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Introduction/Executive Summary

Introduction

Massport is pleased to continue its practice of providing the community with an extensive, almost three-decade record of Boston-Logan International Airport (Logan Airport or Airport) environmental trends, development planning, operations and passenger levels, and Massport’s mitigation commitments in this *Logan Airport 2015 Environmental Data Report (EDR)*. Logan Airport, owned and operated by the Massachusetts Port Authority (Massport), is New England’s primary international and domestic airport. This *2015 EDR* is one in a series of annual environmental review documents submitted to the Massachusetts Environmental Policy Act (MEPA)¹ Office since 1979 to report on the cumulative environmental effects of Logan Airport’s operations and activities. Logan Airport is the first airport in the nation for which an annual environmental report card on airport activities was prepared and Massport continues to be a leader in environmental reporting.

Approximately every five years, Massport prepares an Environmental Status and Planning Report (ESPR), which provides a historical and prospective view of Logan Airport. EDRs, prepared annually in the intervals between ESPRs, provide a review of environmental conditions for the reporting year compared to the previous year. Over the long-term, environmental impacts associated with Logan Airport have been decreasing, as reported on each year in the EDR/ESPR filings. This *2015 EDR* follows the *2014 EDR* and reports on 2015 conditions. In 2015 at Logan Airport, the air quality and noise environment are substantially better than conditions reported during 1990 and 2000. This improvement is a result of both Massport’s efforts to mitigate environmental impacts and airline industry trends towards quieter and cleaner aircraft and greater efficiency.



Annual Environmental Data Reports and Environmental Status and Planning Reports since 1991.

The scope for this *2015 EDR* was established by the Secretary of the Executive Office of Energy and Environmental Affairs’ (EEA) Certificate dated November 12, 2015, which is included in Appendix A, *MEPA*

¹ Massachusetts General Laws Chapter 30, Sections 61-62H. MEPA is implemented by regulations published at 301 Code of Massachusetts Regulations (CMR) 11.00 (the “MEPA Regulations”).

Boston-Logan International Airport 2015 EDR

Certificates and Responses to Comments. This 2015 EDR updates and compares the data presented in the 2014 EDR, and for 2015 presents information on:

- Activity Levels (including aircraft operations, passenger activity, and cargo)
- Airport Planning activities and upcoming projects
- Logan Airport's role in the regional transportation network
- Ground Access to and from the Airport
- Noise Abatement
- Air Quality Emissions Reduction
- Water Quality/Environmental Compliance
- Mitigation Commitments
- Sustainability and Resiliency

To enhance the usefulness of this 2015 EDR as a reference document for reviewers, this report also presents historical data on the environmental conditions at Logan Airport dating back to 1990, in instances where historical information is available. Historical data are included in the technical appendices (CD only).

For the first time, this 2015 EDR includes a Spanish translation of the Executive Summary. This translated version is included after the English-version of the Executive Summary.

EOEA # 3247

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Logan Airport Planning Context

Logan Airport, New England's primary domestic and international airport, plays a key role in the metropolitan Boston and New England passenger and freight transportation networks and is a significant contributor to the regional economy. Logan Airport fulfills a number of roles in the local, New England, and national air transportation networks. It is the primary airport serving the Boston metropolitan area, the principal New England airport for long-haul services, and a major U.S. international gateway airport for transatlantic services. Logan Airport serves as a regional connecting hub for small northern New England markets and the Massachusetts maritime counties of Barnstable, Dukes, and Nantucket; the Airport is also the busiest air cargo center in New England.

The Airport boundary encompasses approximately 2,400 acres in East Boston and Winthrop, including approximately 700 acres underwater in Boston Harbor. Logan Airport, shown in **Figures 1-1** and **1-2**, is one of the most land-constrained airports in the nation, and is surrounded on three sides by Boston Harbor.



Logan Airport is close to downtown Boston and is accessible by two public transit lines and a well-connected roadway system. The airfield comprises six runways, approximately 15 miles of taxiway, and approximately 240 acres of concrete and asphalt apron. Logan Airport has four passenger terminals (Terminals A, B, C, and E), each with its own ticketing, baggage claim, and ground transportation facilities. Massport continues to evaluate and implement enhancements to Logan Airport's security, operational efficiency, and accessibility to and from the Boston metropolitan area, while carefully monitoring the environmental effects of Logan Airport operations.

In 2015, Logan Airport was the 17th busiest U.S. commercial airport by number of commercial passengers, and the 18th busiest U.S. commercial airport by aircraft movements.² Boston is an important domestic and international destination, and air carriers seek to expand international service at Logan Airport based on current and anticipated passenger demand. New international service in the last three years alone has contributed more than \$1.4 billion per year to the local economy and \$44 million in new incremental tax revenue through income and sales.³

In 2015, over 15,000 people were employed at Logan Airport. This included approximately 1,040 Massport airport staff and administration employees. The Massachusetts Department of Transportation (MassDOT) Aeronautics Division's *Massachusetts Statewide Airport Economic Impact Study Update* found that in 2014, Logan Airport supported approximately 132,000 jobs and contributed nearly \$13.4 billion annually to the local economy; this includes all on-Airport businesses, construction, visitor, and multiplier impacts.⁴

2 Airports Council International, 2015 North American Air Traffic Report.

3 InterVISTAS. 2015. Economic Impact of Recent International Routes.

4 MassDOT Statewide Airport Economic Impact Study Update, 2014.



FIGURE 1-1 Aerial View of Logan Airport

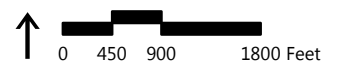





FIGURE 1-2 Logan Airport and Environs

2015 Environmental Data Report

2015 Highlights and Key Findings

This section provides a brief overview of key findings, by chapter, at Logan Airport in 2015. Additional information concerning Airport activities is provided in subsequent chapters. This section also highlights Massport's efforts to further sustainability through specific projects and initiatives with a sustainability leaf, and summarizes Massport's sustainability program at its end. 

Activity Levels

- The total number of air passengers increased by 5.7 percent to 33.4 million in 2015, compared to 31.6 million in 2014 (**Figures 1-3** and **1-4**). The 2015 passenger level represents a new record high for Logan Airport.
- Passenger aircraft operations accounted for 91 percent of total aircraft operations in 2015. The total number of aircraft operations at Logan Airport increased from 363,797 in 2014 to 372,930 in 2015, a 2.5-percent increase. This was preceded by a 0.7-percent increase from 2013 to 2014. Despite the increase, aircraft operations at Logan Airport remained well below the 487,996 operations in 2000 and the historical peak of 507,449 achieved in 1998. In 1998, Logan Airport served 26.5 million air passengers, compared to 33.4 million in 2015, which saw 134,519 fewer operations.
- Air carrier efficiency continued to increase, with the average number of passengers per aircraft operation at Logan Airport increasing from 87.0 in 2014 to 89.7 in 2015. The increasing number of passengers per flight reflects a shift away from smaller aircraft and rising load factors, as airlines continue to focus on capacity control and improvements in efficiency.

