1979 (ASNA) requires the FAA to establish "a single system of measuring noise, for which there is a highly reliable relationship between projected noise exposure and surveyed reactions [emphasis added] of people to noise" which evolved into a de facto reliance on annoyance surveys, while the Noise Control Act of 1972 (NCA) directed the U.S. Environmental Protection Agency (EPA) to study the "implications of identifying and achieving levels of cumulative noise exposure around airports" due to Congress' determination that "inadequately controlled noise presents a growing danger to the health and welfare [emphasis added] of the Nation's population." Under the NCA, the EPA published the "Levels Document", which interpreted Congress' mandate to consider "health and welfare" to be defined as "complete physical, mental and social well-being and not merely the absence of disease and infirmity" and concluded that the land use compatibility threshold should be based on health effects and not merely annoyance. FAA should clarify how these factors drive decision-making. If it is annoyance, we submit that significant additional analysis needs to be completed before identifying a single metric and threshold; if it is health effects, we submit that it is premature for FAA to make a decision, as FAA's own research on health effects is still ongoing; if it is a combination of both, FAA should clarify how each effect is considered. The Levels Document required by the NCA [Noise Control Act], which established Day-Night Average Sound Level (DNL) 55 dBA (A-weighted decibel) as a noise level "requisite to protect the health and welfare with an adequate margin of safety" (which subsequently led to selection of DNL 65 dBA as the economically feasible impact threshold), was clear that criteria should not be based solely on annoyance, stating: The phrase "health and welfare" also includes personal comfort and well-being and the absence of mental anguish and annoyance. In fact, a considerable portion of the data available on the health and welfare effects of noise is expressed in terms of annoyance. However, "annoyance" is a description of the human reaction to what is described as noise "interference"; and though annoyance appears to be statistically quantifiable, it is a subjective reaction to interference with some desired human activity. From a legal standpoint, annoyance per se is not a legal concept. Annoyance expresses the human response or results, not its cause. For this reason, common law has never recognized annoyance as being a compensable injury, absent a showing of an interference with a personal or property right. Of the many

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	community surveys on noise which have been conducted, speech interference emerges as the most tangible component of annoyance, whereas sleep and other kinds of activity interference are important but less well-defined contributors. Thus, although it is important to understand the importance of annoyance as a concept, it is the actual interference with activity on which the levels identified in this document are based. Clearly outline its policy options: FAA has asked for specific input on metrics and thresholds of impacts but has not clarified what policy options are realistic. FAA should winnow down the policy options under consideration before asking for feedback. **ACI (FAA-2023-0855-4579)** Regulatory Impact Analysis - In the same way that the FAA requires airports to conduct benefit-cost analyses (BCA) for justifying federal investment in AIP-eligible capital improvement projects, we urge the FAA to conduct BCA reviews of any policy changes that are considered from this round of noise policy review. For example, a revised policy that changed the threshold of significance would result in costs that include a (at minimum): additional resources expended on 14 CFR Part 150 studies, and additional expenses required to create and maintain effective noise programs at additional airports. Alignment with funding sources: Airport funding is already extremely constrained, and airports should not be mandated to pay more for noise abatement and mitigation regardless of the outcome from the policy discussions without an adequate funding source. Sound Insulation eligibility - Communities may expect that changes in noise policy will be accompanied by expansions of residential sound insulation programs (RISPs). It is very important that the FAA understand the costs associated with such program expansions as well as what entities would be expected to bear them. AIP does not have sufficient funding to support an expansion of RSIPs beyond currently-defined noise thresholds.5 Additionally, in areas where sound insulation has gone beyond the 65 DNL, a high number of aircraft noise complaints are still filed. Accordingly, the effectiveness in treatments for resolving community concerns is not clear. The FAA needs to be clear whether its policy is based on annoyance or other health effects. The Aviation Safety and Noise Abatement Act of 1979 (ASNA) required the FAA to: “Establish a single system of

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	measuring noise, for which there is a highly reliable relationship between projected noise exposure and surveyed reactions of people to noise, to be uniformly applied in measuring the noise at airports and at the areas surrounding such airports". The FAA states that its reliance on DNL 65 is based on annoyance as a "surveyed reaction" (i.e., Schultz), but it is possible that other "reactions" could be considered, such as sleep interference. Indeed, the FAA's own threshold for sound insulation eligibility (Leq 45 dBA) relies on speech interference. Should the FAA decide to revise its Noise Policy, the Coalition urges the FAA to publish a revised Noise Policy in draft and seek and evaluate public comment before issuing a revised Noise Policy. Flexibility for the Future: Any new noise policy should be forward looking, minimize disruption, and not attempt to revise or undo previously issued Records of Decision or other FAA approvals based on current policy. Likewise, any new noise policy should minimize the need to revise, amend, or reconsider studies or projects ongoing at the time the new policy is issued. Airport sponsors and the Federal government have made considerable investments of time and treasury, and a change in policy should not jeopardize that investment by affecting the validity of already completed, or ongoing review and approval processes. **AAAE (FAA-2023-0855-4700)** Before FAA considers the Schultz Curve and NES findings, AAAE believes the agency needs to develop and propose a clearly defined outcome or goal on what the agency is trying to achieve as it considers updating its policies on noise thresholds. What would FAA consider a success through any such updates? Is FAA trying to address public annoyance and/or human health impacts from noise exposure? To what extent could such a goal be quantified, measured, and achieved? How could setting noise thresholds help meet these goals? We believe answering these types of questions is critical for FAA as it reviews and considers updates to its noise policies. Until FAA identifies a desired outcome, it is difficult for AAAE to opine on how FAA should consider the Schultz Curve, NES findings, or any other research when deciding whether to adjust the noise thresholds that are used during Part 150 studies and reviews of proposed airport development projects under NEPA. FAA and stakeholders must recognize that airports are resource constrained. While our members continuously strive to respond to community needs, there are financial limitations on what can reasonably be achieved. Incurring significant costs to address noise concerns may result in less funding for other important airport improvements and potentially reduce the benefits that the airport can offer its community. Noise concerns must be balanced against other priorities that the airport and their communities are trying to address, including enhancing safety and capacity to meet growing

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	demand. FAA should define its goal or intended outcome of the noise policy review and conduct further research on the impacts of any potential changes to decision-making noise metrics and thresholds used during Part 150 studies and NEPA reviews. We believe there should be a strong connection between the defined outcome of FAA's policies; any research conducted; and any proposed change in noise metrics or thresholds. Before FAA considers the Schultz Curve and NES findings, AAAE believes the agency needs to develop and propose a clearly defined outcome or goal on what the agency is trying to achieve as it considers updating its policies on noise thresholds. What would FAA consider a success through any such updates? Is FAA trying to address public annoyance and/or human health impacts from noise exposure? To what extent could such a goal be quantified, measured, and achieved? How could setting noise thresholds help meet these goals? We believe answering these types of questions is critical for FAA as it reviews and considers updates to its noise policies. Until FAA identifies a desired outcome, it is difficult for AAAE to opine on how FAA should consider the Schultz Curve, NES findings, or any other research when deciding whether to adjust the noise thresholds that are used during Part 150 studies and reviews of proposed airport development projects under NEPA. **Nevada Department of Aviation (FAA-2023-0855-3704)** First, any new noise policy should clearly define the purpose of the policy and what the FAA regulatory goals are. The focus of the questions posed in the Notice seems to be on the technical issues regarding noise metrics and thresholds. However, selecting the appropriate metrics and/or threshold necessarily depends on what one is trying to measure. And in turn, what one should measure depends on what aspect of aircraft noise is of regulatory concern. Without a clear statement of what aspects of aircraft noise, the FAA intends to address in the noise policy, it is very difficult to provide meaningful comments on technical issues like noise metrics and thresholds or on more fundamental questions of how best to address those issues. Second, any new noise policy should clearly define the roles and responsibilities of the different stakeholders - including the FAA, aircraft operators, airport operators, local governments, and residents. Third, any noise policy should acknowledge the many billions of dollars of investment in airports by federal, state, local, and private entities and assure that any new noise policy does not jeopardize that investment by imposing undue costs on stakeholders or unduly limiting airport operations. Specifically, the FAA's policy should not set noise standards that impose substantial costs, including potential liability for noise-related damages claim, unless the FAA's

