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## **CHAPTER 2: ALTERNATIVES**

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# Chapter Two:

## ALTERNATIVES

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The analysis of alternatives is key to the NEPA process. Federal guidelines require only a brief discussion of alternatives that provides sufficient information for the FAA to choose an option that meets the need for the proposal and demonstrates reasoned decision-making.

FAA Order 1050.1E, Chapter 4, Section 405(d) states that there “is no requirement for a specific number of alternatives or a specific range of alternatives to be included in an EA. An EA must consider the proposed action and a discussion of the consequences of taking no action and may limit the range of alternatives to action and no-action when there are no unresolved conflicts concerning alternative uses of available resources.”<sup>1</sup> Further, FAA Order 1050.1E, Chapter 4 states that other reasonable alternatives are to be considered in preparing an EA to the degree commensurate with the nature of the proposed action and agency experience with the environmental issues involved.

### 2.1 Identification of Potential Alternatives

A potential alternative is one that might accomplish the Purpose and Need for the Proposed Action. In order to merit further consideration, it is necessary that an alternative provide PBN technology from Runway 33L at Logan Airport for reasons as described in the Purpose and Need chapter. Alternatives that involve other modes of transportation, use of other airports, or

changes in airport use may have the potential to decrease air travel or shift traffic to other airports, but these alternatives do not meet the project’s Purpose and Need for the Proposed Action. Likewise, improvements in ATC technology may provide overall benefits to the operating environment, but would not meet the Purpose and Need to increase the efficiency of air traffic control procedures at BOS and in the Boston TRACON using NextGen.

In this case the FAA has determined that the No Action and Proposed Action Alternatives represent a reasonable range of alternatives to be evaluated in this EA. The Proposed Action Alternative is as close to an overlay as possible to the existing LOGAN SIX procedure and preliminary noise analysis from the BLANS indicated impacts would likely not be significant. Per FAA Order 1050.1E, these alternatives represent the range of alternatives commensurate with the nature of the Proposed Action from FAA’s experience (through BLANS).

The FAA recognizes, however, that both the CAC and general public have an interest in how the Proposed Action Alternative may compare to noise abatement measures that were evaluated in the BLANS for Runway 33L, as was outlined in Chapter 1. In addition, the FAA has considered information learned in the BLANS and the BLANS goals when designing a Runway 33L RNAV SID for operational purposes.

### **2.1.1 FAA Proposed Action**

The Proposed Action (an RNAV SID from Runway 33L) will instruct jet aircraft to takeoff from Runway 33L, climb on a heading of 331 degrees to at or above 520', (aircraft will remain on a 331-degree heading and will continue to climb to published altitudes or as assigned by ATC), then intercept a 314-degree course to the TEKKK waypoint (TEKKK waypoint is 5.88 NM from the BOS VOR and 4.25 NM from the end of the runway). Aircraft then diverge to various departure exit fixes (HYLND, PATSS, LBSTA, CELTK, BRUWN, SSOXS, BLZZR and REVSS).

Turboprop aircraft and jet aircraft that are not RNAV capable would continue to fly via the LOGAN SIX conventional SID (although the procedure is flown differently by turboprop and jet aircraft). While the Proposed Action is anticipated to be used by jet aircraft currently, some high performance propeller aircraft, such as the Bombardier Q400, may be able to use the RNAV SID in the future as well. The procedure is designated as RNAV 1, which requires a total system error of no more than 1 NM (between the centerline and boundary of 1 NM) for 95% of the total flight time. The Proposed Action Alternative is shown in **Figures 2-1** and **2-2**, including a depiction of the flight track corridor.

## **2.2 Alternatives Carried Forward for Detailed Evaluation**

This section provides descriptions of the alternatives for analysis in the EA, which includes the No Action and Proposed Action Alternatives.

