

From the FAA's Notification

Monday, December 23, 2019

**Subject: Kickoff of Boston Logan Runway 4 Left RNAV
Environmental Assessment**

This is a courtesy notification that the Federal Aviation Administration (FAA) awarded a contract for an Environmental Assessment (EA) for a proposed Area Navigation (RNAV) approach procedure for Runway 4 Left (L) at Boston Logan International Airport (BOS).

FAA conducted an Initial Environmental Review with technical analysis support from the Volpe Transportation Center in 2015, which included a noise analysis. We coordinated with the Massachusetts Port Authority (Massport), the Logan Community Advisory Committee (Logan CAC), and Congress on the BOS 4L proposal, and conducted a public meeting in 2015. The noise analysis for the permanent use of the procedure did not result in a reportable or significant noise impact over residential areas. However, the FAA agreed to conduct an EA. The EA project entered the budget planning and prioritization process and was recently funded.

We anticipate providing an overview of the project to the Massport Community Advisory Committee (MCAC) at their next quarterly meeting in January, 2020. This discussion will be in advance of the formal community engagement process which will include notifying the general public, community workshops and the opportunity for the public to comment on the Draft EA, when it is completed later in 2020.

The FAA will work closely with Massport and the MCAC to ensure a timely flow of information.

****sent to stakeholders (local, state and federal) in the following communities: South Boston, Roxbury, Milton, Dorchester, Mattapan, Quincy, Hyde Park, Braintree, Canton, Randolph, Blue Hills Reservation****

1. FAA JANUARY 9, 2020 RUNWAY 4L
ENVIRONMENTAL ASSESSMENT SLIDES

2. FAA ANSWERS TO TD'S WRITTEN
QUESTIONS PRESENTED TO FAA REGIONAL
ADMINISTRATOR JANUARY 9, 2020

3. FAA INITIAL ENVIRONMENTAL REVIEW
SUMMARY DATED MARCH 20, 2017

4. FAA ATTACHMENTS PROVIDED TO TD ON
FEBRUARY 3, 2020

- (1) FLIGHT STANDARDS
- (2) NOISE MODELING REPORT
- (3) RNAV (GPS) 4L AND 4R FLIGHT TRACKS
- (4) PROPOSED ACTION ENVIRONMENTAL JUSTICE

5. CSDA DESIGN GROUP EXCERPT

6. MIT GEAR-DOWN FAF AND NOISE SLIDES

7. 4L RNAV EA WORKING GROUP

Environmental Assessment for the Boston Logan International Airport (BOS) Runway 4 Left (4L) Approach Procedure

**Proposed BOS FAA public RNAV
(GPS) RWY 4L**

Presented to: MCAC

By: FAA

Date: January 9, 2020



**Federal Aviation
Administration**



**Federal Aviation
Administration**

Agenda

- Purpose and Need
- History of FAA's Environmental Review Process
- Environmental Assessment/Community Involvement Plan
- Tentative Schedule

PROPOSED BOS RNAV (GPS) RWY 4L

Purpose and Need:

- The purpose and need of the permanent BOS RNAV (GPS) & RWY 4L approach procedure is to provide a de-conflicted stabilized approach procedure that provides vertical and lateral guidance when weather or winds require BOS to land on RWY 4L. The proposed instrument procedure addresses several needs:
 - Increase safety of aircraft arriving on RWY 4L
 - Reduce arrival delays during IMC and VMC
 - Conform to national policy to implement NextGen RNAV procedures
 - Reduce Air Traffic Control workload and thereby enhance safety.
- The permanent implementation of this approach procedure will enhance safety and efficiency at BOS. The new procedure will follow existing flight tracks as closely as possible.

History of FAA's Environmental Review of the BOS 4L RNAV Proposal

- ❖ 2015 - FAA conducted a public meeting and coordinated with the Massachusetts Port Authority (Massport), Logan Community Advisory Committee, federal, state and local officials on the BOS 4L RNAV proposal
- ❖ During this meeting the FAA informed stakeholders of the noise analysis results for the permanent use of a RWY 4L procedure
 - ❑ Results: no reportable or significant noise impact over residential areas.
- ❖ FAA committed to conduct an Environmental Assessment (EA)
- ❖ EA project entered FAA's budget planning and prioritization process

BOS RNAV (GPS) RWY 4L EA

Environmental Assessment and Record of Decision (EA/ROD) and Community Involvement Plan (CIP):

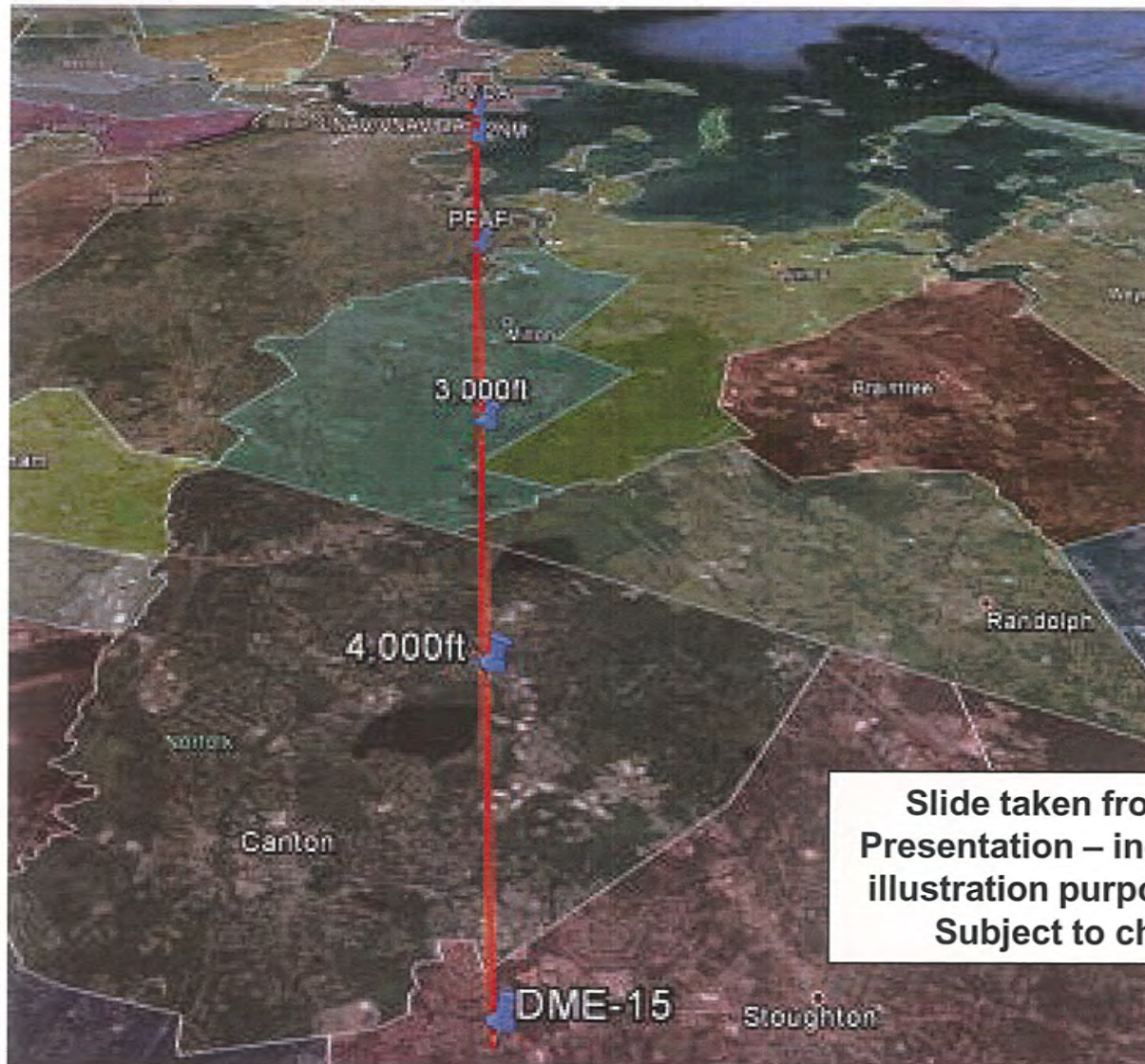
- September 2019, the FAA awarded a contract to prepare an EA for the proposed BOS RNAV (GPS) RWY 4L approach procedure.
- October 2019, a project kick-off meeting was held to begin the National Environmental Policy Act (NEPA) process.
- As part of the NEPA process, the FAA will publish a notice of the draft EA availability in local newspapers, other media, and/or on the Internet, which will initiate a 30-day public comment period.
 - ❑ FAA will revise the draft EA, as necessary, in response to internal and external comments received on the draft document, and prepare the Final EA.
 - ❑ The EA process can take approximately a year or more to complete.
- FAA is developing a Community Involvement Plan (in collaboration with the New England Region Airports Division, Regional Administrator's office, and Massport) concurrently with the NEPA process. The FAA will ensure meaningful involvement in project communication and outreach activities. This outreach will include informing elected officials, Massport, MCAC, the public, and conducting workshops.

Tentative Schedule

- Draft EA 30-day public comment period - Third Quarter CY2020
- Two (2) Public workshops - Third Quarter CY2020
- Prepare Final EA - Fourth Quarter CY2020



FAA Proposed RNAV IFR Track to Rwy 4L



Slide taken from 2015
Presentation – included for
illustration purposes only.
Subject to change

Volpe

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Question 1- Why was the 4L JetBlue RNAV procedure suspended from September 15, 2019 through March 14, 2020?

Answer - Currently the procedure is NOTAM'ed out of service.

Boston Terminal Radar Approach Control (TRACON) had not been using the procedure for years since the FAA agreed to conduct an EA.

FAA NOTAMS PAGE LINK

IFDC 9/4972 (KBOS A0045/19) BOS SPECIAL EDWARD LAWRENCE LOGAN INTL. BOSTON, MA. SPECIAL RNAV VISUAL RWY 04L ORIG...PROC NOT AUTH. 1909251500-2003142359

* The 4L JetBlue RNAV procedure will be analyzed only in the cumulative impacts section of the EA. Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Question 2- Will the baseline for noise comparison be conditions pre-4L JetBlue path?

Answer- The baseline covers the period between November 1, 2018 and October 31, 2019.

This time-frame was chosen because it is representative of current operations and was largely free of factors that could affect normal air traffic operations, such as runway and airfield construction or runway closures.

*The EA scope only involves the proposed BOS RNAV (GPS) RWY 4L instrument approach procedure.

Question 3- Will noise metrics other than DNL be used, specifically: A-weighted Lmax; LEQ and SEL?

Answer- FAA does not intend to use any supplemental metrics at this time. Order 1050.1F specifies that supplemental noise metrics can be considered for determining impact in noise sensitive areas, as well as in areas where a quiet setting is considered a recognized purpose and attribute. If any of these areas are identified after the determination of the area of potential impact (APE), FAA will work with those whose jurisdiction these areas fall under to determine if supplemental noise analysis should be done, and what supplemental metrics should be used for this analysis.

Question 4- Will the EA noise model use gear-down at 10 miles from final approach fix (FAF) in addition to at FAF?

Answer- The Aviation Environmental Design Tool (AEDT) models aircraft using individual flight profiles for each specific aircraft type, and the exact point of the approach where landing gear is extended differs by profile. For the proposed RNAV (GPS) RWY 4L approach, the FAF is 5 miles from the Runway 4L threshold and the intermediate fix (IF) is 10.3 miles from the Runway 4L threshold. Profiles for most aircraft types frequenting BOS would be expected to extend landing gear at a point between the IF and the FAF – between approximately 5 and 10 miles away from the Runway 4L threshold.

Question 5- Will total CSPR noise impacts be taken into account inclusive of the other RNAV 4L and 4R path realities?

Answer- Assuming CSPR means closely-spaced parallel runways, all traffic at the airport will be captured for the purposes of determining noise impacts.

Question 6- Will the noise impacts of 27 and 33L departures on the same 4L JetBlue RNAV residents be included in the EA?

Answer- Noise impacts of all BOS departures will be included in the EA cumulatively.

Question 7- Will economic justice criteria be assessed, given Blue Hill Ave, Mattapan, and Dorchester overflights?

Answer- Yes. As specified by FAA Order 1050.1F, environmental justice should be considered in order to determine potential disproportionate impacts on minority- or low-income communities. These impacts can come from potentially any impact category, and all relevant impact categories will be evaluated for potential environmental justice issues.

AIR TRAFFIC INITIAL ENVIRONMENTAL REVIEW (IER)

Boston Consolidated TRACON (A90) / Boston Logan Airport (BOS) RNAV (GPS) RWY 4L Procedure and BOS RNAV (GPS) RWY 4R Amendment

FAA Order 7400.2 Appendix 5 (Modified)

Facility/Office: Boston Consolidated TRACON A90

Date: March 20, 2017

Prepared by: Clifford R. Baird, Support Manager

Phone: (603) 594-5505 Email: clifford.r.baird@faa.gov

(Also see Section X for the complete listing of preparers.)

Massachusetts Port Authority (Massport) is proposing to reconstruct Boston Logan International Airport (BOS) Runway 4R-22L (RWY 4R-22L) during the summer of 2017. This Initial Environmental Review (IER) is intended to provide information about the proposed project to better assist in preparing for the environmental analysis phase. Although it identifies information in several categories, not all the data may be available initially; however, it does represent information, in accordance with FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, which ultimately will be needed for preparation of the environmental document.

The Federal Aviation Administration (FAA) is preparing this Categorical Exclusion (CATEX) for the above referenced temporary procedures to ensure FAA controllers have adequate procedures to safely land arriving aircraft during the reconstruction period for Runway 4R (RWY 4R). The RWY 4R reconstruction closure reduces the availability of instrument approaches to BOS. This can substantially affect the airport's operational safety and efficiency. To address this issue, the FAA proposes to establish two temporary approach procedures: an Area Navigation (RNAV) approach to RWY 4 Left (4L) and a "side-step" maneuver to the RNAV approach for RWY 4R.

These two approaches will be used for approximately 105 days, from May 15, 2017, through September 1, 2017 while improvements occur on RWY 4R. These are temporary approaches and will be terminated when the construction work is complete. The temporary approach procedures are eligible for a CATEX under FAA Order 1050.1F, Environmental Impacts: Policies and Procedures.

The runway project necessitating these two proposed procedures involves pavement resurfacing of the existing runway sections. Such work is part of Massachusetts Port Authority's (Massport) ongoing program to rehabilitate pavement that is reaching the end of its useful life. The reconstruction of Runway 4R-22L (RWY 4R-22L) also provided an opportunity to address another maintenance issue at the Boston Logan International Airport (BOS). The existing wooden piers that support the RWY 4R approach lighting system are deteriorating and require repair or replacement. Given this opportunity, Massport decided to complete CATEXs and conduct both projects simultaneously. While these are independent projects, they are adjacent to each other. Completing them at the same time is cost-effective, operationally efficient and in the best interests of aviation safety.

These actions do not individually or cumulatively have a significant effect on the human environment and do not involve extraordinary circumstances. Therefore, these projects individually or cumulatively are categorically excluded.

The Proposed Action for this CATEX includes:

BOS RNAV (GPS) RWY 4L: The Proposed Action includes the temporary publishing of BOS RNAV (GPS) RWY 4L procedure, not to exceed six months during RWY 4R-22L closure. Construction is anticipated from May 15, 2017, through September 1, 2017.

BOS RNAV (GPS) RWY 4R Amendment: The proposed BOS RNAV (GPS) RWY 4R Amendment will add a side-step maneuver, which will allow aircraft to land on RWY 4L during the runway construction period. This is a typical procedure used at airports throughout the National Airspace System (NAS) that provides both air traffic controllers and pilots an additional option in landing aircraft. RWYs 4R and 4L are separated by a distance of 1,500 feet between centerlines. This maneuver would begin approximately two nautical miles from the approach end of RWY 4R, then follow existing flight tracks for aircraft inbound to RWY 4L.

