

# **BWFS Update**

## **January 24, 2018**

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# Topics

- What is happening?
- Logan Volume
- RNAV Study Update
- Discussion
- Appendix:
  - Litigation Page on BWFS Site
  - Quieter Aircraft Details
  - Links & Resources

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# What is happening?

- 1. Massport CAC (MCAC)** held 25 meetings in 2017 (Executive Committee, General Membership and Aviation Ops and Environment & Health Subcommittees) – all meetings are open to the public.
  - Hiring Executive Director has been held up by funding.
  - Website ([www.massportcac.org](http://www.massportcac.org)) - sign up for email alerts.
  - Motions: see next slide
- 2. RNAV Study:** – Block 1 approved by MCAC vote. Moving to Block 2 analysis – next update from Study Team expected in March. More later.....

# MCAC Motions

Approved by General Membership in March of 2016:

1. Require Airbus 3 Series Planes flying to and from Logan Airport to install the noise suppressor known as the Vortex Generators
  - ***Update: Airlines have been contacted by Massport – topic at January Massport Board Meeting – more needs to be done***
2. Adopt a FlyQuiet Program like Chicago (ORD) or San Francisco (SFO) – fleet noise tracking and quarterly reporting.
  - ***Update: drafts have been circulated. Aviation Subcommittee provided feedback – more needs to be done***
3. Evaluate Noise-based Landing Fees
  - ***Update: legal review/opinion provided, not encouraging, would likely require unified action on the part of multiple airport operations - options still being discussed***

Note: MCAC is an advisory-only agency. These are provided to Massport and the Legislature as recommendations.

# Logan is a busy airport

- Logan passenger volume is growing, up 5% to 38.4 million in 2017. Logan has a high load factor at 84% (compared to industry avg. 74% in 2002<sup>1</sup>).
- Demand comes from the people and businesses in the region. With a strong economy, people want to travel here for work, school, recreation, business are relocating here or growing and the people that live here want to travel.
- Boston is booming – Logan demand is tied to this growth and economic prosperity as well as proximity.

<sup>1</sup> [https://www.transtats.bts.gov/Data\\_Elements.aspx?Data=5](https://www.transtats.bts.gov/Data_Elements.aspx?Data=5):

# Expect continued growth

- Regionalization has not worked elsewhere - Akron/Cleveland example. Invested \$110M (2008-2018), Allegiant and Southwest dropped out in 2017<sup>1</sup>.
  - Providence 2006-5.2M passengers → 2016-3.6M (-30%)<sup>1</sup>
  - Manchester, 2006-3.8M passengers → 2016-2.0M (-47%)<sup>1</sup>
- Worcester airport is now more capable with upgraded NAV - JetBlue adding a new flight to JFK.
- Airlines are making record profits (\$34.5B net profit in 2017<sup>2</sup>) and are putting that capital back into new more efficient equipment. See Appendix for details.
- Industry outlook is for 4.7% Average Annual Passenger Traffic growth over the next 20 years<sup>3</sup>.
- To support this growth, Boeing forecasts a need for more than 41,000 new deliveries (of jet airplanes), valued at over US \$6 trillion, for growth and replacement over the next 20 years.<sup>3</sup>

<sup>1</sup> Source: Wikipedia

<sup>2</sup> <http://www.iata.org/pressroom/pr/Pages/2017-12-05-01.aspx>

<sup>3</sup> <http://www.boeing.com/resources/boeingdotcom/commercial/market/current-market-outlook-2017/assets/downloads/2017-cmo-6-19.pdf>

# Not just us: FAA & Industry recognize noise problems

- FAA committed to Congresswoman Clark and 33L Officials and Legislators at November 2016 meeting to work on 33L RNAV concerns through the RNAV Study.
- At an Academy of Sciences Technology for a Quieter America (TQA) Workshop - *Commercial Aviation: A New Era (May 2017)*<sup>1</sup> – noise was recognized as the single biggest obstacle to growth.
  - *“Where noise from commercial aviation is concerned, considerable progress has been made in reducing noise, yet it continues to pose a major challenge for the aviation industry and, if not adequately addressed, could substantially inhibit future growth.”*
- RNAV concentration and shifting problems with Metroplex implementations in Charlotte, DC, NorCal, Phoenix and SoCal.
- Some filed litigation in time (SoCal), PHX got exception. DC trying to. NorCal, negotiated agreement – Charlotte, some changes made – still have big issues.

