

Boston Logan Airport Noise Study Phase 3 Amended Scope

The following amends the Phase 3 Scope of Services (Phase 3 Scope) for the Boston Logan Airport Noise Study (BLANS). The Phase 3 Scope is attached. This Amended Scope is based upon the “Phase 3 Completion Scope Outline through September 30, 2016, Revised 2-10-2016” that was distributed to the Boston Logan Community Advisory Committee (CAC) and approved by the CAC membership. Some tasks in the Amended Scope have been moved from their location(s) in the Phase 3 Completion Scope Outline to match the order and task numbering in the budget to complete. The scope is intended to allow completion of Phase 3 by September 30, 2016. The responsible parties (Project Consultant [PC], Independent Consultant [IC], Massport, FAA) are identified for each task element.

Task 1: Project Management

Task 1.1: Project Administration and Coordination

- Preparation and review of monthly invoices and progress reports (PC, IC)
- Monthly review/update to project schedule (PC)

Task 1.2: FAA Coordination

- Weekly coordination with FAA (PC)
- Weekly consultant team coordination (PC, IC)
- Monthly PMT Meetings (8) through September 30, 2016
 - Via phone (unless scheduled during a trip to BOS for another meeting)
 - 1-hour meetings (PC, IC, additional PC time for agenda, coordination, and notes)

Task 2: Public Coordination/Involvement

Note that the Technical Committee referred to in Task 2.1 of the Phase 3 Scope no longer exists. All coordination will be through the full Community Advisory Committee (CAC) and FAA and Massport staff as required.

Task 2.1: CAC Coordination Meetings (4) through September 30, 2016

- This would cover both full CAC meetings and CAC Officer meetings
- 2 via phone (IC attend both, PC attend one)
- 2 in person (IC attend both, PC attend one)

Task 2.2: Elected Representatives and Public Outreach

- Assist FAA with 1 set of elected representatives outreach letters describing recommended runway use plan (PC)
- Assist FAA with 1 public outreach effort describing recommended runway use plan (PC)

Task 2.3: Web-based Periodic Community Updates

- Host website through September 30, 2016 (PC)
- Upload information as needed through remainder of the study (PC)
- Maintain and host website for up to 6 months after September 30, 2016, as FAA, Massport, and the CAC identify the best means for ongoing hosting the website information and making it available to the public (PC)

Task 3: Runway Use Measure Analysis

Note that Task 3.1, 3.2, and 3.3 in the Phase 3 Scope have been replaced with a series of new tasks relevant to the development and analysis of runway use tests. The Amended Scope tasks are listed below.

Task 3.1: Runway Use Test Development and Coordination – This task was completed as part of the original Phase 3 scope. No additional funding is necessary or included to complete Phase 3. This task is included in this scope to maintain numbering consistency.

Task 3.2: Noise Modeling – 2015 Baseline Update

- Update 2015 baseline noise to reflect FAA rules affecting operations on non-intersecting, converging runways (CRO) and other changes in operations/procedures implemented since completion of the original 2015 baseline noise contour update early in Phase 3. Noise analysis will include noise exposure down to DNL 45. (PC, with IC review)
- Conduct population and grid analyses using established census centroids and additional identified grid locations (PC, with IC review)
- Conduct level-weighted population analysis similar to that prepared during previous phases, including evaluations of aircraft noise below DNL 55 and population-weighting and noise-level-factor x population-weighting. (IC, with PC review)

Task 3.3: Completion of Runway Use Test 1 Analysis

- Provide Test 1 data in single, compiled file (Massport to provide file to PC to post on password protected ftp site for CAC access – (This has been completed)
- Review test data and coordinate questions with Massport and then IC (CAC membership filtered through CAC officers)
- Review final CAC questions and finalize Test 1 Report (IC, with PC review)
- Coordinate with CAC to obtain decision regarding moving forward with recommendations on measures included in Test 1, potentially with modifications (IC)
- Finalize Test 1 Report. Up to two iterations of the Final Test 1 Report will be prepared - Preliminary Final and Final. (IC)

- No noise analysis is assumed for Test 1

Task 3.4: Runway Use Test 2 Analysis

- Provide Test 2 data in single, compiled file (Massport to provide file to PC to post on password protected ftp site for CAC access – (This has been completed.)
- Review test data and coordinate questions with Massport and then IC (CAC membership filtered through CAC officers)
- Review final CAC questions and complete analysis of operational data from Test 2 (IC)
 - Analysis will include reporting operational data provided by Massport, as well as evaluating the outcome against the previous year time period.
 - Reasons for FAA not being able to achieve goals will be discussed if that information is discernible from the data.
- Prepare Preliminary Test 2 Report (IC, with PC review)
- Present Preliminary Test 2 Report to CAC (IC)
- Coordinate with CAC to obtain decision regarding moving forward with recommendations on measures included in Test 2, potentially with modifications (IC)
- Finalize Test 2 Report (IC) – Up to two (2) iterations of the Final Test 2 Report will be prepared – Preliminary Final and Final
- No noise analysis is assumed for Test 2

Task 3.5: Runway Use Test 3 Analysis (Information Gathering and Sharing Effort – No Analysis by PC or IC)

- Provide 12 months of data regarding nighttime (defined as 10:00 pm to 7:00 am) operations (Massport to provide to CAC); data to include type of operation (arrival/departure), time of operation, airline or other operator, aircraft type, 14 CFR Part 36 stage classification, including an indication if aircraft is hushkitted or re-engined to meet Stage 3 noise standards. The information will be provided on a flight-by-flight basis. (Massport)¹
- Provide documentation regarding laws preventing airport sponsors from imposing restrictions on aircraft operations related to noise. (FAA and Massport)
- Provide a summary of all operational and noise restrictions in place at Boston Logan International Airport, including the source justification and the process for review and possible revision. (FAA and Massport)
- Review Massport 2014 Environmental Data Report (EDR) regarding the effects of varying nighttime runway use patterns as the result of FAA's suspension of the use of head-to-head operations on Runway 15R-33L and runway closures, requiring the use of other runways during the nighttime hours; review of results provides information to CAC regarding nighttime runway use recommendations. This information is found in Chapter 6 of the EDR. (CAC membership)
- No noise analysis is assumed for Test 3

¹ Massport has agreed to provide data for 2014 by February 29, 2016. It is anticipated that data for 2015 will be available in April 2016 and can be provided to CAC at that time.

