

Boston Logan International Airport Massport/FAA RNAV Study Update

Presentation to the Massport Community Advisory Committee
June 8, 2017



RNAV MOU Study

Focus is on Noise Impacts from RNAV and ID Solutions to Reduce Noise

- Reducing Concentration
- Finding opportunities for more over water flights
- Increasing altitude on departures
- Increasing altitudes on arrivals
- Alternative precision over compatible land use
- Use alternative metrics to evaluate noise changes
- Focused, ~18 month study
- Fast track ideas that are technically feasible and provide noise benefits with minimal or no noise dis-benefits

RNAV MOU Study, Critical Steps

- MOU with FAA Identifies roles and responsibilities
 - Commitment of resources to effort
- MOU Technical Team
 - MIT, HMMH, Ex-FAA Manager
- Coordinate with Massport CAC at important milestones
 - October 7, 2016 Announcement with FAA and elected officials
 - Massport Press Release
 - Briefing to CAC Executive Committee 10/24
 - Briefing to CAC Aviation Committee 11/2
 - Massport briefing to Executive Committee 11/29
 - Briefing to Massport CAC 12/08
 - Public Hearing 2/22/17
 - Technical Briefing to CAC Aviation Committee 5/5
 - Continue briefings...
- Incorporate feedback consistent with study

Potential Uses of PBN for Reducing Noise



Departure Procedure Modifications

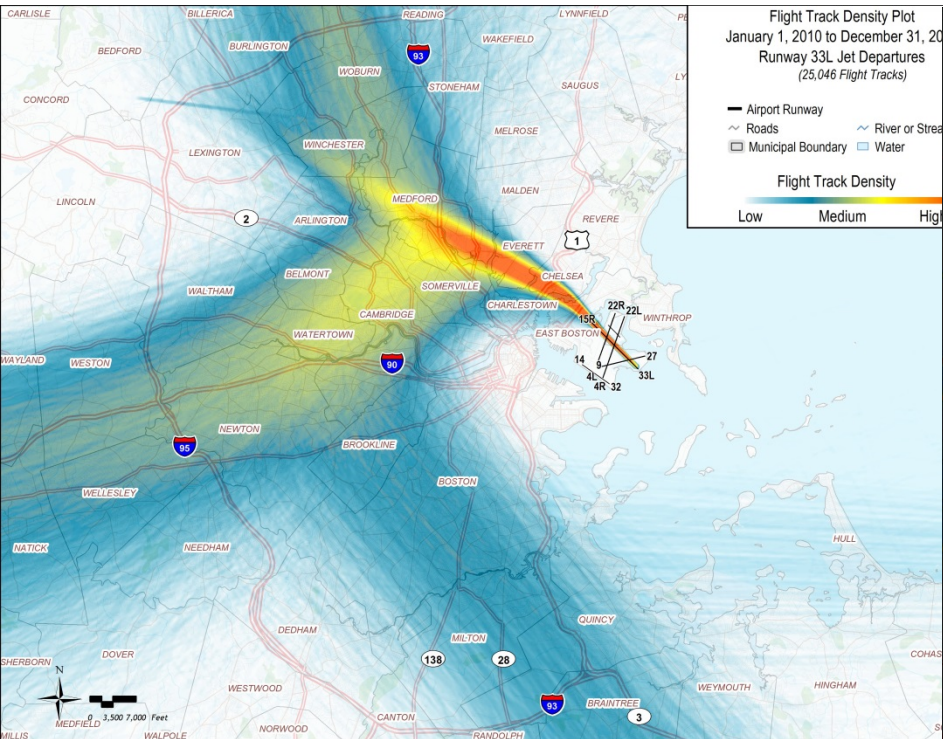
- Noise-preferential lateral paths
 - Early turns after takeoff
 - SID waypoint relocation
 - Overflight of high ambient noise areas
- Reduced procedural separation allowing overflight of areas with compatible land use
- Modified climbs
 - Reduced speed
 - Delayed thrust cutback
 - Thrust scheduling
- Dispersion of departure routes
 - Open-SID
 - Vectors/headings
- Other?

