BOSTON LOGAN INTERNATIONAL AIRPORT

2018/2019 EDR
ENVIRONMENTAL DATA REPORT

December 2020

EEA #3247

SUBMITTED TO

Executive Office of Energy and Environmental Affairs, MEPA Office

SUBMITTED BY

Massachusetts Port Authority
Strategic & Business Planning

PREPARED BY

vhb

IN ASSOCIATION WITH

Harris Miller Miller & Hanson
KB Environmental Sciences
ICF
Inter*VISTAS* Consulting

BOSTON LOGAN INTERNATIONAL AIRPORT

2018/2019 EDR
ENVIRONMENTAL DATA REPORT

December 2020

EEA #3247

SUBMITTED TO

Executive Office of Energy and Environmental Affairs, MEPA Office

SUBMITTED BY

Massachusetts Port Authority
Strategic & Business Planning

PREPARED BY

vhb

IN ASSOCIATION WITH

Harris Miller Miller & Hanson
KB Environmental Sciences
ICF
Inter*VISTAS* Consulting

Printed on recycled paper.

Massachusetts Port Authority
One Harborside Drive
East Boston, MA 02128-2909
Telephone (617) 568-5000
www.massport.com

December 31, 2020

The Honorable Kathleen A. Theoharides, Secretary
Executive Office of Energy and Environmental Affairs
Attn: Anne Canaday, EEA 3247
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Re: Boston Logan International Airport 2018/2019 Environmental Data Report - EEA #3247

Dear Secretary Theoharides and Director Kim:

On behalf of the Massachusetts Port Authority (Massport), we are pleased to submit this *2018/2019 Environmental Data Report* (EDR) for Boston Logan International Airport. This filing continues Massport's nearly four-decade practice of providing an extensive record of Logan Airport environmental trends, facility planning, operations and passenger data, and Massport's mitigation commitments. As a follow-up to the *2017 Environmental Status and Planning Report (ESPR)*, and with the Secretary's approval, this EDR combines reporting for 2018 and 2019.

This EDR was prepared in 2020 during the ongoing COVID-19 worldwide pandemic. Accordingly, Massport has strived to include relevant updates through fall 2020. The dramatic nature of the COVID-19 pandemic, and its impacts to the broader world, the U.S. and local economies, and to the aviation industry in particular, triggered a significant decline in Massport's financial condition, causing deferrals to projects or programs that were in place in 2018 and 2019 and planned for 2020 and beyond.

Beginning in March 2020, flights in and out of Logan Airport were dramatically reduced and passenger levels dropped by over 90 percent at the peak of the pandemic in the spring and summer of 2020. As a result, there are far fewer aircraft operations and passengers and a dramatic drop in overall Logan Airport activity. While activity levels began a slow recovery in mid-summer 2020, the ongoing wave of COVID-19 cases has resulted in continued historically low levels of activity, with a full recovery years away. As of October 2020, total flight operations are down by 50 percent and passenger levels are down by about 70 percent compared to 2019. Massport expects 2020 annual passenger levels to have dropped to levels of activity not seen since the mid-1970s.

As a result of this significant reduction in Airport activity and dramatic reduction in revenues, both Massport and our airline and other tenants have adjusted their capital and operations plans. Concurrently, the schedule for a number of Airport projects and programs have been revised significantly. In an effort to be as transparent as possible, Chapter 3, *Airport Planning* includes the most current project updates through October 2020.

The growth at Logan Airport that was experienced through early 2020 was tied closely to the strong local, regional, national, and international economies and its role as the major airport to a region that is the home to world-class educational and medical institutions, cutting-edge technology companies, rich historical resources, and extensive tourism. Logan Airport's recovery and the timeframe once the COVID-19 pandemic ends will similarly be driven by the national and regional economic recovery.

Massport continues to evaluate and plan for the recovery of aircraft operations and air passenger activity and remains committed to implementing the broad range of environmental and operating strategies designed to reduce the impacts associated with Airport operations. However, there is high uncertainty regarding the duration of Massport's financial crisis and the timing of flights, passenger, and business recovery. As a result, the deferral of certain projects and programs will be evaluated on an ongoing basis. Forthcoming EDRs will continue to provide operations, project, and programmatic updates, as available.

As we look forward, Massport will continue to seek opportunities to implement measures designed to reduce Logan Airport's operating and environmental impacts. Such measures will be tied to High Occupancy Vehicle (HOV) strategies, noise abatement procedures, emission reduction and energy efficiency measures, as well as continued information sharing with interested stakeholders and our neighbors. Additionally, this EDR, in response to community input, includes an expansion of the discussions on the evolving science and studies of aircraft noise and emissions and associated public health investigations. Through both this EDR and future EDRs/ESPRs, we hope both to share most recent, available information and, where possible, support those studies that will ultimately guide evolving regulations and mitigation strategies.

EDR Content and Structure

The *2018/2019 EDR* responds to the Secretary's Certificate on the *Boston Logan International Airport 2017 ESPR* dated November 25, 2019. The EDR also updates 2018 and 2019 (and later where available) conditions for the following categories:

- Passenger levels, aircraft operations, aircraft fleets, and cargo volumes;
- Planning, design, and construction activities at Logan Airport;
- Regional transportation statistics and initiatives;
- Key environmental indicators (Ground Access, Noise Abatement, Air Quality/Emissions Reduction, and Environmental Compliance and Management/Water Quality);
- Status of Logan Airport project mitigation; and
- Sustainability initiatives.

The *2018/2019 EDR* includes the Secretary's Certificate on the *2017 ESPR* and associated comment letters. Recent Certificates received on the Logan Airport Parking Project (EEA# 15665) and Terminal E Modernization Project (EEA# 15434), which included items to be addressed in future EDRs and the ESPR are also included. Appendix D, *Distribution* presents the EDR distribution list and supporting technical appendices are included in the attached CD.

Review Period, Distribution, and Consultation

Massport has requested EEA's consideration of an *extended* 45-day public comment period for this EDR in consideration of the multi-year nature of this document. Based on this request, the public comment period will begin on January 6, 2021, the publication date of the next MEPA *Environmental Monitor*, and will end on February 22, 2021. The distribution list included as Appendix D indicates which listed parties will receive a printed copy of this EDR or notice of availability with a link to the document on Massport's website. As with the recent EDRs and other Massport environmental filings, this EDR is presented in its entirety on Massport's website (http://www.massport.com/massport/about-massport/project-environmental-filings/).

A public virtual consultation session on the *2018/2019 EDR* will be planned for late January/early February 2021. Details on the date of the meeting will be posted on Massport's website at https://www.massport.com/massport/about-massport/project-environmental-filings/. Additional copies of the *2018/2019 EDR* may be obtained by calling (617) 568-3546 or emailing bwashburn@massport.com during the public comment period.

We look forward to your review of this document and to consultation with the MEPA Office and other reviewers. Please feel free to contact me at sdalzell@massport.com, if you have any questions.

Sincerely,

Massachusetts Port Authority

Stewart Dalzell, Deputy Director
Environmental Planning & Permitting,
Strategic & Business Planning Department

cc: J. Barrera, F. Leo, A. Coppola, C. McDonald, B. Washburn/Massport

This Page Intentionally Left Blank.

Table of Contents

List of Appendices

MEPA Appendices

Technical Appendices (Located on the Attached CD)

List of Tables

List of Figures

Figure No.	Description	Page

This Page Intentionally Left Blank.

Acronyms

This section provides a list of acronyms and abbreviations that are found in the *2018/2019 EDR*.

A

AAAE	American Association of Airport Executives
AADT	Annual Average Daily Traffic
ACI-NA	Airports Council International – North America
ACRP	Airport Cooperative Research Program
ASCENT	Aviation Sustainability Center
AEDT	Aviation Environmental Design Tool
AFV	Alternative Fuel Vehicle
ALP	Airport Layout Plan
APU	Auxiliary Power Unit
ARFF	Airport Rescue and Fire Fighting
ARRA	American Recovery and Reinvestment Act
ASPM	Aviation System Performance Metrics
AST	Aboveground Storage Tanks
ATMS	Automated Traffic Monitoring System
AUL	Activity and Use Limitation
AWDT	Annual Average Weekday Daily Traffic
AWEDT	Annual Average Weekend Daily Traffic

B

BC	Black Carbon
BDL	Bradley International Airport, CT airport code
BED	Hanscom Field, MA airport code
BGR	Bangor International Airport, ME airport code
BIF	Bird Island Flats
BLANS	Boston Logan Airport Noise Study
BMP	Best Management Practice
BOS	Boston Logan International Airport, MA airport code
BRT	Bus Rapid Transit
BTV	Burlington International Airport, VT airport code
BWSC	Boston Water and Sewer Commission

C

CAA	Clean Air Act
CAA	Connecticut Airport Authority
CAC	Community Advisory Committee
CACI	Clean Air Construction Initiative
CAEP	Committee on Aviation Environmental Protection
CAGR	Compound Annual Growth
CA/T	Central Artery/Tunnel
CAT III	Category III (instrument landing system)

CBP	U.S. Customs and Border Protection
CEDDS	Complete Economic and Demographic Data Source
CFC	Chlorofluorocarbon
CH_4	Methane
CMR	Code of Massachusetts Regulations
CNG	Compressed Natural Gas
CNI	Cumulative Noise Index
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2eq	CO_2 equivalents
CONEG	Conference of New England Governors
ConnDOT	Connecticut Department of Transportation
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
CRO	Converging Runway Operations
CTPS	Central Transportation Planning Staff
CY	Calendar Year

D

dB	Decibel
dBA	A-weighted decibel
DERA	Diesel Emission Reduction Act
DFS	Department of Fire Services
DIRP	Disaster and Infrastructure Resiliency Planning Study
DNL	Day-Night Average Sound Level
DPH	Department of Public Health
DOT	U.S. Department of Transportation

E

EA	Environmental Assessment
EDR	Environmental Data Report
EDMS	Emissions and Dispersion Modeling System
EEA	Executive Office of Energy and Environmental Affairs
eGSE	Electric Ground Service Equipment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMAS	Engineered Materials Arresting System
EMS	Environmental Management System
ENF	Environmental Notification Form
EPA	U.S. Environmental Protection Agency
EPNL	Effective Perceived Noise Level
EPNdB	Effective Perceived Noise Level (units)
ESMF	Equipment Storage and Maintenance Facility
ESPR	Environmental Status and Planning Report
EV	Electric Vehicle

F

FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FDS	Fuel Distribution System
FEIR	Final Environmental Impact Report
FIS	Federal Inspection Services

FOA	First Order Approximation
FONSI	Finding of No Significant Impact
FRA	Federal Railroad Administration
FY	Fiscal Year

G

GA	General Aviation
GAO	Government Accounting Office
GDP	Gross Domestic Product
GEIR	Generic Environmental Impact Report
GHG	Greenhouse Gas
GIS	Geographic Information Systems
gpm	gallons per minute
GPS	Global Positioning System
GSA	General Services Administration
GSE	Ground Service Equipment
GTOC	Ground Transportation Operations Center
GWP	Global Warming Potential

H

HAPS	Hazardous Air Pollutants
HCFC	Hydrochlorofluorocarbon
HOV	High Occupancy Vehicle
HVAC	Heating, Ventilation, and Air Conditioning
HVN	Tweed New Haven Airport, CT airport code
Hz	Hertz

I

IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ILS	Instrument Landing System
INM	Integrated Noise Model
IPCC	Intergovernmental Panel on Climate Change
IRA	Immediate Response Action
ISA	Inclined Safety Area
ISO	International Organization for Standardization

J

JFK	John F. Kennedy International Airport, NY airport code
JOC	Joint Operations Center

K

kBTU	Thousand British Thermal Units
kg	Kilogram
kWh	Kilowatt-hours

L

lbs	Pounds
LCC	Low-Cost Carriers
LDMS	Logan Dispersion Modeling System
LED	Light-Emitting Diode
LEED®	Leadership in Energy and Environmental Design
LIAG	Logan Impact Advisory Group
LTO	Landing and Takeoff

M

M.G.L.	Massachusetts General Laws
MAPC	Metropolitan Area Planning Council
MassDEP	Massachusetts Department of Environmental Protection
MassDMF	Massachusetts Division of Marine Fisheries
MassDOT	Massachusetts Department of Transportation
Massport	Massachusetts Port Authority
MBTA	Massachusetts Bay Transportation Authority
MCO	Orlando International Airport, FL airport code
MCP	Massachusetts Contingency Plan
MEPA	Massachusetts Environmental Policy Act
MHT	Manchester-Boston Regional Airport, NH airport code
MIT	Massachusetts Institute of Technology
MMT	Million Metric Tons
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOVES	Motor Vehicle Emission Simulator
MPO	Metropolitan Planning Organization
mph	Miles per hour
MT	Metric tones

N

NA	Not Available
NAAQS	National Ambient Air Quality Standards
NCA	North Cargo Area
NCI	Noise Complaint Initiative
NEC	Northeast Corridor
NEG/ECP	Conference of New England Governors and Eastern Canadian Premiers
NEPA	National Environmental Policy Act of 1969
NERASP	New England Regional Airport System Plan
NHESP	Natural Heritage and Endangered Species Program
NO_2	Nitrogen dioxide
NOMS	Noise and Operations Monitoring System
NO_x	Nitrogen oxides
NPC	Notice of Project Change
NPDES	National Pollutant Discharge Elimination System
NPSI	Noise Per Seat Index
NSA	North Service Area

O

O_3	Ozone
ORH	Worcester Regional Airport, MA airport code
ORT	Ozone Transport Region
O&D	Origin and Destination

P

PAH	Polycyclic Aromatic Hydrocarbon
PARC	Parking and Revenue Control
PARTNER	Partnership for Air Transportation Noise and Emissions Reduction
PATCO	Professional Air Traffic Controllers Organization
Pb	Lead
PBN	Performance-Based Navigation

PCA	Pre-Conditioned Air
PM	Particulate Matter (e.g., PM_{10}, $PM_{2.5}$)
ppm	Parts per million
PPA	Power Purchase Agreement
PRAS	Preferential Runway Advisory System
PSM	Portsmouth International Airport at Pease, NH airport code
PVD	T.F. Green Airport, Warwick RI airport code
PWM	Portland International Jetport, ME airport code

Q

QTA	Quick Turnaround Areas

R

RACT	Reasonably Available Control Technology
RAM	Release Abatement Measure
RAO	Response Action Outcome
RCC	Rental Car Center
REC	Renewable Energy Credit
RFI	Request for Information
RFP	Request for Proposals
RIAC	Rhode Island Airport Corporation
RideApp	Ride Application such as Uber or Lyft
RIDOT	Rhode Island Department of Transportation
RIM	Runway Incursion Mitigation
RJ	Regional Jet
RNAV	aRea Navigation
ROD	Record of Decision
RON	Remain Over Night
RNP	Required Navigation Performance
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RSIP	Residential Sound Insulation Program
RTC	Regional Transportation Center
RTN	Release Tracking Number

S

SAF	Sustainable Aviation Fuel
SCA	South Cargo Area
SDSG	Sustainable Design Standards and Guidelines
SIP	State Implementation Plan
SL1	Silver Line
SMART	Solar Massachusetts Renewable Target Program
SMP	Sustainability Management Plan
SO_2	Sulfur dioxide
SOV	Single Occupancy Vehicle
SPCC	Spill Prevention Control and Countermeasure Plan
SPL	Sound Pressure Level
SRE	Snow Removal Equipment
STEM	Science, Technology, Engineering, and Mathematics
SWPPP	Stormwater Pollution Prevention Plan
SWSA	Southwest Service Area

T

TA	Time Above
TAA	Tenant Alteration Application
TAF	Terminal Area Forecast
TDM	Transportation Demand Management
TIM	Time-in-Mode
TMA	Transportation Management Association
TNC	Transportation Network Company, also known as RideApp
tpy	Tons per year
TRB	Transportation Research Board
TSA	Transportation Security Administration
TSS	Total Suspended Solids

U

UAS	Unmanned Aircraft Systems
UFP	Ultrafine Particles
ULCC	Ultra Low-Cost Carriers
USC	United States Code
USGBC	U.S. Green Building Council
UST	Underground Storage Tank

V

VALE	Voluntary Airport Low Emissions Program
VMT	Vehicle Miles Traveled
VNM	Virtual Noise Monitors
VOC	Volatile Organic Compounds
VW	Volkswagen

W

WET	Whole Effluent Toxicity
WHO	World Health Organization

Other

$\mu g/m^3$	Micrograms of pollutant per cubic meter
µm	Micrometers

1

Introduction/Executive Summary

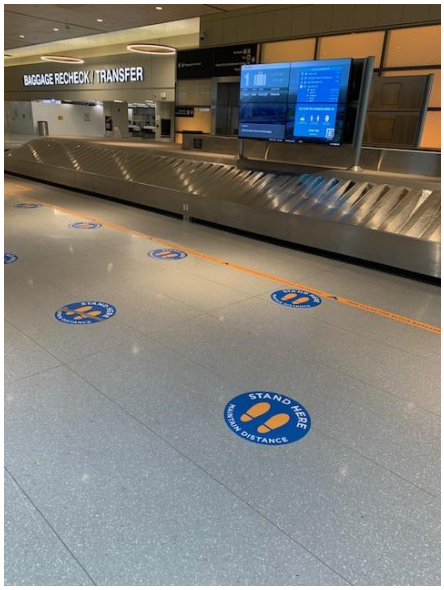
Introduction

The Massachusetts Port Authority (Massport) is continuing its nearly four-decade practice of providing an extensive record of Boston Logan International Airport (Logan Airport or Airport) environmental trends, facility planning, operations and passenger levels, and Massport's mitigation commitments in this *Boston Logan International Airport 2018/2019 Environmental Data Report (EDR)*. As Massport has done periodically following circulation and review of our Environmental Status and Planning Reports (ESPRs), with the approval of the Secretary of the Massachusetts Executive Office of Energy and Environmental Affairs (EEA), this *2018/2019 EDR* combines data and analysis for calendar years 2018 and 2019.

This EDR was prepared in 2020 during the ongoing COVID-19 pandemic. Massport has strived to include relevant updates through fall 2020 where the current conditions have resulted in changes in projects or programs that were in place in 2018 and 2019. Beginning in March 2020, flights in and out of Logan Airport were dramatically reduced and passenger levels dropped by over 90 percent at the peak of the pandemic in the spring and summer of 2020. As a result, currently there are far fewer aircraft operations and passengers and a dramatic drop in overall Logan Airport activity. While activity levels began a slow recovery in mid-summer 2020, the ongoing wave of COVID-19 cases has resulted in continued historically low levels of activity, with a full recovery anticipated years away. As of October 2020, total flight operations for the year were down by approximately 50 percent and passenger levels were down by about 70 percent compared to January through October 2019. Massport expects that by the end of 2020, passenger levels will have dropped to levels of activity not seen since the mid-1970s.

Air traffic declines caused by economic recessions and other "shocks" such as the events of September 11, 2001 and the Great Recession in 2008/2009 have been followed by gradual recovery cycles. As depicted in **Figure 1-1**, after the events of September 11, 2001 and the subsequent recession, Logan Airport's passenger activity levels declined by about 18 percent, yet recovered five years later. Logan Airport's passenger volumes declined by about 9 percent after the Great Recession of 2008/2009. As shown in **Figure 1-2**, in 2020 the seven-day average Transportation Security Administration (TSA) passenger screening throughput dropped by over 90 percent very quickly. **Figure 1-3** shows the percent change in monthly TSA throughput from 2019 to 2020 for the nation and Boston.

COVID-19 is having an unprecedented impact on not just the aviation industry but the global economy. While the immediate and most pressing concern is human cost, COVID-19 has created profound implications for nearly all businesses and industries. The impact on aviation has been particularly severe. The situation is changing on a daily basis and there remains considerable uncertainty as to how long this pandemic will last and what will be the long-term impacts.

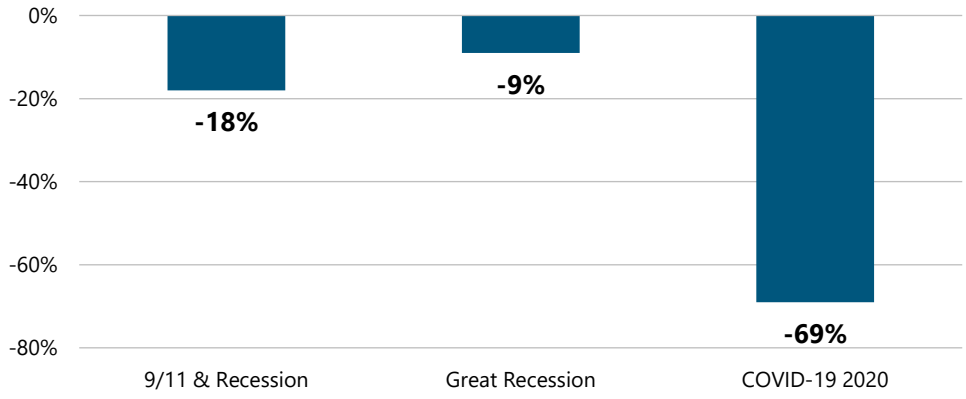


Source: Massport.

Notes: Logan Airport terminal (left) and baggage claim area (right) during the COVID-19 pandemic.

As a result of this significant reduction in Airport activity and dramatic reduction in revenues, both Massport and our airlines and other tenants have necessarily adjusted and scaled back their operations. Concurrently, the schedule for a number of Airport projects and programs have been revised and pushed back. To be as transparent as possible, Chapter 3, *Airport Planning* includes the most current project updates through October 2020. Forthcoming EDRs will continue to provide updates, as available. Overall, Massport continues to evaluate and plan for the recovery of aircraft operations and air passenger activity and remains committed to implementing the broad range of environmental and operating strategies designed to reduce the impacts associated with Airport operations.

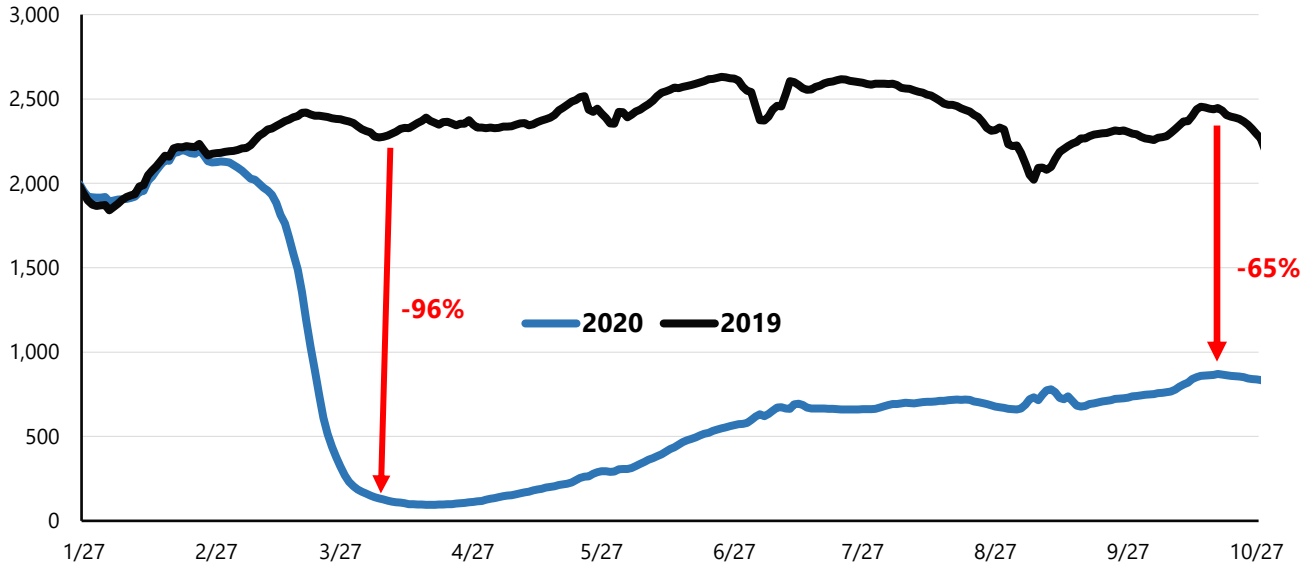
Figure 1-1 Change to Logan Airport Passenger Growth After Recent Recessions



Source: InterVISTAS: Massport traffic statistics.

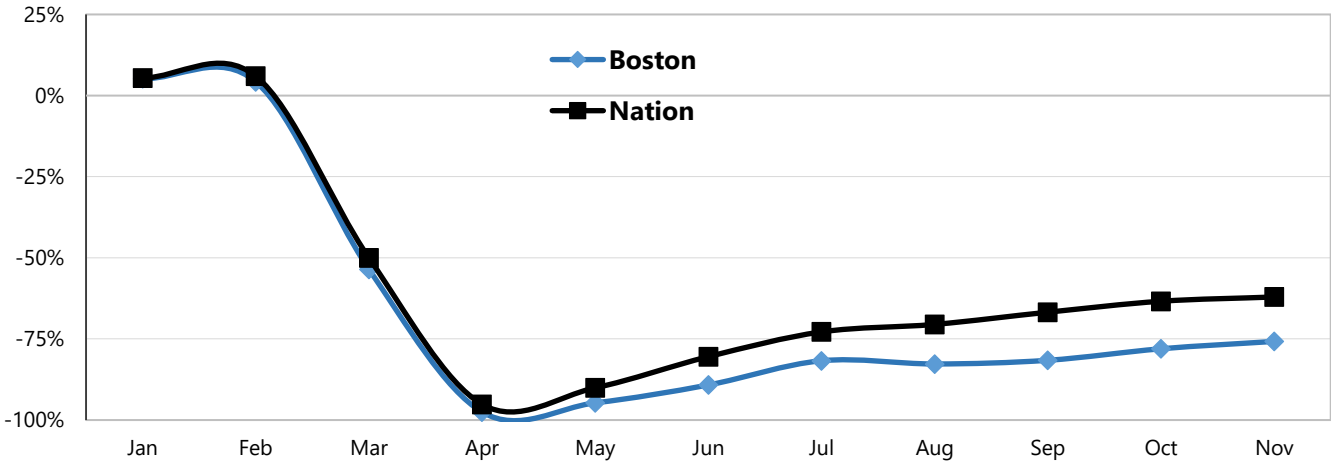
Note: COVID-19 2020 change is the year-to-date October 2020 vs. 2019.

Figure 1-2: Seven Day Average TSA Throughput at U.S. Airports, 2019 vs. 2020



Source: TSA Daily Reports.

Figure 1-3: Percent Change in Monthly TSA Throughout From Prior Year, January 2020 to November 2020



Source: TSA Daily Reports.

Logan Airport, owned and operated by Massport, plays a key role in the metropolitan Boston and New England passenger and freight 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. The Airport boundary encompasses approximately 2,400 acres in East Boston and Winthrop, including approximately 700 acres in Boston Harbor. Logan Airport's airfield comprises six runways, approximately 15 miles of taxiway, and approximately 240 acres of concrete and asphalt apron. Logan Airport has four interconnected passenger terminals (Terminals A, B, C, and E), each with its own ticketing, baggage claim,

and ground transportation facilities. The Airport is less than a three-mile drive from downtown Boston and is accessible by public transit lines, several direct bus lines, and a well-connected roadway system. Massport provides Logan Express bus service to and from Logan Airport for air passengers and employees from a series of park-and-ride lots.

This *2018/2019 EDR* is one in a series of annual environmental review documents submitted to the Secretary of EEA, in accordance with the Massachusetts Environmental Policy Act (MEPA).[1] Since 1979, Massport has submitted these documents 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 assessment on airport activities was prepared, and Massport continues to be a leader in environmental reporting.

Approximately every five years, Massport prepares an ESPR, which provides a historical and prospective view of Logan Airport. EDRs, prepared annually in the intervals between ESPRs, provide an historical review of environmental conditions for the reporting year compared to the previous year. This *2018/2019 EDR* follows the *2017 ESPR* which reported on 2017 conditions and included projections and analyses of future operating and environmental conditions based on a pre-COVID-19 passenger forecast. While Massport and the entire aviation industry continue to adjust to the new operating conditions, we continue to evaluate the pandemic's current and future impacts. Where possible, this EDR includes relevant information and updates. However, more detailed projections and analyses will necessarily need to be addressed in future ESPRs.

The scope for this combined *2018/2019 EDR* was established by the Secretary's Certificate on the *2017 ESPR* dated November 25, 2019, which is included in Appendix A, *MEPA Certificates and Responses to Comments*. This EDR fulfills all the requirements laid out in the Secretary's Certificate on the *2017 ESPR* and includes responses to comments on the Secretary's Certificate and updates and compares the data presented in the *2017 ESPR* for the following subjects:

- Activity Levels (including aircraft operations, passenger activity, and cargo volumes)
- Air Quality/Emissions Reduction
- Logan Airport's Role in the Regional Transportation Network
- Ground Access to and from the Airport
- Noise Abatement
- Airport Planning (including activities underway and upcoming projects)
- Water Quality/Environmental Compliance
- Sustainability and Resiliency
- Environmentally Beneficial Measures and Mitigation Commitments

To enhance the usefulness of this 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. When appropriate and available, this EDR also includes updates through fall 2020.

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").

This EDR includes a Spanish translation of this chapter. This translated version is included after the English-version of the Executive Summary.

EEA # 3247

Submitted By

Massachusetts Port Authority
One Harborside Drive, Suite 200S
East Boston, MA 02128

Stewart Dalzell, Deputy Director
Strategic & Business Planning
(617) 568-3524

Brad Washburn, Environmental Planning & Permit Manager, Strategic & Business Planning
(617) 568-3546

Logan Airport Environmental Review Process

This *2018/2019 EDR* is Massport's next filing in its unique, but well-established, formal state-level environmental review process that assesses Logan Airport's cumulative environmental impacts. The documents provide a current and historical 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 Process

In 1979, the Secretary of 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 Update[2] 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, 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

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

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 cumulative planning context which complements the individual project-specific filings.

In 2018 and 2019, while passenger levels experienced significant growth, reaching new peaks, aircraft operations and associated environmental effects 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 combined *2012/2013 EDR* presented conditions for both calendar years 2012 and 2013. The *2014 EDR*, *2015 EDR*, and *2016 EDR* presented conditions for calendar years 2014, 2015, and 2016, respectively. Similarly, with strong passenger growth and evolving ground access trends with the emerging RideApp industry (formerly referred to as transportation network companies [TNCs]), EEA allowed Massport to defer the *2016 ESPR*.

The *2017 ESPR* provided a comprehensive, cumulative analysis of activity levels and environmental conditions for 2017 and a Future Planning Horizon. In the ESPR, Massport proposed preparation of a combined *2018/2019 EDR* to report the effects of all Logan Airport activities based on actual passenger activity and aircraft operations in 2018 and 2019. This document responds to EEA approval of the combined *2018/2019 EDR*.

While this report is largely focused on 2018 and 2019, Massport has included the best available information on 2020 as the Authority and the nation react to the COVID-19 pandemic. Where appropriate, Massport will continue to identify and address any longer-term aviation and environmental trends in both EDRs and ESPRs.
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 Environmental Notification Forms (ENFs) and Environmental Impact Reports (EIRs) pursuant to MEPA. Similarly, where NEPA[3] environmental review is triggered, projects are reviewed under the NEPA environmental review process. Current and potential future projects anticipated to undergo MEPA and/or NEPA review are discussed in Chapter 3, *Airport Planning*.

Logan Airport Planning Context

Logan Airport plays a key role in the metropolitan Boston and New England passenger and freight transportation networks. The Airport is one of the most land-constrained airports in the nation and is surrounded on three sides by Boston Harbor (see **Figures 1-4** and **1-5**).

3 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.

FIGURE 1-4 Aerial View of Logan Airport

2018/2019 Environmental Data Report

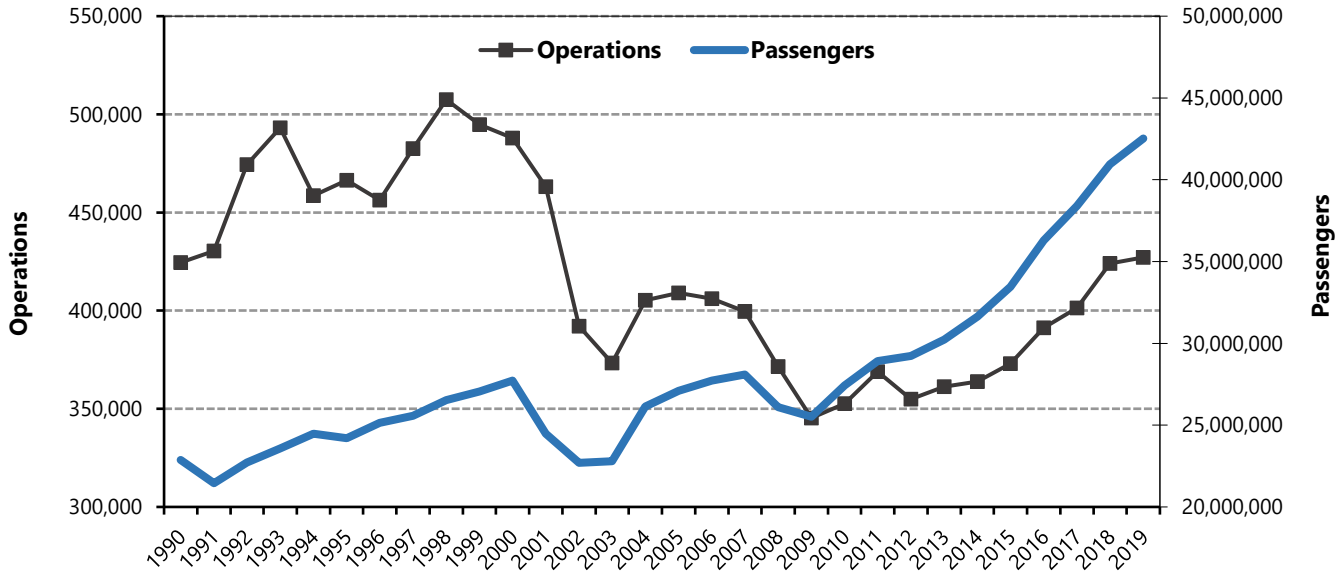
FIGURE 1-5 Logan Airport and Environs

2018/2019 Environmental Data Report

Passenger and Aircraft Activity Growth at Logan Airport

In 2019, air passenger activity levels at Logan Airport reached an all-time high of 42.5 million, an increase of 3.9 percent over 2018 (40.9 million). As has been the recent trend prior to March 2020, aircraft operations increased at a slower rate than passengers. In 2019, operations totaled 427,176 and 2018 operations totaled 424,024. These levels both represent increases compared to the 2017 passenger levels of 38.4 million and 401,371 operations (**Figure 1-6**). The growth seen during 2018 and 2019 was directly correlated to the strong national and regional economies. Even with this strong growth, aircraft operations remained well below the 487,996 operations in 2000 and the historic peak of 507,449 operations reached in 1998. The slower growth in aircraft operations compared to passenger levels is due to the steady increase in aircraft size and improving aircraft load factors (passengers/available seats).

Figure 1-6 Logan Airport Annual Passenger Levels and Aircraft Operations (1990–2019)



Due to COVID-19, 2020 passenger levels and operations have dramatically decreased. As of October 2020, year-over-year passenger levels and operations are down by approximately 70 percent and 50 percent.

Logan Airport Activity Levels are Closely Tied to the Regional and National Economy

Activity levels at Logan Airport are largely driven by the local, regional, and national economies. As can be seen by looking at long-term trends, it is clear that when the economy is strong, Logan Airport grows. Similarly, the most significant declines in passenger levels and aircraft operation track closely with significant national and international disruptions. Examples of the most significant declines include the Professional Air Traffic Controllers Organization (PATCO) strike in 1981, September 11, 2001, the Great Recession in 2008/2009, and now the COVID-19 pandemic.

When there has been significant growth, as was observed through 2018 and 2019, Massport has implemented strategies to address that growth in a manner that allows Logan Airport to evolve in a sustainable and environmentally responsible way.

Logan Airport is the largest airport in the six-state New England region, which has a population of approximately 14.8 million residents. The Airport is located in Massachusetts, which is home to 6.9 million residents, or nearly 46 percent of New England's population. Logan Airport serves passengers from across New England, with its primary catchment area consisting of five Massachusetts counties: Essex, Middlesex, Norfolk, Plymouth, and Suffolk (which includes the City of Boston). According to the most recently available statistics, 4.4 million people reside in this five-county area, and population within the catchment area is projected to increase by 0.5 percent per year over the next 19 years.[4] In 2019, similar to past years, the Boston metropolitan area maintained a lower unemployment rate (2.6 percent) than that of the Commonwealth (2.9 percent) and the entire country (3.7 percent).[5] The Airport not only serves a growing population, but a high earning one as well. Per capita income in 2019 was $68,361 (2012 U.S. dollars) in the Airport's primary service area, 3.6 percent higher than the Commonwealth and 35.9 percent higher than the national average.[6]

Logan Airport is a key transportation and economic resource in the New England region, the state, and the Boston metropolitan area, which is home to a broad range of industries. The industries accounting for the largest share of employees include: healthcare and social assistance; educational services; and professional, scientific, and technology services (which include Boston's thriving biotech industry).[7] In 2018 and 2019, Boston was ranked the #1 city in the U.S. for education and #2 in healthcare.[8] The contribution of innovation and business start-ups is also evident in the latest 2019 economic growth estimates.

In addition to supporting the growth and economic success of the state, Logan Airport and the airport industry are important elements in the state and regional economy. The *Massachusetts Statewide Airport Economic Impact Study Update,* completed by the Massachusetts Department of Transportation

4 Woods & Poole Economics, Inc. 2019. Complete Economic and Demographic Data Source (CEDDS).

5 U.S. Bureau of Labor Statistics. 2020.

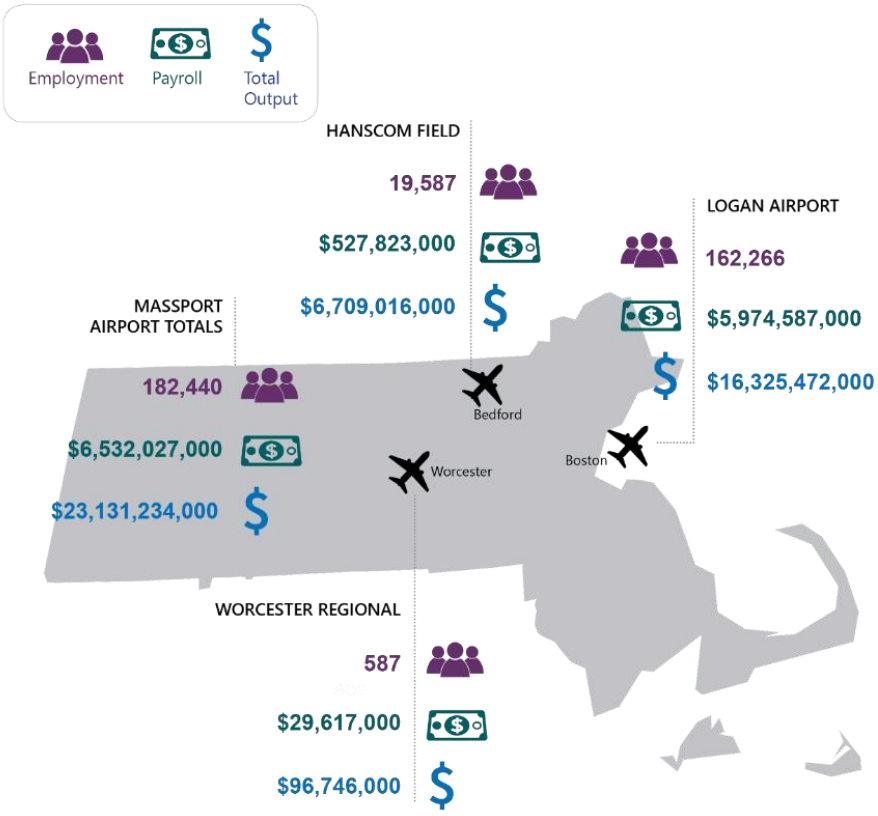
6 Woods & Poole Economics, Inc. 2019. ICF analysis of population and personal income datasets.

7 U.S. Census Bureau via DataUSA. Boston-Cambridge, Newton, MA-NH Metro Area profile. wwww.datausa.io.

8 U.S. News & World Report 2020. Massachusetts.

(MassDOT) in 2014 and most recently updated in 2019,[9] estimates that Massport airports – inclusive of Logan Airport, Worcester Regional Airport, and Hanscom Field – contribute approximately $23.1 billion in output to the Massachusetts economy annually; of this output, 71 percent is due to Logan Airport alone.[10] Total output includes on-Airport businesses, construction, visitor, and multiplier effects (see **Figure 1-7**).[11] Logan Airport supports over 162,000 direct and indirect jobs, while generating approximately $16.3 billion per year in total economic output.[12] In 2019, over 23,000 people were employed at Logan Airport. This included approximately 820 Massport Logan Airport staff and additional administrative employees.[13]

Figure 1-7 Total Economic Impact of Massport Airports



Source: MassDOT, Massachusetts Statewide Airport Economic Impact Study Update, 2019.
Notes: "Massachusetts Totals" refers to the total economic output of all Massachusetts airports.

9 MassDOT. 2014. *Massachusetts Statewide Airport Economic Impact Study Update*. http://www.massdot.state.ma.us/portals/7/docs/airportEconomicImpactSummary.pdf.

10 *Ibid.*

11 Multiplier effects refer to the recirculation of money in the local economy after initially being spent by the Airport, its tenants, or tourists. This recirculation increases the overall impact of the Airport's operation in the local economy.

12 MassDOT Aeronautics Division. 2019. *Massachusetts Statewide Airport Economic Impact Study Update.* https://www.mass.gov/files/documents/2019/03/25/AeroEcon_ImpactStudy_January2019.pdf.

13 Massport, 2019. *Massachusetts Port Authority 2019 Comprehensive Annual Financial Report*. http://www.massport.com/media/3425/mpa-fy19-cafr-final.pdf. Table S-11.

Logan Airport is considered an origin and destination (O&D)[14] airport both nationally and internationally, meaning that approximately 90 percent of Logan Airport passengers' trips either start or end at Logan Airport. Hub airports, such as Atlanta or Chicago, serve many more passengers annually but, compared to O&D airports like Logan Airport, a higher percentage of passenger traffic at hub airports passes through to connecting flights. Through 2019, Logan Airport was one of the fastest growing large airports in the United States in terms of passenger volume.[15] From 2017 to 2019, U.S. air passenger traffic grew by 9.1 percent, whereas Logan Airport experienced a passenger growth of 10.7 percent over the same time period.[16] Logan Airport is considered a domestic and international origin and destination (O&D) airport, meaning that less than 10 percent of air passengers are connecting through Logan Airport.

Forecast Status

The *2017 ESPR* presented an updated forecast for Logan Airport aircraft operations and passenger activity. That forecast focused on a Future Planning Horizon including a projected 50 million annual air passengers and 486,000 annual aircraft operations. Massport's ESPR forecast was consistent with the Federal Aviation Administration's (FAA's) Terminal Area Forecast at that time. However, the COVID-19 pandemic has dramatically reduced air passenger traffic and it's currently expected that it will take several years for the industry to return to pre-COVID-19 operational levels.

During 2018 and 2019, due to the strong economy, passenger activity levels and aircraft operations at Logan Airport increased rapidly. This growth trend was upended in March 2020 and accordingly, the *2017 ESPR* projections will need to be adjusted as the longer-term impacts of the COVID-19 pandemic are better understood.

Massport Investment in Logan Airport

Massport evaluates and implements enhancements to Logan Airport's safety, security, operational efficiency, and accessibility to and from the Boston metropolitan area, while carefully monitoring the environmental effects of Logan Airport operations. A continuing focus has been on enhancing the passenger and user experience at Logan Airport. Recent and ongoing terminal area projects are aimed at providing seamless post-security connectivity among the terminals along with enhancements to passenger processing through consolidated security checking areas. Access to and around Logan Airport also remains a priority. Massport continues to work with FAA to enhance airside safety through a variety of runway safety area (RSA) improvements and simplification of the airfield geometry.

As noted above, the impacts of the COVID-19 pandemic have precipitated a wide range of changes at Logan Airport. Both the drop in passengers and associated revenues have required significant

14 "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.

15 Between 2014 and 2019, Logan Airport was the 20th fastest growing airport in the U.S. in terms of domestic O&D traffic compared to the top 30 large hub U.S. airports (U.S. DOT O&D Survey).

16 ACI. 2019. ACI North American Airport Traffic Summary. http://www.aci-na.org/content/airport-traffic-reports.

adjustments to services and project schedules. Massport has focused on adjusting services to match the shifting passenger levels and ensure that those changes are made with careful consideration of managing environmental and operating impacts. In some areas, programs have been adjusted to reflect current needs and impacts. Massport remains committed to implementing project-related mitigation strategies, as documented in Chapter 9, *Environmentally Beneficial Measures and Project Mitigation Tracking*.

2018 and 2019 Highlights and Key Findings

This section provides a brief overview of key findings, by chapter, at Logan Airport in 2018 and 2019. A brief update on 2020 activity and future projections is also included in light of the COVID-19 pandemic. 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.

The Secretary's Certificate on the *2017 ESPR*, which forms the Scope of this *2018/2019 EDR*, acknowledged the rapid growth in the past several years and directed Massport to provide updates on the *2017 ESPR* forecast. While Logan Airport's recent rapid passenger growth continued through early 2020, the COVID-19 pandemic began to dramatically reduce airport operations and passengers in mid-March 2020. In the early phases of the pandemic, passenger levels dropped by over 90 percent. While activity levels began a slow recovery in mid-summer 2020, the ongoing wave of COVID-19 cases has resulted in continued historically low levels of activity, with a full recovery years away. As of October 2020, total flight operations for the year were down by 50 percent and passenger levels were down by about 70 percent compared to January through October 2019. Massport expects that by the end of 2020, passenger levels will have dropped to levels of activity not seen since the mid-1970s. Until the longer-term impacts of COVID-19 are better understood, Massport can only make preliminary projections of the rate of recovery for passenger levels. The next EDR will provide further updates using best available information at that time.

Activity Levels

Until the onset of the COVID-19 pandemic, Logan Airport (and the aviation industry in general) had been experiencing strong growth, largely driven by the positive economic conditions in the Boston region, low unemployment, a strong, diverse economic base, and continued investment in commercial and residential real estate, particularly in life sciences, finance, healthcare, and higher education. Due to the COVID-19 pandemic, 2020 passenger levels and operations have dramatically decreased. As of October 2020, year-over-year passenger levels and operations are down by approximately 70 percent and 50 percent, respectively.

Air passenger activity levels at Logan Airport in 2018 and 2019 increased to 40.9 million in 2018 and 42.5 million in 2019. Aircraft operations continued the long-term trend of increasing at a slower rate than passengers. In 2018, operations totaled 424,024 and 2019 operations totaled 427,176. That growth was directly correlated to the strong national and regional economy. Even with the strong growth, aircraft operations remained well below the 487,996 operations in 2000 and the historic peak of

507,449 operations reached in 1998. The combination of fewer operations in cleaner and quieter aircraft has resulted in dramatically reduced environmental impacts when compared with those historical peaks.

From 2010 to 2019, the annual number of passengers at Logan Airport increased by about 55 percent, while the annual number of aircraft operations[17] increased at a slower rate, about 21 percent, due to increasing aircraft load factors. International passenger levels increased at a faster rate than domestic passenger levels in 2018 and 2019. Domestic air passenger activity levels increased by 6.9 and 2.6 percent in 2018 and 2019, respectively, while international air passenger activity levels increased by 5.3 and 9.7 percent, respectively.

Please see Chapter 2, *Activity Levels,* for additional information.

Airport Planning

Massport is continually improving the facilities at Logan Airport to accommodate changes in passenger demand, aircraft activity, cargo needs, and transportation access. In Chapter 3, *Airport Planning*, Massport has identified priority planning projects and initiatives in the following categories:

- Ground Transportation and Parking;
- Terminals;
- Airside Planning;
- Service Areas;
- Airport Buffers and Open Space; and
- Energy, Sustainability, and Resiliency.

During 2018 and 2019 there was a strong focus on ground access and trip reduction measures and terminal improvements. Recent and ongoing terminal area projects are providing seamless post-security connectivity and flexibility among the terminals along with enhancements to passenger processing through consolidated security checking areas.

To enhance the on-Airport roadway network, Massport is improving several of the terminal area roadway segments and intersections. In October 2019, Massport opened its new RideApp consolidated drop-off and pick-up areas in the Central Garage. In 2018 and 2019, Massport also advanced several high-occupancy vehicle (HOV) services and Logan Express facilities improvements as part of its trip-reduction goals.

