

Noise Research

Presented to: E&E REDAC Subcommittee

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Date: March 18, 2019



**Federal Aviation
Administration**



A Focus on Noise

What we have **ACHIEVED**



10.6 Billion

since 1982 for sound insulation of homes and schools around U.S. airports



Developed a Balanced Approach

using Source Reduction, Land Use Planning, and Operational Procedures and Restrictions



NEW TECHNOLOGY



OPERATIONS



SOUND INSULATION




LAND USE PLANNING



POLICY


MITIGATION




ANNOYANCE
Nationwide survey to understand community reaction to aircraft noise



HUMAN HEALTH
Explore the incremental effects of aviation noise on human health

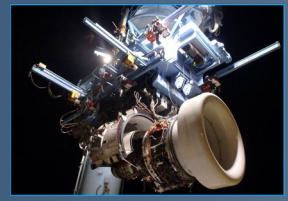


SLEEP DISTURBANCE
National Study to determine physiological impacts of aviation noise



MODELING
Improve modeling of noise effects and impacts

SCIENCE & INTEGRATED MODELING



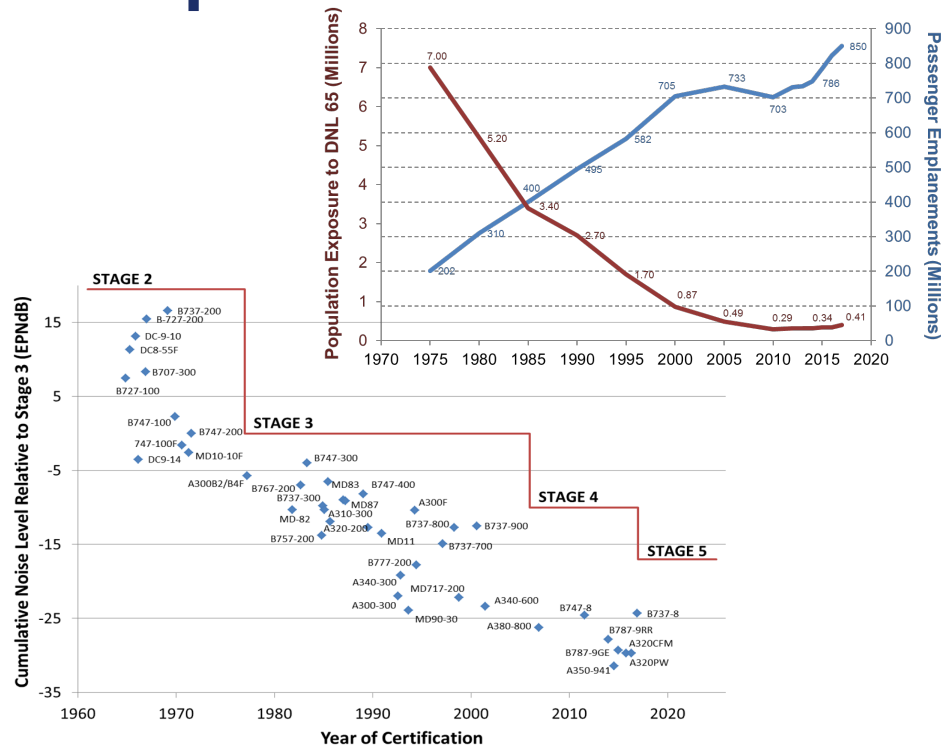
FAA's CLEEN Program + Pratt & Whitney



Aurora Flight Sciences

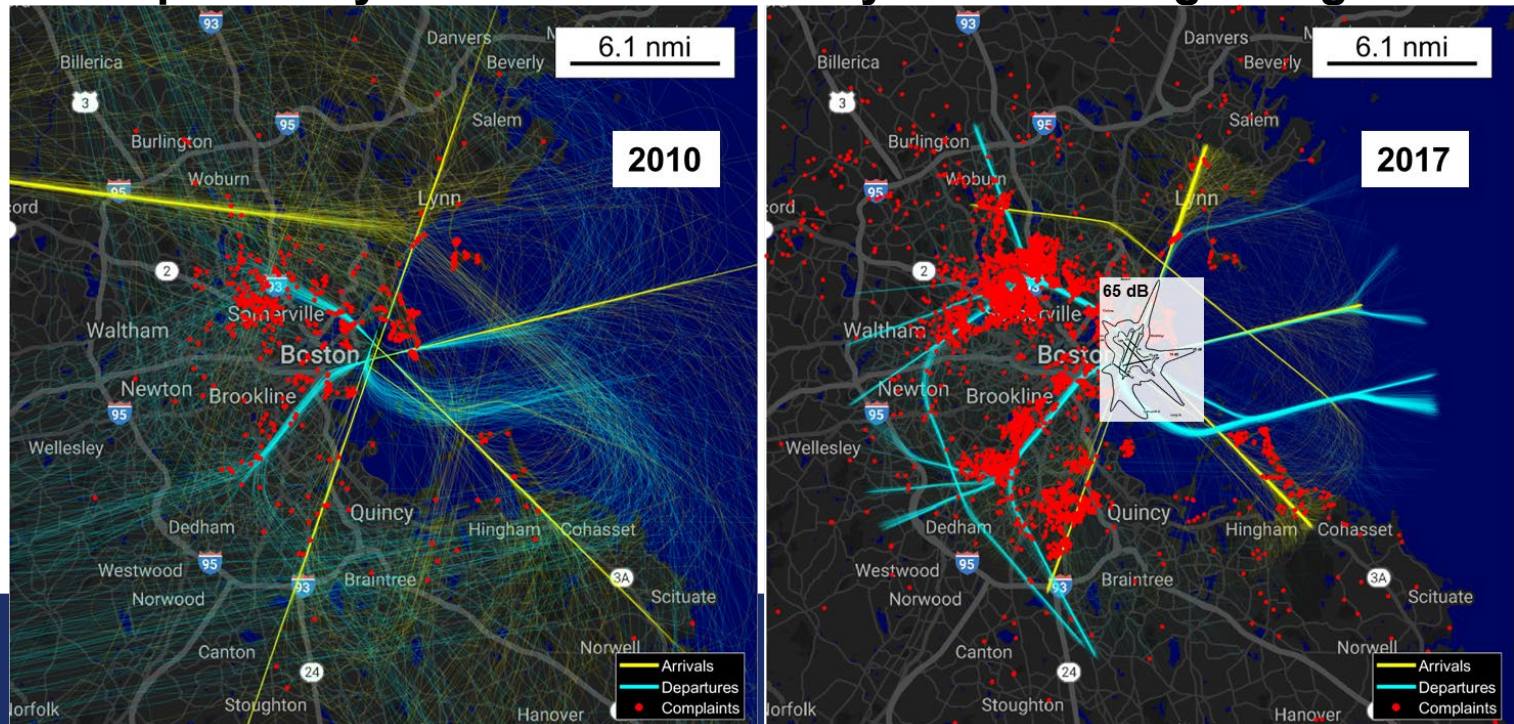
Historical Trends in Noise Exposure

- Despite continued traffic growth, community noise exposure has decreased by a factor of 20
- Aircraft source noise has decreased dramatically
- Precision navigation is being implemented to increase the safety and efficiency of the NAS.