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	policy provides funding and/or immunity to limit those costs. Similarly, the FAA's policy should not allow for the imposition of noise abatement measures that would limit aircraft operations and impair the ability of airport operators to meet the demand for air transportation. FAA's policy should strike a balanced approach to assure that the policy does not have any unintended consequences that might undermine the purpose of the substantial public and private investment in airport capacity to provide public access to air transportation. Implicit in the FAA's questions, and the Neighborhood Environmental Survey itself, is the notion that "annoyance" should be the basis for making decisions regarding noise impacts, and that the new Noise Policy should focus on setting thresholds that that reflect some level of "annoyance" deemed to be unacceptable and/or choosing metrics that best measure meaningful levels of annoyance. CCDOA strongly disagrees with the notion that annoyance alone provides an adequate basis for making decisions about noise. Annoyance is, by its nature, highly subjective and may reflect a wide range of factors that are only tangentially related to actual noise exposure levels. As the EPA explained decades ago, " annoyance... is a subjective reaction to interference with some desired human activity." U.S. Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, at 10 (March 1974) ("Levels Document"). The kinds of interference commonly associated with aircraft noise, which can lead to annoyance, include speech and sleep disruption, interference with education, disruption of outdoor activities, and adverse health impacts. But "annoyance" can reflect a number of factors that are not related to noise exposure levels: "non-level factors, such as attitude toward the noise source and local conditions, may influence an individual's reaction to activity interferences." Levels Document at 30. A regulatory scheme that focusses on reducing annoyance in an estimated percentage of the population leaves a significant percentage of the population highly annoyed without necessarily addressing the impacts that cause the " annoyance." Although annoyance is certainly a relevant general consideration, particularly in order to assess whether there is any noise problem at all, annoyance alone does not provide insight into how noise exposure levels actually impact people and therefore does not provide a meaningful guide to how best to deploy resources to reduce those impacts. As the EPA explained "the selected indicator of environmental noise does not correlate uniquely with any specific effect on human health and performance. Levels Document at 12.

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	The FAA's Noise Policy should address the range of tangible, objective impacts that noise exposure has on people, including speech and sleep disruption, interference with education, disruption of outdoor activities, and other adverse health impacts. The noise policy should correlate those impacts to specific noise exposure levels so that the FAA and airport sponsors can evaluate how best to prevent or mitigate the adverse impacts of aircraft noise. That is consistent with the FAA's current interior noise level standard for AIP eligibility for acoustic treatment, which is set at 45 DNL because that level was determined to prevent interference with speech. **San Antonio Aviation Department (FAA-2023-0855-4428)** We support the review and improvement of the FAA's Aircraft Noise Policy on a periodic basis (at least every 10 years) as aviation technology and community experience evolve over time. **Raleigh Durham Airport Authority (FAA-2023-0855-3758)** The Authority strongly urges FAA to adhere to the principles and procedural requirements outlined herein before making any policy changes that may have a significant negative impact on airports and other stakeholders. FAA's review of its policies on decision-making noise metrics and thresholds is premature and inappropriate because FAA needs to define its goal or intended outcome and conduct further research on the impacts of any potential changes. In its request for comments, FAA indicated that the agency initiated the noise policy review because the public -after reviewing results from the NES - encouraged a revision. At the same time, FAA has stated that it "does its best to base all policy on science. law, and data". Nothing in FAA's noise policy review documents, however, explains what the agency is trying to achieve as it considers updating its policies on decision-making noise metrics and thresholds. How has FAA defined its intended outcome with the review and potential updates? What would FAA consider a success through any such updates? The Authority is concerned that FAA has initiated its review without answering these fundamental questions, or at the very least clearly explaining them to industry. In addition, FAA has not explained how ongoing research initiatives and changing its policies on decision-making metrics and thresholds would help the agency reach its undefined outcome or goal. The Authority strongly believes that potential updates to FAA policies must be based on science and data, and the consideration of impacts that may result from such changes. As acknowledged by FAA, however, the agency is still conducting a variety of research into

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	the impacts of aircraft noise exposure. FAA needs to better understand the factors contributing to an increase in aircraft noise annoyance and conduct this additional research before considering any proposed policy changes. The Authority believes there should be a strong connection between the defined outcome of FAA's policies, the research that FAA has conducted or will conduct, and any proposed change in the metrics or thresholds. Because this information has not been articulated or provided, a noise policy review and any proposed changes is premature and inappropriate. Furthermore, the FAA should not propose any changes to decision-making noise metrics and thresholds in the absence of: (a) a comprehensive economic or benefit-cost analysis; and (b) federal funding to offset the increased costs that airports would be forced to incur. If FAA decides to update its noise policies the agency must provide an opportunity for stakeholders to evaluate and comment on the proposed changes, including any defined outcomes, research, and benefit-cost analysis supporting the proposal.
Communication	**A4A, IATA, ACI, AAAE (FAA-2023-0855-4396)** Community engagement is critical to successful noise management, and any revisions to existing noise policy should place significant emphasis on improving stakeholder engagement and providing further transparency to local communities. **AAAE (FAA-2023-0855-4700)** FAA needs to ensure its staff, especially within the Air Traffic Organization (ATO), is working closely with airports to create consistent, proactive messaging for local communities on noise-related issues. This includes partnering with airports to develop and implement engagement strategies and having consistent FAA representation that understands, listens, and tries to respond to airport community concerns. Addressing aircraft noise-related concerns in any future FAA policy should remain a shared responsibility among federal, state, and local governments, airport operators, airline and aircraft operators, and local community members in accordance with the 1976 “Aviation Noise Abatement Policy.” This framework has played a major role in drastically reducing the number of people exposed to significant aircraft noise.

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	Centennial Airport (FAA-2023-0855-4409) The FAA needs to heavily focus on communicating with the community changes in procedures, traffic routes, etc. early in the process. A productive way to do this is to have FAA representation at local Noise Roundtables, which has been proven a struggle to do at Centennial Airport. This can be helpful for basic questions raised by the community and keep communication from Airports to the community accurate and consistent **Nevada Department of Aviation (FAA-2023-0855-3704)** A critical aspect of any communication regarding changes in noise exposure is gaining a thorough understanding of specific concerns of the community that will be affected by the proposed change in noise exposure. One persistent criticism of the 65 DNL standard is the perception that it is "one-sizefits-all" and does not accurately describe how noise affects any specific individual, neighborhood, or airport. It is imperative, therefore, that the FAA tailor its presentations to the specific concerns of each community. This is particularly important because concerns about noise are often influenced by factors beyond raw noise exposure levels, including ongoing local controversies, recent changes in noise exposure levels and patterns, and the general relationship between the airport sponsor and the local community. All relevant FAA lines of business to work collaboratively with each other, aeronautical users, airport sponsors, and communities to address noise issues through a defined process with a specific objective and timetable before new flight procedures are implemented. **Joby Aviation (FAA-2023-0855-4369)** FAA should review the gaps mentioned at the beginning of this response – new land use in existing noise vs new noise in existing land use, and response based on aviation noise sources only or also considering ambient noise. Engaging the public, as with this proceeding, goes a long way toward providing evidence that concerns are being addressed. **Whisper Aero (FAA-2023-0855-4405)** These communities, which were not traditionally exposed to significant aircraft noise, will suddenly find themselves impacted by the arrival of AAM operations or expanded commercial services. Proactively engaging with and addressing the concerns of newly affected communities is essential

