

March 1 and 2nd San Diego, California

The 2020 UC Davis Aviation Noise and Emissions Symposium

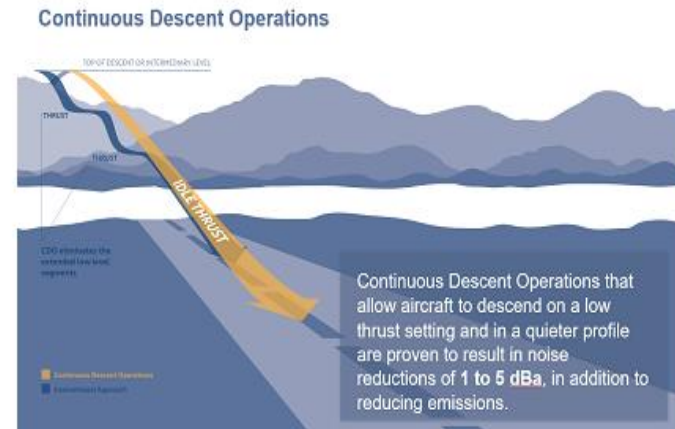
<https://anesymposium.agrc.ucdavis.edu/2020-program>

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Best Practices from around the Globe

AIRSPACE DESIGN AND NOISE MITIGATION TOOLS

- Performance Based Navigation
 - Continuous Descent Operations (CDO)
 - Concentrate Away From People
 - Leverage Distribution with Hybrid Procedures
 - Special Procedures
- Track Over the Ground (favouring non-residential)
- Population Data
- Reduced Time In Flight (and over people)



An Adaptive and Collaborative Approach to Airspace Change

By: [Jonathan Bagg, NavCanada](#)

| WHEN IS CONSULTATION REQUIRED?



When is consultation required?

- Moving flight path laterally below 4,000', over populated areas

OR

- Procedure increases volume on an existing flight path (+30%/+15%)

+ at an airport with:

more than **60,000** IFR movements

CONSULTATION

Some fundamentals – but not one size fits all

Components:

- Notices and Promotion
- Web content
- Open House-style events + Webexes
- Briefing Stations
- Elected Official Briefings
- Airport Noise Management Committees
- Feedback Mechanisms

Considerations:

- Notice of consultation at least 3 week prior to event
- Minimum 45 day consultation period.
- Post-Consultation Reporting
- Notice prior to implementation.



STAKEHOLDER RELATIONS CONCEPTS



Lead with our stakeholders in mind



Engagement is expectation



Sequence matters



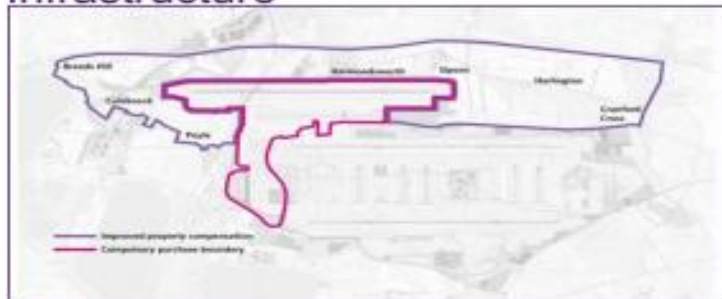
Show that we listened



Share the success

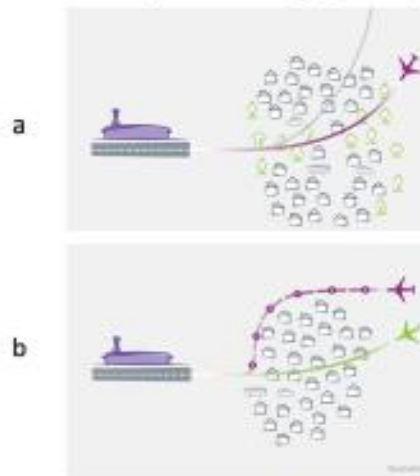
THE TOPICS ON WHICH WE ARE ENGAGING ARE COMPLEX

Infrastructure



Where we operate

Airspace design principles



Minimise the impact of aircraft noise

Future airspace design will comply with Government regulation and policy on noise impact. In addition to this Heathrow will aim to reduce effects on health and quality of life from noise by considering local circumstances, and by contributing to improvements where possible.

