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**City of Cambridge  
Community Development Department**

# **Cambridge City Council Health & Environment Committee Hearing on RNAV Airplane Study**

October 15, 2019



# RNAV Airplane Study Update

## Presentation Contents:

- Flight Noise Background
- City Expectations for RNAV Study Results
- Current Study Process
- Next Steps
- Tentative Schedule





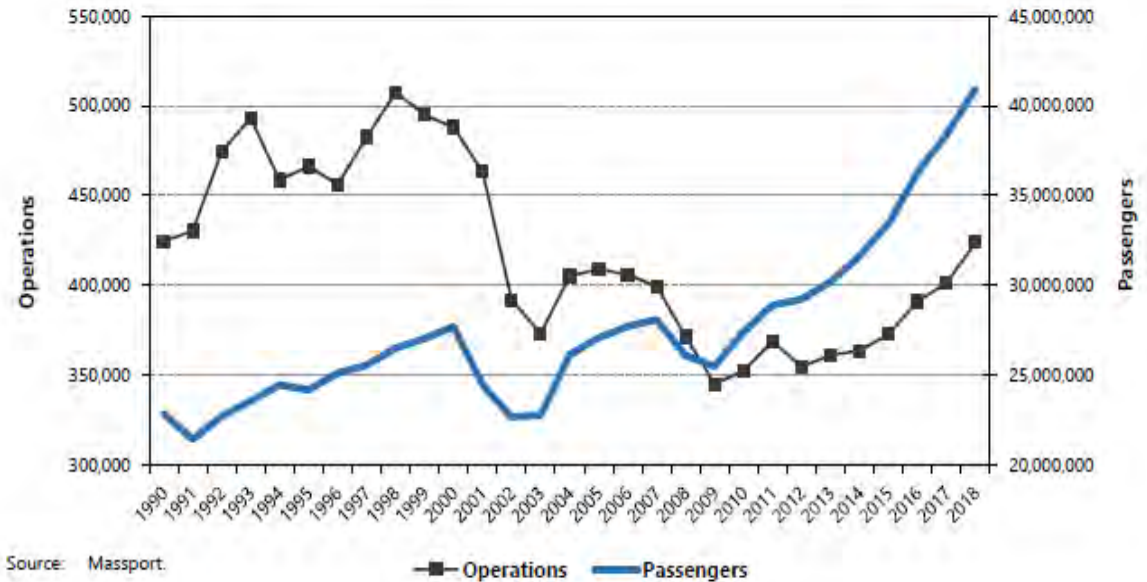
# Airplane Noise Background

- Long history of airplane noise in Cambridge
- City initially worked with Logan Citizen Advisory Committee to address noise complaints
- City is now represented on the state created Massport Advisory Committee
- Engages with Massport, FAA, elected officials and neighboring communities who share similar runway impacts
- Use of runway 33L, which directly affects Cambridge, has increased over the years
- Air traffic at Logan is increasing, resulting in more overflights

# Logan Flight Growth

- Marketing of Logan and strong economy mean increased number of flights
- More flights occurring later at night and earlier in the morning than in prior years
- Trends mean more disturbance for those near the flight paths

Figure 2-7 Logan Airport Annual Passenger Levels Continue to Grow Faster than Aircraft Operations (1990–2018)