17 An aircraft operation is defined as one arrival or one departure.

Since filing the *2017 ESPR*, Massport has completed state and/or federal environmental review of several projects:

- The Logan Airport Parking Project, which will add 5,000 commercial parking spaces at Logan Airport in locations already in use for parking. The additional parking spaces respond to the MassDOT and U.S. Environmental Protection Agency (EPA)'s approval of a modification to the regulatory Logan Airport Parking Freeze.[18] The additional spaces are intended to reduce environmentally harmful drop-off/pick-up modes (i.e., dropped off or picked up by private vehicles, taxi, RideApp, or black car limousine service). The joint MEPA/NEPA review process was completed in January 2020. This project is currently deferred due to the reduction in passenger activity associated with the COVID-19 pandemic.
- Terminal C Canopy, Connector and Roadway Project received federal environmental approval under NEPA in November 2018. As described in the *2017 ESPR*, construction of this project will replace and reconfigure sections of the elevated roadways connecting Terminals B and C. At this time, construction of the replacement canopy is anticipated to begin and be completed in 2021, with a slightly reduced program than originally planned. The Terminal B to C Connector is anticipated to be complete in spring 2022 and roadways are anticipated to be complete in 2023.

Massport continues to work with FAA to enhance airside safety through a variety of federal Runway Safety Area projects and simplification of the airfield geometry. Please see Chapter 3, *Airport Planning,* for additional information.

Regional Transportation

In 2018 and 2019, the New England region saw an increase in air passenger activity. Regional air passengers increased by 6.5 percent to 58.3 million air passengers in 2018 and then another 2.5 percent to 59.7 million in 2019. The 10 regional airports (excluding Logan Airport) in New England accommodated 17.3 and 17.2 million air passengers in 2018 and 2019, respectively, compared to 16.3 million passengers in 2017.

Worcester Regional Airport, T.F. Green Airport, Portland International Jetport, Burlington International Airport, and Bangor International Airport saw an overall increase in commercial service operations since 2017. Manchester-Boston Regional, Tweed-New Haven, Bradley International, and Portsmouth International airports saw reduced service offerings since 2017.

Massport's three airports, Logan Airport, Worcester Regional Airport, and Hanscom Field, make significant contributions to the regional economy, generating approximately $23.1 billion annually, or 94 percent of the overall economic benefits generated by the Massachusetts airport system. Hanscom Field is a reliever airport to Logan Airport and is the second busiest airport in New England.

Worcester Regional Airport passenger numbers increased by 76 percent in 2019 compared to 2017 and reported a total of 817,057 passengers from 2013 to 2019. In the past five years, Worcester Regional Airport experienced an average growth rate of 10 percent per year. Massport continues to invest in

18 310 Code of Massachusetts Regulations 7.30 and 40 Code of Federal Regulations 52.1120.

Worcester Regional Airport—together with the City of Worcester, Massport has already initiated a $100 million, 10-year investment to revitalize and attract commercial operations to Worcester Regional Airport. Investments include a CAT III Instrument Landing System (about $32 million) paid for by federal grants and Massport funds. Additionally, jetBlue Airways, American Airlines, and Delta Air Lines announced new service to New York John F. Kennedy International Airport (JFK), Philadelphia International Airport, and Detroit Metropolitan Wayne County Airport, respectively. As of the publication date of this EDR, commercial passenger service out of Worcester Regional Airport has been suspended by the airlines due to a drop in passenger demand as a result of the COVID-19 pandemic.

Amtrak rail system-wide ridership increased from 31.7 million customer trips in fiscal year (FY) 2018 to 32.5 million trips in FY 2019. In FY 2018, the Northeast Corridor (NEC) carried over 12 million passengers, up about 1 percent from the prior year. In FY 2019, the NEC carried 12.5 million passengers on those services, up about 3 percent from the prior year.

Ground Access

Logan Airport continues to be one of the top airports in the United States in terms of HOV and transit mode share. Massport promotes numerous HOV, transit, and shared-ride options to improve on Airport roadway and curbside operations, alleviate constraints on parking, and improve customer service. Key findings from 2018 and 2019 are summarized in the bullets that follow and additional details can be found in Chapter 5, *Ground Access to and from Logan Airport*.

- Average weekday on-Airport vehicle miles traveled (VMT) increased by about 4.5 percent from 2017 to 2018. Between 2018 and 2019, average weekday on-Airport VMT increased by 2.2 percent. The change in average daily traffic can be attributed primarily to the increases in air passenger activity, passenger drop-off/pick-up, cargo, and non-aviation related Airport uses. It is anticipated that the Airport activity and on-Airport VMT will be significantly lower in 2020 due to the impact of COVID-19.
- RideApp transactions totaled more than 7 million in 2018 and increased to over 8 million in 2019, a growth of over 16 percent. RideApps are impacting other access modes to the Airport and contributing to on-Airport congestion. Partially due to the continued rise of RideApps, black car limousines and scheduled van ridership dropped by nearly 23 percent from 2017 to 2019. Taxi dispatches declined 14 percent in 2018 compared to 2017 and 7 percent between 2018 and 2019. The Massachusetts Bay Transportation Authority (MBTA) Blue Line ridership increased by 4 percent between 2017 and 2018 and declined by 29 percent the following year.
- Based on changes in passenger mode choice for accessing Logan Airport observed between 2017 and 2019, Massport updated its goals and definition of HOV. The updated definition considers vehicle occupancies of taxis, black car limousines, and RideApps that carry two or more air passenger per vehicle to be HOV, while the same modes with one air passenger will count as non-HOV. With this updated definition, Massport established a goal of 35.5 percent HOV by 2022 and 40 percent by 2027. Based on the results of the 2019 Air Passenger Ground-Access Survey, HOV mode share has reached 40.4 percent, exceeding both near-term and longer-term goals. While it's anticipated that the HOV mode share will drop as a result of COVID-19 over the short term, Massport expects HOV ridership to recover over time and remains committed to the HOV mode share goals going forward.

Ground Access Strategy

Massport has a long-standing multi-pronged, trip reduction strategy to diversify and enhance ground transportation options for passengers and employees traveling to and from Logan Airport. The strategy is designed to offer passengers a choice of HOV, transit, and shared-ride options that are convenient and reliable, and that reduce environmental and community impacts. For many years, Logan Airport has ranked as one of the top U.S. airports in terms of HOV and transit mode share. Massport promotes numerous HOV, transit, and shared-ride options to improve on Airport roadway and curbside operations, alleviate constraints on parking, and improve customer service.

Massport's strategy also aims to provide sufficient on-Airport parking for air passengers choosing automobile access modes and/or who have limited HOV options. In 2017, the MassDEP amended the Logan Airport Parking Freeze to allow for an increase of up to 5,000 on-Airport commercial parking spaces, which allows for the construction of additional parking to reduce the use of drop-off/pick up modes and alleviate constrained on-Airport parking conditions.

A long-standing Massport interest is addressing on-Airport roadway congestion with a combination of policy changes and infrastructure improvements. Alleviating terminal area congestion is important for continued safe and efficient landside operations and to reduce environmental impacts. Enhancing multimodal transportation options and providing modern, flexible infrastructure is one way an airport can reduce greenhouse gas (GHG) emissions and improve its environmental footprint.

Massport recognizes the importance of providing safe and reliable HOV services to and from the Airport and by 2019 had already reached its strategic plan to increase HOV mode share to 40 percent by 2027. Understanding the growth in RideApp use and their impact on regional and terminal area roadway congestion is essential to managing on-Airport traffic volume and promoting HOV services as a viable and attractive alternative. Potential emissions reductions are one reason why Massport is committed to a long-term goal of promoting and supporting public and private HOV and shared-ride services aimed at serving air passengers, Airport users, and employees. Other benefits include:

- Reducing congestion on the terminal roadways and curbside drop-off/pick-up areas;
- Alleviating constraints on limited parking facilities; and
- Customer service (providing a range of transportation options for different traveler demographics).

While this report focuses primarily on activity in 2018 and 2019, as a result of the COVID-19 pandemic, a number of Massport's broad HOV and trip reduction measures temporarily changed in 2020. Flights in and out of Logan Airport have been dramatically reduced and passenger levels dropped by nearly 90 percent beginning in March 2020. As a result, while operational and passenger levels have recovered somewhat as of mid-2020, overall, there are far fewer passengers and employees traveling to and from Logan Airport and there is far less peak period roadway congestion both in Boston and the metropolitan area. In addition, the public's interest in using HOV transportation services like buses, rapid transit, and commuter rail has been significantly affected by public health concerns related to COVID-19.

Within that context, Massport continues to evaluate and plan for the recovery of air passenger activity and remains committed to implementing the broad range of ground access strategies that were outlined in

the *2017 ESPR* as demand for those measures recovers. The schedule for those services and planned improvements has, however, been adjusted due to the continuing operational constraints and revenue reductions. Massport continues to carefully review both on and off-Airport activity levels and will adjust its ground access programs to align with ridership levels. Future EDRs will provide detailed updates on all service adjustments and activity levels.

Massport continuously evaluates it strategies and programs aimed at improving and, where needed, expanding HOV services to and from Logan Airport, including continued investment in Logan Express facilities and service. The initiatives described below can improve roadway operations as well as air quality emissions. The following measures have been implemented or remain under consideration:

- A goal to double Logan Express ridership by the time Logan Airport reaches 50 million air passengers by expanding parking, frequency, and facility upgrades;
- **Suburban Logan Express Service Enhancements**
  - In 2019, Massport increased total Logan Express seat capacity by over 10 percent.
  - Increase Braintree Logan Express service from two to three trips per hour (implemented in May 2019 but reduced to hourly service in March 2020 due to the impacts of COVID-19).
  - Add about 1,000 additional spaces to the Framingham garage (permitting completed in 2020 however construction is deferred).
  - Provide security line priority status to Logan Express Back Bay riders (implemented in 2019; this service is temporarily suspended due to COVID-19).
  - Marketing to support Logan Express strategy and increase ridership.
  - Implement Logan Express electronic ticketing (pending).
  - Evaluate new Logan Express suburban locations, with a plan to open at least one new site (deferred due to COVID-19).
  - Explore RideApp Last Mile connections.[19]
  - Continue to monitor parking capacity at all Logan Express sites.
- **MBTA Silver Line**
  - Eight MBTA Silver Line buses were purchased in 2005 by Massport and are operated by the MBTA, with Massport paying operating costs. Since the existing Silver Line fleet is reaching the end of its useable life, the MBTA and Massport have been working together on a plan to procure a replacement Silver Line fleet. As part of this initiative, Massport and the MBTA developed a Silver Line Capacity Study to determine the mid-term fleet and facility needs as well as to assess other ways to improve the reliability and capacity of the system. Based on this analysis, the MBTA plans to procure 45 new enhanced electric hybrid vehicles to replace the existing fleet of 32 dual mode vehicles. Massport plans to purchase eight MBTA Silver Line buses as part of a forthcoming MBTA procurement.

19 Individuals who fall within the 0.5-mile to 1-mile drive distance of a Logan Express facility are the most likely group to use TNCs to connect between the facility and their home.

- **Urban Logan Express Service**
  - Change pick-up/drop-off location from Copley to Back Bay Station (Implemented in 2019. This service is temporarily suspended due to COVID-19).
  - Discount one-way fare from $7.50 to $3.00 (implemented in 2019).
  - Provide free service from Logan Airport (implemented in early 2019).
  - Pilot priority security line status for riders (implemented in 2019).
  - Marketing to support increased ridership (ongoing).
  - Implement Logan Express electronic ticketing (pending).
  - Implement a second urban Logan Express service at North Station (although Massport procured buses for this service in 2020, due to COVID-19, this new service has been deferred).
- **RideApp Management Plan**
  - Facilitate rematch and shared ride by moving RideApp drop-off/pick-up activity to new dedicated areas in the Central Garage (complete).
  - Implement RideApp rematch[20] so drivers dropping off can more easily leave with a passenger (complete).
  - Introduce RideApp shared ride incentives to reduce RideApp vehicles through gateways by increasing vehicle occupancies (complete).
  - Adopt new RideApp fee structure to support HOV strategies, encourage shared rides, and reduce gateway congestion (complete).
  - Optimize RideApp operations on-Airport through data reporting, enforcement tools, and emerging RideApp products (continuing).
- **Infrastructure improvements**
  - Massport will continue to evaluate and identify the need for additional infrastructure modifications as a complement to policy changes to allow terminal area roadways and curbsides to continue functioning adequately and minimize vehicle idling and associated emissions. Changes will be implemented as needed.

20 Rematch allows drivers who are dropping off to instantly pick up another passenger without needing to circle the Airport or leave empty.

Noise

Massport strives to minimize the noise effects of Logan Airport operations on its neighbors through a variety of noise abatement programs, procedures, studies, and other tools. At Logan Airport, Massport implements one of the oldest and 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 (NOMS); extensive residential and school sound insulation programs; time-of-day and runway restrictions for noisier aircraft; ground run-up procedures; and flight tracks designed to optimize over-water operations (especially during nighttime hours). The public can register noise complaints by phone or online through Massport's website.[21]

Key findings are summarized in the bullets that follow and additional details can be found in Chapter 6, *Noise Abatement*.

- The fleet mix of Logan Airport continues to be composed of aircraft types with the quietest available technology (Stage 5 is the quietest). About 15 percent of 2018 and 2019 operations were conducted in aircraft meeting Stage 5 requirements, 83 percent meeting Stage 4 requirements, and 2 percent in Certified Stage 3. While the shift to an all-Stage-4-and-5 fleet has been gradual, the accelerated retirements of older aircraft in 2020 are likely to increase the share of Stage 5 in the Logan Airport fleet. The retirement of older, noisier aircraft has been accelerated by the COVID-19 pandemic where airlines continue to phase out older aircraft in response to reduced passenger loads beginning in spring 2020. The *2020 EDR* will provide an update on this emerging trend.
- Massport and FAA continue to work with the Massachusetts Institute of Technology (MIT) to investigate opportunities to reduce noise through changes to performance-based navigation (PBN), including RNAV. This cooperation is a first-in-the-nation project between FAA and an airport operator to better understand the implications of PBN and evaluate strategies to address community concerns.
- Massport continues to be a national leader in sound insulation mitigation. To date, Massport has provided sound insulation for a total of 36 schools and 11,515 residential units and will continue to seek funding for mitigation for properties that are eligible and whose owners have chosen to participate. Since the start of the program, over $170 million has been invested. In 2019, Massport updated its Residential Sound Insulation Program (RSIP) Noise Exposure Map contours and submitted an Aviation Environmental Design Tool (AEDT)-derived noise exposure map to the FAA in 2020 for review and discussion.
- Massport is currently working with FAA to possibly address issue with the first-generation sound insulation windows. In January 2020, Massport's CEO sent a letter to the FAA Associate Administrator requesting that Massport and FAA work together to address re-treatment of homes that were sound insulated during the early years of the program to upgrade eligible homes to newer, more effective and durable materials. The Associate Administrator responded that FAA is exploring limited circumstances under which Massport might be able to mitigate homes that had been mitigated before FAA first issued sound insulation standards in 1993. The status of the initiative will be reported in future EDRs. Please see Appendix H, *Noise Abatement* for additional info.

21 Massport. Noise Complaints. http://www.massport.com/logan-airport/about-logan/noise-abatement/complaints/.

- Nighttime operations represented 16.1 percent and 16.6 percent of total operations in 2018 and 2019, respectively. Nighttime operations increased, from an average of 168 per night in 2017 to 187 per night in 2018 and 195 per night in 2019. The main increases to nighttime commercial activity were in passenger aircraft operations, primarily resulting from the overall growth in domestic air carrier flights and increased flights to international destinations. The majority (about 81 percent) of nighttime operations occurred either before midnight or after 5:00 AM.
- There was an overall decrease in the total number of people residing within the Day-Night Average Sound Level (DNL) 65 decibel (dB) contour from 2017 to 2018. However, the number within the DNL 65 dB contour increased in Winthrop and Revere while decreasing in East Boston. From 2017 to 2018, there was an increase in total operations and in nighttime operations, but the primary factor in the DNL contour changes was a shift in 2018 back to typical runway use following the extended Runway 4L-22R closure in 2017.
- The 2019 DNL contours are similar in shape and size to those for 2018, with small changes due to runway use shifts, increases in nighttime operations, and overall operations growth in 2019. The total number of people residing within the DNL 65 dB contour increased from 7,034 in 2018 to 8,768 in 2019. The additional population within the DNL 65 dB contour is mainly located in East Boston, primarily due to an increase in Runway 33L departures due to an increase in northwest winds in 2019.
- Compared to 1990, the total number of people residing in the DNL 65 dB contour is about 84 percent lower and 80 percent lower in 2018 and 2019, respectively, due to improved engine technology.

Noise Strategy

The foundation of Massport's noise program is the *Logan Airport Noise Abatement Rules and Regulations*[22] (Noise Rules), which have been in effect since 1986. Massport's Noise Abatement Office is responsible for implementing noise abatement measures and generally monitoring community complaints and other aspects of the noise effects from Logan Airport operations.


Image of Vortex Generator Device by Port on Wing.

Massport is focused on the following noise abatement initiatives:

- **Partnerships with Airlines and FAA**
  - Massport is encouraging retrofitting the Airbus A319/320/321 family of aircraft with vortex generators, which reduce tonal noise on approach. In October 2018, jetBlue Airways (the air carrier with the greatest number of operations at Logan Airport) announced plans to retrofit its older Airbus fleet with Vortex Generators. This move reflects the partnership between Massport and the airlines to reduce aircraft noise to benefit surrounding communities. As airlines retrofit aircraft and transition to the newer models of the A320 family, the number of aircraft operating at Logan Airport without the vortex generators is expected to decrease. For more information, please refer to a press release discussing the generators in Chapter 6, *Noise Abatement*.

22 The Logan International Airport Noise Abatement Rules and Regulations, effective July 1, 1986, are codified as 740 Code of Massachusetts Regulations (CMR) 24.00 et seq (also known as the Noise Rules).

- On October 7, 2016, Massport and FAA signed a Memorandum of Understanding (MOU)[23] to frame the process for analyzing opportunities to reduce noise through changes or amendments to performance-based navigation (PBN), including area navigation (RNAV). This cooperation is a first-in-the-nation project between FAA and an airport operator to better understand the implications of PBN and evaluate strategies to address community concerns. MIT is the technical lead. Block 1 was completed in late 2017 and recommendations were made to the FAA. Currently, MIT is conducting the analysis for Block 2.
  - The fleet operating at Logan Airport is comprised of 83 percent Stage 4 aircraft and 15 percent Stage 5 aircraft (Stage 5 being the quietest), well above the FAA minimum Stage 3 engines.
  - Massport continues to prohibit the use of Runways 4L for departures and Runway 22R for arrivals from 11:00 PM to 6:00 AM; maximize late-night over-water operations via Runways 15R and 33L; and restrict nighttime engine run-ups and use of auxiliary power units (APUs).
  - Massport continues to encourage the voluntary use of reduced-engine taxiing when appropriate and safe (see Appendix L, *Reduced/Single Engine Taxiing at Logan Airport Memoranda*).
  - Massport continues improvement of the Noise Monitoring System. Massport went out to bid in 2018 and selected the prior vendor in 2019. Upgrades to the system and some noise monitors have begun.

- **Sound Insulation Program**
  - Massport has one of the most extensive residential and school sound insulation programs in the nation. To date, Massport has installed sound insulation in 5,467 residences, including 11,515 dwelling units, and 36 schools in East Boston, Roxbury, Dorchester, Winthrop, Revere, Chelsea, and South Boston. Since the start of the program, over $170 million has been invested.
  - Approximately 8 percent of applicants also choose the Room-of-Preference option that allows the owner to identify a room (usually a bedroom or living room) for extra acoustical treatment.

23 Massport. October 7, 2016. *Massport and FAA Work to Reduce Overflight Noise.* https://www.massport.com/news-room/news/massport-and-faa-work-to-reduce-overflight-noise/.

Air Quality/Emissions Reduction

Total emissions from all sources associated with Logan Airport are less than they were a decade ago, with the exception of NO_x. 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 wherever possible. When compared to 2017, the changes in air emissions in 2018 and 2019 remain within expected values given the corresponding upturn in aircraft operations. Due to the COVID-19 pandemic, there are far fewer aircraft operations, passengers, and overall activity at Logan Airport. Reductions in aircraft operations and ground access trips will likely result in reduced emissions in 2020.

Massport prepared emissions inventories for 2018 and 2019 for the criteria pollutants carbon monoxide (CO), particulate matter (PM_{10}/$PM_{2.5}$), and volatile organic compounds (VOCs), as well greenhouse gases (GHGs) and oxides of nitrogen (NO_x). Key findings of those emissions inventories include:

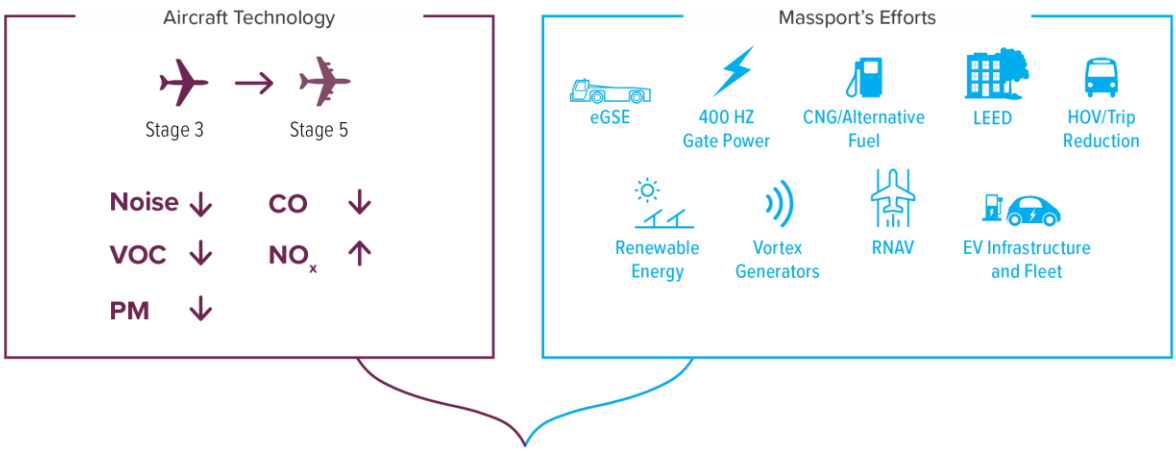
- Total modeled emissions of CO, PM_{10}/$PM_{2.5}$ and NO_X, increased from 2017 to 2018 by approximately 14 percent, 17 percent, and 4 percent, respectively. VOCs remained consistent. These increases were mainly attributable to the 5.6-percent increase in aircraft operations in 2018 compared to 2017. Variations in emissions were also due to airframe/engine combination parameters included in the two model versions used and the associated differences in applied emission factors assumed in the models.
- In 2019, total modeled emissions of CO, PM_{10}/$PM_{2.5}$, and VOCs each increased by about 2 percent from 2018. NO_X emissions instead increased by about 5 percent. These changes are also due to an increase in aircraft operations of 0.7 percent as well as slight variations in the aircraft fleet mix from 2018 to 2019. Additionally, increases in NO_X emissions in 2019 are associated with higher stationary source fuel usages in that year.
- Modeled emissions of CO, VOC, and NO_X associated with GSE and motor vehicles, many of which Massport has influence, have declined from 2018 to 2019. Emissions of PM_{10}/$PM_{2.5}$ remain steady. While there are model version differences between 2017 and 2018, causing variances in emissions between those years, overall GSE and motor vehicles show a decreasing trend from 2017 to 2019 for all pollutants.
- Total Logan Airport GHG emissions increased from 2017 to 2018 by approximately 10 percent and from 2018 to 2019 by approximately 4 percent. These increases are primarily due to the increase in aircraft operations (i.e., 5.6 percent in 2018 and 0.7 percent in 2019). GHG emissions associated with Logan Airport in 2018 and 2019 are approximately 1 percent of the most recent statewide emissions estimates.

Effect of Aircraft Engine Technology on NO_x

Aircraft emissions continue to represent the largest source (95 percent) of NO_x at Logan Airport, followed by other sources (2 percent), ground service equipment (GSE) (2 percent), and motor vehicles (1 percent). Massport does not have any control over aircraft emissions, which represent the vast majority of total airport emissions.

To reduce fuel use and emissions, aircraft engine designers and manufacturers continue to work on producing more "fuel-efficient" (i.e., less fuel-burning) engines. This is achieved by enhancing engine performance with improved fuel combustion technologies, greater thrust-generating power, and less engine wear. Aircraft are also being designed to decrease fuel-burn with advancements in aircraft wing and body aerodynamics, light-weight alloy materials, and improved means of navigation. These emerging technologies and reduced fuel burn are expected to reduce emissions, reduce noise, and moderate the growth in NO_x emissions into the future.

Figure 1-8 Aircraft Engine Technology Has Evolved Over Time



Aircraft engine technology has evolved over time

BENEFITS

- Quieter engines
- Greater fuel efficiency
- Decreasing VOC, PM, and CO emissions

TRADE-OFFS

- Increased NOx emissions

Aircraft engine manufacturers are continually advancing combustion technology to mitigate and reverse the historical tradeoffs between lower emissions, less noise, and increased NOx.

Air Quality Strategy

Massport's air quality management strategy for Logan Airport focuses on decreasing emissions from Airport-related sources. Since Massport does not have direct control over aircraft operations or fleet choices of the airlines, it continues to focus on areas that Massport does control or has an opportunity to influence. Massport's air quality management strategy for Logan Airport focuses on decreasing emissions from Airport-related sources, in addition to furthering innovative means to achieve emissions reductions Airport-wide. Massport has established a number of goals and objectives to address air emissions from Airport operations, including the reduction of GSE and Massport vehicle fleet emissions. Massport is focused on the following initiatives:

- **Provide infrastructure and encourage practices that support reductions in aircraft emissions**
  - Massport provides pre-conditioned air (PCA) and 400 Hertz (Hz) power at all aircraft contact gates to reduce aircraft idling and use of APUs.
  - Massport encourages single engine taxiing procedures by the airlines when safe, to reduce both noise and air emissions.
  - Use of battery powered tugs and belt loaders for the Delta Air Lines ground service fleet at Terminal A. Massport is advancing plans to extend the infrastructure for plug-in GSE to other locations.
- **Maximize use of HOV and reduce single occupancy vehicle trips, particularly drop-off/pick-up trips, and passenger use of private vehicles to and from the Airport**
  - Massport implements an extensive HOV strategy and ground transportation improvements (see following section, Ground Access Strategy, for details).
- **Reduce emissions from fleets operating at Logan Airport**
  - Massport is facilitating the replacement of gas- and diesel-powered GSE with all-electric GSE (eGSE) by the end of 2027 (as commercially available). In 2018, EPA awarded a grant to Massport to replace gas- and diesel-powered GSE at Logan Airport. This grant will be used in conjunction with an FAA VALE grant Massport received in the fall of 2018 to install eGSE charging stations as part of the Terminal B Optimization Project. In 2019, through the same program, Massport was awarded funds for jetBlue Airways' charging infrastructure at Terminal C, Massport contributed toward the installation of 42 eGSE charging stations.
  - In 2019, Massport was awarded a grant through the Massachusetts Department of Environmental Protection's (MassDEP's) Volkswagen Diesel Settlements & Environmental Mitigation Open Solicitation grant program, aimed at reducing NO_X and GHG emissions, to acquire eGSE in partnership with jetBlue. This will replace 31 pieces of GSE with new eGSE and install four eGSE charging stations at Terminal C. United Airlines also privately pursued this grant and was awarded funding.
  - Additionally, in 2019 EPA awarded Massport a DERA grant to replace 44 diesel-powered GSE equipment with all-electric baggage tractors, belt loaders, and push back tugs. GSE owners at Logan Airport will contribute a match.

- **Provide infrastructure to support alternative fuels including compressed natural gas (CNG) and electricity**
    - Massport continues to operate one of New England's largest retail CNG stations, which is open to the public. In 2018 and 2019, the CNG station pumped approximately 25,750 and 24,445 gasoline-gallon equivalents per month for all Massport fleet vehicles (non-Massport vehicles were also using CNG).
    - Massport supports the current and future standard systems for plug-in electric vehicles (EVs). Massport has installed 13 EV-charging stations to accommodate a total of 26 vehicles in the Central Garage and Terminal B parking areas. Massport has increased the availability of EV charging stations so that 150 percent of this demand is available at all facilities at all times and will continue to evaluate demand as passenger activity levels return. Currently, there are 123 charging ports installed at Logan Airport and more at the Logan Express sites.
- **Reduce emissions from Massport fleet vehicles**
    - Massport continues to run and augment its fleet of 54 alternative fuel vehicle (AFV)/alternative power vehicle (APV) on-Airport shuttle buses. Massport also has a vehicle procurement policy that requires consideration of AFVs when purchases are made.
- **Reduce emissions associated with Massport buildings, including energy needs**
    - Massport has committed to achieving Leadership in Energy and Environmental Design (LEED®) certification for eligible buildings, as appropriate.
    - Massport continues to invest in renewable energy installations on-Airport (solar/wind).

Environmental Compliance and Management/Water Quality

Massport's approach to environmental management and compliance is a key component of its commitment to sustainability and responsible stewardship at Logan Airport. Through monitoring and documentation, Massport assesses environmental performance, continually developing, implementing, evaluating, and improving policies and programs. Massport promotes appropriate environmental practices through pollution prevention and remediation measures. Massport also works closely with tenants and operations staff at Logan Airport in an effort to continuously improve environmental compliance. Key findings in this EDR include:

- In 2018, approximately 97 percent of Massport's stormwater samples were in compliance with National Pollutant Discharge Elimination System (NPDES) permit requirements and in 2019, approximately 99 percent of samples were in compliance.
- Massport has had its International Organization for Standardization (ISO) 14001 Environmental Management System (EMS) in place since 2006.
- Massport annually updates and maintains its Stormwater Pollution Prevention Plan (SWPPP) for Logan Airport.

- Massport continues to assess, remediate, and bring its Massachusetts Contingency Plan sites to regulatory closure.
- In 2018, there were eight reportable spills, similar to 2017. Six storm drains were impacted, an increase from the two in 2017. In 2019, there were 22 reportable spills of which nine storm drains were impacted.

For additional information, please see Chapter 8, *Environmental Compliance and Management/Water Quality*.

Sustainability and Resiliency Program

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. Consistent with the Airports Council International - North America's (ACI-NA) definition of Airport Sustainability,[24] 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 *2018/2019 EDR* more fully describe, where appropriate. **Figure 1-9** highlights some of Massport's recent sustainability initiatives.

Figure 1-9 Recent Sustainability Highlights

24 Airports Council International (ACI). Airport Sustainability: A Holistic Approach to Effective Airport Management. Undated. http://www.aci-na.org/static/entransit/Sustainability%20White%20Paper.pdf.

Logan Airport Sustainability Management Plan (SMP)

In 2013, Massport was awarded a grant by FAA to prepare a 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. The Logan Airport SMP is intended to promote and integrate sustainability Airport-wide and to coordinate ongoing sustainability efforts across Massport. The Logan Airport SMP developed a framework and implementation plan, with metrics and targets, designed to track progress over time.

Massport is currently working on a vision for Massport's "Sustainability 2.0" as a next-level planning effort to implement principles and approaches from the SMP at other Massport facilities and to update Massport's sustainability goals and targets. Massport is currently advancing a series of short-term initiatives to help reach its goals (see **Table 1-1**) in the areas of (1) energy and GHG emissions; (2) water conservation; (3) community, employee, and passenger well-being; (4) materials, waste management, and recycling; (5) resiliency; (6) noise abatement; (7) air quality improvement; (8) ground access and connectivity; (9) water quality/stormwater; and (10) natural resources. Massport reports its progress towards achieving each goal, including changes in related performance, in sustainability reports. Since the publication of the Logan Airport SMP, Massport has continued expanding its sustainability initiatives, with an increased focus on implementing resliency measures to protect Maritime and Logan Airport operations, cirital infrastructure, and workforce.

The *Logan Airport Annual Sustainability Report*, first published in April 2016, provides a progress summary of sustainability efforts at Logan Airport based on Massport's sustainability goals and targets established in the Logan Airport SMP. It highlights Massport's progress towards improving sustainability and enhancing resiliency at its facilities. This report, now called the *Annual Sustainability and Resiliency Report*, was updated in 2019 and can also be found at: http://www.massport.com/massport/business/capital-improvements/sustainability/sustainability-management/.

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 the portion of Massport'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, equitable, 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 and national model for resiliency planning and implementation among port authorities.	Noise Abatement 	Minimize noise impacts from Logan Airport operations.
Air Quality Improvement 	Decrease emissions of air quality criteria pollutants from Massport sources.	Ground Access and Connectivity 	Provide superior ground access to Logan Airport through alternative and high-occupancy vehicle (HOV) travel modes.
Water Quality/Stormwater 	Protect water quality and minimize pollutant discharges.	Natural Resources 	Protect and restore natural resources near Massport facilities.

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

The United States Green Building Council's (USGBC's) 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. Most recently, in 2017, the Terminal E New Large Aircraft Wing (Terminal E Renovation and Enhancements Project) received LEED Gold certification for Commercial Interiors. Other recent examples of LEED-certified buildings at Logan Airport are the RCC and Green Bus Depot (see **Figure 1-10** and **Table 1-2**). Further details are available in Chapter 3, *Airport Planning*.

Figure 1-10 LEED-Certified Facilities at Logan Airport

Sustainability Design Standards and Guidelines and LEED Certification

For smaller building projects and non-building projects, Massport uses its *Sustainable Design Standards and Guidelines* (SDSGs). The SDSGs provide a framework for sustainable design and construction for both new construction and rehabilitation projects. The SDSGs apply 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 is also using USGBC's sustainability focused Parksmart rating system, an environmental and sustainability focused rating system specific to parking structure management, programming, design, and technology.

Table 1-2 Leadership in Energy and Environmental Design (LEED)-Certified Facilities at Logan Airport

Terminal A (LEED Certified) Completed 2005/2006

- First airport terminal in the world to be LEED Certified
- Priority curb locations for high-occupancy vehicles (HOVs) 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 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

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

- Green building materials
- Rooftop solar panels
- Bike and pedestrian access and connections
- Natural day lighting and 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
- Vehicle miles traveled (VMT) reduction

Green Bus Depot (LEED Silver) Completed 2014

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

Table 1-2 Leadership in Energy and Environmental Design (LEED)-Certified Facilities at Logan Airport (Continued)

Terminal E New Large Aircraft Wing (LEED Gold - Commercial Interiors) Completed 2017

- Reduces heat island effect by providing a reflective white roof and a light color concrete tarmac
- Low-flow water fixtures and water closets
- Efficient light fixtures and efficient heating, ventilation, and air conditioning (HVAC) system
- Use of renewable energy sources
- Recycled and regionally sourced materials
- Enhanced indoor air quality
- Solar-thermal domestic hot water system to heat 100 percent of the wing's domestic water needs

Climate Change and Resiliency Planning

As the Boston area will continue to experience increased temperatures, more frequent extreme weather events, and higher sea level due to climate change,[25] Massport understands the importance of preparing for impacts to protect and enhance its critical infrastructure, operational assets, and workforce. Through robust planning and regional collaboration, Massport strives to continue its leadership role in resiliency planning among port authorities, the airport industry, and the Boston region.

At the end of 2013, Massport initiated a *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 provides recommendations regarding short-term strategies to make Massport's facilities more resilient to the likely effects of climate change. In 2014, the study was completed, and implementation of adaptation initiatives began, in late 2014.

In addition to the DIRP Study and its related initiatives, Massport has completed an Authority-wide risk assessment, as part of its strategic planning initiative; issued a *Floodproofing Design Guide*; and has developed a resilience framework to provide consistent metrics for short- and long-term planning and protection of its critical facilities and infrastructure. Beyond infrastructure resiliency, Massport is also focused on incorporating social and economic resilience into its long-term operational and capital planning. Massport's *Floodproofing Design Guide* was published in November 2014 and updated in November 2018.

Operational aspects of resiliency strategy include the development of Flood Operations Plans for Logan Airport and Massport maritime facilities. These plans were introduced in 2014 and included the planned deployment of temporary flood barriers to protect up to 12 locations of critical infrastructure in

25 City of Boston. 2016. *Climate Ready Boston*. https://www.boston.gov/sites/default/files/climatereadyeastbostoncharlestown_finalreport_web.pdf.

the event of severe weather. Additional locations have been permanently enhanced to prevent flooding. The flood operations plans are evaluated annually to enhance their effectiveness and to adapt to evolving requirements and past experiences.

Massport reports on progress towards resiliency goals in its Logan Airport Annual Sustainability Reports. Additional information about Massport's resiliency goals and initiatives is available at: http://www.massport.com/massport/business/capital-improvements/sustainability/climate-change-adaptation-and-resiliency/.

Massport Partnerships and Community Support

Massport has a long-standing commitment to be a good neighbor. Working in concert with government, community, and civic leaders throughout Massachusetts and New England, Massport is an active participant in efforts that improve the quality of life for residents living near Massport's facilities. Massport employees participated in a number of community activities in 2018 and 2019. In the spring, Massport employees participated in the City of Boston's annual neighborhood Boston Shines clean-up. At Thanksgiving, Massport employees provided food donations to three community programs, which served more than 500 families and individuals each month. In the fall, children ages four to 17 were provided with a new backpack filled with school supplies and new clothes at the start of the school year. Over the holidays, Massport invited students from neighboring communities and elementary schools to sing at Terminal A as part of its annual holiday music program.

Open Space/Buffer Program

Massport has invested in an extensive open space program to enhance the surrounding communities. Massport initially committed over $15 million for the planning, construction, and maintenance of four Airport edge buffer areas and two parks along Logan Airport's perimeter. These buffers include the Bayswater Embankment Airport Edge Buffer, Navy Fuel Pier Buffer, and the Southwest Service Area (SWSA) Buffer (Phases I and II). The award-winning Piers Park was completed in 1995 and has since become part of a network of greenspace that traverses East Boston from the Jeffries Point waterfront to Constitution Beach.

Adjacent to the current Piers Park, Piers Park Phase II will add approximately 4.2 acres of green space to the East Boston waterfront upon completion, and plans are underway by an outside party for Piers Park Phase III, which will turn an aging pier into a 3.6-acre greenspace that will include resiliency features to help protect the neighborhood from flooding and sea level rise. 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 engagement with the East Boston community. More information can be found in Chapter 3, *Airport Planning*.

Figure 1-11 Parks Owned and Operated by Massport and City of Boston

Source: VHB.

Organization of the *2018/2019 EDR*

The remainder of this EDR includes:

- **Spanish Executive Summary** provides a translated version of the Executive Summary included after the English-version of Chapter 1, *Introduction/Executive Summary*.
- **Chapter 2, *Activity Levels***, presents aviation activity statistics for Logan Airport in 2018 and 2019 with a comparison to previous years. 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 2018 and 2019. 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 2018 and 2019 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 2018 and 2019 with a comparison to previous years.
- **Chapter 6, *Noise Abatement***, updates the status of the noise environment at Logan Airport in 2018 and 2019 with a comparison to previous years, and describes Massport's efforts to reduce noise levels.
- **Chapter 7, *Air Quality/Emissions Reduction***, provides an overview of Airport-related air quality in 2018 and 2019 with a comparison to previous years, and efforts to reduce emissions.

- **Chapter 8, *Environmental Compliance and Management/Water Quality***, describes Massport's ongoing environmental management activities including NPDES compliance, stormwater, fuel spills, activities under the Massachusetts Contingency Plan (MCP), and tank management.
- **Chapter 9, *Environmentally Beneficial Measures and Project Mitigation Tracking***, provides an overview of Massport's programs and initiatives that provide environmental benefits and reports on Massport's progress in meeting its MEPA Section 61[26] mitigation commitments for specific Airport projects.

MEPA Appendices: These include the Secretary's Certificate on the *2017 ESPR and* comment letters received on the *2017 ESPR* and responses to those comments, Secretary's Certificates on the EDRs/ESPRs issued for reporting years 2011 through 2017, a list of reviewers to whom this EDR was distributed, and a proposed scope for the *2020 EDR*. Also included in this section are the Secretary's Certificates on the Terminal E Modernization Project ENF, Draft EA/EIR, Final EA/EIR, and the Secretary's Certificate on the Logan Airport Parking Project ENF.

Appendix A – MEPA Certificates and Responses to Comments[27]
Appendix B – Comment Letters and Responses
Appendix C – Proposed Scope for the 2020 EDR
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 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 –Environmental Compliance and Management/Water Quality
Appendix K – Peak Period Pricing Monitoring Reports
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 EA/EIR and Final EA/EIR are included in Appendix A. For convenience, Massport has responded to comments that relate to the EDR and ESPR.

28 Technical appendices are available on Massport's website at www.massport.com.

This Page Intentionally Left Blank.

Introducción/Resumen Ejecutivo

(Spanish Executive Summary)

1

Introducción/Resumen ejecutivo

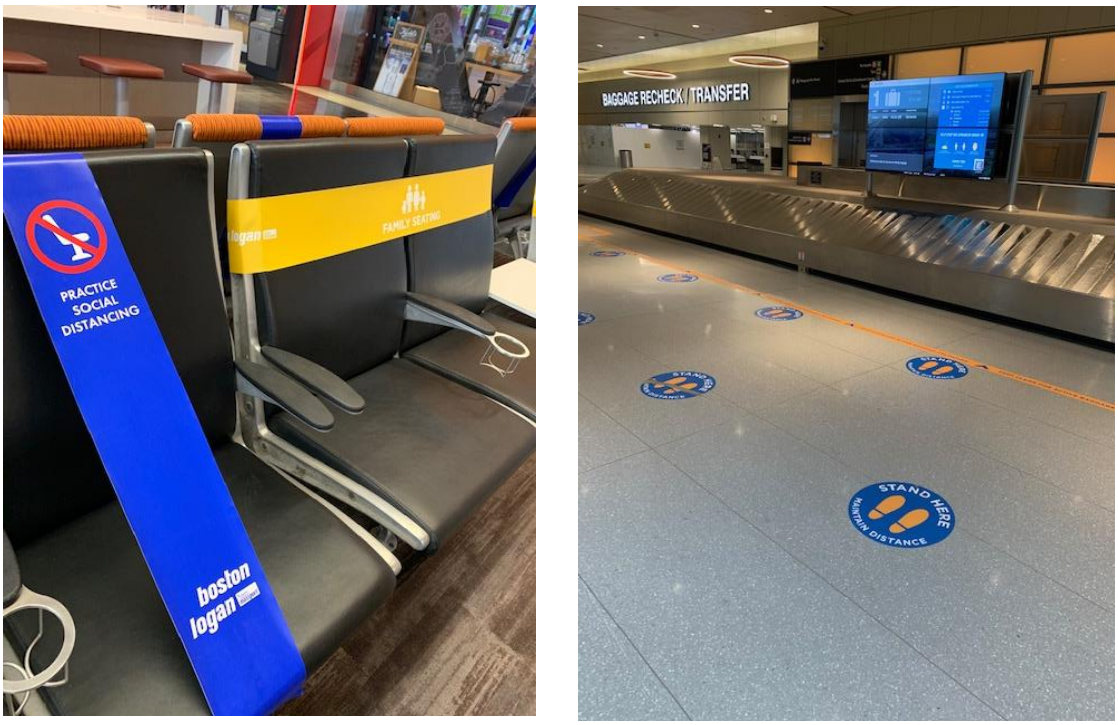
Introducción

Massachusetts Port Authority (Massport) continúa con su práctica de casi cuatro décadas de brindar un registro exhaustivo sobre las tendencias medioambientales, el planeamiento de las instalaciones, y los niveles de operaciones y de pasajeros del Aeropuerto Internacional Logan de Boston (Aeropuerto Logan o Aeropuerto) y los compromisos de mitigación de Massport en este *Informe de datos medioambientales (Environmental Data Report, EDR) de 2018/2019*. Como Massport ha hecho periódicamente después de la circulación y revisión de nuestros Informes de Estado y Planificación Ambiental (Environmental Status and Planning Reports, ESPR), con la aprobación del secretario de la Oficina Ejecutiva de Energía y Asuntos Ambientales (Executive Office of Energy and Environmental Affairs, EEA) de Massachusetts, este *EDR de 2018/2019* combina datos y análisis para los años naturales 2018 y 2019.

Este EDR fue preparado en el 2020 durante la pandemia de la COVID-19 en curso. Massport se ha esforzado por incluir actualizaciones relevantes hasta el otoño del 2020 inclusive, cuando las condiciones actuales dieron lugar a cambios en los proyectos o programas que estaban vigentes en el 2018 y 2019. A partir de marzo del 2020, los vuelos de entrada y salida del Aeropuerto Logan se redujeron drásticamente y los niveles de pasajeros disminuyeron en más del 90 por ciento en el pico de la pandemia en la primavera y el verano del 2020. Por lo tanto, actualmente hay muchas menos operaciones de aviones y pasajeros, y se produjo una caída dramática en la actividad general del Aeropuerto Logan. Si bien los niveles de actividad comenzaron a recuperarse lentamente a mediados del verano del 2020, la actual oleada de casos de COVID-19 ha dado lugar a niveles de actividad históricamente bajos y se prevé una recuperación total en los próximos años. En octubre del 2020, el total de operaciones de vuelo del año se redujo aproximadamente en un 50 por ciento y los niveles de pasajeros se redujeron en un 70 por ciento en comparación con los de enero a octubre del 2019. Massport prevé que, para finales del 2020, los niveles de pasajeros habrán bajado a niveles de actividad no observados desde mediados de la década de 1970.

Las disminuciones del tráfico aéreo causadas por las recesiones económicas y otras "perturbaciones", como los acontecimientos del 11 de septiembre del 2001 y la Gran Recesión del 2008/2009, han sido seguidas por ciclos de recuperación gradual. Como se muestra en la **Figura 1-1**, después de los acontecimientos del 11 de septiembre del 2001 y la recesión posterior, los niveles de actividad de los pasajeros del Aeropuerto Logan disminuyeron en alrededor del 18 por ciento, pero se recuperaron cinco años después. Los volúmenes de pasajeros del Aeropuerto Logan disminuyeron en alrededor de un 9 % después de la Gran Recesión del 2008/2009. Como se muestra en la **Figura 1-2**, en 2020 el promedio de siete días del caudal de detección de pasajeros la Administración de Seguridad en el Transporte (Transportation Security Administration, TSA) se redujo en más del 90 por ciento muy rápidamente. En la **Figura 1-3,** se muestra el cambio porcentual en el caudal mensual de la TSA desde el 2019 al 2020 para la nación y para Boston.

La COVID-19 está afectando de una manera sin precedentes no solo la industria de la aviación sino la economía mundial. Mientras que la preocupación inmediata y más apremiante es el costo humano, la COVID-19 ha creado profundas implicaciones para casi todos los negocios e industrias. El impacto en la aviación ha sido particularmente grave. La situación cambia a diario y sigue habiendo una incertidumbre considerable en cuanto a la duración de esta pandemia y sus repercusiones a largo plazo.

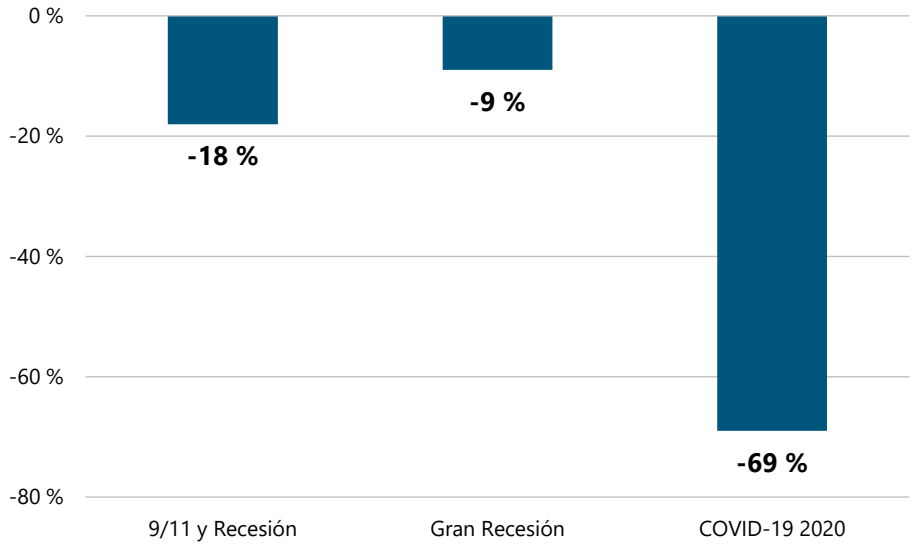


Fuente: Massport

Notas: Terminal de aeropuerto Logan (izquierda) y reclamo de equipaje (derecha) durante la pandemia de COVID-19.