- It also leads to a reduction in the overall number of people exposed to noise from aircraft operations.



Current Noise Challenge

- Despite progress, aviation noise continues to be a concern
- Implementation of precision aircraft navigation has been accompanied by increased community concerns regarding noise



Today's Situation

- Increased Public Interest
- Reauthorization Requirements
- Emerging Types
 - Supersonics
 - UAS
 - Commercial Space

MAKE YOUR VOICE HEARD OVER THE ROAR

The fast, easy way to file airport noise complaints


Airport noise complaints are a pain to file, but you know you have to speak up. Airnoise.io provides the simplest, fastest ways to make your voice heard, to help your community, and get your life back.

Create a free account or get a button >

If your button has a "Claim Code" on the side of the box, click here to claim it.


Claim your button

Jet noise getting you down?



We'll help give you a leg up.

How does Airnoise.io help? We level the playing field — meet the Airnoise button.



1,675,969

TOTAL COMPLAINTS

7,748

COMPLAINTS 24 HRS

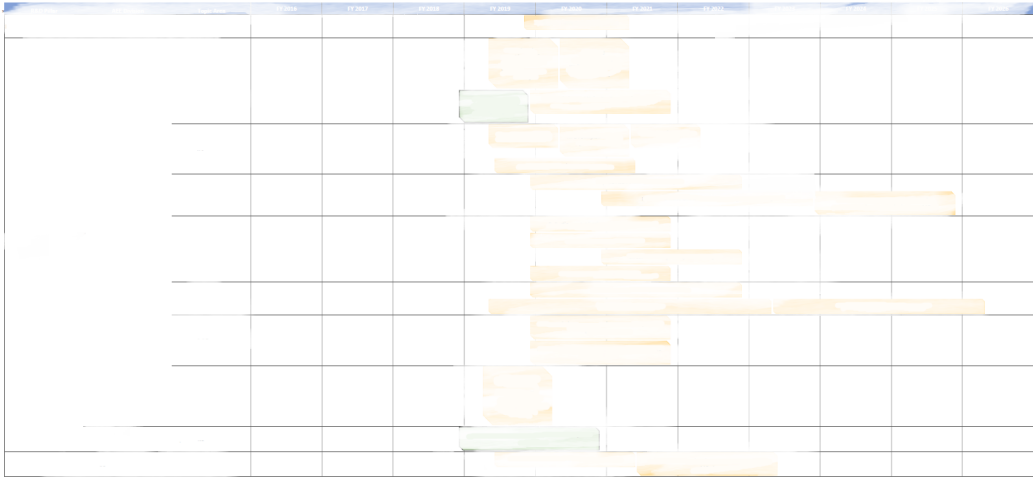
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AIRPORTS NATIONWIDE

Airport authorities don't make it easy to file noise complaints, but we do. With the click of a button, instantly locate loud, bothersome flights, automatically file a complaint, and get back to the things that matter to you.

