DRAFT BOS Runway Use Plan ~~Test Period #4~~ Test 4A – 05~~04~~-13~~25~~~~07~~-2016 [Accepted by LCAC 2016-05-12]

~~1.~~I. **Definitions (for the purposes of these tests)**

~~a.~~1. Configuration – Any combination of two or more runways with a defined primary arrival runway end and primary departure runway end. There may be secondary arrival runway ends and secondary departure runway ends utilized as traffic and operational conditions require.

~~b.~~2. Runway End – Acknowledges that each runway has two operating ends (one for arrivals and one for departures) based on direction of flow.

3. Seasonal Runway Use – Acknowledges that runway use is seasonal due to changing wind and weather conditions during the various seasons.

~~c.~~

~~2. Test 4A Definition~~

II. **Overall Goals**

1. **More equitable distribution of Noise Impacts and decreased Noise Impacts overall.** Develop and agree on metrics and reporting format to evaluate actual and changes. Develop and agree on a Monitoring Program for implementation and effectiveness. With timely and relevant reporting of actual and changes.

2. **Balance Runway Use shorter term for Respite: Dwell, hours and consecutive hours daily, and Persistence, days and consecutive days monthly. Between all Runway Ends. Avoid excessive use of any Runway.** Need is increased by RNAV, less-than-annual noise exposure concentrations.

3. ~~**Balance Runway Use longer term, between Runway Ends used (nominally) in the same wind conditions. (Without increasing previous total use; within previous range for each Runway End.) RW 33L/R Dep-15R/L Arr and RW 27 Dep-9 Arr.** Runway use balance shifted since 2007, new RW 14-32. Need is accentuated by seasonal winds significantly increasing seasonal use of some runways (and with RNAV).]~~

4. ~~[Test 4B: Balance Runway Use longer term, overall, between all Runway Ends. Decrease use of historically most-used Runway End. RW 4L/R Arr-22R/L Dep. Need is accentuated by seasonal winds significantly increasing seasonal use of some runways (and with RNAV).]~~

~~3~~5. **Balance considering all airplanes (in Noise Model), Arrivals and Departures Operations,** all runways at each of the 6 Logan Runway Ends. Balance considering Operations Events, Noise Exposure weighted with Population for Noise Impacts, and Intruding Events.

III. **Test Goals**

~~The intent of the test is to balance the combined impact of noise exposure by runway end (i.e. with Runway 27 departures/Runway 9 arrivals and Runway 33L departures/Runway 15R arrivals) by assigning specific percentages to Runway 27 and Runway 33L departures when the Airport is in a 27/33L~~

~~configuration. The intent is not to increase the overall annual combined use of Runways 27 and 33L for departures nor increase the seasonal runway use of Runways 27 and 33L during the test period.~~

~~i. When operating in a configuration with departures on Runways 27 and 33L, attempt to achieve an overall~~ balancing of runway use: ~~split of ??% jet departures on Runway 27 and ??% jet departures on Runway 33L~~

1. Attempt to decrease maximum consecutive days of a runway use, Persistence.
2. Attempt to decrease maximum hours daily of a runway use, Dwell.
3. Attempt to decrease daily maximum consecutive periods (Overnight, 00:00 - 05:59; Morning, 06:00-11:59; Afternoon, 12:00-17:59; and Evening, 18:00-23:59) of a runway use.
4. Attempt to decrease maximum consecutive days of a runway use with use in the same period as the prior day.