Task 3.6: Runway Use Test 4 Analysis

- Develop Test 4 protocol (IC, with PC review); test potentially to include²:
 - Balancing Runway 27 and Runway 33L departures
 - Reduce Runway 4R arrivals, increasing arrivals to other runways (e.g., Runway 15R); with an initial goal of reducing Runway 4R arrivals by approximately 5 percentage points
- Review 2014 EDR to assess potential noise effects from a change in runway use, particularly at the Runway 15R end and within communities in the highest noise exposure areas (CAC)
- Coordinate with CAC to obtain decision of asking Massport/FAA to implement Test 4 (IC)
- Coordinate with Massport/FAA to finalize plan for Test 4 (PC, IC)
- For each month during the test, provide runway use percentages and flight tracks for jets only, as available from the Noise and Operations Monitoring System (NOMS) within two weeks of the end of the month or as soon as practicable (Massport)
- Following the receipt of monthly data by CAC, conduct informal meetings between FAA, Massport, and CAC leadership to discuss interim test progress and results and to discuss any potential modifications to improve results; meetings not considered formal PMT meetings and meeting records or notes would not be prepared; however decisions based on meetings can be documented via email exchanges between CAC, Massport, and the FAA (FAA, Massport, CAC leadership)
- Provide Test 4 data in single, compiled file (Massport to provide file to PC to post on password protected ftp site for CAC access)
- Review test data and coordinate questions with Massport and then IC (CAC membership filtered through CAC officers; time limit of 2 weeks suggested)
- Review final CAC questions and complete analysis of operational data from Test 4 (IC)
 - Analysis will include reporting operational data provided by Massport, as well as evaluating the outcome against the previous year time period.
 - Reasons for FAA not being able to achieve goals will be discussed if that information is discernible from the data.
- Prepare Preliminary Test 4 Report (IC, with PC review)
- Present Preliminary Test 4 Report to CAC (IC)
- Finalize Test 4 Report (IC) – up to two (2) iterations of the Final report will be prepared – Preliminary Final and Final
- No noise analysis is assumed for Test 4

² It is noted that CAC has discussed the potential for applying the Massport noise rule to Runway 4L departures and Runway 22R arrivals, as described in the noise rule based on noise levels rather than jets versus nonjets. CAC has also discussed the potential of removing the wind restriction on Runway 14-32. Due to the history of how the noise rule was established and implemented and the litigation resulting in the wind restriction on Runway 14-32, it is not possible to address these as part of BLANS Phase 3. It is acknowledged the CAC may request consideration of both following in their recommendations from Phase 3 of the BLANS.

Task 3.7: Runway Use Program Recommendations

- Develop a Final Runway Use Program protocol based on the recommendations of Tests 1-4 (IC, with PC review)
- Coordinate with CAC to obtain decision of moving forward with the Final Runway Use Program (IC)
- Coordinate with Massport to develop recommendation of Final Runway Use Program to FAA (PC, IC)

Task 3.8: Noise Analysis – 2015 with Recommended Runway Use Program

- Update 2015 baseline noise to reflect FAA rules affecting operations on non-intersecting, converging runways (CRO) and other changes in operations/procedures implemented since completion of the original 2015 baseline noise contour update early in Phase 3. Noise analysis will include noise exposure down to DNL 45. (PC, with IC review)
- Conduct population and grid analyses using established census centroids and additional identified grid locations (PC, with IC review)
- Conduct level-weighted population analysis as described under Task 3.2 (IC, with PC review)
- Prepare final noise analysis reflecting anticipated runway use changes associated with the Final Runway Use Program, based upon updated 2015 baseline noise contour (PC, with IC review)
- Conduct population and grid analyses, including noise level change analysis associated with the effects of the Final Runway Use Program. Noise analysis will include noise exposure down to DNL 45. (PC, with IC review)
- Conduct population and grid analyses using established census centroids and additional identified grid locations (PC, with IC review)
- Conduct level-weighted population analysis as described under Task 3.2 (IC, with PC review)

Task 3.9: Fulfill Data Requests by CAC - This task is included in this scope to maintain numbering consistency and to capture the tasks Massport will complete or will be funded by separate Massport funds.

- Fulfill Data Request by CAC
 - CAC formally requested Massport to provide data from previous EDRs in order to answer questions and to develop reports that would inform CAC and the general public about activity at BOS
 - Conduct analyses of data to fulfill CAC requests as follows³ (IC and HMMH):
 1. Runway Use (Arrivals and Departures Operations) by Runway End. [Events. Arrivals and Departures with Subtotals and Grand Total. Including Number and % of Total]

³ List revised to match descriptions of requested data included in an email from Darryl Pomicter to John Williams dated February 8, 2016, at 7:08 p.m. EST. NOTE: Editorial and formatting comments included in the email were not included herein.