Figure 1-3 Logan Airport Annual Passenger and Operations, 2000, 2014, 2015

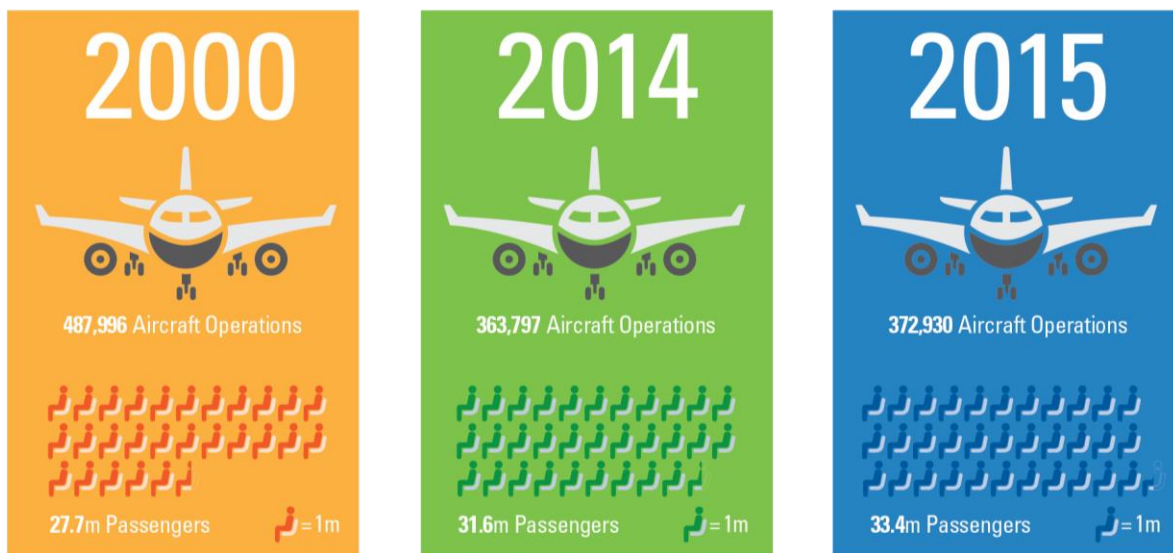
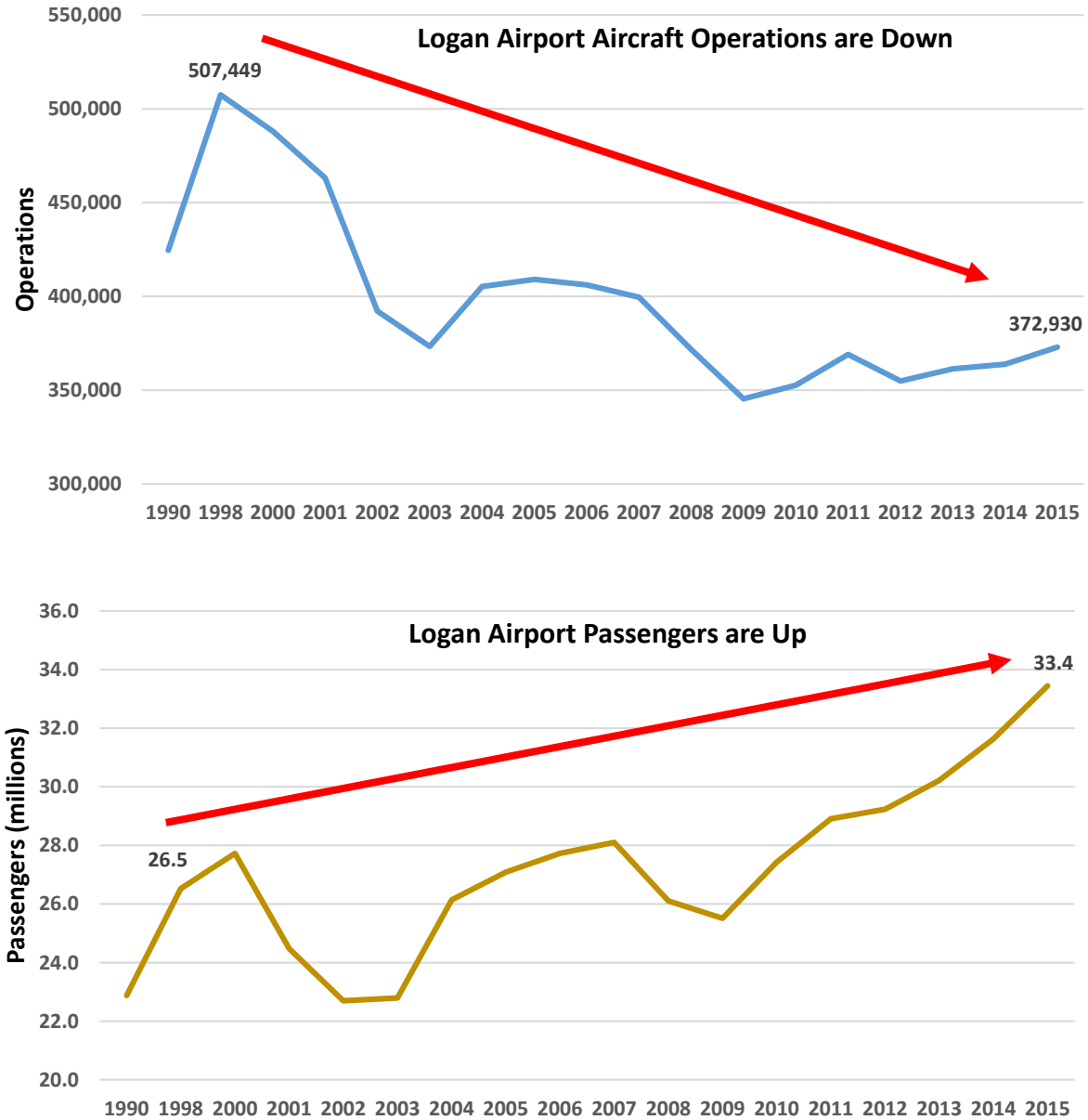


Figure 1-4 Logan Airport Annual Passenger Activity Levels and Operations, 1990, 1998, 2000-2015



Source: Massport.

Note: 1998 represents the historic peak in terms of aircraft operations for Logan Airport.

Logan Airport is an important origin and destination (O&D)⁵ airport both nationally and internationally, and is one of the fastest growing major U.S. airports, in terms of number of passengers, over the past five years.⁶ There has been growth in both domestic and international passenger numbers. In 2015, there were approximately 5.5 million international and 27.8 million domestic passengers (excluding general aviation [GA]).

Annual domestic passengers' activity levels increased from 26.5 million in 2014 to 27.8 million in 2015,⁷ a 4.8-percent increase. While the numbers of both domestic and international passengers are increasing, international passenger demand continues to increase at a faster rate than domestic passenger demand. Total international passengers at Logan Airport increased from 5.0 million in 2014 to 5.5 million in 2015, a 10.9-percent increase. International passengers made up approximately 16.1 percent of total Airport passengers in 2015, and this is projected to increase steadily to nearly 20 percent of the total by 2030 or sooner. The strong international passenger growth was driven by the economic attractiveness of the metropolitan Boston region and the strength of Boston as an O&D market. New international destinations from Logan Airport in 2015 included Mexico City, Hong Kong, Tel Aviv, and Shanghai.

A series of factors, including the key factor of continued local and regional economic growth, have combined to produce this exceptional passenger growth. The *2016 ESPR* will update operations and passenger activity levels through 2035.

Additional information is provided in Chapter 2, *Activity Levels*.

Airport Planning

Logan Airport facilities have been accommodating recent increases in activity and operations on the airside, but the terminal, roadways, and parking facilities are strained by the increase in passengers. Following a two-year strategic planning effort, Massport has identified priority planning projects and initiatives to accommodate the increased demand in international travel, to enhance ground access to and from the Airport, as well as improve on-Airport roadways and parking. Select planning initiatives are described below. Chapter 3, *Airport Planning*, describes the status of all planning projects.

Terminal and Airside Projects

- **Terminal E Renovation and Enhancements Project.** To accommodate regular service by wider and longer Group VI aircraft at Terminal E, this project includes interior and exterior improvements. The project does not include any new gates, but is reconfiguring three existing gates to accommodate Group VI aircraft (including the Airbus A380 and Boeing 747-8 primarily used by international air carriers). An addition to the west side of Terminal E will allow passenger holdrooms to be reconfigured to accommodate the larger passenger loads associated with larger aircraft. The project also includes modifications to the airfield to meet required Federal Aviation Administration (FAA) safety and design

5 "Origin and destination" traffic refers to the passenger traffic that either originates or ends at a particular airport or market. A strong O&D market like Boston generates significant local passenger demand, with many passengers starting their journey and ending their journey in that market. O&D traffic is distinct from connecting traffic, which refers to the passenger traffic that does not originate or end at the airport but merely connects through the airport en route to another destination.


6 Between 2010 and 2015, Logan Airport was the eighth fastest growing airport in the U.S. in terms of domestic O&D traffic (U.S. DOT O&D Survey).

7 Excluding general aviation (GA) passengers.

standards to accommodate the larger aircraft. An Environmental Assessment (EA) was filed, and FAA issued a Finding of No Significant Impact (FONSI) on July 29, 2015. Construction is underway with a planned 2017 completion.

- **Terminal E Modernization Project.** To accommodate existing and long-range forecasted demand for international service in an efficient, environmentally sound manner that also improves customer service, Massport is planning to modernize the existing international Terminal E. Modernizing Terminal E will add the three gates approved in 1996 as part of the International Gateway West Concourse project (EEA # 9791), but never constructed, and an additional four gates. The facility is planned to be constructed in two phases – Phase 1 will add four gates and Phase 2 will add three gates. The building will be aligned to function as a noise barrier. New passenger handling and passenger holdrooms are being planned, as well as possible additional Federal Inspection Services (FIS) and Customs and Border Protection facilities to supplement the existing FIS areas in Terminal E. Previously, a satellite FIS facility was planned and permitted in 2001 for Terminal B, but never constructed (EEA # 9791). As part of Phase 2, the Terminal E Modernization Project will also construct a weather-protected direct connection between Terminal E and the Massachusetts Bay Transportation Authority (MBTA) Blue Line Airport Station, which will improve the passenger experience and convenience. As part of this project, the existing on-Airport gas station will be relocated to the Southwest Service Area (SWSA). Massport filed an Environmental Notification Form (ENF) in October 2015 and a joint federal Draft Environmental Assessment/state Draft Environmental Impact Report (Draft EA/EIR) in July 2016. On September 16, 2016, the Secretary of EEA issued a Certificate on the Draft EIR finding that the project adequately and properly complies with MEPA. Massport filed the Final EA/EIR on September 30, 2016. On November 10, 2016, the FAA issued a FONSI and on November 14, 2016, FAA issued a Record of Decision (ROD) on the project, stating that Massport can now update the Airport Layout Plan (ALP) with the proposed Terminal E Modernization Project. The project is in the conceptual design phase and initial construction will likely begin in 2018. Future EDRs and ESPRs will provide updates as final design and construction proceeds.
- **Terminal C to E Connector.** The Terminal C to E Connector provides a new post-security connection between Terminals C and E on the Departures Level. Approximately 18,900 square feet of interior renovations were made to the existing building, with limited (approximately 3,500 square feet) new exterior construction. The connector provides passengers with a new access point to Terminal E. The connector provides improved passenger circulation within the post-security concourse(s), additional holdroom space at Terminal E, reconfigured office space, concessions and concessions support, and a new consolidated location for escalators and stairs. The project was completed in May 2016.
- **Terminal B Airline Optimization Project.** Similar to the recent renovations and improvements at Terminal B, Pier A, Massport is upgrading its facilities on the Pier B side to meet airlines' needs (primarily reflecting the merger of American Airlines and US Airways) and to provide facilities that improve the passenger traveling experience. Planned improvements include an enlarged ticketing hall, improved outbound bag area, expanded bag claim hall, expanded concession areas, and expanded holdroom capacity at the gate. The project will consolidate American Airlines operations to one pier of the terminal (now operating on two different sides of the terminal); all Terminal B Pier B gates will be connected post security. The project will also consolidate checkpoint operations for better passenger throughput and improved passenger experience.

Ground Access and Parking Projects

 A series of recent projects have been designed to yield substantial environmental benefits, particularly in the areas of ground access efficiencies and associated air quality emissions reductions on-Airport and in East Boston, as documented below.