~~Attempt to achieve an overall split of 50% jet departures on Runway 27 and 50% jet departures on Runway 33L.~~

~~1. Recognizing that departure demand is greater during the morning peak, resulting in a greater use of Runway 27 for departures, attempt to achieve a split during the morning peak of ??% jet departures on Runway 27 and ??% jet departures on Runway 33L~~

~~2. Recognizing that arrival demand is greater during the afternoon/ evening peak, resulting in greater use of Runway 33L for departures, attempt to achieve a split during the afternoon/evening peak of ??% jet departures on Runway 27 and ??% jet departures on Runway 33L~~

~~3. During non-peak hours, attempt to achieve the overall desired daily split of ??% jet departures on Runway 27 and ??% jet departures on Runway 33L~~

~~ii. It is not intended for the overall use of Runways 27 and 33L to be greater during the test period than it has been during the same months in recent years, which has been approximately 16% for the period from June~~May through September, ~~2013-2015. (Ranging 5-9% + 6-11%, total 13-20%.) This is seasonally lower than the 2011-2015 annual average. (Ranging, all aircraft 6-12% + 8-17%, total 15-28%, combined average 22%.)~~

~~OPTION for Logan CAC: The 10-knot wind restriction for Runway 14-32 as required per the FAA's 2002 Record of Decision for the~~ Boston-Logan Airside Improvements Project [ET(1)]~~will not apply during the test period. The elimination of the wind restriction is to provide FAA with more flexibility for using Runways 27 and 33L departures to balance the noise exposure by runway end, but not to increase their combined use compared with seasonal runway use during the same months in recent years.~~

~~iii. The above 50/50 split goals for jet departures do not consider Arrivals (0% in addition to Runway 27 Departures and 1% in addition to Runway 33L Departures) or non-jets. Or, Noise Exposure, Day-Night Average Sound Level (DNL) by Runway End. Or, Noise Impacts, Level-Weighted Population (LWP) by Runway End. Or, Noise Impacts, shorter term, Intruding Events (N Lmax 70 dBA Day + Lmax 60 dBA Night). Massport is late providing the (finally) agreed annual Noise Exposure (DNL) and Noise Impacts (LWP) by Runway End to refine balance considering Population. Massport has not agreed to provide Intruding Events, to allow refining balance considering shorter term Noise Impacts and~~

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Population. When Massport provides the additional metrics, the 50/50 splits for jets will be recalculated—hopefully before the test begins or even during the test. (The test—with FAA ATCT efforts; Massport reporting; and monthly FAA ATCT, Massport, and LCAC review—is valid and important ongoing, even without the goals refinement currently awaiting Massport.)

3.IV.   **Approach to Implementation**

Test Periods – Tests 4A and 4B (described separately) are to be conducted simultaneously. Suggest eEmploying a 3-month test period (not to exceed 6 months) of the runway use program instructions after the environmental documentation has been completed for an operational test per FAA Order 1050.1F: "Environmental Impacts: Policies and Procedures," dated July 16, 2015.

    i.1.   Develop ATCT language
    ii.2.   Provide instruction/training of ATCT staff
    iii.3.   Implement runway use program test
    iv.4.   Monitor ability to implement
    v.5.   Monitor effectiveness of changes in runway end use
    vi.6.   Identify problems/opportunities
    7. Make adjustments during test period
vii.

V.   **Metrics -/Monitoring and Reporting**

Massport shall be responsible for reporting, with the assistance of FAA ATCT, when necessary. The spreadsheet report shall include Test 4A and Test 4B results, covering all Arrivals and Departures Operations at all Runway Ends.

1. Respite
    A. Persistence.
        a. Monthly days with use. Total days with any use.
        b. Consecutive days with use. $1^{st} + 2^{nd} + 3^{rd} + 4^{th} = 3$
        c. Weighted consecutive days with use. $1^{st} + 2^{nd} + 3^{rd} + 4^{th} = 1 + 2 + 3 + 4 = 10$
    B. Dwell.
        a. Daily hours with use. Total hours with any use.
        b. Daily periods with use: Overnight, 00:00-05:59; Morning, 06:00-11:59; Afternoon, 12:00-17:59; and Evening, 18:00-23:59.
        c. Daily consecutive periods with use. Overnight and Morning + Morning and Afternoon + Afternoon and Evening = 3
        d. Weighted daily consecutive periods with use. Total: 2 consecutive periods = 4; 3 consecutive periods = 8; 4 consecutive periods = 16.
    C. Persistence-Dwell.
        a. Consecutive days same periods with use. Total periods with any use same period the prior day. Overnight to Overnight + Morning to Morning + Afternoon to Afternoon + Evening to Evening.
        b. Weighted consecutive days same periods with use. Total for all periods: 2 consecutive days same period = 4; 3 consecutive days same period = 8; 4 consecutive days same period = 16.