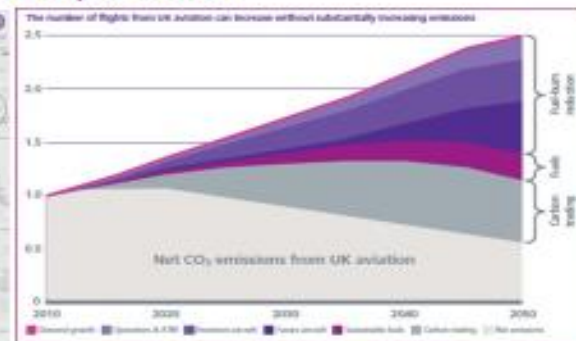
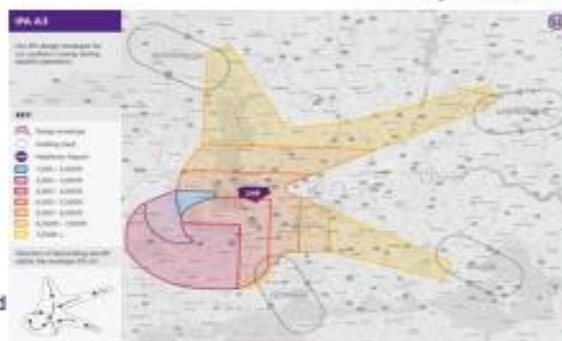
Minimise fuel requirements and greenhouse gas emissions

Heathrow would seek to minimise the amount of fuel and CO2 emissions required by our flight paths, by keeping flight paths as short and direct as possible. Heathrow would avoid long and complicated paths that require more fuel (and therefore greater cost) for airlines.

How we operate

<p>Steeper approaches</p>	<p>End of routine stacking</p>
<p>Increased time without night flights</p>	<p>Runway alternation</p>
<p>Quieter aircraft</p>	<p>Respite through alternated flight paths</p>

Impacts of operation



Heathrow
Expansion

Communities Shaping Heathrow's Flight Paths

- ▶ People were asked what was **most important** to them in the redesign of flight paths:
- ▶ **either** the fewest number of people would be affected (which would be done by concentrating all the flight paths over certain communities);
- ▶ **or** that periods of respite were provided to all communities
- ▶ **or** that new areas should be avoided
- ▶ The least popular was the first one **so Heathrow are now designing** multiple flight paths so that can be rotated while avoiding new areas if at all possible.

Is Engagement Working?

- ▶ Heathrow is committed to a more 'community-friendly' third runway
- ▶ Heathrow is drawing up flight paths much more along the lines the community wants

But there is frustration amongst many residents *that not enough is being done to sort out immediate noise problems*

And it will take longer to overcome the **legacy of mistrust**

The Secrets of Success?

- ▶ **The airport must be willing** to gain a real understanding of community concerns
- ▶ And to address them even if that may mean changing its plans
- ▶ The community should be allowed to shape future plans wherever possible
- ▶ **Community groups must accept** that the airport's prime purpose is to run a successful business and is not there to act as an arm of the social services
- ▶ And there must be a willingness at least to explore the possibility that the airport might be serious in wanting real engagement.

LESSON LEARNING

Classification: Internal

- We have learnt lessons prior to entering into our current airspace change
- And we have learnt as we move through the process
- This learning is high value
- Trust is a notable consideration



- We don't always get the learning right first time
- The detail is important, but we need to make it understandable
- We must think about what communities need rather than what we want to give them
- We do not look to sell, and we tell the whole story whether good or bad

Challenge

[Robyn Connelly, Toronto Pearson International Airport](#)

Toronto Airport

We must continue to seek out and employ opportunities to manage noise, but our main focus needs to be on better communication and community engagement as a means to move the dial on community annoyance.

Sources: Ruud Ummels of To70 Aviation Consultants, Mike Rikard-Bell EMS Bruel & Kjaer, Dr. Colin Novak, University of Windsor, NORAH and ANIMA studies.

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<https://anesymposium.aqrc.ucdavis.edu/sites/g/files/dgvnsk3916/files/inline-files/2020-03-02%20Robyn%20Connelly%20AddressingCommunityAnnoyanceRConnelly.pdf>

Noise Management Programs

Acoustic



Night Flight Restrictions



Quieter Fleet Incentive Program



Noise Abatement Procedures



Land Use Planning



Runway Usage

Non-Acoustic



Communications, Outreach, and Noise Committees



Noise Complaints



Noise Reporting and Metrics



Fly Quiet Reporting Program



Better Community Engagement



Noise Forums: More seats at more tables for engaged residents, industry stakeholders, elected officials and general public



Customized Experiences: Visits to the noise office, and providing tailored and localized information through interactive stations at meetings/open houses, noise reports and InsightFull Web-portal



Meetings Formats: Open houses that provided broader information on the airport, customized presentations and independent moderators



Broader Communications: Use of ads, robocalls and social media to reach out to more people, including those not previously engaged



Research: Supporting University of Windsor research on social acoustic metrics associated with community noise annoyance

ACTUAL ORIGINS OF FAA POLICY POSITIONS

FAA's regulatory rationale is derived from a simplistic, 1950s-era acoustic engineering perspective that annoyance prevalence rates are predictable from noise exposure alone

In reality,

community response to aircraft noise exposure is **not** well predicted by noise exposure alone;
and

dosage-response functions do not in themselves support particular regulatory thresholds

[Sanford Fidell, Fidell Associates, Inc.](#)

FIDELL
Associates

ACTUAL POLICY ORIGINS (CONTINUED)

FAA's aircraft noise regulatory policies long antedate both DNL and the development of dosage-response analysis

The familiar 65 dB DNL regulatory threshold is simply a mathematical conversion of an early 1950s-era measure ("Community Noise Rating", or CNR) into units of "Noise Exposure Forecast", or NEF), and thence into units of DNL

FAA's policy thresholds are based on 1) little more than the opinions of a few prominent, World War II-era consultants, and 2) the agency's former charter to promote civil aviation

http://www.euro.who.int/data/assets/pdf_file/0008/383921/noise-guidelines-eng.pdf?ua=1



Recommendation

Strength

For average noise exposure, the GDG strongly recommends reducing noise levels produced by aircraft below **45 dB L_{den}** , as aircraft noise above this level is associated with adverse health effects.