<sup>1</sup> [http://www.belmont-ma.gov/sites/belmontma/files/pages/final\\_report\\_-\\_academy\\_of\\_sciences\\_tqa\\_workshop\\_with\\_cover.pdf](http://www.belmont-ma.gov/sites/belmontma/files/pages/final_report_-_academy_of_sciences_tqa_workshop_with_cover.pdf)



# Industry is taking noise seriously

- Aviation for America (A4A) Presentation from Nov. 15<sup>th</sup> N.O.I.S.E. Meeting in Charlotte, NC. A4A represents airlines and aircraft manufacturers.

## How Aviation Is Addressing Heightened Noise Concerns

### ✦ With Improved Finances, U.S. Airlines Are Purchasing More Newer & Quieter Aircraft

- The top-ten U.S. passenger airlines:
  - took delivery of 353 new aircraft in 2016;
  - projected delivery of an additional 337 by year-2017;
  - more than 1300 firm orders for new aircraft scheduled for delivery in the coming years

### ✦ The New U.S./ICAO "Stage 5" Noise Standard Goes into Effect for New Aircraft Year-End 2017

- 7 decibels reduction from Stage 4; approximately 35% quieter



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## How Aviation Is Addressing Heightened Noise Concerns (cont.)

### ✦ Public-Private CLEEN R&D Program with FAA for Additional Noise Reduction at Source

- Goal is aircraft achieving a 32 decibel reduction relative to the current standard

### ✦ Implementing Continuous Descent & Other Noise-Reducing Operating Procedures Where Safe and Practicable

- ATC procedures are highly technical and safety is paramount; and "local" procedures must work within National Air Space

### ✦ Supporting Community Outreach/Engagement



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Source: [http://www.belmont-ma.gov/sites/belmontma/files/pages/a4a-airlines\\_and\\_aircraft\\_noise\\_management\\_reduction-11-15-17.pdf](http://www.belmont-ma.gov/sites/belmontma/files/pages/a4a-airlines_and_aircraft_noise_management_reduction-11-15-17.pdf)



# RNAV Study & 33L Departures

## how did we get here?

- Discussions about new departure flight path for 33L and new waypoint in Medford dates back to at least 2008 with Logan CAC as part of BLANS – see May 30<sup>th</sup>, 2008 FAA report to Elected Officials:



Source:[http://www.bostonoverflight.com/docs/BLANS\\_Phase2\\_Outreach\\_ElectedReps\\_080530\\_AttendanceNotesAgendaPresentation.pdf](http://www.bostonoverflight.com/docs/BLANS_Phase2_Outreach_ElectedReps_080530_AttendanceNotesAgendaPresentation.pdf)

# 33L RNAV Timeline

- Multiple alternatives discussed and evaluated (2008-2012)
- FAA Rejects Logan CAC preferred alternative, moves forward with current procedure.
- January 2013 – Publication of DRAFT EA – Public Comment period. Meeting with Legislators (Feb 5<sup>th</sup>), meeting in Milton (Feb 7<sup>th</sup>). Comment period extended to March 15<sup>th</sup> (384 comments).
- June 2013 - Final EA and FONSI Published. Flights start using new procedures (Departure procedures are by destination waypoint – there is no one 33L RNAV SID procedure).
- August 2013 – Milton/Hyde Park/Readville Residents Group files Petition for Review of EA/FONSI (dismissed in 2014)
- September 2013 – Belmont appoints Logan CAC Rep (Watertown follows a few months later).
- Fall 2013: Letters from Officials & Legislators to FAA & Massport.
- Oct. 2013 Quiet Belmont formed

Documents supporting the timeline - <http://www.belmont-ma.gov/logan-airport-community-advisory-committee/pages/logan-cac-document-index>

# 33L RNAV Timeline (cont.)

- December 2013 – Public Meeting, Belmont Town Hall.
- 2014-Two Post-implementation Reviews (FAA playbook)
- Noise studies in Belmont & Watertown
- Logan CAC focused on BLANS Phase 3 – Runway Use
- Arlington (Frank Ciano), Belmont (Myron Kassaraba), Cambridge (Bill Deignan), Watertown (Dennis Duff, Harvey Steiner) CAC Reps form coalition to work together on common goal to get 33L RNAV SID reevaluated and alternatives considered.
- Quiet Belmont evolves to Boston West Fair Skies.
- January 2015: Arlington, Belmont, Watertown made joint motion at the Logan CAC requesting that the FAA re-examine 33L RNAV SID. Response is to talk to Masssport.....