After the issuance of the CATEX, FAA will begin to evaluate the permanent implementation of the BOS RNAV (GPS) RWY 4L procedure and the Jet Blue Special RNAV Visual Flight Procedure (RVFP) (hereafter referred to as Jet Blue RVFP RWY 4L). FAA will conduct an Environmental Assessment (EA) to evaluate the permanent implementation of the proposed procedures, which FAA will begin developing upon issuance of this CATEX. FAA will provide notification to the public of the EA, and the EA process will provide an additional opportunity for the public to provide comments on the procedures.

Project Description

A. Attach a copy of the most recent Project Status Report.

Background:

Based on 2016 flight data, RWY 4R operations account for approximately 30% of arrivals (averaging 159 aircraft per day) during the anticipated temporary closure period. Since 2013, the Air Traffic Mandatory Occurrence Reports showed several safety incidences associated with use of Instrument Landing System (ILS) RWY 15R circle to RWY 4L. When the bases of the clouds are below 1,000 feet, safety concerns with this circling approach limits arrival options and causes a potential increase in delays. In order to safely meet current aircraft arrival rates when the weather requires landing on RWY 4L, the proposed approaches are required. Thus, FAA evaluated the two proposed temporary flight procedures mentioned above to ensure the safe and continuous operation of aircraft arriving into BOS as a result of the temporary closure of RWY 4R.

As part of FAA's alternative analysis, the FAA reviewed Air Traffic Mandatory Occurrence Reports, which showed several safety incidences associated with use of Instrument Landing System (ILS) RWY 15R circle to RWY 4L, since 2013. When the bases of the clouds are below 1,000 feet, safety concerns with this circling approach limits arrival options and causes a potential increase in delays. In order to safely meet current aircraft arrival rates when the weather requires landing on RWY 4L, the proposed approaches are required.

FAA New England Regional Administrator's office met with Representative Michael Capuano and Representative Stephen Lynch on March 6, 2017, and provided a project update of the CATEX for both proposed actions. FAA informed the elected officials that an EA would be prepared prior to adopting the permanent procedure for BOS RNAV (GPS) RWY 4L and the Jet Blue Special RVFP RWY 4L. In addition, FAA will coordinate with Massport regarding proposed procedure changes and will work with Massport to communicate proposed procedure changes to community outreach groups. Massport community outreach may include publishing FAA's CATEX on Massport's website.

- B. Has airspace modeling been conducted using SDAT, TAAM, TARGETS, or other airspace/air traffic design tool? ☒ Yes Model: AEDT ☐ No

FAA's Next generation (NextGen) Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) Aviation Environmental Design Tool (AEDT) 2c was used to model airspace performance in space and time; estimate noise, emissions, emissions dispersion and fuel consumption; to support analysis of interdependence between environmental consequences; and for regulatory compliance, research and development (see Attachment 1 – Prototype Plates, and Attachment 2 – AEDT Noise Modeling Report).

If yes, provide a summary of the output from the modeling.

- See Attachment 2 – AEDT Noise Modeling Report

- C. Describe the present (no action alternative) procedure in full detail. Provide the necessary chart(s) depicting the current procedure. Describe the typical fleet mix, quantifying (if possible) the number of aircraft on the route and depict their altitude(s) along the route.

No-Action Alternative — For the No-Action Alternative, current procedures for the use of RWY 4L would continue, to include a circling approach from RWYs 4R to 4L. RWY 4R would remain unavailable during the construction period from May 15, 2017 through September 1, 2017. RWY 4L would continue to be generally assigned to smaller/lighter aircraft. Arrivals would continue to utilize the visual approach procedure. This would considerably limit approaches from the south-southwest. During marginal weather conditions and Instrument Meteorological Conditions (IMC) only circling approaches to RWY 4L would be available with higher weather requirements thereby decreasing safety and increasing flight delays.

Fleet Mix — The mix of aircraft landing on RWY 4L today is similar to that landing on RWY 4R, except that it does not include wide body aircraft. It includes aircraft from single piston-engine propeller aircraft up to and including turbojets weighing approximately 270,000 pounds (e.g., Boeing 757s (B757s)). Approximately 48% of RWY 4L arrivals during 2013 were jet aircraft. The mix of aircraft landing on RWY 4L today is similar to that landing on RWY 4R, with the exception of the Airbus 380 (A380) aircraft. A380 is a wide-body aircraft, and therefore it cannot land on RWY 4L. The A380 aircraft will land on BOS RWY 15L/33L.

Boston Northeast Flow Configuration — Because Boston RWY 4L lacks an instrument approach guidance system, when the airport is configured for a northeast flow, which occurs approximately 35% of the time, approaches to RWY 4L from the south are only conducted when the clouds are at least 3,000 feet (and preferably 4,000 feet) and the visibility is at least 5 statute miles; the operationally usable Visual Meteorological Conditions (VMC) for this configuration.

- D. Describe the proposed project, providing the necessary chart(s) depicting changes. Describe changes in the fleet mix, numbers of aircraft on the new route, and their altitude(s), if any.

BOS RNAV (GPS) RWY 4L: The Proposed Action includes the temporary publishing of BOS RNAV (GPS) RWY 4L procedure, not to exceed six months during RWY 4R-22L closure. Construction is anticipated from May 15, 2017 through September 1, 2017.

BOS RNAV (GPS) RWY 4R Amendment: The proposed BOS RNAV (GPS) RWY 4R Amendment will add a side-step maneuver, which will allow aircraft to land on RWY 4L during the runway construction period. This is a typical procedure used at airports throughout the

National Airspace System (NAS) that provides both air traffic controllers and pilots an additional option in landing aircraft. RWYs 4R and 4L are separated by a distance of 1,500 feet between centerlines. This maneuver would begin approximately two nautical miles from the approach end of RWY 4R, then follow existing flight tracks for aircraft inbound to RWY 4L.

Currently, RWY 4L does not have any approach procedure that authorizes the use of an instrument guidance system during low ceiling/visibility conditions. RNAV (GPS) procedures are the most cost-effective option to address this deficiency. RNAV (GPS) approach procedures are widely used in the US. Over the past decade, the FAA has implemented RNAV (GPS) IAPs for over 6,000 runways at over 2,700 airports. This includes RNAV (GPS) IAPs for six runway ends at BOS, one of which does not have an ILS.

1. Will there be actions affecting changes in aircraft flights between the hours of 10 p.m. – 7 a.m. local? ☐ Yes ☒ No
2. Is a preferential runway use program presently in effect for the affected airport(s), formal or informal? ☐ Yes ☒ No
3. Will airport preferential runway configuration use change as a result of the proposed project? ☐ Yes ☒ No
4. Is the proposed project primarily designed for Visual Flight Rules (VFR), Instrument Flight Rules (IFR) operations, or both? ☐ VFR ☒ IFR ☐ Both N/A
Proposed Action is an Instrument Approach Procedure (IAP).

If this specifically involves a charted visual approach (CVA) procedure, provide a detailed local map indicating the route of the CVA, along with a discussion of the rationale for how the route was chosen. N/A

5. Will there be a change in takeoff power requirements? ☐ Yes ☒ No
Proposed Action is an IAP. Takeoffs are not involved.

If so, what types of aircraft are involved, i.e., general aviation propeller-driven versus large air carrier jets? N/A

6. Will all changes occur above 3,000 feet above ground level (AGL)? ☐ Yes ☒ No
What is the lowest altitude change on newly proposed routes or on existing routes that will receive an increase in operations?
Proposed Action is an IAP to RWY 4L, and will involve route changes for aircraft between 5,000 feet MSL and field level (however, almost all above 1,500 feet). When RWYs 4R and 4L are considered in combination, there will be no increase in the number of arrivals or types of aircraft that fly these approaches. The proposed RWY 4R Amendment will add a side-step maneuver similar to the current circling maneuver which will allow aircraft to land RWY 4L during the runway construction period. RWYs 4R and 4L are separated by a distance of 1,500 feet between centerlines. The threshold of RWY 4L is 1,155 feet beyond the primary RWY 4R. This action would occur two nautical miles from the approach end of RWY 4R, then follow existing flight tracks for aircraft inbound to RWY 4L.

The proposed arrival procedure to RWY 4L will begin at an altitude of approximately 5,000 feet (at 15 nautical miles (NM) from the RWY 4L threshold) and end at the applicable decision altitude (from where visual guidance is employed). The majority of aircraft utilizing the proposed IAP will be aircraft (estimated to be 4,000 annually) that currently land on RWY 4R under IMC.

7. Will there be actions involving civil jet aircraft (heavier than 75,000 pounds gross weight) arrival procedures between 3,000–7,000 feet AGL or departures between 3,000–10,000 feet AGL? Attach a copy of the results of the noise screening analysis using the AEST, TARGETS Environmental Plug-in, or other FAA–approved noise-screening methodology. X Yes No

The total count of arrivals to RWYs 4R and 4L combined is not projected to change based on the Proposed Action. A noise analysis was performed using AEDT (see Attachment 2).

8. If noise analysis was already performed using the FAA's AEST, Integrated Noise Model (INM), Noise Integrated Routing System (NIRS), or the TARGETS AEDT provide a summary of the results.

The FAA conducted noise modeling for the Proposed Action using the FAA's Aviation Environmental Design Tool (AEDT). The noise analysis was conducted for an average annual day using flight data from four independent one-week periods. The result of closing RWY 4R shifts flights to RWY 4L. The scenario modeled the equal use of the two proposed procedures and resulted in the following noise increases:

- The reportable noise increase exists approximately 1.5 miles to 4 miles from touchdown on RWY 4L and represents a >5 dB noise increase in the range of 45-60 dB.
- The significant noise increase exists approximately 0.25 miles to 1.5 miles from touchdown on RWY 4L and represents a >1.5 dB noise increase for areas where noise levels exceed 65 dB. Areas impacted are primarily over the water.

When weather dictates the use of RWY 4L during RWY 4R construction, to mitigate noise increases the following procedures will be used in the order listed below to the extent practicable:

- When the ceiling is at least 700 ft. and the visibility is at least 2 ½ miles;
 - RNAV (GPS) RWY 4R side-step to RWY 4L (which more similarly overflies current arrival flight paths), or
 - Alternate periodically between RNAV (GPS) RWY 4L and RNAV (GPS) RWY 4R side-step, but no more than 50% of the time flying RNAV (GPS) RWY 4L;
- However, when the ceiling is less than 700 ft. and/or the visibility is less than 2 ½ miles, the RNAV (GPS) RWY 4L will be used.

Purpose and Need

- A. Describe the purpose and need for the proposed project. If detailed background information is available, summarize here and provide a copy as an attachment to this review. The purpose of the Proposed Action is to temporarily change air traffic control procedures in order to accommodate air traffic during BOS RWY 4R construction. RNAV (GPS) Instrument Approach Procedures (IAPs) are one of several types of Performance Based Navigation (PBN) procedures, which are a key element of the FAA's Next Generation Air Transportation System (NextGen). The RNAV (GPS) IAP will provide lateral and vertical guidance, enabling continuous descent to the runway. The Proposed Action is needed to ensure safety, improve operational efficiency, and reduce flight delays during construction.

1. What operational/economic/environmental benefits will result if this project is implemented?
This project will have the following benefits: enhance safety, delay reduction during IMC, and shortened periods of peak traffic under IMC.
2. If a delay reduction is anticipated, can the reduction be quantified?
☐ Yes ☐ No ☒ N/A
3. Can reduced fuel costs/natural energy consumption be quantified? ☐ Yes ☒ No
If not quantifiable, describe the approximate anticipated benefits in lay terms.
Implementing an RNAV (GPS) RWY 4L should reduce fuel consumption for two reasons by reducing delays during IMC and by providing more efficient continuous descent path approaches, although this is a temporary procedure.

- B. Is the proposed project the result of a user or community request or regulatory mandate?
☐ Community Request ☐ Regulatory Mandate ☒ N/A
If not, what necessitates this action? The proposed project is resulting from the need to resurface RWY 4R and replace the pier that contains the Approach Lighting System (ALS) for RWY 4R.

Describe the Affected Environment

- A. Provide a description of the existing land use near the proposed project.

Land use near the proposed project is a mixture of residential, commercial, and open water. It is the same use as exists for arrivals regularly conducted to RWYs 4L and RWY 4R today. Flight tracks for the Proposed Action will not overfly new areas (see Attachment 3).

- B. Will the proposed project introduce air traffic over noise sensitive areas not now affected?
☐ Yes ☒ No

The flight trajectories for the Proposed Action will be similar to those that are currently used on a regular basis. The number and types of aircraft will be similar to the No-Action Alternative. Flight paths for the Proposed Action will not overfly new areas. To the extent there are changes in noise exposure, they will be generally beneficial (see Attachment 3).

Will they be affected to a ☐ greater or ☒ lesser extent?

Note: An area is noise sensitive if aircraft noise may interfere with the normal activities associated with the use of the land.

- C. Are wildlife refuge/management areas within the affected area of the proposed project?
☐ Yes ☒ No

Based on Section 4(f) Sites listed in the Boston Logan Airport Noise Study (BLANS), there are no wildlife refuge/management areas in the affected area.

If so, has there been any communication with the appropriate wildlife management regulatory (federal or state) agencies to determine if endangered or protected species inhabit the area?

☐ Yes ☐ No ☒ N/A

1. At what altitude would aircraft overfly these habitats? N/A

2. During what times of the day would operations be more/less frequent? N/A

- D. Are there cultural or scenic resources, of national, state, or local significance, such as national parks, outdoor amphitheaters, or stadiums in the affected area? ☐ Yes ☒ No

If so, during what time(s) of the day would operations occur that may impact these areas?

The Proposed Action BOS RNAV (GPS) RWY 4L overflies the Blue Hills Reservation, a 6,000-acre Massachusetts state park. The number of flights will remain the same. Annually, under instrument conditions, the proposed RNAV instrument procedure will shift the paths of approximately 4,000 arrivals to the west by less than a mile.

E. Has there been communication with air quality regulatory agencies to determine if the affected area is a non-attainment area (an area which exceeds the National Ambient Air Quality Standards (NAAQS) for ozone, carbon monoxide, lead, particulate matter, sulfur dioxide, or nitrogen dioxide) or maintenance area (an area which was in non-attainment but subsequently upgraded to an attainment area) concerning air quality? ☐ Yes ☒ No

This project is not expected to affect air quality and is presumed to conform as Category 14 "Air Traffic Activities and Adopting Approach, Departure and En Route Procedures for Air Operations" as identified in 72 Federal Register 41565, July 30, 2007. According to the Environmental Protection Agency (EPA), Suffolk County, MA is in attainment with NAAQS (see <https://www3.epa.gov/airquality/greenbook/ancl.html>).

If yes, please explain:

F. Are there reservoirs or other public water supply systems in the affected area? ☒ Yes ☐ No

There are five "Community Groundwater Sources" within the study area. A study area is the geographic area potentially environmentally impacted by a proposed action. All five groundwater sources have the subcategory "Community Groundwater Well," and all are in the Town of Stoughton. Aircraft following the BOS RNAV (GPS) RWY 4L will be at altitudes between 3,600 feet and 4,000 feet while overflying these wells. Aircraft regularly overfly this area now, as the Proposed Action does not involve significant changes to flight routes. There will be no impact to reservoirs or other public water supplies.

Community Involvement

Formal community involvement or public meetings/hearings may be required for the proposed project. Make a determination if the proposed project has the potential to become highly controversial. The effects of an action are considered highly controversial when reasonable disagreement exists over the project's risks of causing environmental harm. Opposition on environmental grounds by a Federal, State, or local government agency or by a Tribe, or by a substantial number of the person affected by the action should be considered in determining whether reasonable disagreement regarding the effects of a proposed action exists (see FAA Order 1050.1, paragraph 5-2b (10)).