Como resultado de esta significativa reducción en la actividad del Aeropuerto y la dramática reducción de los ingresos, tanto Massport como nuestras aerolíneas y otros locatarios han tenido que ajustar y reducir sus operaciones. Al mismo tiempo, el cronograma de varios proyectos y programas del Aeropuerto han sido revisados y retrasados. Para brindar la mayor transparencia posible, en el Capítulo 3, *Planeación aeroportuaria,* se incluyen las actualizaciones más recientes del proyecto hasta octubre del 2020. Los próximos EDR continuarán brindando actualizaciones, según estén disponibles. En general, Massport sigue evaluando y planificando la recuperación de las operaciones de las aeronaves y la actividad de los pasajeros aéreos, y sigue comprometida con la aplicación de la amplia gama de estrategias ambientales y operativas destinadas a reducir los impactos asociados a las operaciones del Aeropuerto.

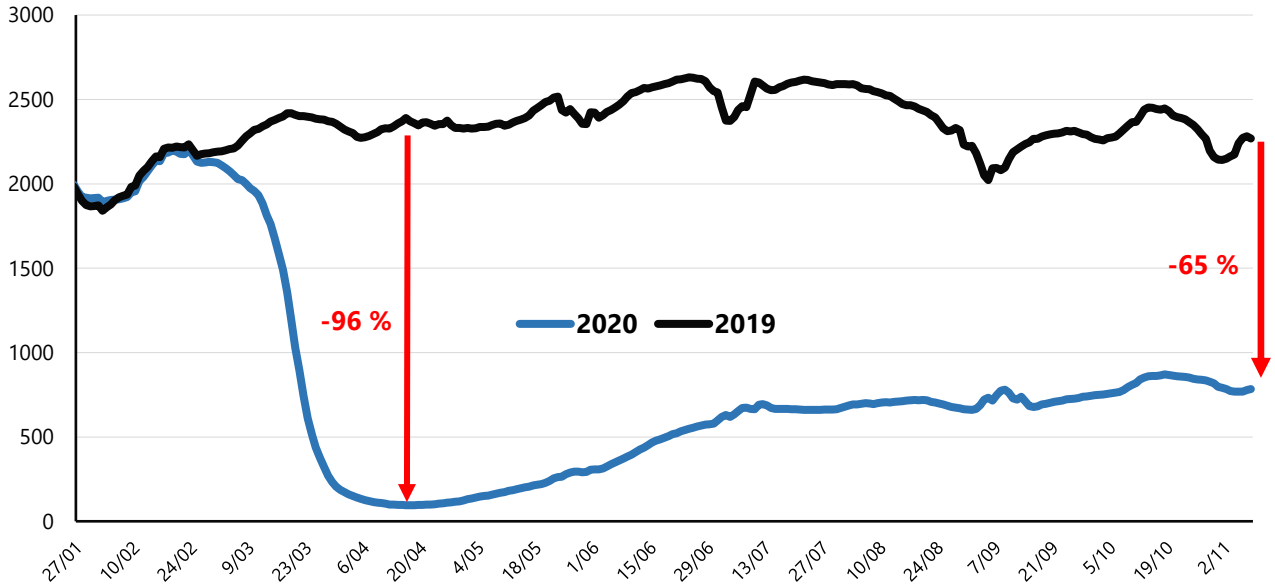
Figura 1-1 Cambio en el aumento de pasajeros del Aeropuerto Logan después de recesiones recientes



Fuente: InterVISTAS: Estadísticas de trafico de Massport..

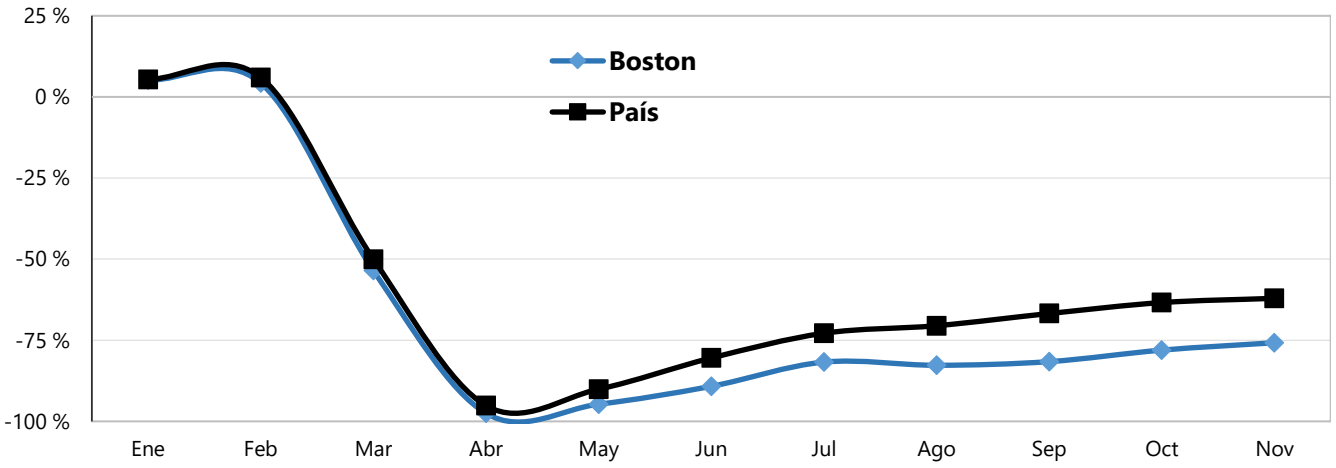
Nota: El cambio por la COVID-19 del 2020 es el año corrido hasta octubre del 2020 frente al 2019.

Figura 1-2: Promedio de siete días del caudal de la TSA en los aeropuertos de los EE. UU., 2019 frente al 2020



Fuente: Informes diarios de la TSA.

Figura 1-3: Cambio porcentual en el caudal mensual de la TSA desde el año anterior, enero del 2020 hasta noviembre del 2020



Fuente: Informes diarios de la TSA.

El Aeropuerto Logan, cuyo propietario y operador es Massport, cumple una función clave en las redes de transporte de pasajeros y de carga en el área metropolitana de Boston y de Nueva Inglaterra. Es el principal aeropuerto del área metropolitana de Boston, el aeropuerto más importante de Nueva Inglaterra en cuanto a los servicios de larga distancia y una gran puerta de entrada internacional a los EE. UU. para los servicios transatlánticos. Los límites del Aeropuerto abarcan aproximadamente 970 hectáreas en el East Boston y Winthrop, incluidas aproximadamente 283 hectáreas en el puerto de Boston. El Aeropuerto Logan comprende seis pistas, aproximadamente 24 140 metros de pistas para carreteo y aproximadamente 97 hectáreas de plataformas de cemento y asfalto. El Aeropuerto Logan tiene cuatro terminales de pasajeros interconectadas (Terminales A, B, C y E), cada una con sus propias instalaciones de emisión de pasajes, reclamo de equipaje y transporte terrestre. El Aeropuerto está a menos de cinco kilómetros del centro de Boston y se puede acceder a este por líneas de transporte público, numerosas líneas de autobuses directas y un sistema de carreteras bien conectadas. Massport también brinda el servicio de autobuses Logan Express desde y hacia el Aeropuerto Logan para los pasajeros de vuelos y para los empleados de una serie de aparcamientos de incentivo.

Este *EDR del 2018/2019* pertenece a una serie de documentos de revisión medioambiental anual entregados al secretario de la EEA, en cumplimiento con la Ley de Políticas Ambientales de Massachusetts (Massachusetts Environmental Policy Act, MEPA).[1] Desde 1979, Massport presenta estos documentos para informar los efectos medioambientales acumulados de las operaciones y de las actividades del Aeropuerto Logan. El Aeropuerto

1 Capítulo 30 de las leyes generales de Massachusetts, secciones 61-62H. La MEPA se implementa mediante las reglamentaciones publicadas en el Código de Normas de Massachusetts (Code of Massachusetts Regulations, CMR) 301 11.00 (las reglamentaciones de la MEPA).

Logan es el primer aeropuerto del país para el que se confeccionó una evaluación medioambiental anual sobre las actividades aeroportuarias y Massport continúa siendo líder en informes medioambientales.

Aproximadamente cada cinco años, Massport confecciona un ESPR, que brinda un panorama histórico y prospectivo del Aeropuerto Logan. Los EDR, que se confeccionan anualmente en los intervalos entre los ESPR, brindan una revisión histórica de las condiciones medioambientales para el año que se informa en comparación con el año anterior. Este *EDR del 2018/2019* sigue al *ESPR del 2017* que informó las condiciones del 2017, e incluyó proyecciones y análisis de las futuras operaciones y condiciones medioambientales en función de la predicción de pasajeros anterior a la COVID-19. Mientras Massport y toda la industria de la aviación continúan ajustándose a las nuevas condiciones operativas, nosotros seguimos evaluando los impactos actuales y futuros de la pandemia. Cuando es posible, este EDR incluye información relevante y actualizaciones. Sin embargo, será necesario realizar proyecciones y análisis más detallados en las próximas ESPRs.

El alcance de este *EDR del 2018/2019* conjunto se estableció mediante la certificación del secretario en el *ESPR del 2017* con fecha del 25 de noviembre del 2019, la que se incluye en el Apéndice A, *Certificados y respuestas a los comentarios de la MEPA*. Este EDR cumple todos los requisitos establecidos en la certificación del secretario en el *ESPR del 2017* e incluye respuestas a los comentarios en la certificación del secretario, y actualiza y compara los datos presentados en el *ESPR del 2017* sobre los siguientes temas:

- Niveles de actividad (incluidas las operaciones de las aeronaves, las actividades de los pasajeros y los volúmenes de carga)
- Planeación aeroportuaria (incluidas las actividades que están en curso y los proyectos venideros)
- Función del Aeropuerto Logan en la red de transporte regional
- Acceso terrestre desde y hacia el Aeropuerto
- Disminución del ruido
- Calidad del aire/Reducción de emisiones
- Calidad del agua/Cumplimiento medioambiental
- Sustentabilidad y resiliencia
- Medidas medioambientales beneficiosas y compromisos de mitigación

Para mejorar la utilidad de este EDR como documento de referencia para los revisores, este informe también presenta datos históricos sobre las condiciones medioambientales en el Aeropuerto Logan desde 1990, en las instancias en que hay información histórica disponible. Cuando corresponde y está disponible, este EDR también incluye actualizaciones hasta el otoño del 2020 inclusive.

Este EDR incluye una traducción al español de este capítulo. Esta versión traducida se incluye después de la versión en inglés del resumen ejecutivo.

EEA n.° 3247

Presentada por

Massachusetts Port Authority
One Harborside Drive, Suite 200S
East Boston, MA 02128

Stewart Dalzell, subdirector
Planificación estratégica y de negocios
(617) 568-3524

Brad Washburn, gerente de Planificación Ambiental y Permisos, Planificación Estratégica y de Negocios
(617) 568-3546

Proceso de revisión medioambiental del Aeropuerto Logan

Este *EDR del 2018/2019* es la próxima presentación de Massport en su proceso de revisión medioambiental estatal formal, único, pero bien consolidado, que evalúa los impactos medioambientales acumulados del Aeropuerto Logan. Los documentos brindan un contexto actual e histórico frente al cual los proyectos individuales del Aeropuerto Logan que alcanzan umbrales de revisión medioambiental estatales y federales se evalúan sobre las bases de proyectos específicos. A continuación, se describen los procesos de revisión medioambiental específicos del proyecto para todo el Aeropuerto.

Contexto histórico para el proceso de EDR/ESPR del Aeropuerto Logan

En 1979, el secretario de la EEA emitió un certificado solicitando a Massport que defina, evalúe y divulgue cada tres años el impacto del crecimiento a largo plazo del Aeropuerto a través de un Informe de impactos medioambientales genérico (Generic Environmental Impact Report, GEIR). En el certificado también se solicitaron actualizaciones anuales provisorias para brindar datos sobre las condiciones para los años entre los GEIR. El GEIR evolucionó hasta transformarse en una herramienta de planificación eficaz para Massport y brindó proyecciones de condiciones medioambientales para que los efectos acumulados de los proyectos individuales se puedan evaluar dentro de un contexto más amplio.

La EEA eliminó los GEIR después de las revisiones de 1998 para sus reglamentaciones de la MEPA. Sin embargo, la certificación del secretario sobre la actualización anual de 1997[2] propuso un proceso de análisis medioambiental revisado para el Aeropuerto Logan lo que dio como resultado la confección de los EDR/ESPR de Massport subsiguientes. El ESPR más amplio brinda un análisis de largo alcance de las operaciones, de los pasajeros y de los impactos acumulados proyectados, mientras que los EDR se confeccionan anualmente para brindar una revisión de las condiciones medioambientales para el año que se informa en comparación con el año anterior. Se desarrolló el proceso del EDR/ESPR para permitir que se analicen los proyectos individuales en el Aeropuerto Logan en un contexto más amplio en todo el Aeropuerto. Como se estableció en la introducción del *ESPR de 1999,* "mientras que el ESPR y el EDR de Logan brindan el contexto amplio de la planificación para los proyectos propuestos para el Aeropuerto Logan y los conceptos de planificación futuros que Massport analiza,

2 Certificación del secretario de la Oficina Ejecutiva de Asuntos Medioambientales sobre la actualización anual del Aeropuerto Logan de 1997, emitida el 16 de octubre de 1998.

no se puede crear ningún proyecto solamente en las bases de inclusión y análisis en el *ESPR de 1999*". Luego, establece que los proyectos que cumplen con los umbrales de revisión de la MEPA o Ley Nacional de Políticas Ambientales (National Environmental Policy Act, NEPA) deben someterse a estos procesos, si es necesario. En resumen, los EDR/ESPR brindan un contexto de planificación acumulada que complementa las presentaciones individuales específicas del proyecto.

En el 2018 y 2019, si bien los niveles de pasajeros tuvieron un crecimiento significativo y alcanzaron nuevos niveles máximos, las operaciones de las aeronaves y los efectos medioambientales asociados se mantuvieron bien por debajo de los niveles analizados previamente para el Aeropuerto Logan. Por lo tanto, el crecimiento de la aviación pronosticado presentado en el *ESPR del 2004,* la afirmación sobre la que se estableció inicialmente el cronograma del ESPR, no se produjo. En consecuencia, con la aprobación del secretario, Massport confeccionó los *EDR del 2009 y del 2010* en lugar del ESPR originalmente planeado para el 2009. El *ESPR del 2011,* presentado a principios del 2013, informó sobre el año natural del 2011 y los pronósticos de los niveles actualizados de las actividades de los pasajeros y de las operaciones de las aeronaves. El *EDR del 2012/2013* conjunto presentó condiciones para ambos años naturales, 2012 y 2013. En el *EDR del 2014,* el *EDR del 2015* y el *EDR del 2016* se presentaron las condiciones para los años naturales del 2014, 2015 y 2016, respectivamente. Del mismo modo, con el fuerte crecimiento de pasajeros y la evolución de las tendencias de acceso terrestre con la industria emergente de las aplicaciones de transporte en coche (previamente conocido como empresas de red de transporte o transportation network company, TNC), la EEA permitió a Massport aplazar el *ESPR del 2016*.

El *ESPR del 2017* proporcionó un análisis integral acumulado de los niveles de actividad y de las condiciones medioambientales para el 2017 y un horizonte de planeación futura. En el ESPR, Massport propuso confeccionar un *EDR del 2018/2019* conjunto para informar los efectos de todas las actividades del Aeropuerto Logan basadas en la actividad de pasajeros y en las operaciones de las aeronaves reales en el 2018 y 2019. Este documento responde a la aprobación de la EEA del *EDR del 2018/2019* conjunto.

Si bien este informe se centra principalmente en los años 2018 y 2019, Massport ha incluido la mejor información disponible sobre el año 2020, a medida que la Autoridad y la nación reaccionan ante la pandemia de la COVID-19. Si corresponde, Massport continuará identificando y abordando cualquier tendencia de aviación y medioambiental a largo plazo tanto en los EDR como en los ESPR.

Revisión específica del proyecto

Aunque esta revisión de todo el Aeropuerto brinda el contexto de planificación más amplio para los proyectos propuestos y para los conceptos de planificación futuros, determinados proyectos del Aeropuerto también están sujetos al proceso público de revisión medioambiental específico del proyecto cuando cumplen los umbrales de revisión medioambiental estatal. Cuando se requiere, Massport y los locatarios del Aeropuerto presentan formularios de notificación ambiental (Environmental Notification Forms, ENF) e informes de impacto ambiental (Environmental Impact Reports, EIR) de conformidad con la MEPA. De manera similar, cuando se desencadena la revisión medioambiental de la NEPA, se revisan los proyectos de acuerdo con el proceso de revisión medioambiental de la NEPA.[3] Los proyectos actuales y futuros potenciales que se prevé que se sometan a la revisión de conformidad con la MEPA y/o NEPA se analizan en el Capítulo 3, *Planeación aeroportuaria*.

Contexto de la planificación del Aeropuerto Logan

El Aeropuerto Logan cumple una función clave en las redes de transporte de pasajeros y de mercadería del área metropolitana de Boston y de Nueva Inglaterra. El Aeropuerto es uno de los aeropuertos con terreno más limitado del país y está rodeado en tres laterales por el puerto de Boston (consulte las **Figuras 1-4** y **1-5**).

3 42 USC Sección 4321 et seq. La Administración Federal de Aviación (Federal Aviation Administration, FAA) implementa la NEPA mediante la ordenanza 1050.1E, Impactos medioambientales, de la FAA: Políticas y procedimientos, Administración Federal de Aviación, Departamento de Transporte de los Estados Unidos, fecha de entrada en vigor: 20 de marzo del 2006.

FIGURA 1-4 Vista aérea del Aeropuerto Logan

0 137.5 275 550 Metros

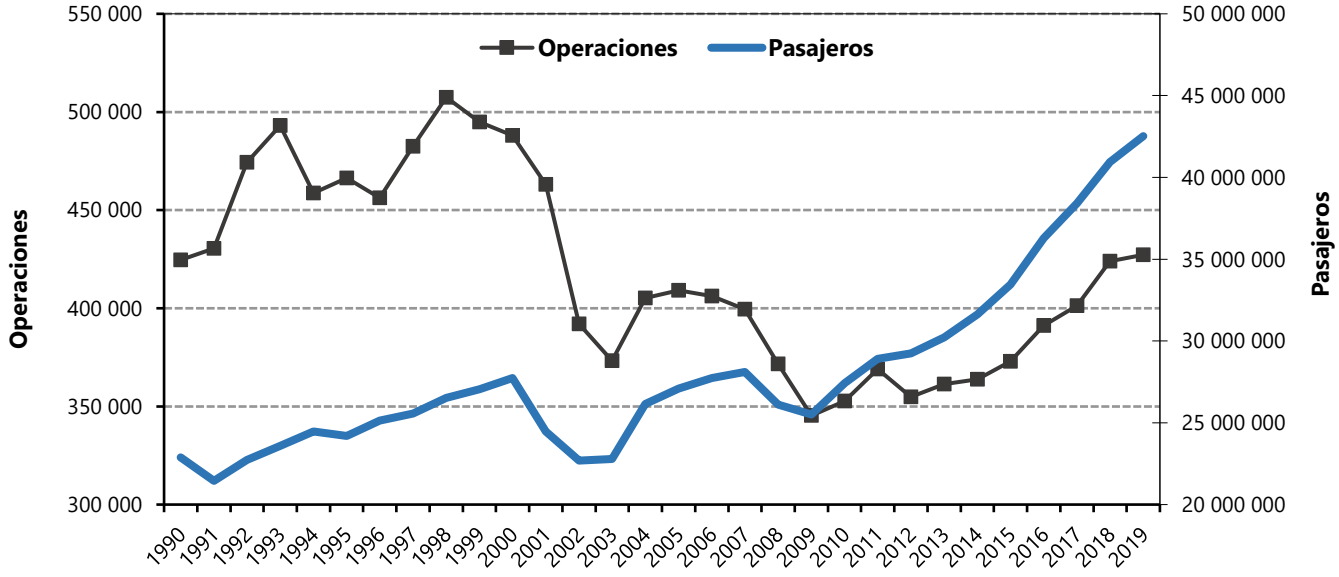
FIGURA 1-5 Aeropuerto Logan y alrededores

Informe de datos medioambientales 2018/2019

Crecimiento de la actividad de pasajeros y de aeronaves en el Aeropuerto Logan

En el 2019, los niveles de actividad de pasajeros aéreos en el Aeropuerto Logan alcanzaron 42,5 millones en todo momento, un aumento del 3,9 por ciento en comparación con el 2018 (40,9 millones). Como ha sido la tendencia reciente antes de marzo del 2020, las operaciones de las aeronaves aumentaron a un ritmo más lento que las de los pasajeros. En el 2019, las operaciones llegaron a un total de 427 176 y en el 2018 las operaciones llegaron a un total de 424 024. Estos dos niveles representan aumentos en comparación con los niveles de pasajeros de 38,4 millones y las 401 371 operaciones del 2017 (**Figura 1-6**). El crecimiento observado durante el 2018 y 2019 estuvo directamente correlacionado con las fuertes economías nacionales y regionales. Incluso con este crecimiento fuerte, las operaciones de las aeronaves permanecieron muy por debajo de las 487 996 operaciones del 2000 y del pico histórico de 507 449 operaciones alcanzadas en 1998. El crecimiento más lento de las operaciones de las aeronaves en comparación con los niveles de pasajeros se debe al aumento constante en el tamaño de las aeronaves y a la mejora en los factores de carga de las aeronaves (pasajeros/disponibilidad de asientos).

Figura 1-6 Niveles de pasajeros anuales y operaciones de aeronaves en el Aeropuerto Logan (1990-2019)



Debido a la COVID-19, los niveles de pasajeros y las operaciones del 2020 disminuyeron drásticamente. Hasta octubre del 2020, interanualmente los niveles de pasajeros y las operaciones han disminuido aproximadamente un 70 y un 50 por ciento, respectivamente.

Los niveles de actividad del Aeropuerto Logan están estrechamente ligados a la economía regional y nacional

Los niveles de actividad del Aeropuerto Logan son impulsados ampliamente por las economías locales, regionales y nacionales. Tal como puede verse al observar las tendencias a largo plazo, está claro que cuando la economía es fuerte, el Aeropuerto Logan crece. Análogamente, las disminuciones más importantes en los niveles de pasajeros y en el funcionamiento de las aeronaves se observan muy cerca de perturbaciones nacionales e internacionales importantes. Ejemplos de las disminuciones más significativas incluyen la huelga de la Organización de Controladores Profesionales de Tráfico Aéreo (Professional Air Traffic Controllers Organization, PATCO) en 1981, el 11 de septiembre del 2001, la Gran Recesión en el 2008/2009 y ahora la pandemia de la COVID-19.

Cuando ha habido un crecimiento significativo, como se observó hasta el 2018 y el 2019, Massport ha puesto en práctica estrategias para abordar ese crecimiento de manera que permita que el Aeropuerto Logan evolucione de manera sostenible y ambientalmente responsable.

El Aeropuerto Logan es el aeropuerto más grande de los seis estados de la región de Nueva Inglaterra, que tiene una población de aproximadamente 14,8 millones de residentes. El Aeropuerto está ubicado en Massachusetts, que alberga a 6,9 millones de residentes o cerca del 46 por ciento de la población de Nueva Inglaterra. El Aeropuerto Logan presta servicios a pasajeros de toda Nueva Inglaterra y la principal zona de influencia está compuesta por los siguientes cinco condados de Massachusetts: Essex, Middlesex, Norfolk, Plymouth y Suffolk (que incluye la ciudad de Boston). De acuerdo con las estadísticas disponibles más recientes, 4,4 millones de personas residen en esta área de cinco condados y, según las proyecciones, la población dentro del área de influencia aumentará un 0,5 por ciento por año en los próximos 19 años.[4] En el 2019, de manera similar a años anteriores, el área metropolitana de Boston mantuvo una menor tasa de desempleo (2,6 por ciento) que la de la Mancomunidad (2,9 por ciento) y que la del país entero (3,7 por ciento).[5] El Aeropuerto no solo atiende a una población en crecimiento, sino también a una población con mayores ingresos. El ingreso *per capita* en el 2019 fue de USD 68 361 (dólares estadounidenses en el 2012) en el área de servicios principal del Aeropuerto, 3,6 por ciento más alta que en la Mancomunidad y 35,9 por ciento más alta que el promedio nacional.[6]

El Aeropuerto Logan es un recurso de transporte y económico clave en la región de Nueva Inglaterra, en el estado y en el área metropolitana de Boston, que alberga una gran variedad de industrias. Las industrias con la mayor cantidad de empleados incluyen la atención médica y la asistencia social, los servicios educativos, profesionales, científicos y tecnológicos (que incluyen la próspera industria biotecnológica de Boston).[7] En el 2018 y 2019, Boston se ubicó en el puesto n.° 1 de ciudades de los

4 Woods & Poole Economics, Inc. 2019. Complete Economic and Demographic Data Source (CEDDS).
5 Oficina de estadística laboral (Bureau of Labor Statistics) de los EE. UU. 2020.
6 Woods & Poole Economics, Inc. 2019. ICF analysis of population and personal income datasets.
7 Oficina de Censos a través de Data USA. Boston-Cambridge, Newton, perfil del área metropolitana MA-NH, wwww.datausa.io.

EE. UU. en educación y 2.° en atención médica.[8] La contribución de la innovación y la creación de empresas también es evidente en las últimas estimaciones de crecimiento económico del 2019.

Además de respaldar el crecimiento y éxito económico del estado, el Aeropuerto Logan y la industria aeroportuaria son elementos importantes para la economía estatal y regional. La *Actualización del estudio del impacto económico del aeropuerto estatal de Massachusetts,* realizada por el Departamento de Transporte de Massachusetts (Massachusetts Department of Transportation, MassDOT) en el 2014 y actualizada más recientemente en 2019,[9] calcula que los aeropuertos de Massport (incluidos el Aeropuerto Logan, Worcester Regional Airport y Hanscom Field) contribuyen con aproximadamente USD 23,1 mil millones en producción a la economía de Massachusetts anualmente. De esta producción, el 71 por ciento se debe solo al Aeropuerto Logan.[10] La producción total incluye negocios dentro del aeropuerto, construcción, visitantes y efectos multiplicadores (consulte la **Figura 1-7**).[11] El Aeropuerto Logan respalda más de 162 000 puestos de trabajo directos e indirectos, al mismo tiempo que genera aproximadamente USD 16,3 mil millones por año en producción económica total.[12] En el 2019, se contrataron más de 23 000 personas en el Aeropuerto Logan. Esto incluyó a, aproximadamente, 820 miembros del personal y empleados administrativos adicionales de Massport del aeropuerto Logan.[13]

8 U.S. News & World Report 2020. Massachusetts.

9 MassDOT. 2014. *Actualización del estudio del impacto económico del aeropuerto estatal de Massachusetts.*http://www.massdot.state.ma.us/portals/7/docs/airportEconomicImpactSummary.pdf.

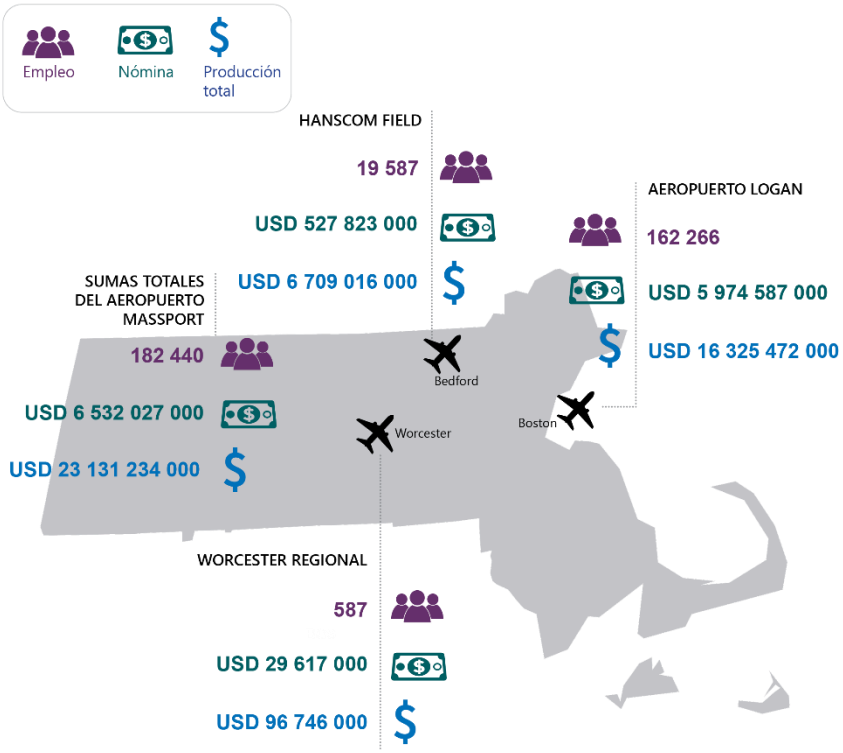
10 *Ibíd.*

11 Los efectos multiplicadores se refieren a la recirculación del dinero en la economía local después de haber sido gastados inicialmente por el Aeropuerto, sus locatarios o los turistas. Esta recirculación aumenta el impacto general de las operaciones del Aeropuerto en la economía local.

12 División de Aeronáutica de MassDOT. 2019. *Actualización del estudio del impacto económico del aeropuerto estatal de Massachusetts.* https://www.mass.gov/files/documents/2019/03/25/AeroEcon_ImpactStudy_January2019.pdf.

13 Massport, 2019. *Informe integral anual final del 2019 de la Autoridad Portuaria de Massachusetts.* http://www.massport.com/media/3425/mpa-fy19-cafr-final.pdf. Tabla S-11.

Figura 1-7 Impacto económico total de los aeropuertos de Massport



Fuente: MassDOT, Massachusetts Statewide Airport Economic Impact Study Update, 2019.
Notas: "Totales para Massachusetts" se refiere a la producción económica total de todos los aeropuertos de Massachusetts.

El Aeropuerto Logan se considera un aeropuerto de origen y destino (O&D)[14] tanto nacional como internacionalmente, lo que significa que, aproximadamente, el 90 por ciento de los pasajeros del Aeropuerto Logan inician o finalizan su viaje en el Aeropuerto Logan. Los aeropuertos principales, como el de Atlanta o Chicago, prestan servicios a muchos más pasajeros anualmente, pero en comparación con los aeropuertos de O&D, como el Aeropuerto Logan, pasa un porcentaje mayor de pasajeros en tránsito en los aeropuertos principales a través de los vuelos de conexión. Durante el 2019, el Aeropuerto Logan fue uno de los aeropuertos grandes con crecimiento más rápido de los Estados Unidos en cuanto a la

14 El "tráfico de origen y de destino" se refiere al tráfico de los pasajeros que se origina o que termina en un aeropuerto o en un mercado en particular. Un mercado de O&D fuerte, como Boston, genera una demanda local de pasajeros significativa, ya que muchos pasajeros inician y terminan su viaje en ese mercado. El tráfico de O&D es diferente al tráfico de conexión, que es tráfico de pasajeros que no inician ni terminan en el aeropuerto, sino que solo hacen conexiones en el aeropuerto en ruta hacia otros destinos.

cantidad de pasajeros.[15] Del 2017 al 2019, el tráfico de pasajeros aéreos en los EE. UU. creció un 9,1 por ciento, mientras que el Aeropuerto Logan experimentó un crecimiento de pasajeros del 10,7 por ciento.[16] El Aeropuerto Logan se considera un aeropuerto de origen y destino (O&D) nacional e internacional, lo que significa que, menos de 10 por ciento de los pasajeros aéreos están conectando por el aeropuerto Logan.

Estado de las predicciones

En el *ESPR del 2017*, se presentó una predicción actualizada para las operaciones de las aeronaves y la actividad de los pasajeros del Aeropuerto. La predicción se centró en un horizonte de planeación futura que incluyó una proyección de 50 millones de pasajeros aéreos anuales y 486 000 operaciones de aeronaves anuales. Las proyecciones del ESPR de Massport fueron congruentes con la proyección del área de la terminal de la Administración Federal de Aviación (FAA) en ese momento. Sin embargo, la pandemia de la COVID-19 redujo drásticamente el tráfico de pasajeros aéreos y, actualmente, se prevé que tomará unos cuantos años hasta que la industria vuelva a los niveles de operaciones previos a la COVID-19.

Durante el 2018 y el 2019, debido a la economía sólida, los niveles de actividad de los pasajeros y de las operaciones de aeronaves en el Aeropuerto Logan aumentaron rápidamente. Esta tendencia de crecimiento finalizó en marzo del 2020 y, en consecuencia, las proyecciones del *ESPR del 2017* tendrán que ajustarse a medida que se comprendan mejor los efectos a más largo plazo de la pandemia de la COVID-19.

Inversiones de Massport en el Aeropuerto Logan

Massport evalúa e implementa mejoras en el Aeropuerto Logan, en la seguridad, en la eficacia operativa y en el acceso desde y hacia el área metropolitana de Boston, mientras controla atentamente los efectos medioambientales de las operaciones del Aeropuerto Logan. Un enfoque continuo ha sido mejorar la experiencia del pasajero y del usuario en el Aeropuerto Logan. Los proyectos del área de la terminal recientes y en curso están destinados a brindar una conectividad posterior a la seguridad sin inconvenientes entre las terminales y mejoras al sistema de proceso de pasajeros a través de las áreas de verificación de seguridad consolidadas. El acceso al Aeropuerto Logan y sus alrededores continúa siendo una prioridad. Massport continúa trabajando con la FAA para mejorar la seguridad en la zona de operaciones a través de una variedad de mejoras en la seguridad del área de las pistas (runway safety area, RSA) y de simplificaciones en la geometría del campo de aviación

Como se mencionó anteriormente, los efectos de la pandemia de la COVID-19 han precipitado una gran serie de cambios en el Aeropuerto Logan. Tanto la disminución de los pasajeros como los ingresos asociados han requerido importantes ajustes en los servicios y en los cronogramas de los proyectos. Massport se ha centrado en ajustar los servicios para que se ajusten a los cambiantes niveles de pasajeros

15 Entre el 2014 y el 2019, el Aeropuerto Logan fue el 20.° aeropuerto con crecimiento más rápido en los EE. UU. en términos de tráfico local de O&D en comparación con los 30 aeropuertos principales de los EE. UU. (encuesta de O&D del Departamento de Transporte [Department of Transportation, DOT] de los EE. UU.).

16 ACI. 2019. Resumen del tráfico en los aeropuertos norteamericanos del ACI http://www.aci-na.org/content/airport-traffic-reports.

y en asegurar que esos cambios se hagan teniendo muy en cuenta la gestión de los impactos ambientales y de operación. En algunas áreas, se ajustaron los programas para reflejar las necesidades y los impactos actuales. Estos ajustes temporarios se describen en los capítulos técnicos correspondientes de este EDR. Massport sigue comprometida en implementar estrategias de mitigación relacionados a proyectos, como documentado en Capitulo 9, *Medidas que benefician al medioambiente y seguimiento del proyecto de mitigación*.

Aspectos destacados y hallazgos clave del 2018 y 2019

Esta sección brinda un breve resumen de los hallazgos clave, por capítulo, en el Aeropuerto Logan en el 2018 y 2019. También se incluye una breve actualización sobre la actividad en el 2020 y las proyecciones futuras a la luz de la pandemia de la COVID-19. Se ofrece información adicional sobre las actividades del Aeropuerto en los capítulos subsiguientes. Esta sección también destaca las iniciativas de Massport para una mayor sustentabilidad a través de proyectos específicos e iniciativas con una hoja de sustentabilidad y resume el programa de sustentabilidad de Massport.

El Certificado del Secretario sobre el *ESPR del 2017*, que constituye el alcance de este *EDR del 2018/2019*, reconoció el crecimiento rápido en los últimos años y le ordenó a Massport que proporcionara actualizaciones sobre la proyección del *ESPR del 2017*. Si bien el crecimiento reciente y rápido de pasajeros del Aeropuerto Logan continuó hasta principios del 2020, la pandemia de la COVID-19 comenzó a reducir drásticamente las operaciones del aeropuerto y los pasajeros a mediados de marzo del 2020. En las fases iniciales de la pandemia, los niveles de pasajeros disminuyeron por más del 90 por ciento. Si bien los niveles de actividad comenzaron a recuperarse lentamente a mediados del verano del 2020, la actual oleada de casos de COVID-19 ha dado lugar a niveles de actividad históricamente bajos y la recuperación total se dará en algunos años. En octubre del 2020, el total de operaciones de vuelo del año se redujo en un 50 por ciento y los niveles de pasajeros se redujeron en un 70 por ciento en comparación con los de enero a octubre del 2019. Massport prevé que, para finales del 2020, los niveles de pasajeros habrán bajado a niveles de actividad no observados desde mediados de la década de 1970. Hasta que no se comprendan mejor los impactos a largo plazo de la COVID-19, Massport solo puede hacer proyecciones preliminares de la tasa de recuperación de los niveles de pasajeros. El próximo EDR proporcionará más actualizaciones con la mejor información disponible en ese momento.

Niveles de actividad

Hasta el inicio de la pandemia de la COVID-19, el Aeropuerto Logan (y la industria de la aviación en general) había estado experimentando un fuerte crecimiento, en gran parte por las condiciones económicas positivas en la región de Boston, el bajo desempleo, una base económica diversa y fuerte, y la inversión continua en bienes raíces comerciales y residenciales, en ciencias biológicas en particular, en las finanzas, en la atención médica y en la educación superior. Debido a la pandemia de la COVID-19, los niveles de pasajeros y las operaciones del 2020 disminuyeron drásticamente. Hasta octubre del 2020, interanualmente los niveles de pasajeros y las operaciones han disminuido aproximadamente un 70 y un 50 por ciento, respectivamente.

Los niveles de actividad de pasajeros aéreos en el Aeropuerto Logan en el 2018 y 2019 aumentaron a 40,9 millones en 2018 y 42,5 millones en el 2019. Las operaciones de las aeronaves continuaron la tendencia a largo plazo de aumentar a un ritmo más lento que los pasajeros. En el 2018, las operaciones llegaron a un total de 424 024 y en el 2019 las operaciones llegaron a un total de 427 176. Ese crecimiento estuvo directamente correlacionado con la fuerte economía nacional y regional. Incluso con el fuerte crecimiento, las operaciones de las aeronaves permanecieron muy por debajo de las 487 996 operaciones del 2000 y del pico histórico de 507 449 operaciones alcanzadas en 1998. La combinación de un menor número de operaciones en aeronaves más limpias y silenciosas ha dado lugar a una reducción drástica de los impactos ambientales en comparación con los valores máximos históricos.

Del 2010 al 2019, la cantidad anual de pasajeros en el Aeropuerto Logan aumentó alrededor de un 55 por ciento, mientras que la cantidad anual de operaciones[17] aumentó más lentamente, alrededor del 21 por ciento, debido al aumento de los factores de carga de las aeronaves. Los niveles de pasajeros internacionales aumentaron más rápidamente que los niveles de pasajeros con destinos nacionales en el 2018 y 2019. Los niveles de actividad de los pasajeros aéreos con destinos domésticos aumentaron un 6,9 por ciento y un 2,6 por ciento en 2018 y 2019, respectivamente, mientras que los niveles de actividad de los pasajeros aéreos con destinos internacionales aumentaron un 5,3 por ciento y un 9,7 por ciento, respectivamente.

Consulte el Capítulo 2, *Niveles de actividad,* para obtener información adicional.

Planeación aeroportuaria

Massport continuamente mejora las instalaciones del Aeropuerto Logan para adaptarlo a los cambios de la demanda de pasajeros, de la actividad de las aeronaves, de las necesidades de las cargas y del acceso al transporte. En el Capítulo 3, *Planeación aeroportuaria*, Massport ha identificado proyectos de planeación e iniciativas prioritarios en las siguientes categorías:

- Transporte terrestre y estacionamiento.
- Terminales.
- Planificación de la zona de operaciones.
- Áreas de servicio.
- Amortiguadores del Aeropuerto y espacio abierto
- Energía, sustentabilidad y resiliencia

Durante el 2018 y 2019 se prestó gran atención a las medidas de reducción del acceso terrestre y de los viajes, y a las mejoras de las terminales. Los proyectos del área de la terminal recientes y en curso brindan una conectividad y flexibilidad posterior a la seguridad sin inconvenientes entre las terminales y mejoras al sistema de proceso de pasajeros a través de las áreas de verificación de seguridad consolidadas.

17 Una operación de una aeronave se define como un arribo o una partida.

Para mejorar la red de carreteras en el Aeropuerto, Massport está mejorando varios de los segmentos de carreteras e intersecciones del área de la terminal. En octubre del 2019, Massport abrió sus nuevas áreas consolidadas para recoger o dejar pasajeros de las aplicaciones de transporte en coche en Central Garage. En el 2018 y 2019, Massport también adelantó varios servicios de medios de transporte masivos (HOV) y realizó mejoras en las instalaciones de Logan Express como parte de sus objetivos de reducción de viajes.

Desde la presentación del *ESPR del 2017*, Massport ha completado la revisión medioambiental estatal y/o federal de numerosos proyectos:

- El Proyecto de Estacionamiento del Aeropuerto Logan, que añadirá 5000 espacios de estacionamiento comercial en el Aeropuerto Logan en ubicaciones que ya se usan para el estacionamiento. Los espacios de estacionamiento adicionales dependen de la aprobación de MassDOT y de la Agencia de Protección Medioambiental de los EE. UU. (EPA) de una modificación a la reglamentación del Congelamiento del Estacionamiento en el Aeropuerto Logan.[18] Los espacio adicionales tienen como objetivo reducir las modalidades para recoger/dejar pasajeros perjudiciales para el medioambiente (es decir, recoger o dejar pasajeros en vehículos privados, en taxi, aplicaciones de transporte en coche o mediante servicios de limusinas con chofer). El proceso de revisión conjunto de la MEPA/NEPA se completó en enero del 2020. Actualmente, este proyecto está aplazado debido a la reducción en la actividad de los pasajeros asociada con la pandemia de la COVID-19.
- El proyecto de la terminal C de la cubierta, conexiones y carreteras recibió la aprobación medioambiental federal según la NEPA en noviembre del 2018. Como se describe en el *ESPR del 2017*, la construcción de este proyecto sustituirá y reconfigurará secciones de las carreteras elevadas que conectan las Terminales B y C. En este momento, se prevé que el reemplazo de la cubierta comience y se complete en el 2021, con un programa ligeramente reducido respecto a lo previsto originalmente. Se prevé que se complete el conector de la Terminal B a la C en la primavera del 2022 y que las carreteras estén terminadas en el 2023.

Massport continúa trabajando con la FAA para mejorar la seguridad en la zona de operaciones a través de una variedad de proyectos en la seguridad del área de las pistas y de simplificaciones en la geometría del campo de aviación Consulte el Capítulo 3, *Planeación aeroportuaria,* para obtener más información.

Transporte regional

En el 2018 y 2019, se observó un aumento en la actividad de pasajeros aéreos en la región de Nueva Inglaterra. Los pasajeros aéreos de la región aumentaron en un 6,5 por ciento a 58,3 millones de pasajeros aéreos en el 2018 y luego otro 2,5 por ciento a 59,7 millones en el 2019. Los 10 aeropuertos regionales (sin incluir el Aeropuerto Logan) de Nueva Inglaterra prestaron servicios a 17,3 millones y 17,2 millones de pasajeros aéreos en el 2018 y 2019, respectivamente, en comparación con 16,3 millones de pasajeros en el 2017.

Worcester Regional Airport, T.F., Green Airport, Portland International Jetport, Burlington International Airport y Bangor International Airport experimentaron un aumento general de las operaciones de

18 Título 310, sección 7.30 del Código de Normas de Massachusetts, y título 40, sección 52.1120 del Código de Reglamentaciones Federales

servicios comerciales desde el 2017. Los aeropuertos Manchester-Boston Regional, Tweed-New Haven, Bradley International y Portsmouth International vieron reducida su oferta de servicios desde el 2017.

Los tres aeropuertos de Massport, el Aeropuerto Logan, Worcester Regional Airport y Hanscom Field contribuyeron de manera significativa con la economía regional, generando aproximadamente USD 23,1 mil millones anualmente o el 94 por ciento de los beneficios de la economía general generados por el sistema de aeropuertos de Massachusetts. Hanscom Field es un aeropuerto de relevo del Aeropuerto Logan y es el segundo aeropuerto con mayor actividad en Nueva Inglaterra.

En Worcester Regional Airport aumentó la cantidad de pasajeros en un 76 por ciento en el 2019 en comparación con el 2017, y se informó un total de aproximadamente 817 057 pasajeros desde el 2013 hasta el 2019. En los últimos cinco años, Worcester Regional Airport experimentó una tasa de crecimiento promedio del 10 por ciento por año. Massport continúa invirtiendo en Worcester Regional Airport. Junto con la ciudad de Worcester, Massport ya ha comenzado una inversión de USD 100 millones a 10 años para revitalizar y atraer operaciones comerciales en Worcester Regional Airport. Las inversiones incluyen un sistema de aterrizaje instrumental CAT III (alrededor de USD 32 millones) que se pagan con subvención federal y fondos de Massport. Además, jetBlue Airways, American Airlines y Delta Air Lines anunciaron un nuevo servicio al John F. Kennedy International Airport (JFK) de Nueva York, al Philadelphia International Airport y al Detroit Metropolitan Wayne County Airport, respectivamente. Desde la fecha de publicación de este EDR, se ha suspendido servicios comerciales de pasajeros desde Worcester Regional Airport debido a la baja en la demanda de los pasajeros como consecuencia de la pandemia de la COVID-19.

Los viajes de todo el sistema de trenes Amtrak aumentó de 31,7 millones de viajes de usuarios en el año fiscal (fiscal year, FY) 2018 a 32,5 millones de viajes en el FY 2019. En el FY 2018, el corredor noreste (Northeast Corridor, NEC) transportó más de 12 millones de pasajeros, alrededor de un 1 por ciento más que el año anterior. En el FY 2019, el NEC transportó más de 12,5 millones de pasajeros en esos servicios, alrededor de un 3 por ciento más que el año anterior.

Acceso terrestre

El Aeropuerto Logan continúa siendo uno de los principales aeropuertos de los Estados Unidos en cuanto a la modalidad de HOV y de viajes en transporte público. Massport promueve numerosas opciones de HOV, transporte público y viajes compartidos para mejorar las carreteras dentro del Aeropuerto y las operaciones en las aceras, para aliviar las limitaciones de estacionamiento y para mejorar el servicio al cliente. Los hallazgos clave del 2018 y 2019 se resumen en las viñetas a continuación y se pueden encontrar detalles adicionales en el Capítulo 5, *Acceso terrestre desde y hacia el Aeropuerto Logan*.

- El promedio de las millas viajadas por vehículos (vehicle miles traveled, VMT) dentro del Aeropuerto en los días de semana aumentaron alrededor de un 4,5 por ciento, del 2017 al 2018. Entre el 2018 y el 2019, el promedio de las VMT dentro del Aeropuerto en los días de semana aumentó en un 2,2 por ciento. El cambio en el tráfico diario promedio se puede atribuir principalmente a los aumentos en la actividad de los pasajeros, a la actividad de recoger/dejar pasajeros, a la carga y a los usos no relacionados con la aviación del Aeropuerto. Se prevé que la actividad en el Aeropuerto y las VMT dentro del Aeropuerto serán significativamente menores en el 2020 debido al impacto de la COVID-19.

- Las transacciones de las aplicaciones de transporte en coche alcanzaron un total de más de 7 millones en el 2018 y aumentaron a más de 8 millones en el 2019, un crecimiento de más del 16 por ciento. Las aplicaciones de transporte en coche tienen un impacto en otras modalidades de acceso al Aeropuerto y contribuyen a la congestión dentro del Aeropuerto. Parcialmente debido al continuo aumento de las aplicaciones de transporte en coche, los viajes en limusinas con chofer y los viajes programados en van disminuyeron en, aproximadamente, un 23 por ciento del 2017 al 2019. Los viajes en taxis disminuyeron un 14 por ciento en el 2018 en comparación con el 2017, y un 7 por ciento entre el 2018 y el 2019. La cantidad de pasajeros de la línea Blue de la Autoridad de Transporte de la Bahía de Massachusetts (Massachusetts Bay Transportation Authority, MBTA) aumentó en un 4 por ciento entre el 2017 y el 2018, y disminuyó en un 29 por ciento el año siguiente.
- En función de cambios en las elecciones de la modalidad de los pasajeros para acceder al Aeropuerto Logan entre el 2017 y el 2019, Massport actualizó sus objetivos y su definición de HOV. La definición actualizada considera que los taxis, las limusinas con chofer y las aplicaciones de transporte en coche que llevan a más de un pasajero aéreo por vehículo son HOV, mientras que las mismas modalidades con un pasajero aéreo no contarán como HOV. Con esta definición actualizada, Massport estableció un objetivo del 35,5 por ciento de HOV para el 2022 y del 40 por ciento para el 2027. Según los resultados de la Encuesta de acceso terrestre de pasajeros aéreos del 2019, la modalidad de HOV compartida alcanzó el 40,4 por ciento, superando tanto los objetivos a corto como a largo plazo. Si bien se prevé que la modalidad de HOV compartida disminuirá como resultado de la COVID-19 a corto plazo, Massport prevé que la cantidad de pasajeros en el HOV se recupere con el tiempo y sigue comprometido con los objetivos de la modalidad de HOV compartida en el futuro.