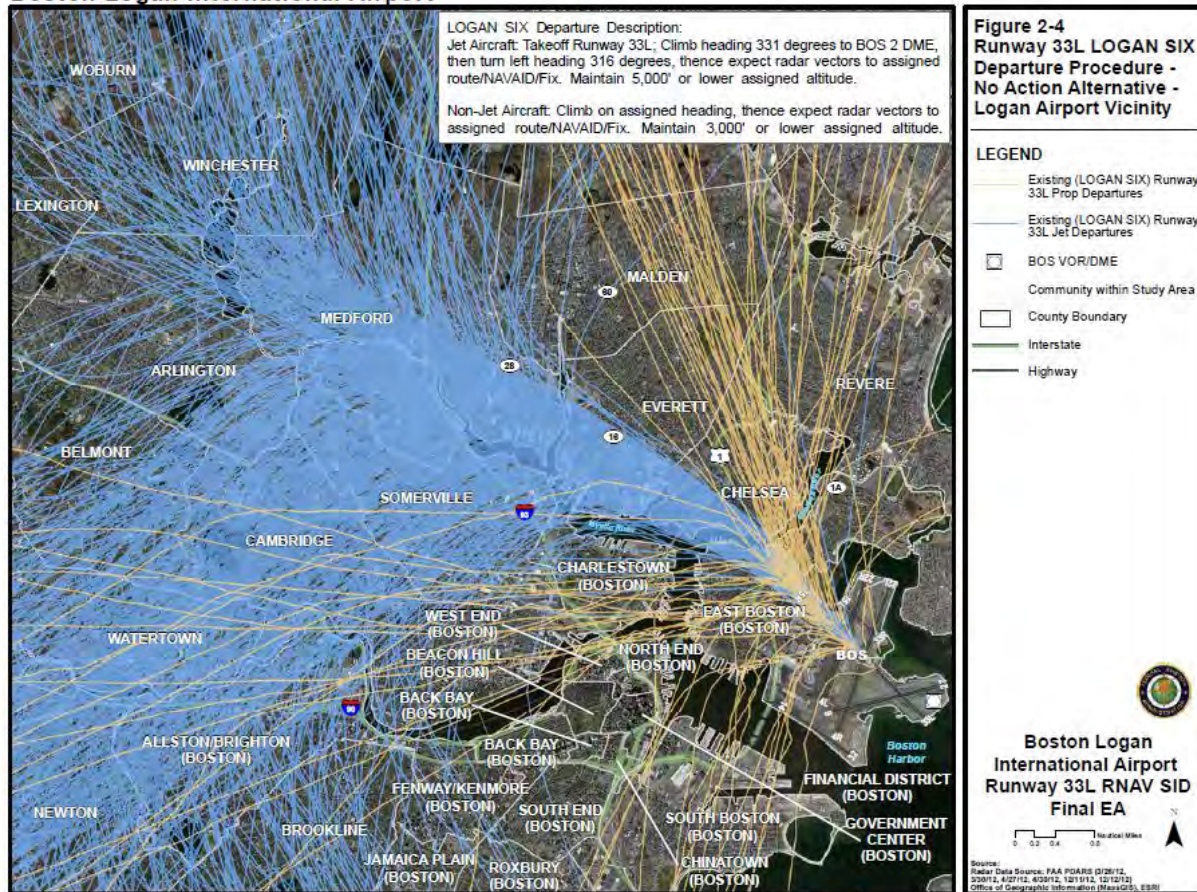


Source: Massport.