A. Have persons/officials who might have some need to know about the proposed project due to their location or by their function in the community been notified, consulted, or otherwise informed of this project? ☒ Yes ☐ No

1. Are local citizens and community leaders aware of the proposed project? ☒ Yes ☐ No
FAA New England Regional Administrator's office met with Representative Michael Capuano and Representative Stephen Lynch on March 6, 2017, and provided a project update of the CATEx for both proposed actions. FAA informed the elected officials that an EA would be prepared prior to adopting the permanent procedure for BOS RNAV (GPS) RWY 4L and the Jet Blue Special RNAV Visual Flight Procedures (RVFP) RWY 4L (hereafter referred to as Jet Blue RVFP RWY 4L). In addition, FAA will coordinate with Massport regarding proposed procedure

changes and will work with Massport to communicate proposed procedure changes to community outreach groups. Massport community outreach may include publishing FAA's CATEX on Massport's website.

2. Are any opposed to or supporting it? If so, identify the parties and indicate the level of opposition and/or support. It is anticipated there will be minor opposition to the temporary procedure changes, since an EA will be conducted for the permanent implementation of proposed flight procedure changes. As part of the meeting with the Representatives and Massport, FAA committed to conducting an EA for any proposed permanent changes.

- a) If they are opposed, what is the basis of their opposition?
- b) Has the FAA received one or more comments objecting to the proposed project on environmental grounds from local citizens or elected officials? ☐ Yes ☒ No
If so, state the nature of the comment and how the FAA was notified (e.g. resolution, Congressional, Public meeting/workshop, etc.).

B. Are the airport proprietor and users providing general support for the proposed project?
☒ Yes ☐ No

1. Is the proposed project consistent with local plans and development efforts?

☒ Yes ☐ No

The FAA's Proposed Action does not impact local plans and development efforts. The proposed project would provide GPS guidance to aircraft that already land on RWY 4L. The Proposed Action flight paths involves: (a) during IMC, shifting approximately 4,000 annual arrivals from RWY 4R to nearby parallel RWY 4L at the same airport and forming part of the same traffic flow; and (b) during VMC, shifting approximately 435 annual arrivals to RWY 4L from use of the RWY 4R ILS to a direct route to RWY 4L.

2. Has there been any previous aircraft-related environmental or noise analysis, including

- a) FAR Part 150 Studies, conducted at this location? ☐ Yes ☒ No

If so, was the study reviewed as a part of this initial review? ☒ Yes ☐ No ☐ N/A

FAA reviewed the ongoing 2003-2016 BLANS report.

Extraordinary Circumstances

The determination of whether a proposed action may have a significant environmental effect is made by considering any requirements applicable to the specific resource (see FAA Order 1050.1, Appendix B).

A. Will implementation of the proposed project result in any of the following? As stated in FAA Order 1050.1, paragraph 5-2, extraordinary circumstances exist when a proposed action involves any of the following circumstances AND may have a significant effect (40 CFR 1508.4).

1. An adverse effect on cultural resources protected under the National Historic Preservation Act of 1966, as amended (see FAA Order 1050.1, paragraph 5-2b (1)).

☐ Yes ☒ No ☐ Possibly

Comment: The proposed temporary approach procedures will not have an adverse effect on cultural resources.

2. An impact on properties protected under section 4(f) of the Department of Transportation Act. ☐ Yes ☒ No ☐ Possibly

Comment: Since the proposed action is affecting very similar airspace, there would be no additional impact to any possible 4(f) properties.

3. An impact on natural, ecological (e.g. invasive species) or scenic resources of Federal, Tribal, State, or local significance (for example, Federally listed or proposed endangered, threatened, or candidate species or proposed or designated critical habitat under the Endangered Species Act); resources protected by the Fish and Wildlife Coordination Act; wetlands; floodplains; prime, unique, State, or locally important farmlands; energy supply and natural resources; wild and scenic rivers, including study or eligible river segments; and solid waste management. ☐ Yes ☒ No

Comment: No impacts are expected as a result of the proposed action.

4. A division or disruption of an established community; a disruption of orderly, planned development; or inconsistency with plans or goals that have been adopted by the community in which the project is located. ☐ Yes ☒ No ☐ Possibly

5. An increase in congestion from surface transportation, by causing a decrease in the Level of Service below the acceptable level determined by the appropriate transportation agency (i.e., a highway agency). ☐ Yes ☒ No ☐ Possibly

Comment: The proposed action is an air traffic navigation procedure; therefore, surface transportation will not be impacted.

6. An impact on noise levels of noise-sensitive areas. ☐ Yes ☒ No ☐ Possibly

A detailed noise analysis using the TARGETS AEDT was conducted for the proposed temporary approach procedures (see Attachment 2).

7. An impact on air quality or a violation of local, State, Tribal, or Federal air quality standards under the Clean Air Act amendments of 1990. ☐ Yes ☒ No ☐

Comment: This project is not expected to affect air quality and is presumed to conform as Category 14 "Air Traffic Activities and Adopting Approach, Departure and En Route Procedures for Air Operations" as identified in 72 Federal Register 41565, July 30, 2007.

8. An impact on water quality, sole source aquifers, a public water supply system, or State or Tribal water quality standards established under the Clean Water Act and the Safe Drinking Water Act. ☐ Yes ☒ No ☐ Possibly

Comment: The proposed action is an air traffic action with no adverse impacts expected on water quality or water supplies.

9. Effects on the quality of the human environment that are likely to be highly controversial on environmental grounds. ☐ Yes ☒ No ☐ Possibly

Comment: The proposed temporary action is similar to existing flight operations that currently exist. These are temporary approach procedures, and the analysis was based on the conservative scenario.

10. Likelihood of inconsistency with any Federal, State, Tribal, or local law relating to the environmental aspects of the proposed action. ☐ Yes ☒ No

11. Likelihood of directly, indirectly, or cumulatively, creating a significant impact on the human environment. ☐ Yes ☒ No ☐ Possibly

Comment: These are temporary approach procedures, and the analysis was based on the conservative scenario.

Alternatives

- A. Are there alternatives to the proposed project? ☒ Yes ☐ No If yes, describe any alternatives to the proposed action. The No-Action Alternative was analyzed. Currently, RWY 4L has no published/unpublished approach procedure for any instrument. During RWY 4R's construction, all flights that landed on RWY 4R would have to use RWY 4L, and without the implementation of the Proposed Action, there are safety concerns with the current circling approach, which limits arrival options and causes a potential increase in delay during IMC.
- B. Please provide a summary description of alternatives eliminated and why. N/A

Mitigation

Are there measures, which can be implemented that might mitigate any of the potential impacts, i.e., GPS/FMS plans, NAVAIDS, etc.? ☒ Yes ☐ No ☐ N/A

The FAA conducted noise modeling for the Proposed Action using the FAA's Aviation Environmental Design Tool (AEDT). The noise analysis was conducted for an average annual day using flight data from four independent one-week periods. The result of closing RWY 4R shifts flights to RWY 4L. The scenario modeled the equal use of the two proposed procedures and resulted in the following noise increases:

- The reportable noise increase exists approximately 1.5 miles to 4 miles from touchdown on RWY 4L and represents a >5 dB noise increase in the range of 45-60 dB.
- The significant noise increase exists approximately 0.25 miles to 1.5 miles from touchdown on RWY 4L and represents a >1.5 dB noise increase for areas where noise levels exceed 65 dB. Areas impacted are primarily over the water.

When weather dictates the use of RWY 4L during RWY 4R construction, to mitigate noise increases the following procedures will be used in the order listed below to the extent practicable:

- When the ceiling is at least 700 ft. and the visibility is at least 2 ½ miles;
 - RNAV (GPS) RWY 4R side-step to RWY 4L (which more similarly overflies current arrival flight paths), or
 - Alternate periodically between RNAV (GPS) RWY 4L and RNAV (GPS) RWY 4R side-step, but no more than 50% of the time flying RNAV (GPS) RWY 4L;
- However, when the ceiling is less than 700 ft. and/or the visibility is less than 2 ½ miles, the RNAV (GPS) RWY 4L will be used.

Cumulative Impacts

What other projects (FAA, non-FAA, or non-aviation) are known to be planned, have been previously implemented, or are ongoing in the affected area that would contribute to the proposed project's environmental impact? The baseline includes all currently implemented procedures.

References/Correspondence

Attach written correspondence, summarized phone contacts using Memorandums for the File, etc.

Attachment 1: FAA, Flight Standards Service (AFS), *RNAV (GPS) RWY 4L and RNAV (GPS) RWY 4R Prototype Approach Plates*, February 2017.

Attachment 2: Proposed Action TARGETS AEDT Noise Modeling Report

Attachment 3: RNAV (GPS) RWY 4L and RNAV (GPS) RWY 4R Flight Tracks

Attachment 4: Proposed Action Environmental Justice

Additional Preparers

The person(s) listed below, in addition to the preparer indicated on page 1, are responsible for all or part of the information and representations contained herein:

Name: Brian R. Hansen

Title: Support Specialist / Air Traffic Controller

Facility/Office: Boston Consolidated TRACON

Telephone: (603) 594-5516

Specific Area of Responsibility: Air Traffic Control

Name: Terry English

Title: Specialist, Airspace and Procedures North Team

Facility/Office: AJV-E21

Telephone: (603) 881-1388

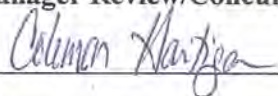
Specific Area of Responsibility: Boston Logan Airport Noise Study

Facility/Service Center Conclusions

Compliance with FAA Order 1050.1F paragraph 5-6.5.m — Based upon FAA Order 1050.1F paragraph 5-6.5.m, the Proposed RNAV (GPS) RWY 4L procedure and the RWY 4R Amendment is qualified for the categorical exclusion of paragraph 5-6.5.m, “Short-term changes in air traffic control procedures, not to exceed six months, conducted under 3,000 feet above ground level (AGL) to accommodate airport construction.” **Attachment 3** depicts representative current arrivals to RWY 4L and for FAA’s proposed BOS RNAV (GPS) RWY 4L.

This IER, including its attachments, documents the above statements.

Facility Manager Review/Concurrence

Signature:  (Coleman Hartigan) Date: March 24, 2017

Title: Air Traffic Manager, Boston Consolidated TRACON (A90)

Address: 25 Robert Milligan Parkway

Merrimack, New Hampshire 03054

Phone: (603) 594-5502 Email: coleman.hartigan@faa.gov

Service Center Environmental Specialist Review/Concurrence

Signature: Veronda Johnson Date: March 24, 2017

Title: Environmental Protection Specialist

Phone: (404) 857-7197 Email: veronda.johnson@faa.gov

Service Center Director Review/Concurrence (if necessary)

Signature:  (Robert K. Jones) Date: March 27, 2017

Title: New England Terminal District Manager

Address: 25 Robert Milligan Parkway

Merrimack, New Hampshire

Phone: (603) 594-5501 Email: robert.k.jones@faa.gov

1. FAA JANUARY 9, 2020 RUNWAY 4L
ENVIRONMENTAL ASSESSMENT SLIDES

2. FAA ANSWERS TO TD'S WRITTEN
QUESTIONS PRESENTED TO FAA REGIONAL
ADMINISTRATOR JANUARY 9, 2020

3. FAA INITIAL ENVIRONMENTAL REVIEW
SUMMARY DATED MARCH 20, 2017

4. FAA ATTACHMENTS PROVIDED TO TD ON
FEBRUARY 3, 2020

- (1) FLIGHT STANDARDS
- (2) NOISE MODELING REPORT
- (3) RNAV (GPS) 4L AND 4R FLIGHT TRACKS
- (4) PROPOSED ACTION ENVIRONMENTAL JUSTICE

5. CSDA DESIGN GROUP EXCERPT

6. MIT GEAR-DOWN FAF AND NOISE SLIDES

7. 4L RNAV EA WORKING GROUP

Attachment 1

**FAA, Flight Standards Service (AFS),
RNAV (GPS) RWY 4L and RNAV (GPS) RWY 4R
Prototype Plates**

BOSTON, MASSACHUSETTS

AL-58 (FAA)

FIG

WAAS CH 77738 W04B	APP CRS 038°	Rwy Idg 8851
	TDZE 14	
	Apt Elev 19	

RNAV (GPS) RWY 4L **GENERAL EDWARD LAWRENCE LOGAN INTL (BOS)**

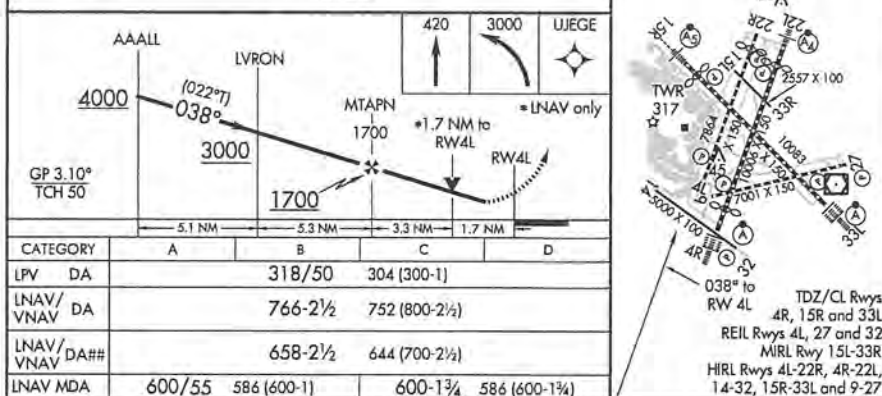
For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -16°C (4°F) or above 48°C (119°F). DME/DME RNP-0.3 NA. Rwy 4L helicopter visibility reduction below RVR 4000 NA. When control tower reports tall vessels in approach area: increase LPV DA to 369 and all Cals visibility to RVR 6000. LPV and LNAV/VNAV NA when vessels taller than 137 feet present.
 ## Missed approach requires minimum climb of 443 feet per NM to 900.

ALSF-2



MISSED APPROACH:
 Climb to 420 then climbing left turn to 3000 direct UJEGE and hold, continue climb-in-hold to 3000.

ATIS ARR 135.0 DEP 127.875	BOSTON APP CON 120.6 263.1	BOSTON TOWER 128.8 257.8	GND CON 121.9	CLNC DEL 121.65 257.8
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BOSTON, MASSACHUSETTS

GENERAL EDWARD LAWRENCE LOGAN INTL (BOS)

Orig FIG

42°22'N-71°00'W

RNAV (GPS) RWY 4L

BOSTON, MASSACHUSETTS

AL-58 (FAA)

FIG

WAAS	APP CRS	Rwy Idg	04R	04L
CH 50124	036°	TDZE	8851	7861
W04A		Apt Elev	18	14
			19	19

RNAV (GPS) RWY 4R

GENERAL EDWARD LAWRENCE LOGAN INTL (BOS)

For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -16°C (4°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. Circling NA to RW 14. Circling NA for Cats C and D west of Rwy 4L and 15R. When control tower reports tall vessels in approach area: increase LPV DA to 374 and all Cats visibility to RVR 4000; increase LNAV/VNAV Cats A and B visibility to RVR 4000; for inop ALSF, increase LPV all Cats visibility to RVR 6000 and LNAV Cats A and B visibility to RVR 5000; Rwy 4R: helicopter reduction below RVR 4000 NA. When vessels taller than 144 feet present, LPV and LNAV/VNAV NA.

ALSF-2



MISSED APPROACH:
Climb to 3000 direct
OMVOZ and on track
033° to WAXEN and
hold.