2. Noise (Exposure and Impacts) by Runway End. [Exposure, dose: Yearly Day-Night Average Sound Level (DNL). Impacts, effects: Sound-Level Weighted Population (LWP) = DNL x Population x % Highly Annoyed @ DNL.]
 3. Noise (Exposure and Impacts) by by Community from Runway End. [Including Boston Neighborhoods and Boston Community subtotal.]
 4. All aircraft (not just jets)
 5. Historic Baseline: from 5 years before new Runway 14-32 in 2007 and since. With average pre R14-32 and post R14-32.
- HMMH, the IC and the PC participated in a teleconference to discuss options for fulfilling the CAC data request task. It was proposed that HMMH will provide to the IC in a spreadsheet format historical data from 2002 to 2014 using the EDR databases as the source for runway use by runway end, jets and non jets, and noise by runway end and community as specified in items 1 through 5 from CAC⁴.
 - CAC and the IC will work together to finalize formats for tables and graphics to fulfill the CAC's data request within the total budget allocated to the IC from the overall consultant budget of up to \$30,000 committed by Massport. Up to two (2) iterations of the table and graphic formats will be considered.
 - This effort will not exceed \$30,000 with about \$15,000 allocated to HMMH and \$15,000 to the IC.
- Development of Metrics/Monitoring Program
 - Develop metrics for monitoring the success of the Phase 1 flight tracks and runway use program (Massport, FAA, CAC)
 - Develop metric reporting template for use by Massport on an on-going basis (Massport, FAA, CAC)
 - Develop graphic depictions of post-Phase 1 flight tracks compared with RNAV designs, including design and actual aircraft altitudes; Massport to provide sample graphics for review by CAC, with the intent of developing a standard template for ongoing reporting (FAA, Massport, CAC)

Task 4: Project Documentation

- Prepare draft BLANS report (PC, with IC input and review)
 - Summarize the three phases of the BLANS and results of Phases 1 and 2
 - Describe runway use test program conducted during Phase 3
 - Present summary of runway use program results

⁴ The CAC has requested EDR data through 2015. These data will be made available to CAC by Massport as soon as they are completed as part of the EDR process. It is anticipated that the data will be available during the summer of 2016 and should therefore give CAC time to compare the results of Test 4 with the 2015 data in order to make final decisions and recommendations on a runway use program within the BLANS Phase 3 schedule.

- Document recommended Final Runway Use Program, along with other noise abatement measures in place at the Airport, including measures adopted in Phase 1 and Phase 2 of the BLANS to present an overall Boston Logan International Airport Noise Abatement Plan
- Prepare final BLANS report based on review by PMT (PC)
- Prepare executive summary of Final BLANS Report (PC, with IC review)

Boston Logan International Airport



Boston Logan Airport Noise Study Phase 3 Scope of Services

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Table of Contents

- Boston Logan Airport Noise Study Phase 3 Scope of Services..... 1**
- 1. Project Management..... 4**
 - 1.1 Project Administration and Coordination..... 4
 - 1.2 FAA Coordination..... 5
- 2. Public Coordination/Involvement 5**
 - 2.1 Technical Committee Coordination 5
 - 2.2 CAC Coordination 6
 - 2.3 Elected Representatives Meeting and Public Outreach 7
 - 2.4 Web-based Periodic Community Updates..... 7
- 3. Runway Use Measures Analysis 8**
 - 3.1 Preliminary Runway Use Measure Development..... 8
 - 3.2 Operational Assessment and Selection of Runway Use Measures for Noise Analysis... 9
 - 3.3 Runway Use Evaluation Protocol and Assumptions10
 - 3.4 Noise Modeling.....12
 - 3.5 Runway Use Recommendations.....13
 - 3.6 Final Noise Analysis.....14
- 4. Project Documentation.....15**

Boston Logan Airport Noise Study

Phase 3 Scope of Services

The Boston Logan Airport Noise Study (BLANS) is in fulfillment of the requirements of the Federal Aviation Administration's (FAA's) Record of Decision on the Airside Improvements Planning Project for the Airport, dated August 2, 2002 (2002 ROD). The specific requirements are described in Section VIII "Mitigation Measures," of the 2002 ROD as measure number 6 "Noise Abatement Study and Review of Preferential Runway Advisory System." The requirements include "a noise study that will include enhancing existing or developing new noise abatement measures applicable to aircraft overflights." In addition, the Mitigation Measure states that "Massport has also committed, as part of its Section 61 Findings, to begin working with the CAC [Logan Airport Community Advisory Committee] to update the existing PRAS program. FAA supports these efforts and will work with Massport and the CAC to assess the PRAS program with the understanding that the PRAS will remain in place until superseded." (As noted below, the CAC voted in April of 2012 to abandon PRAS as documented in a letter dated June 4, 2012.)

Following the conclusion of Phase 1, nine measures were identified that could be implemented to provide noise relief without creating adverse noise effects on other communities. The FAA issued a Documented Categorical Exclusion/Record of Decision in October 2007; and the measures were fully implemented by November 2010, with refinements to meet aircraft operational requirements and in response to input from members of the community. Further monitoring of the measures implemented as part of Phase 1 will be the responsibility of a Noise Abatement Committee (NAC) to be established as described below. Phase 2 was initiated to further examine measures that were carried over from Phase 1 along with new potential noise abatement measures identified during Phase 2 and to determine if an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) would be required in accordance with the National Environmental Policy Act (NEPA) for those measures approved for implementation.

The scope of work for Phase 2 is documented in the *Phase 2 Reassessed Scope of Services*, dated October 2009 (Reassessed Scope of Services). As stated in the Reassessed Scope of Services, the purpose of the BLANS is to identify and implement measures to reduce noise impacts to communities surrounding Boston Logan International Airport (BOS). Phase 2 of the BLANS included three levels of screening to review potential measures and to determine which would be recommended for implementation and, if necessary, subject to environmental analysis in Phase 3. The Level 1 screening addressed safety and feasibility and consistency with CAC goals. The CAC's Basic Goal, as identified in a presentation by the Independent Consultant on May 28, 2009, is: "Safely reduce the aircraft flight and ground noise exposure from BOS-related¹ operations on as many residents of communities in the Boston area as practicable." The results of the Level 1 screening analysis are documented in the *Level 1 Screening Report*, dated October 2009. The Level 2 screening included

¹ BOS-related operations are those which takeoff, land at Boston Logan Airport, or are controlled by air traffic controllers located at the Boston Logan Airport Traffic Control Tower.

the refinement of the measures that passed Level 1 and included an additional feasibility assessment of the refined measures. The results of the Level 2 screening analysis are documented in the *Level 2 Screening Report*, dated November 2011.