# Flight Tracks Before RNAV

## Flights spread over most of Cambridge

Boston Logan International Airport





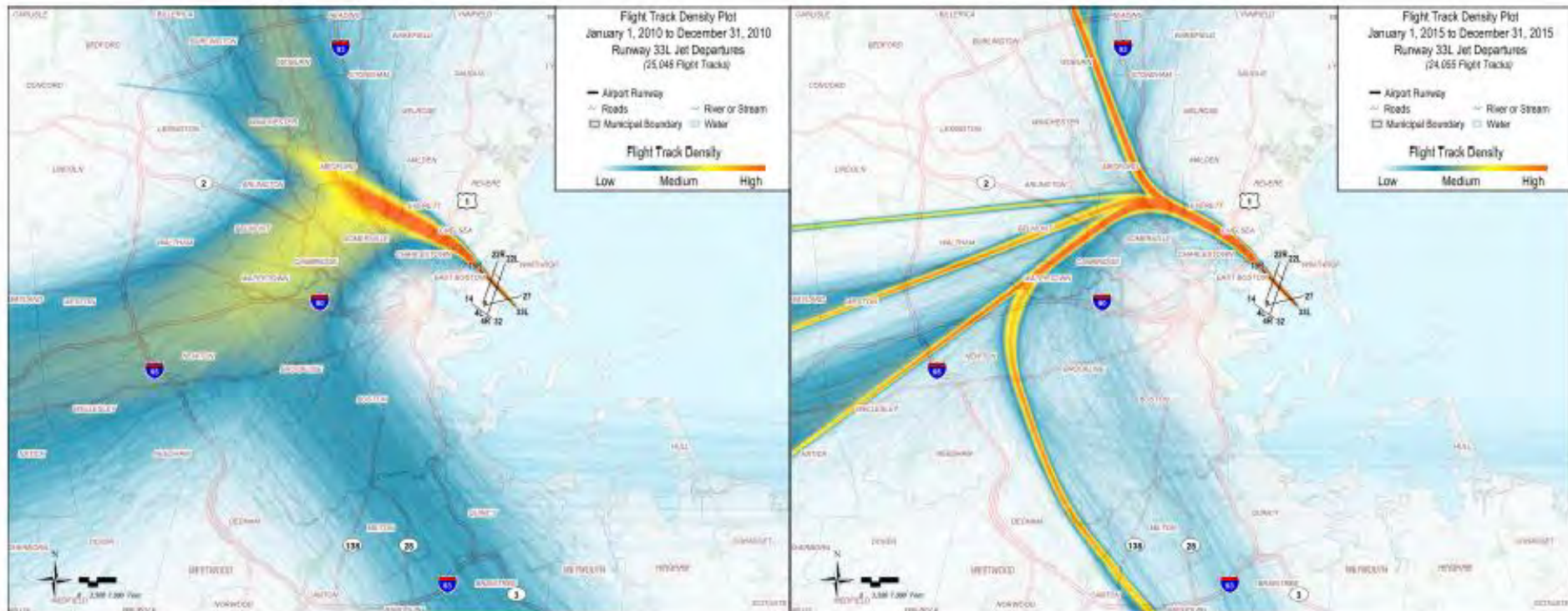
## How did we get here? Runway 33L RNAV Process

- Logan Citizens Advisory Committee, Noise Study Phase II
- Starting in 2008 several alternative RNAV (Area Navigation) options for runway 33L were evaluated.
- Intention was to reduce noise for everyone by bringing planes out over less dense areas and reaching higher altitudes before turning
- Proposed RNAV options were rejected by FAA for operational reasons
- FAA suggested their own RNAV since runway 33L was the only runway without one – implemented in 2013
- Location and frequency of the noise changed in 2013 with new RNAV procedure

# RNAV Track Concentration

2010

2015









## RNAV Study Process

- Memorandum of Understanding (MOU) entered into in October 2016 between FAA & Massport to cooperate in analyzing opportunities for noise reduction through changes or amendments to procedures.
- MIT Lab for Aviation and the Environment engaged to manage the RNAV Study
- The study has two parts: Block 1 (short-term) & Block 2 (longer-term)



## What the Study Doesn't Look At

- Early morning and night-time flights – no curfew allowed under current federal law
- Overall number of flights- longer term issue of capacity for CAC to bring up to Massport
- Aircraft type – being reviewed and monitored by upcoming Massport Fly Quiet report
- Health affects of plane noise – emerging field of study and not yet covered by federal law regulating plane traffic

# Block 1

- Short-term measures to decrease noise on 33L – no shifting of population impacts or environmental review
  - Thrust and speed management
  - Fleet specific performance analysis and noise modeling