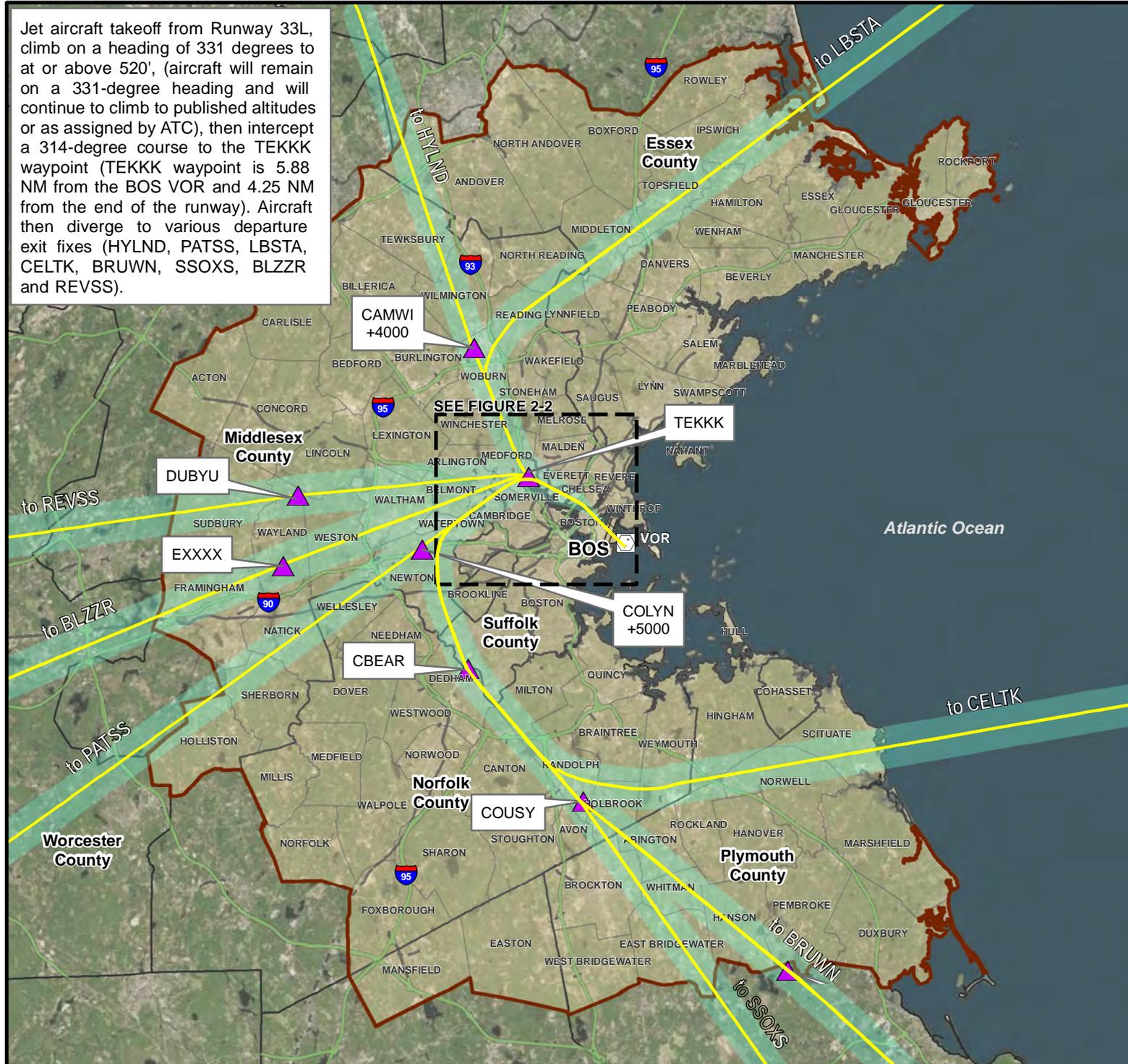
### **2.2.1 Maintain Existing Departure Route (LOGAN SIX Departure Procedure) (No Action Alternative)**