- **The Rental Car Center (RCC) Southwest Service Area (SWSA) Redevelopment Program (EEA 14137).** The RCC is fully operational and the full benefits of the project began to be realized in 2014. Consolidation of rental car operations and associated shuttle bus service into a single coordinated shuttle bus fleet operation resulted in customer service improvements, reduced on-Airport vehicle miles traveled (VMT) with associated emission reductions, and stormwater system enhancements. In 2010, construction began on the new RCC, and rental car and bus operations began in the centralized facility in September 2013. The remaining quick-turnaround areas, permanent taxi pool, bus, limousine pools, and the SWSA edge buffers were completed in 2014. In keeping with Massport's commitment to sustainability, the Authority is proud that the RCC was awarded Logan Airport's first Gold Certification in Leadership in Energy and Environmental Design (LEED®) in 2015. The status of mitigation efforts for the RCC is provided in Chapter 9, *Project Mitigation Tracking*.
- **Logan Airport's new bus fleet,** comprising 21 compressed natural gas (CNG) buses and 32 clean diesel/electric buses, has fully replaced the entire fleet of diesel rental car shuttle buses now that the RCC is fully operational. Three additional new CNG buses were put into service in the summer of 2015, increasing the total from 18 to 21 buses. The new bus fleet has improved operational efficiency and reduced shuttle frequency from 100 to 30 buses per hour.
- **The LEED-Silver Green Bus Depot** serves as Logan Airport's on-Airport maintenance facility for Massport's new clean-fuel bus fleet. By shifting the bus maintenance operations out of the community, Massport is reducing bus traffic in East Boston and Chelsea.
- **The Martin A. Coughlin Bypass.** This project reduces commercial traffic through East Boston by providing a direct link, along a former rail corridor, from Logan Airport's North Service Area to Chelsea for Airport-related vehicle trips.
- **The Economy Parking Garage.** This project simplified and reduced on-Airport circulation by consolidating multiple overflow parking lots throughout the Airport into a single location served by a single shuttle route. Overall traffic circulating throughout the Airport has decreased, resulting in significant operational and environmental benefits.

- **West Garage Parking Consolidation Project.** Massport consolidated 2,050 temporary parking spaces as an addition to the West Garage and at the existing surface lot between the Logan Office Center and the Harborside Hyatt. The West Garage addition is located on the site of the existing Hilton Hotel parking lot. Construction of these spaces constituted all the remaining spaces permitted under the Logan Airport Parking Freeze.⁸ The project commenced in the spring of 2015 and was completed in late 2015.



West Garage addition.
Source: Massport

- **Logan Airport Parking Project.** As one element of its comprehensive ground transportation strategy, Massport proposes to build up to 5,000 new on-Airport commercial parking spaces at Logan Airport. The goal of the Logan Airport Parking Project is to reduce the number of air passengers choosing more environmentally harmful drop-off/pick-up modes, which generate up to four vehicle trips instead of two (see Chapter 3, *Airport Planning*, for a detailed description). The construction of additional commercial parking spaces at Logan Airport is predicated on a regulatory change,⁹ by the Massachusetts Department of Environmental Protection (MassDEP), whereby MassDEP would amend the existing Logan Airport Parking Freeze to allow for some additional commercial parking spaces at Logan Airport. MassDEP has conducted a stakeholder process, which will be followed by initiating the process to amend the Parking Freeze regulation. Massport expects to initiate a parallel process with EEA by filing an ENF for new parking facilities sometime in early 2017.

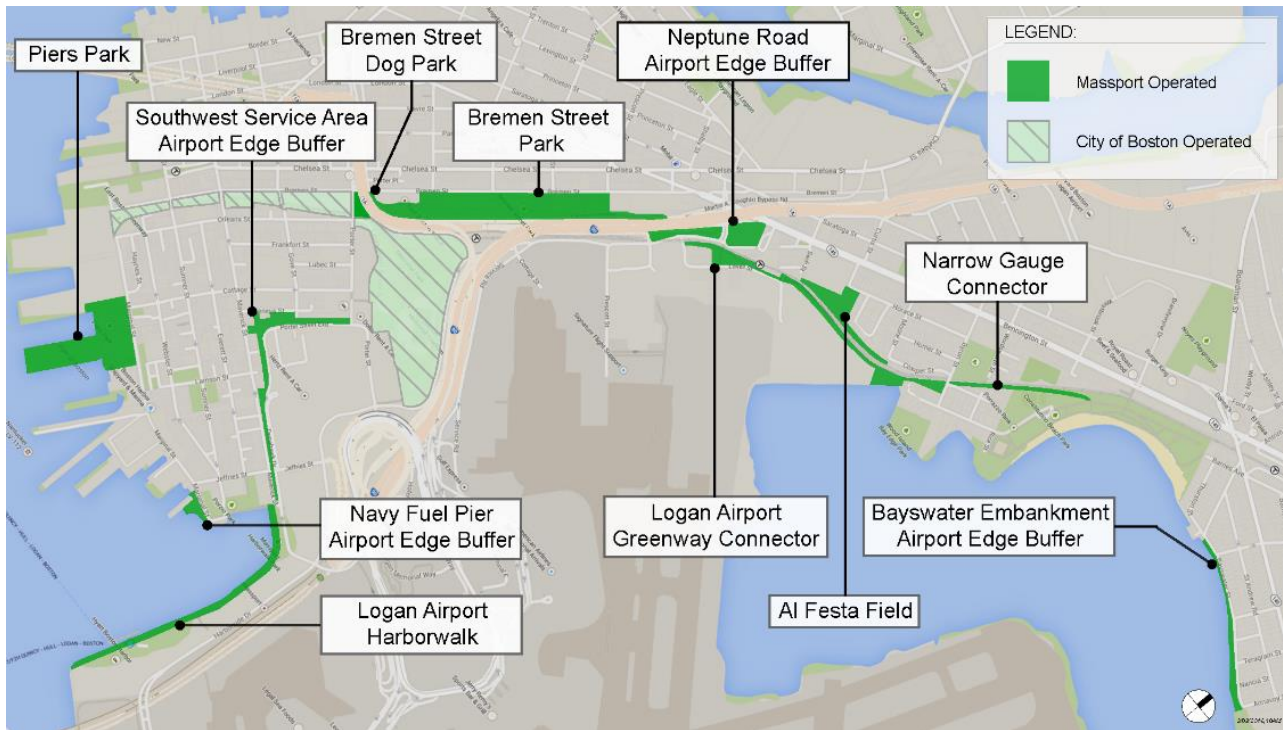
Park and Open Space Projects

Massport has committed up to \$15 million for the planning, construction, and maintenance of four Airport edge buffer areas and two parks along Logan Airport's perimeter. These buffers have now been completed and include the Bayswater Buffer, Navy Fuel Pier Buffer, SWSA Buffer Phase 1, and the SWSA Buffer Phase 2. These areas are located on Massport-owned property along Logan Airport's perimeter boundary and are intended to provide attractive landscape buffers between Airport operations and adjacent East Boston neighborhoods. The buffer design occurs in consultation with Logan Airport's neighbors and other interested parties in an open community planning process. Today, East Boston enjoys 3.3 miles and more than 33 acres of green space developed or managed by Massport in partnership with and in response to the East Boston community (**Figure 1-5**).

⁸ 310 Code of Massachusetts Regulations 7.30 and 40 CFR 52.1120.

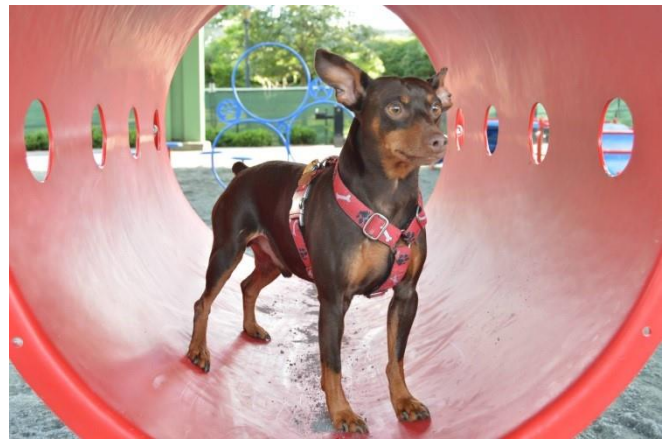
⁹ 310 Code of Massachusetts Regulations 7.30.

Figure 1-5 Parks Owned and Operated by Massport and City of Boston



Source: Massport.

- **Bremen Street Dog Park.** In September 2015, Massport officially opened the Bremen Street Dog Park. This recreational area allows for all types and sizes of dogs to utilize the 22,655-square foot space located on the corner of Bremen and Porter Streets in East Boston.
- **The Narrow Gauge Connector.** The spring 2016 completion of the 1/3-mile long Narrow Gauge Connector project represents the final portion of the East Boston Greenway, which joins the East Boston Greenway Connector, that Massport completed in 2014, with



A dog plays at the recently completed Bremen Street Dog Park.
Source: Massport

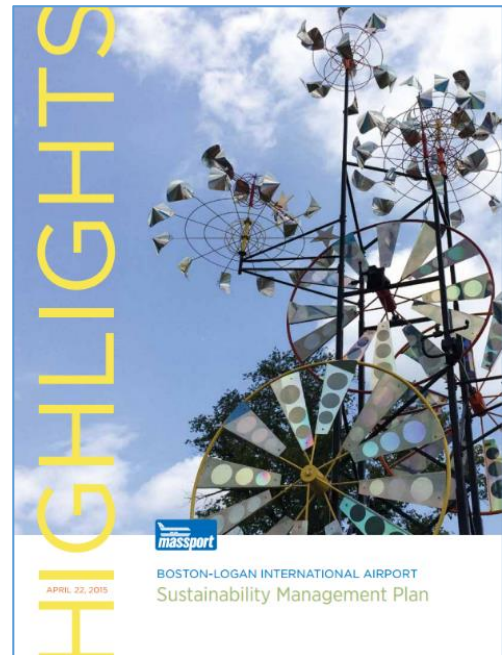
the Massachusetts Department of Conservation and Recreation's Constitution Beach. This project makes it possible for pedestrians and bicyclists to travel from Boston Harbor, through Bremen Street Park and the new East Boston Library, to Wood Island Marsh, and finally to Constitution Beach with only two roadway crossings. There are pedestrian and bike counters along the Greenway Connector. In 2015, there were 11,545 East Boston Greenway users that were recorded by the counters.