Arrival Procedure Modifications

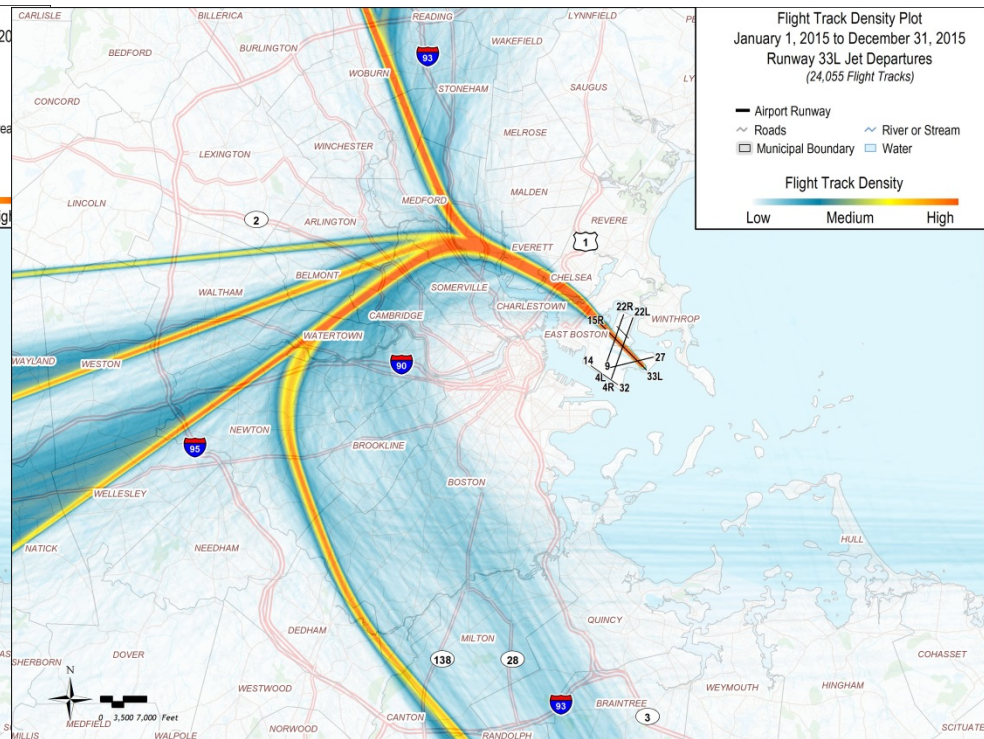
- Noise-preferential lateral paths
 - Overflight of areas with high ambient noise or low population (e.g. Expressway approach)
 - Late turn to final (e.g. Canarsie-like approach paths)
- Steep approaches
 - 1-segment steep approaches
 - 2-segment steep approaches
- Speed/configuration management
- Other?