The No Action Alternative would maintain the Runway 33L departure procedure (LOGAN SIX) for both jet and turboprop aircraft, as is currently flown. Jet aircraft that depart Runway 33L on the LOGAN SIX, climb via a 331-degree heading until reaching a point 2 NM from the BOS VOR/DME, then turn to a heading of 316 degrees. After reaching 3,000' or 5 NM from the BOS VOR/DME, ATC provides instructions (via radar vector) to the pilot. Aircraft then diverge to various departure exit fixes (HYLND, PATSS, LBSTA, CELTK, BRUWN, SSOXS, BLZZR and REVSS). Turboprop aircraft departing Runway 33L fly an assigned heading upon departure and remain at a lower altitude, following ATC instructions. Jet aircraft would initially maintain an altitude of 5,000' or lower as assigned by ATC. Turboprop aircraft would depart and climb on an ATC assigned heading. The No Action Alternative and a sample of jet and turboprop flight tracks are shown in **Figures 2-3** and **2-4**.

Under the No Action Alternative, RNAV capable aircraft would not be able to take advantage of RNAV technologies; thereby reducing the overall efficiency of aircraft operations at Logan Airport and within A90 airspace. Although it does not meet the purpose and need, the No Action Alternative is carried forward for further environmental analysis in accordance with CEQ regulations implementing NEPA.

# Boston Logan International Airport

Jet aircraft takeoff from Runway 33L, climb on a heading of 331 degrees to at or above 520', (aircraft will remain on a 331-degree heading and will continue to climb to published altitudes or as assigned by ATC), then intercept a 314-degree course to the TEKKK waypoint (TEKKK waypoint is 5.88 NM from the BOS VOR and 4.25 NM from the end of the runway). Aircraft then diverge to various departure exit fixes (HYLND, PATSS, LBSTA, CELTK, BRUWN, SSOXS, BLZZR and REVSS).



**Figure 2-1  
Proposed Action  
Alternative -  
Runway 33L  
RNAV SID Procedure -  
Study Area**

**LEGEND**

- Runway 33L RNAV SID Noise Model Departure Flight Tracks
- 95% Flight Corridor
- Waypoint
- Study Area
- Community within Study Area
- County Boundary
- BOS VOR/DME
- Interstate
- Highway

Note: Procedure applies to RNAV-capable Jet aircraft. Turboprop and non-RNAV capable aircraft use LOGAN SIX Conventional SID.