Strong

For night noise exposure, the GDG strongly recommends reducing noise levels produced by aircraft during night time below **40 dB L_{night}** , as night-time aircraft noise above this level is associated with adverse effects on sleep.

Strong

To reduce health effects, the GDG strongly recommends that policy-makers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions the GDG recommends implementing suitable changes in infrastructure.

Strong

The World Health Organization has recently presented new recommendations for aircraft noise exposure to avoid adverse health effects. The new limit is L_{dn} 45 dB which is about one order of magnitude lower than the previous WHO recommendation.

FAA Policy on Addressing Aircraft Noise Complaints / Inquiries from the Public

Introduction: Addressing aircraft related noise is a shared responsibility between the FAA, airport sponsors, airlines, state and local government, and communities.

Policy: FAA seeks to efficiently and effectively respond to and address FAA related aircraft noise complaints and inquiries from the public in a clear, consistent, and repeatable manner that is responsive and applies the best use of FAA resources.

Highlights from the FAA policy include:

- Establishing and utilizing the FAA website to provide the public with up-to-date information regarding on-going projects including FAQs, public meetings and educational information on FAA noise and policy issues.
- Identifying specific information the public must include for the FAA to fully address the complaint/inquiry.
- Utilize the FAA Noise Portal for consistent reporting and tracking of noise complaints and inquiries.
- Accepting and registering noise complaints and inquiries with the necessary information submitted through the FAA Noise Portal, by postal mail, or by voice message.
- Not accepting noise complaints or inquiries from third party automated applications or devices.
- Not responding to the same general complaint or inquiry from the same individual more than once.
- Coordinating with partnering airport sponsors to share applicable noise complaint/inquiry data.
- Providing timely responses to aircraft noise and inquiries.
- Focusing on the content of the noise complaints/inquiries FAA receives not the volume



FAA's Relationship with Airport Sponsors

The FAA recognizes that addressing aircraft noise should be a shared responsibility between the FAA and the airport sponsor.

Partnering Airports Proposal

- **Definition:** An airport sponsor that is coordinating with the FAA on a regular basis in responding to public noise complaints or inquiries to collectively improve consistency in responses to the public and avoid duplication of efforts between the FAA and the airport sponsors.
- **Pre-defined area:** A pre-defined radius that the airport sponsor has agreed to delineate for first-time complaints from individuals who go to the FAA Regional Aircraft Noise Website (e.g., current geographical area for aircraft noise complaints). The pre-defined area can be airport-specific.





Noise Abatement Guidelines

- General-purpose rules of thumb
- Validated for all ten aircraft
- Now included as a part of HAI's Fly Neighborly Curriculum
- Feedback from early adopters indicates that it's working!



Helicopter Noise Abatement Recommendations

Level Flight:

- ✈ Accelerations are quieter than decelerations
- ✈ Straight flight is quieter than turning flight

Turning Flight:

- ✈ Turning away from the advancing blade (especially when decelerating) is quieter than turning into the advancing blade
- ✈ Level turns are quieter than descending turns

Descending Flight:

- ✈ Straight-in flight is quieter than turning flight
- ✈ Steeper approaches are quieter than shallow approaches

Decelerations:

- ✈ Level flight decelerations are quieter than descending or turning flight decelerations

Maneuvering:

- ✈ Smooth and gentle control inputs are quieter than rapid control inputs

These recommendations are flight tested and scientifically vetted by the U.S. Department of Transportation and NASA to support the Fly Neighborly Goals.

Take the Fly Neighborly training at: <https://go.usa.gov/xOPCW>

Fly neighborly procedures/recommendations should be executed in the safest manner possible and followed only to the extent safety is not compromised.



<https://anesymposium.aqrc.ucdavis.edu/sites/g/files/dgvnsk3916/files/inline-files/Greenwood.ANES2020.pdf>

Thoughts and takeaways by Tom Materna

- The SFV will benefit from early and better communication on airport and flight path changes. Listening to the community works.
- As we have seen from the 15 Task Force recommendations engaging the community yields good community consensus and solutions.
- The CAC should actively engage the community and work with LAWA and the FAA to see that all the Task Force recommendations are implemented.
- There are good options for noise complaint interfaces alternatives to WebTrak that the CAC should explore and invite the vendors to give presentations.
- Thank you CAC and LAWA for sending me to the symposium.