Runway 33L Departures Density Plots 2010 vs. 2015

Pre-RNAV



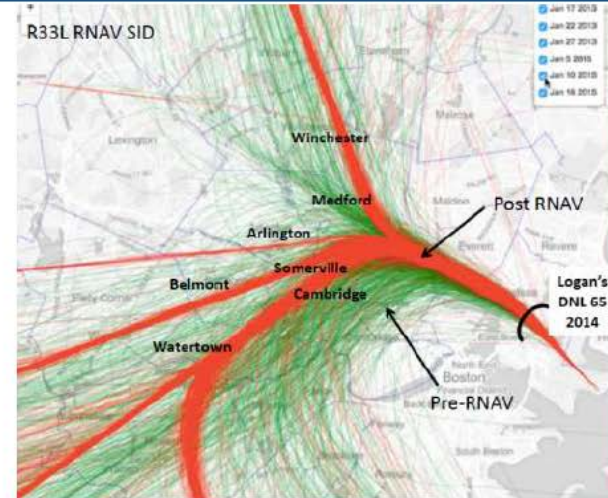
Post-RNAV



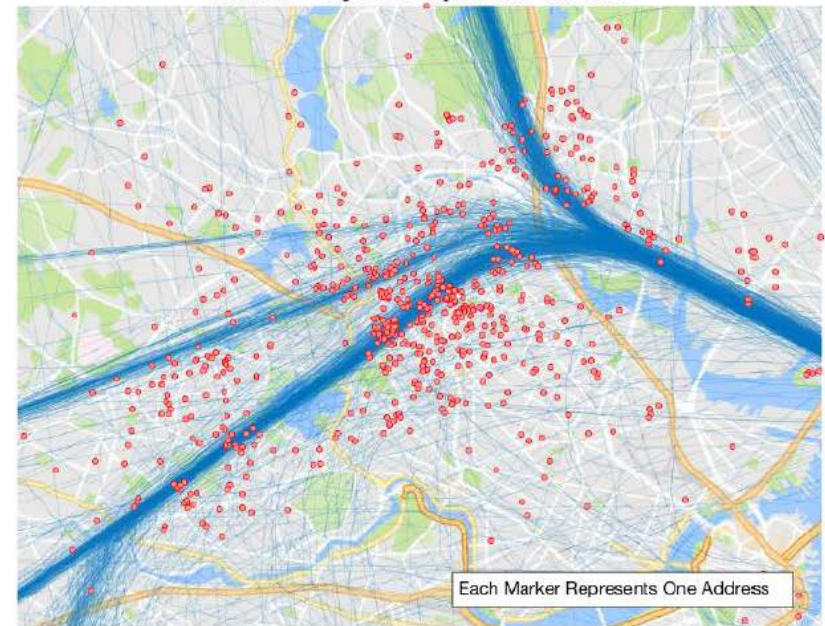
Runway 33L Departure Concepts

- **Thrust and Speed Management**
 - Fleet-specific performance analysis and noise modeling
- **Flight track dispersion**
 - **Discontinuous (Open SID) procedures**
 - Initial RNAV segment on departure, transition to vectors to introduce dispersion, return to RNAV