Documents supporting the timeline - <http://www.belmont-ma.gov/logan-airport-community-advisory-committee/pages/logan-cac-document-index>

# 33L RNAV Timeline (cont.)

- Decided we needed to make our own case - requested flight path data for busy 33L days before & after RNAV.
- Summer 2015: Ramp-up of official requests for reexamination of the procedure – first BWFS meeting.
- Kent Johnson programming & visualization of before/after flight paths.
- October 2015 meeting/formation of the 33L Municipal Working Group by Officials from Arlington, Belmont, Cambridge and Watertown (Medford & Somerville have joined in 2017)
- **November 2015 – BWFS Meeting and presentation of analysis.**
- Intensity of concentration gets attention. This coincides with RNAV complaints from other cities.
- December, Milton meeting with FAA.

Documents supporting the timeline - <http://www.belmont-ma.gov/logan-airport-community-advisory-committee/pages/logan-cac-document-index>

# 33L RNAV Timeline (cont.)

- January 2016: more letters
- July 2016: 33L Municipal Working Group meeting at State House
- September 2016: Letter from Congressional Delegation requesting meeting with FAA
- October 2016: Announcement of RNAV Study MOU
- November: 33L Municipal Working Group and Officials meeting with FAA in Burlington. Included Deputy Director Carl Burleson.
- February 2017, November 2016: RNAV Public Meetings

Documents supporting the timeline - <http://www.belmont-ma.gov/logan-airport-community-advisory-committee/pages/logan-cac-document-index>

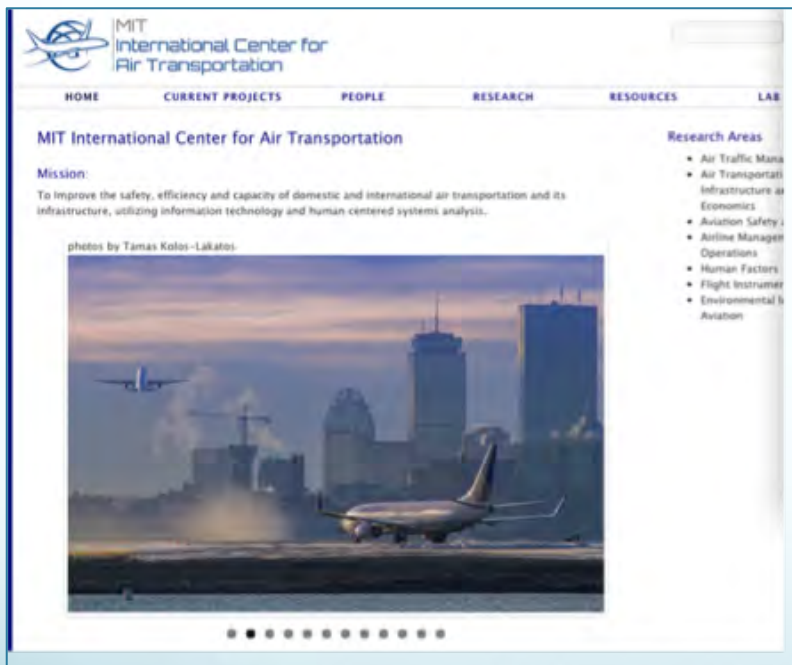
# RNAV Study

- What it is: focused on PBN/RNAV. Looking at flight paths & procedures – where and how the planes are flying.
- What it is not intended to address:
  - When (time of day, curfews, etc. the planes are flying)
  - How many - volume
  - What runways are used when – runway use
- All valid issues: they are not in the scope of the current RNAV Study.

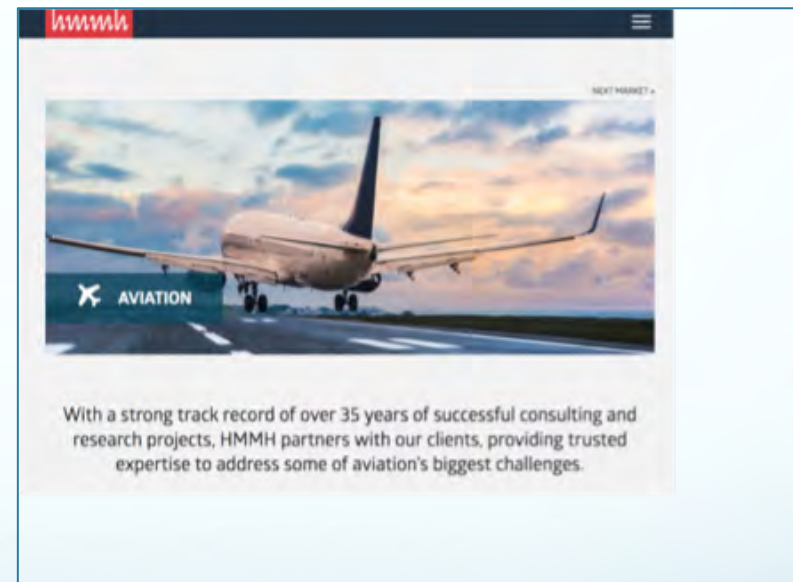


# MIT Lab & HMMH

- ASCENT/Center of Excellence – already doing research for the FAA.
- Access to Airline Pilots Association, Airlines and FAA & Volpe.