Area	Public Comments
	Communication with communities that may not currently experience significant noise but will likely be affected by AAM operations in the future is paramount. The FAA should proactively engage in early and transparent communication with these communities to ensure they are well-informed about upcoming changes in noise exposure. In addition to traditional communication methods, such as public meetings, online resources, and direct outreach, the FAA should consider innovative tools like auralization. Auralization involves recreating the proposed noise within the context of the existing soundscape. This technique goes beyond numerical metrics and provides communities with a tangible experience of the type of noise they will be exposed to before it happens. Auralization can be a powerful tool for enhancing community understanding of the potential noise impact of AAM operations. By utilizing such advanced communication methods, the FAA can help these communities grasp the evolving aviation landscape, make informed decisions about land use and development, and actively participate in discussions about noise mitigation measures.
Policy for Different Vehicle Types/Operation Type	**ALPA (FAA-2023-0855-1706)** It is ALPA's belief that there should be an equivalent level of acceptable noise that applies to all vehicular operation in the NAS and FAA should not allow for the creation of different noise standards that would apply only to certain operations in the NAS. **Joby Aviation (FAA-2023-0855-4369)** Lacking a mandate for regulation of operational noise exposure, the FAA should continue to refine its guidance to airports, operators of aircraft and local government to support their (and not the FAA's) decision-making. Both terminal and enroute operations are important. Communities have concerns about aviation noise in two areas: actual interference in daily activities, which can be measured, and noise as a proxy for other concerns such as safety, privilege, and environmental justice, which is more difficult to estimate. The FAA does have a mandate to "foster air commerce." To advance the state of the art, the FAA should lead the way in helping local communities properly assess the environmental impact of aviation noise sources big and small, however they are used in the community. Development, validation, and verification of operational noise metrics should follow the steps outlined above, including human surveys and correlation of metric results with those surveys. Special attention should be paid to recent developments in the understanding of human perception of sound and response to noise. Furthermore, the introduction of AAM aircraft and the potential expansion of commercial aviation to new locations raise an important concern: the emergence of new communities affected by aircraft noise. In

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	particular, small airports that were previously used predominantly for General and Private aviation purposes may experience a substantial increase in noise levels when commercial services are introduced. These communities, which were not traditionally exposed to significant aircraft noise, will suddenly find themselves impacted by the arrival of AAM operations or expanded commercial services. Proactively engaging with and addressing the concerns of newly affected communities is essential.
Noise from Emerging Vehicle Types, Supersonics, etc.	**ACI (FAA-2023-0855-4579)** Based on experiences with aircraft noise, ACI-NA expects that communities will have reactions to all of the contemplated future vehicle types noted in the FAA's question. Accordingly, future noise policy will need to consider all of these aircraft and should take into account empirical data associated with these new entrant vehicles and the community experience/reaction to their operation. **Commercial Drone Alliance (FAA-2023-0855-4104)** Given the benefits of UAS to the environment, including related to noise, the FAA should streamline and improve its UAS-related environmental review processes under NEPA. Despite the best efforts of some at the FAA, the agency's environmental review processes related to UAS have lacked resourcing and regulatory clarity, hindering industry's ability to scale and, paradoxically, impeding the realization of environmental benefits. To aid the scaling of new technologies, we urge the FAA to expedite its development and publication of UAS-specific NEPA guidance and implementation procedures for UAS operational approvals, including programmatic approaches to enable scaled operations where operating parameters are similar. In developing these procedures, the FAA should account for the reduced noise impact associated with industrial inspection operations, particularly over closed- or restricted-access sites. We further urge the FAA to consider additional categorical exclusions based on previously prepared and finalized environmental assessments completed by the agency. Clear, right-sized procedures will help UAS manufacturers and operators and the communities they serve assess the potential environmental impacts, including noise impacts in different operating contexts, such as limited scale operations in small communities, more broadly scaled drone delivery operations, and operations over industrial sites closed to the public with high levels of ambient noise. In addition to streamlining noise-related approval processes to enable scaled UAS operations as outlined above, the Commercial Drone Alliance (CDA) urges the FAA, at a minimum, to ensure that any revisions to the Noise

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	Policy do not adversely impact UAS operations or allow noise considerations to become a barrier that delays UAS certification and related approval efforts. The FAA currently uses the Yearly Day Night Average Sound Level ("DNL") as the primary decision-making metric for evaluating noise. At this time, the CDA supports the FAA's continued use of the cumulative DNL noise metric, which has afforded the FAA the ability to apply a uniform metric to evaluate noise from all types of aircraft and operations. While individuals and communities may have different tolerances for or sensitivities to aviation noise, it is reasonable for the FAA to apply a standard metric when assessing noise to ensure equal application of the Noise Policy. Agency actions affecting aviation noise are appropriately informed by the FAA's uniform noise measurement system, one that UAS companies have operated under since the industry's inception. The CDA is not opposed to FAA's examination of companion or alternative noise metrics, provided they do not adversely impact the UAS industry or hold UAS aircraft to more stringent noise thresholds as compared to other aviation operations. The CDA also supports continued use of 65 DNL as the significance threshold that the FAA applies to evaluate noise impacts as part of the agency's NEPA environmental review process. To date, the FAA has completed 18 environmental assessments ("EAs") in connection with UAS approvals, including: To the extent the FAA considers alternative metrics or modifications to the significant noise impact threshold, the CDA urges the FAA to ensure that such policy changes do not disproportionately impact the UAS industry. **Small UAV Coalition (FAA-2023-0855-4378)** DNL, the FAA's current standard noise metric, has worked well for decades, and has been applied to all aircraft types and models, as well as to all environments. The Coalition contends that DNL remains the best available noise metric and does not believe there is sufficient support in the literature to abandon DNL for a new alternative. Should the FAA decide to revise its Noise Policy, the Coalition urges the FAA to publish a revised Noise Policy in draft and seek and evaluate public comment before issuing a revised Noise Policy. **First Person View Freedom Coalition (FAA-2023-0855-1520)**

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	Considering the type of operations and the time of day these operations take place, most recreational sUAS operations take place during the day. This reinforces the continued use of a DNL metric for recreational operations. First Person View (FPV) Freedom Coalition recommends the FAA consider the additional segmentation under small UAS of part 107 for general flight operations and part 107 and part 107 or Certificates of Authorization for Public Safety operations. **Whisper Aero (FAA-2023-0855-4405)** The FAA should continue to require noise certification as part of the type certification of all aircraft (manned or unmanned) used for commercial applications. As new aircraft configurations emerge in the AAM space, including those with innovative propulsion systems like electric ducted fans, it is especially important that their noise be measured and restricted fairly as a function of their weight, propulsion type, and operating category. In the future, it might be necessary to eventually add a new subsection to Part 36 catering to those aircraft to ensure comprehensive noise regulation and mitigation. In the meantime, certifying vehicles that do not easily fall into existing categories using Rules of Particular Applicability is acceptable. The EPNL metric used so far to evaluate the effects of airplane noise on human beings is suitable and we recommend the FAA continue its use. All elements of aircraft operations (e.g., en-route, takeoff, landing) are important and should be evaluated by the noise metric. As AAM aircraft become certified and begin to be operated, it is essential to recognize that their mission profiles might significantly differ from traditional fixed-wing aircraft. These new profiles could involve shorter takeoff and landing distances, fully vertical takeoffs and landings, steeper climbs and descents, and lower cruise segments. These operational differences introduce unique noise challenges that demand careful consideration as noise policy is reviewed and updated. **Embraer S.A. / Eve (FAA-2023-0855-3474)** For this reason, a learning period is necessary after the entry into service of eVTOLs to collect data and to quantify the long-term impact of technology on the community. Public acceptance will increase as expected benefits are realized from UAM operations, including positive non-acoustic factors such as air transportation flexibility, travel time, adoption of sustainable aviation and accessibility. Acquiring knowledge of different eVTOL configurations and operational procedures is important for technology development.