Review R27 and R4R departures also requested through public input

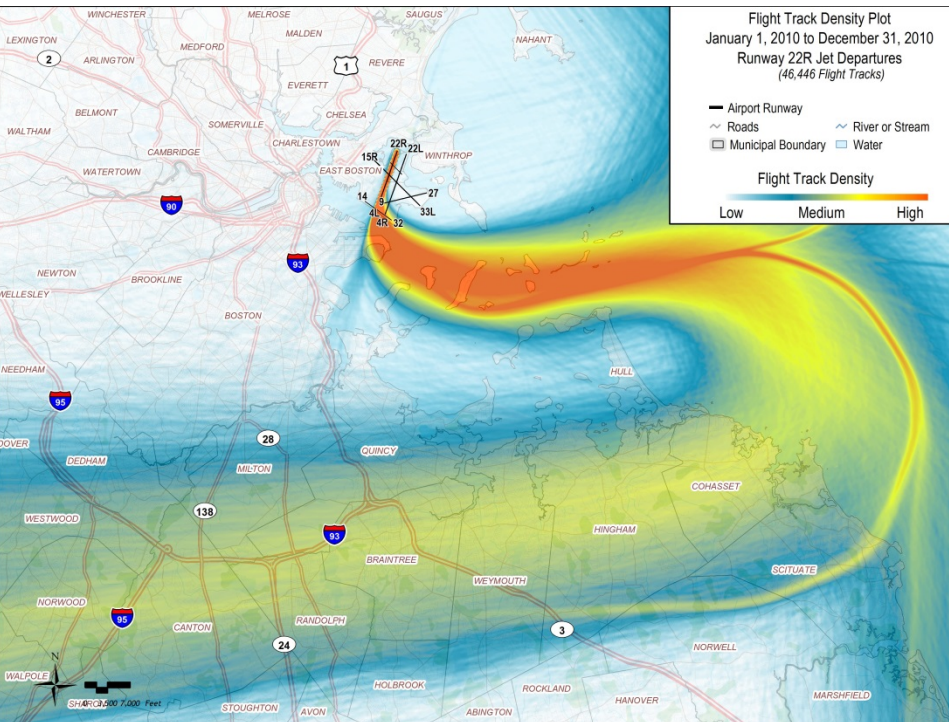


**2015-2016 Noise Complaints at BOS
with 12 Days of Departure Tracks**

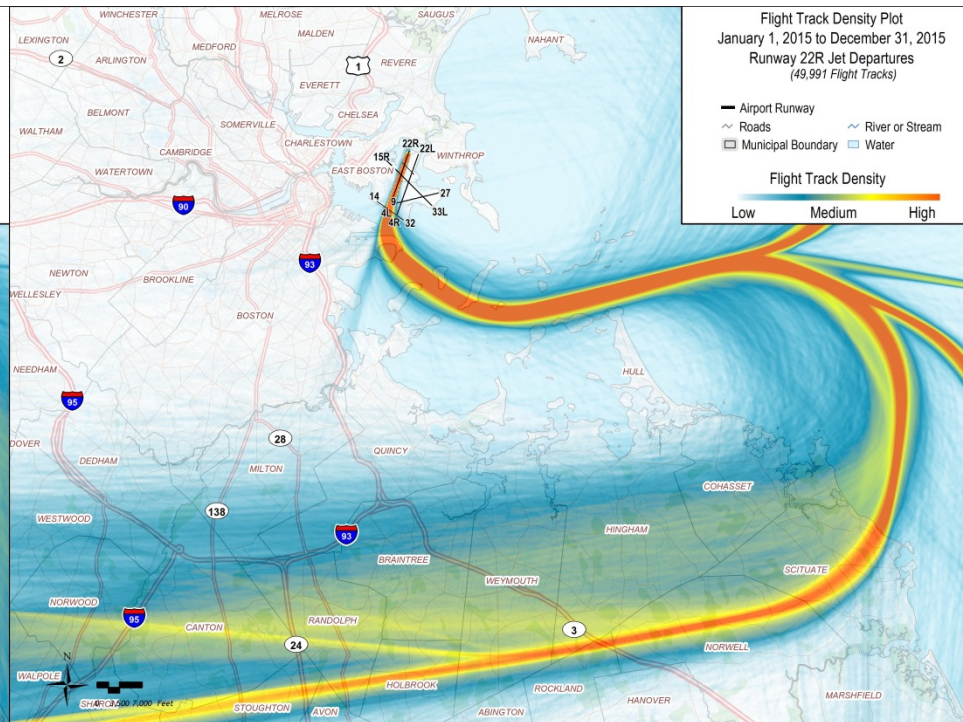


R22R Departures, Density Plots 2010 vs. 2015

Pre-RNAV