<http://icat.mit.edu/>



<https://hmmh.com/markets/aviation/>

# RNAV Study Schedule



## Massport/FAA MOU Process Timeline (Preliminary/Subject to Change)

- **Block 1**
  - MCAC/Public Meeting Feb 2017
  - Briefed MCAC Aviation Subcommittee May 2017
  - Briefed MCAC Aviation Subcommittee Sep 2017
  - MIT Technical Feasibility/Noise Analysis Oct 2017
  - MCAC/Public Meeting Block 1 and update on Block 2 Nov 2017
  - MCAC Block 1 Final Recommendations Dec 2017
  - MPA Block 1 Recommendation to FAA Jan/Feb 2018
  - FAA internal review (safety, efficiency, NEPA) Ongoing
  - FAA Implementation Process Ongoing
  
- **Block 2**
  - MCAC/Public Meeting Feb. 2017
  - Briefed MCAC Aviation Subcommittee May 2017
  - Briefed MCAC Aviation Subcommittee Sept 2017
  - Technical Review (procedure and noise analysis) Jun 2017- Ongoing
  - Brief MCAC (Full and Aviation Subcommittee) Mar 2018- Ongoing
  - MIT Technical Feasibility/Noise Analysis to FAA and Massport TBD
  - MCAC/Public Meeting on Block 2 May 2018
  - MCAC Block 2 Final Recommendations TBD
  - MPA Recommendation to FAA TBD
  - FAA internal review (safety, efficiency, NEPA) TBD
  - FAA implementation (may include extensive NEPA process) TBD

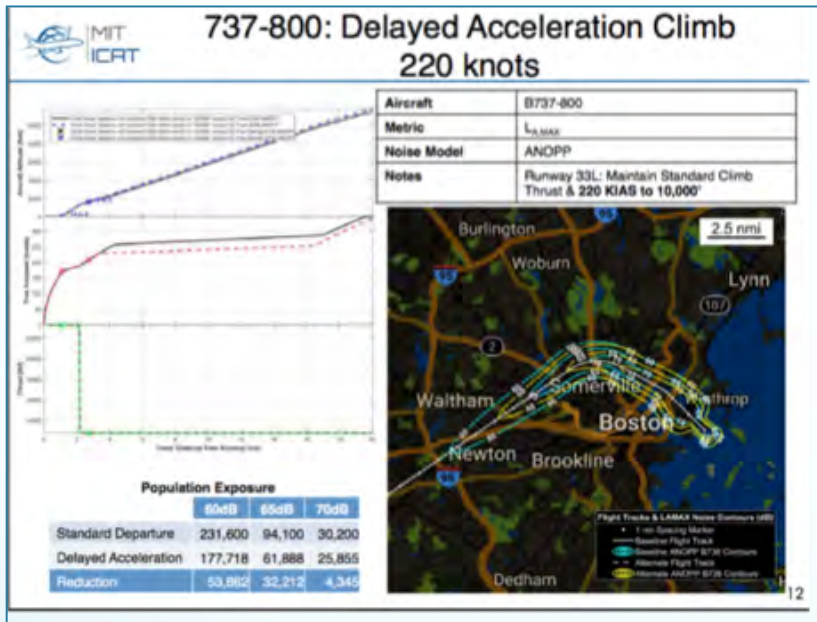
**MCAC  
APPROVED**

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Source: <http://massportcac.org/wp-content/uploads/2017/11/RNAV-Study-Block-1-Recommendations-11-14-2017.pdf>