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	OEMs are considering existing PART 36 test procedures and requirements as the basis for noise certification, following the current FAA Advanced Air Mobility Implementation Plan. Potential new metrics, proposed through a regulation discussion, should not impact the vehicle noise certification campaign, including demonstration requirements and data provision activities. Any possible changes must be made in accordance with the International Civil Aviation Organization - ICAO DOC 9911 procedures. **Joby Aviation (FAA-2023-0855-4369)** Several entities have proposed new ecosystems involving urban air mobility vehicles, which are characterized by low emissions both in noise and other pollutants. The FAA might consider definition of a new class of "vertiport" that is essentially a heliport with emissions restrictions to facilitate the development of local policy around these facilities. Existing sound level measurement protocols are not adequate to capture the acoustic impact of low frequency events, although there may be some clues in studies that have been done on community response to military weapons practice, and wind turbines. NASA has recently conducted a series of tests of "low boom" aircraft which should provide insight into response to these sounds. There is guidance in the ANSI/American Standards Association (ASA) 12.2 standard about low frequency sounds that can cause rattle or vibration indoors and FAA might consider adopting this guidance.
Research Recommendations	**A4A (FAA-2023-0855-4402)** FAA has not provided any policy analyses that suggest that any of the other metrics that FAA has suggested as alternatives or supplements would provide meaningfully different decision-making processes and/or science-based results. FAA could also evaluate noise metrics that are not available in existing tools. FAA's own research has suggested that there are other measures that better predict annoyance, e.g., loudness: From the psychoacoustic tests conducted it was found that loudness is the most dominant factor and tonalness is the next dominant factor in annoyance due to the aircraft noise. Roughness was found to contribute slightly to the annoyance. The importance of tonalness and roughness increased when loudness did not vary very much. Given the importance of tonalness in annoyance, it is important to include a measure of tonalness in metrics used to quantify environmental noise impact on communities. None of the metrics or models that are currently used to quantify aircraft noise annoyance incorporate measures of loudness, tonalness, and roughness together. A Modified Psychoacoustic Annoyance model developed in this research includes effects of loudness,

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	tonalness, and roughness together. The Modified Psychoacoustic Annoyance Model performed very well when compared to the performance of other annoyance models or metrics that are currently used for quantifying aircraft noise annoyance [emphasis added]. This hypothesis has not been tested in a real environment, or against current annoyance data, i.e., NES. A4A acknowledges that this is a significant undertaking, but FAA should examine dose-response relationships using such models. In short, it is not appropriate to invite recommendations of changes to noise metrics without data showing a reliable relationship. The FAA should detail if the dose-response relationship for the proposed alternative or supplemental metrics provides a better statistical fit to the data. Complete its noise effects research before finalizing policy changes: A4A believes it is premature for FAA to change noise policy before completing important research that was specifically designed to inform policy. **ACI (FAA-2023-0855-4579)** Use of objective, peer-reviewed research as a foundation: Any changes to federal policy on noise must be based on the latest science with strong correlation between aircraft noise and the specific area of concern. Results from the underlying FAA research projects should be made public in a usable form. ACI-NA recommends that the FAA conduct the following research, and make that research available to stakeholders, as it considers changes to aircraft noise policy: • While "annoyance" appears to be correlated to DNL, the FAA should further research whether there is a more precise cause of such annoyance, such as the frequency of overflights, changes in flight patterns, the loudness of individual overflights, or some other acoustic or non-acoustic factor(s). • Similarly, the FAA should further research the extent to which non-acoustic factors, such as demographic and socio-economic factors, vehicular and other non-aircraft noise, recent airport or aviation-related controversies, air emissions, aviation incidents, may play a role in levels of annoyance, as suggested by recent research. • The FAA noted in the NES Federal Register Notice that aircraft noise generally results in higher levels of annoyance than other sources, including ground transportation. Further research is appropriate to understand why that is, and why people indicate high levels of annoyance with aircraft noise that is far quieter than many other sources of noise that people accept and, in some cases, choose.

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	• The feasibility of phasing out noisier aircraft and accelerating introduction of quieter engines and airframes. • Further integrating consideration of noise impacts into the design and implementation of flight procedures and routes that are not limited to just geographic location (performance, speed, climb and descent rates, etc.). • The FAA noted in its February 22, 2021 presentation that "noticeable" flight event characteristic, (i.e., the number of events having a maximum sound level at or above 50 dB, NA50Lmax), demonstrated marginal significance and should be investigated further because of the high correlation of NA50Lmax with DNL. ACI-NA believes that research regarding the specific kinds of noise events that cause higher levels of annoyance will yield important information to guide future policy development. • Additional research should include determination of quantifiable impacts of aircraft noise – such as health impacts, sleep disturbance, learning interference, life expectancy, property values is necessary to put the "annoyance" data in context and also to identify critical environmental impacts that new policies can (and should) address. ACI-NA understands that the FAA is currently pursuing a number of research projects related to aircraft noise, several of which have been underway for a number of years. ACI-NA would like to understand whether there are ways in which the studies could be accelerated with increased funding or other methods. The acceleration of ongoing studies relates to our request to understand the road map to updating policy. As pieces of research similar to the NES are released, our airport members will be required to manage continued uncertainty while waiting for policy updates. • Research on the change in both noise and operational metrics correlated to the change in annoyance to aid in better understanding the significance of a change. • In the Federal Register NES, the FAA stated that "Recent academic research and internal assessments have raised questions about the benefits of sound insulation relative to the costs." ACI-NA's members would like to learn more about the internal assessments that the FAA has conducted and conclusions reached in those assessments. Further research on the cost-benefit of noise mitigation measures may also help inform future aircraft noise policy. • ACI-NA recognizes the likelihood of including benefit-cost analyses as a means to aid in deciding appropriate policy decisions. Accordingly, we recommend that the FAA conduct research defining an appropriate BCA cost effectiveness methodology that is consistently applied in aiding decision-making related to policy. ACI-NA also recommends the findings be documented and coordinated with stakeholders and results be made available to the members. • The Airport Cooperative Research Program has undertaken several research road maps, including an Environmental Research Road Map4. There are several noise items identified in that road map as areas

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	where further research is needed, which we would highlight and request the FAA consider adding to their research portfolio: ○ Assessing Community Annoyance of Noise from Unmanned Aerial Systems ○ Best Practices for Effective Sound Insulation ○ Best Practices for Stakeholder Engagement and Assessment and Reporting on Multiple Noise Metrics – We would be particularly interested if the dataset from the NES would provide new areas of knowledge related to noise metrics • As noted in the Federal Register notice, the FAA has continually developed its high-fidelity modeling capabilities. As AEDT becomes more and more complex, it becomes more of a "black-box" to community members. Research on the soft skills of how to explain the model and make public its results would be helpful to our members. Any change in metrics or threshold should be based on empirical data measuring the impacts of noise on health and other objective impacts, such as sleep disturbance, speech interference, learning interference, or other health impacts. Levels of annoyance are subjective and are not sufficient to provide the sole basis for revising the national noise policy. Any new policy must be based on reliable, peer- reviewed research regarding how aircraft noise affects people and communities. ACI-NA believes that any new noise policy should be based on a clearly defined set of goals or objectives founded on objective, empirical factors. While the NES is an important first step to providing relevant information, it is only the first step in reviewing the need to update policy; the process should include additional research results on the health impacts of aviation. Not having the empirical data to provide the FAA, ACI-NA supports the ongoing, and future, efforts by the FAA to conduct research and develop the empirical data needed to inform any changes to aircraft noise policy. **GAMA (FAA-2023-0855-4100)** More psychoacoustic research may be helpful to improve the understanding of annoyance in the long-term to reduce complaints and restrictions. **Port of Seattle/Seattle-Tacoma International Airport (FAA-2023-0855-3849)** For example, if the FAA transitioned to a 55 DNL with a higher penalty for evening noise plus a frequency/concentration metric and a different standard for near- airport schools, how many more people would be within the contour, and how many more buildings would be eligible for sound insulation?