Estrategia para el acceso terrestre

Massport cuenta con una estrategia integral múltiple de reducción de viajes de larga data para diversificar y mejorar las opciones de transporte terrestre para los pasajeros y para los empleados que viajan desde y hacia el Aeropuerto Logan. La estrategia está diseñada para ofrecer a los pasajeros la oportunidad de elegir entre HOV, transporte público y opciones de viajes compartidos que son prácticas y confiables, y que reducen los impactos medioambientales y en la comunidad. Desde hace muchos años, el Aeropuerto Logan ocupa el puesto número uno en los aeropuertos de los EE. UU. en términos de HOV y modalidades de transporte público compartido. Massport promueve numerosas opciones de HOV, transporte público y viajes compartidos para mejorar las carreteras dentro del Aeropuerto y las operaciones en las aceras, para aliviar las limitaciones de estacionamiento y para mejorar el servicio al cliente.

La estrategia de Massport también tiene como objetivo brindar suficiente estacionamiento dentro del Aeropuerto para los pasajeros aéreos que eligen la modalidad de acceso en automóvil y/o que tienen opciones de HOV limitadas. En el 2017, MassDEP enmendó el Congelamiento del Estacionamiento en el Aeropuerto Logan para permitir un aumento de hasta 5000 espacios de estacionamiento comercial dentro del Aeropuerto, lo que permite la construcción de estacionamientos adicionales para reducir el uso de las modalidades para recoger/dejar pasajeros, y para aliviar las condiciones de estacionamiento limitado dentro del Aeropuerto.

Un interés de larga data de Massport es abordar la congestión de las carreteras dentro del Aeropuerto con una combinación de cambios en las políticas y con mejoras en la infraestructura. Es importante aliviar la congestión de la zona de las terminales para que las operaciones en tierra sigan siendo seguras y eficientes, y para reducir los impactos ambientales. Mejorar las opciones de transporte multimodal, y brindar una infraestructura moderna y flexible es una forma mediante la cual un aeropuerto puede reducir las emisiones de gases de efecto invernadero (greenhouse gas, GHG) y de mejorar su huella ecológica.

Massport reconoce la importancia de proporcionar servicios de HOV seguros y confiables desde y hacia el Aeropuerto, y para el 2019 ya había alcanzado su plan estratégico de aumentar la parte de la modalidad de HOV al 40 por ciento para el 2027. Comprender el crecimiento del uso de las aplicaciones de transporte en coche y su impacto en la congestión de las carreteras regionales y de las zonas de las terminales es esencial para gestionar el volumen de tráfico dentro del Aeropuerto y para promover los servicios de HOV como una alternativa viable y atractiva. Las reducciones de las posibles emisiones son una razón por la que Massport está comprometido con un objetivo a largo plazo para fomentar y respaldar el HOV público y privado, y los servicios de viajes compartidos dirigidos a los pasajeros aéreos, a los usuarios del Aeropuerto y a los empleados. Otros beneficios incluyen los siguientes:

- Reducir la congestión en las carreteras de las terminales y en las aceras de las áreas para recoger/dejar pasajeros.
- Aliviar las restricciones en las instalaciones de estacionamiento limitadas.
- Servicio al cliente (brindar una variedad de opciones de transporte para las diferentes características demográficas de los viajeros).

Aunque este informe se centra principalmente en la actividad en el 2018 y 2019, como consecuencia de la pandemia de la COVID-19, en el 2020 se modificaron temporalmente varias medidas de reducción del HOV y de los viajes de Massport. Los vuelos desde y hacia el Aeropuerto Logan se han reducido drásticamente y los niveles de pasajeros disminuyeron casi un 90 por ciento a partir de marzo del 2020. Como consecuencia, aunque los niveles operativos y de pasajeros se recuperaron un poco a mediados del 2020, en general, hay muchos menos pasajeros y empleados que viajan hacia y desde el Aeropuerto Logan y hay mucha menos congestión en las carreteras en el período pico tanto en Boston como en el área metropolitana. Además, el interés de la comunidad por utilizar los servicios de transporte HOV, como los autobuses, el tránsito rápido y el ferrocarril suburbano, se ha visto considerablemente afectado por las preocupaciones de la salud pública relacionadas con la COVID-19.

En ese contexto, Massport sigue evaluando y planificando la recuperación de la actividad de los pasajeros aéreos y mantiene su compromiso de implementar la amplia gama de estrategias de acceso terrestre que se esbozaron en el *ESPR del 2017* cuando demanda para estas medidas se recuperen. Sin embargo, el cronograma de esos servicios y las mejoras previstas se han ajustado debido a las continuas limitaciones operacionales y a las reducciones de ingresos. Massport continúa revisando cuidadosamente los niveles de actividad dentro y fuera del Aeropuerto, y ajustará sus programas de acceso terrestre para alinearlos con los niveles de cantidad de pasajeros. Los próximos EDR brindarán actualizaciones detalladas sobre todos los ajustes a los servicios y los niveles de actividades.

Massport evalúa continuamente sus estrategias y programas destinados a mejorar y, donde sea necesario, expandir los servicios de HOV hacia y desde el Aeropuerto Logan, incluida la continua inversión en las instalaciones y el servicio de Logan Express. Las iniciativas descritas a continuación pueden mejorar las

operaciones en las carreteras, así como la calidad de las emisiones atmosféricas. Las siguientes medidas se implementaron o siguen en análisis:

- El objetivo de duplicar la cantidad de pasajeros en Logan Express para cuando el Aeropuerto Logan alcance 50 millones de pasajeros aéreos al expandir el estacionamiento, la frecuencia y las mejoras en las instalaciones.

- **Mejoras al servicio suburbano de Logan Express**
  - En 2019, Massport aumentó la capacidad de asientos totales en el Logan Express en más de 10 por ciento.
  - Aumentar el servicio de Braintree Logan Express de dos a tres viajes por hora (implementado en mayo del 2019, pero reducido a un servicio por hora en marzo del 2020 debido a los impactos de la COVID-19).
  - Agregar unos 1000 espacios más a Framingham Garage (el permiso se completó en el 2020, pero la construcción está aplazada).
  - Brindar estado de prioridad en la cola de seguridad para los usuarios de Logan Express Back Bay (implementado en el 2019; este servicio está actualmente suspendido debido a la COVID-19).
  - Realizar campañas de publicidad para respaldar la estrategia de Logan Express y para aumentar la cantidad de pasajeros.
  - Implementar la emisión de boletos electrónicos para Logan Express (pendiente).
  - Evaluar las nuevas ubicaciones suburbanas de Logan Express, con un plan para abrir, al menos, un sitio nuevo (aplazado debido a la COVID-19).
  - Explorar las conexiones de destino final de las aplicaciones de transporte en coche.[19]
  - Continuar monitoreando la capacidad de estacionamiento en todos los sitios de Logan Express.

- **Línea Silver de la MBTA**
  - Massport adquirió ocho autobuses de la línea Silver de la MBTA en el 2005 y los opera la MBTA, y Massport paga los costos operativos. Dado que la flota existente de la línea Silver está llegando al final de su vida útil, la MBTA y Massport han estado trabajando juntos en un plan para conseguir una flota de reemplazo de la línea Silver. Como parte de esta iniciativa, Massport y la MBTA elaboraron un Estudio de capacidad de la línea Silver para determinar las necesidades a mediano plazo de la flota y las instalaciones, así como para evaluar otras formas de mejorar la confiabilidad y la capacidad del sistema En función de este análisis, la MBTA tiene previsto adquirir 45 nuevos vehículos híbridos eléctricos mejorados para sustituir la flota actual de 32 vehículos de modo dual. Massport planea comprar ocho autobuses de la línea Silver de la MBTA como parte de una próxima adquisición de la MBTA.

19 Las personas que se encuentran dentro de la distancia de 0,5 a 1 milla en coche de algunas de las instalaciones de Logan Express son el grupo que más probablemente utilice las empresas de red de transporte (Transportation Network Company, TNC) para realizar la conexión entre las instalaciones y su vivienda.

- **Servicio urbano de Logan Express**
  - Cambiar la ubicación para recoger/dejar pasajeros de la estación Copley a Back Bay (implementado en el 2019. Este servicio está temporalmente suspendido debido a la COVID-19).
  - Descuento en la tarifa de un solo trayecto de USD 7,50 a USD 3,00 (implementado en el 2019).
  - Proporcionar un servicio gratuito desde el Aeropuerto Logan (implementado a principios del 2019).
  - Estado de prioridad en la cola de seguridad para pilotos para los usuarios (implementado en el 2019).
  - Llevar a cabo campañas publicitarias para respaldar el aumento de la cantidad de pasajeros (en curso).
  - Implementar la emisión de boletos electrónicos para Logan Express (pendiente).
  - Implementar un segundo servicio urbano de Logan Express en la estación North (aunque Massport adquirió autobuses para este servicio en el 2020, debido a la COVID-19, este nuevo servicio ha sido aplazado).
- **Plan de manejo de aplicaciones de transporte en coche**
  - Facilitar el flujo de pasajeros y los viajes compartidos al trasladar la actividad de recoger/dejar pasajeros de las aplicaciones de transporte en coche a nuevas áreas especialmente destinadas a tal fin en Central Garage (completado).
  - Implementar el flujo constante de pasajeros[20] de las aplicaciones de transporte en coche para que los conductores que dejan un pasajero puedan retirarse con un pasajero más fácilmente (completado).
  - Introducir incentivos para los viajes compartidos de las aplicaciones de transporte en coche para reducir los vehículos de las aplicaciones de transporte en coche en los ingresos/las salidas al aumentar la cantidad de pasajeros en los vehículos (completado).
  - Adoptar una nueva estructura para las tarifas de las aplicaciones de transporte en coche para respaldar las estrategias de los HOV, alentar los viajes compartidos y reducir la congestión en los ingresos/las salidas (completado).
  - Optimizar las operaciones de las aplicaciones de transporte en coche dentro del Aeropuerto a través del informe de datos, de las herramientas de cumplimiento y de los nuevos productos de las aplicaciones de transporte en coche (en continuación).

20 El flujo constante de pasajeros permite que los conductores que dejan pasajeros instantáneamente recojan otros pasajeros sin la necesidad de dar vueltas en el Aeropuerto o de retirarse vacíos.

- **Mejoras en la infraestructura**
  - Massport continuará evaluando e identificando la necesidad de nuevas modificaciones a la infraestructura como complemento a los cambios en las políticas para permitir que las áreas de las carreteras y de las aceras continúen funcionando adecuadamente y para minimizar el tiempo que los vehículos están parados con los motores encendidos y las emisiones asociadas. Se implementarán los cambios según sean necesarios.

Ruido

Massport se esfuerza por minimizar los efectos del ruido de las operaciones del Aeropuerto Logan en sus vecinos mediante diferentes programas, procedimientos, estudios y demás herramientas para la disminución del ruido. En el Aeropuerto Logan, Massport implementa uno de los programas para la disminución del ruido más antiguos y amplios de cualquier aeropuerto del país. El programa integral de disminución del ruido incluye una Oficina para la Disminución del Ruido especializada, un sistema de monitoreo del ruido y de operaciones (Noise and Operations Monitoring System, NOMS) de avanzada, programas de protección acústica para viviendas y escuelas, restricciones de horarios y de pistas para los aviones más ruidosos, procedimientos de prueba de motores en tierra y rastreo de vuelos diseñado para optimizar las operaciones sobre el agua (especialmente durante las horas de la noche). La población puede dejar asentadas quejas por ruido por teléfono o en línea a través del sitio web de Massport.[21]

Los hallazgos clave se resumen en las viñetas a continuación y se pueden encontrar detalles adicionales en el Capítulo 6, *Disminución del ruido*.

- La mezcla de flota en el Aeropuerto Logan sigue estando compuesta por tipos de aeronaves con la tecnología más silenciosa disponible (la Fase 5 es la más silenciosa). Alrededor del 15 por ciento de las operaciones del 2018 y 2019 se realizaron con aeronaves que cumplen los requerimientos de la Fase 5, el 83 por ciento con aeronaves que cumplen los requerimientos de la Fase 4 y el 2 por ciento con aeronaves con certificación de Fase 3. Si bien el cambio a una flota toda Fase 4 y 5 ha sido gradual, es probable que las retiradas aceleradas de aeronaves más antiguas en el 2020 aumenten la proporción de Fase 5 en la flota del Aeropuerto Logan. El retiro de las aeronaves más viejas y ruidosas se ha acelerado por la pandemia de la COVID-19 y las aerolíneas continúan eliminando gradualmente las aeronaves más viejas en respuesta a la reducción de la carga de pasajeros a partir de la primavera del 2020. El *EDR del 2020* proporcionará un actualización sobre esta nueva tendencia.
- Massport y la FAA continúan trabajando con el Instituto Tecnológico de Massachusetts (Massachusetts Institute of Technology, MIT) para investigar las oportunidades de reducir el ruido mediante cambios en la navegación basada en el rendimiento (performance-based navigation, PBN), lo que incluye la navegación de área (area navigation, RNAV). Esta colaboración es el primer programa en el país entre la FAA y un operador aeroportuario para entender mejor lo que implica la PBN y evaluar las estrategias para abordar las preocupaciones de la comunidad.
- Massport sigue siendo un líder nacional en mitigación de la aislación sonora. Al día de la fecha, Massport proporcionó aislación sonora para un total de 36 escuelas y 11 515 unidades residenciales, y

21 Massport. Quejas por ruidos. http://www.massport.com/logan-airport/about-logan/noise-abatement/complaints/.

continuará buscando financiamiento para la aislación sonora de propiedades que son elegibles y cuyos propietarios eligieron participar. Desde el inicio del programa, se invirtieron más de USD 170 millones. En el 2019, Massport actualizó las curvas del mapa de exposición al ruido del Programa de Aislamiento Acústico Residencial (Residential Sound Insulation Program, RSIP) y presentó un mapa de exposición al ruido derivado de la Herramienta de Diseño Ambiental de la Aviación (Aviation Environmental Design Tool, AEDT) a la FAA en el 2020 para su revisión y análisis.

- Actualmente, Massport está trabajando con la FAA para, posiblemente, abordar este problema con la primera generación de ventanas de aislación acústica. En enero del 2020, el gerente de Massport envió una carta al administrador adjunto de la FAA solicitando que Massport y la FAA trabajen juntos para abordar el retratamiento de las viviendas a las que se les había realizado aislamiento acústico durante los primeros años del programa para renovar las viviendas elegibles con materiales más nuevos, más eficaces y más duraderos. El administrador adjunto respondió que la FAA está explorando circunstancias limitadas en las que Massport podría ser capaz de mitigar las viviendas que habían sido mitigadas antes de que la FAA emitiera las primeras normas de aislamiento acústico en 1993. El estado de la iniciativa se informará en los próximos EDR. Consulte el Apéndice H, *Disminución del ruido* para obtener más información.
- Las operaciones nocturnas representaron el 16,1 por ciento y el 16,6 por ciento de las operaciones totales en el 2018 y 2019, respectivamente. Las operaciones nocturnas aumentaron, de un promedio de 168 por noche en el 2017 a 187 por noche en el 2018 y a 195 por noche en el 2019. Los principales aumentos de la actividad comercial nocturna se produjeron en las operaciones con aeronaves de pasajeros, principalmente como resultado del crecimiento general de los vuelos de las compañías aéreas nacionales y el aumento de los vuelos a destinos internacionales. La mayoría (alrededor del 81 por ciento) de las operaciones nocturnas se produjeron antes de la medianoche o después de las 5:00 a. m.
- Se produjo una disminución general en el número total de personas que viven dentro de la curva de nivel de sonido promedio día-noche (Day-Night Average Sound Level, DNL) de 65 decibeles (dB) del 2017 al 2018. Sin embargo, el número dentro de la curva de DNL de 65 dB aumentó en Winthrop y Revere mientras que disminuyó en East Boston. Del 2017 al 2018, hubo un aumento en las operaciones totales y en las operaciones nocturnas, pero el factor principal en los cambios de la curva del DNL fue un cambio en el 2018 de retorno al uso típico de la pista después del cierre extendido de la pista 4L-22R en el 2017.
- Las curvas del DNL del 2019 son similares en forma y tamaño a las del 2018, con pequeños cambios debido a los cambios en el uso de la pista, los aumentos en las operaciones nocturnas y el crecimiento general de las operaciones en el 2019. La cantidad total de personas que residen en la curva de DNL de 65 dB aumentó de 7034 personas en el 2018 a 8768 en el 2019. La población adicional dentro de la curva de DNL de 65 dB se encuentra mayoritariamente en East Boston, principalmente debido a un aumento en las salidas de la pista 33L por un aumento de los vientos del noroeste en el 2019.
- En comparación con 1990, la cantidad total de personas que residen en la curva de DNL de 65 dB fue, aproximadamente, un 84 por ciento más baja y un 80 por ciento más baja en el 2018 y en el 2019, respectivamente, debido a una mejora en la tecnología de los motores.

Estrategia para el ruido

La base del programa contra el ruido de Massport son las *Normas y Reglamentaciones para la disminución del ruido en el Aeropuerto Logan*[22] (las Normas contra el ruido), que rigen desde 1986. La Oficina para la Diminución del Ruido de Massport se encarga de implementar medidas para la disminución del ruido y de monitorear, generalmente, las quejas de la comunidad y otros aspectos de los efectos del ruido de las operaciones del Aeropuerto Logan.

Massport está enfocado en las siguientes iniciativas para la disminución del ruido:

- **Asociaciones con aerolíneas y con la FAA**
  - Massport alienta la modernización de la familia de aerobuses A319/320/321 de aeronaves con generadores en vórtice, lo que reduce el ruido tonal al acercarse. En octubre del 2018, jetBlue Airways (la aerolínea con mayor cantidad de operaciones en el Aeropuerto Logan) anunció planes para modernizar su flota de aerobuses más antigua con generadores de vórtices. Este movimiento refleja la asociación entre Massport y las aerolíneas para reducir el ruido de las aeronaves para beneficiar a las comunidades circundantes. A medida que las aerolíneas modernizan las aeronaves y hacen la transición a los nuevos modelos de la familia A320, se prevé que la cantidad de aeronaves que operan en el Aeropuerto Logan sin generadores de vórtice disminuya. Para obtener más información, consulte un comunicado de prensa en el que se analizan los generadores en el Capítulo 6, *Disminución del ruido*.


Imagen de un dispositivo generador de vórtice por puerto

  - El 7 de octubre del 2016, Massport y la FAA firmaron un memorando de entendimiento (Memorandum of Understanding, MOU)[23] para darle un marco al proceso para el análisis de oportunidades para reducir el ruido mediante cambios o enmiendas a la navegación basada en el rendimiento (PBN), incluida la navegación de área (RNAV). Esta colaboración es el primer programa en el país entre la FAA y un operador aeroportuario para entender mejor lo que implica la PBN y evaluar las estrategias para abordar las preocupaciones de la comunidad. El MIT es el líder técnico. El Bloque 1 se completó a finales del 2017 y se hicieron recomendaciones a la FAA. Actualmente, el MIT está llevando a cabo el análisis del Bloque 2.

22 Las Normas y Reglamentaciones para la Disminución del Ruido en el Aeropuerto Internacional Logan, vigentes a partir del 1 de julio de 1986, se codifican como código 740 de las normas de Massachusetts (Code of Massachusetts Regulations, CMR) 24.00 et seq (también denominadas Normas contra el ruido).

23 Massport. 7 de octubre del 2016. *Massport y la FAA trabajan para reducir el ruido de los sobrevuelos (Massport and FAA Work to Reduce Overflight Noise)* https://www.massport.com/news-room/news/massport-and-faa-work-to-reduce-overflight-noise/.

- La flota que opera en el Aeropuerto Logan está compuesta en un 83 por ciento por aeronaves de fase 4 y en un 15 por ciento por aeronaves de fase 5 (las de fase 5 son las más silenciosas), muy por encima de los motores de fase 3, exigidos como mínimo por la FAA.
- Massport continúa prohibiendo el uso de la pista 4L para las salidas y de la pista 22R para los arribos desde las 11:00 p. m. hasta las 6:00 a. m., maximizando las operaciones sobre el agua tarde a la noche, usando las pistas 15R y 33L, y restringiendo el aumento del volumen de los motores y el uso de las unidades de potencia auxiliar (auxiliary power units, APU) a la noche.
- Massport continúa alentando el uso voluntario del carreteo con uso reducido de motores cuando corresponde y es seguro (consulte el Apéndice L, *Memorando de la reducción del carreteo/carreteo con un solo motor en el Aeropuerto Logan*).
- Massport continúa mejorando el sistema de monitoreo del ruido. Massport salió a la puja en el 2018 y seleccionó al proveedor anterior en el 2019. Comenzaron las actualizaciones en el sistema y algunos monitoreos de ruido.

- **Programa para la protección contra el sonido**
  - Massport cuenta un de los programas de protección contra el sonido en viviendas y en escuelas más amplio del país. Al día de la fecha, Massport ha instalado protección acústica en 5467 viviendas, incluidas 11 515 unidades de viviendas y 36 escuelas en East Boston, en Roxbury, en Dorchester, en Winthrop, en Revere, en Chelsea y en South Boston. Desde el inicio del programa, se invirtieron más de USD 170 millones.
  - Aproximadamente, el 8 por ciento de los solicitantes también eligieron la opción de Habitación de preferencia que permite que el propietario señale una habitación (generalmente un dormitorio o la sala de estar) para el tratamiento con acústica adicional.

Calidad del aire/Reducción de emisiones

Las emisiones totales de todas las fuentes relacionadas con el Aeropuerto Logan son menores a las de hace una década, a excepción del NO_x. Esta tendencia hacia la disminución es congruente con el objetivo de larga data de Massport de adaptarse a las demandas del aumento de pasajeros y de los niveles de actividad de las cargas con menos operaciones de aeronaves y menos emisiones en donde sea posible. En comparación con el 2017, los cambios en las emisiones atmosféricas en el 2018 y 2019 siguen estando dentro de los valores dado el repunte correspondiente de las operaciones de las aeronaves. Debido a la pandemia de la COVID-19, hay menos operaciones de aeronaves y pasajeros, y disminuyó la actividad en general en el Aeropuerto Logan. Las reducciones en las operaciones de aeronaves y los viajes de acceso terrestre probablemente traigan como consecuencia reducciones en las emisiones en el 2020.

Massport confeccionó listados de emisiones para el 2018 y 2019 para los criterios de los siguientes contaminantes: monóxido de carbono (CO), partículas (PM_{2019}/PM_{10}) y compuestos orgánicos volátiles (COV), así como gases de efecto invernadero (GHG) y óxidos de nitrógeno (NO_x). Los hallazgos clave de estos listados de emisiones incluyen los siguientes:

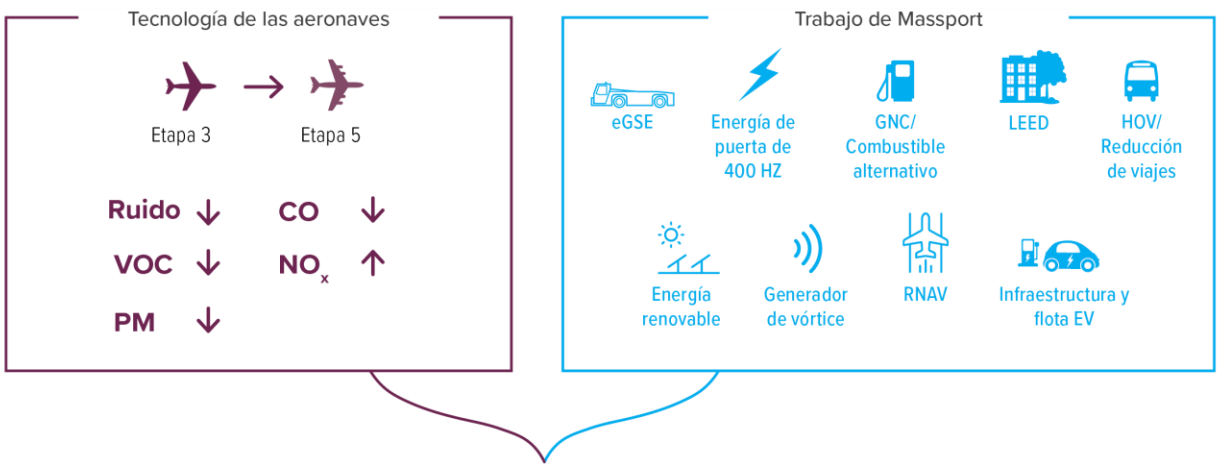
- El total de las emisiones modelizadas de CO, $PM_{10}/PM_{2,5}$ y NO_X, aumentaron del 2017 al 2018 en, aproximadamente 14 por ciento, 17 por ciento y 4 por ciento, respectivamente. Los VOC permanecieron constantes. Estos aumentos se atribuyeron principalmente al aumento del 5,6 por ciento en las operaciones de las aeronaves en el 2018 en comparación con el 2017. Las variaciones en las emisiones también se debieron a los parámetros de combinación de fuselaje/motor incluidos en las dos versiones de modelo utilizadas y a las diferencias asociadas en los factores de emisión aplicados asumidos en los modelos.
- En el 2019, las emisiones modelizadas totales de CO, $PM_{10}/PM_{2,5}$ y VOC aumentaron, cada una, en alrededor del 2 por ciento desde el 2018. En cambio, las emisiones de NO_X aumentaron en alrededor del 5 por ciento. Estos cambios también se deben a un aumento en las operaciones de las aeronaves del 0,7 por ciento así como variaciones leves en la mezcla de la flota de aeronaves del 2018 al 2019. Además, el aumento de las emisiones de NO_X en el 2019 se asocia con un mayor uso de combustible de fuentes estacionarias en ese año.
- Las emisiones de CO, VOC y NO_x modelizadas asociadas con el equipo de servicio terrestre (Ground Service Equipment, GSE) y con los vehículos con motor, sobre muchas de las cuales Massport tiene influencia, han disminuido del 2018 al 2019. Las emisiones de $PM_{10}/PM_{2,5}$ permanecen estables. Si bien hay diferencias en las versiones de los modelos entre el 2017 y 2018, lo que causa variaciones en las emisiones entre esos años, en general el GSE y los vehículos con motor muestran una tendencia decreciente entre el 2017 y 2019 para todos los contaminantes.
- El total de las emisiones de GHG del Aeropuerto Logan aumentó del 2017 al 2018 en, aproximadamente, un 10 por ciento y del 2018 al 2019 en, aproximadamente, un 4 por ciento. Estos aumentos se deben, principalmente, al aumento en las operaciones de las aeronaves (es decir, 5,6 por ciento en el 2018 y 0,7 por ciento en el 2019). Las emisiones de GHG asociadas con el Aeropuerto Logan en el 2018 y 2019 son, aproximadamente, un 1 por ciento de las emisiones calculadas más recientemente en todo el estado.

Efecto de la tecnología de los motores de las aeronaves en el NO_x

Las emisiones de las aeronaves continúan representando la fuente más grande (95 por ciento) de NO_x en el Aeropuerto Logan, seguidas por otras fuentes (2 por ciento), el equipo de servicio terrestre (GSE) (2 por ciento) y por los vehículos con motor (1 por ciento). Massport no tiene ningún control sobre las emisiones de las aeronaves, que representan la gran mayoría de las emisiones totales del aeropuerto.

Para reducir el uso de combustible y las emisiones, los diseñadores y los fabricantes de los motores de las aeronaves siguen trabajando para producir motores que ahorren más combustible (es decir, que quemen menos combustible). Esto se logra mejorando el desempeño del motor con tecnologías de combustión mejoradas, mayor poder de propulsión y menor desgaste del motor. También se están diseñando aeronaves para disminuir la quema de combustible con avances en la aerodinámica de las alas y del cuerpo de las aeronaves, con materiales de aleaciones livianas y mejores medios de navegación. Se prevé que estas nuevas tecnologías y la reducción en la quema de combustible reduzcan las emisiones, reduzcan el ruido y moderen el crecimiento de las emisiones de NO_x en el futuro.

Figura 1-8 La tecnología de los motores de las aeronaves ha evolucionado con el tiempo



Estrategia para la calidad del aire

La estrategia de Massport para el manejo de la calidad del aire para el Aeropuerto Logan se centra en la disminución de las emisiones de las fuentes relacionadas con el Aeropuerto. Debido a que Massport no tiene un control directo sobre las operaciones de las aeronaves ni de las elecciones de las flotas de las aerolíneas, continúa enfocándose en las áreas que Massport sí controla o sobre las que tiene posibilidades de ejercer influencia. La estrategia para el manejo de la calidad del aire de Massport para el Aeropuerto Logan se enfoca en la reducción de las emisiones de las fuentes relacionadas con el Aeropuerto, además de continuar innovando en formas de lograr las reducciones de las emisiones en todo el Aeropuerto. Massport ha establecido una cantidad de metas y objetivos para abordar las emisiones atmosféricas de las operaciones del Aeropuerto, lo que incluye la reducción de las emisiones de los GSE y de la flota de vehículos de Massport. Massport está enfocado en las siguientes iniciativas:

- **Brindar infraestructura y fomentar prácticas que respalden las reducciones de las emisiones de las aeronaves.**
  - Massport brinda aire preacondicionado (pre-conditioned air, PCA) y energía de 400 hertz (Hz) en todas las puertas de contacto de las aeronaves para reducir el tiempo en que las aeronaves tienen los motores encendidos y el uso de APU.

- Massport fomenta los procedimientos de carreteo con un solo motor por parte de las aerolíneas cuando seguro, para reducir tanto el ruido como las emisiones atmosféricas.
- Uso de remolcadores a batería y cargadores de cintas para la flota de servicio terrestre de Delta Air Lines en la Terminal A. Massport está avanzando en sus planes para extender la infraestructura de GSE a batería a otros lugares.

- **Maximizar el uso del HOV y reducir los viajes en autos con un solo pasajero, especialmente los viajes para recoger/dejar pasajeros, y el uso de vehículos privados por parte de los pasajeros desde y hacia el Aeropuerto.**
  - Massport implementa una amplia estrategia para el HOV y mejoras en el transporte terrestre (consulte la siguiente sección, Estrategia de acceso terrestre, para obtener detalles).

- **Reducir las emisiones de las flotas que operan en el Aeropuerto Logan**
  - Massport está facilitando el reemplazo del GSE que funciona con gasolina y con diésel por equipos que sean completamente eléctricos (electric GSE, eGSE) para finales del 2027 (según estén disponibles comercialmente). En el 2018, la Agencia de Protección Medioambiental (Environmental Protection Agency, EPA) de los EE. UU. otorgó una subvención a Massport para reemplazar el GSE que funciona con gasolina y diésel en el Aeropuerto Logan. Esta subvención se usará junto con una subvención del programa Bajas Emisiones Voluntarias en Aeropuertos (Voluntary Airport Low Emissions, VALE) de la FAA que Massport recibió en el otoño del 2018 para instalar estaciones de carga de eGSE como parte del Proyecto de optimización de la Terminal B. En el 2019, a través del mismo programa, Massport recibió fondos para la infraestructura de carga de JetBlue Airways en la Terminal C. Massport contribuyó a la instalación de 42 estaciones de carga de eGSE.
  - En el 2019, Massport recibió una subvención a través del programa de subvenciones de la convocatoria abierta Volkswagen Diesel Settlements & Environmental Mitigation del Departamento de Protección Ambiental de Massachusetts (MassDEP), con el objetivo de reducir las emisiones de NO_X y GHG, para adquirir eGSE en asociación con jetBlue. Con esto, se reemplazarán 31 unidades de GSE por nuevos eGSE y se instalarán cuatro estaciones de carga de eGSE en la Terminal C. United Airlines también buscó esta subvención de forma privada y se le concedió la financiación.
  - Además, en el 2019 Massport recibió de la EPA, una subvención de DER para sustituir 44 GSE a diésel por tractores de equipaje, cargadores de cintas y remolcadores de retroceso totalmente eléctricos. Los propietarios de GSE del Aeropuerto Logan contribuirán con lo mismo.

- **Brindar infraestructura para respaldar los combustibles alternativos, incluido el gas natural comprimido (GNC) y la electricidad**
  - Massport continúa operando una de sus estaciones minoristas de GNC más grandes de Nueva Inglaterra, que está abierta al público. En el 2018 y 2019, la estación de GNC dispensó aproximadamente el equivalente a 25 750 y 24 445 galones de gasolina por mes para todos los vehículos de la flota de Massport (vehículos que no pertenecen a Massport también usaron GNC).

  - Massport respalda los sistemas estándar actuales y futuros para los vehículos eléctricos (electric vehicles, EV) que se enchufan. Massport instaló 13 estaciones para cargar EV, para abastecer a un total de 26 vehículos en Central Garage y en las zonas de estacionamiento de la Terminal B. Massport aumentó la disponibilidad de las estaciones de carga de EV de modo que el 150 por ciento de esta demanda está disponible en todas las instalaciones en todo momento y seguirá evaluando la demanda a medida que regresen los niveles de actividad de los pasajeros. Actualmente, hay 123 puertos de carga instalados en el Aeropuerto Logan y más en las instalaciones de Logan Express.

- **Reducir las emisiones de los vehículos de la flota de Massport**
  - Massport continúa operando y aumentando su flota de 54 vehículos con combustible alternativo (alternative fuel vehicle, AFV)/vehículos con energía alternativa (alternative power vehicle, APV) en los autobuses de enlace dentro del Aeropuerto. Massport también tiene una política de adquisición de vehículos que exige que se tengan en cuenta los AFV cuando se realicen compras.

- **Reducir emisiones asociadas a los edificios de Massport, incluidas las necesidades energéticas**
  - Massport se ha comprometido a alcanzar la certificación Leadership in Energy and Environmental Design (LEED®) para los edificios elegibles, según corresponda.
  - Massport continúa invirtiendo en instalaciones de energía renovable dentro del Aeropuerto (solar/eólica).

Cumplimiento y manejo medioambiental/Calidad del agua

El enfoque de Massport en cuanto al manejo medioambiental y al cumplimiento es un componente clave de su compromiso con la sustentabilidad y con las prácticas responsables en el Aeropuerto Logan. Mediante el monitoreo y la documentación, Massport evalúa el desempeño medioambiental y desarrolla, implementa, evalúa y mejora las políticas y los programas continuamente. Massport promueve las prácticas medioambientales apropiadas a través de la prevención de la contaminación y de las medidas de descontaminación. Massport también trabaja estrechamente con los locatarios y con el personal de operaciones del Aeropuerto Logan para intentar mejorar continuamente el cumplimiento medioambiental. Los hallazgos clave de este EDR incluyen los siguientes:

- En el 2018, aproximadamente, el 97 por ciento de las muestras de aguas pluviales de Massport cumplieron con los requisitos del permiso del Sistema Nacional de Eliminación de Descarga de Contaminantes (National Pollutant Discharge Elimination System, NPDES) y en el 2019, aproximadamente, el 99 por ciento de las muestras cumplieron con este.
- Massport cuenta con su Sistema de Manejo Medioambiental (Environmental Management System, EMS) de la Organización Internacional de Normalización (ISO) 14001 desde el 2006.
- Massport actualiza y mantiene anualmente su Plan de Prevención de la Contaminación del Agua Pluvial (Stormwater Pollution Prevention Plan, SWPPP) para el Aeropuerto Logan.
- Massport continuá evaluando, descontaminando y llevando sus sitios del Plan de Contingencia de Massachusetts a un cierre reglamentario.

- En el 2018, se informaron ocho derrames, similar al 2017. Se vieron afectadas seis bocas de tormenta, esto representó un aumento con respecto a las dos del 2017. En el 2019, se informaron 22 derrames, los que afectaron 9 bocas de tormenta.

Para obtener información adicional, consulte el Capítulo 8, *Cumplimiento y manejo medioambiental/Calidad del agua*.

Programa de sustentabilidad y resiliencia

Massport está comprometido con un programa de sustentabilidad sólido. La sustentabilidad ha redefinido los valores y los criterios para medir el éxito organizacional al usar un enfoque de resultado triple que toma en cuenta el bienestar económico, ecológico y social. Aplicar este enfoque a la toma de decisiones es una manera práctica de optimizar el capital económico, medioambiental y social. Massport tiene una amplia visión de la sustentabilidad que se basa en el concepto de resultado triple y toma en cuenta el contexto específico del aeropuerto. En congruencia con la definición de la sustentabilidad de los aeropuertos del Consejo Internacional de Aeropuertos - Norteamérica (Airports Council International - North America, ACI-NA),[24] Massport se centra en un enfoque holístico para el manejo del Aeropuerto Logan para garantizar la viabilidad económica, la eficacia operativa, la conservación de los recursos naturales y la responsabilidad social (Economic viability, Operational efficiency, Natural resource conservation, and Social responsibility, EONS). Massport está comprometido con la implementación de prácticas sustentables para el medioambiente tanto por parte del Aeropuerto como por parte de las autoridades y continúa progresando en diferentes iniciativas. Las siguientes secciones resumen muchas de las iniciativas de sustentabilidad a largo plazo y multifacéticas llevadas adelante por Massport, que se describen de manera más detallada en los capítulos individuales de este *EDR del 2018/2019,* si corresponde. La **Figura 1-9** destaca algunas de las iniciativas de sustentabilidad recientes de Massport.

Figura 1-9 Aspectos destacados de sustentabilidad recientes

24 Consejo Internacional de Aeropuertos (ACI) Airport Sustainability: A Holistic Approach to Effective Airport Management. Sin fecha. http://www.aci-na.org/static/entransit/Sustainability%20White%20Paper.pdf.

Plan de manejo para la sustentabilidad (SMP) del Aeropuerto Logan

En el 2013, la FAA le otorgó a Massport un subsidio para preparar un plan de manejo para la sustentabilidad (Sustainability Management Plan, SMP) para el Aeropuerto Logan. Las iniciativas de planificación del SMP del Aeropuerto Logan comenzaron en mayo del 2013 y se completaron en abril del 2015. El SMP del Aeropuerto Logan tiene una amplia perspectiva de sustentabilidad que incluye el estudio de la vitalidad económica, de la eficacia operativa, de la conservación de los recursos naturales y de la responsabilidad social. El SMP del Aeropuerto Logan tiene como objetivo promover e integrar la sustentabilidad en todo el Aeropuerto, y coordinar las iniciativas de sustentabilidad en curso en todo Massport. El SMP del Aeropuerto Logan desarrolló un marco y un plan de implementación, con mediciones y objetivos diseñados para hacer un seguimiento del progreso en el tiempo.

Actualmente, Massport trabaja sobre la visión de "Sustentabilidad 2.0" de Massport como una próxima medida de planificación para implementar los principios y enfoques del SMP en otras instalaciones de Massport, y para actualizar las metas y los objetivos de sustentabilidad. Actualmente, Massport está avanzando en una serie de iniciativas a corto plazo para ayudar a alcanzar sus objetivos (consulte la **Tabla 1-1**) en las áreas de (1) energía y emisiones de GHG, (2) conservación del agua, (3) bienestar de la comunidad, de los empleados y de los pasajeros, (4) materiales, manejo de los desperdicios y reciclado, (5) resiliencia, (6) disminución del ruido, (7) mejora de la calidad del aire, (8) acceso terrestre y conectividad, (9) calidad del agua/desagües pluviales y (10) recursos naturales. Massport informa su progreso para alcanzar cada objetivo, incluidos los cambios en el desempeño relacionado, en los informes de sustentabilidad. Desde la publicación del SMP del Aeropuerto Logan, Massport ha continuado expandiendo sus iniciativas de sustentabilidad, enfocándose cada vez más en la implementación de las medidas de resiliencia para proteger las operaciones marítimas y del Aeropuerto Logan, la infraestructura crítica y la mano de obra.

El *Informe Anual de Sustentabilidad del Aeropuerto Logan*, publicado por primera vez en abril del 2016, brinda un resumen del progreso de las iniciativas de sustentabilidad en el Aeropuerto Logan en función de los objetivos y de las metas de Massport establecidas en el SMP del Aeropuerto Logan. Destaca el progreso de Massport hacia la mejora de la sustentabilidad y hacia la mejora de la resiliencia en sus instalaciones. Este informe, que ahora se denomina *Informe Anual de Sustentabilidad y Resiliencia*, se actualizó en el 2019 y también se puede encontrar en: http://www.massport.com/massport/business/capital-improvements/sustainability/sustainability-management/.

Tabla 1-1 Objetivos y descripciones de sustentabilidad del Aeropuerto Logan

Categoría de sustentabilidad	Objetivo	Categoría de sustentabilidad	Objetivo
Energía y emisiones de gases de efecto invernadero (GHG) 	Reducir la intensidad de la energía y las emisiones de GHG mientras se aumenta la parte de energía de Massport generada a través de fuentes renovables.	Preservación del agua 	Preservar los recursos de agua regionales mediante la reducción del consumo de agua potable.
Bienestar de la comunidad, de los empleados y de los  pasajeros	Promover comunidades económicamente prósperas, equitativas y sanas, y el bienestar de los pasajeros y de los empleados.	Materiales, manejo de los desperdicios y reciclado 	Reducir la producción de desperdicios, aumentar la tasa de reciclado y utilizar materiales ecológicos.
Resiliencia 	Transformarse en un modelo innovador y nacional para la planificación de resiliencia y para la implementación entre las autoridades portuarias.	Disminución del ruido 	Minimizar los impactos del ruido de las operaciones del Aeropuerto Logan.
Mejora de la calidad del aire 	Disminuir las emisiones de los contaminantes del aire de las fuentes de Massport.	Acceso terrestre y conectividad 	Proporcionar un acceso terrestre al Aeropuerto Logan superior mediante medios de transporte alternativos y medios de transporte masivos (HOV).
Calidad del agua/Desagües  pluviales	Proteger la calidad del agua y minimizar los desechos de contaminantes.	Recursos naturales 	Proteger y restaurar los recursos naturales en las cercanías de Massport.

Instalaciones certificadas por Leadership in Energy and Environmental Design (LEED®) en el Aeropuerto Logan

El sistema de calificación LEED de United States Green Building Counsil (USGBC) es el sistema de certificación de construcciones ecológicas de terceros más reconocido en los Estados Unidos. Massport se esfuerza por alcanzar la certificación LEED para todos los proyectos de construcción nuevos y de renovación sustancial sobre más de 1858 metros cuadrados. Más recientemente, en el 2017, la nueva ala de aeronaves grandes de la Terminal E (Proyecto de renovación y mejoras de la Terminal E) recibió la certificación LEED dorada para los interiores comerciales. Otros ejemplos recientes de construcciones certificadas por LEED en el Aeropuerto Logan son el centro de alquiler de autos (Rental Car Center, RCC) y Green Bus Depot (consulte **la Figura 1-10** y la **Tabla 1-2**). Hay más detalles disponibles en el Capítulo 3, *Planificación del Aeropuerto*.

Figura 1-10 Instalaciones certificadas por LEED en el Aeropuerto Logan

Estándares de diseño sustentable y pautas, y certificación LEED

Para los proyectos de construcción más pequeños y para los proyectos que no son de construcción, Massport usa sus *Estándares de diseño sustentable y pautas (Sustainable Design Standards and Guidelines,* SDSG). Los SDSG brindan un marco para el diseño y para la construcción sustentables tanto para la construcción nueva como para los proyectos de rehabilitación. Los SDSG se aplican a una amplia variedad de criterios específicos del proyecto, como el diseño del sitio, los materiales del proyecto, el manejo de la energía, las emisiones atmosféricas, el manejo de la calidad y la eficiencia del agua, la calidad del aire en el interior y la comodidad de los ocupantes. Massport también usa el sistema de calificación centrado en la sustentabilidad Parksmart del Consejo de Construcción Sustentable de los EE. UU. (US Green Building Council, USGBC), un sistema de calificación centrado en el medioambiente y en la sustentabilidad, específico para el manejo, la programación, el diseño y la tecnología de las estructuras de estacionamiento.

Tabla 1-2 Instalaciones certificadas por Leadership in Energy and Environmental Design (LEED) en el Aeropuerto Logan

Terminal A (certificación LEED), completada en el 2005/2006

- Primera terminal aeroportuaria en el mundo en recibir la certificación LEED
- Aceras con prioridad para medios de transporte masivos (HOV) y para bicicletas
- Modernización con paneles solares en el techo de la Terminal A
- Filtración de los desagües pluviales
- Techo reflectante
- Características de reducción del consumo de agua
- Iluminación diurna natural junto con tecnologías de iluminación avanzadas para la eficiencia de la energía
- Uso de materiales reciclados y de fuentes regionales
- Medidas para mejorar la calidad del aire en el interior

Instalaciones de aviación general que respaldan los vuelos característicos (certificación LEED), completadas en el 2007/2008

- Mecanismos para reducir el uso del agua
- Iluminación diurna natural con tecnologías de iluminación avanzadas para la eficiencia de la energía
- Acristalamiento de las ventanas y sombrillas para maximizar la luz diurna y para minimizar el calentamiento
- Materiales reciclados y de fuentes regionales
- Medidas para mejorar la calidad del aire en el interior

Centro de alquiler de autos (RCC) (certificación LEED dorada), completado en 2013

- Materiales de construcción ecológicos
- Paneles solares en el techo
- Accesos y conexiones para bicicletas y peatones
- Iluminación diurna natural y tecnologías de iluminación avanzadas para la eficiencia de la energía
- Uso de materiales reciclados y de fuentes regionales
- Calidad del aire en el interior mejorada
- Estaciones para enchufar vehículos eléctricos y otras fuentes de combustible alternativo como el E-85 (etanol)
- Flotas de autos de alquiler que incluyen vehículos híbridos/de combustible alternativo/de emisiones bajas
- Conexiones para peatones
- Instalaciones para bicicletas y duchas, vestuarios para empleados
- Recuperación del agua para el lavado de autos y uso de desagües pluviales para los usos no potables, como el lavado de vehículos y el riego.
- Reducción de las millas viajadas por vehículos (VMT)

Green Bus Depot (certificación LEED), completado en el 2014

- Paneles solares en el techo
- Características de ahorro de agua y energía
- Reducción de VMT
- Nueva flota de transportes compartidos que incluyen autobuses a diésel limpio/autobuses híbridos eléctricos y autobuses a gas natural comprimido (GNC).
- Materiales de construcción sembrados, cosechados, producidos y transportados de manera sustentable

Tabla 1-2 Instalaciones certificadas por Leadership in Energy and Environmental Design (LEED) en el Aeropuerto Logan (cont.)

Nueva ala para aeronaves grandes en la Terminal E (certificación LEED dorada para interiores comerciales), completada en el 2017

- Reducción del efecto isla de calor al proporcionar un techo blanco reflectante y asfalto de concreto de color claro
- Instalaciones para el agua y para retretes de flujo bajo
- Instalaciones para la luz eficientes, y calefacción, ventilación y sistema de aire acondicionado (heating, ventilation, and air conditioning, HVAC) eficientes
- Uso de fuentes de energía renovables
- Materiales reciclados y de fuentes regionales
- Calidad del aire en el interior mejorada
- Sistema de agua caliente solar térmico para agua de uso doméstico para calentar el 100 por ciento del agua de uso doméstico del ala

Cambio climático y planificación para la resiliencia

Ya que el área de Boston continuará experimentando temperaturas elevadas, condiciones climáticas extremas más frecuentes y nivel del mar más elevado debido al cambio climático,[25] Massport entiende la importancia de prepararse para los impactos para proteger y mejorar su infraestructura, sus activos operativos y su mano de obra críticos. Mediante la sólida planificación y la colaboración regional, Massport se esfuerza por continuar su función de liderazgo en la planificación de la resiliencia entre las autoridades aeroportuarias, la industria aeroportuaria y la región de Boston.

A finales del 2013, Massport comenzó un *Estudio para la planificación para desastres y resiliencia de la infraestructura (Disaster and Infrastructure Resiliency Planning, DIRP)* para el Aeropuerto Logan, para el puerto de Boston, y para los recursos marítimos de Massport en el South Boston y East Boston. El estudio de DIRP incluye el análisis de los peligros, el modelado del aumento del nivel del mar y marejada ciclónica, y proyecciones de temperatura, precipitaciones y aumentos anticipados de fenómenos meteorológicos extremos. El estudio de DIRP brinda recomendaciones sobre las estrategias a corto plazo para hacer que las instalaciones de Massport sean más resilientes a los posibles efectos del cambio climático. En el 2014, el estudio se completó y se comenzó la implementación de las iniciativas de adaptación a finales del 2014.