ATIS

135.0

BOSTON APP CON

120.6 263.1

BOSTON TOWER

128.8 257.8

GND CON

121.9

CLNC DEL

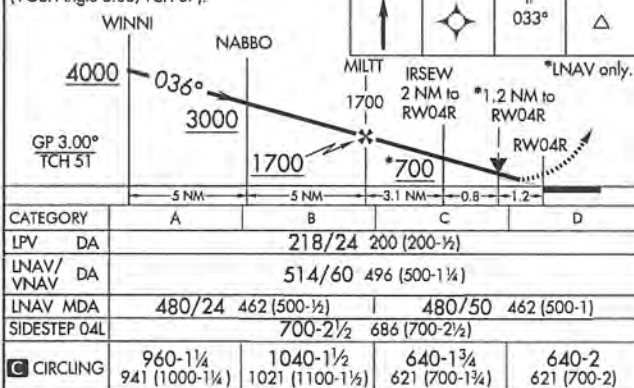
121.65 257.8

CPDLC

RADAR REQUIRED

PROTOTYPE-NOT
FOR NAVIGATION

VGSI and RNAV glidepath not coincident
(VGSI Angle 3.00/TCH 67).



ELEV 19

D

TDZE 04R 18

TDZE 04L 14

036° to
RWY 04R

TDZ/CL Rwy 4R, 15R
and 33L
REIL Rwy 4L, 27 and 32
MIRL Rwy 15L-33R
HIRL Rwy 4L-22R, 4R-22L,
14-32, 15R-33L and 9-27

BOSTON, MASSACHUSETTS

GENERAL EDWARD LAWRENCE LOGAN INTL (BOS)

Amdt 2 FIG

42°22'N-71°00'W

RNAV (GPS) RWY 4R

Attachment 2

TARGETS AEDT Noise Modeling Report

TARGETS

Noise Plug-in Report

For

General Edward Lawrence Logan International Airport
BOS
Boston, Massachusetts

Prepared by:

ATO, AJV-114, Environmental Policy Office

Date: February 24, 2017

BOS Noise Screening Analysis Report *For Official Internal Use Only*

This Noise Screening Report was prepared by the FAA to assess noise exposure from the proposed project under consideration. Even though the data and results contained in the report are accurate, the report is a preliminary document, potentially subject to revision, until the FAA makes a final environmental decision related to the proposed project.

Summary

A Noise screening analysis was completed to assess potential noise impacts resulting from proposed air traffic actions at General Edward Lawrence Logan International Airport in Boston, Massachusetts using the Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) Environmental Plug-in tool and the Aviation Environmental Design Tool (AEDT).

Historical radar track data was used to create a baseline scenario. After the baseline scenario was built, aircraft operations assigned to the proposed procedure were modeled as flying the proposed procedure instead of their historical tracks, which provides the alternative scenario. The tracks were assigned to the new procedures based on usage assumptions passed on from the facility and the historical tracks were used in order to predict the lateral spread on the final approach into the airport.

Once the baseline and alternative scenarios were built, the TARGETS Environmental Plug-in Tool was used to generate noise outputs for both scenarios. In the case of BOS, there were significant and reportable increases in noise under the 4L Approach with corresponding decreases under the 4R Approach.

General Edward Lawrence Logan International Airport (BOS)

TARGETS Noise Analysis Process

I. Purpose

The purpose of this report is to document the process used to analyze the noise impact of proposed air traffic actions at General Edward Lawrence Logan International Airport (BOS) in Boston, Massachusetts and to present the results of that analysis. Figure 1-1 shows the airport diagram for BOS. This analysis centers on a temporary closure of Runway 4L and the expected changes to flight management to compensate with this closure. The new procedures connected to this shutdown are the new RNAV (GPS) RWY 4L approach and an amended RNAV (GPS) RWY 4R approach, where a sidestep was added to allow for landing onto 4L from the 4R procedure. The analysis was performed using the Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) Environmental Plug-in tool and the Aviation Environmental Design Tool (AEDT). Table 1-1 shows the procedure name, type and publication date.

Figures 1-2 thru 1-4 show:

- 1.) The proposed procedures individually
- 2.) The historic radar tracks being reassigned to the new procedure for the Noise Model.

Table 1-1, Procedures to be Modeled.

Name of Procedure	Names of Transition Waypoints	Type of Procedure
RNAV (GPS) RWY 4L	WOONS, NUNZO, AAALL, LVRON, MTAPN	New RNAV (GPS) Approach
RNAV (GPS) RWY 4R*	WINNI, NABBO, MILTT, IRSEW	Amended RNAV (GPS) Approach

*This procedure is being proposed as part of the Runway 4R shutdown but no tracks were modeled on the procedure due to the assumptions provided by the facility. Please see the methodology section below for more details

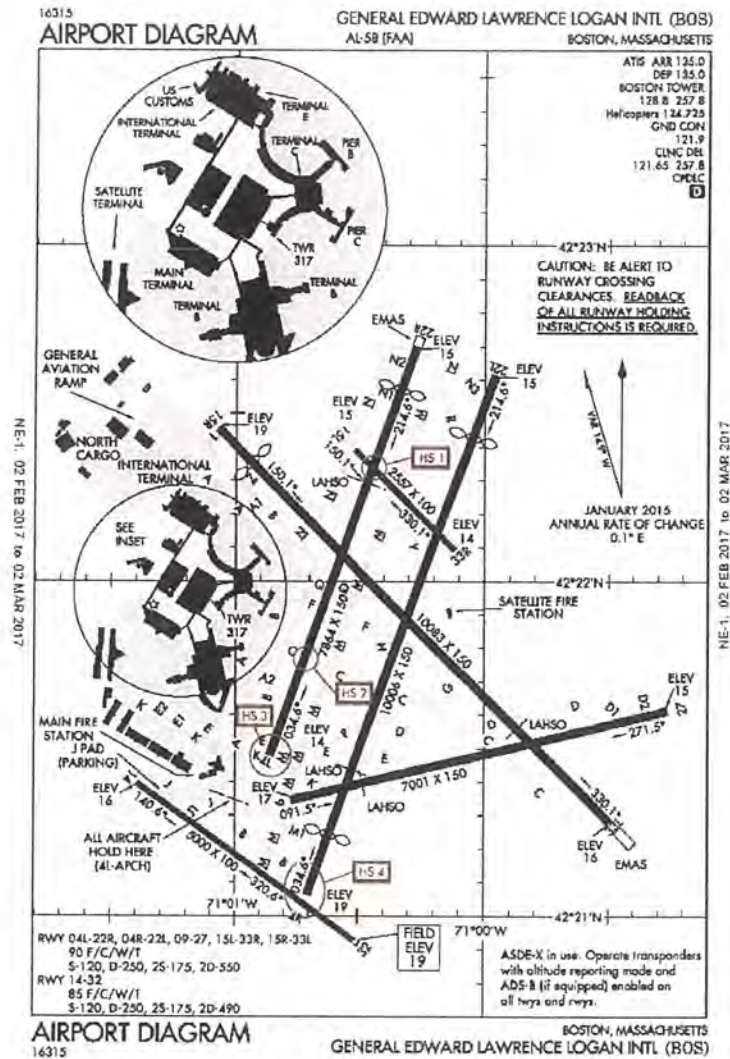


Figure 1-1, Airport Diagram of BOS

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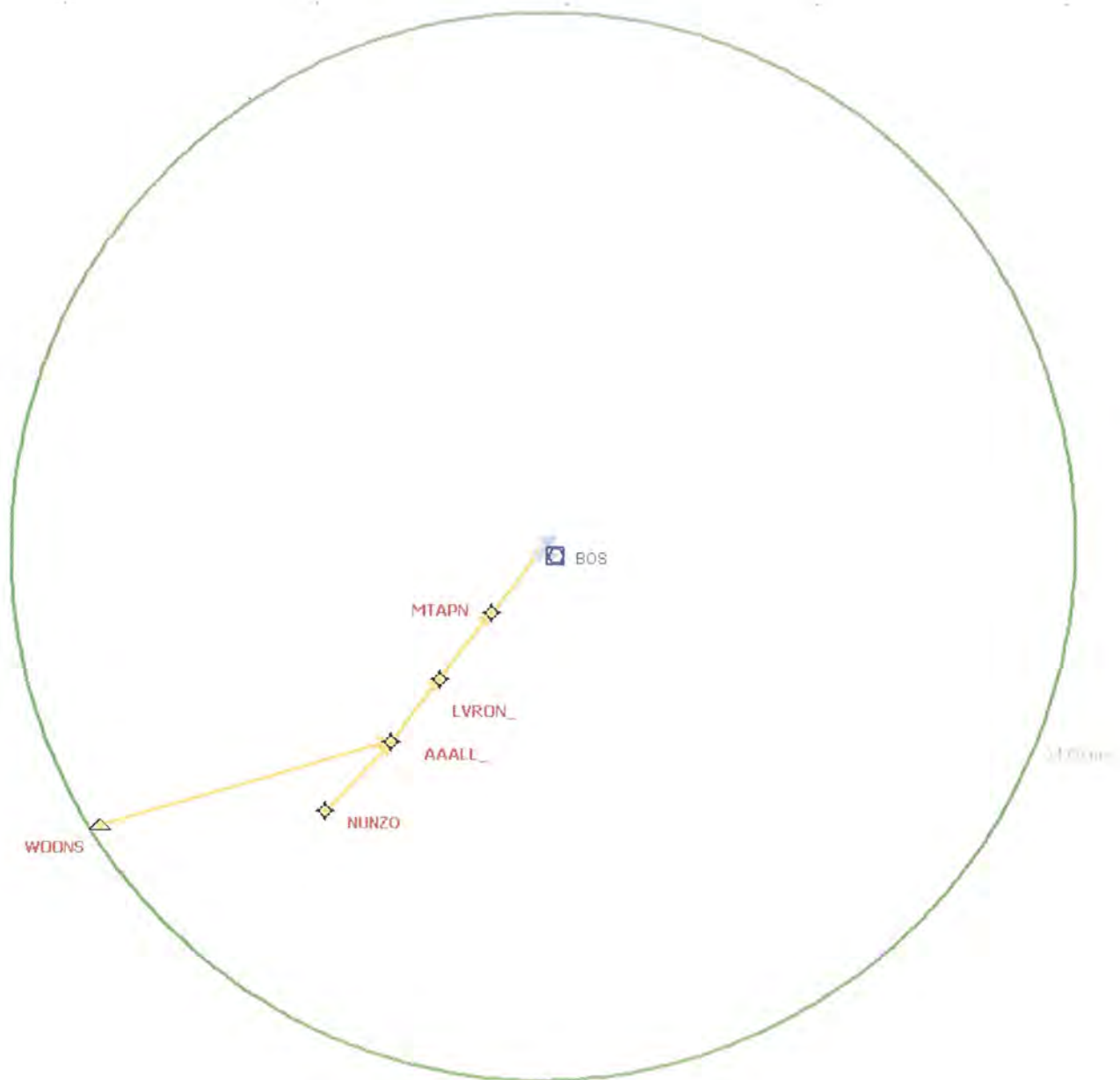


Figure 1-2, BOS Procedure RNAV (GPS) RWY 4L

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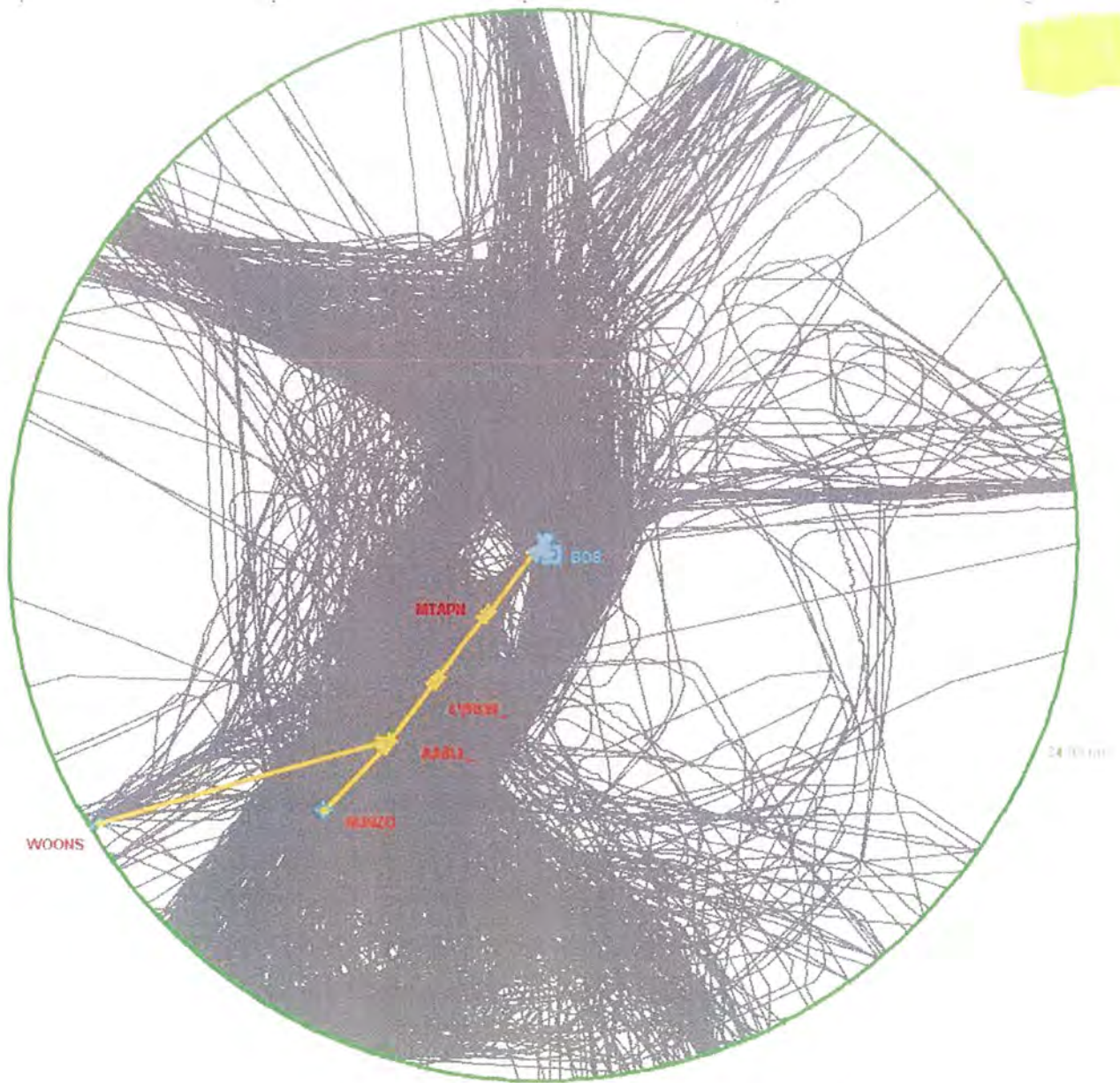