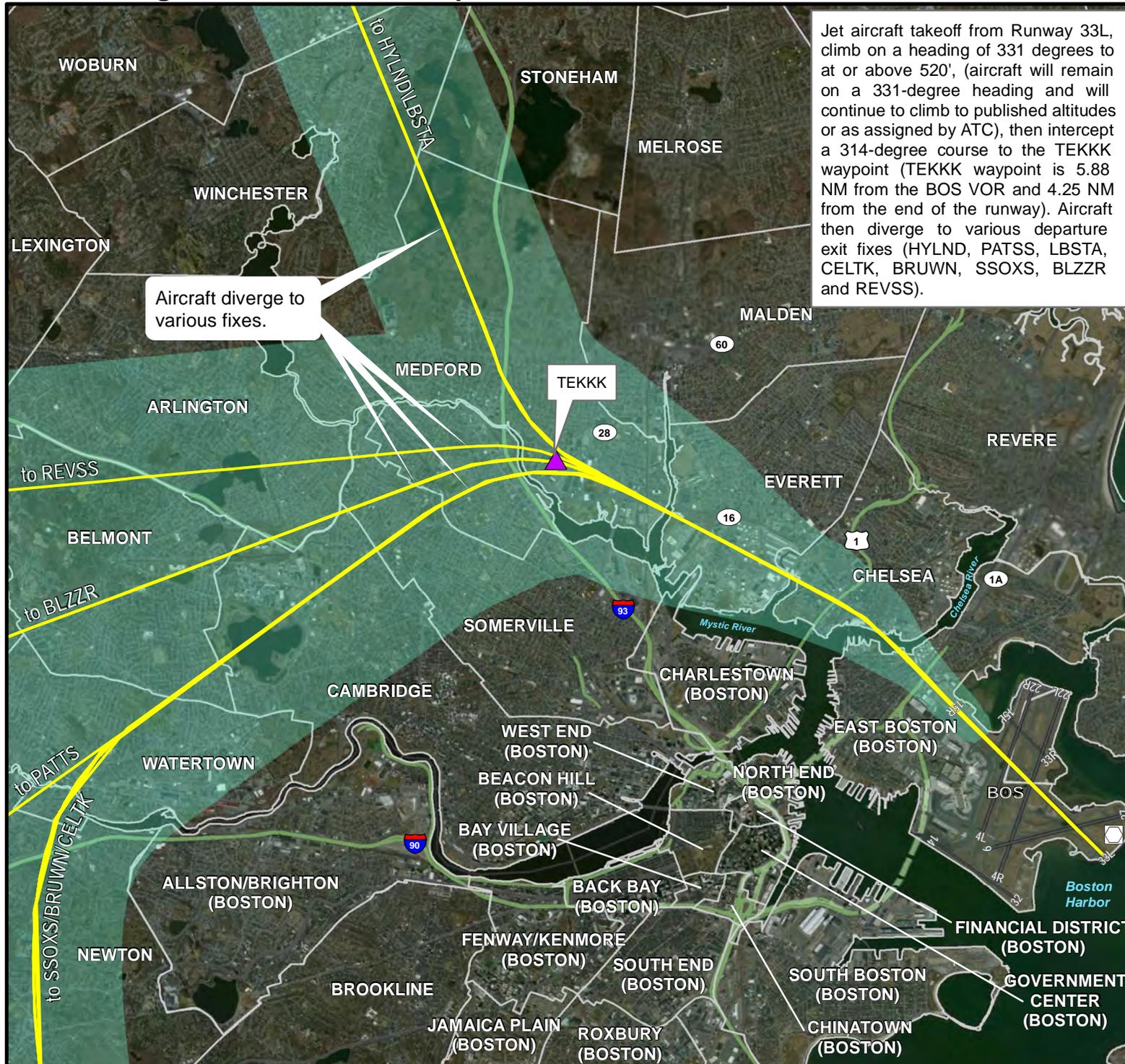


**Boston Logan  
International Airport  
Runway 33L RNAV SID  
Final EA**



Source: RNAV: TARGETS (FAA PBN Integration Office)  
Office of Geographic Information (MassGIS), ESRI

# Boston Logan International Airport



**Figure 2-2**  
**Proposed Action**  
**Alternative -**  
**Runway 33L**  
**RNAV SID Procedure -**  
**Logan Airport Vicinity**

**LEGEND**

- Runway 33L RNAV SID Noise Model Departure Flight Tracks
- 95% Flight Corridor
- BOS VOR/DME
- Town/Neighborhood Boundary
- Waypoint

Note: Procedure applies to RNAV-capable Jet aircraft. Turboprop and non-RNAV capable aircraft use LOGAN SIX Conventional SID.

