

University of California, Davis

**Aviation
Noise &
Emissions
Symposium**

May 1-3, 2023 at UC Davis



ANE Keynote and Agenda

Adapting for Tomorrow, Today

While climate change is an urgent challenge for every sector, forcing businesses and people to rethink their actions, the airline industry and affected communities are also facing even deeper challenges in attempting to alleviate continued noise, health and climate change impacts. This year's sessions will take a deep dive into how aviation noise and emissions assessments and research can be translated into policy and action. By reviewing current policies, looking widely at future noise and emissions impacts, and review both climate abatement and adaptation measures, this year's symposium will connect airports, airlines, regulators, industry developers and community members, to build change makers for tomorrow, today.

FAA Noise Policy Review

NOISE POLICY REVIEW



- In late 2021, the FAA initiated a review of our noise policy as part of our ongoing commitment to address aircraft noise. This effort will build on our work to advance the scientific understanding of noise impacts as well as the development of analytical tools and technologies.
- It will consider new evidence from the agency's noise research program, including from the Neighborhood Environmental Survey, and the distribution of environmental risks, tradeoffs, or externalities across communities.
- Goals
 - Identify and implement well-reasoned, scientifically-grounded noise policy updates that incorporate FAA's updated understanding of aviation noise and human response and the development of analytical tools and technologies to better manage and reduce the environmental impacts of aviation
 - Conduct an inclusive, transparent, and participatory process that prioritizes input from substantially affected stakeholders, including local communities

SCOPE OF NOISE POLICY REVIEW



- **Focus on foundational elements of FAA's noise policy, including:**
 - **Metrics:** hard look at DNL, consideration of other metrics (e.g., Number Above), and how they are calculated
 - **Noise Thresholds:** Consider NES findings and other research, investigate lowering below DNL 65 dBA the definition of the level of significant noise exposure for actions subject to environmental review requirements and modifying 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.
 - For new metrics, consider whether it is appropriate to establish a noise threshold and its potential value

FEDERAL REGISTER NOTICE (FRN)

- [Published](#) on May 1, 2023
- 90-day comment period ends July 31, 2023
- Includes a background on FAA Noise Policy
- Request for comments includes 11 questions
- Links to a companion [framing paper](#)

POTENTIAL OUTCOMES OF POLICY CHANGES

- Possible updates to regulations, orders, guidance, etc.
- Change level of review needed for a given action
- Improve FAA's communication about noise impacts to public

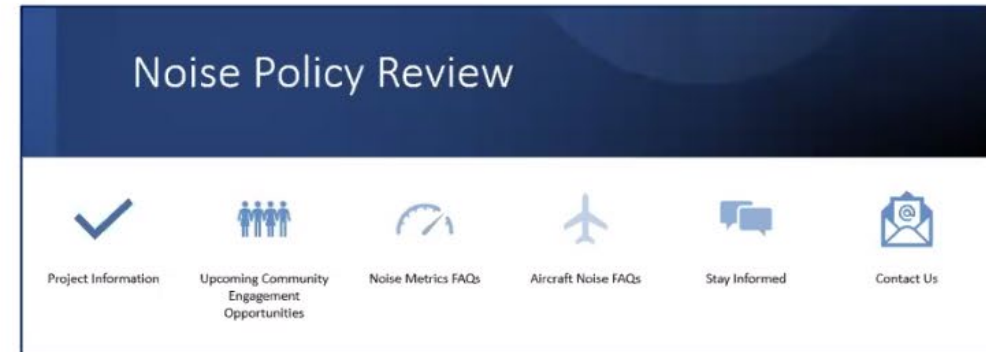
POLICY CHANGES WILL NOT AFFECT

- Current/existing aviation noise exposure
- Where/when aircraft currently fly
- Completed or ongoing environmental reviews

FAA NOISE POLICY REVIEW LANDING PAGE:



- FAA has published a **landing page** for the noise policy review <https://www.faa.gov/noisepolicyreview>
- The landing page will be revised as the noise policy review progresses.
- Landing page content will include:
 - Noise Policy Review information and status;
 - Framing Paper
 - Resources (education materials, videos, FAQs, primary sources, etc.);
 - Links to join virtual webinars; and
 - Link to subscribe to FAA project updates.