Figure 1-3, BOS Radar Tracks Reassigned to RNAV (GPS) RWY 4L into Runway 4L

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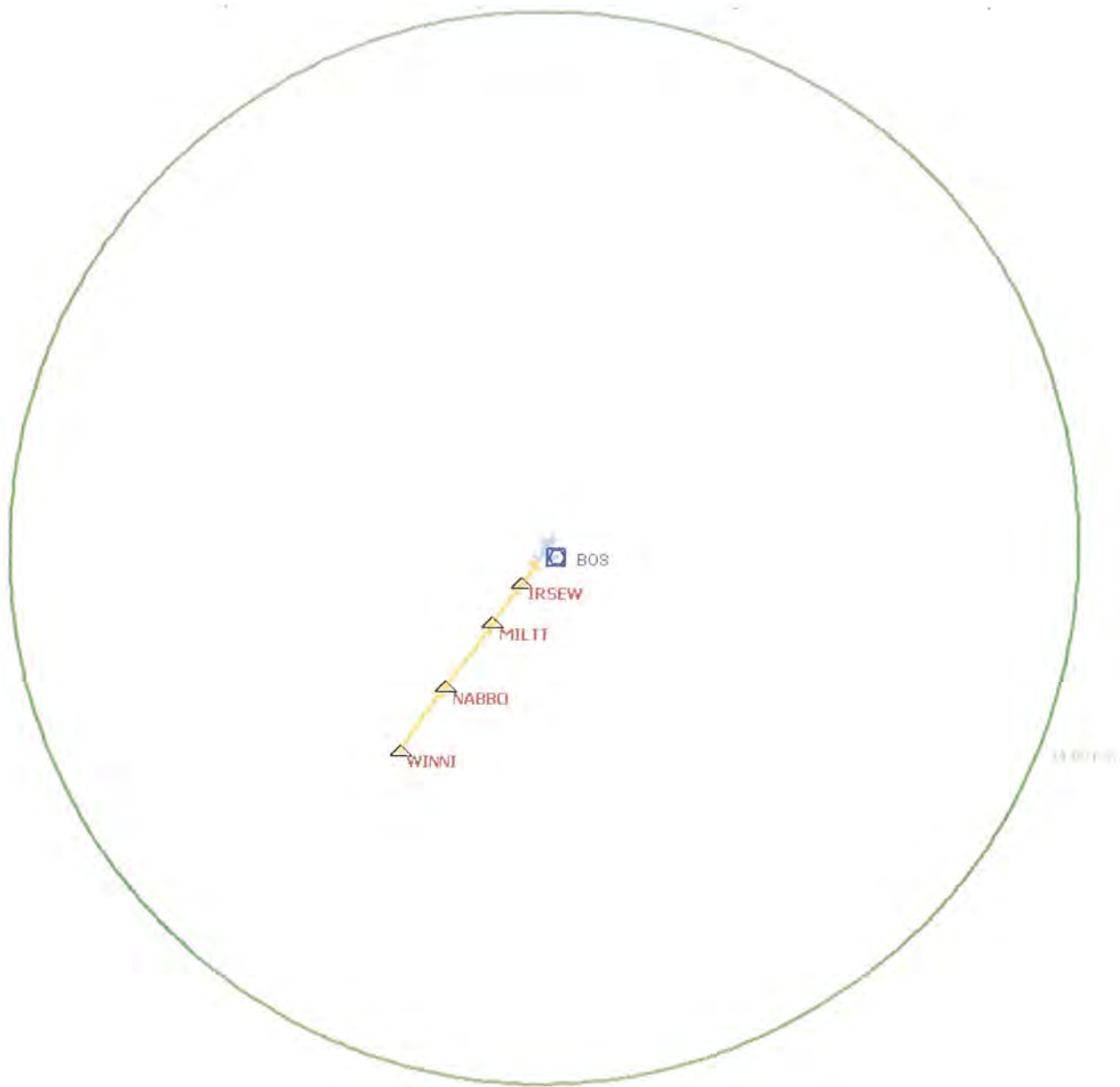


Figure 1-4, BOS Procedure RNAV (GPS) RWY 4R

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2. Methodology

Noise screening was completed using the TARGETS AEDT Environmental Plug-in tool to calculate Day-Night Average Sound Levels (DNL) from existing operations (baseline) and modeled operations to replicate the proposed action (alternative). Historic radar track data for BOS was obtained from the FAA's National Offload Program (NOP)¹ after concurrence of the dates to be used by the environmental specialist and air traffic facility. Twenty eight days of radar track data were selected for the BOS analysis representing a range of temperature and wind conditions² as well as being representative of the average runway usage. After the removal of overflights, incomplete track segments, and other irrelevant and/or unusable tracks, 23,803 tracks were used for the analysis.

The dates selected for this project were the following:

April 16-22, 2016

July 9-15, 2016

October 17-23, 2016

January 15-21, 2017

These dates represent average traffic counts and traffic flows through various seasons and peak travel times for BOS. There were no significant runway outages or significant conditions that would otherwise result in abnormal traffic counts or traffic flows. In order to calculate the accurate AAD parameter, traffic counts for average daily departures and arrivals used for annualization in this analysis were obtained through the FAA's Traffic Flow Management System Counts (TFMSC) database.

Historical radar track data (figures 2-1 and 2-2) was used to create a baseline noise exposure, which provides lateral path definition, aircraft fleet mix, departure/arrival stream proportions for each runway, and day/night traffic ratios. A legend (Table 2-1) shows, by color, the altitudes of the track data.

After the baseline scenario was built, aircraft operations assigned to the proposed procedure were modeled as flying the proposed procedure instead of their historical tracks, which provides the alternative scenario. The historical tracks were used in order to predict the lateral spread on the final approach into the airport.

The assumptions provided by the facility for procedure usage were as follows:

- 1) RNAV Equipped aircraft only would be flying both approaches
- 2) The non-RNAV equipped aircraft that had historically been landing on 4L and 4R will instead be directed to RWY 27 or RWY 33L.
- 3) The RNAV (GPS) RWY 4R procedure was described to be used as overflow and no information could be provided how often flights from the 4L approach would be put onto the 4R "overflow." Because of this lack of information, the decision was made to model all the flights on the 4L approach as the conservative situation.

¹ All traffic data was obtained using the Boston Center (ZBW) as the radar source facility.

² Historic weather data was obtained from weather underground (<http://www.weatherunderground.com>).

The analysis does not take into account terrain. All calculations were based on “above field elevation” (AFE) using the airport’s reference elevation. The altitude controls of the RNAV procedures were used to adjust the vertical profile for each modeled aircraft flying the proposed procedure. When a range of altitudes was given for a particular waypoint, the lowest point of the range was used in order to model the most conservative environmental case. The TARGETS Environmental Plug-in uses 0.5 nautical mile dispersion on either side of the centerline of an RNAV procedure and 0.3 nautical mile dispersion on either side of the centerline of an RNP procedure in the case where no historical data is available.

Once the baseline and alternative scenarios were built, the TARGETS Environmental Plug-in Tool was used to generate noise outputs for both scenarios. The Environmental Plug-in Tool uses the Aviation Environmental Design Tool version 2c (AEDT 2c) to calculate noise. The noise output files from AEDT 2c for both the baseline and alternative noise exposures consist of a series of equally spaced grid points, each showing the DNL value. The noise grid (receptor set) is a grid extending around the areas of procedure change with grid points (receptors) spaced 0.25 nautical miles (n.m.) apart. The noise results of the baseline and alternative scenarios were then compared to test for noise impacts.

The noise impact is a comparison between the baseline and the alternative noise exposure that depicts reportable and significant noise changes at all affected locations per the criteria indicated in FAA Order 1050.1F and Chapter 32 of FAA Order 7400.2K. The reportable and significant noise increases and decreases (if any) are then depicted on an aerial photograph using Google Earth as well as on a sectional chart.

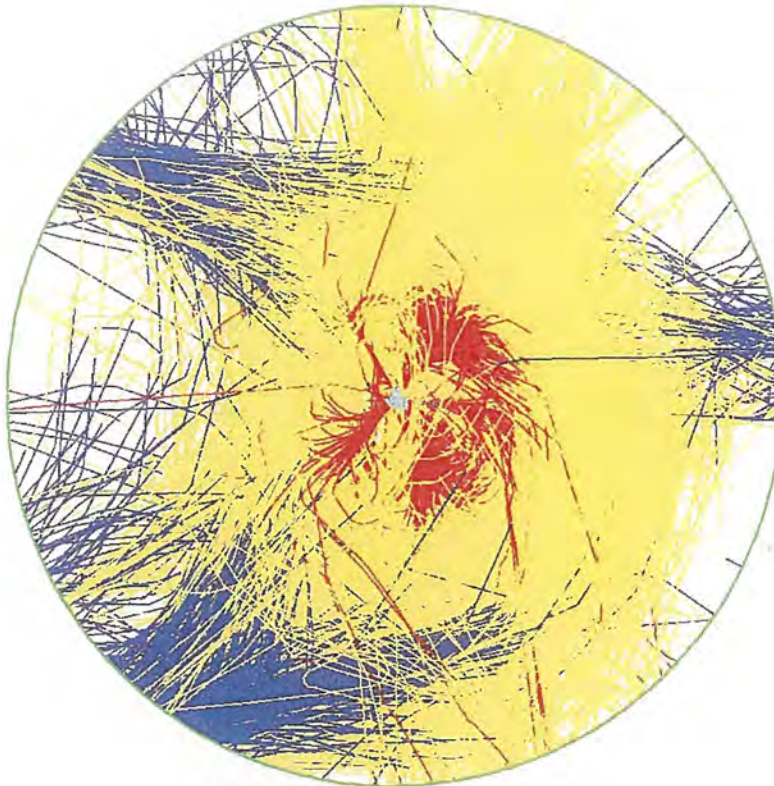


Figure 2-1, Baseline Arrival Traffic

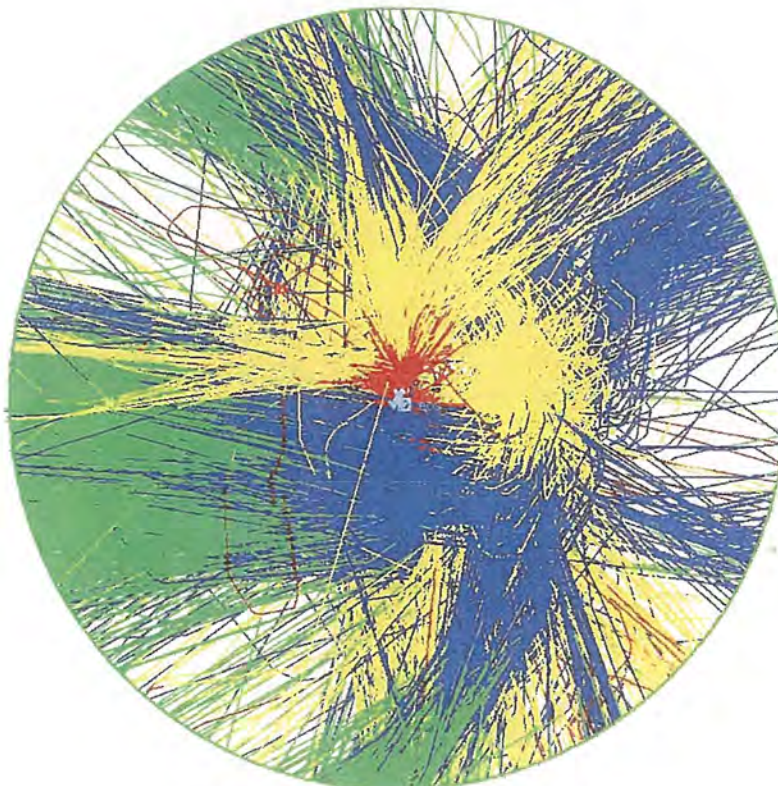


Figure 2-2, Baseline Departure Traffic

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Table 2-3, Legend for Baseline Arrival and Departure Traffic

Track Data Legend with Field Elevation		
<i>Airport: BOS</i>	<i>Field Elevation In Feet</i>	19.6
AGL Altitudes	MSL Altitudes	Legend Colors
1000	1019.6	Red
2000	2019.6	
3000	3019.6	
4000	4019.6	Yellow
5000	5019.6	
6000	6019.6	
7000	7019.6	
8000	8019.6	
9000	9019.6	
10000	10019.6	
11000	11019.6	Blue
12000	12019.6	
13000	13019.6	
14000	14019.6	
15000	15019.6	
16000	16019.6	
17000	17019.6	
18000	18019.6	
Above		Green

3. Baseline Scenario

The baseline noise exposure is shown in Figure 3-1, which depicts the levels and locations of the noise produced by the historical radar track data for arrivals and departures. Table 3-1 is the legend for the baseline noise exposure figures.

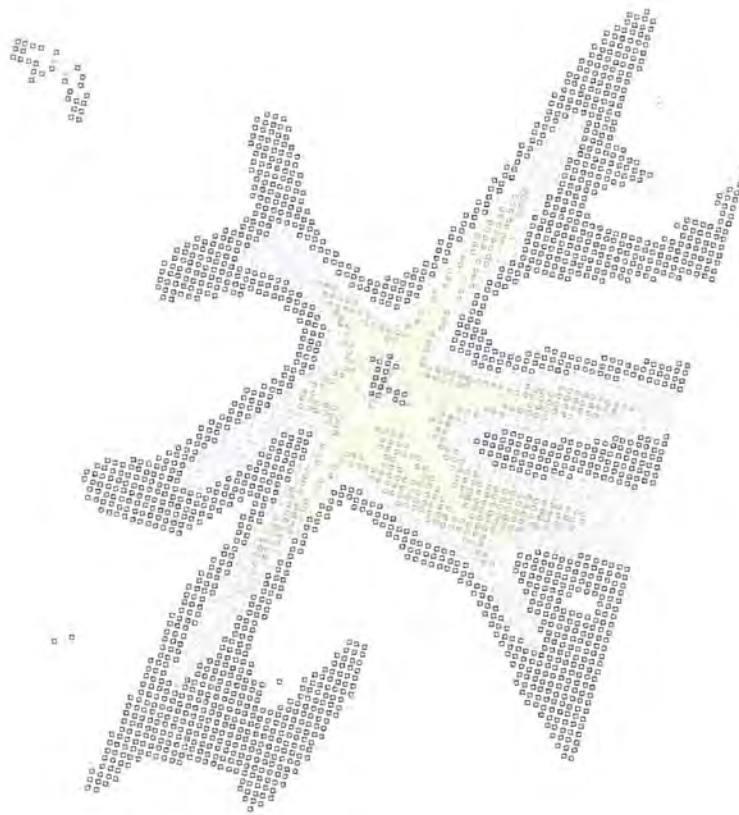


Figure 3-1, Baseline Noise Exposure in TARGETS

Table 3-1, Legend for Noise Exposure

GEOMETRIC SHAPE	COLOR	DNL VALUE
SQUARE	PURPLE	45 dB OR LESS
SQUARE	BLUE	45–50 dB
SQUARE	LIGHT BLUE	50–55 dB
SQUARE	GREEN	55–60 dB
SQUARE	YELLOW	60–65 dB
SQUARE	ORANGE	65–70 dB
SQUARE	PINK	70–75 dB
SQUARE	RED	75 dB OR MORE

BOS Noise Screening Analysis Report *For Official Internal Use Only*

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4. Alternative Noise Exposure

The alternative noise exposure is shown next to the baseline noise exposure for comparison in Figure 4-1, which depicts the levels and locations of the noise exposure output from the model of the proposed action. Table 4-1 is the legend for the alternative noise exposure figures.