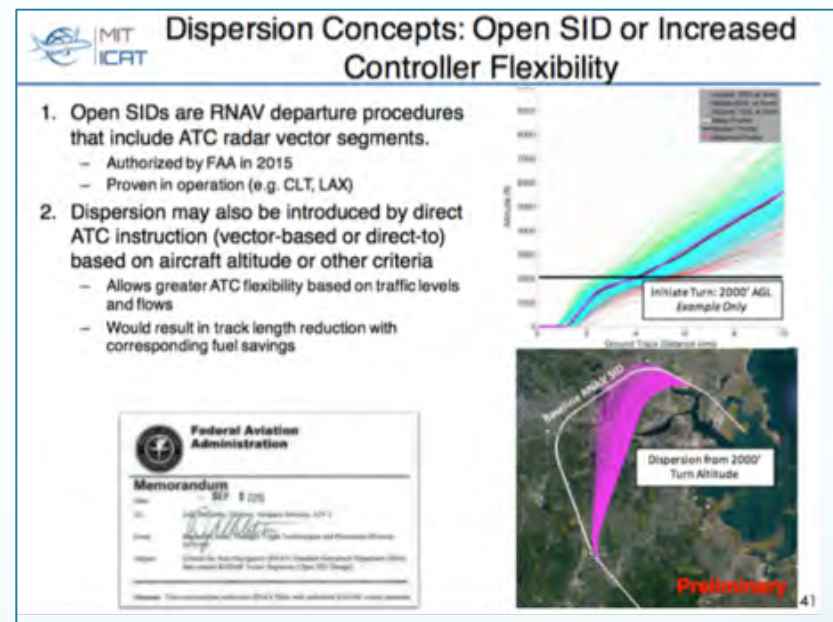
# Block 1 & Block 2 & 33L Departures

## Block 1: Reduced Speed Departures (1-D1) - Approved



<http://massportcac.org/wp-content/uploads/2017/11/RNAV-Study-Block-1-Recommendations-11-14-2017.pdf>

## Block 2: Dispersion – In analysis



<http://massportcac.org/wp-content/uploads/2017/10/RNAV-Study-2017-09-28-MCAC-Briefing-ilovepdf-compressed-1.pdf>

Interesting thesis paper on dispersion options:  
<https://dspace.mit.edu/handle/1721.1/110790>



# FAA Evaluation of Proposed Procedures

- Block 1 Example – 33L Arrival procedure

## Environmental Process

- Both proposed RNAV approach procedures are consistent with the *October 2007 Record of Decision*.
  - Available for review at:  
<http://www.bostonoverflightnoisestudy.com/phase1.aspx>.
  - The requirements used to develop this procedure are outlined under the *Alternative 11* section.
- Environmental reviews in accordance with the National Environmental Policy Act were conducted in conjunction with the development of this change.
- The FAA examined the proposed actions and determined that they generally fall under the 2007 Alternative 11 Runway 33L Arrival categorical exclusion and that the procedures are also specifically categorically excluded in accordance with paragraphs 5-6.5 g, i, and p of FAA Order 1050.1F, "Environmental Impacts; Policies and Procedures."



Federal Aviation  
Administration

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Source: <http://massportcac.org/wp-content/uploads/2017/12/FAA-Brief-to-MCAC-on-Proposed-Proc-for-R33L-120717.pdf>

# Dispersion won't be so easy

- Even though 33L RNAV shifted and concentrated noise to a subset of the people that used to have it, re-introducing dispersion will also shift and spread noise creating equity issues.
- MIT Study team will be running analysis of various dispersion options with the intent of decreasing the repetitive use of the current RNAV “highways”.
- They have been evaluating Open SID as well as ATC-controlled vectoring.
- Based on sets of assumptions – simulations will be run to assess impacts – spatial changes in noise. They have proposed several alternative metrics that go beyond annual DNL<sup>1</sup>

Paper looking at alternative noise assessment metrics:

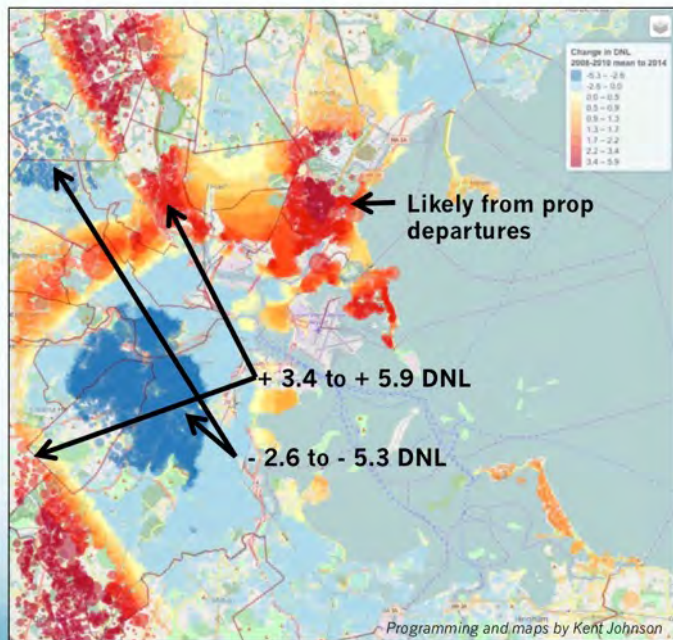
<https://dspace.mit.edu/handle/1721.1/110791#files-area>