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	In our March 2021 comment letter on the NES, we stated that "[i]t may very well be that the FAA already has all of the information needed to make noise policy decisions after completing the comprehensive literature review that we suggest above, in which case we encourage timely and decisive action on policymaking." To that end, while we fully support additional and ongoing research in the ways listed in this question, we do not believe that such an investigation should preclude near-term action. **Nevada Department of Aviation (FAA-2023-0855-3704)** Accordingly, CCDOA urges the FAA to conduct the studies necessary to (1) identify the kinds of human activities that would be disrupted by aircraft noise and (2) correlate each such impact to a specific noise exposure level in order to provide empirical data to guide the FAA, airport sponsors, local land use planning authorities, developers, and of course the general public, in making decisions that might depend on noise exposure levels. It would be most helpful to provide that co1Telation for each kind of health impact by showing the magnitude of impacts by noise contour, sta1iing at the contour level the FAA ultimately decides to be the lowest contour of significance, but at least down to the 60 DNL contour. FAA should clearly and firmly establish a collaborative partnership between members of the airport authority and the FAA to ensure that the FAA accurately and effectively communicates how operational changes will affect noise exposure to impacted residents and what those impacts will mean. This includes but is not limited to discussing and implementing recommended actions and plans from subject matter experts from the airport authority. **Joby Aviation (FAA-2023-0855-4369)** Joby believes that different noise metrics will be required in different circumstances, because people's sensitivity to noise varies with the environment. Once again, we don't think we can point to a single new metric that will solve the problem, rather, we would suggest the process of research, test and refinement, both to find the most applicable metric and threshold, and to support messaging about having done so. Other national aviation authorities have addressed noise from small UAS and rather than adopt its own guidance, might provide references to those metrics and thresholds established by the European Community16, EASA17 and ISO/DIS 5305 (under development). The European Community document, in particular, establishes a product labeling

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	agenda for public notification, which then establishes a means for local authorities to implement regulations about the maximum noise level small UAS may emit in public spaces. **Wing Aviation LLC (FAA-2023-0855-4433)** Concerns regarding excessive noise emissions from drones have not been frequent or persistent in Wing's experience of successfully completing over 350,000+ flights worldwide, in predominantly densely populated areas, with widespread customer interest and satisfaction. In fact, in the final report for Wing's FAA noise certification test in 2021, the noise emissions from the aircraft at the standard height did not sufficiently exceed the ambient noise. As a result, the altitude for certification testing had to be lowered to 200 feet AGL, and the supplemental flyover series was lowered to 100 feet AGL from the standard 250 feet AGL height target altitude. The FAA (with input from DOT) would benefit from conducting additional research comparing noise emissions from drones versus various forms of ground transportation.

Appendix G: Excerpts from Consultants

This appendix encompasses key excerpts from the comments submitted by the organizations listed above. The passages included are quotes pulled directly from the comments, and they are representative of other similarly worded points. Due to space constraints, the table below may not include an excerpt from each of these organizations, but their general ideas are represented. There are nine umbrella areas included in the table to organize the excerpts included: Decision-Making Metric, Thresholds, and Supplemental Metrics; NES and Schultz Curve; Health Impacts and Concerns; NEPA/Part 150/Land Use/Mitigation; Noise Policy Development Process; Communication; Policy for Different Vehicle Types/Operation Type; Noise from Emerging Vehicle Types, Supersonics, etc. and Recommended Research.

Area	Public Comments
Decision-Making Metric, Thresholds, and Supplemental Metrics	**Coffman Associates (FAA-2023-0855-4041)** We believe two interrelated factors have reduced the effectiveness of the DNL noise metric. First, loud aircraft noise events, such as those resulting from Stage 1 & 2 aircraft, tend to dominate the DNL noise metric calculation. When these loud aircraft noise events are no longer present, DNL noise exposure contours tend to shrink substantially and remove portions of the community that still believe they are significantly impacted. Second, the perception of what constitutes a significant aircraft noise impact has evolved with the introduction of quiet aircraft noise technology and phaseout of older/louder aircraft. The recurrence rates of aircraft noise events by concentrating operations and traffic pattern activity over a defined corridor appears to be a major contributing factor in overall annoyance and needs to be addressed in future FAA noise policy. We believe the term “supplemental noise metrics” needs to be dropped from future FAA policy. Providing noise metrics without context or impact criteria generally does not provide a benefit to the concerned citizen who is impacted by aircraft noise. As previously stated, more noise metrics for the assessment of aircraft noise impact and the decision-making process need to be added to the noise policy toolbox. **Air Experts Consulting (FAA-2023-0855-3729)** The Decision making metric should be developed by another agency – perhaps EPA – with FAA a Stakeholder along with other parties, including residential communities. A standardized and understandable method of measuring noise – NOT DNL – should be used to ensure all parties understand the compare impact of the operations.

Area	Public Comments
Neighborhood Environmental Survey and Schultz Curve	**Coffman Associates (FAA-2023-0855-4041)** The Neighborhood Environmental Survey results show a higher percentage of people who self-identify as "highly annoyed" by aircraft noise across all DNL levels studied in comparison to the Schultz Curve.
Health Impacts and Concerns	*There were no recommendations related to this area identified in the comments made by organizations that fall into this group.*
NEPA/ Part 150/ Land Use/ Mitigation	**Coffman Associates (FAA-2023-0855-4041)** Finally, we believe some of the requirements for the preparation of 14 CFR Part 150 noise compatibility studies need to be refreshed to make better use of technology and how the public consumes information. For example, the 1″ = 2,000′ map scale requirement is no longer valid because of digital availability and capabilities. We suggest conducting a survey of both airport sponsors and consultants on updating outdated requirements and providing enhancements to 14 CFR Part 150 to take advantage of technology and lessons learned. **Air Experts Consulting (FAA-2023-0855-3729)** Compliance with FAA Part 150 Noise studies should not be voluntary.
Noise Policy Development Process	*There were no recommendations related to this area identified in the comments made by organizations that fall into this group.*
Communication	**Coffman Associates (FAA-2023-0855-4041)** One comment we often hear during public meetings is, "whose responsibility is aircraft noise?" For example, when a resident calls an airport sponsor about an overflight, there is an exchange of information about how an airport operates, why it operates the way it does, and who controls aircraft. When that resident learns that an airport sponsor is not in control of an aircraft after takeoff, they want to know who they should call to address their concern; the sponsor answers that the FAA is responsible for aircraft airspace. The resident calls the FAA and is told to call the airport sponsor to file a noise complaint. This results in a very frustrated resident. We suggest adding a best practices or guidance document that better defines roles, responsibilities, and communication between the airport sponsor, the FAA, and residents/organizations/groups concerned about aircraft noise issues.

Area	Public Comments
	Community members are very critical of the DNL/CNEL methodology of dividing an average day's number of aircraft operations over a 24-hour period. While very loud aircraft noise events can dominate DNL/CNEL metric calculations due to the logarithm structure of noise energy calculation, the public perceives that these loud events are being minimized by averaging them over time. We believe using events above a specified threshold would be more relatable than averaging noise events over time. Transparency and non-political by government agencies is key to gaining public support. The public should be identified as "Key Stakeholders" and directly involved in planning and approving use of all vehicles. A standardized and understandable method of measuring noise – NOT DNL – should be used to ensure all parties understand the comparative impact of the operations.
Policy for Different Vehicle Types/Operation Type	*There were no recommendations related to this area identified in the comments made by organizations that fall into this group.*
Noise from Emerging Vehicle Types, Supersonics, etc.	*There were no recommendations related to this area identified in the comments made by organizations that fall into this group.*
Research Recommendations	**Coffman Associates (FAA-2023-0855-4041)** We believe a comprehensive look at all auditory and non-auditory effects should be considered for this noise policy update. We suggest adding categories to the land use compatibility table based on available research and funding focused research on areas that do not have sufficient information for these effects.

Appendix H: Excerpts from Individuals

This appendix encompasses key excerpts from the comments submitted by individuals. The passages included are quotes pulled directly from the comments, and they are representative of other similarly worded points. Due to space constraints, the table below does not include an excerpt from every individual, but their general ideas are represented. There are nine umbrella areas included in the table to organize the excerpts included: Decision-Making Metric, Thresholds, and Supplemental Metrics; NES and Schultz Curve; Health Impacts and Concerns; NEPA/Part 150/Land Use/Mitigation; Noise Policy Development Process; Communication; Policy for Different Vehicle Types/Operation Type; Noise from Emerging Vehicle Types, Supersonics, etc. and Recommended Research.