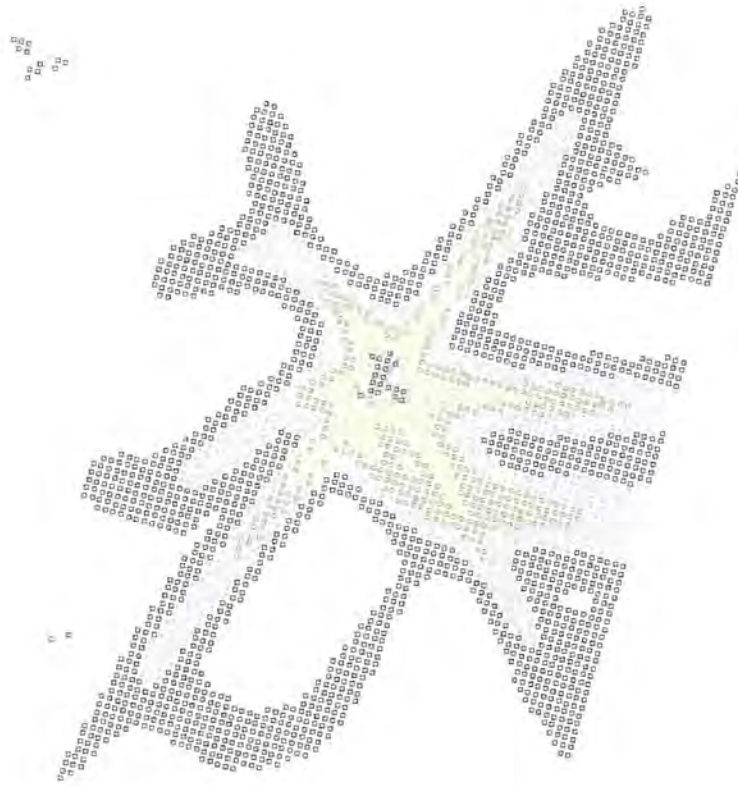


Figure 4-1, Alternative Noise Exposure for the Proposed Procedures in TARGETS

Table 4-1, Legend for Noise Exposure

GEOMETRIC SHAPE	COLOR	DNL VALUE
SQUARE	PURPLE	45 dB OR LESS
SQUARE	BLUE	45–50 dB
SQUARE	LIGHT BLUE	50–55 dB
SQUARE	GREEN	55–60 dB
SQUARE	YELLOW	60–65 dB
SQUARE	ORANGE	65–70 dB
SQUARE	PINK	70–75 dB
SQUARE	RED	75 dB OR MORE

BOS Noise Screening Analysis Report *For Official Internal Use Only*

This Noise Screening Report was prepared by the FAA to assess noise exposure from the proposed project under consideration. Even though the data and results contained in the report are accurate, the report is a preliminary document, potentially subject to revision, until the FAA makes a final environmental decision related to the proposed project.

5. Comparison of Baseline Scenario and Alternative Scenario

A comparison of the baseline and alternative scenarios by the TARGETS AEDT Environmental plug-in determines the noise impacts of the proposed alternative. Significance of noise impacts is defined by FAA Order 1050.1F³ which establishes the threshold for and significant increases in noise exposure. Where the proposed action results in a noise impact, the TARGETS AEDT Environmental Plug-in generates a graphic noise impact map that indicates the locations of reportable and significant changes. These impacts are shown below (Figure 5-1) and is also shown overlaying a google earth map view of the area surrounding the airport. (Figure 5-2) Table 5-1 shows the legend for the noise exposure map.

Table 5-1, Legend for Noise Impact

GEOMETRIC SHAPE	COLOR	DNL DIFFERENCE
SQUARE	PURPLE	60 dB OR LESS WITH A DECREASE OF 5.0 dB OR GREATER
SQUARE	BLUE	60-65 dB WITH A DECREASE OF 3.0 dB OR GREATER
SQUARE	GREEN	65 dB OR GREATER WITH A DECREASE OF 1.5 dB OR GREATER
SQUARE	RED	65 dB OR GREATER WITH AN INCREASE OF 1.5 dB OR GREATER
OVAL	ORANGE	60-65 dB WITH AN INCREASE OF 3.0 dB OR GREATER
OVAL	YELLOW	60 dB OR LESS WITH AN INCREASE OF 5.0 dB OR GREATER

³ According to Exhibit 4-1 of FAA Order 10501F, *Environmental Impacts: Policies and Procedures*, a noise impact is significant if "The action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe"

BOS Noise Screening Analysis Report *For Official Internal Use Only*

This Noise Screening Report was prepared by the FAA to assess noise exposure from the proposed project under consideration. Even though the data and results contained in the report are accurate, the report is a preliminary document, potentially subject to revision, until the FAA makes a final environmental decision related to the proposed project.

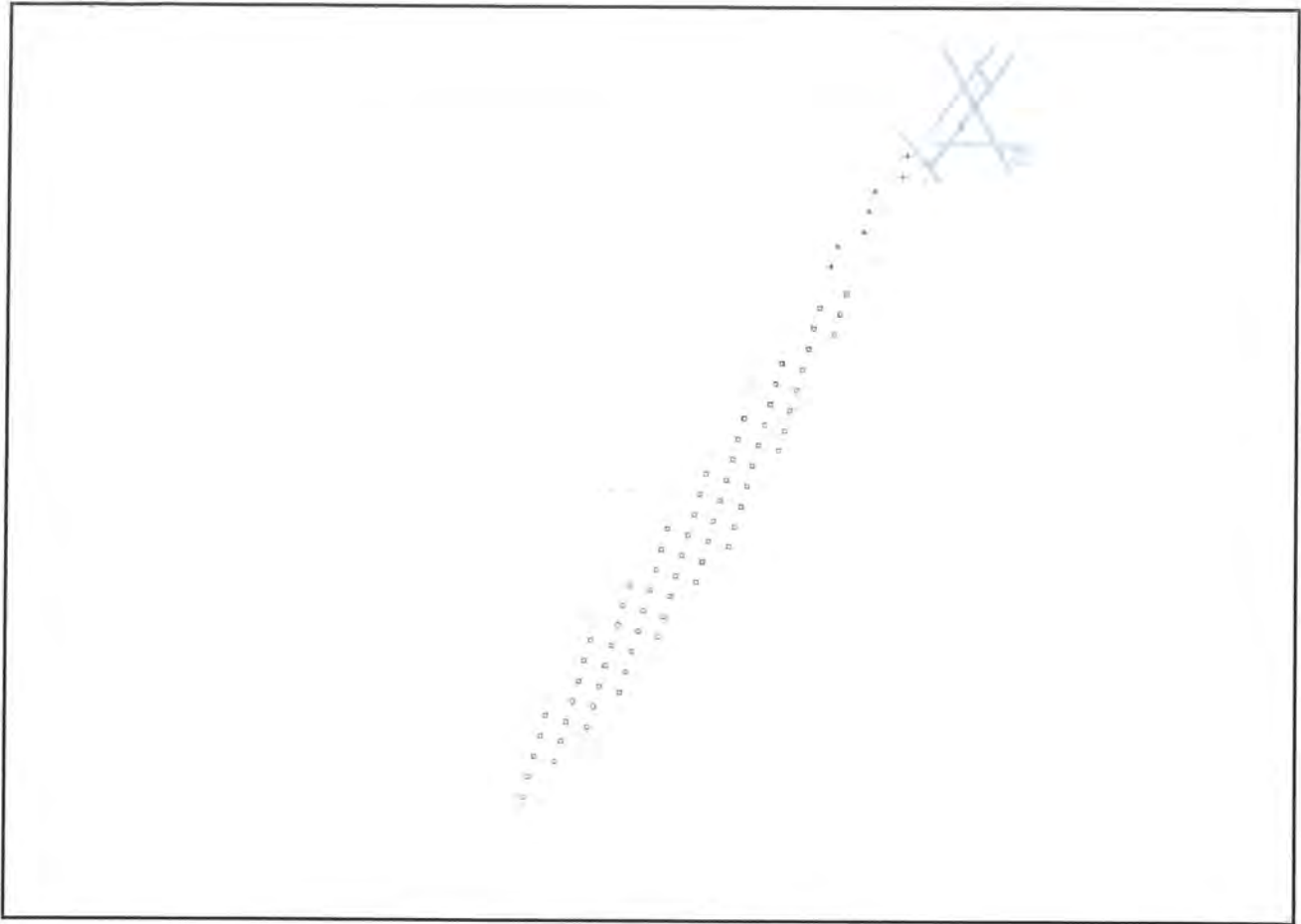


Figure 5-1, Noise Comparison

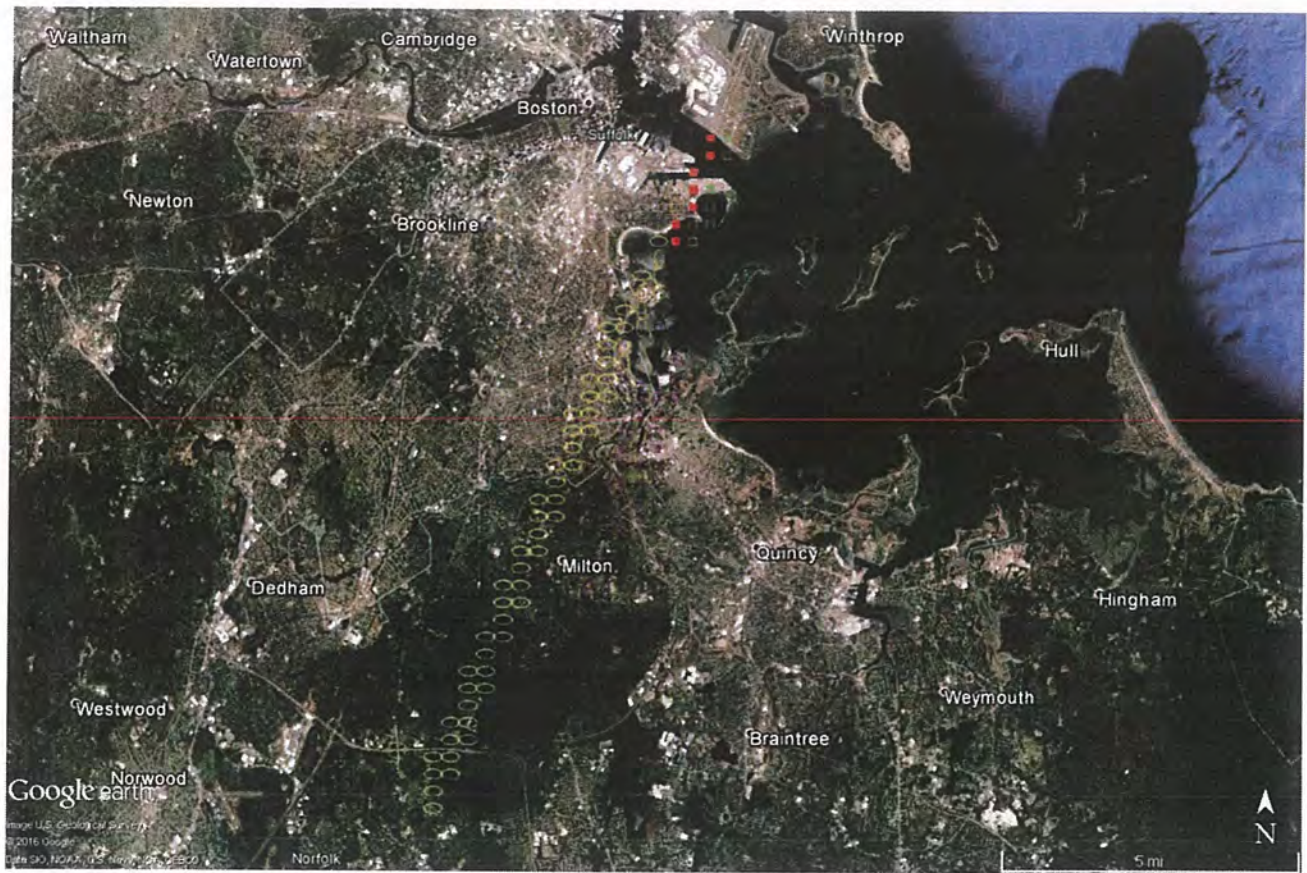


Figure 5-2, Noise Comparison on Google Earth

NOISE IMPACT COMPARISON FOR BOSTON INTERNATIONAL AIRPORT

The figures below provide supplemental screenings for the TARGETS Noise Screening Report provided for Boston International on Friday, February 24, 2017. **Figure 1** shows the noise impacts results from the original analysis provided as a reference. **Figure 2** provides an alternative where 50% of the traffic that historically approached Runway 4R were moved to the RNAV (GPS) RWY 4R Amended RNAV (GPS) Approach (with sidestep to land on 4L). **Figure 3** provides an alternative where 75% of traffic that historically approached 4R were moved the Amended RNAV approach.

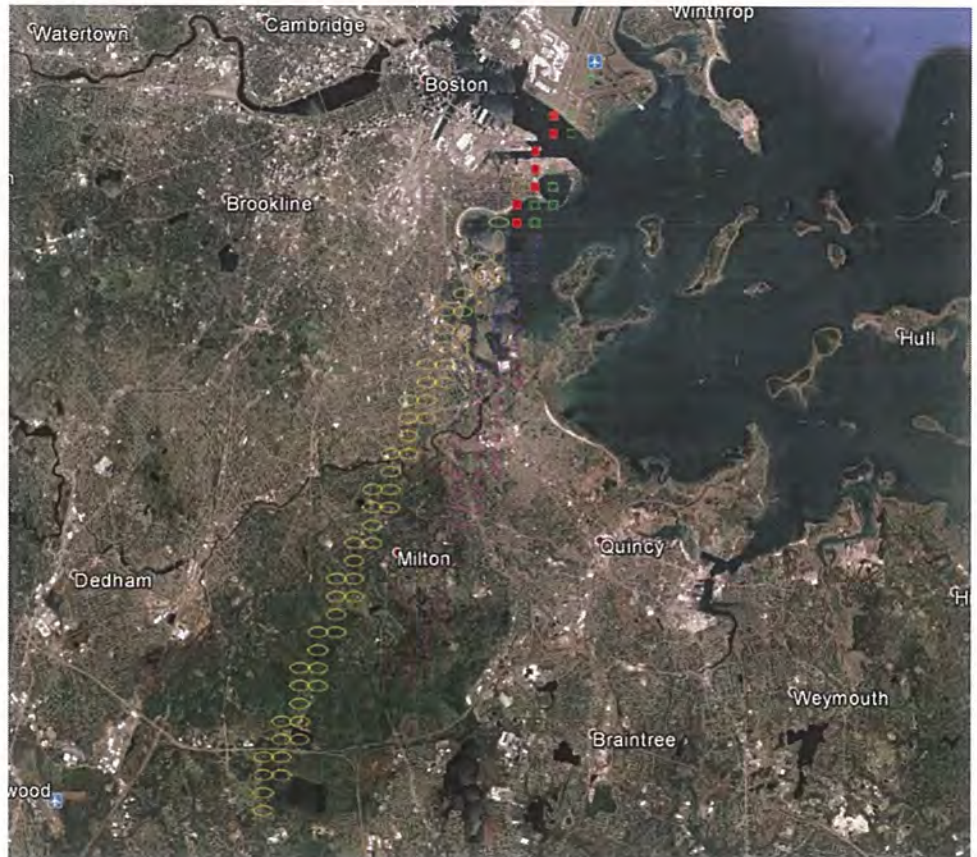


Figure 1 - Original results from previously provided noise screen.