A total of 12 measures were then evaluated in the Level 3 screening, which included aircraft noise analyses and comparisons with criteria established by the CAC and separate criteria established by the FAA. The Level 3 screening was completed in 2012 and the results are documented in the *Level 3 Screening Report*, dated December 2012. The CAC recommended that 8 of the 12 measures, including 2 related to ground movement and 6 related to flight procedures, be implemented. The FAA and Massport determined that both measures related to ground movements would meet their criteria for implementation; however, the FAA determined that none of the six measures related to flight procedures would meet their criteria related to changes in noise exposure. As a result, because no additional measures related to flight procedures would be implemented following the Level 3 screening analysis, no federal action is proposed and therefore no further NEPA analysis would be required in Phase 3 for measures related to flight procedures.

Another requirement of the 2002 ROD was to address the future of the Preferential Runway Advisory System (PRAS) at the Airport. The following information related to the PRAS is excerpted from the 2010 Environmental Data Report (EDR) for Boston-Logan International Airport:²

Developed in 1982 and enhanced in 1990 and subsequent years, the Preferential Runway Advisory System (PRAS) is a set of short-term and long-term runway use goals that includes the use of a computer program that recommends to FAA air traffic controllers, runway configurations that will meet weather and demand requirements and provide an equitable distribution of the Airport's noise impacts on surrounding communities. The two primary objectives of the PRAS goals are to distribute noise in on [sic] an annual basis, and to provide short-term relief from continuous operations over the same neighborhoods at the ends of the runways.

In February of 2004, the FAA upgraded to the Standard Terminal Automation Replacement System (STARS) and Integrated Information Display & Dissemination System version 5 (IDS5)18 radar during the consolidation of the Boston Terminal Control Center (TRACON) at the new facility in Merrimack, NH. As a result of this upgrade, a shutdown of the PRAS system computer was necessary. Updated PRAS software was installed in 2007. Technical difficulties related to processing input from the FAA's IDS5 system have continued. Phase Three of the on-going BLANS will evaluate whether or not to begin use of the PRAS system. Until then, Massport remains committed to providing a comparison each year to the PRAS goals.

² Massachusetts Port Authority Economic Planning & Development, "2010 EDR Environmental Data Report", prepared by Vanasse Hangen Brustlin, Inc., et al, October 2011.

During Phase 2 of the BLANS, the CAC:

voted in April of 2012 by a majority of those communities casting votes to abandon the Preferential Runway Advisory System (PRAS). The CAC has concluded that since its inception in 1982, PRAS has failed to provide the noise abatement that it had intended. However, there exists within the Record of Decision, Article VIII, Section 6 the opportunity to assess other methods of reducing noise including but not limited to runway end use. The CAC intends to take advantage of this opportunity to reduce noise over the communities and will work with Massport and the FAA to develop a program that will be effective to replace PRAS.³

Five runway use options had been identified in Phase 1 of the BLANS and it was agreed to defer assessment of those or any other runway use measures until the analysis of and decisions regarding measures related to flight procedures were completed. The decisions regarding measures related to flight procedures were completed at the conclusion of the Level 3 screening as documented above.

A Project Management Team (PMT) meeting was held on October 9, 2012, during which the results of the Level 3 screening analysis, the CAC's recommendations, and the FAA's and Massport's findings were discussed. The next steps in the BLANS were also discussed. Although no NEPA analysis will be required for measures related to flight procedures, Phase 3 will determine a runway use program, consistent with current FAA regulations, to supersede PRAS (considering that the CAC voted to abandon PRAS in April 2012) and other items necessary to complete the BLANS such as: the elected representatives meeting and public outreach identified in Phase 2 and final documentation to summarize the results of all three phases of the BLANS. In the event that Phase 3 results in a need for further assessment, including NEPA processing, a separate scope of services, budget, and schedule would be established at that time.

Massport has agreed to work with the CAC to establish a Noise Abatement Committee (NAC) that will work to address noise abatement concerns on-going, outside of and beyond the context of the BLANS, as well as to monitor noise abatement measures including those implemented as part of the BLANS. FAA will provide assistance to the noise abatement committee as needed. The establishment and work of the noise abatement committee is separate from the Scope of Services considered herein for Phase 3.

As part of the documentation for Phase 3, an overall summary of the noise abatement measures identified in Phase 1 and Phase 2, as well as the recommended runway use program resulting from Phase 3 will be described as an overall noise abatement program resulting from the BLANS. The measures will be grouped by types of measures (e.g., departure, arrival, ground, runway use). The summary will include commitments made in writing by Massport during the course of the BLANS. The intent is to have a consolidated Logan Airport BOS Noise Abatement Program, including a runway use program approved and implemented by the FAA, and a Ground Measures Program agreed upon and implemented by Massport (similar to many other US airports).

³ Excerpt from letter from Sandra M. Kunz, President, Logan Airport Community Advisory Committee, Inc., to Flavio Leo, Deputy Director of Aviation Planning and Strategy, Massachusetts Port Authority, dated June 4, 2012.

The document will also provide a list of implementation steps for the runway use program, including actions to be taken by FAA and Massport to implement the program and a discussion of potential metrics that the NAC could utilize to monitor the runway use program in the event that the intent of certain measures is not met (i.e., to achieve the intended runway use goals and review the resultant impacts to communities surrounding BOS). The BLANS Phase 3 documentation will be intended to provide a foundation for the work of the NAC.

The following sections describe the Scope of Services for BLANS Phase 3. As for previous phases, the work for each task is described, along with activities of both the Project Consultant (PC) and the Independent Consultant (IC).

1. Project Management

The Project Management tasks address the overall administration, management, and coordination of Phase 3. The FAA will have overall responsibility for management of the project. The FAA, Massport, and CAC will continue to collaborate on project direction and the assessment of alternative scenarios. The CAC will have overall responsibility for management of the IC.