Además del estudio de DIRP y de sus iniciativas relacionadas, Massport completó una evaluación de los riesgos con todas las autoridades de sus iniciativas de planificación estratégica, emitió una *Guía de diseño a prueba de inundaciones (Floodproofing Design Guide)* y desarrolló un marco de resiliencia para brindar mediciones congruentes para la planificación a corto y a largo plazo, y para la protección de sus instalaciones e infraestructura críticas. Más allá de la resiliencia de la infraestructura, Massport también se

25 Ciudad de Boston. 2016. *Climate Ready Boston*. https://www.boston.gov/sites/default/files/climatereadyeastbostoncharlestown_finalreport_web.pdf.

centra en la incorporación de resiliencia social y económica en su planificación operativa y de capital a largo plazo. La *Guía de diseño a prueba de inundaciones* de Massport se publicó en noviembre del 2014 y se actualizó en noviembre del 2018.

Los aspectos operativos de la estrategia de resiliencia incluyen el desarrollo de planes para el manejo de inundaciones para el Aeropuerto Logan y para las instalaciones marítimas de Massport. Estos planes se introdujeron en el 2014 e incluyeron los despliegues previstos para las barreras temporarias contra inundaciones para proteger hasta 12 ubicaciones de infraestructura crítica en caso de condiciones climáticas extremas. Se mejoraron de manera permanente ubicaciones adicionales para prevenir inundaciones. Los planes operativos para inundaciones se evalúan anualmente para mejorar su eficacia y para que se adapten a los requisitos cambiantes y en función de experiencias pasadas.

Massport informa el progreso hacia los objetivos de resiliencia en los informes de sustentabilidad anuales del Aeropuerto Logan. Se encuentra disponible información adicional sobre los objetivos y las iniciativas de resiliencia de Massport en el siguiente enlace:http://www.massport.com/massport/business/capital-improvements/sustainability/climate-change-adaptation-and-resiliency/.

Sociedades de Massport y respaldo a la comunidad

Massport tiene un compromiso que data de hace tiempo de ser un buen vecino. Al trabajar en colaboración con el gobierno, con la comunidad y con los líderes civiles en todo Massachusetts y Nueva Inglaterra, Massport participa activamente realizando esfuerzos para mejorar la calidad de vida de las personas que residen cerca de las instalaciones de Massport. Los empleados de Massport participan en numerosas actividades comunitarias. Durante la primavera, los empleados de Massport participan en la limpieza anual del vecindario Boston brilla (Boston Shines) de la ciudad de Boston. Durante la época de Acción de Gracias, los empleados de Massport donan alimentos a tres programas comunitarios, que atienden a más de 500 familias y personas todos los meses. Durante el otoño, a los niños de entre cuatro y 17 años se les entrega una mochila nueva llena de artículos escolares y ropa nueva para empezar el año escolar. Durante las vacaciones, Massport invita a los estudiantes de las comunidades vecinas y de las escuelas primarias a cantar en la Terminal A, como parte del programa anual de música de vacaciones.

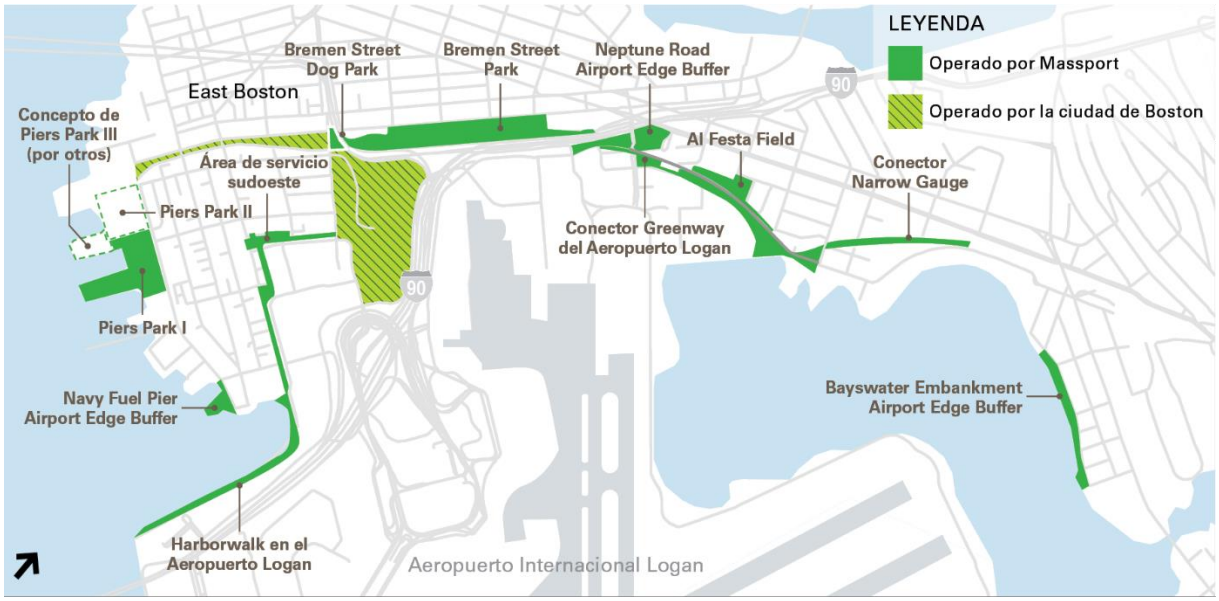
Programa de espacio abierto/amortiguación

Massport ha invertido en un amplio programa de espacio abierto para mejorar las comunidades circundantes. Massport destinó inicialmente más de USD 15 millones para la planificación, la construcción y el mantenimiento de cuatro espacios abiertos y dos parques junto al perímetro del Aeropuerto Logan. Estos amortiguadores incluyen el amortiguador Bayswater Embankment Airport Edge, el amortiguador Navy Fuel Pier y el amortiguador del área de servicios sudeste (Southwest Service Area, SWSA) (fases I y II). El premiado Piers Park se completó en 1995 y desde entonces se ha convertido en parte de una red de espacios verdes que atraviesa East Boston desde la zona costera Jeffries Point hasta Constitution Beach.

La etapa II de Piers Park, contigua al actual Piers Park, sumará 1,7 hectáreas de espacio verde a la zona costera de East Boston una vez completada y hay planes de un tercero para la etapa III de Piers Park, que transformarán un viejo muelle en un espacio verde de 1,45 hectáreas, el que incluirá características de

resiliencia para ayudar a proteger el vecindario de la inundación y del aumento del nivel del mar. Hoy, East Boston disfruta de 5,3 km y de más de 13,3 hectáreas de espacio verde desarrollado o manejado por Massport, en colaboración con la comunidad de East Boston y en respuesta a su participación. Puede obtener más información en el Capítulo 3, *Planificación aeroportuaria*.

Figura 1-11 Parques de propiedad de Massport y operados por este y la ciudad de Boston



Fuente: VHB.

Organización del *EDR del 2018/2019*

El resto de este EDR incluye lo siguiente:

- **Resumen ejecutivo en español,** que proporciona una versión traducida del Resumen ejecutivo incluido después de la versión en inglés del Capítulo 1, *Introducción/Resumen* ejecutivo.
- **Capítulo 2, *Niveles de actividad,*** que presenta estadísticas de la actividad de la aviación para el Aeropuerto Logan en el 2018 y 2019 con una comparación con años anteriores. Las mediciones de las actividades específicas analizadas incluyen pasajeros aéreos, operaciones de aeronaves, mezcla de flota y volúmenes de carga/correo.
- **Capítulo 3, *Planificación aeroportuaria*,** que brinda una descripción general de la planificación, construcción y actividades permitidas que se realizaron en el Aeropuerto Logan en el 2018 y 2019. También, describe la planificación, construcción, y actividades permitidas e iniciativas conocidas futuras.
- **Capítulo 4, *Transporte regional*,** que describe los niveles de actividades en los aeropuertos de Nueva Inglaterra en el 2018 y 2019, y actualiza las actividades de planificación regional recientes.
- **Capítulo 5, *Acceso terrestre desde y hacia el Aeropuerto Logan*,** que informa la cantidad de pasajeros en el transporte público, las calles, los volúmenes de tráfico y el estacionamiento para el 2018 y 2019 con una comparación con años anteriores.
- **Capítulo 6, *Disminución del ruido*,** en el que se actualiza el estado del entorno sonoro en el Aeropuerto Logan en el 2018 y 2019 con una comparación con los años anteriores, y describe las iniciativas de Massport para reducir los niveles de ruido.
- **Capítulo 7, *Calidad del aire/Reducción de las emisiones*,** que brinda una descripción general de la calidad del aire en relación con el Aeropuerto en el 2018 y 2019 con una comparación con los años anteriores, y las iniciativas para reducir las emisiones.
- **Capítulo 8, *Cumplimiento y manejo medioambientales/Calidad del agua*,** que describe las actividades del manejo medioambiental en curso de Massport, incluido el cumplimiento con el NPDES, los desagües pluviales, los derrames de combustible, las actividades del Plan para Contingencias de Massachusetts (MCP) y el manejo de tanques.
- **Capítulo 9, *Medidas que benefician al medioambiente y seguimiento del proyecto de mitigación***, que brinda una descripción general de los programas y de las iniciativas de Massport que proporcionan beneficios medioambientales e informa el progreso de Massport para cumplir la sección 61 de la MEPA[26] sobre los compromisos de mitigación de proyectos específicos del Aeropuerto.

26 El Capítulo 30, sección 61 (M.G.L. 30, § 61) de las leyes generales de Massachusetts establece que todas las agencias deben revisar, evaluar y determinar los impactos medioambientales de todos los proyectos o actividades, y deben usar todos los medios prácticos y mediciones para minimizar el daño al medioambiente. Para los proyectos que requieren un informe de impacto medioambiental, los hallazgos de la sección 61 especificarán todas las posibles medidas que se pueden tomar para evitar o mitigar los impactos medioambientales, y el cronograma de implementación anticipado para las medidas de mitigación.

Apéndices de la MEPA: estos incluyen la certificación del secretario para el *ESPR del 2017 y* cartas con comentarios recibidas para el *ESPR del 2017* y las respuestas a esos comentarios, certificaciones del secretario para los EDR/ESPR emitidos para los años de informe del 2011 al 2017, una lista de revisores a quienes se les distribuyó el EDR y un alcance propuesto para el *EDR del 2020*. También se incluyen en esta sección las certificaciones del secretario para el Formulario de notificación medioambiental (environmental notification form, ENF) del proyecto de modernización de la Terminal E, evaluación medioambiental (Environmental Assessment, EA)/informe de impacto medioambiental (Environmental Impact Report, EIR) provisorios y EA/EIR finales, y la certificación del secretario para el ENF del proyecto de estacionamiento del Aeropuerto Logan.

Apéndice A: Certificaciones de la MEPA y respuestas a los comentarios[27]
Apéndice B: Cartas de comentarios y respuestas
Apéndice C: Alcance propuesto para el EDR del 2020
Apéndice D: Lista de distribución

Apéndices técnicos:[28] estos incluyen datos analíticos detallados y documentación metodológica para los diferentes análisis medioambientales presentados y realizados para este EDR.

Apéndice E: Niveles de actividad
Apéndice F: Transporte regional
Apéndice G: Acceso terrestre
Apéndice H: Disminución del ruido
Apéndice I: Calidad del aire/Reducción de emisiones
Apéndice J: Cumplimiento y manejo medioambiental/Calidad del agua
Apéndice K: Informes del control de precios para el período de valores máximos
Apéndice L: Memorando de la reducción del carreteo/carreteo con un solo motor en el Aeropuerto Logan

27 Las certificaciones del secretario para el Formulario de notificación medioambiental para el proyecto de modernización de la Terminal E, EA/EIR provisorios y EA/EIR finales se incluyen el apéndice A. Por practicidad, Massport respondió a los comentarios que se relacionan con el EDR y el ESPR.

28 Los apéndice técnicos están disponibles en el sitio web de Massport en www.massport.com.

Esta página se dejó intencionalmente en blanco.

2

Activity Levels

During 2018/2019, Boston Logan International Airport (Logan Airport or the Airport) and the aviation industry in general continued to see the strong growth experienced over the past few years. That growth was largely driven by the positive economic conditions in the Boston region, low unemployment, a strong, diverse economic base, and continued investment in commercial and residential real estate, particularly in life sciences, finance, healthcare, and higher education. The worldwide COVID-19 pandemic, which began to be felt in mid-March 2020 has, however, reversed this trend with dramatic reductions in Logan Airport passenger levels and flights. Beginning in March 2020, flights in and out of Logan Airport were dramatically reduced and passenger levels dropped by over 90 percent at the peak of the pandemic in the spring and summer of 2020. As a result, there are currently far fewer aircraft operations and passengers and a dramatic drop in overall Logan Airport activity. While activity levels began a slow recovery in mid-summer 2020, the ongoing wave of COVID-19 cases has resulted in continued historically low levels of activity, with a full recovery years away. As of October 2020, total flight operations for the year were down approximately 50 percent and passenger levels were down by about 70 percent compared to January through October 2019. Massport expects that by the end of 2020, passenger levels will have dropped to levels of activity not seen since the mid-1970s.

As of the filing of this Environmental Data Report (EDR), Logan Airport continued to be one of the nation's most impacted airports experiencing one of the most dramatic reductions in levels of activity. While the effects of COVID-19 on the aviation industry and Logan Airport continue to evolve, key updates reflecting 2020 are presented, as available. The *2020 EDR* will provide an update on the significant changes in the airline industry and Logan Airport.

Introduction

Logan Airport plays a number of critical roles in the local, New England, and national air transportation systems. 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 is a key transportation and economic resource in the New England region, the state, and the Boston metropolitan area, which is home to a broad range of industries.

The industries accounting for the largest share of employees include: healthcare and social assistance;[1] educational services; and professional, scientific, and technology services (which include Boston's growing

1 The Social Assistance subsector of the North American Industry Classification System includes Individual and Family Services; Community Food and Housing, and Emergency and Other Relief Services; Vocational Rehabilitation Services; and Child Day Care Services. U.S. Bureau of Labor Statistics. 2019. Industries at a Glance – Social Assistance: NAICS 624. https://www.bls.gov/iag/tgs/iag624.htm

biotech industry).[2] In 2019, Boston/Cambridge, the nation's largest biopharma cluster, committed to advancing digital health through creation of a digital health record database where the industry is expected to grow to more than $350 billion by 2025.[3] The City of Boston was also declared the "#1 city in the U.S. for fostering entrepreneurial growth and innovation" in 2017, where continued longtime strengths from top-tier universities and talent have fueled its strong startup ecosystem.[4] The contribution of innovation and business startups was also evident in the 2019 year-to-date economic growth estimates and reflected the trends in increased employment and high-tech industries.

In addition to supporting the economic success of the Commonwealth, Logan Airport and the airport industry have always been important elements in the state and regional economies. The *Massachusetts Statewide Airport Economic Impact Study Update,* completed by MassDOT in 2014 and most recently updated in 2019,[5] estimates that the three Massport airports contribute approximately $23.1 billion in output to the Massachusetts economy annually; of this output, 71 percent is due to Logan Airport alone.[6] Total output includes on-Airport businesses, construction, visitor, and multiplier effects.[7] Logan Airport supports over 162,000 direct and indirect jobs, while generating approximately $16.3 billion per year in total economic output.[8] In 2019, over 20,000 people were employed at Logan Airport. This included approximately 820 Massport Logan Airport staff and administrative employees.

This chapter reports on annual air traffic activity at Logan Airport in 2018 and 2019, including air passengers, aircraft operations, aircraft fleet mix, and cargo volumes. Air traffic and passenger activity levels at Logan Airport are the basis for the evaluation of noise, air quality effects, and ground access conditions associated with Logan Airport. In this chapter, current activity levels at the Airport are compared to prior-year levels, and historical passenger and operations trends at Logan Airport dating back to 2000 are reviewed.[9]

Where available, this EDR includes updates on 2020 activity levels that reflect the initial impacts of the COVID-19 pandemic and other changes in the aviation and travel industries. As the longer-range impact of the pandemic becomes clearer, Massport expects to be able to present updates on passenger activity and an early understanding of the anticipated recovery. The next ESPR will provide an updated activity forecast.

2 U.S. Census Bureau via DataUSA. 2019. Boston-Cambridge, Newton, MA-NH Metro Area profile. www.datausa.io

3 Massachusetts Biotechnology Council (MassBio) conference; McKinsey estimate "The Era of Exponential Improvement in Healthcare" https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/the-era-of-exponential-improvement-in-healthcare

4 U.S. Chamber of Commerce Foundation and 1776. 2017. *Innovation That Matters*. https://www.1776.vc/reports/innovation-that-matters-2017/

5 MassDOT Aeronautics Division. 2019. *Massachusetts Statewide Airport Economic Impact Study Update*. https://www.mass.gov/files/documents/2019/03/25/AeroEcon_ImpactStudy_January2019.pdf

6 *Ibid.*

7 Multiplier effects refer to the recirculation of money in the local economy after initially being spent by the Airport, its tenants, or tourists. This recirculation increases the overall impact of the Airport's operation on the local economy.

8 MassDOT Aeronautics Division. 2019. *Massachusetts Statewide Airport Economic Impact Study Update.* https://www.mass.gov/files/documents/2019/03/25/AeroEcon_ImpactStudy_January2019.pdf

9 Refer to Appendix E, *Activity Levels,* for available information dating back to 1980.

The chapter describes 2018/2019 activity levels and historical trends for:

- Air passengers and aircraft operations at Logan Airport;
- Cargo and mail volumes at Logan Airport; and
- Airline service at Logan Airport.

Due to COVID-19, 2020 passenger levels and operations have dramatically decreased. As of October 2020, year over year passenger levels and operations were down by approximately 70 percent and 50 percent, respectively.

Source: ACI, 2018; U.S. Department of Transportation T-100 Database, 2019.
Note: A U.S. international passenger gateway refers to a U.S. port of entry for passengers traveling internationally. Logan Airport ranks 12th among other U.S. airports with international service, in terms of total number of international enplaned passengers.

Logan Airport is an important origin and destination (O&D)[10] airport both nationally and internationally and for the reporting period, had been growing on average 5.4 percent annually, ranking 20th among large hub sized U.S. airports over the past five years.[11] From 2017 to 2019, U.S. passenger traffic grew by 9.1 percent, whereas Logan Airport passenger traffic grew by 10.7 percent over the same time period. The increase in passengers and operations in 2018 and 2019 was in direct response to the strong national and regional economies during that time period. Despite the increase in passengers, aircraft operations at Logan Airport for both 2018 and 2019 remained well below the 487,996 operations in 2000 and the historical peak of 507,449 operations reached in 1998. This has been the result of a steady increase in aircraft size at the Airport and increasing aircraft load factors (passengers/available seats).[12] Historically, the number of connecting passengers has been less than 10 percent each year.

Additionally, economic and political events constantly affect the airline industry. Air traffic declines caused by economic recessions and other "shocks" such as the events of September 11, 2001 and the Great Recession in 2008/2009 have been followed by gradual recovery cycles. The airline industry has experienced significant turmoil since 2000, seeing a wave of airline bankruptcies and reorganizations and periodic increases in oil prices.

As depicted in **Figure 2-1**, after the events of September 11, 2001 and the subsequent recession, Logan Airport's passenger activity levels declined by about 18 percent, yet recovered five years later. Logan Airport's passenger

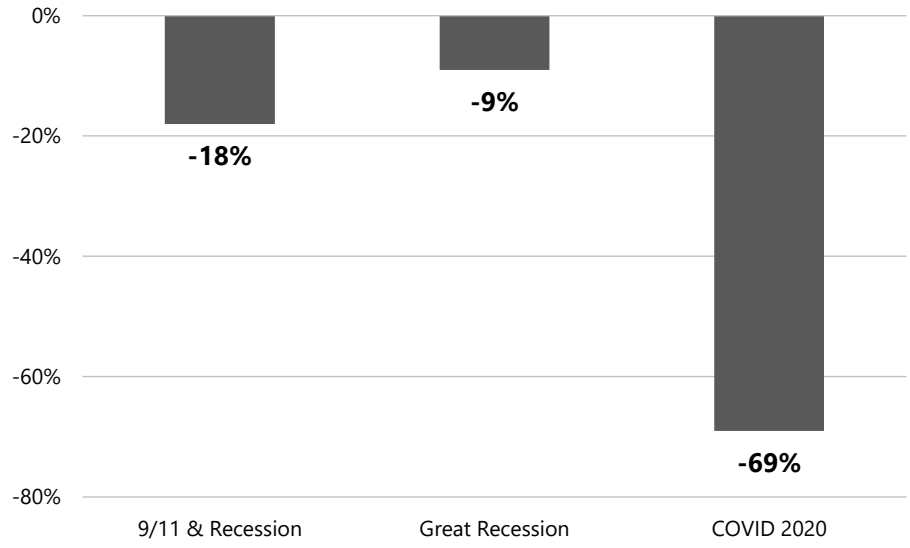
10 "Origin and destination" (O&D) traffic refers to the passenger traffic that either originates or ends at a particular airport or market. A strong O&D market like Boston generates significant local passenger demand, with many passengers starting their journey and ending their journey in that market. 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.

11 Between 2014 and 2019, Logan Airport was the 20th fastest growing airport in the U.S. in terms of domestic O&D traffic compared to the top 30 large hub U.S. airports (U.S. Department of Transportation O&D Survey).

12 Load factor is the ratio of passengers on board to the number of available seats provided on a flight.

volumes declined by about 9 percent after the recession of 2008/2009. Recovery to pre-recession levels occurred in two years, demonstrating the resiliency of the Boston region economy.

Figure 2-1 Change to Logan Airport Passenger Growth After Recent Recessions



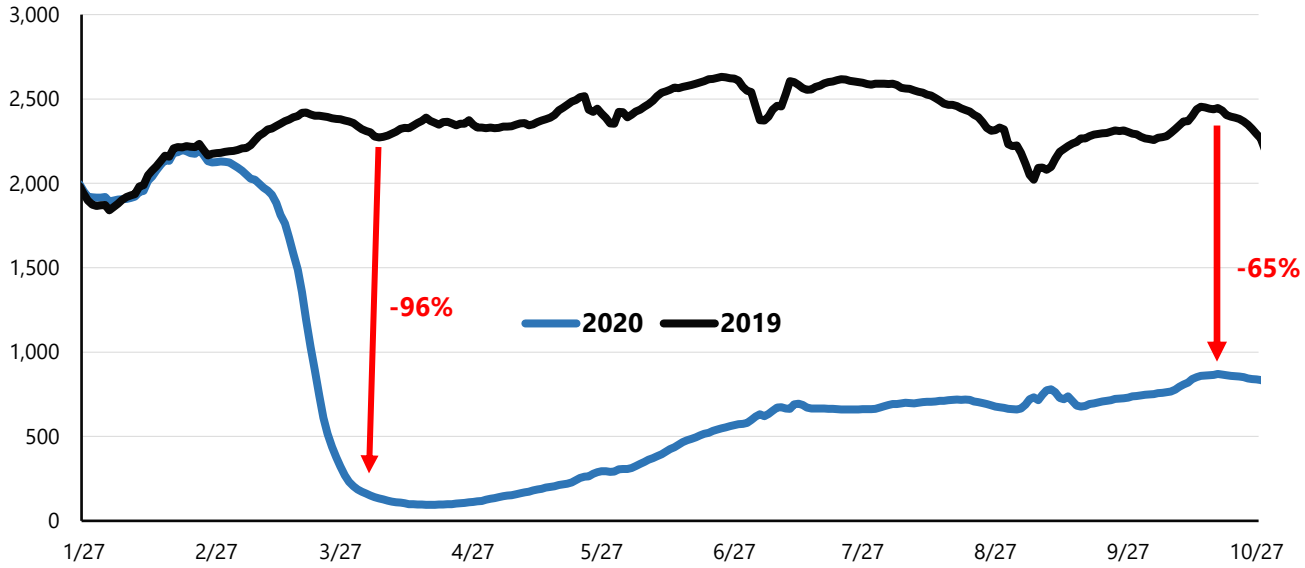
Source: InterVISTAS: Massport traffic statistics.
Note: COVID 2020 change is the year-to-date October 2020 vs. 2019.

COVID-19 Effect on the Airline Industry

COVID-19 is having an unprecedented impact on not just the aviation industry but the global economy. While the immediate and most pressing concern is human cost, COVID-19 has created profound implications for nearly all businesses and industries. The impact on aviation has been particularly severe. The situation is changing on a daily basis and there remains considerable uncertainty as to how long this outbreak will last and what will be the long-term impacts.

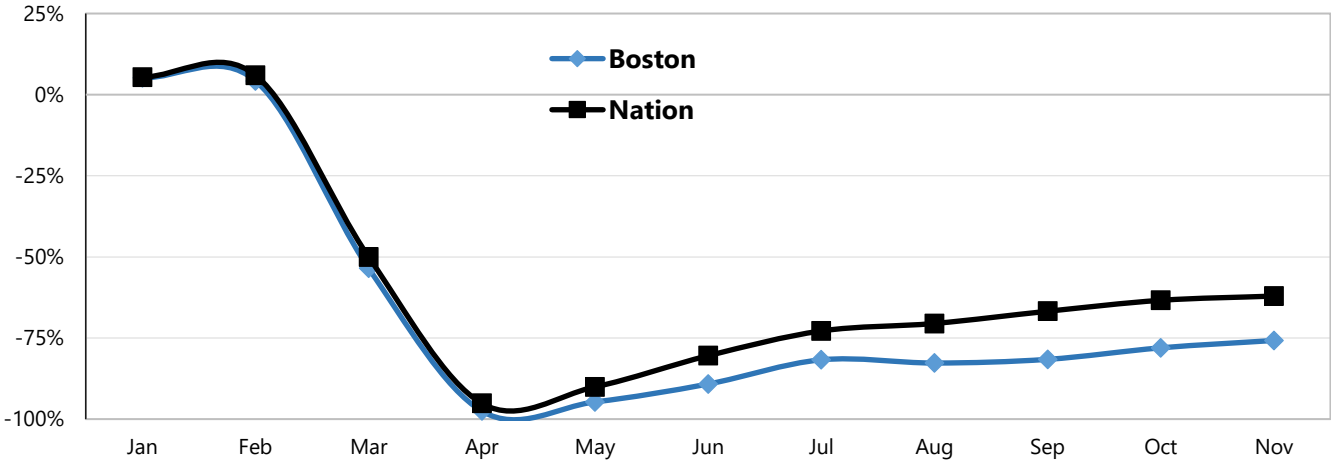
The rapid spread of COVID-19 and the related travel restrictions and social distancing measures implemented throughout the world have significantly reduced demand for air travel. After initially impacting service to China beginning in January 2020, the spread of the virus and the resulting global pandemic next affected the majority of the airline's international networks and ultimately the domestic network. Beginning in March 2020, large public events were cancelled, governmental authorities began imposing restrictions on non-essential activities, businesses suspended travel and popular leisure destinations temporarily closed to visitors. Many countries that are key Logan Airport markets have imposed bans on international travelers for specified periods or indefinitely. The dramatic decline in passengers at U.S. airports began in earnest in March 2020. As shown in **Figure 2-2**, the seven-day average Transportation Security Administration (TSA) throughput dropped by over 90 percent very quickly. TSA throughput is the number of passengers going through the TSA security screening process. **Figure-2-3** shows the percent change in monthly TSA throughput from 2019 to 2020 for the nation and Boston.

Figure 2-2: Seven Day Average TSA Throughput at U.S. Airports, 2019 vs. 2020



Source: TSA Daily Reports.

Figure 2-3: Percent Change in Monthly TSA Throughout From Prior Year, January 2020 to November 2020



Source: TSA Daily Reports.

Passenger traffic gradually began to recovery in early May 2020. But the summer recovery that was initially envisioned never materialized as the pandemic continued. It is now clear that the disruption to aviation caused by the COVID-19 pandemic could dramatically reshape the U.S. airport sector landscape, adding uncertainty and potential variability to operations, along with comparatively weaker financial performance and competitiveness. This is unlike previous downturns in severity, likely duration, effect on the rise of virtual meetings and decline of business travel, and, most notably, the tremendous industrywide transformation required to address consumer health and safety issues on a global scale.

All indications are that this precipitous decline is not a temporary disruption with a relatively rapid recovery, but rather a backdrop for what will be a period of sluggish air travel demand that could extend for a prolonged period.

The pandemic, together with the measures implemented by governmental authorities and private organizations in response to the pandemic, has had an adverse impact that has been material to airline operating results, financial conditions, and liquidity. Measures such as "shelter in place" or quarantine requirements, international and domestic travel restrictions or advisories, limitations on public gatherings, social distancing recommendations, remote work arrangements and closures of tourist destinations and attractions, as well as consumer perceptions of the safety, ease and predictability of air travel, have contributed to a precipitous decline in passenger demand and bookings for both business and leisure travel.

The airlines began experiencing a significant decline in international and domestic demand related to COVID-19 during the first quarter of 2020. The decline in demand caused a material deterioration in revenues which has lasted through the third quarter of 2020, resulting in record financial losses. The U.S. airlines combined have experienced a $36.3 billion loss for the first three quarters of 2020. Full year losses are expected to be in the range of $45 to $50 billion. The airlines have taken a number of actions in response to the decreased demand for air travel, which has resulted in mounting financial losses.

These actions include:

- Making historic capacity cuts, parking and/or retiring older aircraft (and, in some cases, entire fleet types);
- Utilizing passenger planes on cargo-only missions, either belly-only or belly and main cabin;
- Consolidating footprint at airport facilities (e.g., concourses), shuttering lounges, halting real estate projects;
- Deferring aircraft deliveries and reducing non-aircraft (e.g., ground equipment, IT) capital expenditures;
- Cutting executive compensation and implementing voluntary leave and early retirement programs; and
- Freezing hiring and non-essential spending (e.g., employee travel, consultants, events, marketing, training.

Although during the third quarter of 2020, airlines have experienced some improvement in demand, the full extent of the ongoing impact of COVID-19 on the longer-term operational and financial performance will depend on future developments, including those outside the control of the airlines, related to possible increases in COVID-19 cases and/or new quarantine requirements being imposed in certain jurisdictions or other restrictions on travel, and the distribution of a vaccine, all of which are highly uncertain.

At the end of October 2020, total flight operations at Logan Airport had dropped 63 percent compared to October 2019, and over 50 percent year-over-year. Passenger activity levels in October 2020 were down nearly 80 percent compared to October 2019, and down 70 percent comparing January to October 2020 to the same period in 2019. Logan Airport's decline in available flights and seats is one of the most severe in the United States. The Airport's ranking in the U.S. has fallen as well. In 2019, Logan Airport ranked 15th in annual passenger activity levels. In 2020, Logan Airport will likely drop to being ranked 19th.

The Northeast was hit early and hard by the pandemic. Among the other U.S. regions, the Northeast has experienced the largest decline in passenger activity levels at 49 percent. The first region to be impacted by COVID-19, the West Coast, follows with a 44-percent decline. With leisure passengers accounting for the majority of passengers traveling today, it is no surprise the Mountain region, with its wide-open spaces and Florida, with its beaches, have experienced the lowest declines.

Air Passenger Levels in 2018 and 2019

Logan Airport is the principal airport for the greater Boston metropolitan area, and the international and long-haul gateway for much of New England. Logan Airport was ranked the 16th busiest airport in the U.S. in terms of air passengers in 2018 and remained the same rank in 2019.[13] Logan Airport served 42.5 million passengers in 2019, an increase of 3.9 percent over 2018, and adding 4.1 million air passengers since 2017. This represented a high for Logan Airport, exceeding the previous record of 40.9 million in 2018. Logan Airport had been averaging an annual passenger growth of 5.9 percent since 2013, and continued to outpace the overall U.S. passenger growth of 4.1 percent per year for the same time period.[14] As a large hub airport along the U.S. eastern seaboard, Logan Airport also ranked 6th in terms of transatlantic international passengers with nearly 5.0 million passengers flying to Europe, the Middle East, and Africa in 2019, increasing by 10.3 percent compared to 2018. Factors that contributed to the Airport's strong passenger growth through 2018 and 2019 included:

- Continued economic growth and an increase in air travel demand across the nation, especially in Massachusetts and the Boston metropolitan area;
- Continued growth by air carriers jetBlue Airways' and Delta Air Lines' at Logan Airport; and
- Increasing international passenger demand and new international destinations introduced by both domestic and foreign flag carriers.

As shown in **Table 2-1**, domestic air passengers represent Logan Airport's largest market segment, accounting for approximately 81.2 and 80.2 percent of total air passengers in 2018 and 2019, respectively. The domestic passenger market increased by 6.9 percent in 2018 compared to 2017, and another 2.6 percent from 2018 to 2019. The continued economic and personal income growth of the New England region and increased need for business travel contributed to the increase in domestic passenger demand over 2018 and 2019.

Figure 2-4 shows the total annual passengers for the five major airlines at Logan Airport. Overall, the substantial low-cost carrier growth at the Airport over the past decade, particularly the entry of jetBlue Airways in 2004 and its subsequent decision to expand and make Logan Airport one of its focus cities, has exceeded recent consolidation and contraction among other carriers serving Logan Airport.[15] Through 2019, domestic passenger activity levels had recovered from the economic downturn in 2008/2009 (the Great Recession), when the total number of domestic air passengers fell to 21.8 million. In 2019, domestic passenger activity levels reached a new peak of 34.1 million.

13 Airports Council International. 2018. World Airport Traffic Report.

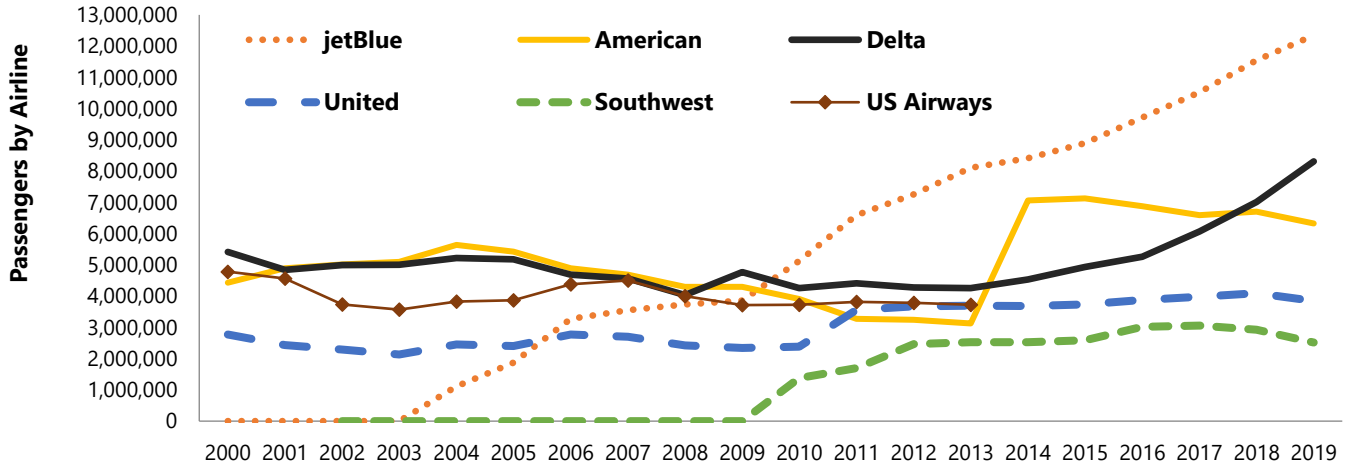
14 Bureau of Transportation Statistics. 2019.

15 Airline industry consolidation includes the merger of Delta Air Lines and Northwest Airlines in October 2008, United Airlines and Continental Airlines in August 2010, Southwest Airlines and AirTran Airways in April 2011, American Airlines and US Airways in December 2013, and Alaska Airlines and Virgin America in December 2016.

International passenger traffic at Logan Airport increased by 5.3 percent in 2018 over 2017 and 9.7 percent over 2018 levels. After three periods of decline and gradual recovery in 2001, 2006, and 2008, Logan Airport's international air passenger activity levels surpassed 2000 levels for the first time in 2013. In 2018 and 2019, international passengers comprised approximately 18.5 and 19.6 percent of total Airport passengers, respectively. Since 2013, the international air passenger segment has averaged a 10.6-percent annual growth. This increase was driven by strong market demand, resulting in the expansion of jetBlue Airways and Delta Air Lines' international service at Logan Airport, as well as a rapid increase in foreign carrier services in recent years, net international service reductions/removal from foreign flag carriers. In 2019, Boston was the 12th largest U.S. gateway for international air travel and the largest U.S. gateway airport that is not a connecting U.S. airline hub.[16] The O&D strength of the Boston market makes Logan Airport an attractive gateway for international airlines. Additional trends in new aircraft technology allowing for smaller and more fuel-efficient aircraft on international routes are also expected to continue to benefit mid-size O&D markets like Boston.

Figure 2-4 Annual Passengers at Logan Airport Served by Top Airlines, 2000–2019

Source: Massport.



Notes: US Airways totals in this chart include America West Airlines beginning in 2006 (following 2005 merger), Delta Air Lines totals include Northwest Airlines beginning in 2009 (following 2008 merger), United Airlines totals include Continental Airlines beginning in 2011 (following 2010 merger), Southwest Airlines include AirTran Airways beginning 2012 (following 2011 merger), and American Airlines includes US Airways beginning in 2014 (following 2013 merger). Totals for American Airlines, Delta Air Lines, United Airlines, and US Airways include Delta Shuttle, US Airways Shuttle, and contract carriers doing business as Delta Connection, United Express, US Airways Express, American Eagle, or American Connection.

16 U.S. Department of Transportation. 2019. T-100 Database.

Table 2-1 Air Passengers by Market Segment, 1990, 1998, 2000, 2010, and 2013-2019

	1990	1998[1]	2000	2010	2013	2014	2015	2016	2017	2018	2019	Percent Change (2018-2019)	Avg. Annual Growth (2013-2019)
Domestic	**19,519,247**	**22,429,639**	**23,100,645**	**23,688,471**	**25,578,080**	**26,545,978**	**27,810,256**	**29,591,053**	**31,100,950**	**33,245,880**	**34,098,788**	**2.6%**	**4.9%**
International	**3,358,944**	**3,985,954**	**4,513,192**	**3,681,739**	**4,546,018**	**4,992,225**	**5,534,176**	**6,587,473**	**7,199,595**	**7,583,887**	**8,317,993**	**9.7%**	**10.6%**
Europe/ Middle East/Africa[2]	N/A	2,467,585	2,948,452	2,672,635	2,901,529	3,194,109	3,473,579	4,096,114	4,360,706	4,511,543	5,003,881	10.9%	9.5%
Bermuda/ Caribbean[3]	N/A	702,383	693,620	518,088	863,842	887,301	946,428	1,032,330	1,100,769	1,103,394	1,278,045	15.8%	6.7%
Canada	N/A	790,731	833,669	486,911	643,987	669,546	688,459	878,191	1,000,634	1,054,008	985,051	(6.5%)	7.3%
Asia/Pacific	N/A	25,255	37,451[4]	0	104,235	170,867	316,621	415,869	503,386	531,030	602,004	13.4%	33.9%
Central/ South America	N/A	0	0	4,105	32,425	70,402	109,089	164,969	234,100	383,912	449,012	16.9%	55.0%
General Aviation	**N/A**	**111,115**	**112,996**	**58,752**	**94,872**	**96,242**	**105,148**	**109,516**	**111,874**	**112,158**	**105,630**	**(5.8%)**	**1.8%**
Total Passengers	**22,878,191**	**26,526,708**	**27,726,833**	**27,428,962**	**30,218,970**	**31,634,445**	**33,449,580**	**36,288,042**	**38,412,419**	**40,941,925**	**42,522,411**	**3.9%**	**5.9%**

Source: Massport.

Notes: Numbers in parentheses ( ) indicate negative numbers. Reported International passengers include only international passengers using Logan Airport as an international gateway; a significant number of international O&D passengers also board domestic flights from Logan Airport to connect to other U.S. gateways to international destinations. Avg. Annual Growth rates calculate compound annual growth (CAGR)

N/A Not available.

1 1998 represents the historical peak in terms of aircraft operations for Logan Airport with 507,449 operations.

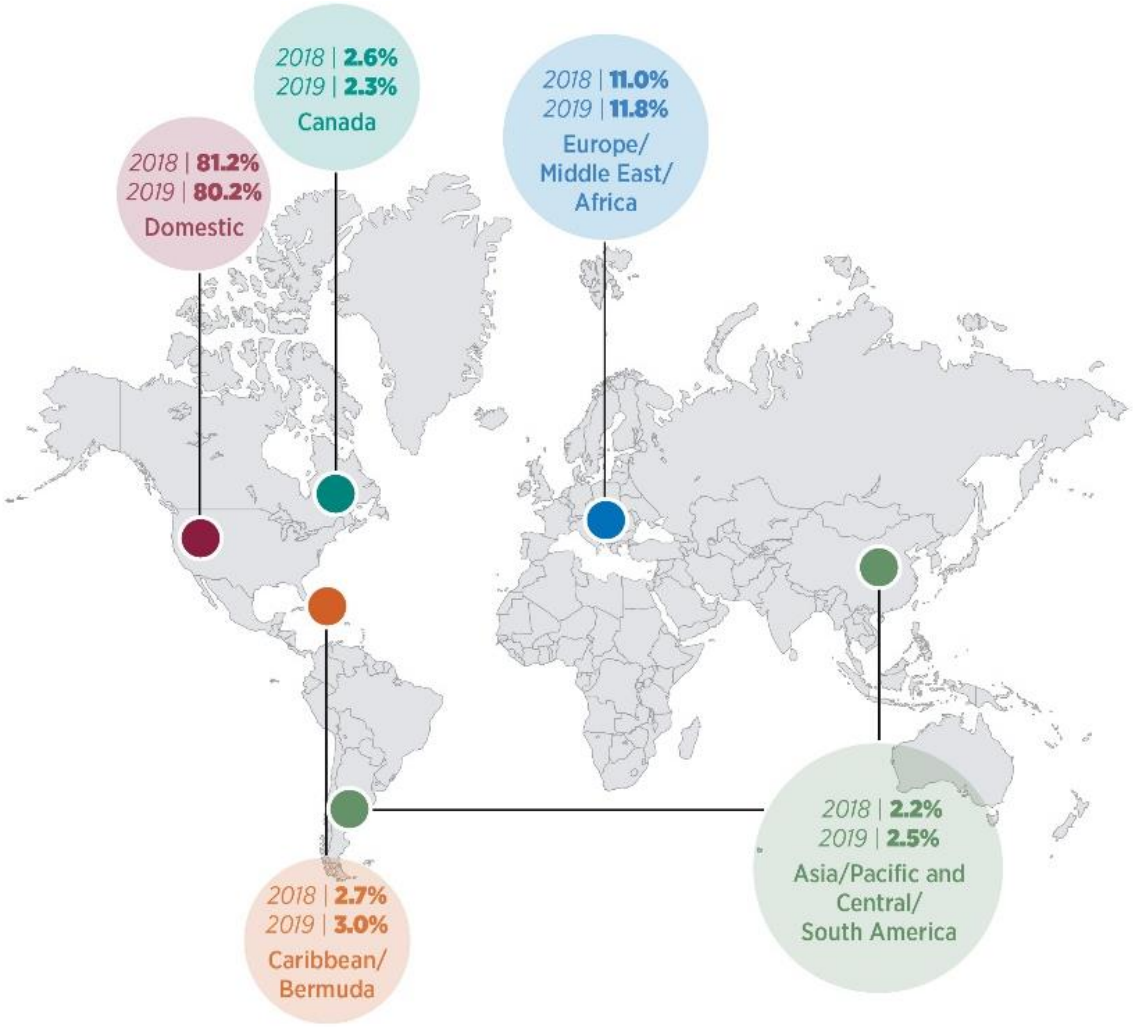
2 Royal Air Maroc commenced service to Casablanca, Morocco (North Africa) in June 2019.

3 Includes Puerto Rico and U.S. Virgin Islands.

4 Between 1996 and 2001, Korean Air served Logan Airport with one-stop service via New York John F. Kennedy and Washington Dulles; this service was discontinued in February 2001. However, eighteen years later, starting in May 2019, Korean Air re-commenced service out of Boston with a direct connection to Seoul-Incheon on their new B787 Dreamliner.

Figure 2-5 shows the distribution of Logan Airport passengers by market segment. Europe/Middle East/Africa was the dominant international destination market, accounting for 60.2 percent of international traffic and 11.8 percent of total traffic at Logan Airport. Passenger traffic to Europe/Middle East/Africa was up 10.9 percent in 2019, driven by added capacity to Europe and other destinations by several European carriers and Delta Air Lines. The Bermuda/Caribbean regions and Canada accounted for 15.4 percent and 11.8 percent of international passengers in 2019, respectively, with passenger traffic to Bermuda/Caribbean increasing 15.8 percent and passenger traffic to Canada declining 6.5 percent. Asia/Pacific and Central/South America passenger traffic accounted for 7.2 percent and 5.4 percent of international passengers in 2019, respectively.

Figure 2-5 Distribution of Logan Airport Passengers by Market Segment, 2018-2019



Source: Massport.
Note: General aviation accounted for 0.2% of Logan Airport passengers in 2019.

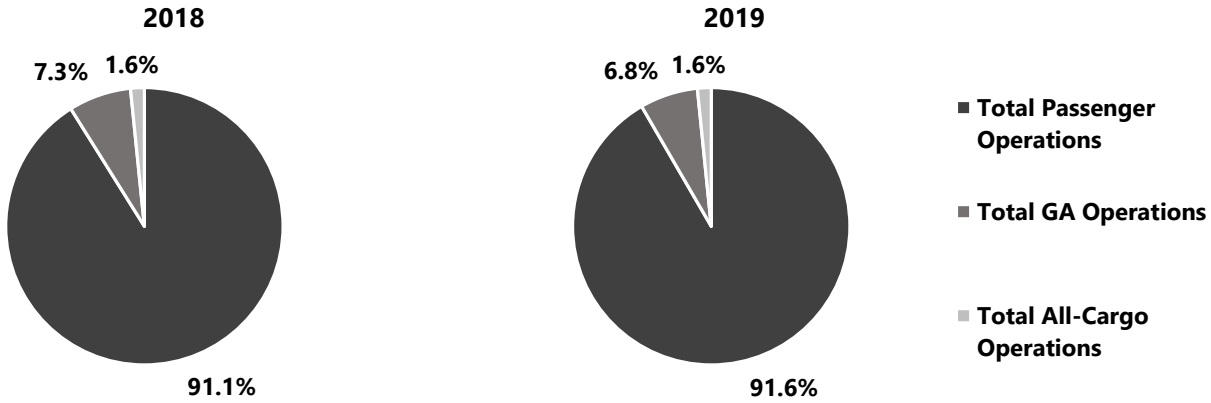
Aircraft Operation Levels in 2018 and 2019

This section reports on aircraft operations levels for Logan Airport, including passenger aircraft operations, General Aviation (GA) operations, all-cargo aircraft operations, and aircraft load factors in 2018 and 2019.

Logan Airport Aircraft Operations

The total number of aircraft operations at Logan Airport increased by 5.6 percent, from 401,371 operations in 2017, to 424,024 operations in 2018. Operations increased by 0.7 percent in 2019 to 427,176 operations (**Table 2-2**). Increases were seen in passenger and all-cargo operations in both 2018 and 2019 compared to the previous year, as airlines respond to passenger demand growth with both additional frequencies to existing markets and introducing non-stop services to new markets. In 2018, passenger operations grew 6.3 percent from 2017 due to an increase in regional jet (RJ) operations of 19.5 percent (an additional 7,648 flights), coming specifically from domestic short/medium haul routes served by mainline carrier regional affiliates (e.g., Delta Connection). In 2019, passenger operations increased at a slower rate of 1.3 percent from 2018. GA activity, on the other hand, has diminished at Logan Airport since 2017, declining by 0.6 and 6.5 percent in 2018 and 2019, respectively, because GA operations shifted to smaller, lower-cost facilities outside of Boston (i.e. Hanscom, Worcester, etc.). As shown in **Figure 2-6**, passenger operations in 2019 accounted for 91.6 percent of total aircraft operations at Logan Airport an increase of 0.5 percent from its 2018 share of 91.1 percent, while GA and all-cargo operations accounted for 6.8 percent and 1.6 percent, respectively. GA operations share shrunk slightly from its 2018 level of 7.3 percent whereas all-cargo operations remained unchanged. Although Logan Airport saw limited growth in total movements between 2018 and 2019, increasing by 3,152 operations, the attributed growth in passenger operations and aviation demand was primarily driven by the increased economic activity and welfare of New Englanders that use the Airport. **Figure 2-7** depicts passenger levels and aircraft operations since 1990 and shows a historical trend of increasing passenger levels and operations increasing, though not as rapidly as passenger activity levels. From 2001 to 2019, the annual number of passengers at Logan Airport increased by 73.7 percent, while the annual number of aircraft operations decreased by 7.8 percent, demonstrating the trend of increasing aircraft load factors by air carriers.