Figure 2 – 50% of tracks moved to Amended 4R approach (total 2,046 tracks moved)



Figure 3 – 75% of tracks moved to Amended 4R approach (total of 3,069 tracks moved)

Attachment 3

Proposed Action Flight Tracks

Figure 1: Flight Track Overlay RWY4L

24 hour track data compiled for RWY 4L & 4R from January 2, 2017
Overlay of proposed RNAV (GPS) RWY 4L

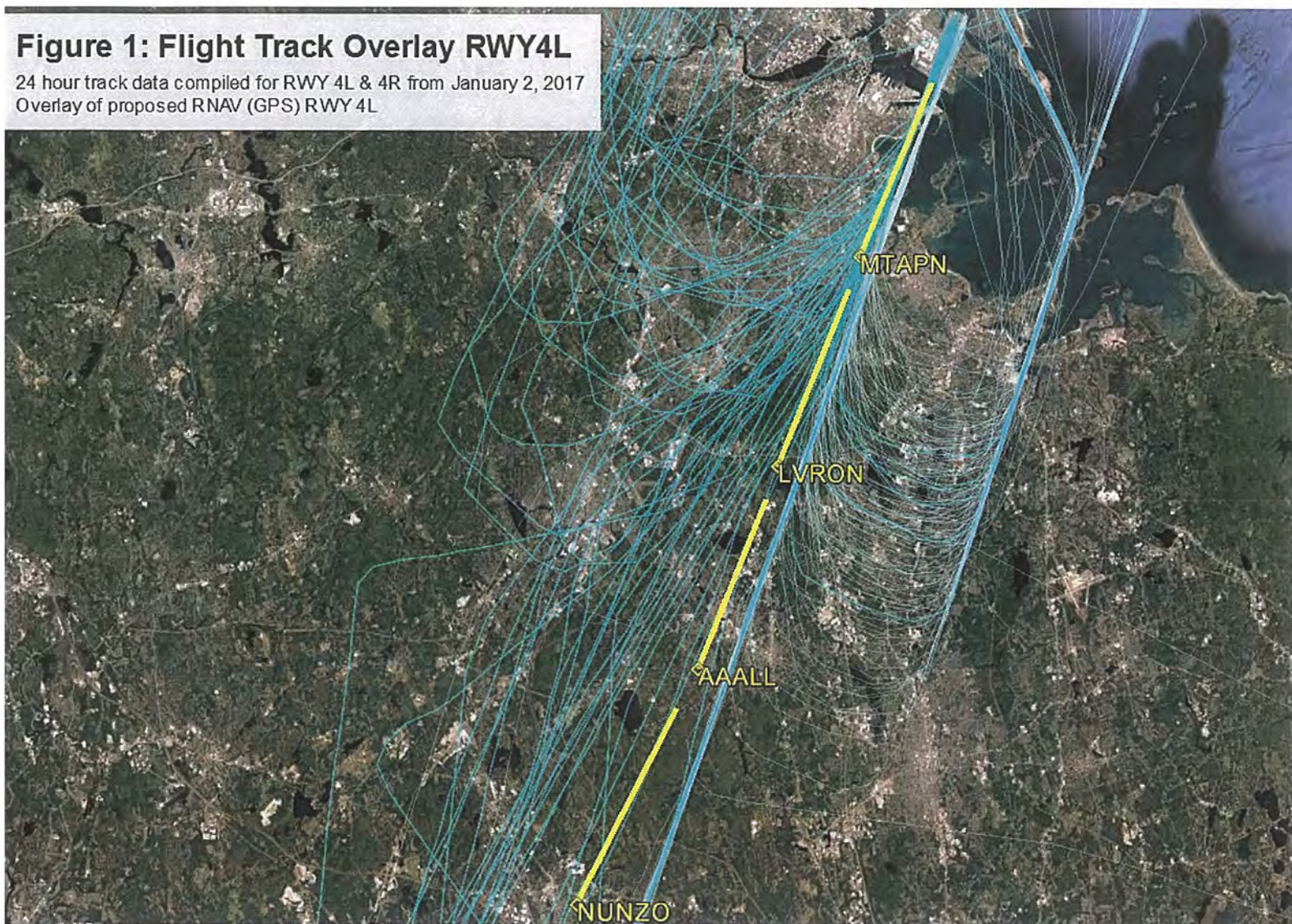


Figure 2: Flight Track Overlay RWY4R Amendment

24 hour track data compiled for RWY 4L & 4R from January 2, 2017

Overlay of RNAV (GPS) RWY 4R and estimated path of sidestep maneuver to RWY4L

Legend

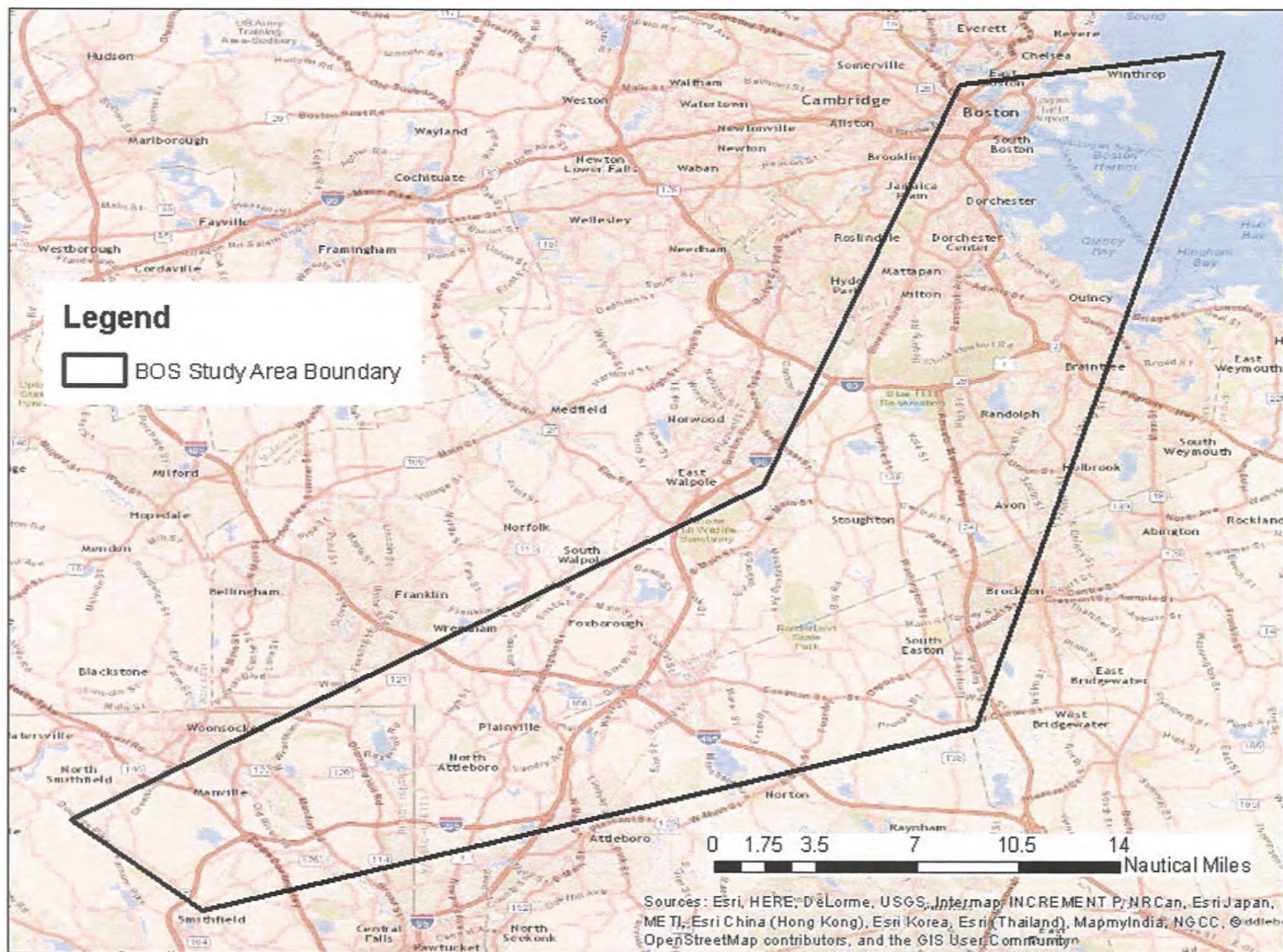
 BOS RNAV (GPS) RWY 4R

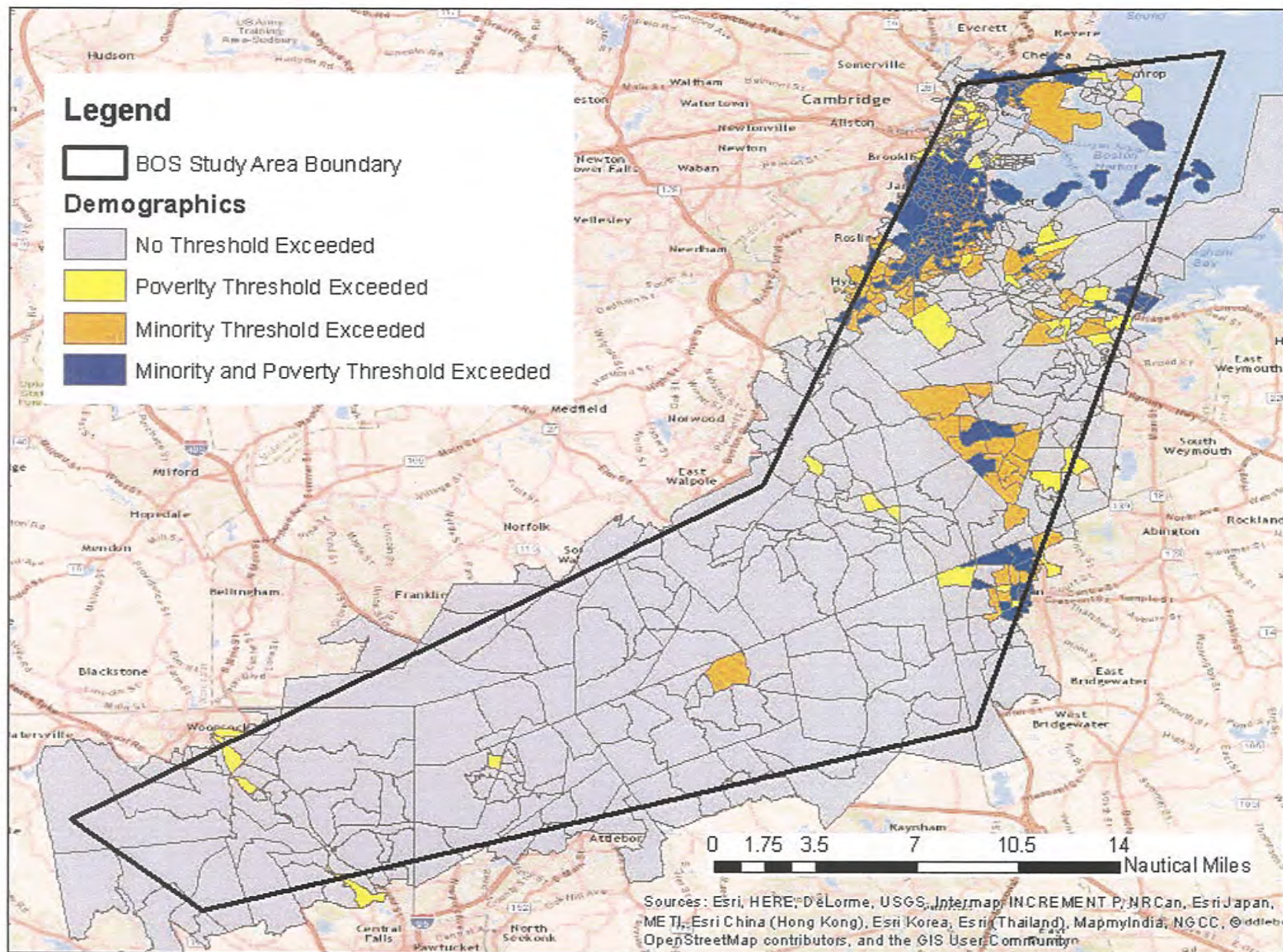
 Sidestep to Final RWY 4L

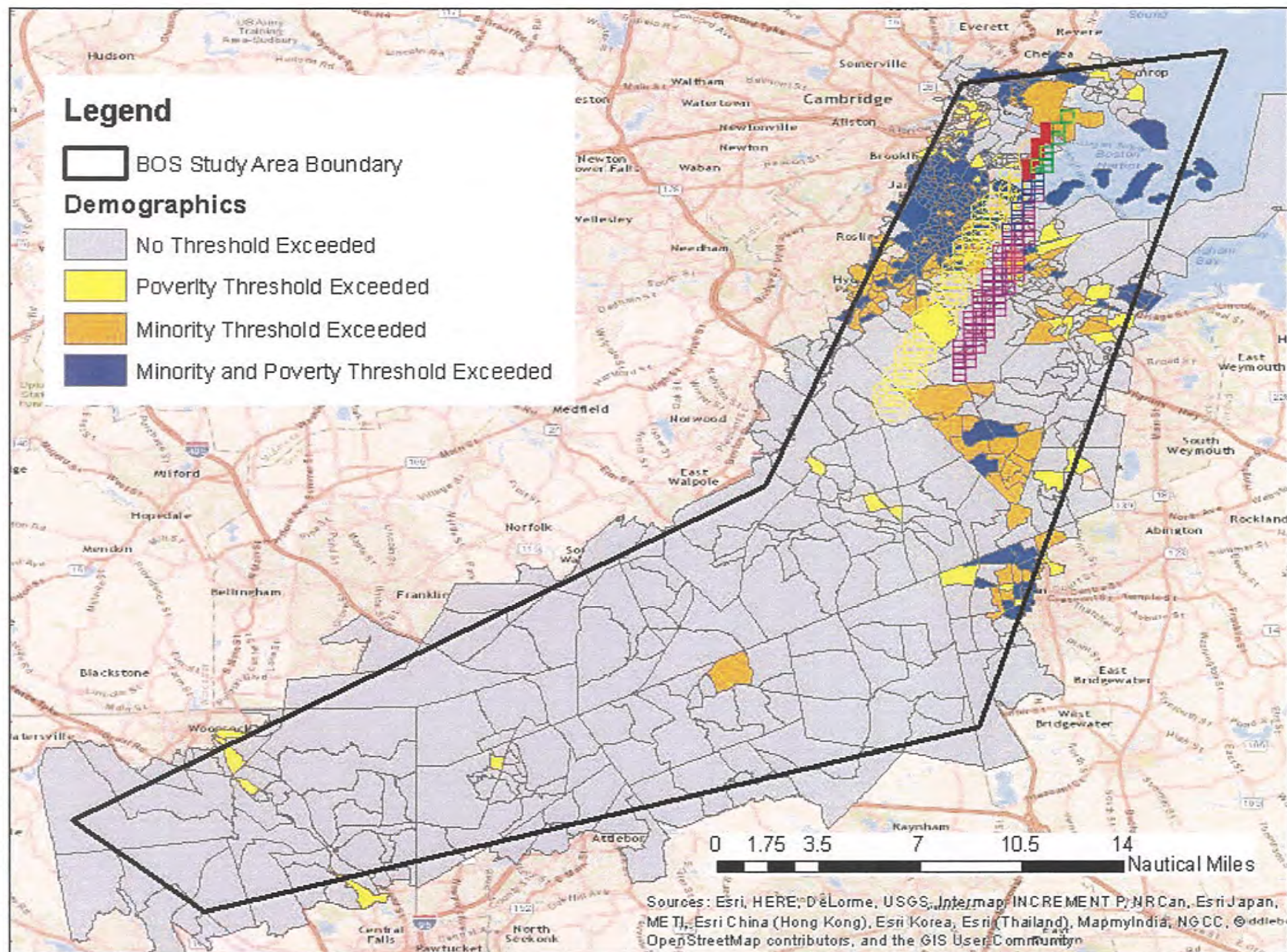


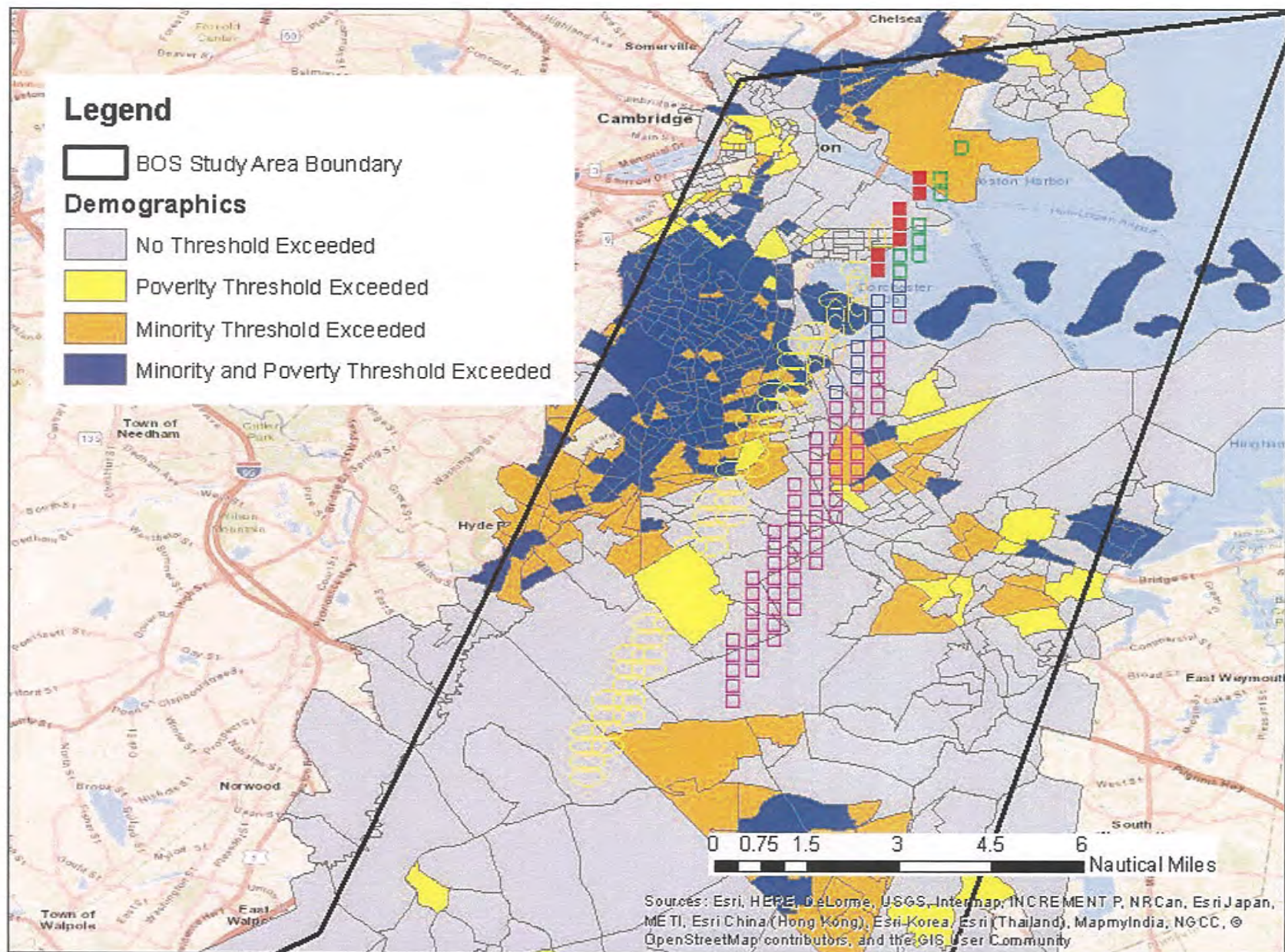
Attachment 4

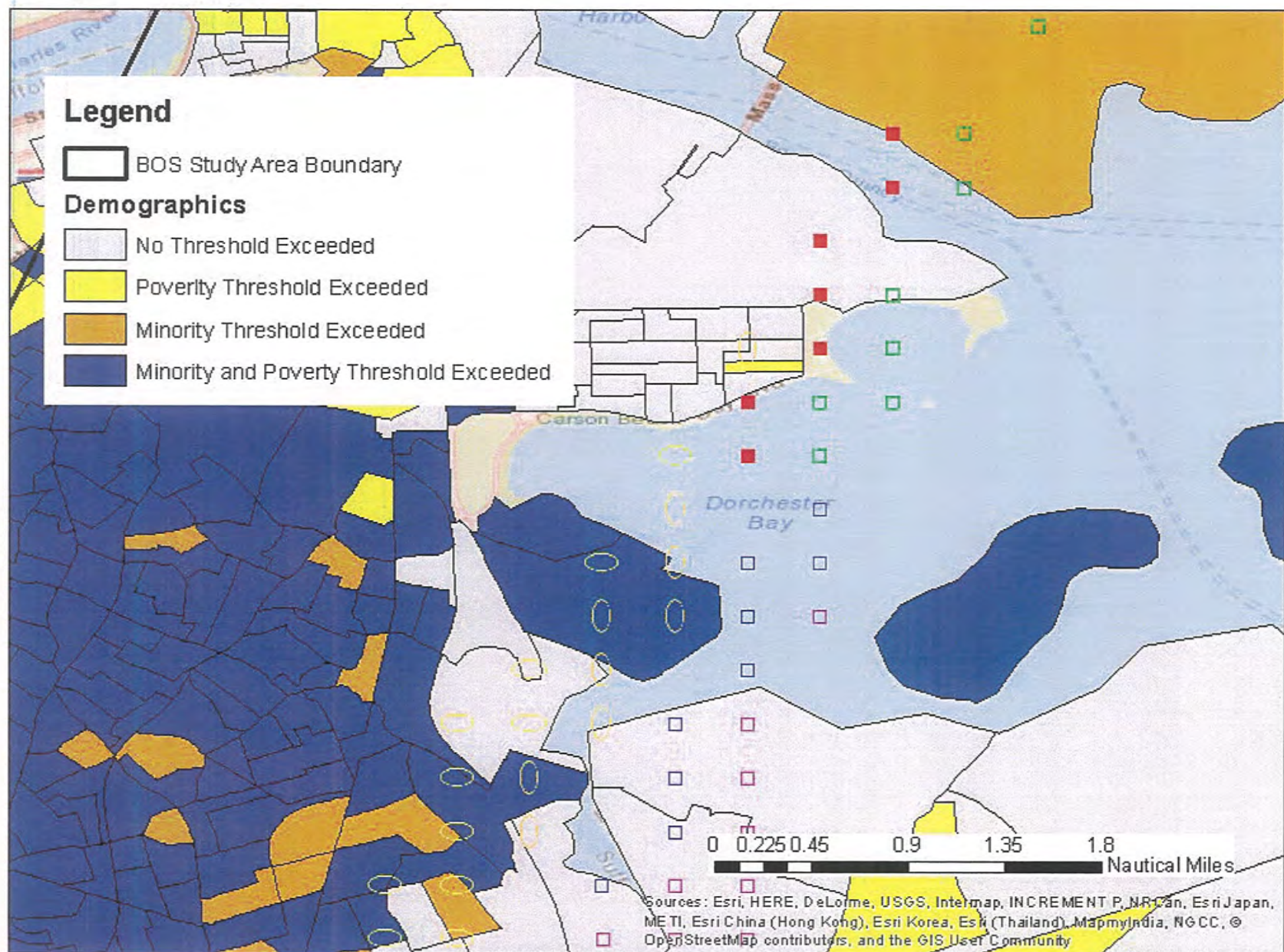
Proposed Action Environmental Justice Impacts











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- (2) NOISE MODELING REPORT
- (3) RNAV (GPS) 4L AND 4R FLIGHT TRACKS
- (4) PROPOSED ACTION ENVIRONMENTAL JUSTICE

5. CSDA DESIGN GROUP EXCERPT

6. MIT GEAR-DOWN FAF AND NOISE SLIDES

7. 4L RNAV EA WORKING GROUP

REQUEST FOR PROPOSAL
ACOUSTICAL ENGINEERING CONSULTING SERVICES
BOSTON LOGAN AIRPORT RWY 04L ARRIVAL



January 29, 2020



CSDA Design Group has provided aviation noise services since 1994

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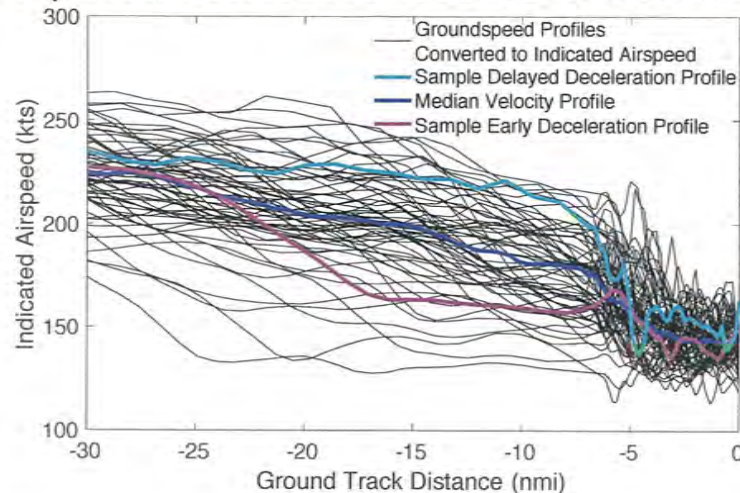
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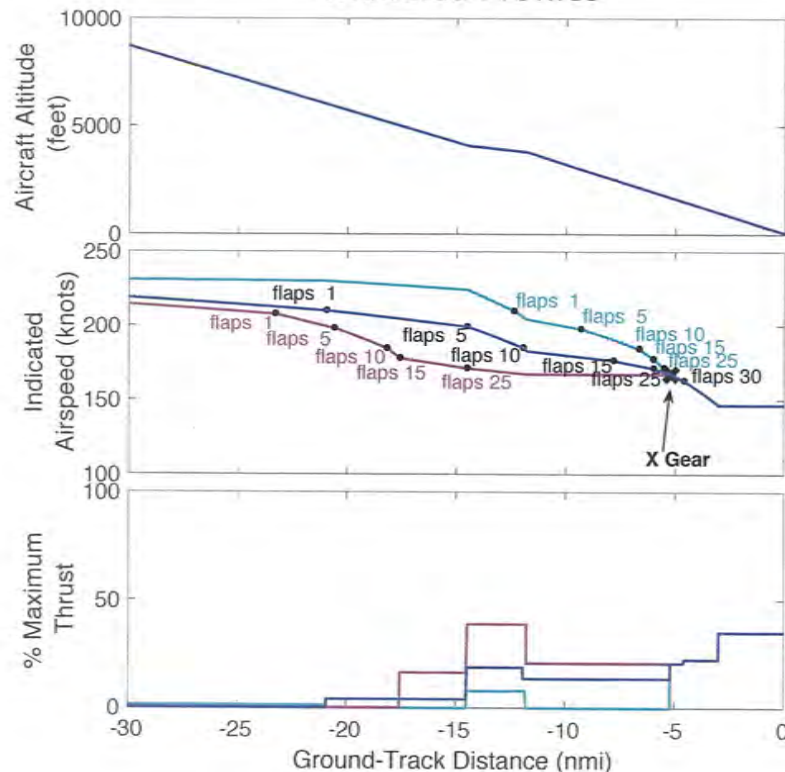
7. 4L RNAV EA WORKING GROUP

Delayed Deceleration Approaches

Velocity Radar Data for B737-800 4000ft Level Offs into 4R

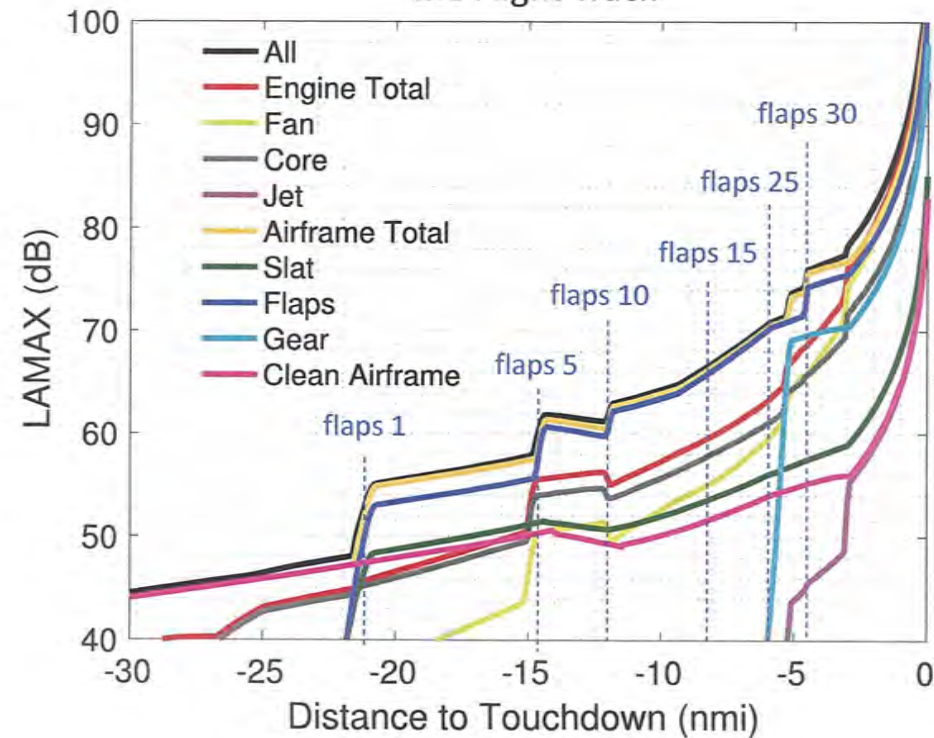


Modeled Profiles



- Reduce noise by delaying extension of flaps
- Potential concerns from ATC and pilots regarding different deceleration rates and managing traffic
- Must decelerate early enough to assure stable approach criteria

Example Noise Component Breakdown Under the Flight Track



Landing Gear accounts for about 40% of the total noise emissions of long range aircraft in approach conditions