Area	Public Comments
Decision-Making Metric, Thresholds, and Supplemental Metrics	**Mary Beth Moser (FAA-2023-0855-4581)** Question 5a: Yes, different noise metrics should be used for decision making in different circumstances. Question 5b: The "Time Above Ambient" metric should be included. This metric provides the following information that is not included in DNL: 1) The ambient noise level in the impacted location, 2) The number and length of unique noise events for each day, 3) The time span between these unique noise events. This "Time Above Ambient" metric should be employed by the FAA in non-urban and rural locations that are under approach and departure paths to/from nearby airports. In these locations the air traffic is at lower altitudes and is changing configurations. This results in significant noise fluctuations from the local background noise levels. This metric should also be employed in rural areas under all flight paths, especially in noise sensitive areas such as national and state parks and wildlife refuge areas. **Richard Jepsen (FAA-2023-0855-0436)** I wish you to consider retiring the limited 65 decibel Community Noise Equivalent Level (CNEL) metric you currently use to evaluate noise impacts near airports. I think you will agree that the noise from aircraft is different than other ambient noise issues like highways or music festivals where the noise is relatively continuous over a long period of time. I ask that you consider a Single Exposure Level (SEL) measurement to describe aircraft noise in addition to (or instead of) the Day-Night Average Sound Level (DNL) and CNEL that is currently employed. The DNL/CNEL measurements are inaccurate if not completely invalid metrics for determining annoyance, because both measure average noise. Using a Day/Night average means that loud, highly disruptive, and piercing noises that are periodic or of short duration don’t move the needle of the DNL/CNEL metrics, even though the periodic overflights create obnoxiously loud and disruptive noise for the seconds of overflight of a particular home or business. Also please consider that the FAA rules on takeoff routes unnecessarily cause planes from OAK to fly over more homes and create noise disturbances while doing little to make the skies safer for aircraft. Finally, consider a curfew on private jet

Area	Public Comments
	overflights, from the OAK North Field directly over most of Alameda after the evening hours. Those flights stop all activity in our homes as they are extraordinarily loud. This was not evident for the first 15 years we lived here, but something in your rules has changed, or your rules have not kept up with the explosion of private jet aircraft use. **Richard Rotruck (FAA-2023-0855-3936)** Question 5a: Yes. Question 5b: The DNL metric is inadequate for non-urban areas under approach and departure flight paths in the vicinity of an airport; especially areas impacted by NextGen RNAV. DNL is focused on aggregate noise energy in locations in close proximity to an airport. DNL does not incorporate, as a baseline, the ambient noise in the impacted location. DNL does not address multiple concentrated sequential increasing then decreasing noise events that occur over numerous times during a full 24-hour period. The duration and frequency of these noise events are not included in DNL. A superior metric for these locations is "Time Above Ambient". This metric addresses the DNL deficiencies specified above. This metric should be used for non-urban areas near airports that have low ambient noise levels. This metric should also be used in "quiet settings" such as national parks and wildlife refuges.
Neighborhood Environmental Survey and Schultz Curve	**Timothy Z (FAA-2023-0855-1928)** Comments on NEPA and Land Use Noise Thresholds: The results from Neighborhood Environmental Survey suggest that Schultz Curve is no longer a reasonable measure for noise exposure. It is important to recognize that the Schulz Curve was generated from social surveys dating back to 1978, which is 45 years old. Airplane operation frequency has increased dramatically over this time, and the established relationship between DNL and population annoyance may have changed significantly and therefore need to be revised. Relying solely on the DNL as a noise metric proves insufficient, as it fails to address the intensified noise concentration brought about by increased flight frequencies. The existing threshold of 65 dB for determining "normal compatibility" is thus constrained and outdated. FAA should adopt new metrics that combines cumulative and single-operation metrics, such as CNEL with Number Above (NA), and Persons Event Index (PEI). The new threshold should reflect the findings of the annoyance survey, which suggests a new threshold equivalent to 45-50 DNL.

Area	Public Comments
	In addition to delineating the threshold contours, FAA need to enforce strict compliance with noise regulations. The FAA should conduct regular noise monitoring to ensure that the airport adheres to the agreed-upon noise limits. If violations occur, appropriate penalties should be imposed to discourage further non-compliance. **Jennifer Landesmann (FAA-2023-0855-3668)** The FAA's Noise Policy threshold criteria needs to have a well explained rationale and basis which has never been the case with the 65 DNL. The 65 DNL only explains that the agency has a threshold that limits the amount of money for Insulation Eligibility. From a budgetary perspective this seems irresponsible because how could billions be spent on any mitigation on the "sole" basis of one graphic (the Schultz curve) - a picture with the relationship of a single metric with a single issue (annoyance). And then, how does half a century go by and the FAA's threshold and investment criteria explicitly still ignore health, night time noise and people's need to sleep. About low frequency sounds. I can testify that when KE214 barrels down on the way to SFO from LA, by the time it reaches my area it's like the flight grabs me by my pajamas and I feel I am inside the plane, landing at the international terminal. That is low frequency sound which double pane windows, and double ceiling insulation cannot protect from. The FAA needs to have a policy that promotes finding solutions to this, which with all the navigation technologies, it is possible. To take planes over the Bay or to fly higher, or to glide into the runway - making zero noise at night. My views on the FAA's policies and recommendations are also in my comments to the FAA's solicitation about the NES https://www.regulations.gov/comment/FAA-2021-0037-3869. I suggest that all the specific recommendations submitted with the NES also be included in this review. Thank you. **Joseph Gitersonke (FAA-2023-0855-1958)** Thank you allowing comments on this policy review. I live ~2 miles from an airport runway and am exposed to aviation noise. Here are my comments: • Please simplify (or get rid of) the DNL process so it's easier to understand and communicate to non-experts. I watched a live board meeting where noise experts (the company who collected the data) explained the process to our County Board members. It was clear the board members had no idea how this data was collected and should be applied. There's an enormous amount of noise data already available along with thousands of historical flight paths.

Area	Public Comments
	• Most of the noise in my community occurs when a plane adjusts course early after take-off. Would like to see an altitude threshold that pilots would need to meet before they can turn the aircraft and fly over a community. This would be most relevant at night when the noise is much more disturbing. • The Neighborhood Environmental Survey seems much more representative of annoyance with aviation noise. I completely agree with results from this study. • Our community was zoned based off historical flight paths. DNL sampling was done and instead of adjusting flight paths to reduce aviation noise, the community was rezoned, allowing aircraft additional flight paths over the community. This makes no sense to homeowners who purchased based off the original zoning and speaks to the incoherence of the existing policy.
Health Impacts and Concerns	**Lynne Campanale (FAA-2023-0855-0831)** I request the FAA return air traffic at SMF to pre-NextGen flight paths. Aircraft on southbound takeoff should fly over vacant land, not densely populated residential areas, parks and schools thus reducing safety and creating noise issues for the surrounding community. SMF is documented as the No. 1 airport per capita for bird strikes and there are many documented negative heart health impacts of jet noise and exhaust. **Anonymous (FAA-2023-0855-2920)** The loud and low flights departing from LaGuardia airport, starting at six in the morning, and finishing after 12 at night, have destroyed my quality of life. Statistics show increased cases of heart disease among people living in the departure path of airports. They have no consideration for anybody here on the ground, who has to endure the nonstop, noise, vibration, and pollution from slow and low, flying aircraft in the same departure path 18 hours a day you are killing us here on the ground. **Shirley Harvey-Poole (FAA-2023-0855-2635)** Beginning on or around 2016, airplanes with insignia of Southwest, Delta, JetBlue, and some private jets and other small aircraft headed to BWI Airport, began to fly directly above my home 24 hours a day sometimes as close as two minutes apart during the daytime and hourly a night. The nighttime, "roaring" loud, train-like noise and strong vibrations from the airplanes are the most intolerable and inhumane. Such airplane noise can be heard as the airplane approaches and before it flies directly over the house. This noise and motion waked me about 15 seconds on approaching my home and can be heard longer after the direct flyover above my home. These flyovers have repeatedly