NOISE POLICY REVIEW WEBINARS



Date	Time	How to Attend
Tuesday, May 16th, 2023	1:00 pm - 3:00 pm ET	<ul style="list-style-type: none">• Attend Through Zoom<ul style="list-style-type: none">○ Password: 059052• YouTube Live Stream
Thursday, May 18th, 2023	6:00 pm - 8:00 pm ET	<ul style="list-style-type: none">• Attend Through Zoom<ul style="list-style-type: none">○ Password: 007544• YouTube Live Stream
Tuesday, May 23rd, 2023	9:00 pm - 11:00 pm ET	<ul style="list-style-type: none">• Attend Through Zoom<ul style="list-style-type: none">○ Password: 170360• YouTube Live Stream
Thursday, May 25th, 2023	4:00 pm - 6:00 pm ET	<ul style="list-style-type: none">• Attend Through Zoom<ul style="list-style-type: none">○ Password: 561270• YouTube Live Stream

FOR FURTHER INFORMATION

- Email: NoisePolicyReview@faa.gov
- Phone: 202-269-6999

AvGas lead-free in 2030

Presentations:

- **Getting the Lead Out: What an EAGLE Industry-Government Coalition is Doing to Eliminate Leaded Aviation Gasoline Emissions:** In February of 2022, the Federal Aviation Administration (FAA) Administrator announced the formation of the Eliminate Aviation Gasoline Lead Emissions (EAGLE) initiative, an industry-government coalition committed to removing lead from aviation gasoline by the end of 2030. The formation of EAGLE was in anticipation of the U.S. Environmental Protection Agency (EPA) finding that lead emissions from aircraft engines that operate on leaded fuel cause or contribute to air pollution that may reasonably be anticipated to endanger public health and welfare in 2023. EAGLE member agencies including the FAA, have focused on test and evaluation of fuels that would be authorized to safely replace leaded fuel. This short presentation will focus on the progress and challenges of transitioning to lead-free skies.
 - Presented by: Robert Olislagers, *EAGLE Project*
- **The Global Transition to Unleaded Avgas:** Swift Fuels, LLC has architected the ability for select communities, airfields, pilots, and industry stakeholders to share in the benefits of unleaded avgas nationwide since 2015. It is a complex and multi-dimensional task. Our research and commercial development teams have worked with direct FAA oversight, industry collaboration from oil & gas experts, engine OEM's, airframe OEM's, helicopter experts, and a wide array of avgas experts to get an unleaded fuel approved to an international unleaded avgas fuel standard (called ASTM D7547) approved for over 70% of the US piston fleet. Our UL94 unleaded avgas is commercially available nationwide and is endorsed by FAA, ASTM International, Lycoming, Continental, Rotax, Textron Aviation, Robinson Helicopter among many others. Our Swift Fuels team is also actively working with these same teams on the 100% global replacement of toxic leaded avgas. Our 100-octane unleaded fuel is called 100R (10% renewable) and is nearing its market introduction soon. Come hear our plans and commitments to systematically eliminate toxic lead emissions from all general aviation piston aircraft on a global scale.
 - Chris D'Acosta, *Swift Fuels, LLC*
- **The Movement towards Sustainable Aviation Fuels**
 - Tim Pohle, *Airlines for America*
- **Health Benefits from the use of SAFs**
 - Dr. Shruti K. Mishra, *Sandia National Laboratories*

NOMS for Everyone!

Noise and Operations Monitoring Systems (NOMS), at their core, are tools to help airports analyze, track and report on noise issues associated with aircraft activity. Traditionally these systems have only been affordable by large international airports, but advances in technology and a move to the cloud have put them within reach of smaller airports and even some communities. Within this area of on-demand data, how can airports and communities alike best leverage these tools to maximize the benefit to everyone?

Session Chairs: Greg Maxwell, *CMT Engineering*, Jerry Gerspatch, *Port of Portland*, Darlene Yaplee, *Aviation-Impacted Communities Alliance and Concerned Residents of Palo Alto*

Presentations:

- **From Data to Actions:** The speakers will present and engage in a dialogue on how NOMS systems can be used to extract information to inform communities and airports about noise problems as well as pursue noise reduction solutions.
 - Presented by: Marie-Jo Fremont, *Concerned Residents of Palo Alto*
 - Presented by: Phil Stollery, *Envirosuite*
- **PHL's NOMS Fly Quiet Departure Analysis:** A case study illustrating how Philadelphia is using its NOMS system to analyze Fly Quiet Departure performance and leveraging the data to drive improvements in collaboration with operators and the FAA.
 - Presented by: Greg Maxwell, *Crawford, Murphy & Tilly*

New ideas – Hydrogen and Formation Flying!