[https://dspace.mit.edu/bitstream/handle/1721.1/110791/Morrisa\\_Brenner\\_MS\\_Thesis\\_ICAT\\_Report.pdf?sequence=1](https://dspace.mit.edu/bitstream/handle/1721.1/110791/Morrisa_Brenner_MS_Thesis_ICAT_Report.pdf?sequence=1)

# Q: What Happens to noise?

## Noise Impact – shifted burden

Source: Analysis of DNL data from Massport EDR



Noise impact has shifted and become more concentrated

Orange/Red =  
> 2 DNL increase

Blue = > 2 DNL decrease

© 2016

Source: [http://www.belmont-ma.gov/sites/belmontma/files/u486/33lworkinggroupslides-forfaameetingnov2016\\_final.pdf](http://www.belmont-ma.gov/sites/belmontma/files/u486/33lworkinggroupslides-forfaameetingnov2016_final.pdf)



# Appendix

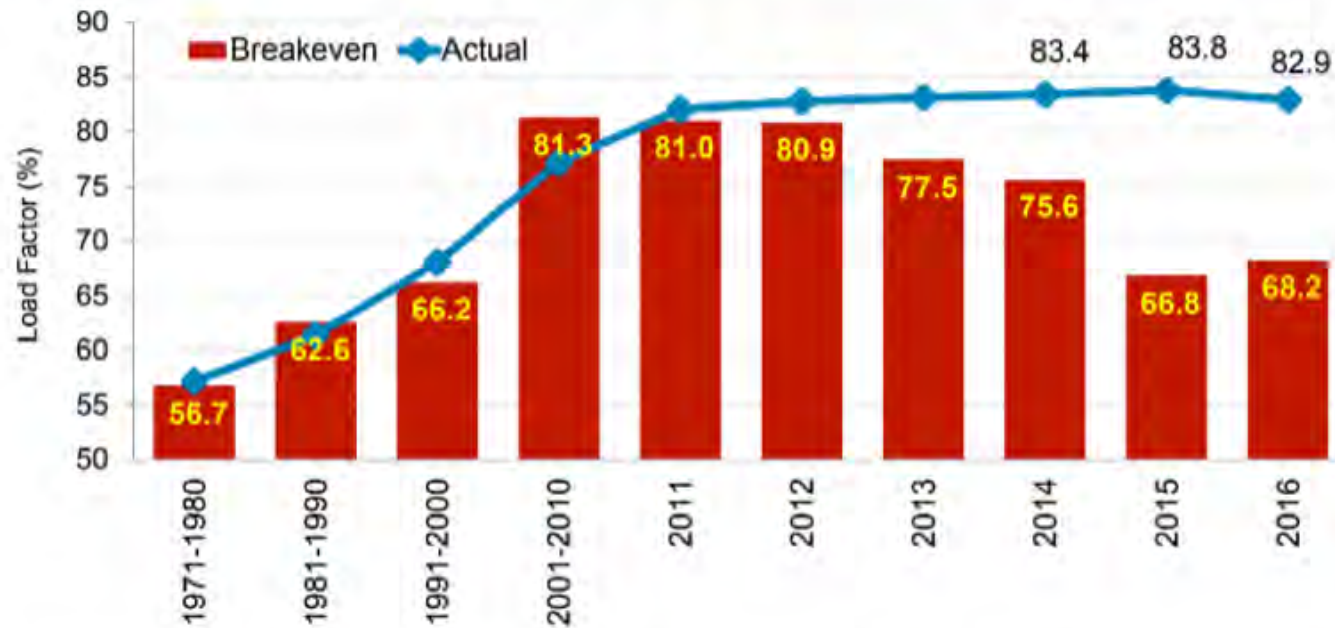
Supplemental Information

# Litigation Information

- New page added to BWFS website:  
<https://www.bostonwestfairskies.org/litigation-information.html>
- Overview of litigation activities - copies of complaints and dockets.
- Every case and situation is unique. Most victories have been on procedural issues.
- 33L departures were litigated in 2008 (increase in volume post 14/32), case abandoned and in 2013 – RNAV SID EA and FONSI, case dismissed.