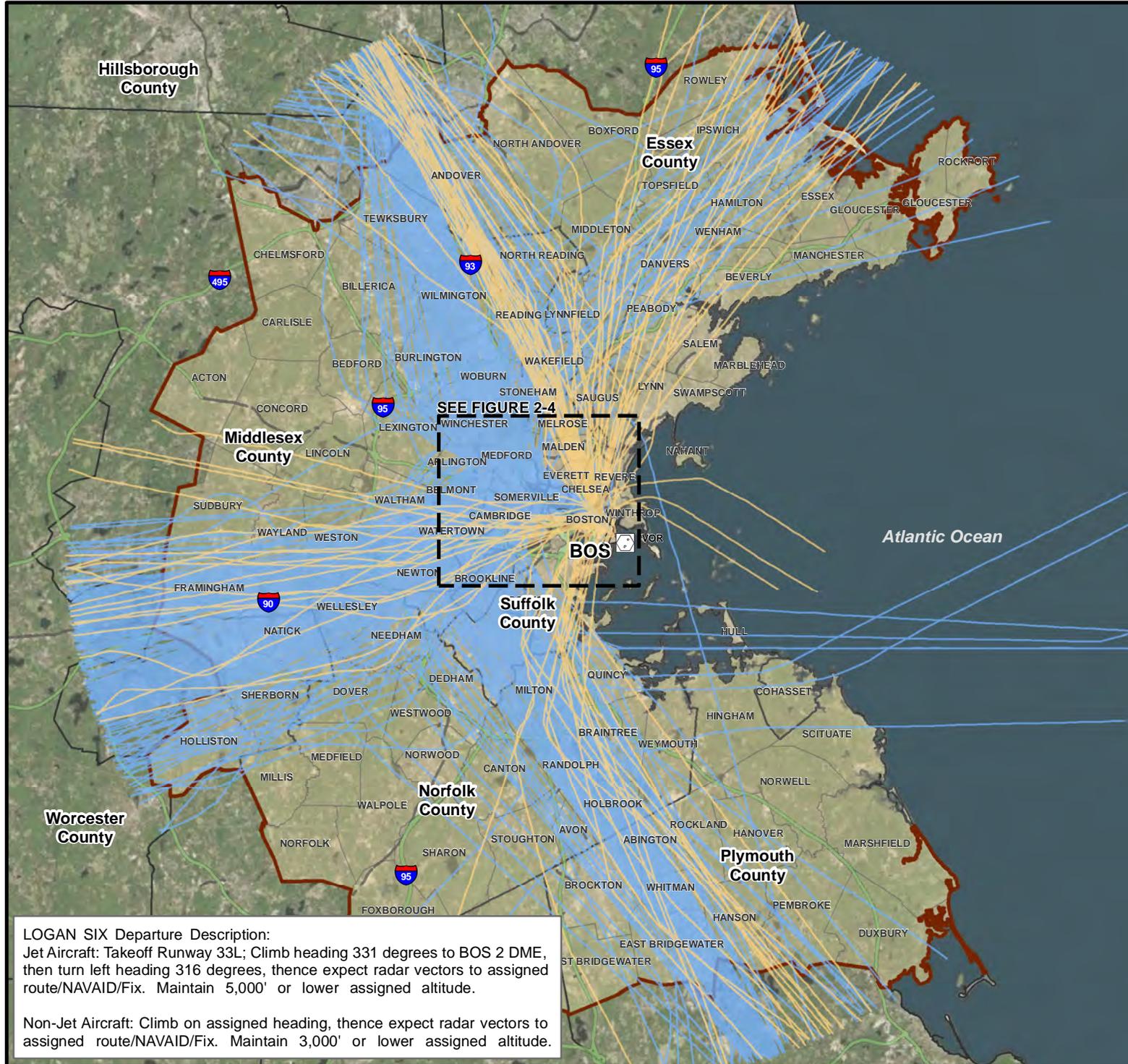


**Boston Logan International Airport**  
**Runway 33L RNAV SID**  
**Final EA**



Source: RNAV: TARGETS (FAA PBN Integration Office)  
 Office of Geographic Information (MassGIS), ESRI