Planning Initiatives

- **Strategic Planning.** In 2013, Massport began a strategic planning effort to position the Authority's aviation, maritime, and real estate lines of business, and its administrative support structures and workforce to meet the region's 21st century transportation and economic development challenges. The strategic planning initiative's primary goal was to formulate a vision for Massport as a transportation and economic development engine for the Commonwealth of Massachusetts in the 21st century.
- **Resiliency Planning.** At the end of 2013, Massport initiated the Disaster and Infrastructure Resiliency Planning (DIRP) Study for Logan Airport, the Port of Boston, and Massport's waterfront assets in South and East Boston. The DIRP Study includes a hazard analysis, modeling sea-level rise and storm surge, and projections of temperature, precipitation, and anticipated increases in extreme weather events. The DIRP Study will make recommendations regarding short-term adaptation strategies to make Massport's facilities more resilient to the likely effects of climate change. Massport published *Flood Proofing Design Guidelines* in November 2014, with a revision in April 2015.
- **Runway Incursion Mitigation (RIM) and Comprehensive Airfield Geometry Analysis.** As FAA began to close out their comprehensive nationwide runway safety area improvements program in 2015, their safety focus shifted to analysis of the airfield geometry. The new comprehensive multi-year RIM program will identify, prioritize, and develop strategies to help airports across the U.S. enhance airfield safety. In January 2016, Massport issued a Request for Proposals to study airfield geometry issues at Logan Airport. Future EDRs and ESPRs will provide updates on this initiative and those efforts are likely to require permitting under state or federal regulations.

- **Logan Airport Sustainability Management Plan (SMP).** In 2013, Massport was awarded a grant by the FAA to prepare an SMP for Logan Airport. The Logan Airport SMP planning effort began in May 2013, and was completed in April 2015. The Logan Airport SMP takes a broad view of sustainability including economic vitality, operational efficiency, natural resource conservation, and social responsibility considerations, and is intended to promote and integrate sustainability Airport-wide and to coordinate on-going sustainability efforts across the Authority. A copy of the SMP Highlights Report can be found at <https://www.massport.com/environment/sustainability-management-plan>.

- **Logan Airport Annual Sustainability Report.** The Logan Airport Annual Sustainability Report provides a progress summary of sustainability efforts at Logan Airport based on Massport's sustainability goals and targets established in the 2015 SMP. The first Annual Sustainability Report was published in April 2016, and can be found at <https://www.massport.com/environment/sustainability-management-plan/2016-logan-airport-annual-sustainability-report/>.



Logan Airport Sustainability Management Plan
Source: Massport

Regional Transportation

Logan Airport and a system of 10 other commercial service, reliever, and GA airports¹⁰ (regional airports) anchor the New England region. Together, these 11 airports accommodate nearly all of New England’s commercial¹¹ air travel demand (**Figure 1-6**). Logan Airport serves as a major domestic O&D market and acts as the primary international gateway for the region. Amtrak rail service, which connects Boston to the New York/Washington D.C. metropolitan areas to the south and Portland, ME to the north, also serves the region.

- Passenger traffic in the New England region in 2015 represented a record high for the region, returning to passenger levels prior to the 2008/2009 economic downturn and exceeding the historical peak of 48.0 million in 2005. The total number of air passengers using New England’s commercial service airports, including Logan Airport, increased by 4.1 percent from 46.8 million annual air passengers in 2014 to 48.7 million in 2015.
- Of the 48.7 million passengers using New England’s commercial service airports in 2015, 68.6 percent of passengers (33.4 million) used Logan Airport compared to 67.6 percent (31.6 million) in 2014.
- Total aircraft operations in the New England region (including Logan Airport) remained flat in 2015, increasing 0.3 percent from 987,652 operations in 2014¹² to 991,041 operations in 2015.
- Worcester Regional Airport (ORH) is an important aviation resource that accommodates corporate GA activity and commercial airline services. Massport has continued investment in Worcester Regional Airport by acquiring and modernizing Worcester Regional Airport to better serve the commercial airline travel demands of the central Massachusetts region.

Figure 1-6 New England Regional Transportation System



- Together, with the City of Worcester, Massport is investing \$100 million over the next 10 years to revitalize and grow commercial operations at Worcester Regional Airport. As a result of this

10 Commercial Service Airports are publicly owned airports that have at least 2,500 passenger boardings each calendar year and receive scheduled passenger service. Reliever Airports are airports designated by the FAA to relieve congestion at Commercial Service Airports and to provide improved general aviation access to the overall community. General Aviation Airports are public-use airports that do not have scheduled service or have less than 2,500 annual passenger boardings.

11 Commercial airline service is defined as air transportation offered by air carriers for compensation or hire. In contrast, general aviation (GA) refers to all aviation activity other than commercial airline and military operations.

12 Reflects updated calendar year 2014 aircraft operation statistics for some regional airports based on updated FAA tower counts since the publication of the 2014 EDR. See Table 4-1 for more details.

collaboration, JetBlue Airways has already handled over 350,000 passengers at ORH since commencing operations in late 2013.

- Massport recently started construction on Worcester’s Category (CAT) III Instrument Landing System to enhance operational and safety conditions to a level equal to that of all other commercial airports in New England. This project will significantly improve Worcester Regional Airport’s all-weather reliability, a long-standing impediment to greater utilization of this airport.
- Hanscom Field (BED) is a full-service GA airport that accommodates a wide variety of GA activities, including corporate aviation, private flying, commuter air services, as well as some charters and light cargo. Located in Bedford, MA, approximately 20 miles northwest of Logan Airport, Hanscom Field is New England’s premier facility for business/corporate aviation and serves a critical role as a GA reliever airport for Logan Airport. In 2015, consistent with Hanscom Field’s role as a premier corporate airport, new hangars are being built to accommodate the need for corporate jet services.
- Massport is supporting MassDOT’s efforts to expand Boston’s South Station to meet the current and future demand for rail mobility within Massachusetts and along the Northeast Corridor (NEC). Amtrak’s NEC is an intercity rail line that operates between Boston-South Station and Washington, DC via New York City. Other major destinations served by the route include Providence, RI; New Haven, CT; Philadelphia, PA; and Baltimore, MD. Logan Airport passengers can connect directly to Boston-South Station via Silver Line bus rapid transit service or via taxi or other unscheduled modes. Overall, NEC ridership reached a new record in 2015, surpassing 2014 record levels. Amtrak’s share of the Northeast total passenger market has increased substantially since the introduction of Acela Express service in 2000. In fiscal year 2015, the NEC carried 11.7 million passengers on its Acela Express and Northeast Regional services, up 0.5 percent from the prior year. Acela Express accounted for 3.5 million passengers, while the Northeast Regional accounted for 8.2 million passengers.

Additional information is provided in Chapter 4, *Regional Transportation*.

Ground Access to and from Logan Airport

Massport has a comprehensive strategy to diversify and enhance ground transportation options for passengers and employees. The ground transportation strategy is designed to provide a broad range of high occupancy vehicle (HOV), transit, and shared-ride options for travel to and from Logan Airport and to minimize vehicle trips, by providing convenient transit, shuttle, bike, and pedestrian connections to the Airport. The strategy also aims to provide parking on-Airport for passengers choosing to drive or with limited HOV options. Massport’s strategy aims to limit impacts to the environment and community, while providing air passengers and employees with many alternatives for convenient travel to and from Logan Airport. Despite Massport’s industry-leading efforts promoting and providing HOV/shared-ride mode use, private passenger vehicle trips continue to increase with growth in air travel. As Logan Airport air traveler numbers have increased, a constrained parking supply at Logan Airport has resulted in an increase in “drop-off/pick-up” vehicle trips. The greater number of vehicle trips means increasing VMT and attendant emissions – the opposite effect of what the Logan Airport Parking Freeze regulation was intended to achieve.

Massport is implementing multiple strategies to limit impacts to the environment and to reduce the number of private vehicles that access Logan Airport and in particular, the associated environmentally undesirable

drop-off/pick-up modes,¹³ which generate up to four vehicle trips instead of two. Massport has continued to invest in and operate Logan Airport with a goal of maintaining and increasing the HOV mode share – the number of passengers and Airport employees arriving by transit or other HOV/shared-ride modes. Logan Airport continues to rank at the top of U.S. airports in terms of HOV/transit mode share, with current HOV mode share close to 30 percent.¹⁴ Measures implemented by Massport to increase HOV use include a blend of strategies related to pricing (incentives and disincentives), service availability, service quality, marketing, and traveler information. Because of the different demographics of Logan Airport air passenger travelers, no single measure alone will accomplish the goal to increase HOV mode share.

Continuing improvements to support HOV include: new Back Bay Logan Express pilot service (since May 2014); free MBTA Silver Line outbound (from Logan Airport) boardings; a new 1,100-car parking garage at the Framingham Logan Express; reduced holiday travel parking rates at Logan Express facilities; increased parking rates on the Airport; and support for private coach bus and van operators.