Figure 2-6 Logan Airport 2018 and 2019 Aircraft Operations by Type



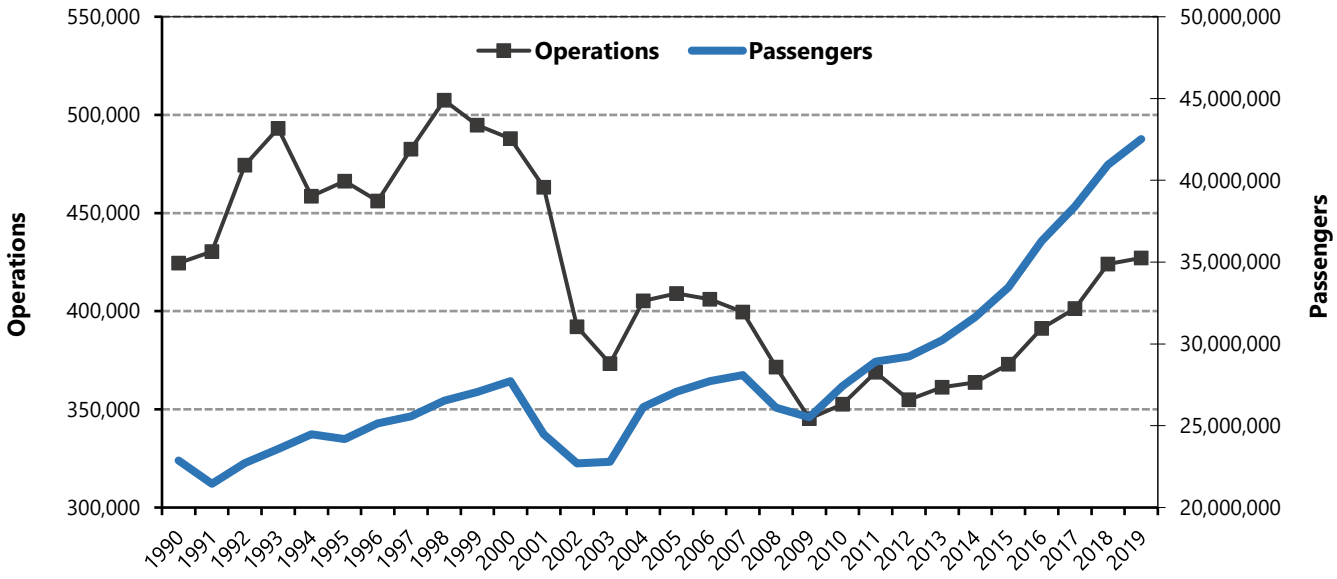
Source: Massport

Table 2-2 Logan Airport Aircraft Operations (1990, 1998, 2000, 2010, and 2013–2019)

Category	1990	1998[1]	2000	2010	2013	2014	2015	2016	2017	2018	2019	Percent Change (2018-2019)	Avg. Annual Growth (2013-2019)
Total Aircraft Operations	**424,568**	**507,449**	**487,996**	**352,643**	**361,339**	**363,797**	**372,930**	**391,222**	**401,371**	**424,024**	**427,176**	**0.7%**	**2.8%**
Operations by Type and Aircraft Class													
Passenger Jet	N/A	242,927	254,968	214,307	233,072	240,252	254,250	270,330	279,464	292,636	296,514	1.3%	4.1%
Passenger Regional Jet	N/A	12,087	37,600	66,498	47,875	44,079	38,229	36,564	39,279	46,927	49,417	5.3%	0.5%
Passenger Non-Jet	N/A	209,665	147,913	50,882	48,307	47,339	46,225	46,868	44,764	46,708	45,492	(2.6%)	(1.0%)
Total Passenger Operations	**N/A**	**464,679**	**440,481**	**331,687**	**329,254**	**331,670**	**338,705**	**353,762**	**363,507**	**386,270**	**391,424**	**1.3%**	**2.9%**
GA Jet Operations	N/A	13,636	20,595	11,430	21,237	21,025	20,589	24,499	24,769	20,092	19,328	(3.8%)	(1.6%)
GA Non-Jet Operations	N/A	18,076	14,638	3,252	5,445	5,391	7,577	6,281	6,351	10,848	9,594	(11.6%)	9.9%
Total GA Operations	**24,976**	**31,712**	**35,233**	**14,682**	**26,682**	**26,416**	**28,166**	**30,780**	**31,120**	**30,940**	**28,922**	**(6.5%)**	**1.4%**
Cargo Jet	N/A	10,428	11,788	5,332	4,647	4,911	5,605	5,745	5,800	6,392	6,402	0.2%	5.5%
Cargo Non-Jet	N/A	630	494	942	756	800	454	935	944	422	428	1.5%	(9.1%)
Total All-Cargo Operations	**N/A**	**11,058**	**12,282**	**6,274**	**5,403**	**5,711**	**6,059**	**6,680**	**6,744**	**6,814**	**6,830**	**0.2%**	**4.0%**

Source: Massport.
Notes: Jet includes the Embraer E-190, which is a regional jet configured with 88 to 100 seats but similar in size to some traditional narrow-body jets.
Numbers in parentheses ( ) indicate negative numbers. Avg. Annual Growth rates calculate compound annual growth (CAGR)
N/A Not Available.
1 1998 represents the historical peak in terms of aircraft operations for Logan Airport.

Figure 2-7 Logan Airport Annual Passenger Levels and Aircraft Operations (1990–2019)



Source: Massport.

Due to COVID-19, 2020 passenger levels and operations have dramatically decreased. As of October 2020, year over year passenger levels and operations are down by approximately 70 percent and 50 percent, respectively.

Passenger Aircraft Operations

Logan Airport had 386,270 and 391,424 passenger aircraft operations in 2018 and 2019, respectively, increasing by 6.3 percent from 2017 and another 1.3 percent from 2018. jetBlue Airways, Delta Air Lines, American Airlines, Cape Air, United Airlines and Southwest Airlines accounted for the majority of aircraft operations in 2018 and 2019.[17]

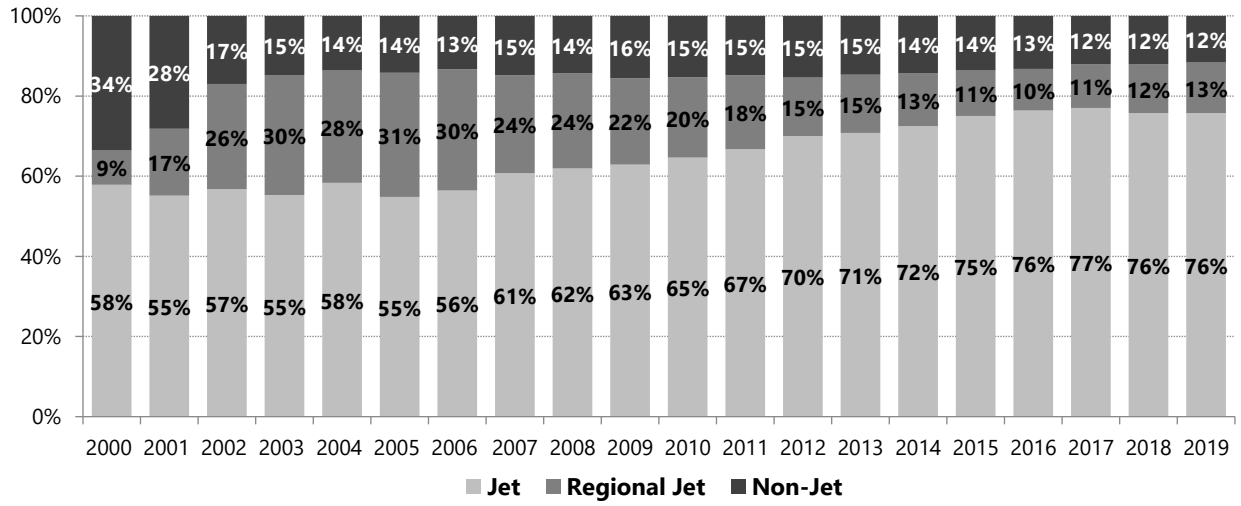
Table 2-2 shows year-over-year changes in passenger RJ, non-jet passenger, and passenger jet operations. RJ operations, which are jet aircraft with fewer than 90 seats, increased significantly by 19.5 percent in 2018 to 46,927 operations and rose again by 5.3 percent in 2019.[18] Up until 2016, RJ operations had been declining steadily since 2006, as airlines eliminated unprofitable services to small and medium size markets and consolidated services after a period of airline mergers. However, in the past three years, RJ operations increased by 35.2 percent over 2016 levels due to low fuel prices, resulting in mainline carrier's regional affiliates to increase use of RJs on select routes.

17 Aircraft operation numbers for airlines include regional partners and subsidiaries.

18 In this report, the term regional jet refers to small jet aircraft with fewer than 90 seats. The Embraer-190, operated by jetBlue Airways at Logan Airport, carries up to 100 passengers and is considered a jet.

The change in mix of passenger aircraft operations since 2000 is shown in **Figure 2-8**. RJs accounted for 13 percent of total passenger operations in 2019, compared to 31 percent at the peak level in 2005. Similarly, non-jets operations have declined from 34 percent in 2000 to 12 percent in 2019.

Figure 2-8 Passenger Aircraft Operations at Logan Airport by Aircraft Type, 2000-2019



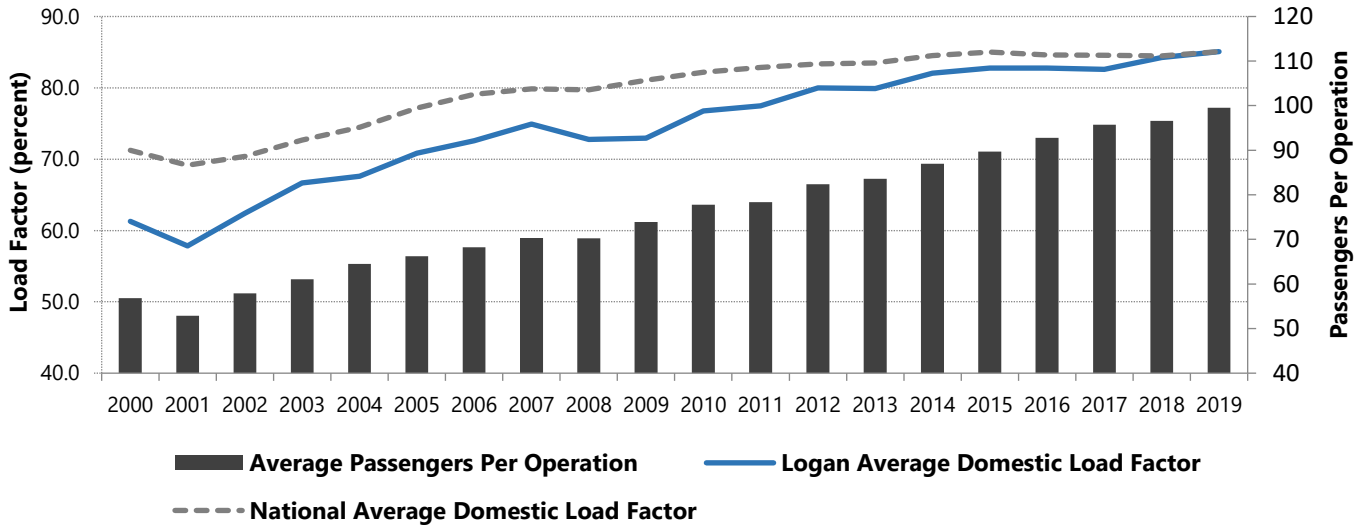
Source: Massport.
Notes: Jet includes the Embraer E-190, which is a regional jet configured with 88 to 100 seats but is similar in size to some traditional narrow body jets.

Passengers per Aircraft and Load Factors

The average number of passengers per aircraft operation increased in 2018 and 2019, continuing the long-term trend of greater efficiency. An increase in the average number of passengers per aircraft operation indicates an increase in the average aircraft seating capacity and/or an increase in the percentage of aircraft seats occupied by passengers (i.e., load factor[19]). Changes in the number of passengers per operation and load factors at Logan Airport are shown in **Figure 2-9**. In 2019, Logan Airport operations accommodated an average of 99.5 passengers per flight compared to 96.6 in 2018 and 95.7 in 2017 (**Table 2-3**), which is the highest average in the last decade. This increase in 2018 and 2019 is attributed by the introduction of newer and larger aircraft like the Airbus 350 and Boeing 787 at Logan Airport, especially for international long-haul flights to both existing and new destinations in 2018 and 2019. The average number of passengers per flight has risen by 27.9 percent since 2010 when the average number of passengers per flight was 77.8. The trend of reducing costs by supporting more passengers on fewer flights is more efficient, reflecting a shift away from smaller, less fuel-efficient aircraft and rising load factors as airlines carefully monitor and restrict capacity growth. In 2019, Logan Airport's average domestic load factor was 85.1 percent, up from 2018 levels of 84.2 percent and 2017 levels of 82.6 percent. The national average domestic load factor increased during the same period, from 81.8 percent in 2017 to 84.4 percent in 2018 and 85.1 percent in 2019.[20]

19 The number of passengers as a percentage of total seats operated at the airport.
20 U.S. Department of Transportation. 2017. T-100 Database; includes scheduled passenger service only.

Figure 2-9 Passengers per Aircraft Operation and Aircraft Load Factors (2000-2019)



Source: Massport; U.S. Department of Transportation, T-100 Database.
Notes: Includes scheduled passenger service only.

Table 2-3 Air Passengers and Aircraft Operations, 2000, 2010-2019

Year	Air Passengers	Percent Change from Previous Year	Aircraft Operations	Percent Change from Previous Year	Average Number of Passengers per Operation	Net Change from Previous Year (No. Pass/Op.)	Logan Airport Average Domestic Load Factor	Net Change from Previous Year (Pct. Points)
2000	27,726,833	2.5%	487,996	(1.4%)	56.8	2.1	61.3%	0.4
2010	27,428,962	7.5%	352,643	2.1%	77.8	3.9	76.8%	3.8
2013	30,218,631	3.4%	361,339	1.8%	83.6	1.2	79.9%	(0.1)
2014	31,634,445	4.7%	363,797	0.7%	87.0	3.4	82.1%	2.2
2015	33,449,580	5.7%	372,930	2.5%	89.7	2.7	82.8%	0.7
2016	36,288,042	8.5%	391,222	4.9%	92.8	3.1	82.8%	0.0
2017	38,412,419	5.9%	401,371	2.6%	95.7	2.9	82.6%	(0.2)
2018	40,941,925	6.6%	424,024	5.6%	96.6	0.9	84.2%	1.6
2019	42,522,411	3.9%	427,176	0.7%	99.5	3.0	85.1%	0.8

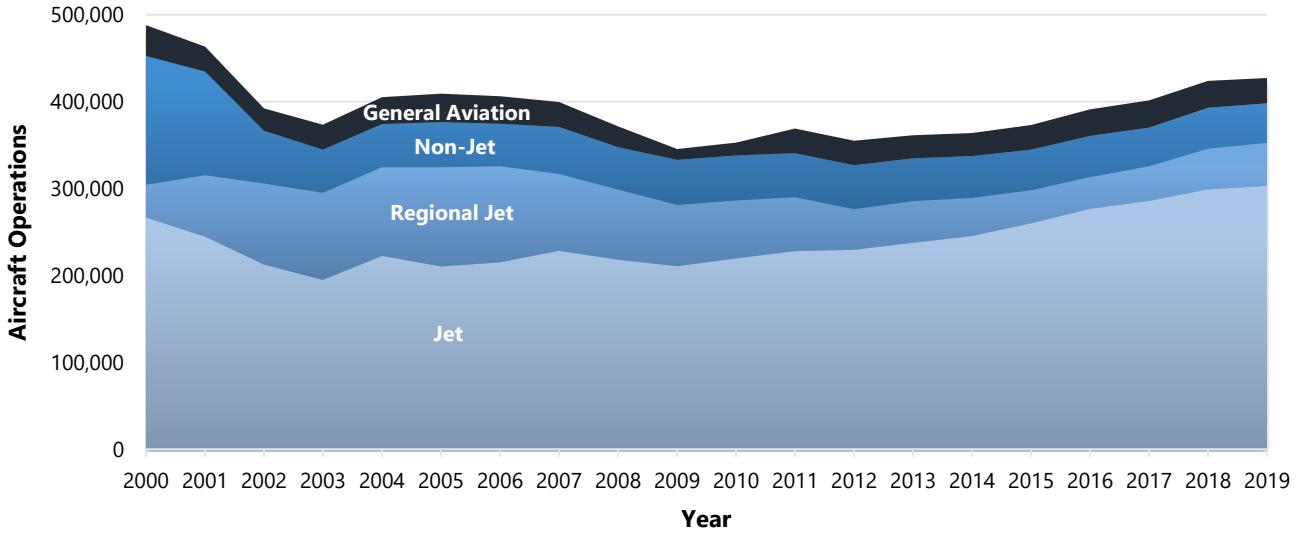
Source: Massport; U.S. Department of Transportation, T-100 Database.
Notes: Numbers in parentheses ( ) indicate negative numbers.
Includes scheduled passenger service only.
Refer to Appendix E, *Activity Levels,* for additional passenger and operations data dating back to 1980.

General Aviation Operations

GA is defined as all aviation activity other than commercial airline and military operations. It encompasses a variety of aviation activities at Logan Airport, including corporate/business aviation, private business jet charters, law-enforcement, and emergency medical/air ambulance services. GA operations are conducted by a diverse group of private and business aviation aircraft ranging from single-engine piston driven aircraft to high-performance, long-range jets. GA activity at Logan Airport declined following the 2008/2009 economic recession but recovered in 2011. Lower oil prices and decreased fuel expenses over the past two years have contributed to an increase in GA activity at Logan Airport. GA operation levels in 2017 remained well below the 35,233 GA operations that Logan Airport handled in 2000. In 2018 and 2019, GA operations at Logan Airport totaled 30,940 and 28,922, respectively, which represents an annual year-over-year decline of 0.6 percent from the 31,120 movements in 2017, and a further decline of 6.5 percent from 2018.

Table 2-2 shows year-over-year changes in GA operations. Hanscom Field remains the primary GA airport for the Greater Boston region, accommodating over four times the number of GA operations at Logan Airport. Hanscom Field accommodated 120,945 and 127,755 GA operations in 2018 and 2019, respectively, representing greater than 99 percent of Hanscom Field's aircraft activity **Figure 2-10** depicts changes in the number of Logan Airport aircraft operations by category since 2000.

Figure 2-10 Aircraft Operations at Logan Airport by Aircraft Class, 2000-2019



Source: Massport.
Notes: Jet, regional jet, and non-jet operations are associated with commercial passenger and all-cargo airlines.
GA operations also include jet and non-jet aircraft but are associated with private charter and corporate use.

All-Cargo Operations

Operations by cargo-dedicated aircraft represent less than 2 percent of aircraft activity at Logan Airport. **Table 2-2** shows year-over-year changes in all-cargo operations. All-cargo carriers at Logan Airport include FedEx, UPS, DHL, and a few other smaller carriers.

Airline Passenger Service in 2018 and 2019

Airlines can adjust service at an airport or on a specific route in two ways: changing the number of flights operated or changing the size of the aircraft. Changes in flight frequency and changes in aircraft size both affect the number of seats available to passengers (seat capacity). Airline services are therefore typically discussed in terms of seat capacity as well as the number of flight departures.[21] This section examines changes in airline departures and seat capacity at Logan Airport in 2018 and 2019 and provides an overview of new and discontinued routes.

Service Developments at Logan Airport

In 2018, 46 airlines provided scheduled passenger service from Logan Airport to 134 non-stop destinations, whereas in 2019, 48 airlines offered scheduled passenger service to 141 global destinations.[22] The average non-stop stage length (the average length of non-stop flights) of scheduled domestic flights from Logan Airport increased from 988 miles in 2017 to 1,076 miles in 2018 and to 1,093 miles in 2019. The average non-stop stage length of scheduled international flights also increased in 2019 versus 2018, from 3,119 miles to 3,233 miles given new connections over both the Atlantic and Pacific Oceans. The major changes in Logan Airport's scheduled passenger services in 2018 and 2019 are described below.

Changes in Domestic Passenger Service

The total number of scheduled domestic flights at Logan Airport in 2018 increased by 6.9 percent compared to 2017 and rose another 1.3 percent between 2018 and 2019 for a total of 336,938 operations. Overall, scheduled jet operations by legacy carriers and low-cost carriers increased by 6.3 percent in 2018, while regional/commuter flights also increased by 8.7 percent after seeing limited growth of 0.8 percent in 2017. In 2019, low-cost carriers continued to grow steadily as has been the trend the last six years with 1.6 percent average annual growth in scheduled domestic operations while legacy domestic service shrunk by a small margin of 0.2 percent. **Table 2-4** shows year-over-year changes in domestic air passenger operations. Key changes in 2018/2019 include:

- **Decrease in Legacy Carrier Service.** Although legacy carrier jet operations saw an increase of 12.3 percent in 2018 over 2017 levels, it declined in 2019 by 2.2 percent compared to 2018.

21 A departure is an aircraft take-off at an airport. While aircraft operations include both departures and arrivals, airline services are typically described in terms of departures, as the number of scheduled departures generally equals the number of scheduled arrivals. Changes in departures translate to changes in overall operations.

22 Based on Innovata SRS schedules. The merger between Alaska Airlines and Virgin America was approved by the U.S. Department of Justice in December 2016. The airline began to operate under the Alaska Airlines name in 2018.

- **Continued increase in Low-Cost Carrier Service.** Low-cost carriers accounted for over 40 percent of Logan Airport's total scheduled domestic operations in both 2018 and 2019.[23]
- **Increase in Regional/Commuter Service.** Regional commuter flights increased significantly in both 2018 and 2019 by 8.7 percent and 6.6 percent, respectively, due to increased operations by Republic Airlines (American Airlines, Delta Air Lines, and United Airlines regional affiliates), SkyWest Airlines (Delta Air Lines), and Piedmont Airlines (American Airlines regional affiliate).

A complete listing of all changes in scheduled departures by domestic destination is in Appendix E, *Activity Levels*. Logan Airport's scheduled domestic large jet and domestic regional services are illustrated in **Figures 2-11** and **2-12**.

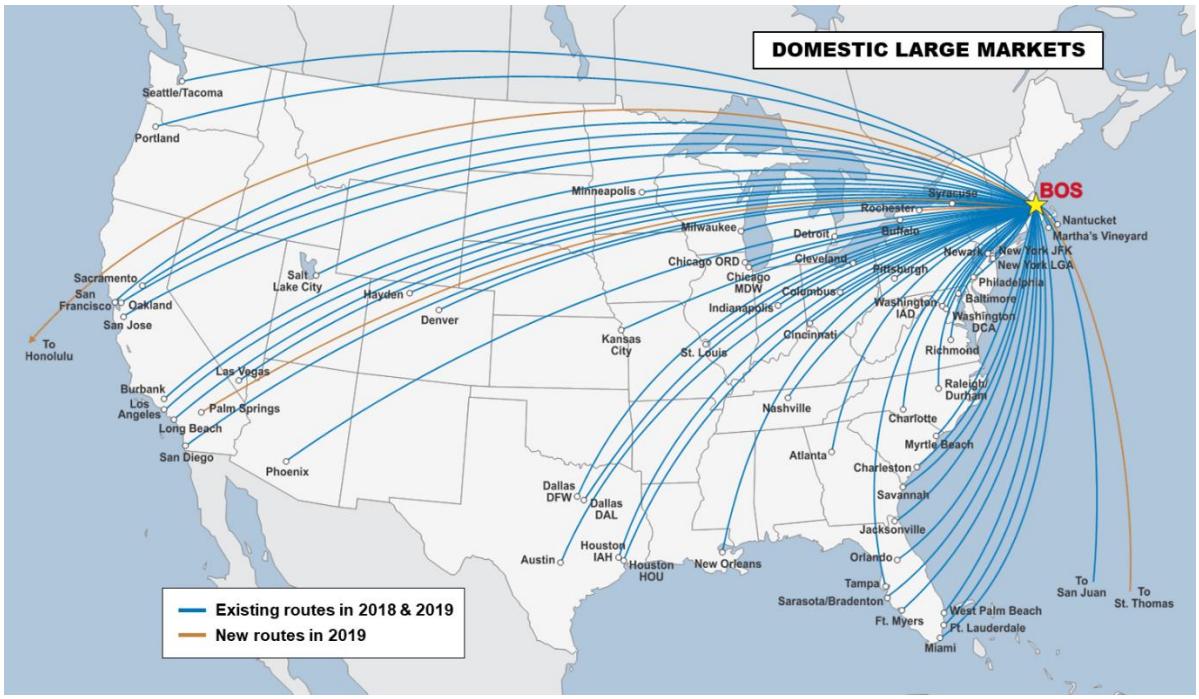
Table 2-4 Scheduled Domestic Air Passenger Operations by Airline Category, 2000, 2010, 2013-2019

Category	2000	2010	2013	2014	2015	2016	2017	2018	2019	Percent change 2018-2019	Avg. Annual Growth (2013-2019)
Scheduled Jet Carriers	**233,993**	**203,081**	**211,176**	**214,854**	**225,629**	**235,381**	**242,404**	**257,795**	**257,202**	**(0.2%)**	**3.3%**
Legacy Carriers[1]	222,564	117,877	107,162	109,470	114,987	114,012	110,790	124,396	121,675	(2.2%)	2.1%
Low-Cost Carriers[2]	11,429	85,204	104,014	105,384	110,642	121,369	131,614	133,399	135,527	1.6%	4.5%
Regional/ Commuter	160,041	94,535	79,922	76,682	70,274	68,204	68,753	74,766	79,736	6.6%	(0.0%)
Total Scheduled Domestic	**394,034**	**297,616**	**291,098**	**291,536**	**295,903**	**303,585**	**311,157**	**332,561**	**336,938**	**1.3%**	**2.5%**

Source: Massport.
Notes: Numbers in parentheses ( ) indicate negative numbers. Avg. Annual Growth rates calculate compound annual growth (CAGR).
1 Includes legacy carrier large jet operations only; regional jet and non-jet operations operated by regional affiliates or subsidiaries of legacy carriers are included in the "Regional/Commuter" category.
2 Low-cost carriers that provided domestic service at Logan Airport in 2018 and 2019 included jetBlue Airways, Southwest Airlines, Spirit Airlines, Virgin America, Sun Country Airlines, and Frontier Airlines.

23 Southwest Airlines decreased domestic operations by 14.2 percent from 23,191 operations in 2018 to 19,907 operations in 2019.

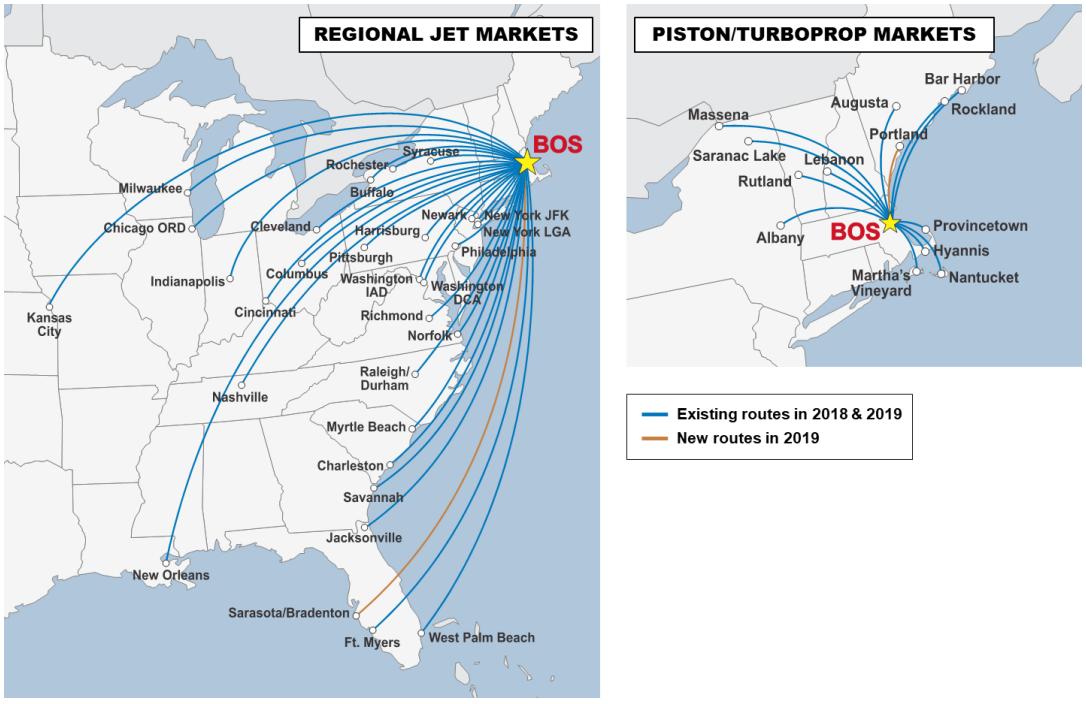
Figure 2-11 Domestic Non-Stop Large Jet Markets Served from Logan Airport, 2019



Source: Innovata Schedules via Diio by Cirium.

Note: There were three new domestic non-stop large jet routes in 2019, to: Honolulu, Palm Springs, and St. Thomas Virgin Islands.

Figure 2-12 Domestic Non-Stop Regional Jet and Non-Jet Markets Served from Logan Airport, 2019



Source: Innovata Schedules via Diio by Cirium.

Changes in International Passenger Service

Total scheduled international passenger operations at Logan Airport grew by 3.0 percent in 2018 and 1.5 percent in 2019. There were 54,468 scheduled international passenger operations at Logan Airport in 2019, up from 53,664 operations in 2018, and 52,119 operations in 2017, as summarized in **Table 2-5** (for details on the changes in operations by carrier, see Appendix E, *Activity Levels*). Starting in 2019, Europe alone represents Logan Airport's largest international destination region in terms of aircraft operations, accounting for approximately 36.5 percent of total scheduled international passenger operations in 2019 with 19,904 scheduled passenger operations. **Table 2-5** shows year-over-year changes in scheduled international passenger operations by market segment. In 2019, passenger operations to Asia had the largest increase in operations, followed by Bermuda/Caribbean. In 2018, Central/South America had the largest increase in passenger operations due to new and additional non-stop services offered by foreign flag carriers. Overall, Logan Airport served 59 non-stop international destinations in 2019, compared to 55 in both 2017 and 2018.[24]

Table 2-5 Scheduled International Passenger Operations by Market Segment, 2000, 2010, 2013-2019

Category	2000	2010	2013	2014	2015	2016	2017	2018	2019	Percent change 2018-2019	Avg. Annual Growth (2013-2019),
Canada	26,067	16,399	16,125	15,748	15,801	17,929	18,590	19,204	17,074	(11.1%)	1.0%
Europe/Middle East/North Africa	13,345	12,750	13,530	14,868	16,251	20,099	20,595	20,169	21,590	7.0%	8.1%
Bermuda/Caribbean[1]	3,205	4,116	7,031	7,428	7,584	8,339	8,690	8,702	9,682	11.3%	5.5%
Asia	0	0	646	1,011	1,751	2,156	2,415	2,513	2,854	13.6%	28.1%
Central/South America	314	0	347	730	991	1,433	1,829	3,076	3,268	6.2%	45.3%
Total Scheduled International	**42,931**	**33,265**	**37,679**	**39,785**	**42,378**	**49,956**	**52,119**	**53,664**	**54,468**	**1.5%**	**6.3%**

Source: Massport.
Notes: Numbers in parentheses ( ) indicate negative numbers. Avg. Annual Growth rates calculate compound annual growth (CAGR).
N/A Not Available.
1 Includes Puerto Rico and U.S. Virgin Islands.

Changes in international service at Logan Airport in 2018 and 2019 included continued growth of foreign carrier service across both the Atlantic and Pacific Oceans. Logan Airport has seen a rapid increase in international service in recent years, with a number of new foreign carriers entering the market. Logan Airport's scheduled international air service markets are shown in **Figure 2-13**.

24 International Air Transport Association (IATA) Innovata Schedules

Figure 2-13 International Non-Stop Markets Served from Logan Airport, 2019

Source: Innovata Schedules via Diio by Cirium.
Note: LEVEL Air opened up non-stop services to Barcelona in March 2018; LATAM commenced Sao Paulo service in June 2018. Avianca commenced non-stop service to its Central American hub in San Salvador in August 2018, however suspended after May 2019. jetBlue suspended seasonal services to St. Maarten in 2018 due to impact of Hurricane Irma to the island, but re-commenced service in February 2019.

Cargo Activity Levels in 2018 and 2019

In 2018 and 2019, Logan Airport ranked 21st among U.S. airports in total air cargo volume.[25] Total air cargo volume[26] at Logan Airport increased to over 735 million pounds in 2018, compared to 708 million pounds in 2017, however declined by 2.5 percent the following year in 2019 to 717 million pounds. Altogether, total cargo volumes today represent nearly 68 percent of the cargo volume level seen in 2000, having transported over 1.0 billion pounds then. Air cargo is carried either in the belly compartments of passenger aircraft or by dedicated all-cargo carriers such as FedEx, UPS, and DHL in all-cargo aircraft. The express/small package segment continued to dominate Logan Airport cargo activity, accounting for 56.3 and 57.4 percent of the total non-mail cargo volumes in 2018 and 2019, respectively.

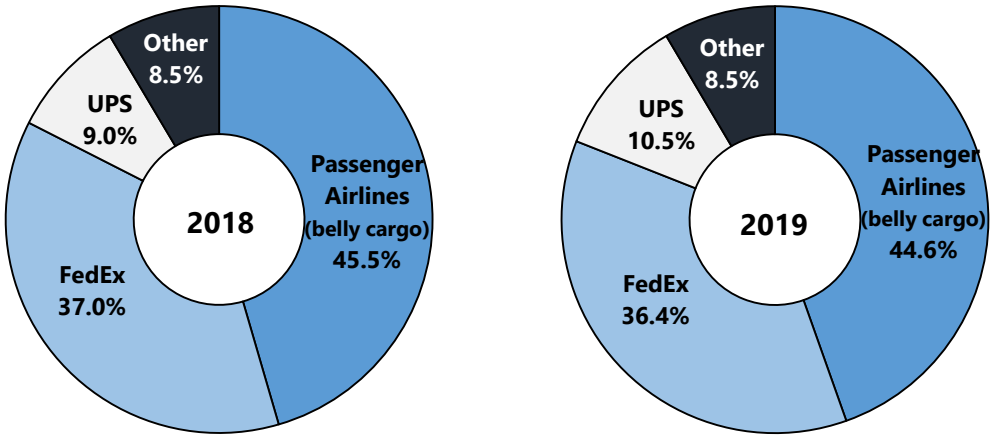
Table 2-6 shows all-cargo aircraft operations and cargo volumes at Logan Airport for 1990, 2000, and 2010 to 2018 and 2019. In 2018, the number of all-cargo aircraft operations at Logan Airport increased by 1.0 percent compared to 2017 while total cargo volume, including mail, increased 3.8 percent, reflecting an industrywide trend of growth in all-cargo segments: heavyweight, small package, e-commerce, and mail starting in 2017. Whereas in 2019, total volume declined by 2.5 percent, all-cargo aircraft movements rose slightly by 0.2 percent compared to 2018 activity levels.

25 U.S. Department of Transportation. T-100 Database. Total cargo volume includes mail.
26 Air cargo includes express/small packages, freight, and mail.

Compared to 2000, all-cargo operations during 2019 at Logan Airport have declined by 44.4 percent, while total cargo volume has declined by 31.5 percent. Several factors are responsible for the decline over the last two decades in cargo shipments (including freight, express, and non-express mail and packages) at Logan Airport, as well as nationally. Cargo carriers, particularly the integrators that provide door-to-door delivery services, have significantly increased their use of trucks to move cargo in shorter-haul markets because it is more cost-effective than air transport. In addition, the widespread acceptance and use of the internet and e-mail has greatly reduced mail volumes overall.

FedEx was the largest air carrier by cargo volume carried through Logan Airport in 2018 and 2019, transporting over 261 and 272 million pounds[27] (representing 37.0 and 36.4 percent of Logan Airport's cargo volume), respectively. FedEx was the 16th largest air carrier at the Airport in terms of total flights in 2019, dropping down by one rank compared to 2018.[28] UPS was the next largest cargo operator and accounted for 10.5 percent of Logan Airport's cargo volume in 2019. Passenger airlines carried the greatest share of 44.6 percent, or 319.8 million pounds, of Logan Airport's cargo as belly cargo in 2019, compared to 397.6 million pounds that were shipped on all-cargo carriers (see **Figure 2-14)**.

Figure 2-14 Cargo Carriers – Share of Logan Airport Cargo Volume, 2018 and 2019



Source: Massport.
Note: Passenger airlines carry cargo as belly cargo; Wiggins Airway and Mountain Air Cargo all fly for FedEx, Atlas Air and ABX Air all fly for DHL (grouped as "Other")

Cargo Trends in 2020

As the world reels from the outbreak of COVID-19, air freight continues to operate worldwide. Perhaps never in modern history has such attention been put on this industry and its vital role in providing medical equipment and other necessities.

27 This includes express/small packages, freight, and mail.
28 Massport. 2019.

While people around the world adjust to social distancing and remote working, logistics companies have been working around the clock to resolve disruptions and circumvent supply chain issues. The grounding of a large number of passenger aircraft has led to the loss of a sizeable share of cargo capacity (i.e., "belly" cargo). Approximately 40 to 45 percent of global international air freight consist of belly cargo; massive groundings of passenger aircraft are affecting countries/airports differently. Meanwhile, freighter aircraft continue to fly but not without challenges.

Air cargo volumes have been more resilient to coronavirus pandemic-related effects than passenger traffic activity. At the 10 largest U.S. cargo airports, passenger volumes were down 80 to 90 percent in the initial period of peak declines after March 2020, while cargo volumes have seen more mild declines or, in a few cases, significant growth.

At Logan Airport, as of the end of October, cargo has declined by around 17 percent in 2020, but, like many other large U.S. gateways, nowhere near the percentage declines in passenger volumes. Logan Airport saw its largest cargo volume decline in April 2020, at a decrease of 31 percent. In October 2020, cargo volumes were down 14.8 percent compared to October 2019, with the biggest drop in international cargo. Domestic mail and express/small package markets are seeing modest increases in volume associated with the online shopping trend associated with the pandemic.

Table 2-6 Cargo and Mail Operations and Volume (1990, 2000, and 2010–2019)

	1990	2000	2010	2013	2014	2015	2016	2017	2018	2019	Percent change (2018-2019)	Avg. Annual Growth (2013-2019)
All-Cargo Aircraft Operations	N/A	12,282	6,724	5,403	5,711	6,059	6,680	6,744	6,814	6,830	0.2%	4.0%
Volume (lbs.)												
Express/ Small Packages	N/A	484,490,143	339,485,424	334,315,119	356,743,626	336,013,472	352,551,369	376,009,078	396,304,856	395,108,073	(0.3%)	2.8%
Freight	N/A	367,857,011	206,893,979	203,877,671	228,716,329	239,768,129	264,382,330	303,398,899	307,895,701	293,831,074	(4.6%)	6.3%
Mail	119,818,113	194,902,513	25,904,205	19,407,738	22,087,150	30,556,356	23,215,743	29,271,688	31,481,901	28,536,921	(9.4%)	6.6%
Total	**753,253,075**	**1,047,259,667**	**572,283,608**	**557,600,528**	**607,547,105**	**606,337,957**	**640,149,442**	**708,679,665**	**735,682,458**	**717,476,068**	**(2.5%)**	**4.3%**

Source: Massport.
Notes: Avg. Annual Growth rates calculate compound annual growth (CAGR).
N/A Not Available.

3

Airport Planning

This Environmental Data Report (EDR) was prepared in 2020 during the ongoing COVID-19 worldwide pandemic. This EDR focuses primarily on calendar years 2018 and 2019, however, due to the dramatic effects of the pandemic on Airport activity in 2020, Massport has strived to include relevant updates through fall 2020. Beginning in March 2020, flights in and out of Logan Airport were dramatically reduced and passenger levels dropped by over 90 percent in the spring and summer of 2020. As a result, currently there are far fewer aircraft operations, passengers, and overall Boston Logan International Airport (Logan Airport or the Airport) activity. While activity levels began a slow recovery in mid-summer 2020, the ongoing wave of COVID-19 cases has resulted in continued historically low levels of activity, with a full recovery years away. As of October 2020, total flight operations for the year were down by 50 percent and passenger levels were down by about 70 percent compared to January through October 2019. Massport expects that by the end of 2020, passenger levels will have dropped to levels of activity not seen since the mid-1970s.

As a result of this significant reduction in Airport activity and dramatic reduction in revenues, Massport, our airlines, and other tenants have necessarily adjusted their operations. Concurrently, the schedule for a number of Airport projects and programs have been adjusted. To be as transparent as possible, this chapter includes the most current project updates through October 2020. As a result of the pandemic and the unprecedented reduction in passengers and revenues, many Massport and tenant projects have been deferred; the best available current status of these projects is included. Massport is continuing to review the status of its projects/programs and additional changes or deferments could occur. This includes careful review of both on and off-Airport activity levels to adjust its ground access programs to align with ridership levels. Massport remains committed to implementing project-related mitigation strategies, as documented in Chapter 9, *Environmentally Beneficial Measures and Project Mitigation Tracking*. Forthcoming EDRs will continue to provide updates, as available.

Introduction

The increase in the number of Logan Airport's air passengers through early 2020 was attributed to the strong local, regional, and national economies. To address that strong growth, Massport was implementing a strategy to address the associated operational and environmental challenges to allow Logan Airport to evolve in a sustainable and environmentally responsible way. Despite the current economic downturn, Logan Airport remains a key economic and transportation resource in the New England region, the state, and the Boston metropolitan area, which is home to a broad range of industries and institutions. In addition to supporting the growth and economic success of the state, Logan Airport and the airport industry are important elements in the state and regional economies. Logan Airport will continue to be an important resource as the region and the country move towards recovery.

This chapter updates the status of Logan Airport planning and development projects through 2018 and 2019 and includes available updates through October 2020. Specific topics include terminal area projects, service

area projects, buffer/open space projects, Airport parking projects, airside area projects, high occupancy vehicle (HOV) improvements, and Airport-wide projects. 2018 and 2019 were marked by construction of several projects focused on enhancing the passenger experience, accommodating increases in passenger activity levels, and improving ground access. Given the timing of the publication of this *2018/2019 EDR*, **Table 3-1** presents the status of recent progress on planning initiatives and individual projects at Logan Airport, as well as planned projects and projects under consideration, as of October 2020.

As discussed in Chapter 1, *Introduction/Executive Summary,* of this *2018/2019 EDR,* all Massport and tenant projects that trigger a threshold under the Massachusetts Environmental Policy Act (MEPA) or the National Environmental Policy Act (NEPA) will undergo the appropriate project-specific state and/or federal environmental review. This chapter provides an overview of planned projects to provide context for understanding the cumulative effects of Logan Airport activities.

Massport has identified priority planning projects and initiatives in the following categories:

- Ground Transportation and Parking;
- Terminals;
- Airside Planning;
- Service Areas;
- Airport Buffers and Open Space; and
- Energy, Sustainability, and Resiliency.

Ground Transportation and Parking Planning

Logan Airport ground access and parking are priority planning interests. Massport's focus in these areas is on HOV investment, management of RideApp services such as Uber and Lyft, parking management, and on-Airport roadway operations, safety, and congestion management.

In 2018 and 2019, Massport's strategies to improve and expand HOV service to and from Logan Airport included continued investment in Logan Express facilities and service. These improvements were in support of Massport's goal to double Logan Express shuttle bus ridership from 2 million to 4 million passengers (by the time Logan Airport reaches 50 million passengers), thereby reducing passenger and employee vehicle miles traveled (VMT), congestion, and associated air quality emissions. Those initiatives included both the urban and suburban Logan Express sites, and focused on increasing frequencies, adding parking, improving customer amenities, and reducing fares. Massport also continued to evaluate opportunities to add an additional urban and suburban location. Most notably, as a complement to the Back Bay service, in 2019 Massport purchased new buses in anticipation of opening a new urban location proximate to Boston's North Station in 2020. This effort is now deferred due to the pandemic.

In 2019, more than a quarter of on-Airport traffic was from activities related to RideApp (formerly known as Transportation Network Company/TNC) activity which contributed to unprecedented congestion on Airport roadways. In an effort to reduce congestion, emissions, and RideApp deadhead[1] activity, in October 2019, Massport relocated most RideApp drop-off/pick-up activity to the ground floor of the Central Parking Garage

1 Deadhead trips are those trips to or from the Airport that do not contain a passenger.

complex in December 2019, with the exception of drop-off at terminal curbs during the 4:00 AM to 10:00 AM peak departure period. The new area provides weather-protected and climate-controlled areas for passengers, including wheelchair assistance, curb-side baggage check, and other amenities. Specific curbside locations have been reserved at each terminal for drop-off/pick-up accommodations for persons with disabilities.

Massport's parking management strategy addresses parking supply, pricing, and operations to promote the use of HOV, transit, and shared-ride options, and to reduce environmentally harmful drop-off/pick-up modes. In accordance with the approvals by the Massachusetts Department of Environmental Protection (MassDEP) and the U.S. Environmental Protection Agency (EPA) to modify the Logan Airport Parking Freeze, Massport received state and federal approvals to build an additional 5,000 commercial parking spaces at Logan Airport in a new garage in front of Terminal E and by expanding the Economy Garage. Each proposed garage will be designed in accordance with Massport's Sustainable Design Standards and Guidelines and incorporate measures from the U.S. Green Building Council's sustainability-focused Parksmart rating system.[2] Design of the first 2,000 spaces to be constructed in a garage atop the existing surface lot across from Terminal E is underway, however, following the drop in passenger activity due to COVID-19, construction of the garage in front of Terminal E and expanding the Economy Garage is deferred. As part of modifying the Logan Airport Parking Freeze, Massport also committed to completing three key Logan Airport ground access studies. The findings of these studies were initially published as part of the Logan Airport Parking Project Final Environmental Impact Report (EIR)/Environmental Assessment (EA) in December 2019 and are available on Massport's website: http://www.massport.com/media/3370/final-massport-dep-report.pdf.

The studies analyze the feasibility and effectiveness of the following:

- Potential services and improvements to HOV access;
- Potential operational measures to further reduce drop-off/pick-up modes; and
- Possible pricing strategies for different modes.

Projects that aim to provide on-Airport roadway congestion relief include on-Airport roadway improvements to enhance efficiency and reduce congestion; roadway and curb improvements in front of Terminal C (Arrival and Departure levels) to reduce peak hour congestion and prioritize HOV access; and improvements to the roadways connecting Terminals B and C to improve circulation, reduce congestion, and improve safety. Construction is ongoing as of this filing and expected to be complete by summer 2023.

Terminal Area Planning

Massport completed the Terminal B Optimization Project in 2019, which upgraded the security checkpoints and added substantial passenger amenities primarily for American Airlines and Air Canada. Enhanced post-security connections between Terminals B and C are under construction to optimize passenger movements and security. Other enhancements include expanded passenger amenities for current and future passenger needs. Feasibility studies of post-security connections between Terminal A and Terminal B, and Terminal A and Terminal E were also initiated.

2 U.S. Green Building Council's Parksmart Certification Standard. https://www.usgbc.org/resources/parksmart-certification-standard.

Construction of the first phase of the Terminal E Modernization Project, will add four gates[3] to the international terminal; Phase 2 will add three additional gates. Construction of the remaining three new gates is being deferred due to the downturn in passenger activity. Massport is studying alternatives for connecting the Massachusetts Bay Transportation Authority (MBTA) Blue Line and the terminal area as part of the Phase 2 addition. Additionally, over 170,000 square feet of impervious surface is being converted to new green space along Terminal E for a total of 190,000 square feet of green space in that area. The *2020 EDR* will provide an update on the schedule for completing the Terminal E Modernization project.

Airside Planning

Massport continues to upgrade and improve the airfield to enhance the operational efficiency and safety of Logan Airport while exploring ways of efficiently using the limited land resources in the service areas. In coordination with the FAA, Massport completed a comprehensive multi-year Runway Incursion[4] Mitigation Study and Comprehensive Airfield Geometry Analysis (RIM, or RIM Study) to identify, prioritize, and develop strategies to help Massport mitigate risk.[5] Massport is also working with the FAA on concept design and permitting for enhancement of the runway safety area (RSA) of Runway 27. Based on the current level of planning, it is anticipated that the RSA improvements will include a pile-supported deck over Boston Harbor at the approach-end of Runway 27. Construction of the RSA improvements will be advanced once environmental approvals are secured and design is complete. Initial concept design and preliminary environmental review and permitting commenced in late 2019. Environmental data collection and field studies commenced in Spring 2020 including marine borings.

Service Area Planning

Massport is continually undertaking service area improvements to maximize efficient use of limited land resources and respond to the changing needs of airline businesses, customers, and tenants. Among several planned improvements, Massport is currently exploring options to improve the layout of the North Service Area (NSA) by reorganizing the existing uses to enhance safety and efficiency of activities located within the runway protection zone (RPZ). Massport issued a Request for Information (RFI) and is in the process of identifying a replacement for the current fixed-based operator (FBO) located in the NSA. In addition, Massport is advancing plans for construction of an additional jet fuel storage tank in the NSA, adjacent to the existing jet fuel storage tanks.