# Boston Logan International Airport



**Figure 2-3**  
**No Action Alternative -**  
**LOGAN SIX Departure**  
**Procedure - Study Area**

**LEGEND**

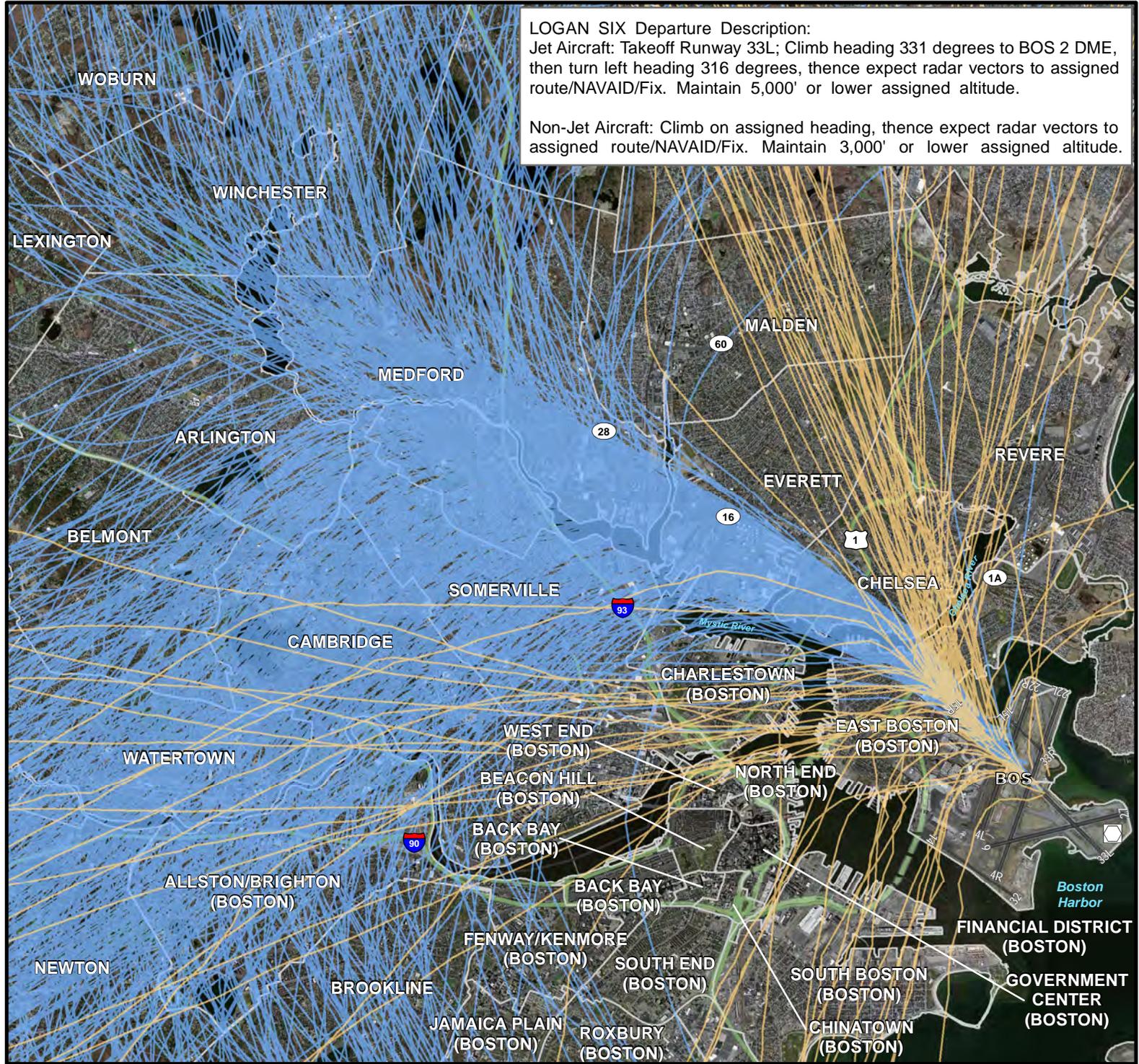
-  Existing (LOGAN SIX) Runway 33L Prop Departures
-  Existing (LOGAN SIX) Runway 33L Jet Departures
-  BOS VOR/DME
-  Study Area
-  Community within Study Area
-  County Boundary
-  Interstate
-  Highway