Key findings in 2015 are:

- Current Annual Average Daily Traffic (AADT) and annual average weekday daily traffic (AWDT) values are 2 and 5 percent (respectively) lower than peak recorded (2007) on-Airport traffic volumes despite a 19.0-percent increase in passenger levels from 2007 to 2015. VMT over the same timeframe has decreased by roughly 9 percent, although, due to changes in modeling procedures, a direct VMT comparison cannot be made.
- The total number of air passengers increased by 5.7 percent to 33.4 million in 2015, compared to 31.6 million in 2014. During the same period, VMT on-Airport increased by 6.5 percent. There are likely many factors that contribute to the change in VMT. These factors will be further investigated in the *2016 ESPR*.
- Massport continued to be in full compliance with the Logan Airport Parking Freeze regulations in 2015. Daily parking demand in 2015 more frequently approached the Parking Freeze cap as compared to 2014, despite an increase in terminal area parking rates on July 1, 2014. As one element of its comprehensive transportation strategy, Massport proposes to build up to 5,000 new on-Airport commercial parking spaces at Logan Airport. The goal of the Logan Airport Parking Project is to reduce the number of air passengers choosing more environmentally harmful drop-off/pick-up modes, which generate up to four vehicle trips instead of two. The construction of additional commercial parking spaces at Logan Airport is predicated on a regulatory change,¹⁵ by MassDEP, whereby MassDEP would amend the existing Logan Airport Parking Freeze to allow for some additional commercial parking spaces at Logan Airport. MassDEP has conducted a stakeholder consultation, which will be followed by initiating the process to

13 Drop-off/Pick-up modes can include private vehicles, taxis, and black car services. For example, if an air passenger is dropped off when they depart on an air trip and is picked-up when they return, that single air passenger generates a total of four ground-access trips: two for the drop-off trip (one inbound to Logan Airport, one outbound from Logan Airport) and two for the pick-up trip (one inbound to Logan Airport, one outbound from Logan Airport). The air passenger may be dropped off and picked up in a private vehicle or in a taxi or black car that may not carry a passenger during all segments of travel to and from Logan Airport.

14 According to the *2013 Logan Airport Air Passenger Ground Access Survey*, 27.8 percent of air passengers accessing Logan Airport used HOV modes of travel.

15 310 Code of Massachusetts Regulations 7.30.

amend the Parking Freeze regulation. Massport expects to initiate a parallel process with EEA by filing an ENF for new parking facilities sometime in early 2017.

- The 2014 EDR reported a 10.5-percent decrease in on-Airport VMT. This reflects Massport's efforts to reduce VMT through the opening of the RCC, which: (1) consolidated rental car operations to one location; (2) provides one unified rental car shuttle; (3) relocated the taxi and limousine/bus pool closer to terminal area roadways; and (4) included additional improvements to alternative transportation systems.
- Massport is currently offering a pilot program, Back Bay Logan Express, to determine whether a frequent, direct, express bus service increases HOV service from the City of Boston. This particular service has been valuable in providing an alternative to air passengers and employees who have been impacted by the temporary, two-year Government Center station closure (a key connection to the Blue Line and Logan Airport), and it provides a new transit alternative to the Airport. After the re-opening of Government Center Station in March 2016, this pilot program has continued. Ridership in 2015 for the Back Bay Logan Express totaled 290,796 passengers, an average of about 805 riders per day. In 2014, the service averaged 624 riders per day, with a total of 152,892 passengers between April 28 and December 31, 2014.

Additional information is provided in Chapter 5, *Ground Access to and from Logan Airport*.

Aviation Environmental Design Tool (AEDT)

In 2015, the FAA introduced a new combined noise and air quality modeling tool, the Aviation Environmental Design Tool (AEDT). This new tool is a software system that dynamically models aircraft performance in space and time to produce fuel burn, emissions, and noise information. As of 2015, the FAA requires airports to use AEDT for National Environmental Policy Act (NEPA) projects and soundproofing eligibility. Massport undertook initial modeling of noise and air using AEDT; however, Massport has technical concerns related to the initial results at Logan Airport. Following a briefing with the FAA, it was decided that the initial AEDT results would not be published in the 2015 EDR (pending further technical discussions with FAA's Office of Environment and Energy). Therefore, 2015 modeling for noise was performed with the FAA's Integrated Noise Model (INM) and the Emissions and Dispersion Modeling System (EDMS) for air emissions.

Massport is actively evaluating the new model and working with the FAA to develop the types of Logan Airport-specific adjustments for the AEDT model that have been used for many years in INM. Once approved by FAA, the adjustments will allow the model to more accurately reflect the noise environment at Logan Airport. Several of these custom adjustments cannot yet be implemented directly in AEDT and will need to be evaluated by Massport and approved by FAA. Massport has reached out to FAA for consideration and approval of these adjustments and, if completed in a timely fashion, AEDT is expected to be the official model for next year's 2016 ESPR. Additional information on AEDT is provided in Chapter 6, *Noise Abatement*, and Chapter 7, *Air Quality/Emissions Reduction*.

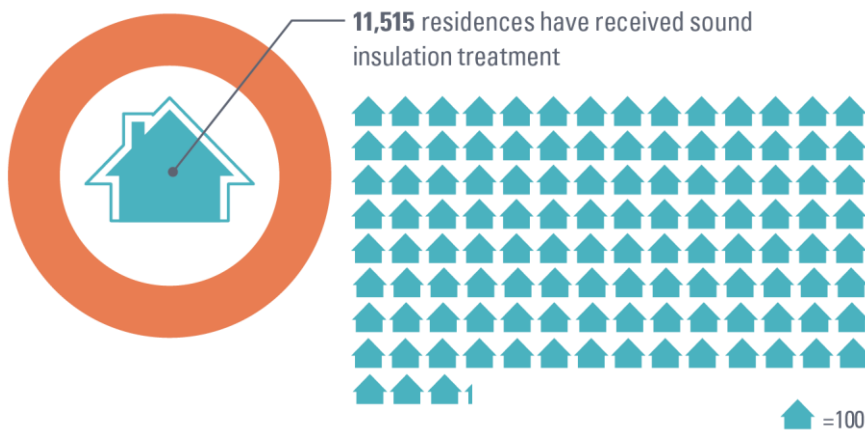
The Secretary's Certificate on the 2014 EDR states that 2015 noise contours and air quality emissions should be modeled using AEDT and compared to the most recent version of INM and EDMS. For the reasons outlined above, this 2015 EDR does not include AEDT results. Massport is actively working with the FAA to review preliminary results and to develop, at FAA's discretion, Logan Airport-specific model adjustments.

Noise Abatement

Massport strives to minimize the noise effects of Logan Airport operations on its neighbors through a variety of noise abatement programs, procedures, and other tools. At Logan Airport, Massport implements one of the most extensive noise abatement programs of any airport in the nation. Massport’s comprehensive noise abatement program includes a dedicated Noise Abatement Office; a state-of-the-art Noise and Operations Monitoring system; residential and school sound insulation programs; time and runway restrictions for noisier aircraft; ground run-up procedures; and flight tracks designed to optimize over-water operations (especially during nighttime hours¹⁶).

Massport is a national leader in sound insulation mitigation. To date, Massport has provided sound insulation for a total of 11,515 residential units, and will continue to seek funding for sound insulation for properties that are eligible and whose owners have chosen to participate (**Figure 1-7**). As of 2015, FAA requires airports to use the AEDT model to establish eligibility. Massport is working with FAA on the AEDT model as applied to Logan Airport operations.

Figure 1-7 Residences Treated through Massport Residential Sound Insulation Program (RSIP)



Since 2000, the number of daily aircraft operations at Logan Airport has declined by almost 25 percent (from 1,355 operations per day in 2000 to 1,022 operations per day in 2015) while aircraft have been experiencing increasing passenger loads. Passenger volumes continue to increase at a higher rate than aircraft operations. In 2015, the overall number of air passengers was up by 20.6 percent compared to 2000. This trend reflects an increase in the use of larger aircraft in the fleet, airline consolidation, and increased load factors on the part of airlines. Compared to 2000, in 2015:

- Jet operations made up 86 percent of operations compared to 66 percent in 2000;
- Overall operations were down by 23.6 percent while overall passengers were up by 20.6 percent compared to 2000; and
- The number of people exposed to Day-Night Average Sound Level (DNL) 65 decibels (dB) has declined by 20.6 percent since 2000.

¹⁶ Nighttime hours are defined as 10:00 PM to 7:00 AM.

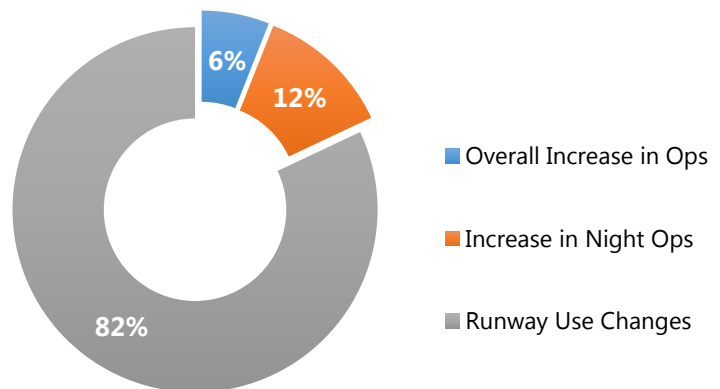
For 2014 and 2015, differences between measured and modeled noise values have narrowed even more than reported in previous EDRs and ESPRs.¹⁷ This improved accuracy in modeled results corresponds with the Airport's noise measurement equipment and monitoring system and its ability to correlate measured noise events with individual flight tracks, combined with the improvements in the INM database.

Compared to 2014, the 2015 DNL 65 dB noise contours were larger in most areas around the Airport due to changes in: (1) runway usage, primarily as a result of wind and weather conditions, (2) an increase in the number of nighttime operations, and (3) an increase in the number of overall operations. The overall number of people exposed to DNL values greater than or equal to 65 dB increased by 58.0 percent, from 8,922 people in 2014 to 14,097 people in 2015.¹⁸ Noise contour changes specific to 2015 in comparison to 2014 are discussed below.