# Right Sizing to Demand = Profits

**In 2015-2016, U.S. Flights Needed to Fill 2 of Every 3 Seats to Avoid Losing Money**  
Breakeven Load Factor Requirement Rose in 2016 on Lower Yield, Higher Unit Cost




Source: A4A Passenger Airline Cost Index (<http://airlines.org/dataset/a4a-quarterly-passenger-airline-cost-index-u-s-passenger-airlines/>)



Source: <http://airlines.org/dataset/a4a-presentation-industry-review-and-outlook/>

# Boeing 737Max

- 4000+ on order, 74 delivered
- AA: 100, Alaska: 32, Southwest: 200, United: 135



737 MAX

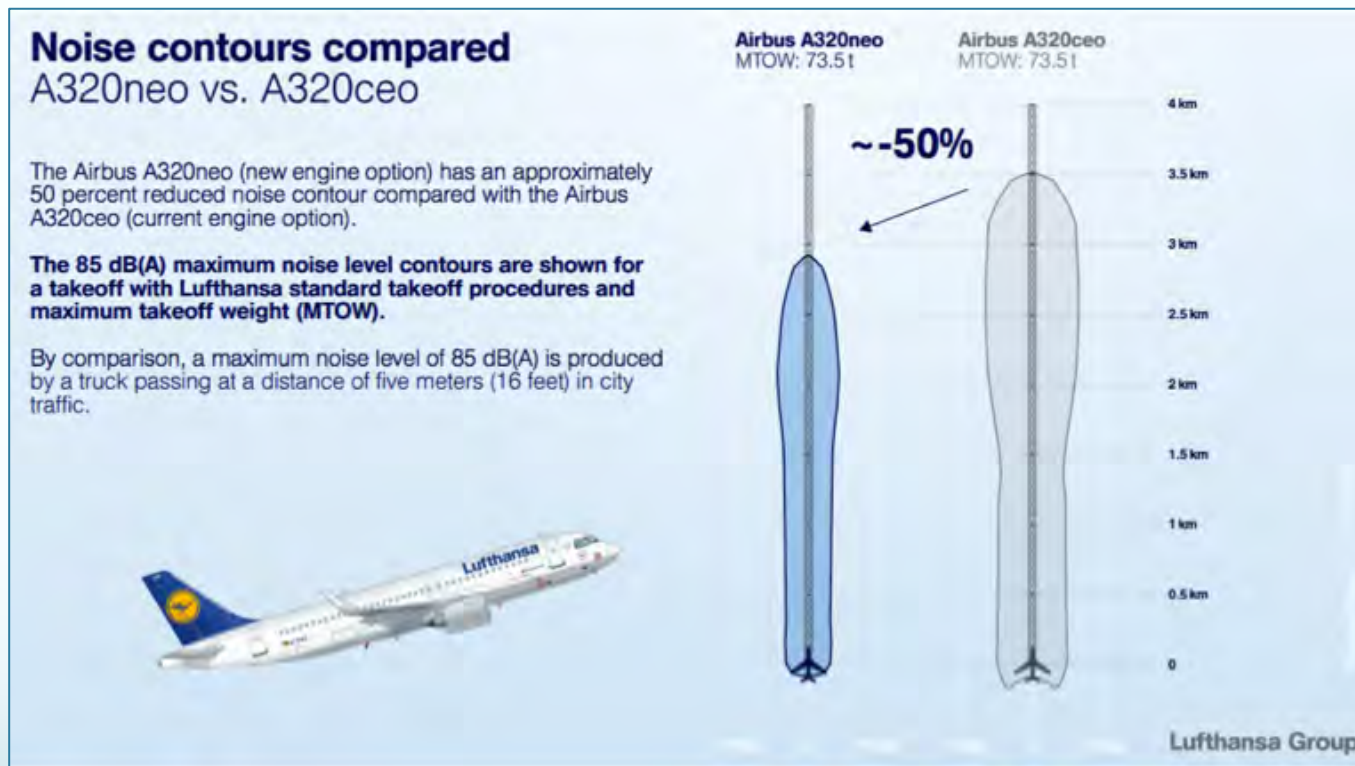
40% quieter than 737 NG

0:50 / 3:10

Source: <http://www.boeing.com/features/2016/09/737max-noise-09-16.page>  
[https://en.m.wikipedia.org/wiki/List\\_of\\_Boeing\\_737\\_MAX\\_orders\\_and\\_deliveries](https://en.m.wikipedia.org/wiki/List_of_Boeing_737_MAX_orders_and_deliveries)

# Airbus A320neo

- 5600+ on order, 249 delivered
- AA: 100, Delta: 100, JetBlue: 85, Spirit: 48, Virgin: 30