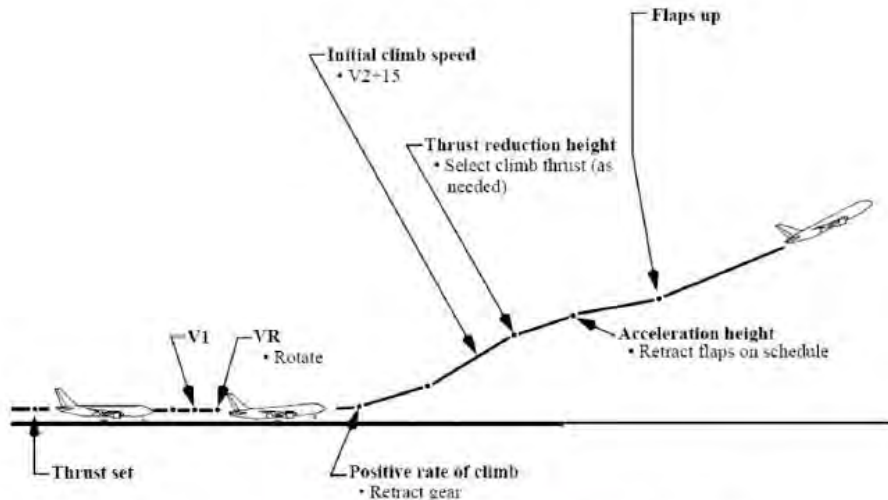
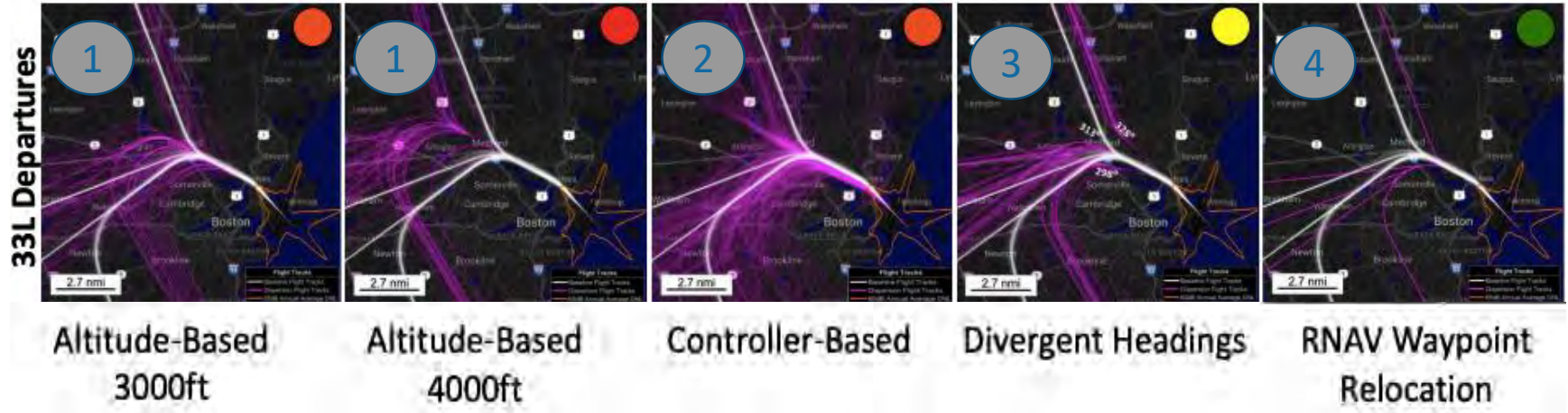


Figure 4. Standard jet departure profile (figure source unknown)

- Not Apparent that anything can be implemented in Block 1 due to concerns about plane speeds