1. Runway use changes from 2014 to 2015 were the largest factor in the increase in the number of people exposed to DNL values greater than or equal to 65 dB in 2015.
 - The DNL contour increased in East Boston and slightly in South Boston due to an increase in Runway 22R departures in 2015. Increased departures from Runway 22L also resulted in increases in Winthrop.
 - Increased arrivals to Runways 22L and 27 at night contributed to increases in Revere and Winthrop.
 - Unlike 2014, 2015 reflects almost a full year of the head-to-head night noise abatement procedures on Runway 15R-33L. While this reduces overall noise exposure by concentrating operations over water rather than over populated areas, it increases start-of-takeoff-roll noise in East Boston, north and west of the Runway 15R end.
 - Lower use of Runway 4R for arrivals in 2015 resulted in a reduction in the contour south of the Airport.

2. An additional factor influencing noise contour changes in 2015 was a 5.7-percent increase in nighttime operations (from 48,056 nighttime operations in 2014 to 50,786 nighttime operations in 2015). This increase in overall operations and nighttime operations is still well below the peak of 54,038 annual operations at night reached in 1999. As airlines have expanded to new destinations, the number of commercial operations, and in turn the number of nighttime

Figure 1-8 Reason for Increase in Number of People Exposed to DNL Values Greater than or Equal to 65 dB



17 Several factors have resulted in better agreement between measured versus modeled levels. Beginning with the 2009 EDR, flight track data and measurement data have come from the new monitoring system. The more accurate flight track data are used for the modeling inputs and for the measured aircraft event correlation.

18 Population data were derived from the most recent 2010 United States Census block data.

operations, has increased. In 2015, there was an increase of 7.5 nighttime operations per day compared to 2014.¹⁹

3. The overall increase in operations was smaller than the increase in nighttime operations (2.5 percent overall versus 5.7 percent nighttime), but contributed to the expansion of the noise contours.

The DNL and population levels in 2015 remain well below the peak levels reached in 1990 and are less than in the year 2000 when 17,745 people were exposed to DNL levels greater than or equal to DNL 65 dB.

As shown in **Figure 1-9**, the 2015 DNL 65 dB contour is somewhat larger than the 2014 DNL 65 dB contour. Almost all of the residences exposed to levels greater than or equal to DNL 65 dB in 2015 have been eligible in the past to participate in Massport's residential sound insulation program (RSIP).

Additional information is provided in Chapter 6, *Noise Abatement*.

¹⁹ DNL treats nighttime noise differently than daytime noise; for the A-weighted sound pressure levels occurring at night (between 10:00 PM and 7:00 AM) a 10 dB penalty is applied to the nighttime event.

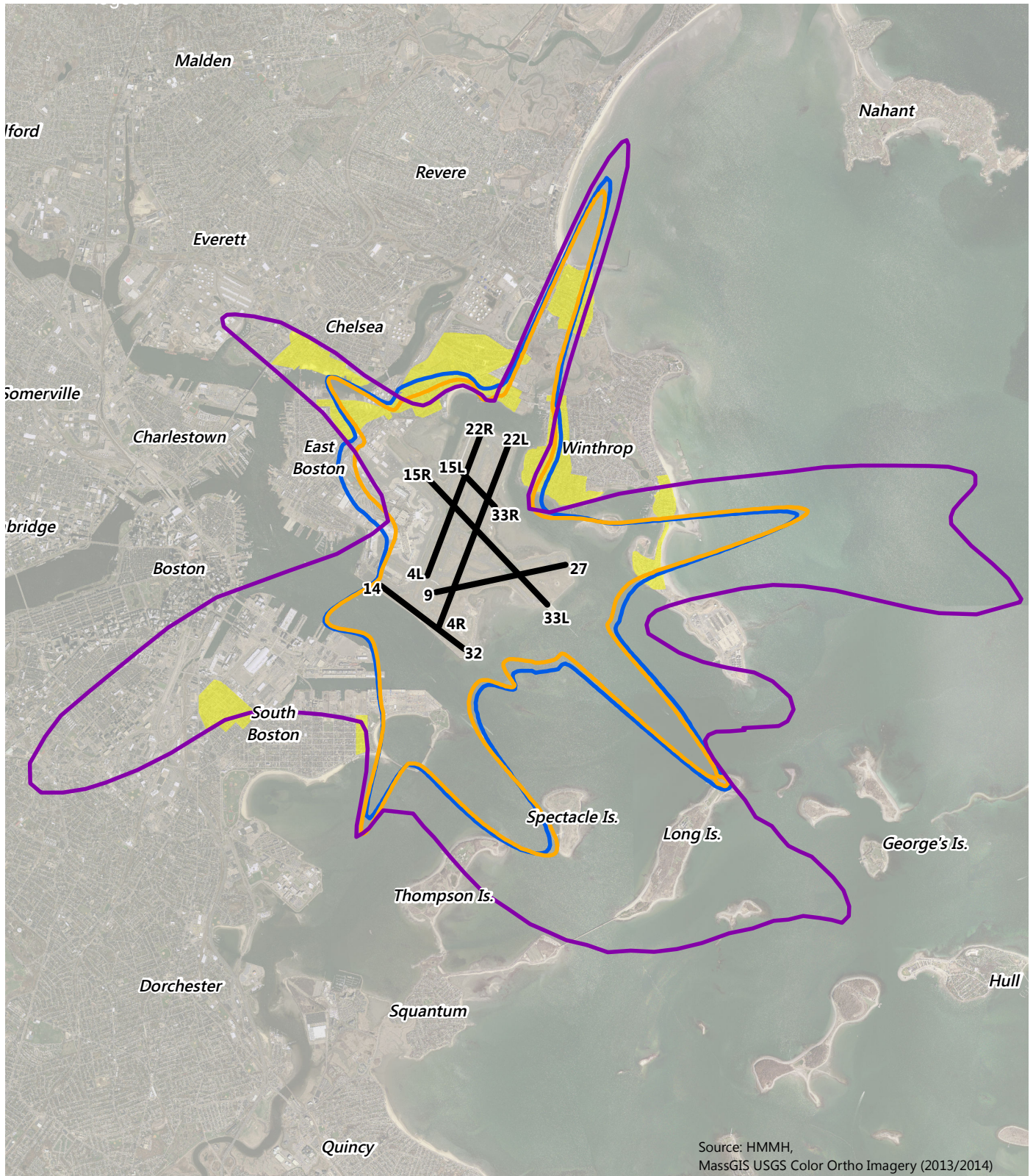


FIGURE 1-9 DNL 65 dB Contour Comparison with Historical Contour

- 1990 DNL Contour
- 2014 DNL Contour (INM 7.0d)
- 2015 DNL Contour (INM 7.0d)
- Sound Insulation Areas

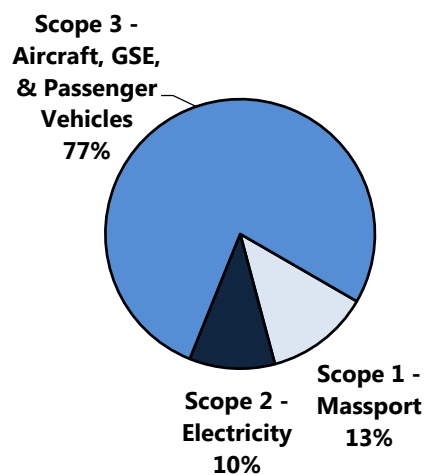


Air Quality/Emissions Reduction

Total air quality emissions from all sources associated with Logan Airport in 2015 are considerably less than they were a decade ago. This long-term downward trend is consistent with Massport’s longstanding objective to accommodate the demands of increasing passenger and cargo activity levels with fewer aircraft operations and reduced emissions. In 2015, calculated emissions of volatile organic compounds (VOCs), oxides of nitrogen (NO_x), carbon monoxide (CO), and particulate matter (PM) went up slightly compared to 2014. The increase in emissions for VOCs, NO_x, CO, and PM are primarily due to the corresponding increase in aircraft landing and take offs (LTOs) and airfield taxi times.

- Total emissions of VOCs increased by 1 percent in 2015 to 1,188 kilograms (kg)/day compared to 1,177 kg/day in 2014, which is still well below 1990 and 2000 levels.
- Total NO_x emissions increased by approximately 5 percent in 2015, to 4,262 kg/day compared to 2014 levels of 4,040 kg/day. To a lesser extent, this increase is also attributable to the increase in natural gas use by stationary sources. The increase in 2015 is still well below 1990 and 2000 levels.
- Total CO emissions increased by about 3.5 percent in 2015 to 7,243 kg/day, from 6,987 kg/day in 2014; emissions in 2015 were still well below 1990 and 2000 levels.
- Total PM₁₀/PM_{2.5} emissions also increased by about 3 percent in 2015 to 98 kg/day, from 95 kg/day in 2014.
- For nine consecutive years, Massport has voluntarily prepared a greenhouse gas (GHG) emissions inventory for the Logan Airport EDR. In 2015, total GHG emissions grew by 6 percent. As reported in past year EDRs, Logan Airport-related GHG emissions in 2015 comprised less than 1 percent of statewide totals.
- Massport’s voluntary Air Quality Initiative (AQI)²⁰ has tracked NO_x emissions since the benchmark year of 1999. In the final year of this program (2015), total NO_x emissions were 632 tons per year (tpy) lower than the 1999 benchmark. This represents an overall decrease of 27 percent in NO_x emissions over the past 15 years. Between 1999 and 2015, the greatest reductions of NO_x emissions were associated with aircraft, ground service equipment (GSE), and on-Airport motor vehicles at 17 percent, 71 percent, and

Figure 1-10 Sources of GHG Emissions, 2015



Note: Scope 1 emissions are from sources that are owned or controlled by Massport, Scope 2 emissions are from electrical consumption, which are generated off-Airport at power generating plants, and Scope 3 emissions are from aircraft, GSE, and ground transportation to and from the Airport.