Area	Public Comments
	interrupted phases of my non-REM and Restorative, Deep REM sleep. These sleep phases are necessary for humans to maintain good overall mental and physical health and wellbeing. At the time when my body would normally repair and regrow tissues, build bone and muscle, strengthen the immune system, and other health benefits of solid, uninterrupted sleep, airplanes wake me up with their noise and vibrations. For several years, this source of loud noise pollution, vibrations and fuel emissions from airplanes flying so close above my home, particularly after 11:00 P.M, night-after-night, prevented me from sleeping through the nights and significantly negatively affected my physical, mental and emotional health, wellbeing, and quiet enjoyment. Due to repeated airplane noise interrupting my nocturnal sleep, I began to lose weight (lost 43 lbs.), and have intense, unrelenting headaches, became depressed, unable to focus and properly take care of myself; so to become more healthy, get proper sleep, and to avoid further neurodegenerative disease and sleep-deprived illnesses, I was forced to leave my home that was under near-constant airplane noise disruption, and move away from my adored grandchildren. I hope and expect the FAA will adopt a new noise policy and new metrics that protect overflown communities and near-airport communities from harm based on the lived experience of people like myself. Thank you.
NEPA/ Part 150/ Land Use/ Mitigation	**Anonymous (FAA-2023-0855-0010)** As new information is discovered, the FAA should also work with the California Department of Transportation Aeronautics Division to ensure that they update their Airport Land Use Planning Handbook. California state law requires counties to have commissions that review land use decisions near airports. Current state guidelines suggest restricting residential development in certain areas but those areas should be increased if it is determined that people are more sensitive to noise than previously believed. **Brian Martin (FAA-2023-0855-1211)** I request the FAA return air traffic at SMF to pre NextGen flight paths. Aircraft on southbound takeoff should fly over vacant land, not densely populated residential areas, parks and schools, thus reducing safety and creating noise issues on the surrounding community. I request the FAA return air traffic at SMF to pre NextGen flight paths. Aircraft on southbound takeoff should fly over vacant land, not densely populated residential areas, parks and schools, thus reducing safety and creating noise issues on the surrounding community. Last year on my evening walk I personally witnessed a plane flying over my house with sparks and a small fire coming out of a plane engine that had just taken off. Later that evening I heard on the news that the plane returned

Area	Public Comments
	to the airport because it had hit a bird that caused damage to the engine. Planes take off all day long, in our community and we have a school adjacent to the eastern side of our development and a new school has been constructed across the Del Paso Blvd from our community. Planes traversing our community have not achieved much altitude prior to crossing our neighborhood. Should a plane have a problem taking off it will most likely crash in our community. There is no reason for this since there is an option to take off over undeveloped land. Also, some planes are so low that you literally can't hear others speaking to you as a result of the plane noise. **Diane Inman (FAA-2023-0855-4492)** First of all I support the comment FAA 2023-0855-4027 submitted by Vashon Island Fair Skies and in addition want to add that living on an island in a country like setting is NOT like living in Seattle and the way ambient sound levels are measured needs to reflect that. I live right over the NEXT GEN flight path on the north end of the island -the roar of planes crossing above one right after the other is not only disruptive to my life but to wildlife and the environment and it doesn't have to be our lower ambient sound level makes that airplane roar across my property drown out the sounds of country living even more disruptive than if I was living in the city.
Noise Policy Development Process	*There were no recommendations related to this area identified in the comments made by individuals*
Communication	**Ethan Tanner (FAA-2023-0855-1923)** The most effective communication method involves a combination of in-person and online channels. Holding county or city town hall meetings and open forums allows for face-to-face interactions, questions, and discussions. The FAA should prioritize communicating with the communities that are directly affected by potential noise exposures. this includes residents, school boards, homeowner associations, and other local stakeholders. recognizing that noise impacts often extend beyond county or city boundaries, the FAA should ensure that communication covers all relevant areas. **Anonymous (FAA-2023-0855-4727)**

Area	Public Comments
	Transparency and accountability in disclosing the results of these studies are crucial in assessing the true impact of the altered flight paths. additionally, it has come to our attention that the results from a temporary noise study conducted for the city of phoenix lawsuit against the faa indicate that noise levels in mesa are louder than those measured at noise monitoring stations on the runway. these findings further emphasize the urgent need for comprehensive noise assessments and their public disclosure. **Elena Byrgazova (FAA-2023-0855-2071)** Please, please, improve the FAA's response to the aviation noise complaints and inquiries. we have sent numerous submissions via the online form on the noise portal, email and phone number listed on the FAA's site for the Ombudsman, over last two years and we are not getting any response to this date. please have another contact listed for someone who oversees a Regional Ombudsman, so we have an alternative way to contact the FAA when the Regional Ombudsman is not responding (NW region in our case). **Guido Garfunkel (FAA-2023-0855-3065)** The Ombudswoman, Veda Simmons, and the roundtables the way they are working currently, are not working well for the community. **Steven Grand (FAA-2023-0855-2587)** The timing of arrivals with low aircrafts has interrupted sleep with noise impacting our house after 11 pm and before 6 am. these recent changes have materially impacted my wife and my quality of life through lack of sleep and overall disturbances. there has been no communication leading up to this increase in noise pollution by mac, we have received no response to complaints, and the 24 hour line has been unreachable.
Policy for Different Vehicle Types/Operation Type	**Michael Saremi (FAA-2023-0855-1652)** Noise studies need to thoroughly study all types of aircraft: propeller plane passing or looping around residential and country areas, commercial high bypass jet engine passes, helicopter passes, military aircraft, including all versions of each as the noise and vibration profile and impact is different with each type of aircraft. **Melanie Wynkoop (FAA-2023-0855-1715)** The DNL is clearly not working. It should be replaced. I would recommend a more relevant noise metric for different parts of the day. For example, night time flights (i.e., when communities are sleeping) should be measured differently than mid-day flights. Doing an average for a 24-hour period dilutes the data and favors airlines.

Area	Public Comments
	Barry Siegel (FAA-2023-0855-4102) There needs to be fair dispersal of arrival traffic and higher altitudes. This is a simple fix. Different noise metrics should be used in ALL circumstances. As GAO concluded, the DNL metric is manifestly misleading in its calculation of aircraft noise impacts because it is based on a 24-hour average which incorporates the relatively lightly traveled night hours, and that masks the actual impact of both numbers of aircraft overflights and individual noise signatures. The averaging of noise is absurd as a measurement. Overflight communities are concerned that the current noise policy does not reflect the true impacts they experience - the number of aviation noise events, their loudness relative to the community's ambient noise, and how often and when the noise occurs. The current policy of metrics and thresholds used for decision-making does not capture the negative health and quality of life impact-factors from NextGen's high volume and concentration low altitude aircraft. Today's one size fits all, DNL 65 has been interpreted as Significant Impact for the two separate noise exposure environments. Overflight communities require different metrics, thresholds, and mitigation including noise abatement procedures and dispersion. **Joseph Kaus (FAA-2023-0855-3956)** Yes there should be different noise metrics for different circumstances.
Noise from Emerging Vehicle Types, Supersonics, etc.	**Cindy Friday Beeman (FAA-2023-0855-0924)** I understand the FAA is evaluating whether it needs to use more metrics than it has to date for measuring aircraft "noise." In looking at how air use has changed with the advent of amazon and drones, I think the answer is yes -- you need to bring your metrics up to date! Don't wait like our congress has done with social media, legislating after the cat is out of the bag. **Joseph Kaus (FAA-2023-0855-3956)** While drones are not in active use yet, there is a UPS and Amazon distribution center near where I live. I'm very concerned that these drones will add excessive noise to the environment. Noise metrics should be extremely stringent, considering the number of drones flying simultaneously may be much higher than airplanes and helicopters. I also think there should be a new metric for 'visual' noise. Communities should have the right to see a sky that is not filled with drones. Drones should also be restricted away from parks and other recreational spaces. **Jeffrey Orbock (FAA-2023-0855-4426)**

Area	Public Comments
	Looking beyond my immediate concern with the skydiving airplane noise, I am very concerned about potentially greatly increased aircraft noise in the future as new technologies such as drones and taxis mature. Future technology will also allow more aircraft to operate safely in the sky causing potentially much more noise. I urge the FAA to adopt new noise policies and new metrics for determining a significant impact that protect overflown communities from harm and reflect the lived experience of people like you. I am confident we can restore a fair balance of power between aviation interests and the rights of ordinary citizens in the community to enjoy reasonable peace and quiet in their homes. **Anonymous (FAA-2023-0855-2235)** This problem is destroying our sanity and destroying our ability to live in peace in our own home. also, we are highly concerned about the negative impacts of emerging aircraft (eg, supersonic, jets, drones, air taxis, etc.) and, for the same noise & health reasons stated above, we are strongly against having these aircraft fly over our home.
Research Recommendations	**Deborah Wagner (FAA-2023-0855-3304)** • FAA should do a thorough analysis and investigation of noise/health impact to assure proper consideration of citizens. • FAA should use the information they gather to make sound decisions not as merely a consideration but as a real policy guide. • FAA should thoroughly study the potential health damage of other frequencies of noise not covered by DNL and A Weighting. Using scientific analysis, it has been shown that the DNL does not cover the majority or even any of the most damaging noise frequencies coming from aircraft. • FAA is aware of health damage from aviation noise and should respond accordingly by not commissioning any further studies but instead acting on the large body of evidence that already exists. If FAA were to commission new studies, it will likely be seen as a delay tactic and/or a manipulation to alter findings. **Fahad Aldawsari (FAA-2023-0855-3293)** Finally, the FAA could invest in research and innovation which can serve the aviation industry. However, it is crucial to see that noise reduction efforts usually require a balanced approach that considers the needs of both aviation stakeholders and affected people. Moreover, the effectiveness of noise reduction measures could vary based on each airport location, type of operations, and local conditions.