1.1 PROJECT ADMINISTRATION AND COORDINATION

This task includes the day-to-day project administration and coordination required by the PC and IC in coordination with FAA, Massport, the project Technical Committee (described in Task 2.1), and the CAC. For purposes of scope and budget development, it is assumed that nine (9) months will be needed for project administration and coordination to complete all tasks included in Phase 3. In the event that Phase 3 results in a need for further assessment, including NEPA processing, a separate scope of services, budget, and schedule would be established at that time.

PC Activities:

- Maintain a summary project schedule on a monthly basis. The monthly summary schedules will be published on the BLANS Forum website.
- Provide project files and records for PC efforts for inclusion in the Administrative Record.
- Prepare and submit monthly invoices and progress reports. This task is assumed to require two (2) hours per week for subconsultant coordination, reconciliation of invoices and budgets, and completion and preparation of invoices and status reports.

IC Activities:

- Prepare monthly invoices and progress reports for delivery to the CAC management and Massport. This task is assumed to require two (2) hours monthly.
- Provide project files and records of IC efforts for inclusion in the Administrative Record.

1.2 FAA COORDINATION

The PC will hold project management meetings with the FAA, Massport, and CAC Project Management Team (PMT) during Phase 3 to review material, discuss work progress, and respond to comments. For purposes of scope and budget development, it is assumed that four (4) PMT meetings will be needed over the course of Phase 3. The task will also include on-going coordination with FAA. As in previous phases, PC/IC coordination is included in this task.

PC Activities:

- Conduct PMT meetings, including preparing agendas and meeting materials, establishing teleconference or web conference connections, and preparing and distributing meeting notes. Meetings will be assumed to last up to two (2) hours each.
- Coordinate with IC via bi-weekly, one-(1-)hour teleconferences, and other calls as needed.
- Coordinate with FAA representatives as needed throughout the course of Phase 3.

IC Activities:

- Participate in PMT meetings (up to two [2] hours each) and coordinate CAC interests in the preparation of the topics to be considered in this phase. For budgetary purposes, two (2) separate trips to FAA offices are assumed.
- Coordinate with PC via bi-weekly, one-(1-)hour teleconferences and other calls, as needed. This coordination is assumed to require two (2) hours per month.

2. Public Coordination/Involvement

2.1 TECHNICAL COMMITTEE COORDINATION

It is assumed that CAC, FAA, and Massport will appoint representatives to a focused Technical Committee to agree upon the Phase 3 Scope of Services and to work with the PC and IC during the technical analysis and review. It is assumed that up to three (3) face-to-face meetings and up to two (2) additional teleconferences would be held during the nine-month Phase 3 work effort. It is assumed that face-to-face meetings would be held at Massport or Volpe conference facilities and would last no more than four (4) hours.

PC Activities:

- Prepare draft agendas for review prior to each meeting or teleconference and revise based on comments received, as appropriate. Technical materials will be prepared for meetings as part of separate tasks.
- Prepare draft meeting notes. The meeting notes are not intended to be meeting minutes with direct quotes from attendees, but are intended to capture the primary issues discussed and the proposed

follow-up actions. All meeting notes will be distributed to the Technical Committee and the IC for review prior to being finalized.

- Provide project lead and, as necessary, a noise expert at face-to-face meetings and on teleconferences.
- Provide a teleconference line and/or webinar connection, as appropriate, for teleconferences.

IC Activities:

- Participate in Technical Committee meetings to assist CAC representatives on the Committee to understand the issues discussed and to provide peer review of technical presentations made by the PC or FAA during the meetings.
- Review and comment on notes prepared by the PC.

2.2 CAC COORDINATION

The members of the Technical Committee appointed by the CAC will have primary responsibility for keeping the full CAC informed on an ongoing basis. The purpose of this task is for periodic Technical Committee updates to the CAC membership and a final meeting with CAC membership to discuss the results of the study. It is assumed that up to two (2) face-to-face meetings and up to two (2) additional teleconferences would be held with the full CAC during the nine-month Phase 3 work effort. It is assumed that the face-to-face meetings would be held at Massport or Volpe conference facilities and would last no more than four hours.

PC Activities:

- Prepare meeting agendas for review prior to each meeting or teleconference and revise based on comments received, as appropriate. Technical materials will be prepared for meetings as part of separate tasks.
- Prepare draft meeting notes. The meeting notes are not intended to be meeting minutes with direct quotes from attendees, but are intended to capture the primary issues discussed and the proposed follow-up actions. All meeting notes will be distributed to the CAC and the IC for review.
- Provide project lead and, as necessary, a noise expert at face-to-face meetings and on teleconferences.
- Provide a teleconference line and/or webinar connection, as appropriate, for teleconferences.

IC Activities:

- Meet with the CAC in Boston to assist in their understanding of materials under consideration. This coordination assumes 16 hours of meeting and preparation by two IC team members for each CAC meeting. For budgetary purposes assume two (2) face-to-face meetings and two (2) teleconferences.
- Meet or teleconference up to two (2) times during the course of the project, as directed by CAC, with small focus groups of the CAC membership and other public representatives to focus on specific areas of interest where greater understanding of the information is desired. The IC will develop a short,

summary memorandum reviewing the discussion and suggested CAC approach. For budgeting purposes, it is intended that any travel for these focus group meetings will occur during travel that occurs for other project meetings (assume one [1] face-to-face meeting and one [1] teleconference).

- Notices/agendas should be sent electronically via e-mail distribution lists.
- Review meeting notes prepared by the PC.

2.3 ELECTED REPRESENTATIVES MEETING AND PUBLIC OUTREACH

The Phase 2 Reassessed Scope of Services included two elected representative meetings. The first was held in May 2008 to brief elected representatives on the results of Phase 1 and to obtain input on the study. FAA conducted an interim briefing with elected representatives in November 2011; however the second full meeting intended to brief elected representatives on the results of Phase 2 and has not yet been held. The meeting will be held as part of Phase 3 and will address findings of the Level 3 Screening Analysis and describe the process for developing a runway use program to be completed during Phase 3 to supersede PRAS. FAA will be responsible for facilitating the meeting. PC and IC would assist as needed in preparing presentation materials, attend the meeting, and present results, if needed. In addition, as was done in Phase 2, FAA will prepare and disseminate material similar to that provided at the elected representative meeting to the media and to elected officials within the study area to maximize the overall public outreach.