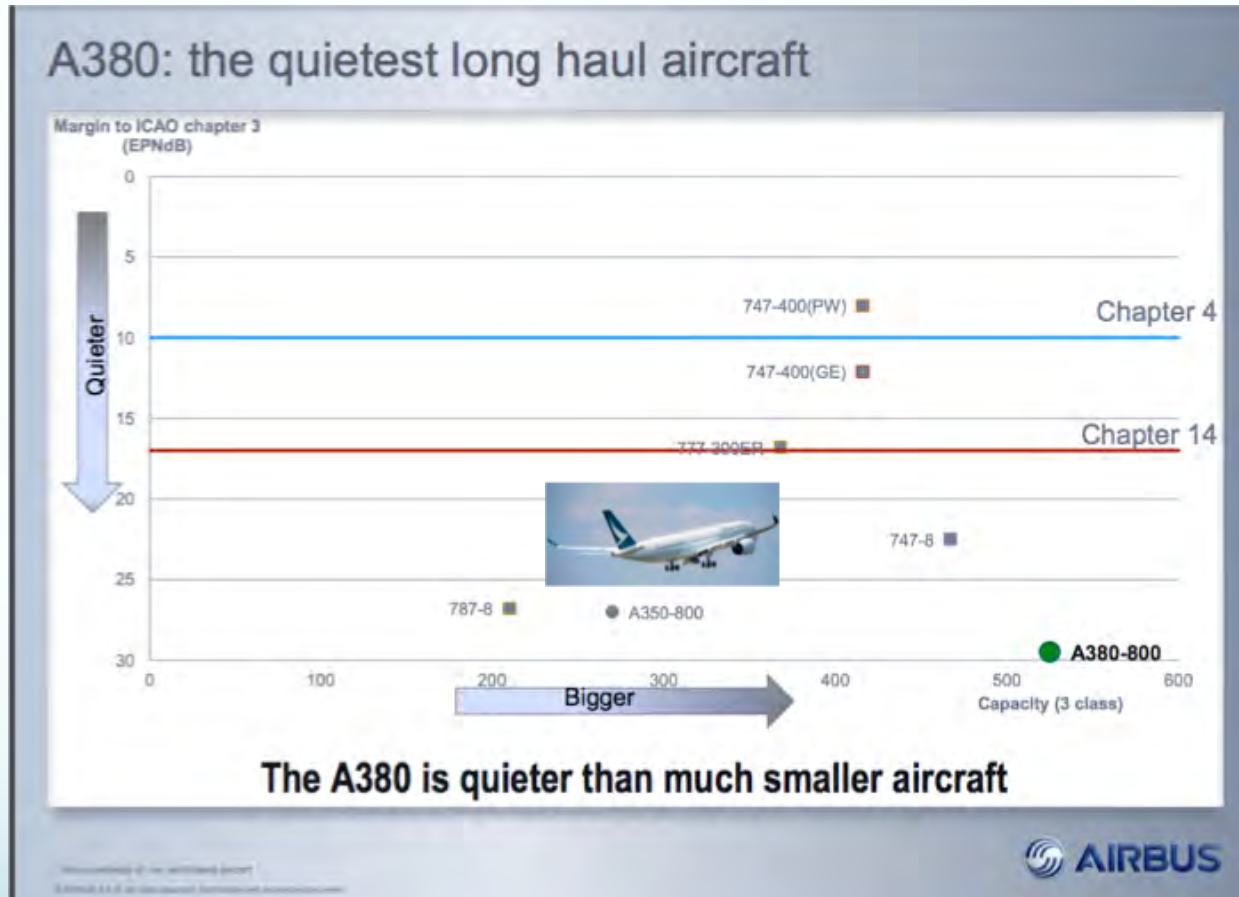


Sources: [https://www.lufthansagroup.com/fileadmin/data/themen/a320neo/LHG\\_Infografik\\_Laermkontur\\_EN.pdf](https://www.lufthansagroup.com/fileadmin/data/themen/a320neo/LHG_Infografik_Laermkontur_EN.pdf)  
[https://en.m.wikipedia.org/wiki/List\\_of\\_Airbus\\_A320neo\\_family\\_orders\\_and\\_deliveries](https://en.m.wikipedia.org/wiki/List_of_Airbus_A320neo_family_orders_and_deliveries)



# Wide-bodies too

- Cathay Pacific flies both 777-300er and new A350's



Source: [https://www.aerosociety.com/Assets/Docs/Events/723/Dan%20Carnelly\\_PDF.pdf](https://www.aerosociety.com/Assets/Docs/Events/723/Dan%20Carnelly_PDF.pdf)



# Links & Resources

- Belmont CAC Document Index: <http://www.belmont-ma.gov/logan-airport-community-advisory-committee/pages/logan-cac-document-index>
- Boston West Fair Skies: <https://www.bostonwestfairskies.org/>
- Massport CAC Document Library: <http://massportcac.org/the-library/>
- RNAV Study MOU: [http://www.belmont-ma.gov/sites/belmontma/files/u486/massport-faa-rnavstudy-mou\\_10-7-16.pdf](http://www.belmont-ma.gov/sites/belmontma/files/u486/massport-faa-rnavstudy-mou_10-7-16.pdf)