2. Runway Use

A. Arrivals and Departures Operations, Events (N) by Runway End and Total. All airplanes in Noise Model. (# and %)

A. Noise Exposure, annual, Day-Night Average Sound Level (DNL) by Runway End and Total. Map contours by DNL level, and Population between contour DNL levels. (=>45 dBA)

B.

C. Noise Impacts, annual, Level-Weighted Population (LWP) by Runway End and Total.

B. Noise Impacts, shorter term, Intruding Events (N Lmax 70 dBA Day + Lmax 60 dBA Night). Map Contours by N level, and Population between contour N levels.

D.

E. (Also, Noise Exposure and Noise Impacts (and Intruding Events) by Community from Runway End.)

VI. ~~III.~~ Report Format-Operational Performance

1. Persistence and Dwell Hours spreadsheet:
   A. Daily Hours horizontally, 00-24. Delineating periods: 00-06, 06-12, 12-18, 18-24.
   B. Monthly Days vertically, 1-31. Delineating week beginning and end: Monday-Sunday.
   C. Each Hour/Day allowing coloring (ROYGBIV) for use of all (6) Runway Ends. Arrivals 4LR, 9, 15LR, 22LR, 27, 33LR over Departures: 22RL, 27, 33RL, 4RL, 27, 15RL.
   D. Persistence, monthly days and consecutive days totals vertically.
   E. Dwell, daily hours, periods, and consecutive periods totals horizontally.
   F. Persistence-Dwell, consecutive days periods of use totals vertically.
   G. Monthly Average Day. Hour colored (by Runway End Arrivals and Departures) if used >50% days, average Persistence, average Dwell, average Persistence-Dwell.

2. Arrivals and Departures Events spreadsheet—same worksheet layout and format overall as Persistence and Dwell Hours worksheet:
   A. Daily Hours horizontally, 00-24. Delineating periods: 00-06, 06-12, 12-18, 18-24.
   B. Monthly Days vertically, 1-31. Delineating week beginning and end: Monday-Sunday.
   C. Each Hour/Day with Events of any runway by all (6) Runway Ends. Arrivals 4LR, 9, 15LR, 22LR, 27, 33LR over Departures: 22RL, 27, 33RL, 4RL, 27, 15RL.
   D. Events, Arrivals and Departures, monthly totals vertically (by hour, period).
   E. Events, Arrivals and Departures, daily totals horizontally
   F. Monthly Average Day. Average hourly Events of any Runway by all (6) Runway Ends. Average daily Events of any runway by all Runway Ends, Arrivals and Departures.

3. Wind and Maintenance/Repair Conditions spreadsheet—same hours horizontally and days vertically layout and format overall as Hours and Events spreadsheets:

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A. Wind Direction and Speed when changed, by hour of change.
B. Color hours each day a Runway is not available for operation due to Maintenance/Repair, and note reason.
C. Runway Configuration when changed, by hour of change, noting reason for change: Wind, Maintenance/Repair, Schedule Load, or Noise Abatement.
D. Note Runway Configuration selection is based upon Schedule Load, Maintenance/Repair availability, Wind Direction and Speed (acceptable wind, NOT optimal wind), and Noise Abatement.

VII. ~~IV.~~ Report Timing

1. Prior year period, 2015 June-July-August, in intended Test Report Format by Massport to FAA ATCT and LCAC by three weeks after LCAC Test acceptance—to allow edit before start of Test.
2. Daily through previous day by Massport for FAA ATCT. Following weekday AM. Recognizing that daily reconciliation may sometimes require longer.
3. Weekly through previous week ending Sunday by Massport to FAA ATCT and LCAC. By Wednesday after the last day of the previous week.
4. Monthly for Review Meeting with Massport, FAA ATCT, and LCAC. By the 2nd Wednesday after the last day of the previous month (8-14 days).