PC Activities:

- Prepare a draft PowerPoint presentation based upon materials presented over the course of Phase 2. Prepare final presentation for use at the meeting upon receipt of comments.
- Provide up to two (2) professional staff for the meeting – the Project Manager and the appropriate technical lead, as needed.
- Review and catalog comments received during the meeting and assist the FAA in reviewing the comments and in responding to the comments, as appropriate.
- Assist FAA and Massport in other outreach to elected officials, as needed.

IC Activities:

- Review and comment on the behalf of CAC on materials prepared for the meeting.
- Provide appropriate staff to participate in the meeting on behalf of the CAC. Assume attendance by the Project Manager.
- Prepare and coordinate IC and CAC comments regarding materials to be presented at the meeting.

2.4 WEB-BASED PERIODIC COMMUNITY UPDATES

This task includes continued maintenance of and updates to the project website through the completion of Phase 3. The website will be reviewed monthly to determine whether additional materials should be posted. The results of Phase 2, along with periodic updates from Phase 3 work will be posted to the site. All materials posted to the site will be compliant with Section 508 of the Rehabilitation Act of 1973, as amended.

PC Activities:

- Update the website to ensure available information is current.
- Add a new Section of the website for Phase 3.
- Develop website materials, additional pages, necessary graphics, and reports.
- Provide site production and progress reviews.
- Provide monthly website updates.
- Coordinate with the IC regarding materials prepared by the IC to be posted to the website.

IC Activities:

- Review and comment on website materials.
- Coordinate CAC comments on website materials.

3. Runway Use Measures Analysis

In accordance with the 2002 ROD, "Massport has also committed, as part of its Section 61 Findings, to begin working with the CAC to update the existing PRAS program. FAA supports these efforts and will work with Massport and the CAC to assess the PRAS program with the understanding that the PRAS will remain in place until superseded." As noted in the introduction to this Scope of Services and as documented in correspondence, CAC voted to abandon PRAS, and to pursue a runway use program that will be effective to replace PRAS. Therefore, this task is intended to identify and evaluate runway use measures to develop a runway use program that would replace PRAS. The evaluations may include the assessment of the five (5) runway use measures that were originally identified in Phase 1 and carried over into Phase 2 (or revisions to those measures) and/or other runway use measures that may be identified during Phase 3.

An initial list of runway use measures will be established and evaluated from an operational perspective to determine which measures merit a full noise assessment. It is assumed for budget purposes that the noise effects of up to ten (10) runway use measures will be evaluated during Phase 3.

3.1 PRELIMINARY RUNWAY USE MEASURE DEVELOPMENT

Considering the CAC's Basic Goal: "Safely reduce the aircraft flight and ground noise exposure from BOS-related operations on as many residents of communities in the Boston area as practicable;" and the PRAS Basic Goal: "Provide an equitable distribution of aircraft noise over the long-term (i.e. annually), as well as short-term relief from excessive operations over certain neighborhoods," CAC and Massport will work together to develop preliminary runway use measures to be evaluated with FAA technical assistance regarding the potential operational effects of various runway use measures. It is expected that the CAC's established goals and objectives for the BLANS will be utilized in the development and review of potential measures and that the evaluation criteria will be the same as those used for the Phase 2 Level 3 Screening Analysis as documented on page 41 of the Phase 2 Reassessed Scope of Services.

The CAC will work with Massport and with the technical assistance of FAA to identify a preliminary list of runway use measures, including preferential, priority, and rotational systems, restrictions, and procedures, to be assessed for their ability to achieve the goals of the CAC. Information regarding preferential or other noise abatement runway use programs at other U. S. airports and international airports that was prepared by the IC in earlier phases will be reviewed and updated as necessary, including an assessment of their applicability to U.S. airports and to BOS, and provided to the Technical Committee. A meeting will be held with the Technical Committee to discuss the overall goals of the CAC, identify operational considerations provided by FAA, and to establish an initial list of runway use measures to be considered. The IC will assist the CAC and its representatives on the Technical Committee to prepare for the meeting. Historical weather and wind data will be analyzed and made available to assist in the development of runway use measures. The IC will meet with the CAC to review and approve a preliminary list of measures.

PC Activities:

- Collect and analyze available weather and wind data from Massport, FAA, or other sources as necessary to be available for identifying runway use measures and for later evaluations of potential runway use measures.
- Facilitate a meeting with the Technical Committee to identify runway use measures for consideration.

IC Activities:

- Review the list of runway use measures and programs in place at U.S. and international airports and update as appropriate to be available for review by the CAC.
- Assist the CAC in preparing for the meeting to identify runway use measures to be considered.
- Meet with the CAC to review and approve a preliminary list of measures.

3.2 OPERATIONAL ASSESSMENT AND SELECTION OF RUNWAY USE MEASURES FOR NOISE ANALYSIS

Based upon the results of the meetings described in Task 3.1 and a preliminary operational analysis conducted using the protocol established as part of Task 3.3, the list of preliminary runway use measures will be reviewed to narrow the list of measures that would show the most promise in terms of meeting the goals of the CAC while also meeting operational requirements. It is anticipated that several of the measures that may result from the meetings described in Task 3.1 may be eliminated following a preliminary operational assessment. The intent is to identify a list of measures to be further assessed for noise effects and to document the operational assessment and selection of those measures. As stated earlier, it is assumed for budget purposes that the noise effects of up to ten (10) runway use measures will be evaluated during Phase 3.

The PC will work with the FAA to develop methodology and format to present operational analyses of the various runway use measures in a format similar to that used in earlier phases of the BLANS. To the extent feasible, this will include quantification of various metrics to assist in the explanations of the evaluations.