**Boston Logan**  
**International Airport**  
**Runway 33L RNAV SID**  
**Final EA**

0 1 2 4 Nautical Miles  
 Source: Radar Data Source: FAA PDARS (3/26/12, 3/30/12, 4/27/12, 4/30/12, 12/11/12, 12/12/12)  
 Office of Geographic Information (MassGIS), ESRI

# Boston Logan International Airport



**LOGAN SIX Departure Description:**  
 Jet Aircraft: Takeoff Runway 33L; Climb heading 331 degrees to BOS 2 DME, then turn left heading 316 degrees, thence expect radar vectors to assigned route/NAVAID/Fix. Maintain 5,000' or lower assigned altitude.  
 Non-Jet Aircraft: Climb on assigned heading, thence expect radar vectors to assigned route/NAVAID/Fix. Maintain 3,000' or lower assigned altitude.

**Figure 2-4**  
**Runway 33L LOGAN SIX**  
**Departure Procedure -**  
**No Action Alternative -**  
**Logan Airport Vicinity**

**LEGEND**

- Existing (LOGAN SIX) Runway 33L Prop Departures
- Existing (LOGAN SIX) Runway 33L Jet Departures
- BOS VOR/DME
- Community within Study Area
- County Boundary
- Interstate
- Highway



**Boston Logan**  
**International Airport**  
**Runway 33L RNAV SID**  
**Final EA**



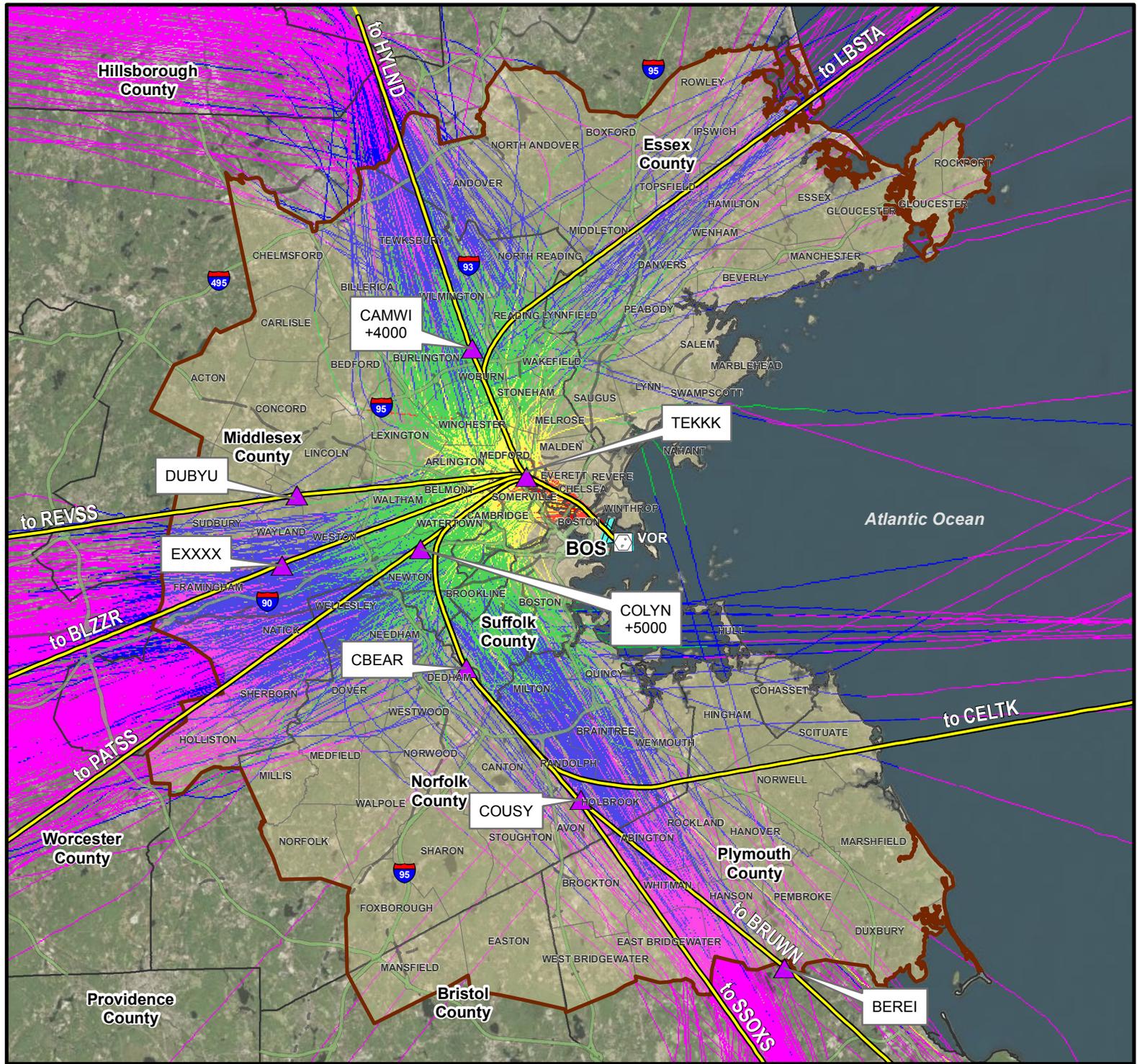
Source:  
 Radar Data Source: FAA PDARS (3/26/12,  
 3/30/12, 4/27/12, 4/30/12, 12/11/12, 12/12/12)  
 Office of Geographic Information (MassGIS), ESRI