Airport Buffers and Open Space Planning

Massport has invested in an extensive open space program to enhance the surrounding communities. Massport initially committed over $15 million for the planning, construction, and maintenance of four Airport edge buffer areas and two parks along Logan Airport's perimeter. These buffers include the Bayswater Embankment Airport Edge Buffer, Navy Fuel Pier Airport Edge Buffer, Neptune Road Airport Edge Buffer, and the Southwest Service Area (SWSA) Airport Edge Buffer (Phases I and II). The award-winning Piers Park was completed in 1995 and has since become part of a network of greenspace that traverses East Boston from the

3 The Terminal E Modernization Project will add the three gates approved in 1996 as part of the International Gateway West Concourse project (EEA # 9791), but never constructed, and add an additional four gates.

4 Runway incursions occur when an aircraft, vehicle, or person enters the Airport's designated area for aircraft landings and take-offs.

5 Information on FAA's RIM program can be found at https://www.faa.gov/airports/special_programs/rim/.

Jeffries Point waterfront to Constitution Beach. In 2014, Massport completed construction of the East Boston Greenway Extension that connects Bremen Street Park to Wood Island Marsh. In 2016, Massport assumed operations of the City's Greenway extension to Constitution Beach. In October 2019, the East Boston Greenway was renamed Mary Ellen Welch Greenway, a long-time East Boston community activist.

Adjacent to the current Piers Park, Piers Park Phase II will add approximately 4.2 acres of green space to the East Boston waterfront upon completion. Studies are also underway by the Trustees of Reservations for a Piers Park Phase III, which would turn an aging pier into a 3.6-acre greenspace including resiliency features to help protect the neighborhood from flooding and sea level rise. As of this filing, the Trustees have begun outreach to community stakeholders to receive input for the design of the waterfront park. 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 engagement with the East Boston community.

Energy, Sustainability, and Resiliency Planning

Massport continues to incorporate sustainability elements into its projects and is currently working on a vision for Sustainable Massport 2.0. The vision for this next-level planning effort is to implement principles and approaches from the Logan Airport Sustainability Management Plan (SMP) at other Massport facilities and to update Massport's sustainability goals and targets. Massport is also focused on the following:

- Facilitating the replacement of gas- and diesel-powered airfield ground service equipment (GSE) with all-electric GSE (eGSE) by the end of 2027 (as commercially available).
- Studying opportunities to maximize solar installations across Logan Airport and installing electric vehicle infrastructure on the airside and in the parking garages.
- In 2018, the EPA awarded a $541,817 grant to Massport to replace gas- and diesel-powered GSE at Logan Airport. This grant was used in conjunction with an FAA Voluntary Airport Low Emissions Program (VALE) grant that Massport received in Fall 2018 to install 50 eGSE charging stations at Terminal B, Pier B and eight eGSE charging stations at Terminal B, Pier A as part of the Terminal B Optimization Project.
- In 2018, an FAA VALE grant was awarded to Massport for $1.65 million to install 100 charging ports in partnership with American Airlines at Terminal B. In 2019, a VALE grant was awarded to Massport for $3.01 million in partnership with jetBlue Airways, to install 78 charger ports at Terminal C, the Amelia Earhart terminal, and at the jetBlue hangar. In 2019, Massport also installed eight ports under a Volkswagen (VW) settlement awarded grant amount of $165,859. All grants were subsidized with Massport funding to meet federal grant assurances.
- Massport has a robust program to identify vulnerabilities from climate and other natural threats on the Airport and is now incorporating resilient infrastructure design standards for existing and future flood levels for all types of Airport projects.

Due to COVID-19, 2020 passenger levels and operations have dramatically decreased. As of October 2020, year over year passenger levels and operations are down by approximately 70 percent and 50 percent, respectively. Therefore, Massport's previously planned programs and projects are under evaluation and subject to change.

Table 3-1 Logan Airport Short- and Long-Term Planning Initiatives

		Completion	
	Status as of October 31, 2020	**Short-Term By End of 2025**	**Long-Term By End of 2035**
Airport Ground Transportation and Parking Projects/Planning Concepts			
West Garage Parking Consolidation Project	Complete (2016)		
Logan Airport Parking Project (additional 5,000 spaces)	Deferred		
Logan Airport Parking Project: Parking Freeze Studies	Studies Complete (2019)		
On-Airport Roadway Congestion Relief Infrastructure	Feasibility/ Planning		✈
RideApp Infrastructure Improvement and Policy	Complete (2019)		
Logan Express Route and Facility Expansion (Off-Airport)	Deferred		
Terminal Area Projects/Planning Concepts			
Terminal E Renovations and Enhancements	Complete (2017)		
Terminal E Modernization (Phase 1 – 4 gates/Phase 2 – 3 gates)	Phase 1 – Construction Phase 2 – Deferred	Phase 1 ✈	
Convenience and Filling Station/ Taxi Pool/RideApp Lot Relocations	Complete (2019)		
Terminal B Optimization	Complete (2019)		
Terminal C to E Airside Connector	Complete (2016)		
Terminal C, Pier B Optimization	Complete (2019)		
Terminal C Canopy, Connector, and Roadway Project	Construction	✈	
Terminal A to B Airside Connector	Feasibility/Planning		✈
Airside Projects/Planning Concepts			
Runway 15L-33R Runway Safety Area (RSA) Improvement	Complete (2014)		
Runway 4R Light Pier Replacement	Complete (2017)		
Runways 22R and 33L RSA Improvements/Runway 33L Light Pier Replacement	Complete (2014)		
Runway 9-27 RSA Improvement Project	Planning/Permitting	✈	
Runway Incursion Mitigation (RIM) Study and Comprehensive Airfield Geometry Analysis	Complete (2019)		

Table 3-1 Logan Airport Short- and Long-Term Planning Initiatives (Continued)

	Status as of October 31, 2020	Completion	
		Short-Term	Long-Term
		By End of 2025	By End of 2035
Service Area Projects/Planning Concepts			
Southwest Service Area (SWSA) Redevelopment Program (Rental Car Center)	Complete (2014)		
Logan Airport Runway Protection Zone (RPZ) Enhancements Equipment Storage and Maintenance Facility (ESMF)	Planning/Permitting	✈	
Jet Fuel Storage Addition – North Service Area (NSA)	Permitting/Design	✈	
Group 1 Hangar – South Cargo Area (SCA)	Feasibility/Planning	✈	
Governors Island Equipment Storage	Feasibility		✈
Relocated Compressed Natural Gas (CNG) Station – North Cargo Area (NCA)	Feasibility/Planning		✈
Replacement Cargo Facilities – NCA	Feasibility	✈	
Joint Operations Center (JOC)	Feasibility/Planning		✈
Airport Buffers/Open Space Projects			
SWSA Airport Edge Buffer (Phases I and II)	Complete (2014)		
Neptune Road Airport Edge Buffer	Complete (2016)		
Navy Fuel Pier Airport Edge Buffer	Complete (2007)		
Bayswater Embankment Airport Edge Buffer	Complete (2003)		
Bremen Street Park and Dog Park	Complete (2016)		
Greenway Connector	Complete (2014)		
Community Greenway Enhancements	Complete (2015)		
Narrow-Gauge Connector	Complete (2016)		
Piers Park Phase I	Complete (1995)		
Piers Park Phase II	Design	✈	
Piers Park Phase III (*by others*)	Feasibility		✈
Energy, Resiliency, and Sustainability Planning			
Energy Planning	Ongoing	✈	✈
Electric Ground Service Equipment (eGSE) installation	Ongoing	✈	✈
Resiliency Planning	Ongoing	✈	✈
Sustainability Planning	Ongoing	✈	✈

Notes: Anticipated completion dates and status as of October 31, 2020, as denoted by ✈.
Short-term projects are anticipated to be completed by 2025 and long-term projects are anticipated to be completed by 2035.
Details of each project or planning concept are provided in the sections that follow.

Ground Transportation and Parking Planning

Massport continues to implement a robust ground transportation strategy, which includes ongoing operational and capital commitments to the Logan Express services, the MBTA Silver Line 1 (SL1) service, and MBTA Blue Line station shuttles, as well as continued partnership with and marketing of private bus carriers.

As outlined in Chapter 1, *Introduction/Executive Summary*, this EDR was filed during the ongoing COVID-19 worldwide pandemic. While this report focuses primarily on activity in 2018 and 2019, as a result of the pandemic, a number of Massport's broad HOV and trip reduction measures temporarily changed in 2020. Flights in and out of Logan Airport have dramatically reduced and passenger levels dropped by nearly 90 percent beginning in March 2020. As a result, while operational and passenger levels have recovered somewhat as of mid-2020, overall, there are far fewer passengers and employees traveling to and from Logan Airport and there is far less peak period roadway congestion both in Boston and the metropolitan area. In addition, the public's interest in using HOV transportation services like buses, rapid transit and commuter rail, has also been significantly affected by concerns about the COVID-19 virus.

Within that context, Massport continues to evaluate and plan for the recovery of air passenger activity and remains committed to implementing the broad range of ground access strategies that were outlined in the *2017 ESPR*. The schedule for those services and planned improvements has, however, been adjusted due to the continuing operational constraints and revenue reductions. Massport continues to carefully review both on and off-Airport activity levels and will adjust its ground access programs to align with ridership level. Future EDRs will provide detailed updates on all service adjustments and activity levels.

HOV Investment

Massport continuously evaluates it strategies and programs aimed at improving and, where needed, expanding HOV services to and from Logan Airport, including continued investment in Logan Express facilities and service. Massport has a goal to double Logan Express ridership from 2 million to 4 million passengers, by the time Logan Airport reaches 50 million passengers, thereby reducing VMT, congestion, and air quality emissions by shifting riders from other vehicle modes. At suburban locations, Massport has the following action plan:

- Increase Braintree Logan Express service from two to three trips per hour (implemented in May 2019 but reduced to hourly service in March 2020 due to the impacts of COVID-19).
- Add about 1,000 additional spaces to the Framingham garage (permitting completed in 2020 however construction is deferred).
- Provide security line priority status to Logan Express Back Bay riders (implemented in 2019; this service is temporarily suspended due to COVID-19).
- Marketing to support Logan Express strategy and increase ridership.
- Implement Logan Express electronic ticketing (pending).
- Evaluate new Logan Express suburban locations, with a plan to open at least one new site (deferred due to COVID-19).

- Explore RideApp Last Mile connections.[6]
- Continue to monitor parking capacity at all Logan Express sites.

Massport has provided Logan Express service from Woburn for many years, however in early December 2020, this service was suspended due to the COVID-19 pandemic. Roughly 90 percent of the users were Logan Airport employees who will now be accommodated on-Airport.

Until March 2020, the Back Bay Logan Express operated daily between the hours of 5:00 AM and 10:00 PM. Initially, one-way fares to Logan Airport were $7.50 per passenger. Riders with a current, valid MBTA pass received a reduced $3.00 fare. In mid-2019, Massport implemented a number of improvements to the service with a focus on boosting urban Logan Express ridership:

- Change pick-up/drop-off location from Copley to Back Bay Station (implemented in 2019);
- Discount one-way fare from $7.50 to $3.00 (implemented in 2019);
- Free service from Logan Airport (implemented in early 2019);
- Pilot priority security line status for riders (implemented in 2019);
- Execute marketing campaign to support increased ridership (ongoing);
- Implement Logan Express electronic ticketing; and
- Implement a second urban Logan Express service at North Station (although Massport procured buses for this service in 2020, due to COVID-19 this new service has been deferred).

In March 2020, the Back Bay Logan Express service was suspended due to the drop in ridership; the plan is to monitor Logan Airport passenger activity closely and determine the appropriate time to restart the service.

Eight Silver Line buses, connecting the Airport to South Station, were purchased in 2005 by Massport and are operated by the MBTA, with Massport paying operating costs. In 2017, Massport funded mid-life rebuilds of four Silver Line buses and rebuilt four additional buses in 2018. The mid-life rebuild extends the useful life of each vehicle by approximately eight years. This will allow the MBTA to maintain reliability and quality of operations along the Silver Line today while initiating the procurement process to acquire new vehicles in the future. Since the existing Silver Line fleet is reaching the end of its useable life, the MBTA and Massport have been working together on a plan to procure a replacement Silver Line fleet. As part of this initiative, Massport and the MBTA developed a *Silver Line Capacity Study* to determine the mid-term fleet and facility needs as well as to assess other ways to improve the reliability and capacity of the system. Based on this analysis, the MBTA plans to procure 45 new enhanced electric hybrid vehicles to replace the existing fleet of 32 dual mode vehicles. Massport plans to purchase eight MBTA Silver Line buses as part of a forthcoming MBTA procurement. Chapter 5, *Ground Access to and from Logan Airport*, provides additional information on these efforts.

Starting with the 2019 Air Passenger Ground Access Survey, Massport is using an updated HOV definition where vehicle occupancies of taxis, black car limousines, and RideApp vehicles that exceed one air passenger

6 Individuals who fall within the 0.5-mile to 1-mile drive distance of a Logan Express facility are the most likely group to use RideApps to connect between the facility and their home.

per vehicle are considered HOV, while the same modes with one air passenger count as non-HOV. With this updated definition, Massport has committed to a goal of 35.5 percent HOV by 2022 and 40 percent HOV by 2027.

Progress towards Massport's HOV goal is measured using the triennial Air Passenger Ground Access Survey. The latest published survey, conducted in 2019, revealed an air passenger ground access mode share of 40.4 percent for HOV and shared-ride modes, exceeding both near-term and longer-term goals. COVID-19 has had a range of impacts on ground transportation, particularly on the use of ground access HOV modes. While it's anticipated that the HOV mode share will drop as a result of COVID-19 over the short term, Massport expects HOV ridership to recover over time and remains committed to the HOV mode share goals going forward.

Parking Management

Massport continues to manage parking supply, pricing, and operations to promote the use of HOV, transit, and shared-ride options and to reduce drop-off/pick-up modes. As air traveler numbers increased through early 2020, the legally constrained parking supply at Logan Airport, resulting from the Logan Airport Parking Freeze, had periodically had the unintended consequence of causing an increase in environmentally harmful drop-off/pick-up vehicle trips. The goal of the Logan Airport Parking Project is to reduce the use of drop-off/pick-up modes, which generate up to four vehicle trips instead of two (**Figure 3-1**). While the intent of the Logan Airport Parking Freeze has been to shift air passengers to HOV travel modes with lower VMT, survey data collected from the 1970s to the present at Logan Airport have consistently shown that if parking was not an option for passengers who parked on-Airport, 77 percent of diverted parkers would use drop-off/pick-up modes-generating a higher level of VMT and associated air emissions (**Figure 3-1**).

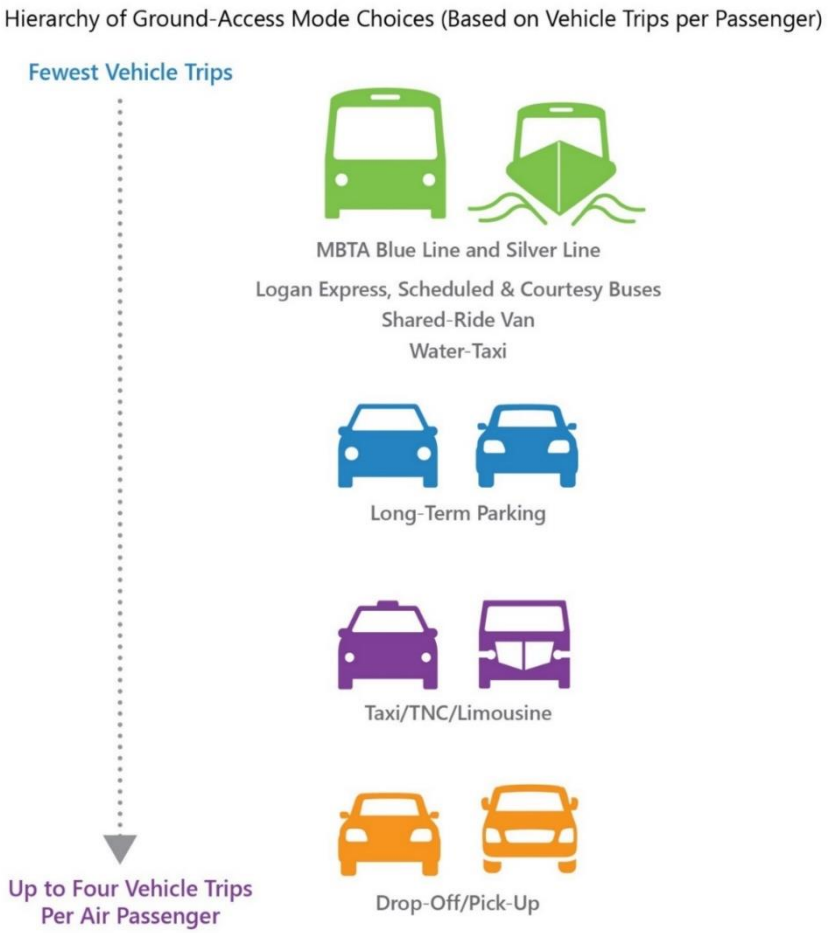
In 2017, the Logan Airport Parking Freeze regulation was revised to allow for an increase of 5,000 on-Airport commercial parking spaces to alleviate constrained parking conditions on-Airport. Until the recent amendments to the Logan Airport Parking Freeze, the total number of employee and commercial parking spaces permitted at Logan Airport was limited to 21,088 spaces under the State Implementation Plan (SIP) and MassDEP air quality regulations; the amendment has increased the limit to 26,088 spaces (there was no increase in the number of employee parking spaces).

While design of the initial project phase (2,000 spaces in a new garage at the existing surface parking lot in front of Terminal E) commenced in 2019, that project is currently deferred. **Figure 3-2** shows the proposed sites for new parking garage facilities.

Table 3-2 describes plans for commercial parking projects at Logan Airport.

In accordance with the modified Logan Airport Parking Freeze approved by MassDEP and the EPA, to allow for an additional 5,000 commercial parking spaces at Logan Airport, Massport completed three key Logan Airport ground access studies, also known as the *Logan Airport Parking Freeze Amendment Ground Access and Trip Reduction Strategy Studies*. The findings of these studies were initially published as part of the Logan Airport Parking Project Final EIR/EA in December 2019, and are available on Massport's website: http://www.massport.com/media/3370/final-massport-dep-report.pdf.

Figure 3-1 Ground-Access Mode Choice Hierarchy



Source: VHB.
Notes: Short-term parking is included under "drop-off/pick-up."
Rental cars are included in the number of Parked Vehicles.

FIGURE 3-2 Location of Airport Ground Access Projects/Planning Concepts

2018/2019 Environmental Data Report

Notes: See Table 3-2 for a description of the numbered projects. Status as of October 31, 2020.

1. West Garage Parking Consolidation (complete)
2a. Logan Airport Parking Project - Economy Garage
2b. Logan Airport Parking Project - Terminal E Surface Lot

Airport-Wide or Location To Be Determined

3. Logan Airport Parking Project: Parking Freeze Studies
4. On-Airport Roadway Congestion Relief Infrastructure
5. RideApp Infrastructure and Policy
6. Logan Express Route and Facility Expansion (Off-Airport)

0 500 1000 2000 Feet

Table 3-2 Description and Status of Airport Ground Access Projects/Planning Concepts (October 31, 2020)

Description	Status
1. 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 project incorporated sustainable design and resiliency elements.	On March 20, 2014, the Executive Office of Energy and Environmental Affairs (EEA) issued an Advisory Opinion confirming no review of the Massachusetts Environmental Policy Act (MEPA) was required for the consolidation of existing on-Airport parking spaces. The consolidation project was completed in late 2016.
2. Logan Airport Parking Project (additional 5,000 spaces)	
As one element of its comprehensive transportation strategy, Massport has proposed the phased construction of 5,000 new on-Airport commercial parking spaces at Logan Airport in two locations. This project would include construction of a 2,000-space structured garage in the parking lot in front of Terminal E and a 3,000-space addition to the Economy Garage. Each of the proposed garages will be designed in accordance with Massport's Sustainable Design Standards and Guidelines and incorporate measures from the U.S. Green Building Council's Parksmart rating system, an environmental and sustainability focused rating system specific to parking structure management, programming, design, and technology.	The Massachusetts Department of Environmental Protection (MassDEP) issued the amended regulation on June 30, 2017 approving the requested parking increase. On December 5, 2017, the U.S. Environmental Protection Agency (EPA) proposed a rule approving the revision of the Massachusetts State Implementation Plan (SIP) incorporating the amended Logan Airport Parking Freeze. The final rule was issued on March 6, 2018 and became effective on April 5, 2018. Massport initiated a parallel process with EEA by filing an Environmental Notification Form (ENF) for new parking facilities on March 31, 2017. A Secretary's Certificate on the ENF was issued on May 5, 2017 establishing the scope for the required Draft Environmental Impact Report (EIR). The Draft EIR/Environmental Assessment (EA) was published in May 2019. The Final EIR/EA was filed in November 2019 and the Secretary's Certificate was issued on January 30, 2020. Massport is currently advancing final design for the first 2,000 spaces in the parking lot across from Terminal E. Both phases are deferred, due to the reduction in passenger activity associated with the pandemic.
3. Logan Airport Parking Project: Parking Freeze Studies (Airport-wide)	
In accordance with the June 2017 approval by MassDEP and the April 2018 approval by the EPA to modify the Logan Airport Parking Freeze to allow for an additional 5,000 commercial parking spaces, Massport has taken steps to advance three key ground access studies. These include analyzing the feasibility and effectiveness of the following: ▪ Potential services and improvements to high occupancy vehicle (HOV) access; ▪ Possible pricing strategies for different modes; and ▪ Potential operational measures to further reduce drop-off/pick-up modes.	The findings of these studies were initially published as part of the Logan Airport Parking Project Final Environmental Impact Report EIR/EA in December 2019, are available on Massport's website: http://www.massport.com/media/3370/final-massport-dep-report.pdf.

Table 3-2 Description and Status of Airport Ground Access Projects/Planning Concepts (October 31, 2020) (Continued)

Description	Status
4. On-Airport Roadway Congestion Relief Infrastructure (locations to be determined)	
In addition to the planned roadway improvements as part of the Terminal C Building, Roadway, and Curb Enhancements, Terminal E Modernization, and Logan Airport Parking Projects, Massport was considering other possible infrastructure modifications to complement the roadway changes mentioned above, as well as policy changes to allow terminal area roadways and curbsides to continue functioning adequately and minimize vehicle idling time and associated emissions. Several options were being considered to reduce on-Airport congestion and improve on-Airport ground access efficiency; however, these studies are currently deferred and will be revisited once passenger levels recover.	Possible infrastructure and management options for improving ground access efficiency at Logan Airport will be evaluated once passenger levels recover closer to 2019 levels.
5. RideApp (formerly Transportation Network Company) Infrastructure and Policy (Airport-wide)	
Massport began tracking and reporting RideApp service (such as Uber and Lyft) activity in 2017. RideApps are estimated to contribute approximately 15,000 vehicle trips per day (excluding deadhead trips). RideApp operations are adversely impacting other modes to the Airport and contributing to on-Airport congestion. As RideApps have become an increasingly popular option for travelers going to and from Logan Airport, Massport has and will continue to develop strategies to facilitate efficient operation of all modes of ground transportation. In an effort to reduce congestion and emissions, Massport has a robust plan to manage RideApp operations and reduce RideApp deadhead activity. Massport's plan includes a rematch and shared ride program, RideApp fee structure changes to encourage shared rides and competition between modes, and optimization of RideApp operations on-Airport. Additional details can be found in Chapter 5, *Ground Access to and from Logan Airport*.	Massport consolidated RideApp activities on the ground floor of the Central and West Garages in October 2019. Pricing and policy changes continue to be evaluated as operational conditions evolve.
6. Logan Express Route and Facility Expansion (Off-Airport)	
To maximize Logan Airport's off-campus traffic and infrastructure improvements, Massport has a goal to double Logan Express ridership from 2 million to 4 million passengers, by the time Logan Airport reaches 50 million passengers, thereby reducing vehicle miles traveled (VMT), congestion, and air quality emissions by shifting riders from other vehicle modes. Investments being considered for Logan Express include improving Back Bay Logan Express service, offering a new urban Logan Express service at North Station, pursuing new suburban Logan Express locations, increasing the frequency of the Braintree service, investing in existing suburban sites, and investing in structured parking at existing sites, among others. Additional details can be found in Chapter 5, *Ground Access to and from Logan Airport*.	Some initiatives to expand Logan Express routes and facilities commenced in 2018 and 2019, (e.g., studies to improve ridership, expansion of services, and evaluation of new suburban Logan Express locations). In response to the COVID-19 pandemic, in March 2020 many service reductions were implemented to better align with the severely reduced passenger levels. Further adjustments will be made overtime in line with recovery of passenger and employee activity levels. In early December, Massport suspended service at the Woburn Logan Express site.

Source: Massport.
Notes: See **Figure 3-2** for the location of Airport parking projects/planning concepts.

Terminal Area Planning

The terminal area accommodates most of the passenger functions at Logan Airport, including the passenger terminals, terminal-area roadways, central parking facilities, and the Hilton Hotel. **Table 3-3** presents information on the status of each ongoing terminal area project. In addition, both Massport and its tenants are proposing projects or exploring planning concepts to modernize and carry out future improvements to the existing terminal facilities. The location of the ongoing terminal area projects and the planning concepts are shown on **Figure 3-3**.

Source: Stantec.
Notes: Terminal C roadway construction after demolition of the old air traffic control tower (left). Terminal C roadways under construction (right).

FIGURE 3-3 Location of Projects/Planning Concepts in the Terminal Area

2018/2019 Environmental Data Report

Notes: See Table 3-3 for a description of the numbered projects. Status as of October 31, 2020.

1. Terminal E Renovation and Enhancements (complete)
2. Terminal E Modernization
3a. Relocated Convenience and Filling Station (complete)
3b. Relocated Taxi Pool Lot
3c. Relocated RideApp Lot
4. Terminal B Optimization
5. Terminal C to E Airside Connector (complete)
6. Terminal C, Pier B Optimization (complete)
7. Terminal C Canopy, Connector, and Roadway Project
8. Terminal A to B Airside Connector

0 500 1000 2000 Feet

Table 3-3 Description and Status of Projects/Planning Concepts in the Terminal Area (October 31, 2020)

Description	Status
Massport Projects/Planning Concepts	
1. Terminal E Renovation and Enhancements This project included interior and exterior improvements at Terminal E to accommodate regular service by wider and longer Group VI aircraft. The project did not include any new gates but did include the reconfiguration of three existing gates to accommodate Group VI aircraft (including the A380 and B747-8 used by international air carriers). Some runway and taxiway shoulders were upgraded to support more frequent Group VI activity.	Planning was initiated in 2014. A federal Environmental Assessment (EA) was filed in July 2016, and the Federal Aviation Administration (FAA) issued a Finding of No Significant Impact (FONSI) on July 29, 2016. Project construction was completed in early 2017.
2. Terminal E Modernization (incorporates former West Concourse Project) The Terminal E Modernization Project will add the three gates approved in 1996 as part of the International Gateway West Concourse project (EEA # 9791), but never constructed, and add an additional four gates. The building will be aligned to function as a noise barrier. New passenger areas and passenger holdrooms are being planned, as well as possible additional Federal Inspection Services (FIS) and Customs and Border Protection (CBP) facilities to supplement the existing FIS areas in Terminal E. The Terminal E Modernization Project will occupy a portion of the North Cargo Area (NCA) and will include terminal gates, aircraft parking, hangars, and cargo facilities. The existing UPS cargo building will be relocated. Upon completion of this project and following a broader ground transportation strategy and planning process, a covered pedestrian connection between Terminal E and the Massachusetts Bay Transportation Authority (MBTA) Blue Line Airport Station will be constructed to improve passenger convenience. This connection is currently being studied and various approaches are under consideration.	An Environmental Notification Form (ENF) was filed with the Executive Office of Energy and Environmental Affairs (EEA) in October 2015. A joint draft federal Environmental Assessment (EA)/state Environmental Impact Report (EIR) was filed in July 2016 in accordance with the National Environmental Policy Act [NEPA] and the Massachusetts Environmental Policy Act [MEPA]). Massport filed the Final EA/EIR on September 30, 2016. FAA issued a FONSI on November 10, 2016, and a Record of Decision (ROD) on the project on November 14, 2016, stating that Massport can update the Airport Layout Plan (ALP) with the Terminal E Modernization Project. (copies of the Secretary's Certificates on the ENF, Draft and Final EA/EIRs, with responses to those comments, in Appendix A, *MEPA Certificates and Responses to Comments)*. Initial construction began in 2019. In June 2020, the construction program was adjusted in response to the COVID-19 pandemic and resulting passenger and revenue declines. Currently, Massport is proceeding with construction of the first four gates that will connect to the existing Terminal E with a mid-2023 anticipated completion. An update on a schedule to complete the remaining three gates and covered pedestrian connection to the Blue Line Airport Station will be provided in the next EDR; currently Phase 2 of the project is deferred.

Table 3-3 Description and Status of Projects/Planning Concepts in the Terminal Area (October 31, 2020) (Continued)

Description	Status
Massport Projects/Planning Concepts	
3. Convenience and Filling Station/Taxi Pool/RideApp Lot Relocations	
Construction of the Terminal E Modernization Project includes the relocation of the existing on-Airport gas station to the intersection of Tomahawk Drive and Jeffries Street on Massport property (Southwest Service Area [SWSA]). With input from the community-based Logan Impact Advisory Group, this location provides community benefits such as convenience stores for local vendors (Starbucks and Meridian Food Market), and landscaping and beautification enhancements. Another part of the design phase involved Massport further evaluating transportation and land-uses in this area in an effort to reduce vehicular congestion along Tomahawk Drive associated with the RideApp mode. The RideApp Pool Lot was relocated to the existing taxi pool at Porter Street to minimize Tomahawk Drive traffic and congestion. Similarly, the existing taxi pool lot was returned to the Blue Lot between the Logan Office Center and the Hyatt Hotel. By relocating the RideApp pool, greater operational flexibility and additional routing options are available that will allow Massport to reduce RideApp service impacts along Tomahawk Drive (shown as 3a, 3b, and 3c in **Figure 3-3**).	The replacement gas station was approved as part of the Terminal E Modernization Project's MEPA and NEPA review process described above. Construction was completed in 2019. Massport relocated both the RideApp Lot and Taxi Pool Lot in the fall of 2018. The project included traffic signal modifications along Harborside Drive.
4. Terminal B Optimization	
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. Improvements included an enlarged ticketing hall, improved outbound bag area, expanded baggage claim hall, expanded concession areas, and expanded holdroom capacity at the gates. The project consolidated American Airlines operations to one pier of the terminal (currently operating on two different sides of the terminal); all Terminal B Pier B gates are now connected post security. The project also consolidated checkpoint operations for better passenger throughput and improved passenger experience.	Massport prepared a Draft EA in May 2017 and a Final EA in June 2017. On June 29, 2017, the FAA issued a FONSI. Work on Pier B is substantially complete, while work on Pier A was completed in the summer of 2019.
5. Terminal C to E Airside Connector	
A connector between Terminals C and E provides a greater post-security connectivity between terminals and improves flexibility for airlines. In addition, the Terminal C to E Connector provides a post-security connection between Terminals C and E on the Departures Level. 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 Terminal C to E Airside Connector was a project component of the Renovations and Improvements at Terminals B & C/E Environmental Assessment approved by FAA in 2012. The Terminal C to E Airside Connector construction was completed in May 2016.

Table 3-3 Description and Status of Projects/Planning Concepts in the Terminal Area (October 31, 2020) (Continued)

Description	Status
Massport Projects/Planning Concepts	
6. Terminal C, Pier B Optimization This project will make improvements within the existing footprint of Terminal C, Pier B. Existing passenger areas will be renovated and a second level of less than 5,000 square feet will be added. A jet bridge will be installed at an existing aircraft parking position.	Project construction was completed in 2019.
7. Terminal C Canopy, Connector, and Roadway Project Massport is planning improvements that will enhance Terminal C facilities and provide a post-security connector between Terminals B and C, replace aging roadways serving the terminals, and improve the operation of the Terminal C curb. The enhancements also include replacement of the existing canopy on the Departures Level. The project will enhance Logan Airport's ability to efficiently accommodate current and future passenger volumes by bringing the terminal facilities up-to-date and improving access, egress, and drop-off/pick-up operations. Massport removed the "Old Tower" in Summer of 2020 to accommodate the roadway and curb enhancements.	The FAA issued a FONSI in November 2018. Construction of the building enhancements and reconfigured roadway began in fall of 2019. The building enhancements are nearly complete as of this filing and the roadway work is progressing through the Fall of 2020. As of October 2020, the "Old Tower" removal was substantially completed. At this time, construction of the replacement canopy is anticipated to begin and be completed in 2021, with a slightly reduced program than originally planned. Completion of the Terminal C to B Connector is anticipated to be complete in spring 2022 and roadways are anticipated to be complete in summer 2023.
8. Terminal A to B Airside Connector As part of the Airport-wide effort to enhance terminal connectivity post-security, a secure-side connector between Terminals A and B is under consideration.	The airside connector between Terminals A and B is still being considered, however, this project is not currently in the five-year Capital Program.

Source: Massport.
Notes: **See Figure 3-3** for the location of terminal area projects/planning concepts.

Airside Planning

The airside area includes all Logan Airport land from the edge of the terminal buildings to the Logan Airport harbor boundary, incorporating the Logan Airport apron, runways, gates, and other airfield operating facilities. Airside improvements include upgrades and improvements to the airfield to enhance the operational efficiency and safety of Logan Airport.

Nationally, FAA continues working to reduce potential airfield safety concerns. One current focus is reducing runway incursions, which occur when an aircraft, vehicle, or person enters an Airport's designated area for aircraft landings and take-offs. In 2019, in coordination with the FAA, Massport completed a comprehensive multi-year Runway Incursion Mitigation Study (RIM, or RIM Study) and Comprehensive Airfield Geometry Analysis to identify, prioritize, and develop strategies to help Massport mitigate incursion risk.[7] Massport identified and prioritized airfield locations where safety can be improved or that could be improved over the next 15 to 20 years, subject to federal, state, and local environmental reviews and permitting.

Massport is also currently exploring options to improve the layout and efficiency of the North Service Area (NSA) by reorganizing the existing uses and enhancing safety within the runway protection zone (RPZ). **Table 3-4** describes the status of these and other projects (as shown on **Figure 3-4**) and planning concepts under consideration for Logan Airport's airside area as of October 2020, and provides additional updates as available.

7 Information on FAA's RIM program can be found at https://www.faa.gov/airports/special_programs/rim/.

FIGURE 3-4 Location of Projects/Planning Concepts on the Airside

2018/2019 Environmental Data Report

Notes: See Table 3-4 for a description of the numbered projects. Status as of October 31, 2020.

1. Runway 15L-33R RSA Improvement (complete)
2. Runway 4R Light Pier Replacement (complete)
3. Runways 22R and 33L RSA Improvements/ Runway 33L Light Pier Replacement (complete)
4. Runway 9-27 RSA Improvement
5. Runway Incursion Mitigation Study and Comprehensive Airfield Geometry Analysis

0 500 1000 2000 Feet

Table 3-4 Description and Status of Projects/Planning Concepts on the Airside (October 31, 2020)

Description	Status
1. Runway 15L-33R Runway Safety Area (RSA) Improvement Project	
As part of an ongoing program to improve safety at Logan Airport, and in close coordination with the Federal Aviation Administration (FAA), Massport proposed shifting existing Runway 15L-33R to accommodate an expanded RSA at the westernmost end (Runway 15L approach) of the runway. The project shifted the runway 200 feet to the southeast in order to comply with FAA standards requiring safety areas of 150 feet wide by 300 feet long at both ends of the runway.	The FAA issued a National Environmental Policy Act (NEPA) Categorical Exclusion on April 1, 2014. The project was completed in late 2014.
2. Runway 4R Light Pier Replacement	
Massport replaced the aging Runway 4R wooden approach light pier with a new modern structure with concrete pier/pilings.	Construction was completed in the fall of 2017.
3. Runways 22R and 33L RSA Improvements/ Runway 33L Light Pier Replacement	
The Runway 33L RSA project initially proposed replacing the landward 500 feet of the light pier to bring the RSA up to current standards. During RSA construction, it was determined that the remaining 1,900 feet of the light pier should be replaced due to its advanced age and efficiencies of combining the construction with the RSA project in summer 2012 while the runway was already closed.	Massport filed an Environmental Notification Form (ENF) on June 30, 2009. A Draft EA/EIR was filed on July 15, 2010, and a Final EA/EIR on January 31, 2011, and the Secretary's Certificate was issued March 18, 2011. Remaining environmental permits were obtained by May 2011, and construction of the Runway 33L RSA was completed ahead of schedule in November 2012. Runway End 22R enhancements were completed in late 2014, including replacement of the EMAS installed in 2005.
As described in the Final Environmental Assessment/ Environmental Impact Report (EA/EIR), an Inclined Safety Area (ISA) similar to what was constructed at Runway-End 22L was constructed for Runway End 22R. A pile-supported deck with an Engineered Materials Arresting System (EMAS) approximately 460 feet long by 300 feet wide was approved for Runway End 33L.	Massport filed a Notice of Project Change (NPC) in January 2012. The Secretary's Certificate was issued on March 9, 2012. All local, state, and federal permits were obtained for the additional work in June 2012, and the full replacement was completed in October 2012. As part of this project, the Runway 33L Instrument Landing System (ILS) approach, originally approved in the Airside Improvements Planning Project, was upgraded from Category I to Category III. Reduction in approach minimums on Runway 15R and Runway 33L was implemented in 2013, following the completion of the Runway 33L Light Pier replacement and FAA testing of new ILS equipment. Mitigation measures for eelgrass and salt marsh impacts have been implemented. See Chapter 9, *Environmentally Beneficial Measures and Project Mitigation Tracking,* for more information on continuing monitoring.

Table 3-4 Description and Status of Projects/Planning Concepts on the Airside (October 31, 2020) (Continued)

Description	Status
4. Runway 9-27 RSA Improvement Project As part of the Runway Incursion Mitigation (RIM) Study, RSAs at Logan Airport were analyzed for conformance with FAA standards. The FAA requires RSAs to accommodate aircraft overruns, undershoots, and veer-offs in emergency situations. Consistent with FAA requirements, Massport is continuously looking for opportunities to increase the margin of safety for all runways and, where practicable, providing the FAA standard for RSAs at all locations. At Logan Airport, the FAA standard for RSAs is typically 500 feet wide by 1,000 feet long at each runway end. Where this space is not available, FAA has approved the use of an EMAS for aircraft overrun protection. An EMAS uses a system of collapsible concrete blocks that can stop an aircraft by exerting predictable forces on the landing gear while minimizing aircraft damage. The RIM Study evaluated multiple alternatives for Runway 9-27 RSA enhancements and recommended construction of a deck, with an EMAS to meet the FAA safety requirements. The RSA at the end of Runway 27 is expected to be similar to the pile supported deck installed at Runway 33L.	The FAA issued a determination that approved the recommended alternative as it met applicable FAA safety requirements while minimizing environmental impacts. Initial concept design and preliminary environmental review and permitting commenced in late 2019. Environmental data collection and field studies commenced in Spring 2020 including marine borings.
5. Runway Incursion Mitigation (RIM) Study and Comprehensive Airfield Geometry Analysis FAA recently initiated a nationwide comprehensive multi-year RIM program to identify, prioritize, and develop strategies to help airport sponsors mitigate risk. Runway incursions occur when an aircraft, vehicle, or person enters the Airport's designated area for aircraft landings and take-offs.[1] Risk factors may include unclear taxiway markings, airport signage, and more complex issues such as runway or taxiway layout.	Massport has worked with FAA to identify areas that need to be addressed and plan for the implementation of safety measures. The study commenced in December 2016 and was completed in June 2019.

Source: Massport.

Notes: See **Figure 3-4** for the location of airside projects/planning concepts.

1 Information on FAA's RIM program can be found at https://www.faa.gov/airports/special_programs/rim/.

Service Area Planning

Logan Airport's service areas contain airline support businesses and operations. Land use in the service areas continue to evolve in response to changing airline business, customer and tenant needs, as well as public works projects. Massport continues to explore ways of efficiently using the limited land resources in the service areas. The six service areas at Logan Airport are shown in **Figure 3-5** and are described below.

- **North Cargo Area (NCA)** is in Logan Airport's northwest corner. It is bounded by the main Logan Airport outbound roadway to the south, Route 1A to the west, Prescott Street to the north, and Terminal E to the east. The NCA, which is adjacent to Logan Airport's airside area, is the Airport's primary airline support area. It accommodates essential airline support businesses including hangars, GSE maintenance, air cargo, and aircraft parking. The NCA will remain the most appropriate location for operations that require contiguous airside access. The Terminal E Modernization Project will eventually occupy a portion of the NCA and will include terminal gates, aircraft parking, hangars, and cargo facilities. Portions of the NCA will continue to be used for economy parking. Expansion of the Economy Garage, as part of the Logan Airport Parking Project, has completed the permitting process; the construction of the Economy Garage construction is deferred.
- **North Service Area (NSA)** is north of Prescott Street and extends to the Green Bus Depot Site, the MBTA Wood Island Station, and Runway End 15R. The NSA includes two flight kitchens, weather and navigation equipment, the Green Bus Depot, Facilities 2 and 3, the Large Vehicle Storage Facility, Hangar 5, BOSFuel Fuel Farm, water tanks, Signature Flight Support (a fixed-based operator), and Logan Airport Greenway, among others. The Greenway Connector and Narrow-Gauge Connector both run parallel to the MBTA Blue Line corridor in this section of the Airport. Massport is currently exploring options to improve the layout and efficiency of the NSA by reorganizing the existing uses which would expand Remain Over Night (RON) aircraft parking, remove an unused building in the RPZ, and improve overall land use. This project is expected to require review under NEPA. Massport has issued a Request for Information (RFI) and is in the process of identifying a replacement for the current FBO located in the NSA.

  Also within the NSA, Massport is planning to expand its jet fuel storage facilities to be constructed opposite the Economy Garage. An additional jet fuel storage tank is planned to meet recent and future demand at Logan Airport. The additional facilities will be constructed on the site of an abandoned Massport water pumping station, located on Prescott Street adjacent to the Economy Garage. Massport is advancing project design and permitting; a schedule for construction has not been determined at the time of this filing.
- **Southwest Service Area (SWSA)** is south of Logan Airport's main access roadway and is bounded on the east by Harborside Drive. Because of its proximity to the terminals and the regional highway system, the SWSA functions as Logan Airport's primary ground transportation hub and includes the Rental Car Center (RCC), and the taxi, RideApp, and bus/limousine pools. The RCC reduces Airport VMT and improves roadway and intersection operations through: consolidation of the rental car shuttle bus fleet and some Massport shuttle buses into a unified shuttle route system, resulting in the elimination of eight rental car bus fleets (a net total of 66 buses eliminated); improvement of intersection and roadway infrastructure, including signal coordination and dedicated ramp connections; and establishment of a Ground Transportation Operations Center (GTOC), enabling efficient planning and operation of Airport-wide transit activities. As part of the Terminal E Modernization Project, the existing on-Airport gas station was relocated to the SWSA in 2019, and combined with a new community convenience store/market and Starbucks.

- **Bird Island Flats (BIF)** is located south of the Logan Airport SWSA. BIF has landside access via Harborside Drive and water access through the system of water taxis that shuttle passengers between downtown Boston, the South Shore, and Logan Airport. BIF development includes the Hyatt Hotel and Conference Center, the Logan Office Center and adjoining garage, an employee parking lot (Lot B), the Logan Taxi Pool, the Water Shuttle Dock, the Logan Airport Rescue and Fire Fighting Facility Marine Dock, and the Harborwalk, a publicly accessible promenade along the harbor's edge.
- **South Cargo Area (SCA)** is located southeast of the Logan Airport SWSA and is generally bounded on the south by Harborside Drive and on the east and north by Logan Airport's airside area. The SCA, which provides landside access and secured airside access, is Logan Airport's primary cargo area and accommodates domestic and international cargo operations.
- **Governors Island** is at Logan Airport's southern tip and is bounded by Runway 14-32 and Boston Harbor to the east and south, by Runway 4R to the west, and Runway 9 to the north. Governors Island has functioned as a storage site for the Central Artery/Tunnel (CA/T) Project and for construction stockpiles. The area also contains an Aircraft Rescue and Fire Fighting Facility training area, parking for snow removal equipment, a biocell remediation area, and FAA aircraft navigation equipment. The area has been considered as a future location of RON aircraft parking, and potentially other uses (including cold storage).

Table 3-5 presents information on the status of each ongoing project and planning concept in the service areas. Both Massport and Logan Airport tenants are proposing projects or exploring planning concepts to modernize and carry out future improvements to the service areas. The locations of the ongoing service area projects and planning concepts that may potentially be constructed in the future are shown on **Figure 3-6**.

FIGURE 3-5 Logan Airport Service Areas

2018/2019 Environmental Data Report

Service Areas

0 500 1000 2000 Feet

FIGURE 3-6 Location of Projects/Planning Concepts in the Service Areas

2018/2019 Environmental Data Report

Notes: See Table 3-5 for a description of the numbered projects. Status as of October 31, 2020.

1. SWSA Redevelopment Program (complete)
2. Logan Airport RPZ Enhancements ESMF Relocation
3. Jet Fuel Storage Addition - NSA
4. Governors Island Equipment Storage

Locations To Be Determined

5. Relocated CNG Station - NCA
6. Replacement Cargo Facilities - NCA
7. Joint Operations Center

0 500 1000 2000 Feet

Table 3-5 Description and Status of Projects/Planning Concepts in the Service Areas (October 31, 2020)

Description	Status
Massport Projects/Planning Concepts	
1. Southwest Service Area (SWSA) Redevelopment Program The SWSA Redevelopment Program replaced and upgraded existing ground transportation uses within the SWSA. This included the consolidated Rental Car Center (RCC); support facilities for the car rental operations; a new clean-fuel unified shuttle bus system; a relocated and reconfigured taxi pool; bus and limousine pool; roadway improvements, pedestrian and bicycle facilities, and site landscaping. It also included a customer service center and four quick turn-around maintenance and service facilities. The Ground Transportation Operations Center (GTOC) within the RCC functions as the hub for management of ground transportation at the Airport. Phase II of the SWSA Airport Edge Buffer (EEA #14137) was integrated into the proposed SWSA Redevelopment Program.	A Final state Environmental Impact Report/federal Environmental Assessment (EIR/EA) was prepared in accordance with the Secretary of the Executive Office of Energy and Environmental Affairs (EEA)'s Certificate on the Notice of Project Change (NPC). The Final EIR/EA was filed on March 1, 2010. An extended public comment period closed on May 24, 2010. The Secretary's Certificate was issued on May 28, 2010, with finding that the Final EIR adequately and properly complied with the Massachusetts Environmental Policy Act (MEPA). The Federal Aviation Administration (FAA) issued a Finding of No Significant Impact (FONSI) on March 1, 2010. This project was completed in late 2014 and the RCC achieved Leadership in Energy and Environmental Design® (LEED®) Gold certification in 2016. The SWSA Airport Edge Buffer was completed in late 2014.
2. Logan Airport RPZ Enhancements Equipment Storage and Maintenance Facility (ESMF) Relocation Massport is evaluating safety enhancements in the RPZ at the approach end of Runway 15R. This area includes hangars, aircraft parking, the North Gate, aircraft fueling facilities, and other airfield maintenance support facilities.	Massport is working with FAA to study the feasibility of implementing RPZ enhancements including reorganization of buildings and uses in this area. Environmental review of this project is expected to proceed in 2021.
3. Jet Fuel Storage Addition – NSA Massport proposes to enhance the reliability of jet fuel storage availability and distribution to meet current demand at Logan Airport by installing additional jet fuel storage facilities within the existing storage and distribution system. The proposed location for these additional facilities is the site of an abandoned Massport water pumping station, located on Prescott Street adjacent to the rear of the Economy Garage. The functions, facilities, and land use in the project area will remain generally consistent.	Massport is advancing plans and permitting to add a fifth jet fuel storage tank immediately adjacent to the existing tanks and fuel distribution facilities. Construction is anticipated to begin in 2022.