PC Activities:

- Facilitate the development of the operational analysis protocol to be used by FAA.
- Facilitate the FAA's operational assessment of the runway use measures to determine those that would meet operational requirements.
- Prepare a working paper that includes FAA's operational assessment.

IC Activities:

- Review operational analysis protocol to be used by FAA.
- Facilitate CAC's review of the operational assessment and develop recommendations of which of those measures that would meet operational requirements that could be carried forward for the noise analysis.
- Review the working paper prepared by the PC documenting FAA's operational assessment.

3.3 RUNWAY USE EVALUATION PROTOCOL AND ASSUMPTIONS

As during previous phases, an evaluation protocol will be developed to establish baseline and runway use measure assumptions for conducting the noise analysis. The technical aspect of the alternatives analysis will focus on noise analysis, with assessments of the effects on Airport operations to be provided by FAA as described in Task 3.2. The PC will work with FAA, with reviews by the IC, to establish runway use assumptions for evaluating the runway use measures. In addition, the protocol will identify supplemental information that may be provided to the CAC by the IC. The protocol will address:

- Definition of the baseline condition and confirmation of current runway use. (It is assumed that the baseline condition will be the 2015 baseline condition established earlier in Phase 2, with the addition of the implementation of the revised Runway 27 SID and the proposed Runway 33 SID that are under review by FAA and any refinements made to the Phase 1 measures. This will require the 2015 baseline noise analysis to be rerun to reflect the appropriate conditions and will be referred to as the revised 2015 baseline conditions.)
- The comparisons of noise exposure will be made using the revised 2015 baseline conditions and modifying the inputs to reflect each of the scenarios. The year 2015 will be used for comparison purposes during Phase 3. In the event that processing is required in accordance with NEPA to implement recommended changes, it is assumed that a future conditions noise analysis would be required. As stated earlier, this would be covered under a separate scope of services and budget.
- Anticipated feasible changes in runway use for each of the runway use measures to be considered. (Runway use changes will be developed by the PC working with FAA, based on historical wind and weather conditions, runway operating conditions, and forecast air traffic levels and aircraft fleet changes as reflected in the 2015 revised baseline.)
- Scope of the noise analysis, including noise exposure levels and supplemental metrics to be calculated. (It is assumed that the same criteria established by the CAC and the FAA will be used to

compare the runway use scenarios as used in the Level 3 Screening Analysis, and therefore, the same metrics will be calculated.)

- Additional information to be provided to the CAC by the IC, similar to that prepared during previous phases that could include evaluations of aircraft noise below DNL 55 and population-weighting and noise-level-factor x population-weighting.
- The Integrated Noise Model (INM) 7.0c will be used for the runway use scenario analysis.
- The same population centroids that represent the geographic centroids of the census tracts will be used for the analysis; however, the population centroid data will be updated to 2010 census data for the analysis.

The draft assumptions will be reviewed by the IC. A draft working paper will be prepared describing the protocol, once there is agreement on the assumptions, for review by the Technical Committee.

PC Activities:

- Meet with appropriate FAA representatives to confirm flight tracks associated with the revised Runway 27 SID and the new Runway 33 SID, review the runway use scenarios, and establish feasible changes in runway use that could be anticipated for each.
- Prepare summaries of the revised 2015 baseline conditions and runway use changes and resulting runway use percentages and coordinate review with IC.
- Facilitate discussions with FAA representatives, PC, and IC regarding runway use percentages to address any questions raised by the IC.
- Prepare a draft working paper describing the runway use analysis protocol and revise based on comments received.

IC Activities:

- Update the summary of runway use programs and measures in place at other airports in the U.S. and overseas applicable and relevant to U.S. airports and BOS.
- Review revised baseline conditions assumptions, runway use assumptions, and overall noise analysis protocol provided by PC. Provide comments and discuss with PC and FAA representatives as necessary.
- Coordinate with CAC representatives on Technical Committee regarding the runway use percentage assumptions and overall protocol.
- Review draft working paper describing the runway use analysis protocol, coordinate review with CAC representatives on Technical Committee, and provide comments to PC.

3.4 NOISE MODELING

Conduct noise modeling using INM Version 7.0c for the following:

- Revised 2015 baseline conditions reflecting the revised Runway 27 SID and the new Runway 33 SID under development by the FAA.
- Revised 2015 noise exposure reflecting each of the runway use scenarios to be evaluated.

It is assumed that day-night average sound level (DNL) 55, 60, 65, 70, and 75 noise exposure contours, as well as grid point analyses for the population centroids for the revised 2015 baseline conditions and for each of the runway use scenarios. Results at certain population centroids will be reviewed as they were earlier in Phase 2 and adjustments made, as appropriate. It is also assumed that the criteria used for the Phase 2 Level 3 screening analysis will be applied to the runway use alternative scenarios.

Comparisons of the noise analyses for each of the runway use measures with the revised 2015 baseline conditions will be developed to allow evaluations with respect to each of the CAC and FAA criteria. As stated earlier, it is assumed for budget purposes that the noise effects of up to ten (10) runway use measures will be evaluated during Phase 3.

At the direction of the CAC, the IC may provide additional analyses for the CAC in their review of the results, including noise levels below DNL 55 and population-weighting and noise-level-factor x population-weighting similar to that provided in previous phases.

PC Activities:

- Develop INM inputs for revised 2015 baseline conditions and each of the runway use measures to be evaluated.
- Update population centroid data to reflect 2010 census data.
- Run the INM Version 7.0c for the revised 2015 baseline conditions and for each of the runway use measures to be evaluated, calculating noise exposure contours and centroid analyses as required to compare with FAA and CAC criteria.
- Prepare comparisons as necessary to review each of the runway use scenarios against the FAA and CAC criteria.
- Coordinate with IC regarding reviews of the input files and the results of the analyses.

IC Activities:

- Review INM inputs for the revised 2015 baseline conditions and each of the runway use measures.
- Review results of the INM runs for the revised 2015 baseline conditions and for each of the runway use measures.
- Provide additional information as requested by the CAC regarding aircraft noise below DNL 55 and population and noise-level weighting.