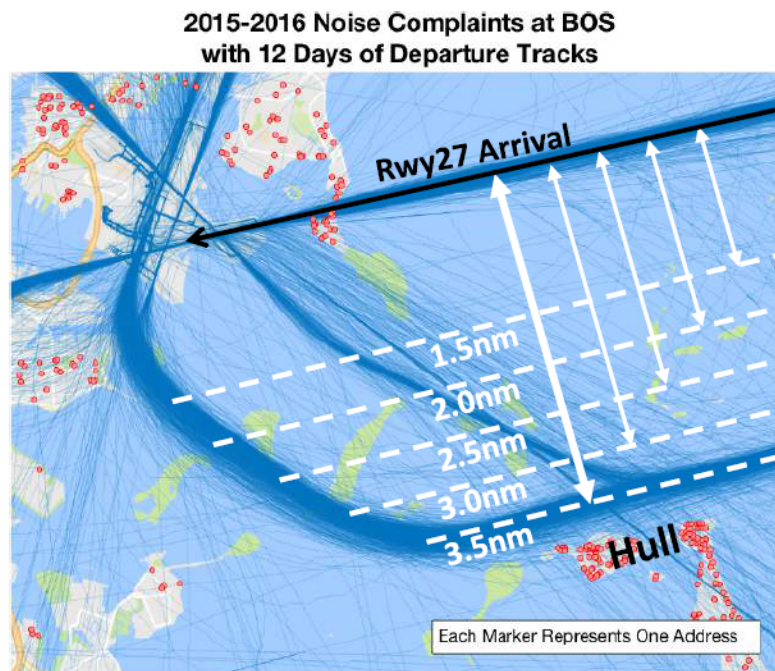


Post-RNAV



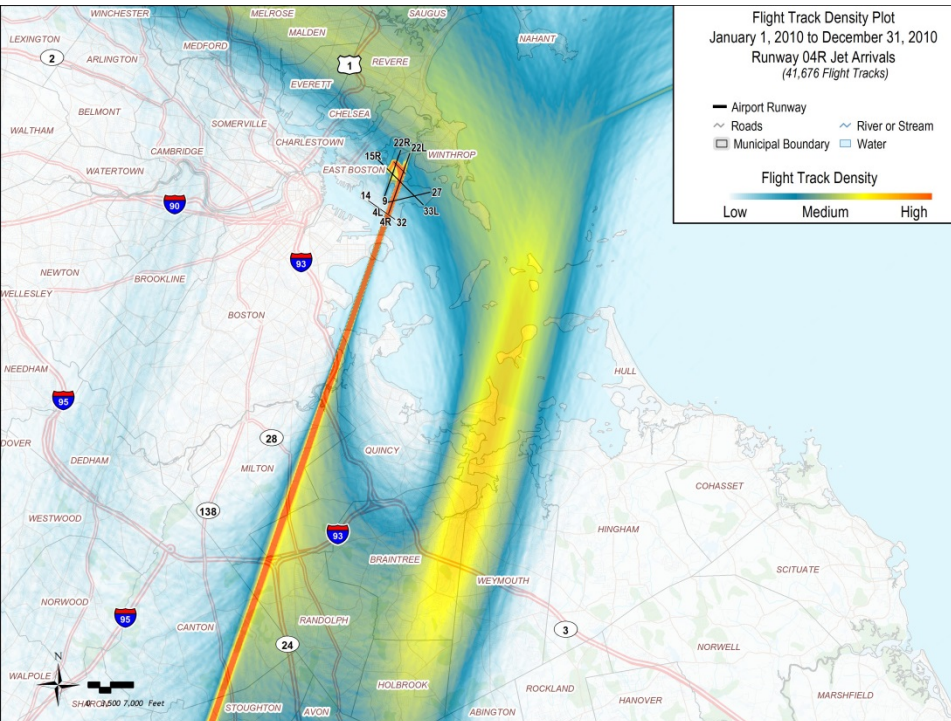
Runway 22R and 22L Departure Procedure Concepts

1. Reduced separation with Rwy 27 arrival flow
2. Early turn after takeoff to reduce noise at Castle Island and surrounding areas