Landing gear are required to be in lowered position at the FAF (final approach fix) which for 4L and 4R is the MILTT fix located at the Granite Ave entrance to the Expressway heading north. MILTT is 5.1 nm from 4L/4R.

Yet, aircraft landing gear are often lowered well before MILTT.

We see it as flights pass overhead. This is an operational issue that airlines and pilots could address. Lowered landing gear increase fuel burn, so associated operational cost savings to airlines would accrue if early gear lowering were avoided or reduced. Right-time-landing-gear-lowering should be an element of any fly quiet initiative. See the short discussion excerpt and graphics below:

Source: Airbus Engineering 2015 White Paper Published by American Institute of Aeronautics and Astronautics

Landing Gear accounts for about 40% of the total noise emissions of long range aircraft in approach conditions

. [EU's ACARE](#) (Advisory Council for Aviation Research in Europe) is aiming to reduce noise emission of flying aircraft by 65% in 2050 relative to the capabilities of typical new aircraft in 2000.

In terms of noise impact for the residential areas surrounding airports, takeoff and landing are the most critical phases of the flight. While noise emissions at takeoff are mainly dominated by engines, contributions of all other noise sources are evenly balanced during landing. For a typical long-range airplane during the approach phase, around 54% of the noise stems from the

airframe. Out of these 54%, 76% originate from the landing gear alone (see Figure 2 and Figure 3).

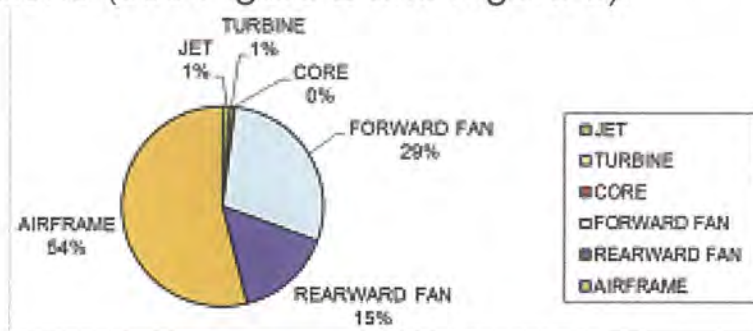


Figure 2 – Contribution to the overall noise emission of a typical long-range jet airplane during the landing phase

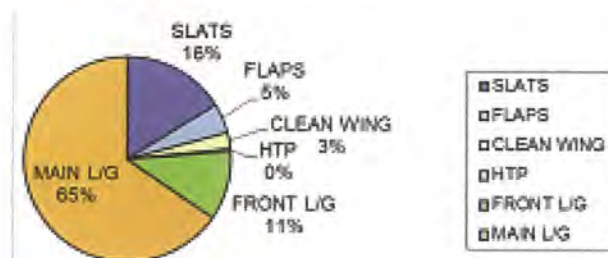


Figure 3 – Decomposition of airframe noise of a typical long-range jet airplane during the landing phase

In total, the landing gear accounts for about 40% of the total noise emissions of a long-range airplane in approach conditions.

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