### **2.2.2 FAA Proposed Action**

As described in Section 2.1.1, the FAA developed an RNAV SID procedure. **Figure 2-5** depicts a sample of jet aircraft, color-coded by altitude flying the LOGAN SIX departure, compared with the Proposed Action. The figure identifies the minimum altitudes at those waypoints which have an altitude specification under the Proposed Action. Generally, on average, altitudes would be similar or higher under the Proposed Action.

This alternative, which was technically evaluated to meet RNAV performance criteria and preliminarily evaluated for noise impacts, is carried forward for further environmental analysis.

# Boston Logan International Airport



**Figure 2-5**  
**Runway 33L LOGAN SIX**  
**Jet Departures Compared**  
**with Proposed Action**

**LEGEND**

- Runway 33L RNAV SID Noise Model Departure Flight Tracks
- Waypoint
- Study Area
- Community within Study Area
- County Boundary
- BOS VOR/DME
- Interstate
- Highway

**Existing (LOGAN SIX)**  
**Runway 33L Jet Departures**

- 0 - 3,000 ft AGL
- 3,001 - 6,000 ft AGL
- 6,001 - 10,000 ft AGL
- 10,000 - 14,000 ft AGL
- 14,001+ ft AGL

Note: Procedure applies to RNAV-capable Jet aircraft. Turbo prop and non-RNAV capable aircraft use LOGAN SIX Conventional SID.



**Boston Logan**  
**International Airport**  
**Runway 33L RNAV SID**  
**Final EA**

0 1 2 4 Nautical Miles

Source: Radar Data: FAA PDARS (3/26/12, 3/30/12, 4/27/12, 4/30/12, 12/11/12, 12/12/12)  
 RNAV: TARGETS (FAA PBN Integration Office)  
 Office of Geographic Information (MassGIS), ESRI

**Boston Logan International Airport Runway 33L  
RNAV SID Final Environmental Assessment**

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**Endnotes**

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- <sup>1</sup> Federal Aviation Administration, FAA Order 1050.1E, CHG 1, Ch. 4, Sec. 405(d), pg. 4-10, March 2006, ([http://www.faa.gov/documentLibrary/media/order/energy\\_orders/1050-1E.pdf](http://www.faa.gov/documentLibrary/media/order/energy_orders/1050-1E.pdf)).