- Coordinate with CAC representatives on the Technical Committee to review results and comparisons of scenarios.

3.5 RUNWAY USE RECOMMENDATIONS

CAC and Massport, with FAA technical assistance will make recommendations of runway use goals to achieve decreased total noise exposure, to the extent practicable and in keeping with FAA policy, consistent with CAC's goals and objectives. Specific goals regarding percentages; times-of-day; categories of aircraft; and hours, daily and consecutively, may change to achieve the basic goals. The recommendations may include preliminary estimates of utilization by runway end for departures, arrivals, and the sum of both.

As documented in Mitigation Measure 6 in the 2002 ROD, "Massport has also committed, as part of its Section 61 Findings, to begin working with the CAC [Logan Airport Community Advisory Committee] to update the existing PRAS program. FAA supports these efforts and will work with Massport and the CAC to assess the PRAS program with the understanding that the PRAS will remain in place until superseded." With CAC's decision to abandon PRAS and develop a program that will be effective to replace PRAS, Massport and CAC will work together to review the runway use scenarios, with technical assistance from the FAA. Based on the established criteria, Massport will work with the CAC representatives on the Technical Committee to review the results of the analyses and comparisons to determine which of the runway use measures to recommend for implementation as part of the runway use program. The CAC representatives on the Technical Committee will also coordinate with the full CAC to ensure that all potentially affected communities have input into the development of recommendations.

The joint recommendations of the CAC and Massport will then be given to the FAA, who will review the recommendations, determine which of those recommendations they can support for implementation, consistent with FAA regulations for runway use programs, and determine whether NEPA processing would be required and, if so, what type of document would be required. NEPA processing is not included in the Phase 3 Scope of Services. If required, a separate scope of services and budget would be established for the necessary work.

PC Activities:

- Facilitate reviews of the analyses and comparisons and respond to any questions raised during the review.
- Assist the FAA in reviewing the NEPA requirements for recommended runway use measures.
- Coordinate with the IC as necessary.

IC Activities:

- Assist the CAC representatives on the Technical Committee and the full CAC membership in the review of the results and the development of recommendations.

- Provide the CAC with Google Earth overlays following Phase 2 examples, including community boundaries and names; grid points and polygons; population centroids; and noise contours DNL 45-70; for latest available year, revised 2015 Baseline, and each Measure and alternative.
- Provide additional information as requested by the CAC regarding aircraft noise below DNL 55 and population and noise-level weighting.
- Coordinate with the PC as needed to address questions.

3.6 FINAL NOISE ANALYSIS

The final noise analysis will include the development of DNL 55, 60, 65, 70, and 75 noise exposure contours and grid point analyses reflecting the recommended runway use measures. The analysis will include population centroid analysis of contours reflecting recommended to compare against FAA and CAC criteria to determine the overall effects of the combined measures.

The IC may provide additional analyses for the CAC in their review of the results, including noise levels below DNL 55 and population-weighting and noise-level-factor x population-weighting similar to that provided in previous phases.

PC Activities:

- Develop INM inputs reflecting the combined recommended and accepted runway use measures.
- Run the INM Version 7.0c for the combined recommended and accepted runway use measures, calculating noise exposure contours and centroid analyses as required to evaluate against FAA and CAC criteria.
- Prepare a comparison of the combined runway use measures with the revised 2015 baseline conditions for evaluation against the FAA and CAC criteria.
- Coordinate with IC regarding reviews of the input files and the results of the analyses.

IC Activities:

- Review INM inputs reflecting the combined recommended and accepted runway use measures.
- Provide the CAC with Google Earth overlay following Phase 2 example, consistent with provided for Runway Use Recommendations.
- Provide additional information as requested by the CAC regarding aircraft noise below DNL 55 and population and noise-level weighting.
- Review results of the INM runs reflecting the combined recommended and accepted runway use measures.

4. Project Documentation

A Phase 3 report describing the assumptions and noise analysis results will be prepared. The report will summarize the process, the full list of runway use measures that were assessed, the operational assessment of those measures, and those that were carried forward for the full noise analysis. The noise analysis assumptions, including runway use assumptions associated with the runway use measures; the results of the analyses; and the recommendations for runway use program measures to be implemented will also be documented. The report will also describe any NEPA processing required to implement recommended runway use measures.

As part of the documentation for Phase 3, an overall summary of the noise abatement measures identified in Phase 1 and Phase 2, as well as the recommended runway use program resulting from Phase 3 will be described as an overall noise abatement program resulting from the BLANS. The measures will be grouped by types of measures (e.g., departure, arrival, ground, runway use). The summary will include commitments made in writing by Massport during the course of the BLANS. The intent is to have a consolidated Logan Airport BOS Noise Abatement Program, including a runway use program approved and implemented by the FAA, and a Ground Measures Program agreed upon and implemented by Massport (similar to many other US airports).

The document will also provide a list of implementation steps for the runway use program, including actions to be taken by FAA and Massport to implement the program and a discussion of potential metrics that the NAC could utilize to monitor the runway use program in the event that the intent of certain measures is not met (i.e., to achieve the intended runway use goals and review the resultant impacts to communities surrounding BOS). The BLANS Phase 3 documentation will be intended to provide a foundation for the work of the NAC.

A two- to three-page executive summary will be prepared summarizing Phase 3.

As currently scoped, Phase 3 does not include documentation that may be required for approval of a runway use program under NEPA. As stated above, NEPA processing would be conducted under a separate scope of services and budget.

PC Activities:

- Prepare the draft Phase 3 report and executive summary. The first draft will be provided to the FAA and Massport for review and then for CAC review after responding to FAA and Massport comments.
- Review and respond to comments from the CAC, as appropriate and prepare a final report.

IC Activities:

- Review the draft documentation and provide comments to the PC.
- Coordinate review and comments from the CAC on the draft report.