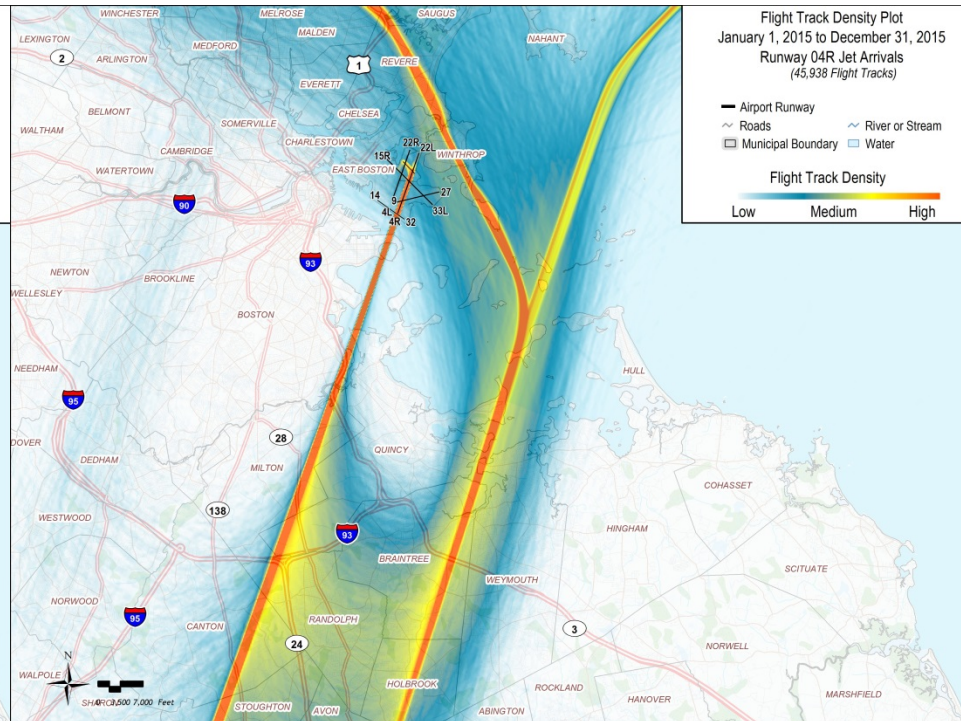


Runway 4R Arrivals, Density Plots 2010 vs. 2015

Pre-RNAV



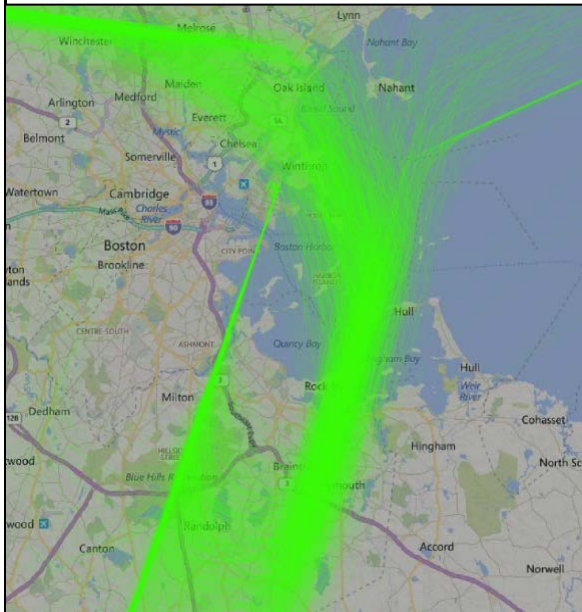
Post-RNAV



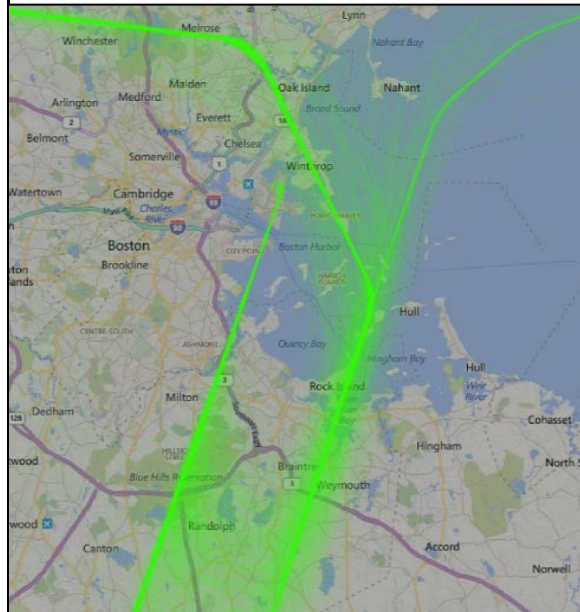
Comparing pre and post RNAV arrivals and departures (Examples 33L & R4R)