Roadmap Update

- Progress has been made since last REDAC, however work on noise roadmap was sidelined due to shutdown
- Draft roadmap is already being used to identify project ideas, especially re: tools
- Aim to have more comprehensive roadmap update at fall REDAC



2018 Reauthorization

- There were a number of provisions related to aircraft noise in HR302
- In our review, we found that most of the things we were asked to do were already in-progress or in our future plans
- We may need to 'shuffle' timelines on several items in order to comply with HR302
- The following slides provide a summary of key research activities related to the requirements in HR302



HR 302 § 189 – Study on Potential Health and Economic Impacts of Overflight Noise

- **Focus Areas**

- Incremental health impacts attributable to aircraft noise exposure, including sleep disturbance and elevated blood pressure
- Incremental health impacts on residents living underneath flight paths <10,000'
- Assess the relationship between a perceived increase in aircraft noise... and an actual increase in aircraft noise...
- Consider the economic harm or benefit to businesses located underneath flight paths <10,000'

- **Timeline: 3 years**

- **This will build on work done by BU over last several years in ASCENT 3**

- **Challenge: How do we analyze the relationship between a perceived increase in noise and an actual increase in noise?**

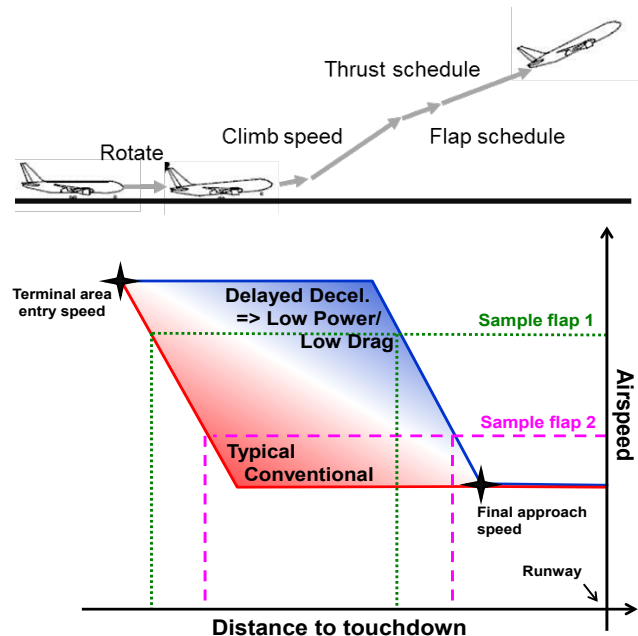
HR 302 § 173, § 179, § 188

- Sound Insulation Research
- Alternative Noise Metrics Research
- Operations Research

Concepts Being Evaluated*

- Route changes
- Thrust / speed management
- Vertical profile
- Introduction of systematic dispersion

- **Key Takeaway:** AEE is using R&D to address the biggest aviation noise problems we face.



*More Information Available at ASCENT Project 023 website:

[https://ascent.aero/project/analytical approach for quantifying noise from advanced operational procedures/](https://ascent.aero/project/analytical%20approach%20for%20quantifying%20noise%20from%20advanced%20operational%20procedures/)

HR 302 § 181 – FAA Leadership on Civil SST

- **Supersonic Aircraft**

- Much interest by manufacturers to begin producing aircraft capable of flying over Mach 1
- FAA is in the middle of two SST-related rulemaking activities
 - Clarification of the process to apply for a special flight authorization to fly over Mach 1 in the U.S.
 - Development of SST landing and take off noise certification process

- **Research**

- A10: Georgia Tech and Purdue efforts to examine supersonic aircraft design space and future demand
- A41/A42: Penn State efforts to understand en-route noise generation, propagation, and certification
 - including potential for Mach Cut Off operations
- A47: MIT effort to understand opportunities for reduced noise and emissions from supersonic aircraft through a clean-sheet engine design



Other New Entrants

- **Unmanned Aircraft Systems (UAS)**

- Research has started to understand the potential noise impacts of UAS and to develop appropriate noise certification process for UAS
- Working to leverage the UAS Integration Pilot Program (IPP) to obtain consistent and reliable noise test data for UAS during representative flight operations
 - Acoustics
 - Tracking
 - UAS Flight Info
 - Meteorological
 - Tools

- **Commercial Space**

- Focus is on providing information on appropriate methodologies to use for noise modeling for the National Environmental Policy Act (NEPA)



Summary

- Noise continues to be a concern and area of focus
- Many initiatives are underway to address noise from multiple aircraft types
- Many areas of research are emerging or are being identified as a priority with steady (or reduced) resources, which is challenging
- We are also focused on more efficiently and effectively addressing public concerns related to aircraft noise