²⁰ Massport adopted the AQI as a 15-year voluntary program with the overall goal to maintain NO_x emissions associated with Logan Airport at, or below, 1999 levels. This reporting year, 2015, marks the final year of the program’s operation. However, NO_x will continue to be reported in future EDRs/ESPRs as part of the Logan Airport emissions inventory.

87 percent reductions, respectively. Massport will continue to report on NO_x emissions as part of the Logan Airport emissions inventory in future EDRs/ESPRs.

Chapter 7, *Air Quality/Emissions Reduction* provides additional information.

Water Quality/Environmental Compliance and Management

Massport's approach to environmental management and compliance is a key component of its commitment to sustainability and responsible stewardship at Logan Airport (refer to the following section of this chapter for details). Through monitoring and documentation, environmental performance is assessed, allowing policies and programs to be developed, implemented, evaluated, and continuously improved.

Massport is responsible for ensuring compliance with applicable state and federal environmental laws and regulations. Massport promotes appropriate environmental practices through pollution prevention and remediation measures. Massport also works closely with Airport tenants and Airport operations staff in an effort to improve compliance. The following summarizes the key water quality and compliance findings for 2015.

- The most recent International Organization for Standardization (ISO) 14001 Environmental Management System (EMS) certification audit took place in June 2014, and a certificate was issued in July 2014; and is valid through July 2017. Massport holds regular meetings to meet regulatory requirements and improve environmental performance beyond compliance.
- Massport's Stormwater Pollution Prevention Plan (SWPPP) addresses stormwater pollutants in general and also addresses deicing and anti-icing chemicals, potential bacteria, fuel and oil, and other potential sources of stormwater pollutants.²¹
- In 2015, approximately 99 percent of samples were in compliance with standards (Table J-15). Due to the large size of the drainage areas and relatively low concentration of pollutants, it is not always possible to trace exceedances to specific events. Where a known event such as a spill is reported, Massport routinely checks the drainage system for impacts from the event and takes corrective actions if necessary.
- Out of 160 samples (inclusive of oil and grease, total suspended solids, and pH at North, West, Porter Street, and Maverick Street Outfalls), 158 were at or below National Pollutant Discharge Elimination System (NPDES) permit limits.
 - One outfall sample out of a total of 20 samples at the North Outfall and one sample out of a total of 19 samples at the West Outfall exceeded the regulatory limits of the NPDES permit for oil and grease and total suspended solids (TSS), respectively. The oil and grease exceedance at the North Outfall was reported in February 2015 and the TSS exceedance at the West Outfall was reported in September 2015, as required.

²¹ The 2015 Annual Certificates of Compliance were submitted to the Environmental Protection Agency (EPA) and MassDEP on December 17, 2015, for Massport and each co-permittee.

- In 2015, there were 16 oil and hazardous material spills that required reporting to MassDEP, seven of which involved a storm drainage system.²² All spills were adequately addressed with no adverse impacts to water quality.
- In accordance with the Massachusetts Contingency Plan (MCP), Massport continues to assess, remediate, and bring to regulatory closure areas of subsurface contamination. Massport is working towards achieving regulatory closure of the remaining Logan Airport MCP sites associated with known releases, as well as addressing sites encountered during construction.

Chapter 8, *Water Quality/Environmental Compliance and Management* provides additional information.

Sustainability at Logan Airport

Massport is committed to a robust sustainability program.

Sustainability has redefined the values and criteria for measuring organizational success by using a "triple bottom line" approach that considers economic, ecological, and social well-being. Applying this approach to decision-making is a practical way to optimize economic, environmental, and social capital. Massport is taking a broad view of sustainability that builds upon the triple bottom line concept, and considers the airport-specific context.

Figure 1-11 EONS Approach to Sustainability



Consistent with the Airports Council International - North America's (ACI-NA) definition of Airport Sustainability²³ (**Figure 1-11**), Massport is focused on a holistic approach to managing Logan Airport to ensure Economic viability, Operational efficiency, Natural resource conservation, and Social responsibility (EONS). Massport is committed to implementing environmentally sustainable practices Airport- and Authority-wide, and continues to make progress on a range of initiatives. The following sections summarize many of the long-term and multifaceted sustainability initiatives undertaken by Massport, which individual chapters of this 2015 EDR more fully describe, where appropriate.

Logan Airport Sustainability Management Plan (SMP)

Massport is committed to reducing local environmental impacts without sacrificing service level; Massport's robust sustainability program is indicative of this commitment. In 2013, Massport was awarded a grant by the FAA to prepare a SMP for Logan Airport. The Logan Airport SMP planning effort began in

²² State environmental regulations require that oil spills of 10 gallons or more in volume be reported to MassDEP.

²³ Airport Council International (ACI). Airport Sustainability: A Holistic Approach to Effective Airport Management. Undated. <http://www.aci-na.org/static/entransit/Sustainability%20White%20Paper.pdf>. Accessed July 17, 2013.











May 2013 and was completed in April 2015. The Logan Airport SMP takes a broad view of sustainability including economic vitality, social responsibility, operational efficiency, and natural resource conservation considerations. The Logan Airport SMP is intended to promote and integrate sustainability Airport-wide and to coordinate on-going sustainability efforts across the Authority. The Logan Airport SMP developed a framework and implementation plan, with metrics and targets, designed to track progress over time. Massport is currently advancing a series of short-term initiatives to help reach its goals (**Table 1-1**) in the areas of energy and greenhouse gas emissions; community, employee, and passenger well-being; resiliency; materials, waste management, and recycling; and water conservation. The Logan Airport SMP is available online at <https://www.massport.com/environment/sustainability-management-plan>.

Logan Airport Sustainability Goals

As part of the Logan Airport SMP, Massport set goals to improve Logan Airport's performance in ten sustainability categories: energy and GHG emissions; water conservation; community, employee, and passenger well-being; materials, waste management, and recycling; resiliency; noise abatement; air quality improvement; ground access and connectivity; water quality/stormwater; and natural resources.

Table 1-1 describes each goal, as the Logan Airport SMP defines them. Massport reports its progress towards achieving each goal, including changes in related performance, in sustainability reports. Massport released its first annual sustainability report in 2016, which is available on Massport's website at <https://www.massport.com/environment/sustainability-management-plan/2016-logan-airport-annual-sustainability-report/>.

Table 1-1 Logan Airport Sustainability Goals and Descriptions

Sustainability Category	Goal	Sustainability Category	Goal
Energy and Greenhouse Gas (GHG) Emissions 	Reduce energy intensity and GHG emissions while increasing portion of Logan Airport’s energy generated from renewable sources.	Water Conservation 	Conserve regional water resources through reduced potable water consumption.
Community, Employee, and Passenger Well-being 	Promote economically prosperous and healthy communities and passenger and employee well-being.	Materials, Waste Management, and Recycling 	Reduce waste generation, increase the recycling rate, and utilize environmentally sound materials.
Resiliency 	Become an innovative model for resiliency planning and implementation among port authorities.	Noise Abatement 	Minimize noise impacts from Logan Airport’s operation.
Air Quality Improvement 	Decrease emissions of air quality criteria pollutants from Logan Airport sources.	Ground Access and Connectivity 	Provide superior ground access to Logan Airport through alternative and HOV travel modes.
Water Quality/Stormwater 	Protect water quality and minimize pollutant discharges.	Natural Resources 	Protect and restore natural resources near Logan Airport.

Sustainability in Planning, Design, and Construction

The following sections outline Massport’s sustainability achievements in the planning, design, and construction of its projects.



Leadership in Energy and Environmental Design (LEED®)-Certified Facilities at Logan Airport

The United States Green Building Council (USGBC) LEED rating system is the most widely recognized third-party green building certification system in North America. Massport is striving to achieve LEED certification for all new and substantial renovation building projects over 20,000 square feet. Some recent examples of LEED-certified buildings at Logan Airport are the new RCC and the Green Bus Depot (**Figure 1-12** and **Table 1-2**). The new RCC in the SWSA began construction in 2010 and was completed in 2013. Massport is very proud that the RCC obtained Logan Airport’s first LEED Gold Certification in 2015. The LEED-Silver Green Bus Depot shifted bus maintenance operations on-Airport from an off-Airport location, which reduced bus trips and unnecessary emissions on congested neighborhood roadways. Further details are available in Chapter 3, *Airport Planning*.

Figure 1-12 LEED-Certified Facilities at Logan Airport



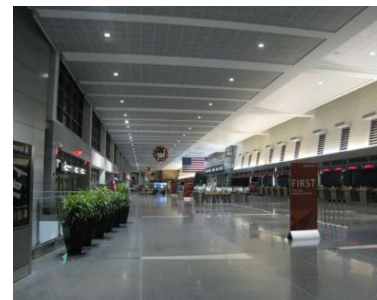
Sustainable Design Standards and Guidelines and LEED Certification

For smaller building projects and non-building projects, Massport uses its *Sustainable Design Standards and Guidelines* (SDSG) to incorporate sustainability. The SDSG, revised and reissued in March 2011, provides a framework for sustainable design and construction for both new construction and rehabilitation projects. The SDSG applies to a wide range of project-specific criteria, such as site design, project materials, energy management and efficiency, air emissions, water management quality and efficiency, indoor air quality, and occupant comfort. Massport has used the new standards to guide over \$200 million in capital projects Authority-wide between fiscal years 2010 to 2013, including over \$30 million for maritime projects. In addition to SDSG, Massport strives to attain LEED Certification for eligible projects. In 2014, the Green Bus Depot was certified as LEED Silver and in 2015, the RCC was certified as LEED Gold.