**R4R
Arr**

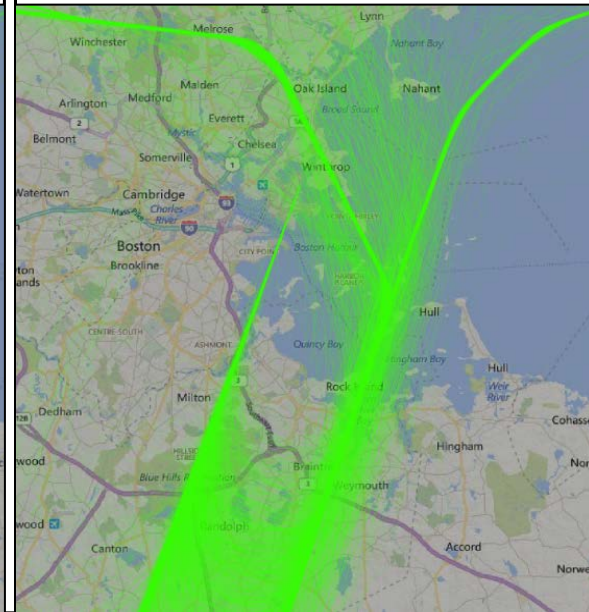
March 2010



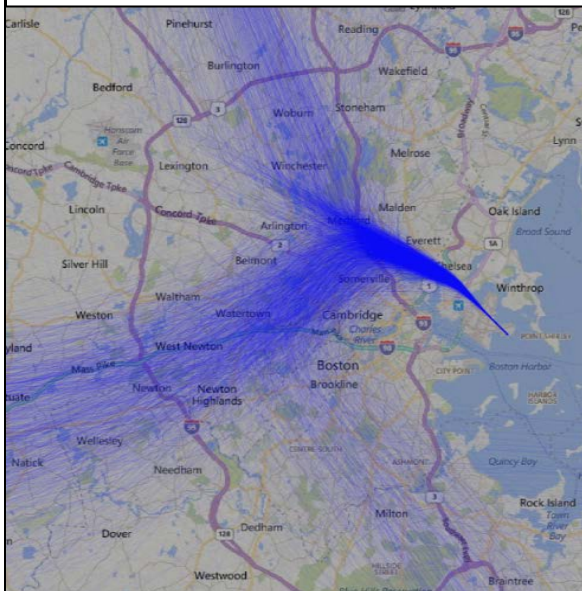
October 2013



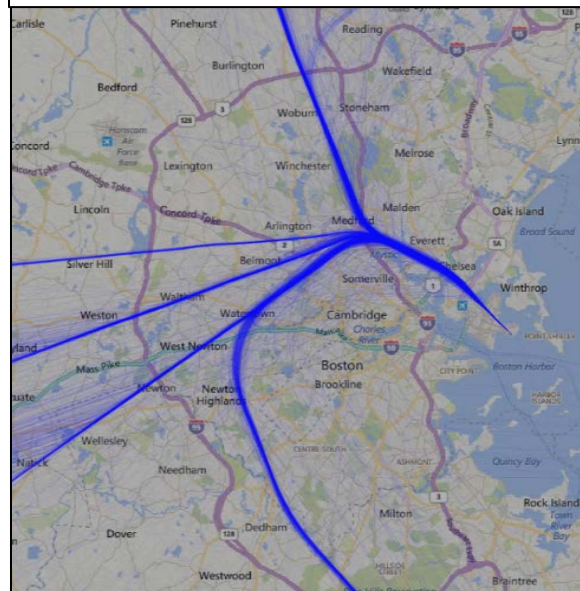
May 2016



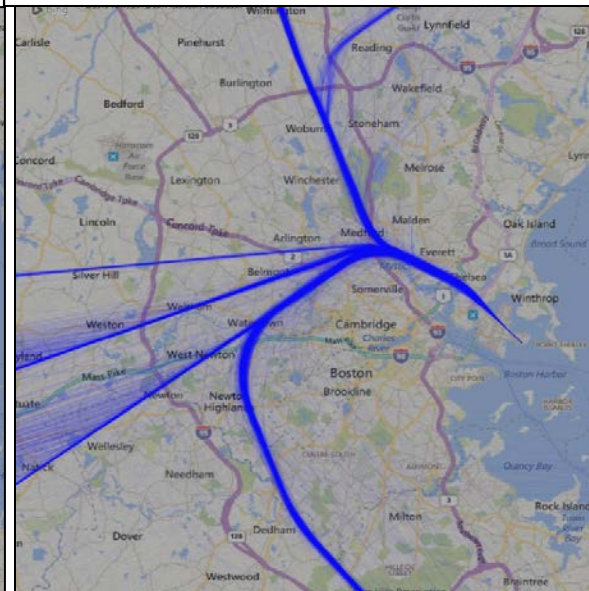
December 2010



November 2013



December 2016

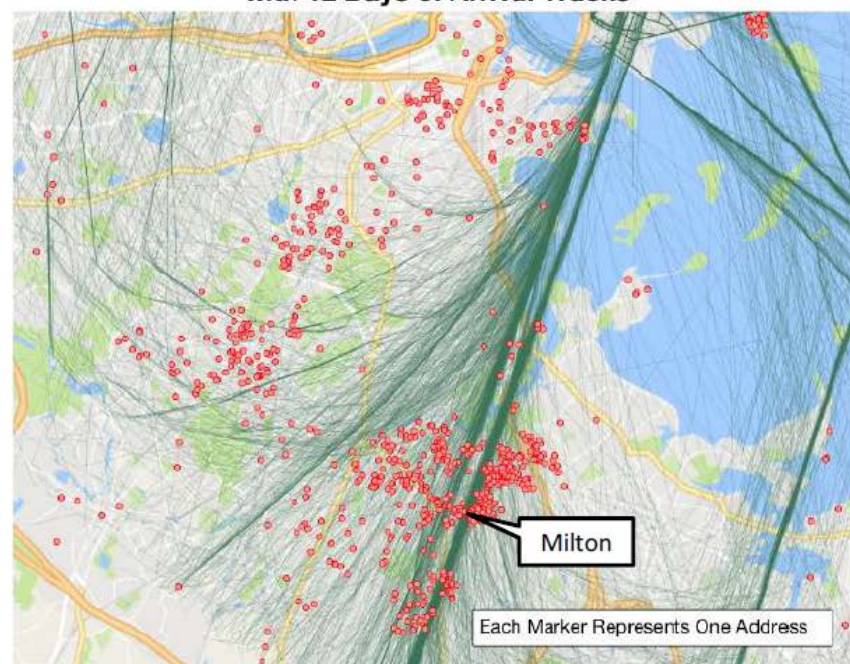


**R33L
Dep**

Runway 4R Arrival Noise Mitigations

- Standard steep approaches
- 2-segment steep approaches
- Late turn to final
 - RNAV (Lighthouse-like approach paths)
 - RNP (Canarsie-like approach paths)
- Overflight of areas with high ambient noise
 - (i.e. Expressway approach)

**2015-2016 Noise Complaints at BOS
with 12 Days of Arrival Tracks**



Most Promising Procedures

Block 1 and Block 2

Block 1

Departure Mods

- 22R
 - RNAV Waypoint relocation
 - Early turn after departure
- 15R
 - RNAV Waypoint relocation
- 33L and 27
 - Speed management

Arrival Mods

- 33L
 - Lighthouse RNAV Approach

Block 2

Departure Mods

- 33L and 27
 - Open SID departures to introduce dispersion

Arrival Mods

- 4R
 - RNAV approach to 4R (Lighthouse-like)
 - RNP approach to 4R (Canarsie-like)
 - Noise masking on arrival

- Safety concerns with steeper arrivals
- Equity concerns related to shifting flight paths

Preliminary Findings/Subject to Change