Presentations:

- **Project NAPKIN - Assessing the role for hydrogen propulsion:** Project NAPKIN - New Aviation, Propulsion, Knowledge and Innovation Network - brought together 10 organisations, including airports and aerospace manufacturers, to establish the conditions required to enable the successful introduction of zero-carbon emissions flight in the UK. It published its findings at the end of 2022 and is available here: www.heathrow.com/napkin.
 - Presentation by: Matt Prescott, *Heathrow Airport*
- **Contrails and their Impact on Climate:** Contrails are considered a major factor in aviation's impact on climate warming. While the field has a long history of research, there is still considerable work to be done to better understand the solutions available to airlines to mitigate this impact. In this session, you will learn about contrails, their impact on climate, potential solutions to avoid their impact, and the work needed to develop those solutions.
 - Presentation by: Jerry Griffin, *Delta Air Lines*
- **Climate change adaptation: strengthening resilience to climate change impacts on aviation:** The impacts from climate change directly and indirectly affect the global aviation sector. This presentation will explore climate change vulnerabilities that may affect aviation and possible adaptation options to strengthen resilience.
 - Presentation by: Andrea Deitz, *FAA*
- **Wake Energy Retrieval - Formation Flying:** Wakes left by aircraft represent a large amount of kinetic energy left behind in powerful twin spirals. When this energy is retrieved by a follower aircraft (typically positioned 1.5NM behind, and at the same altitude), engine thrust can be reduced, leading to lower fuel consumption and CO2 emissions. Airbus demonstrated trip fuel reduction is typically in the range of 5% for the follower aircraft during a first transatlantic flight in Nov2021. Operational integration into Airlines and ATM processes will lead to initiate operations before the end of the decade.
 - Presentation by: Philippe Masson, *Airbus*
- **Airport Climate Action Playbook**
 - Erin Cooke, *San Francisco International Airport*

New ideas – Mach 1 No Boom – Electric Training!

Presentations:

- **Overview of Community Response Test Campaign with NASA's X-59 Aircraft:** Prohibition of civil supersonic flight over land became federal regulation in 1973, currently codified in 14 CFR Part 91.817. Of concern, the sonic booms that result when aircraft travel at supersonic speeds were deemed an untenable source of noise affecting populations directly under and near flight paths. Fifty years of research in aircraft design and shaping have led to the prospect of low-noise supersonic flight. As part of its Quesst mission, NASA is building an experimental aircraft, the X-59, to demonstrate this capability. After completing flight test and design validation phases, NASA will field a national community testing campaign in order to collect data on how people perceive the sound from low-noise supersonic flight. The collected data will be provided to national and international regulators as they consider replacing the overland speed limit with a noise-based limit. This overview presentation identifies some of the key objectives, plans, and anticipated challenges.
 - Presented by: Dr. Nathan Cruze, *NASA Langley Research Center*
- **Minimizing aircraft noise impacts to communities:** The re-introduction of supersonic air travel brings with it the novel opportunity of delivering enhanced connectivity while achieving the ever-stringent noise standards governing today's aircraft. At Boom Supersonic, we are transforming air travel by building Overture, a supersonic commercial airliner optimized for speed, safety and sustainability, and its engine Symphony, both engineered to enable net zero carbon operations and designed to meet the most recent subsonic airport noise levels. This talk will highlight innovation in technologies and design methodologies that Boom is pioneering to minimize aircraft noise impacts to communities. Boom is committed to making supersonic flight something that communities welcome by working closely with communities, airports, regulators, and other stakeholders around the globe.
 - Presented by: Dr. Akshay Ashok, *Boom Supersonic*
- **Real World Experience with Electric Aircraft:** A discussion of how electric aircraft compare with conventional ICE aircraft in operation and how noise levels are reduced at an urban airport.
 - Presented by: Joseph Oldham, *New Vision Aviation, Inc*
- **Designing Urban Air Mobility for Low Noise:** Urban Air Mobility has the potential to unlock the skies for daily commuters; simultaneously reducing traffic congestion, carbon emissions and travel times. In addition, this technology provides higher levels of safety and lower noise levels compared to helicopters. This presentation will describe the process and considerations necessary to design, build and ultimately incorporate Urban Air Mobility vehicles into the community.
 - Presented by: Ben Goldman, *Bell Helicopter*