Area	Public Comments
	Michael Saremi (FAA-2023-0855-1652) • Noise studies need to thoroughly study all types of aircraft: propeller plane passing or looping around residential and country areas, commercial high bypass jet engine passes, helicopter passes, military aircraft, including all versions of each as the noise and vibration profile and impact is different with each type of aircraft. • Studies should assess noise impacts both indoor and outdoor over a wide range of home types, and not with preference to homes with above average sound insulation in the area studied. • Aviation noise impact on symptoms such as tiredness, headache, tinnitus, sleep loss, fatigue, etc. should be considered as well. • Study on people sensitive to low-frequency noise and vibration rather than ignoring them in studies and pretending they aren't part of the population. • Acknowledgement that the low-frequencies from aviation noise are extraordinarily more difficult to soundproof, particularly helicopters and propeller planes at cruising altitudes, giving people no escape, especially coupled with the fact that there are no locations in the US without aircraft. • Aircraft noise at cruising altitudes: 1) Propeller planes even at 20,000 ft. AGL having HUGELY more of a noise/vibration impact than commercial high bypass jet engine planes. • FAA needs to study well below 50Hz sound frequencies due to potential vestibule organ damage based on my comment above.

Appendix I: List of Acronyms

Acronym	Definition
A4A	Airlines for America
AAAE	American Association of Airport Executives
AAB	Airport Advisory Board
AAD	Annual Average Day
AAM	Advanced Air Mobility
ACI - NA	Airports Council International – North America
ACK	Nantucket Memorial Airport (ACK)
ACQSC	Arlington County Quiet Skies Coalition
ACR	Airport Community Roundtable
AEDT	Aviation Environmental Design Tool
AGL	Above Ground Level
AICA	Aviation-Impacted Communities Alliance
AIP	Airport Improvement Program
ALPA	Air Line Pilots Association
ANAP	Aviation Noise Abatement Policy
ANEC	Average Noise Exposure Category
ANEEM	Aircraft Noise Event Extraction Methodology
ANNQS	ATL Neighbors Needing Quiet Skies
ANOPP	Airplane Noise Prediction Program
ANSI	American National Standards Institute
ASA	American Standards Association
AOPA	Aircraft Owners and Pilots Association
ARSAC	Regional Solution To Airport Congestion
ASCENT	Center of Excellence for Alternative Jet Fuels and Environment
ASE	Aspen Airport
ASNA	Aviation Safety and Noise Abatement Act
ATL	Atlanta
ATO	Air Traffic Association
AWG	Airport Working Group of Orange County
BCA	Benefit-Cost Analysis
BED	Hanscom Field
BJC	Rocky Mountain Metropolitan Airport
BOS	Boston Airport
BWI	Baltimore/Washington International Thurgood Marshall Airport
CAGE LFA	Citizens Against Gillespie’s Expansion and Low Flying Aircraft
CA	California
CAA	Cargo Airline Association
CANP	Civil Aviation Noise Policy

Acronym	Definition
CATEX	Categorical Exclusions
CCDOA	Clark County Department of Aviation
CDA	Commercial Drone Alliance
CDD	City of Cambridge
CDNL	Concussion-Weighted Day-Night Average Sound Level
CFR	Code of Federal Regulations
CLASS	Citizens League for Airport Safety and Serenity
CLT	Charlotte Airport
CNEL	Community Noise Equivalent Level
CNF	Community Noise Forum
COVID	Coronavirus Disease
CRAAP	Concerned Residents Against Airport Pollution
CTO	Chief Technology Office
DC	District of Columbia
DCA	Regan National Airport
DCNR	Department of Conservation and Natural Resources
DNL	Day-Night Average Sound Level
DOT	Department of Transport
DVT	Phoenix Deer Valley Airport
EPA	Environmental Protection Agency
EPNL	Effective perceived noise level
ESL	Equivalent Sound Level
EVTOL	Electric vertical take-off and landing
FAA	Federal Aviation Administration
FACA	Federal Advisory Committee Act
FICAN	Federal Interagency Committee On Aviation Noise
FMS	Flight Management Systems
FONSI	Finding of No Significant Impact
FOPP	Fuel tank Over Pressure equalization Ports
FPV	First Person View
FR	Federal Register
GA	Georgia
GAMA	General Aviation Manufacturers Association
GAO	Government Accountability Office
GDG	Guideline Development Group
GYR	Goodyear Airport
HARNESS	Helping Aviation Respect Neighbors, Environments, Sustainability and Silence
HA	Highly Annoyed
HAI	Helicopter Association International
HIA	Health Impact Assessment

Acronym	Definition
HICOP	Hawaii Island Coalition Malama Pono
HOA	Home Owners Association
IAD	Dulles International Airport
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IER	Initial Environmental Review
IL	Illinois
IN	Indianapolis
ISO/DIS	International Standards Organization/ Draft International Standard
LA	Los Angeles
LAX	Los Angeles International Airport
LDN	Day night average sound level
LEQ	Equivalent sound level
LFA	Low Flying Aircraft
LMAX	Maximum Sound Level
M&V	Miedema-Vos
MBA	Master of Business Administration
MA	Massachusetts
MAC	Metropolitan Airports Coalition
MAGIC	Metro Area Governors Island Coalition
MCAC	Massachusetts Port Authority Community Advisory Committee
MCQSC	Montgomery County Quiet Skies Coalition of Maryland
MIT	Massachusetts Institute of Technology
MSP	Minneapolis St. Paul International Airport
MWAA	Metropolitan Washington Airports Authority
NA	Number Above
NAA	Number Above Ambient
NAC	Noise Advisory Committee
NACA	National Air Carrier Association
NAS	National Airspace System
NASA	National Aeronautics and Space Administration
NBAA	National Business Aviation Association
NCA	Noise Control Act
NCP	Noise Compatibility Program
NEPA	National Environmental Policy Act
NES	Neighborhood Environmental Survey
NGO	Non-Government Organization
NNI	Noise and Number index
NOC	Noise Oversight Committee
NOCCC	North Orange County Corridor Cities

Acronym	Definition
NPD	Noise Power Distance
NPR	Noise Policy Review
NY	New York
NY/NJ	New York/New Jersey
NYC	New York City
NYCAR	New York Community Aviation Roundtable
OPD	Optimized Profile Descent
OSHA	Occupational Safety and Health Administration
PANYNJ	Port Authority of New York and New Jersey
PBN	Performance Based Navigation
PEI	Person Events Index
PHX	Phoenix Airport
PTSD	Post Traumatic Stress Disorder
PWM	Portland International Jetport
QC	Quiet Communities
RAA	Regional Airline Association
RNAV	Area navigation
S.F	San Francisco
SCANA	Scottsdale Coalition for Airplane Noise Abatement
SEL	Sound Exposure Level
SENEL	Single Event Noise Exposure Level
SFO	San Francisco International Airport
SMF	Sacramento International Airport
SNA	John Wayne Airport
SPON	Still Protecting Our Newport
TA	Time Above
TAA	Time Above Ambient
TANS	Taxpayers for Air Craft Noise Solutions
TNI	Total Noise Index
TV	Television
U.S	United States
UAM	Urban Air Mobility
UAS	Unmanned Aircraft System
UAV	Unmanned Aerial Vehicle
UK	United Kingdom
US	United States
VA	Virginia
VNY	Van Nuys Airport
VTOL	Vertical Take-Off and Landing
WA	Washington

Acronym	Definition
WHO	World Health Organization
WI	Wisconsin