# Dispersion Concepts (Block 2)



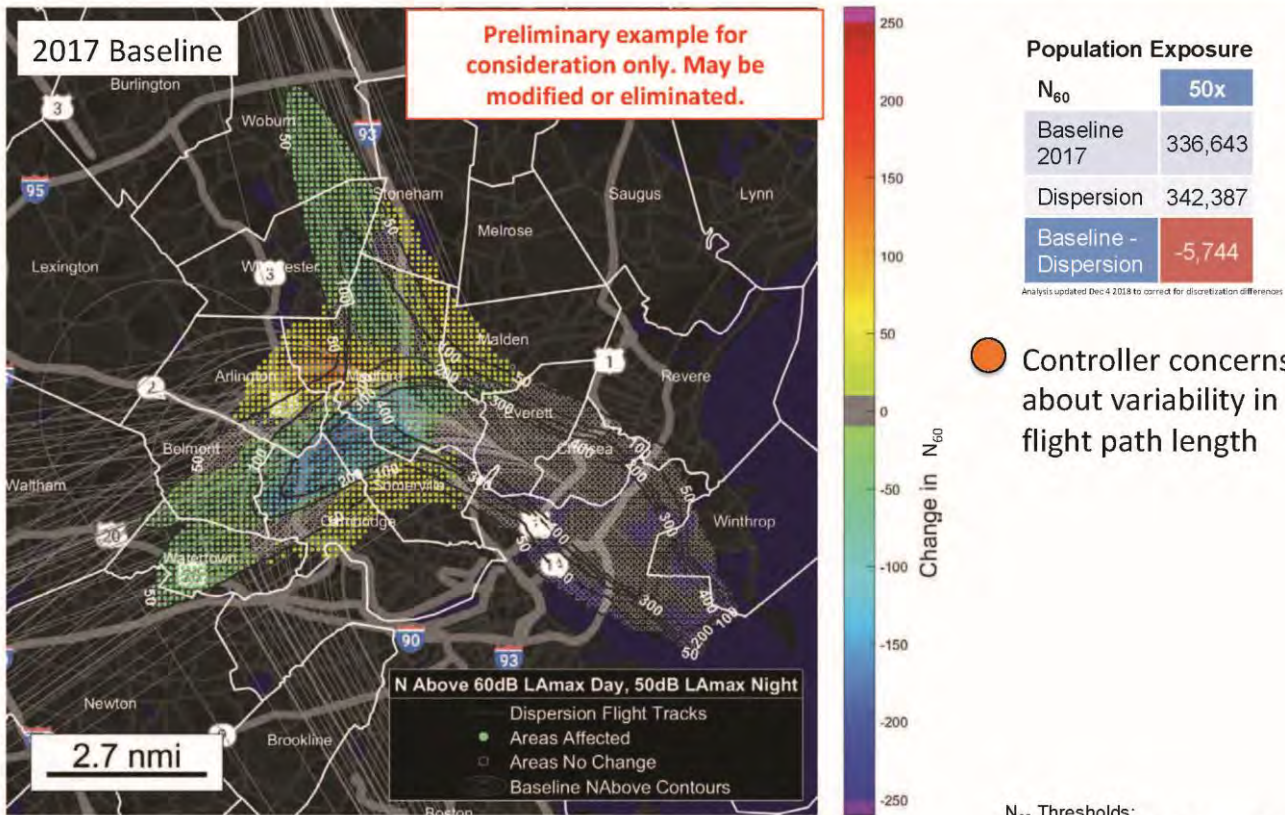
- 1 Altitude-based: Flights are free to vector to next waypoint @ 3k or 4k ft. Different planes reach 3k or 4k ft. at different times (aircraft type, weight, weather)
- 2 Controller-based (ATC vectoring)
- 3 Divergent-headings (create a new fork in trunk)
- 4 Waypoint relocation (4 variants,  $-.5$ ,  $-1$ ,  $+.5$ ,  $+1$ nm)

Source: <http://massportcac.org/wp-content/uploads/2019/05/April-2019-RNAV-MCAC-Presentation.pdf>

# Modeling of Concepts



## 33L Departures Altitude-Based Dispersion at 3000ft Change in $N_{60}$ Compared to 2017



Analysis based on peak day operations; only includes 33L departures

24



## Expected Outcomes for Cambridge from RNAV study

- Reduce concentrations of noise by introducing vectors to spread out overflights
- Could mean “new” noise to additional Cambridge households but less concentration of noise impacts
- Identify option(s) that best share noise impacts both in Cambridge and in surrounding communities



## Questions to Consider

- Does a dispersion concept provide relief for those most impacted by RNAV?
- What is the nature of the relief? Lower volume of flights directly overhead or possibly fewer days with flights?
- For those who benefited most from RNAV – how do the dispersion concepts impact them?
- Will there be metrics or tracking of the performance of an implemented modification to 33L departures against established criteria?



## Process Moving Forward

- Expecting data soon on a data request from study team on options
- City in process of hiring a consultant to review data and look at spread of noise before, now and in each option – one month
- Process to review one or more options that best meet Cambridge's desired outcomes
- Discussions with other 33L communities to discuss options and try to reach consensus
- Massport CAC vote in early 2020 to make recommendation
- FAA review of recommendation and possible modifications – about six months





**Thank You**