Project Schedule\Work Plan Outline

Updated May 31, 2017

Overview of Work Plan

- FAA/ Massport Discussions
- Announcement
- Consultant Team Organization
- Historical Flight Comparison\Analysis
- Block 1 Procedure Opportunity
 - Lower complexity w/ benefits, minimal/no impacts
 - DNL and alternative metrics (e.g. single event above)
- Block 1 Preliminary Recommendations
 - Feedback from the Massport CAC

Schedule

Winter – Fall 2016

Oct 2016

Fall 2016

Dec to Feb 2016

Feb 2017

Apr-May 2017

Aug 2017

Jun 2017

Fall 2017

Ongoing

Winter 2017/18

Spring 2018

Public Engagement

Press Event with Elected Officials, Massport, FAA, MCAC Leadership

Briefings to MCAC Aviation Subcommittee, Executive Committee, and General Meeting

Public Hearing, 2/22

Briefing to Aviation Subcommittee, 5/5

Today

- Block 1 Detail Analysis/Implementation Barriers
- Block 2 Procedure Opportunity
 - More complex, benefits\negative impacts, noise equity
 - DNL and alternative metrics (e.g. single event above)
- Block 2 Preliminary Recommendations
- FAA Review Process
- Finalize Recommendations
- Implementation/Final Report

Summer 2017
Aviation Subcommittee

Fall 2017
Aviation Subcommittee

Fall 2017
MCAC

Winter\Spring 2018
Aviation Subcommittee

WORK IN PROGRESS SUBJECT TO CHANGE 06/0/617

End