Table 1-2 LEED-Certified Facilities at Logan Airport

Terminal A (LEED Certified) Completed 2005/2006

- Priority curb locations for high occupancy vehicles (HOV) and bicycles
- Retrofitting with solar panels on the Terminal A roof
- Stormwater filtration
- Reflective roof
- Water use reduction features
- Natural daylighting paired with advanced lighting technologies for energy efficiency
- Use of recycled and regionally sourced materials
- Measures to enhance indoor air quality



Signature Flight Support General Aviation Facility (LEED Certified) Completed 2007/2008

- Mechanisms to reduce water use
- Natural day lighting paired with advanced lighting technologies for energy efficiency
- Window glazing and sunshades to maximize daylight and minimize heat build-up
- Recycled and regionally sourced materials
- Measures to enhance indoor air quality



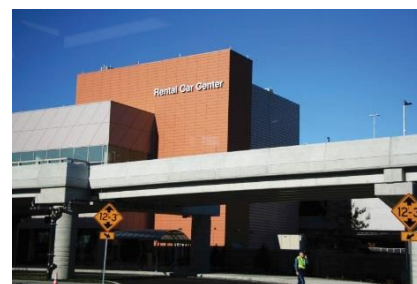
Green Bus Depot (LEED Silver Certified) Completed 2012

- Rooftop solar panels
- Water and energy saving features
- Vehicle miles traveled (VMT) reduction
- New shuttle fleet including 50 clean diesel/electric hybrid buses and CNG buses
- Sustainably grown, harvested, produced, and transported building materials



Rental Car Center (RCC) (LEED Gold Certified) Completed 2013

- Green building materials
- Rooftop solar panels
- Bike and pedestrian access and connections
- Natural day lighting paired with advanced lighting technologies for energy efficiency
- Use of recycled and regionally sourced materials
- Enhanced indoor air quality
- Plug-in stations for electric vehicles and other alternative fuel sources such as E-85 (ethanol)
- Rental car fleets which include hybrid/alternative fuel/low emitting vehicles
- Pedestrian connections
- Bicycle facilities and employee showers/changing
- Water reclamation for vehicle wash water, and use of stormwater for non-potable uses such as vehicle washing and landscaping irrigation
- VMT reduction



Logan Airport Environmental Review Process

This *2015 EDR* is part of a well-established, state-level environmental review process that assesses Logan Airport's cumulative environmental impacts. The process provides a context against which individual projects at Logan Airport meeting state and federal environmental review thresholds are evaluated on a project-specific basis. The Airport-wide and project-specific environmental review processes are described below.

Historical Context for the Logan Airport EDR/ESPR

In 1979, the Secretary of the Executive Office of Environmental Affairs (EEA) issued a Certificate requiring Massport to define, evaluate, and disclose, every three years, the impact of long-term growth at the Airport through a Generic Environmental Impact Report (GEIR). The Certificate also required interim Annual Updates to provide data on conditions for the years between GEIRs. The GEIR evolved into an effective planning tool for Massport and provided projections of environmental conditions so that the cumulative effects of individual projects could be evaluated within a broader context.

EEA eliminated GEIRs following the 1998 revisions to its MEPA Regulations. However, the Secretary's Certificate on the 1997 Annual Update²⁴ proposed a revised environmental review process for Logan Airport resulting in Massport's preparation of subsequent EDRs/ESPRs. The more comprehensive ESPRs provide a long-range analysis of projected operations and passengers and cumulative impacts, while EDRs are prepared annually to provide a review of environmental conditions for the reporting year compared to the previous year. The EDR/ESPR process was developed to allow individual projects at Logan Airport to be considered and analyzed in the broader, Airport-wide context. As stated in the introduction to the *1999 ESPR*, "while the Logan ESPR and EDRs provide the broad planning context for projects proposed for Logan Airport and future planning concepts under consideration by Massport, no specific projects can be built solely on the basis of inclusion and discussion in the *1999 ESPR*." It continues to state that projects that meet MEPA or NEPA review thresholds must undergo those processes, as needed. In short, the EDRs/ESPRs provide a planning context which complements the individual project-specific filings.

In the last several years, aircraft operations and passenger activity levels and associated environmental effects have remained well below levels previously analyzed for Logan Airport. Thus, the forecasted aviation growth presented in the *2004 ESPR*, the predicate upon which the ESPR schedule was initially established, has not occurred. Accordingly, with the approval of the Secretary, Massport prepared *2009* and *2010 EDRs* in lieu of the ESPR originally planned for 2009. The *2011 ESPR*, filed in early 2013, reported on calendar year 2011 and updated passenger activity level and aircraft operations forecasts. The *2012/2013 EDR* presented conditions for both calendar years 2012 and 2013. The *2014 EDR* presented conditions for calendar year 2014.

This *2015 EDR* provides a comprehensive, cumulative analysis of the effects of all Logan Airport activities based on actual passenger activity and aircraft operation levels in 2015, and presents environmental

²⁴ Certificate of the Secretary of the Executive Office of Environmental Affairs on the Logan Airport 1997 Annual Update, issued on October 16, 1998.

management plans for addressing areas of environmental concern. Massport proposes to prepare a 2016 *ESPR* to report on activity levels and environmental conditions for that year and projections through 2035, and anticipates publishing this report in early 2018. Where appropriate, Massport will continue to identify and address any longer-term aviation and environmental trends in both EDRs and *ESPRs*. As directed in the Secretary's Certificate on the Terminal E Modernization Project ENF, the EDR/*ESPR* will continue to be the forum to address cumulative, Airport-wide impacts.

Project-Specific Review

While this Airport-wide review provides the broad planning context for proposed projects and future planning concepts, certain Airport projects are also subject to a project-specific, public environmental review process when they meet state environmental review thresholds. When required, Massport and Airport tenants submit ENFs and EIRs pursuant to MEPA. Similarly, where NEPA²⁵ environmental review is triggered, projects are reviewed under the NEPA environmental review process.

Organization of the 2015 EDR

The remainder of this 2015 *EDR* includes:

- **Spanish Executive Summary**, a translated version of the Executive Summary is included after the English-version of Chapter 1, *Introduction/Executive Summary*.
- **Chapter 2, Activity Levels**, presents aviation activity statistics for Logan Airport in 2015 and compares activity levels to the prior year. The specific activity measures discussed include air passengers, aircraft operations, fleet mix, and cargo/mail volumes.
- **Chapter 3, Airport Planning**, provides an overview of planning, construction, and permitting activities that occurred at Logan Airport in 2015. It also describes known future planning, construction, and permitting activities and initiatives.
- **Chapter 4, Regional Transportation**, describes activity levels at New England's regional airports in 2015 and updates recent regional planning activities.
- **Chapter 5, Ground Access to and from Logan Airport**, reports on transit ridership, roadways, traffic volumes, and parking for 2015.
- **Chapter 6, Noise Abatement**, updates the status of the noise environment at Logan Airport in 2015 and describes Massport's efforts to reduce noise levels.
- **Chapter 7, Air Quality/Emissions Reduction**, provides an overview of Airport-related air quality in 2015 and efforts to reduce emissions.
- **Chapter 8, Water Quality/Environmental Compliance and Management**, describes Massport's ongoing environmental management activities including National Pollutant Discharge Elimination System (NPDES) compliance, stormwater, fuel spills, activities under the Massachusetts Contingency Plan (MCP), and tank management.

25 42 USC Section 4321 et seq. The Federal Aviation Administration (FAA) implements NEPA through FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, Federal Aviation Administration, United States Department of Transportation, Effective Date: March 20, 2006.

- **Chapter 9, Project Mitigation Tracking**, reports on Massport's progress in meeting its MEPA Section 61²⁶ mitigation commitments for specific Airport projects.

Supporting appendices include:

MEPA Appendices: These include the Secretary of EEA's Certificate on the *2014 EDR*, comment letters received on the *2014 EDR* and responses to those comments, Secretary Certificates on the annual reports issued for reporting years 2011 through 2014, a list of reviewers to whom this *2015 EDR* was distributed, and a proposed scope for the *2016 ESPR*. Also included in this section are the Secretary's Certificates on the Terminal E Modernization Project ENF, Draft EA/EIR, and Final EA/EIR.

Appendix A – MEPA Certificates and Responses to Comments²⁷

Appendix B – Comment Letters and Responses

Appendix C – Proposed Scope for the 2016 ESPR

Appendix D – Distribution List

Technical Appendices:²⁸ These include detailed analytical data and methodological documentation for the various environmental analyses presented in and conducted for this *2015 EDR*.

Appendix E – Activity Levels

Appendix F – Regional Transportation

Appendix G – Ground Access

Appendix H – Noise Abatement

Appendix I – Air Quality/Emissions Reduction

Appendix J – Water Quality/Environmental Compliance and Management

Appendix K – 2015 and 2016 Peak Period Pricing Monitoring Report

Appendix L – Reduced/Single Engine Taxiing at Logan Airport Memoranda

26 Massachusetts General Law, Chapter 30, Section 61 (M.G.L. c. 30, § 61) states that all agencies must review, evaluate, and determine environmental impacts of all projects or activities and shall use all practicable means and measures to minimize damage to the environment. For projects requiring an Environmental Impact Report, Section 61 Findings will specify all feasible measures to be taken to avoid or mitigate environmental impacts, the party responsible for funding the mitigation measures, and the anticipated implementation schedule for mitigation measures.

27 The Secretary's Certificates on the Terminal E Modernization Project Environmental Notification Form, Draft Environmental Assessment/Environmental Impact Report, and Final Environmental Assessment/Environmental Impact Report are included in Appendix A. For convenience, Massport has responded to comments that relate to the EDR and ESPR.

28 Technical appendices are included on the attached CD.

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