VIII. ~~V.~~ Evaluation Comparison

1. Prior year (same months) period (June-September) 2015.
2. Seasonal (same months) period (June-September) average—2015-2013.
3. Post and Pre RW 14-32, 2007 multi-year averages.
4. Phase 3 Baseline 2015 year.

~~4.~~

~~a. ATCT Performance – These metrics are designed to specifically measure ATCT's ability to implement the test program and would be produced weekly, as appropriate:~~
~~i. Departure Runway Split – when operating in a configuration with departures on Runways 27 and 33L, report the hourly numbers of departures by runway for Runways 27 and 33L.~~
~~• FAA to present the hourly numbers of departures by runway for Runways 27 and 33L and calculate the percentage split by hour to show variations over the course of the day.~~
~~• Massport to calculate weekly, monthly, and overall test period hourly numbers of departures by runway and the percentage split for Runway 27 and Runway 33L.~~
~~• Massport to calculate the overall percentage split between Runway 27 and Runway 33 departures and the percentage split during the daytime hours (7:00 a.m. – 10:00 p.m.) and nighttime hours (10:00 p.m. – 7:00 a.m.).~~
~~• Massport to calculate the numbers of departures by runway for Runways 27 and 33L during the morning peak, afternoon/evening~~

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> ~~peak, and for non-peak hours.(NOTE: The specific hours for each~~
> ~~period to be finalized working with FAA.)~~
> - ~~Massport to compare the overall percentage splits with the overall~~
>   ~~goal and the morning peak, afternoon/evening peak, and non-~~
>   ~~peak hour percentage splits against the goals for those periods.~~
> ~~ii. *Documentation* – Provide detailed operational conditions (wind,~~
>   ~~weather, airfield closures, etc.) for the test period.~~
> ~~b. Operational Performance – These metrics are designed to measure the~~
>   ~~operational results of implementing the program:~~
> ~~i. *Runway End Use Percentages* – Massport to provide daily reports of~~
>   ~~runway end use percentages to include:~~
>   ~~Runway End Use by Day (24 hours)~~
>   ~~Detailed Runway End Use for 6:00 am to 8:30 pm~~
> ~~ii. *Hourly Operational Data* – At the end of each week, Massport/FAA to~~
>   ~~provide hourly reports (taken from available sources) of wind, weather,~~
>   ~~traffic volumes, airfield closures~~

IX.   Noise Performance ~~–~~

~~c.~~ These metrics are designed to measure the noise results of implementing the overall runway use program:

1. *Baseline Preparation* – Massport to update the 2015 baseline noise data for comparison purposes to include:
   A. DNL noise contours for 65, 60, 55, ~~and~~ 50, and 45 dB increments
   B. Number of people residing within each 5 dB DNL increment
   C. DNL for the evaluation points identified in previous phases of BLANS
   D. Noise-level weighted population data for the evaluation points *(CAC will calculate this from noise data prepared by Massport)*
2. *Noise Analysis of Recommended Runway Use Program* – At the end of the Test Period #4 and upon development of a recommended runway use program by CAC, Massport to provide a noise analysis to include:
   A. DNL noise contours for 65, 60, 55, ~~and~~ 50, and 45 dB increments
   B. Number of people residing within each 5 dB DNL increment
   C. DNL for the evaluation points identified in previous phases of BLANS
   D. Noise-level weighted population data for the evaluation points *(CAC will calculate this from noise data prepared by Massport)*

X.   Percentage-Based Goals

~~d.~~   ~~Except for those listed above, t~~There w~~ould~~ill not be percentage-based goals for runway end utilization or configuration utilization as part of Test 4. After the end of the test period~~s~~s, the feasibility of percentage-based goals w~~ould~~ill be determined and if determined to be valuable those goals established. The most likely goals for runway end utilization are improvement from current towards more equitable Noise Impacts—based on metrics and monitoring reporting to be agreed, including all aircraft and population-noise-weighting—not simply Events or Noise Exposure.