Table 3-5 Description and Status of Projects/Planning Concepts in the Service Areas (October 31, 2020) (Continued)

Description	Status
Massport Projects/Planning Concepts	
4. Governors Island Equipment Storage Governors Island has been identified for a number of aviation support activities for many years. The area has been considered as a future location of RON aircraft parking, and potentially other uses (including cold storage).	Massport continues to evaluate concepts for Governors Island.
5. Relocated Compressed Natural Gas (CNG) Station in the North Cargo Area (NCA) (location to be determined) This would relocate Massport's existing CNG Station to accommodate the airside operations in the NCA.	Massport continues to examine potential on-Airport parcels for relocation of the existing CNG station. Relocation is not expected to occur before 2021.
Tenant Projects/Planning Concepts	
6. Replacement Cargo Facilities in the NCA (location to be determined) Construction of new cargo facilities in the NCA would compensate for the loss of cargo facilities due to the Central Artery/Tunnel (CA/T) Project, as well as for the projected growth in cargo demand.	The project remains under evaluation. If a decision were made to proceed with this project, construction would likely commence after 2025.
7. Joint Operations Center (JOC) (location to be determined) The JOC is envisioned as a state-of-the-art operations and situational awareness center. The goal of the JOC is to capture the security and response benefits afforded through integrated incident dispatch and mobile response for public safety and security services. The program plans to bring the Operations Center, State Police Dispatch, Maritime Monitoring (with future Hanscom Field and Worcester Regional Airport monitoring), Transportation Security Administration (TSA) staff, and camera monitoring within the structure of one common facility.	Development of a common command and control JOC is in the feasibility phase

Source: Massport.
Note: See **Figure 3-6** for the location of service area projects/planning concepts.

Airport Buffer Areas and Open Space Planning

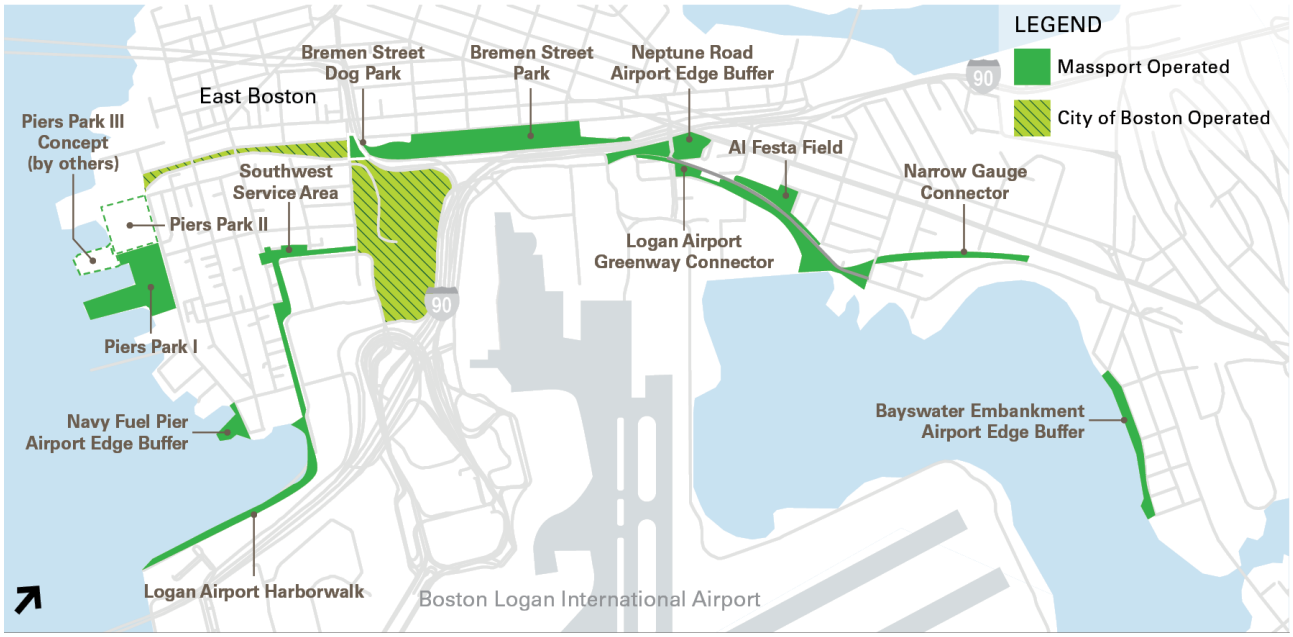
Previously, Massport committed over $15 million for the planning, construction, and maintenance of four Airport edge buffer areas and two parks along Logan Airport's perimeter (**Figure 3-7**). These buffers have been completed and include the Bayswater Embankment Airport Edge Buffer, Navy Fuel Pier Airport Edge Buffer, SWSA Airport Edge Buffer, and Neptune Road Airport Edge Buffer. These areas are located on Massport-owned property along Logan Airport's perimeter boundary and provide attractive landscape buffers between Airport operations and adjacent East Boston neighborhoods. The buffer design included 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.

In September 2016, Massport officially opened the Bremen Street Dog Park. The park, the first of its kind in East Boston, provides 22,655 square feet of play space for neighborhood dogs. Other park amenities include exercise equipment for dogs, pet waste stations, and water fountains for both pets and their owners. Massport completed the construction of the Greenway Connector between Bremen Street Park and an overlook at Wood Island Marsh in March 2014. The one-half mile Greenway Connector connects the pedestrian/bicycle path to the City of Boston/Narrow-Gauge Connector to Constitution Beach. In 2016, construction on the Narrow-Gauge Connector was underway by the City of Boston. The Narrow-Gauge Connector is a one-third mile multi-use path and extension of the East Boston Greenway network which allows pedestrians and cyclists to travel between Piers Park and Constitution Beach. Massport assumed ownership and operation of the Narrow-Gauge Connector when it was completed in 2016.

As part of the Logan Impact Advisory Group (LIAG), Massport committed to developing Piers Park II, which will add approximately 4.2 acres of green space to the East Boston waterfront upon completion. The conceptual design of the Phase II site envisions a fully accessible park with a central lawn area, basketball and volleyball courts, and bicycle and rollerblade tracks. A Request for Proposals for design of Piers Park Phase II was issued by Massport in June 2017. The planning and design process is underway with the East Boston community.

Piers Park Phase III is conceived as a 3.8-acre addition of green space to the existing Piers Park on the East Boston waterfront. The Phase III site is located adjacent to the Phase II site, along Marginal Street in East Boston. Piers Park Phase III is an early-stage planning concept that Massport has made available to external developers. Piers Park Phase III would turn an aging pier into a 3.6-acre greenspace that includes resiliency features to help protect the neighborhood from flooding and sea level rise. Massport issued a Request for Proposals (RFP) in February 2018 for design and construction of Piers Park Phase III. In 2020, The Trustees of Reservations were selected to advance planning and permitting for this facility. Initial site feasibility studies are underway, as is stakeholder outreach.

Figure 3-7 Parks Operated by Massport and City of Boston



Source: Massport, VHB.

To collaborate in East Boston open space planning, Massport also participates in meetings with other agencies including the Massachusetts Department of Transportation (MassDOT), the City of Boston, and the MBTA. **Table 3-6** describes the status of ongoing buffer projects and other Massport green space projects under consideration as of 2020. **Figure 3-8** shows the location of these buffer projects.

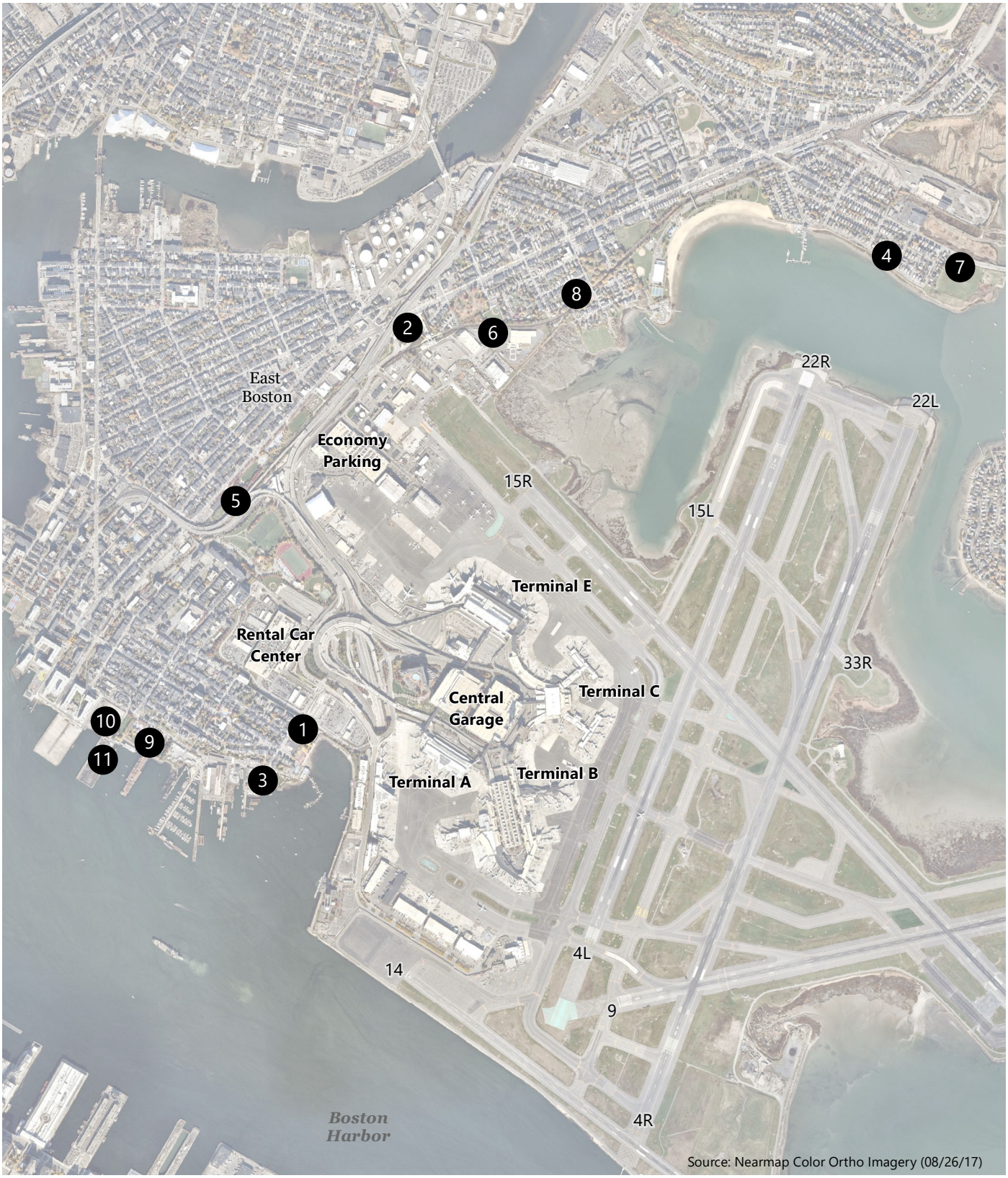


FIGURE 3-8 Location of Airport Buffer Projects/Open Space

2018/2019 Environmental Data Report

Notes: See Table 3-6 for a description of the numbered projects. Status as of October 31, 2020.

1. SWSA Airport Edge Buffer (Phases I and II) (complete)
2. Neptune Road Airport Edge Buffer (complete)
3. Navy Fuel Pier Airport Edge Buffer (complete)
4. Bayswater Embankment Airport Edge Buffer (complete)
5. Bremen Street Park and Dog Park (complete)
6. Greenway Connector (complete)
7. Community Greenway Enhancements (complete)
8. Narrow-Gauge Connector (complete)
9. Piers Park Phase I (complete)
10. Piers Park Phase II
11. Piers Park Phase III (by others)

0 500 1000 2000 Feet

Table 3-6 Description and Status of Airport Edge Buffer Projects/Open Space (October 31, 2020)

Description	Status
1. Southwest Service Area (SWSA) Airport Edge Buffer (Phases I and II)	
Phase I involved the construction of an approximately half-acre area with landscaping and lighting improvements along Maverick Street that included evergreen and deciduous trees, ornamental shrubs, and groundcovers.	Phase I construction was completed in 2006.
Phase II consisted of landscaping (i.e., densely planted or planted atop earth berms for enhanced separation) and solid barriers such as fences and walls. The project enhanced bicycle and pedestrian connectivity between Maverick Street and East Boston Memorial Park and Stadium with extensive landscaping including trees, shrubs, flowering perennials, and decorative fences.	Phase II of the SWSA Airport Edge Buffer design was integrated with the SWSA Redevelopment Program and was completed in Fall 2014.
2. Neptune Road Airport Edge Buffer	
The Neptune Road Airport Edge Buffer is a Massport community mitigation project to buffer the East Boston Neighborhood at Logan Airport's northwestern edge. The 1.5-acre parcel is at the nexus of Neptune Road, Vienna, and Frankfort Streets and is adjacent to the Massachusetts Bay Transportation Authority's (MBTA) Wood Island Station. The majority of the parcel is located within the Runway 15R-33L Runway Protection Zone (RPZ) which limits the type of active uses in this area. The project consists of Olmsted-inspired landscape with interpretive elements that complement the adjacent North Service Area Roadway Corridor and serves as a continuation of the pedestrian/bicycle path to Bennington Street.	The Neptune Road Airport Edge Buffer was completed in June 2016.
3. Navy Fuel Pier Airport Edge Buffer	
The Navy Fuel Pier Airport Edge Buffer project began with the U.S. Army Corps of Engineers' remediation of the former Navy Fuel Pier, which was completed in 2001. The project involved beautification of this 0.7-acre property through landscape improvements and stabilization of the waterfront perimeter. An interpretive panel was also installed which details the history of the surrounding area.	Construction of the Navy Fuel Pier Airport Edge Buffer was completed in 2007.
4. Bayswater Embankment Airport Edge Buffer	
This project involved creating a landscaped buffer between Bayswater Street and Boston Harbor.	Construction of this Airport edge buffer was completed in 2003. Massport is evaluating options for repairing recent storm-related shoreline damage.
5. Bremen Street Park and Dog Park	
The 18-acre park was constructed as part of the Central Artery/Tunnel (CA/T) Project. The park, which is the second largest neighborhood park in East Boston, offers a variety of facilities, a direct pedestrian connection to the MBTA Blue Line Airport Station, and a half-mile segment of the three-mile East Boston Greenway. The park was built on land previously used as a rail yard and later off-Airport parking. a nearly half-acre dog park is located on the corner of Bremen and Porter Streets.	Construction of the park was completed in 2008. Massport continues to operate the park and provide community facilities. The Dog Park was opened in September 2016.
6. Greenway Connector	
The one-half mile pedestrian/bicycle path connects the Bremen Street Park pedestrian/bicycle path to the Narrow-Gauge Connector. Together the Greenway and Narrow-Gauge Connectors provide a continuous path connecting Piers Park, Bremen Street Park, Stadium Park, and Constitution Beach.	Construction of the Greenway Connector between Bremen Street Park and an Overlook at Wood Island Marsh was completed by Massport in 2014.

Table 3-6 Description and Status of Airport Edge Buffer Projects/Open Space (October 31, 2020) (Continued)

Description	Status
7. Community Greenway Enhancements	
Eight street lights were installed along Saratoga Street to improve safety and maintain spacing consistent with what was existing.	The lighting improvements were completed in December 2015.
8. Narrow-Gauge Connector	
The Narrow-Gauge Connector is a one-third mile multi-use path and extension of the East Boston Greenway network. This portion of the East Boston Greenway allows people to continuously walk from Piers Park to Constitution Beach.	Construction by the City of Boston was started in 2015 and the Narrow-Gauge Connector was opened in May 2016. The City of Boston completed final plantings in Spring of 2016 and turned the project over to Massport for ownership and continuing maintenance, and security.
9. Piers Park Phase I	
Formerly a 7-acre industrial site located on the East Boston waterfront, the Phase I site is comprised of three distinct zones: 5.5-acre backland, 1.2-acre pier, and a community sailing facility. The park includes a picnic area, adult fitness course, children's playground and spray park, and an outdoor amphitheater.	Construction was completed in 1995.
10. Piers Park Phase II	
Piers Park Phase II will add 4.2 acres of green space to the existing Piers Park on the East Boston waterfront. The Phase II site is located adjacent to the Phase I site, along Marginal Street. The conceptual design of the Phase II site envisions a fully accessible park with a central lawn area, basketball and volleyball courts, and bicycle and rollerblade tracks. Massport has committed up to $15 million for the design and construction. This new park is expected to offer resiliency landscape features similar to those in the Phase I Park, including brick paved walkways, site furniture, lighting, and plantings. Elevation of the site is also planned to improve neighborhood resiliency and flood damage protection. A new 1,000-square foot community/sailing center, located on the waterfront, is designed to replace the existing Sailing Center building while providing additional meeting spaces for the community.	Massport issued a Request for Proposals for design of Piers Park Phase II in June 2017. The planning and design process is underway and is expected to be completed in 2021.
11. Piers Park Phase III (*by others*)	
Piers Park Phase III is conceived as a 3.8-acre addition of greenspace to the existing Piers Park on the East Boston waterfront. The site is located adjacent to the Phase II site, along Marginal Street in East Boston. Piers Park Phase III would turn an aging pier into a 3.6-acre greenspace that includes resiliency features to help protect the neighborhood from flooding and sea level rise.	Massport issued a Request for Proposals in February 2018 for design and construction of Piers Park Phase III. In 2020, The Trustees of Reservations was designated by Massport a developer of the park. Initial site feasibility studies and stakeholder outreach commenced in 2020 and overall planning is underway. Concept design and permitting is expected to take several years.

Source: Massport.
Note: See **Figure 3-8** for the location of Airport edge buffer projects/planning concepts.

Energy, Resiliency, and Sustainability Planning

As part of an authority-wide initiative, Massport recently completed or is undertaking several airport-wide energy, resiliency, and sustainability planning efforts described below.

Energy Planning

Massport has a long-standing energy management program committed to supply side wholesale energy management and procurement and demand side energy efficiency and renewable energy development. Supply side wholesale purchasing is managed through an inter-departmental advisory group consisting of representatives of Administration and Finance, Building Operations, and Capital Programs and Environmental Affairs. Procurement is guided by a Board approved Energy Hedge Policy. Demand management is pursued through individual capital projects and stand-alone measures, where feasible, including investments in high efficiency lighting, automated building energy management systems, and micro-grids. Renewable energy planning has taken the form of a Massport-wide evaluation of feasible third-party financed renewable energy development sites designed for coordination with the Commonwealth of Massachusetts SMART (Solar Massachusetts Renewable Target Program). As part of this evaluation, all Massport properties were vetted for potential solar development. A single solar project resulted from this analysis, the Worcester Regional Airport project, which has subsequently been advertised and awarded. Project development of the Worcester project will continue under a public/private partnership.

Massport will continue to evaluate renewable energy development potential across all of its properties. Massport has numerous existing self-financed solar panel installations at Logan Airport and Hanscom Field, including locations on top of the Economy Garage, Rental Car Center, Terminal A, Hanscom Civil Air Terminal, and Terminal B Garage. Solar development continues to be integrated into new construction projects including the Terminal E Modernization Project which includes a planned 300,000-kilowatt hour (kWh) rooftop solar array in the second phase of the project. The Terminal C Canopy project is planned to include a rooftop solar array. In addition, Massport will install solar panels at the planned new Terminal E parking garage when that project proceeds. Previously, Massport formed a public/private partnership to develop its largest existing solar installation, 357kW, on the roof of Terminal A and Terminal A Satellite. This project was undertaken as part of a statewide solicitation designed to facilitate American Recovery and Reinvestment Act (ARRA) grant funding development of solar energy in the Commonwealth of Massachusetts

In 2018, the EPA awarded a $541,817 grant to Massport to replace diesel powered GSE at Logan Airport. This grant will be used in conjunction with an FAA VALE grant Massport received in the fall of 2018, to install eGSE charging stations as part of the Terminal B Optimization Project. On the landside, Massport has installed electric charging facilities in all its garages and will also install them in the proposed new garage in front of Terminal E and the expanded Economy Garage when those projects proceed.

Resiliency Planning

Massport has a robust effort underway that first identified coastal storm and climate change vulnerabilities on the Airport and has incorporated resilient infrastructure design standards for all types of Airport projects. At the end of 2013, Massport initiated a Disaster and Infrastructure Resiliency Planning Study (DIRP) for Logan Airport,

the Port of Boston, and Massport's waterfront assets in South and East Boston. The DIRP Study includes a hazard analysis, models of sea-level rise and storm surge, and projections of temperature and precipitation and anticipated increases in extreme weather events. The DIRP Study provides recommendations regarding short-term strategies to make Massport's facilities more resilient to the likely effects of climate change. The study was completed and implementation of adaptation initiatives began in late 2014.

In addition to the DIRP Study and its related initiatives, Massport has completed an Authority-wide risk assessment, as part of its strategic planning initiative; issued a Floodproofing Design Guide; and has developed a resilience framework to provide consistent metrics for short- and long-term planning and protection of its critical facilities and infrastructure. Beyond infrastructure resiliency, Massport is also focused on incorporating social and economic resilience into its long-term operational and capital planning. Massport's Floodproofing Design Guide was published in November 2014, and updated in November 2018.

Operational aspects of resiliency strategy include the development of Flood Operations Plans for Logan Airport and Massport maritime facilities. These plans were introduced in 2014 and included the planned deployment of temporary flood barriers to protect up to 12 locations of critical infrastructure in the event of severe weather. The test deployments and live event staging for the March 2018 Nor-easters succeeded in managing and tracking flood barrier deployment logistics and effective communication. As a result, Logan Airport's Flood Operations Plans and operational responses have evolved. A web-based coastal flood resiliency application was developed to better manage planning immediately prior to an event impact, and to facilitate operational response and recovery as quickly as possible.

Additional locations have been permanently enhanced to prevent flooding. The flood operations plans are evaluated annually to enhance their effectiveness and to adapt to evolving requirements and past experiences. As reported in the *Sustainable Massport 2019 Annual Sustainability and Resiliency Report*, 100 percent of critical assets such as electrical power facilities, diesel fuel pumping stations, telecommunications systems, and police and fire public safety buildings have been enhanced with resiliency measures. Floodproofing measures include: installing temporary flood barriers for facilities, raising electrical and mechanical equipment above forecasted flood levels, sealing and waterproofing openings and conduits; installing water sensors and pumps, and installing anchoring systems for the deployment of temporary flood fencing and flood barriers in the event of an emergency.

In 2017, Massport conducted a series of workshops with key stakeholders to review and continuously improve its Flood Operations Plans. In addition, many education and training opportunities have been provided to staff and emergency responders to increase operational preparedness for flood events. In March 2018, Massport conducted several test deployments of flood barriers at three critical Logan Airport assets. Additionally, Massport developed a flood resiliency application to inform decision-making, facilitate management oversight, and enable real-time field updates via mobile devices before, during, and after storm events.

Logan Airport Sustainability Planning

In 2013, Massport was awarded a grant by FAA to prepare a Sustainability Management Plan (SMP) for Logan Airport. The Logan Airport SMP planning effort began in May 2013 and was completed in April 2015. The purpose of the Logan Airport SMP is to enhance the efficiency and sustainability of Logan Airport's operations

and to support the broader sustainability principles of the Commonwealth. The Logan Airport SMP takes a comprehensive approach to sustainability including economic vitality, social responsibility, operational efficiency, and natural resource conservation considerations. The Logan Airport SMP is intended to promote, integrate, and coordinate sustainability efforts across the Authority. The Logan Airport SMP was developed with 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 in the areas of energy and greenhouse gas emissions; community, employee, and passenger well-being; resiliency; materials, waste management, and recycling; and water conservation.

Massport Annual Sustainability and Resiliency Report

The Massport Annual Sustainability and Resiliency Report provides a progress summary of sustainability efforts at Logan Airport and other Massport facilities, based on Massport's sustainability goals and targets established in the Logan Airport SMP. The first report, titled the *Logan Airport Annual Sustainability Report*, was published in April 2016 and focused on Logan Airport only. Since the publication of the first report, Massport has continued expanding its sustainability initiatives, with an increased focus on implementing resiliency measures to protect Maritime and Logan Airport operations, critical infrastructure, and workforce. The lastest Annual Sustainability and Resiliency Report highlights Massport's progress towards improving sustainability and enhancing resiliency at its facilities and is available on Massport's website at: http://massport.com/massport/business/capital-improvements/sustainability/sustainability-management/.

Annual Sustainable Massport Calendar

Each year since 2015, Massport distributes *Sustainable Massport* calendars to employees and other stakeholders. The calendars are filled with examples of Massport's sustainability projects and successes, and each month highlights aspects of environmental, social, and economic aspects of sustainability to which employees can contribute.

Source: Massport.

Sustainable Massport 2.0

Massport is continuing to incorporate sustainability considerations into its projects and is currently working on a vision for Massport "Sustainable Massport 2.0." The vision for this next-level planning effort is to implement principles and approaches from the Logan Airport SMP at other Massport facilities and to update Massport's sustainability goals and targets. In early 2019, Massport conducted a series of charrettes with Massport staff, tenants, and business partners to help define this vision. Massport is currently working on a detailed set of recommendations for Sustainability 2.0. Updates will be reported in future Annual Sustainability and Resiliency Reports.

4

Regional Transportation

During the 2018/2019 period, Boston Logan International Airport (Logan Airport or the Airport) (and the aviation industry in general) continued to see the strong growth experienced over the past few years. However, the COVID-19 pandemic, which began to be felt in mid-March 2020, has reversed this trend with dramatic reductions in passenger levels and flights at Logan Airport as well as the other regional airports. As of the filing of this *2018/2019 Environmental Data Report (EDR)*, Logan Airport continued to be one of the nation's airports experiencing the most dramatic reductions. As of October 2020, total flight operations for the year were down by 50 percent and passenger levels were down by about 70 percent compared to January through October 2019.

Activity levels at the regional airports including Manchester-Boston Regional Airport in New Hampshire and T.F. Green Airport in Warwick, Rhode Island experienced significant drops in passenger activity between 95.0 and 96.9 percent at the height of the pandemic in April 2020. These airports have recovered at slightly better rates than Logan Airport since they are less dependent on international travel. Over the 2020 Thanksgiving weekend, there were 147,900 travelers combined at six major New England airports from Friday through Wednesday — down more than 70 percent compared to the same time period last year, when nearly 500,000 people headed to those airports, according to Transportation Security Administration officials. The upcoming *2020 EDR* will address the substantial changes in the regional transportation network.

Key Findings for 2018 and 2019

- In 2018 and 2019, the New England region saw an increase in air passenger activity. Regional air passengers increased by 6.5 percent to 58.3 million air passengers in 2018 and then another 2.5 percent to 59.7 million in 2019, a historic high. The 10 regional airports (excluding Boston Logan International Airport [Logan Airport or the Airport]) in New England accommodated 17.3 and 17.2 million air passengers in 2018 and 2019, respectively, compared to 16.3 million passengers in 2017.
- Worcester Regional Airport, T.F. Green Airport, Portland International Jetport, Burlington International Airport, and Bangor International Airport saw an overall increase in commercial service operations since 2017. Manchester-Boston Regional, Tweed-New Haven, Bradley International, and Portsmouth International airports saw reduced service offerings since 2017.
- The Massachusetts Port Authority's (Massport's) three airports, Logan Airport, Worcester Regional Airport, and Hanscom Field, make significant contributions to the regional economy, generating approximately $23.1 billion annually, or 94 percent of the overall economic benefits generated by the Massachusetts airport system.
- Worcester Regional Airport passenger numbers increased by 76 percent in 2019 compared to 2017 and reported a total of 817,057 cumulative passengers from 2013 to 2019. In the past five years, Worcester Regional Airport experienced an average growth rate of 10 percent per year.
- Massport continues to invest in Worcester Regional Airport—together with the City of Worcester, Massport has already initiated a $100 million, 10-year investment to revitalize and attract commercial operations to Worcester Regional Airport.
    - Recently, Massport installed a Category (CAT) III Instrument Landing System (about $32 million) paid for by federal grants and Massport funds.
    - jetBlue Airways, American Airlines, and Delta Air Lines announced new service to New York John F. Kennedy International Airport (JFK), Philadelphia International Airport, and Detroit Metropolitan Wayne County Airport, respectively.
- Hanscom Field is a reliever airport to Logan Airport and is the second busiest airport in New England.
- Amtrak rail system-wide ridership increased from 31.7 million customer trips in fiscal year (FY) 2018 to 32.5 million trips in FY 2019. In FY 2018, the Northeast Corridor (NEC) carried over 12 million passengers, up about 1 percent from the prior year. In FY 2019, the NEC carried 12.5 million passengers on those services, up about 3 percent from the prior year.

Introduction

Logan Airport plays an important role in the New England region's intermodal transportation system. This chapter reports on the status of the region's airports and other intermodal facilities. While the focus of the chapter is describing the regional system and Logan Airport's role in 2018 and 2019, significant updates in 2020 are also presented.

Logan Airport is the centerpiece of the three airports owned and operated by Massport. It is the primary international and domestic airport operating within the network of New England regional airports.[1] Massport also owns and operates Worcester Regional Airport and Hanscom Field; both of which play important roles in the New England regional transportation system, as described below. This chapter focuses on 2018 and 2019 and describes passenger and aircraft operations activity levels at New England regional airports,[2] including consideration of:

- Changes in airline service levels and other factors that have contributed to trends in regional airport activity;
- The status of current improvement plans and projects at the regional airports;
- Massport's initiatives and joint efforts with other transportation agencies to improve the efficiency of the New England regional transportation system; and
- Regional long-range transportation planning efforts.

New England Regional Airports

As shown in **Figure 4-1**, the New England region is anchored by Logan Airport and a system of 10 other commercial service, reliever, and general aviation (GA) airports (regional airports).[3] Together, these 11 airports accommodated 58.1 million passengers in 2018 and 59.6 million passengers in 2019, approximately 99 percent[4] of New England's air travel demand. These airports include:

- Logan Airport (BOS)
- Worcester Regional Airport (ORH)
- Hanscom Field (BED)
- Bradley International Airport (BDL)
- T.F. Green Airport (PVD)
- Manchester-Boston Regional Airport (MHT)
- Portland International Jetport (PWM)
- Burlington International Airport (BTV)
- Bangor International Airport (BGR)
- Tweed-New Haven Airport (HVN)
- Portsmouth International Airport (PSM)

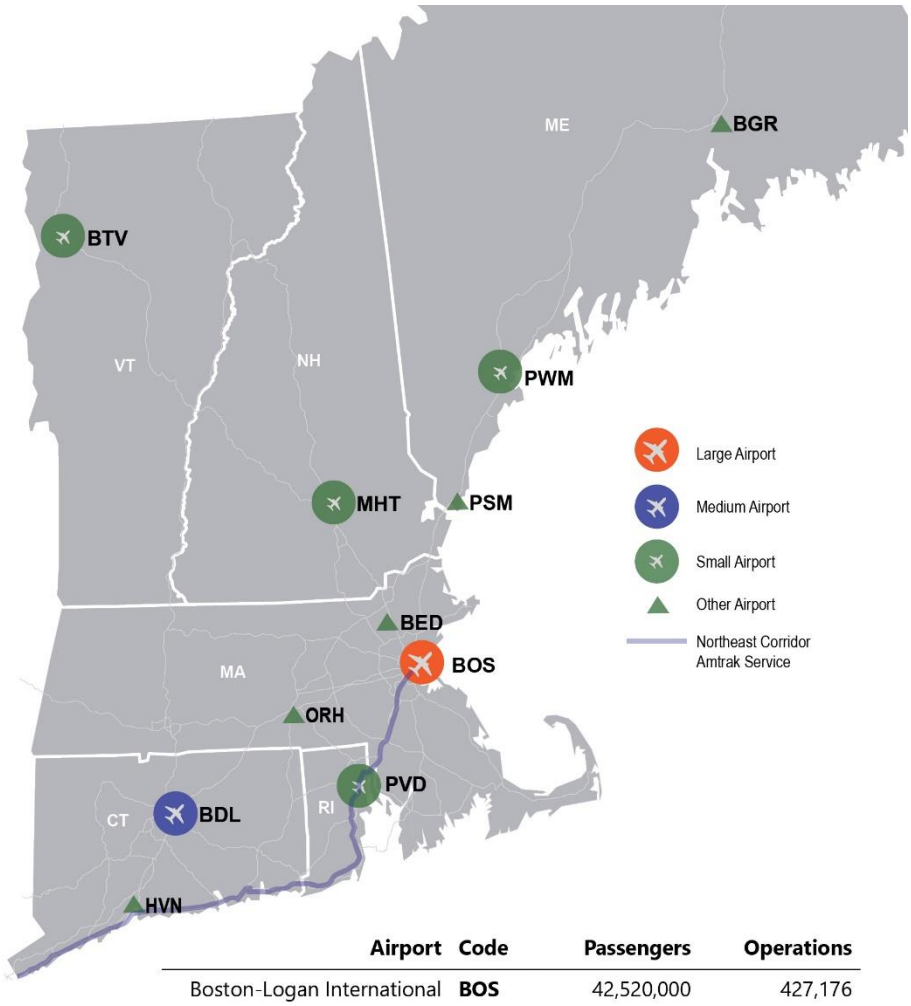
1 A regional airport is an airport serving traffic that supports regional economies by connecting communities to statewide and interstate markets.

2 A review of passenger and operations activity levels at Logan Airport is provided in Chapter 2, *Activity Levels*.

3 The *New England Regional Airport System Plan* (NERASP), which was published by the Federal Aviation Administration in 2006, includes Logan International Airport and these 10 regional airports: Bangor International, Bradley International, Burlington International, Hanscom Field, Manchester-Boston Regional, Portland International, Portsmouth International, T.F. Green, Tweed-New Haven, and Worcester Regional airports.

4 Federal Aviation Administration. 2019. Final Calendar Year (CY) 2019 Passenger Boarding Data.

Figure 4-1 New England Regional Transportation System – 2018/2019 Passenger and Operations Activity Levels at the 11 Commercial Service Airports



Airport	Code	Passengers	Operations
Boston-Logan International	**BOS**	42,520,000	427,176
T.F. Green	**PVD**	3,990,000	69,761
Bradley International	**BDL**	6,750,000	91,383
Manchester-Boston Regional	**MHT**	1,700,000	51,139
Burlington International	**BTV**	1,370,000	73,270
Portland International Jetport	**PWM**	2,180,000	58,232
Portsmouth International	**PSM**	120,000	41,545
Hanscom Field	**BED**	20,000	128,671
Worcester Regional	**ORH**	190,000	20,763
Tweed New Haven Regional	**HVN**	100,000	28,430
Bangor International	**BGR**	610,000	45,600

Source: Federal Aviation Administration (FAA). 2019. *Passenger Boarding Data*. https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

Note: Airport sizes are based on the FAA definition: Large Hub (1 percent or more of U.S. annual passenger boardings), Medium Hub (at least 0.25 percent, but less than 1 percent), Small Hub (at least 0.05 percent, but less than 0.25 percent); Other (Nonhub Primary – more than 10,000, but less than 0.05 percent).

Logan Airport serves a major domestic origin and destination (O&D)[5] market and is the primary international gateway for the region. The regional airports range in role and activity levels, from Bradley International Airport, which served over 6.6 million commercial passengers in 2018 and over 6.7 million in 2019, to Hanscom Field, which does not currently handle any scheduled commercial flights but serves as New England's largest GA facility.

In addition to Logan Airport and the 10 regional airports shown in **Figure 4-1**, a third tier of commercial airports serves relatively isolated communities or provides seasonal or niche commercial air services in New England. These airports include:

- Hyannis Airport, Martha's Vineyard Airport, Nantucket Memorial Airport, New Bedford Regional Airport, and Provincetown Municipal Airport in Massachusetts;
- Augusta State Airport, Bar Harbor Airport, Rockland Airport, and Northern Maine Regional Airport in Maine;
- Lebanon Municipal Airport in New Hampshire;
- Block Island State Airport and Westerly State Airport in Rhode Island; and
- Rutland Southern Vermont Regional Airport in Vermont.

These third-tier airports support frequent commercial service to Logan Airport and, in some instances, T.F. Green Airport during the summer months. Most of these third-tier airports are not in close proximity to Logan Airport and are isolated due to geographic factors. Because of their remoteness and/or limited market areas, many of these airports are unlikely to attract passengers that now fly from Logan Airport. Instead, many of these airports are dependent on Logan Airport for connecting services.

Strong Regional Economy Drives Growth at Logan Airport

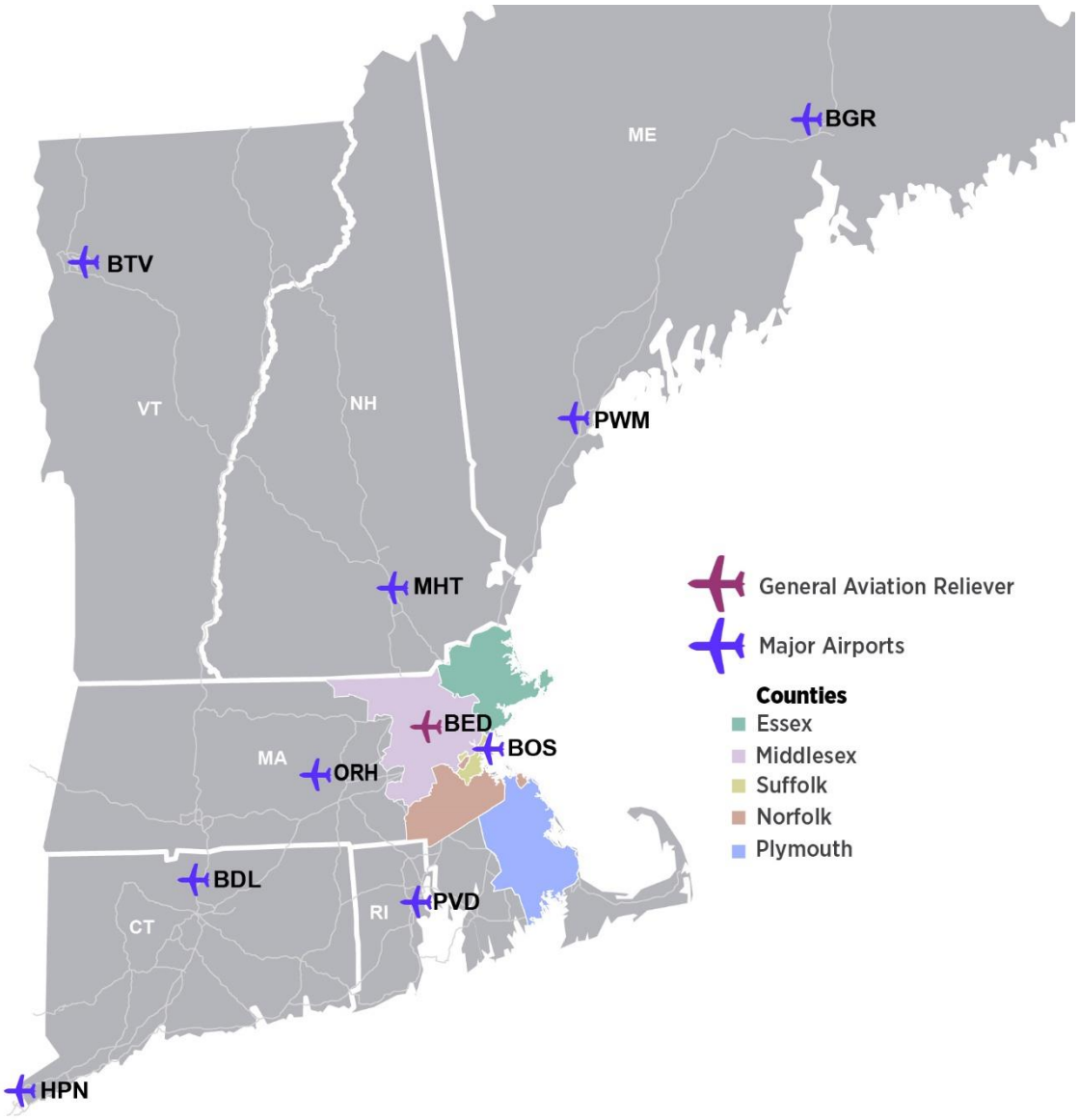
Through early 2020, the region surrounding Logan Airport had demonstrated strong economic growth over the last 10 years through early 2020. This regional economic growth was the primary drive of growth at Logan Airport and demonstrates the close relationship between the regional economy and Logan Airport activity. The 2019 Massachusetts Department of Transportation (MassDOT) Statewide Airport Economic Impact Study reported a 22-percent increase in total dollar economic output at Logan Airport from 2014 to 2019, which reflected increased contributions from visitor spending, airline and general aviation passenger traffic, new on-airport businesses, and returns on strategic investments. The robust regional economy drove Logan Airport's inbound and outbound passenger and cargo demand. Similarly, the Airport's air service enables businesses to serve customers outside of New England as well as tourists who use services provided by local businesses. Logan Airport is the predominant international airport in the region.

Logan Airport is the largest airport in the six-state New England region, which has a population of approximately 14.8 million residents (see **Figure 4-2**). The Airport is located in Massachusetts, which is home to approximately 6.9 million residents, or 46 percent of the total population of New England. The Airport serves

5 "Origin and destination" (O&D) 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.

passengers from across New England, with its primary catchment area consisting of five Massachusetts counties: Essex, Middlesex, Norfolk, Plymouth, and Suffolk (which includes the City of Boston). Approximately 4.4 million people reside in this five-county area (see **Table 4-1**).

Figure 4-2 Boston Logan International Airport Catchment Area



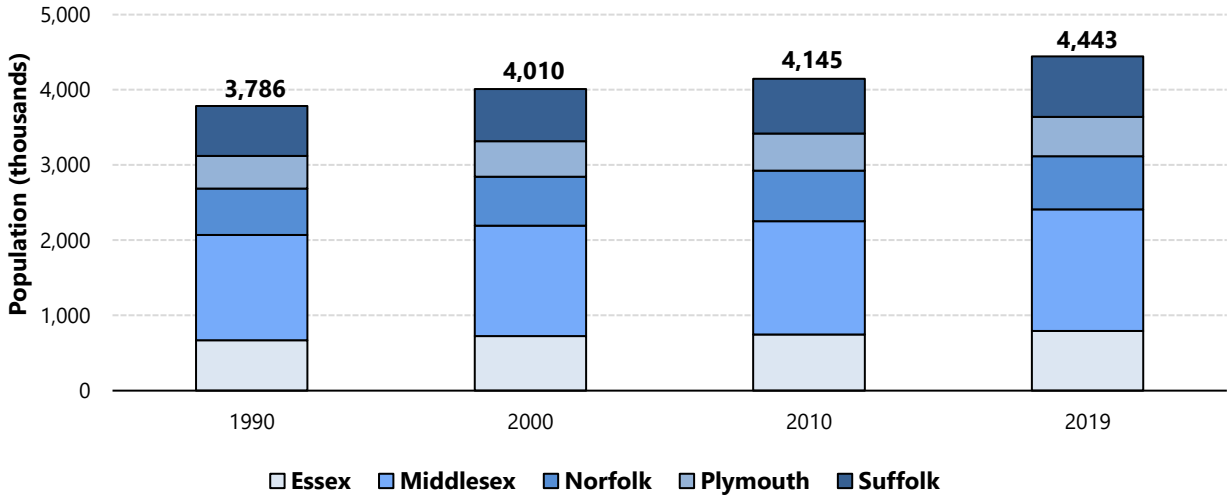
Source: VHB.
Notes: BDL – Bradley International Airport; BED – Lawrence G. Hanscom Field; BGR – Bangor International Airport; BOS – Boston Logan International Airport; BTV - Burlington International Airport; HPN – Westchester County Airport; MHT – Manchester-Boston Regional Airport; PVD – T. F. Green Airport; PWM – Portland International Jetport.

Table 4-1 Population of Logan Airport Primary Catchment Area, 1990, 2000, 2010, 2019

	Population (thousands)				Compound Annual Growth Rates		
County	**1990**	**2000**	**2010**	**2019**	**1990-2000**	**2000-2010**	**2010-2019**
Essex	671	725	746	792	0.8%	0.3%	0.7%
Middlesex	1,399	1,467	1,507	1,619	0.5%	0.3%	0.8%
Norfolk	617	651	672	706	0.5%	0.3%	0.5%
Plymouth	436	474	495	521	0.8%	0.4%	0.5%
Suffolk	663	693	725	804	0.4%	0.5%	1.2%
Boston Catchment Area	**3,786**	**4,010**	**4,145**	**4,443**	**0.6%**	**0.3%**	**0.8%**
Massachusetts	6,023	6,361	6,565	6,917	0.6%	0.3%	0.6%
New England	13,230	13,950	14,468	14,916	0.5%	0.4%	0.3%
U.S.	249,623	282,162	309,347	330,393	1.2%	0.9%	0.7%

Source: Woods & Poole Economics, Inc. 2019. Complete Economic and Demographic Data Source (CEDDS).
Note: Due to rounding, sums presented in the above figure may not add up precisely.

Figure 4-3 Logan Airport Primary Catchment Area Population Growth, 1990, 2000, 2010, 2019



Source: Woods & Poole Economics, Inc. 2019. Complete Economic and Demographic Data Source (CEDDS).

Logan Airport continued to experience rapid growth through 2019. However, beginning in early 2020 in the wake of the COVID-19 pandemic, the Airport experienced disproportionately lower passenger levels than a majority of the nation's larger airports. This dramatic drop in both domestic and international travel appears to be the result of several factors including reduced tourism, fewer students attending area colleges, restriction on business travel and the overall worldwide economic declines. Another reflection of the strength of the Airport's regional market was its relatively low unemployment rate during the reporting period. However, in 2020, it is important to note the effects of COVID-19 in Massachusetts, New England, and the entire globe in regard to economic health and payroll employment levels. The annualized Massachusetts real GDP declined 43.8 percent in the second quarter of 2020, which was greater than the nation's drop of 32.9 percent (largest in history for both). The GDP declined in Massachusetts to a greater extent than the U.S. as a whole because the Northeast was impacted earlier than other regions within the country[6] and the response of each state has been unique in terms of closures and restrictions to protect public health. Similarly, the unemployment rate in Massachusetts was among the highest of all states due to the pandemic. Although there has been some economic improvement during the third quarter of 2020, the full extent of the ongoing impact of COVID-19 will depend on future developments, including those outside the control of the airlines, related to possible increases in COVID-19 cases and/or new quarantine requirements being imposed in certain jurisdictions or other restrictions on travel, and the distribution of a vaccine, all of which are highly uncertain.

The *2020 EDR* will provide more context and understanding of the significant changes in the airline industry in general and for Logan Airport, in particular.

Prior to COVID-19, the Boston metropolitan area had consistently maintained a lower unemployment rate than that of the Commonwealth and the entire country (see **Figure 4-4**). In 2019, the Boston metropolitan statistical area had an unemployment rate of 2.6 percent, which is lower than both the rate in the Commonwealth (2.9 percent) and the country (3.7 percent). Even during the 2008/2009 economic downturn, Boston and the Commonwealth experienced unemployment rates below the national average.[7]

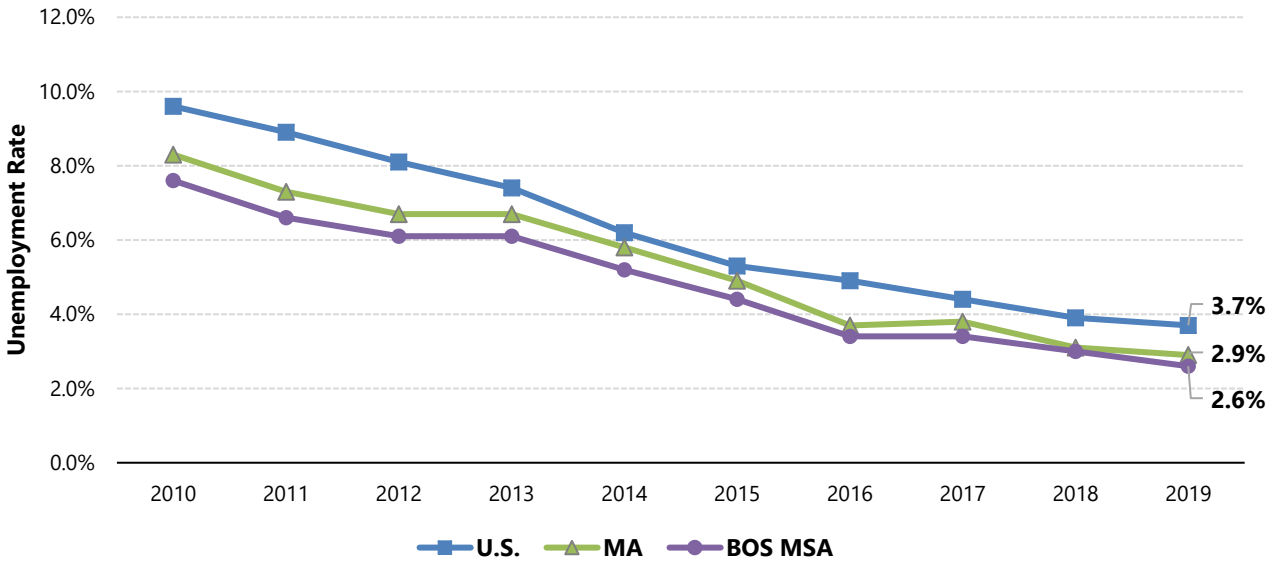
The Airport not only serves a growing population, but a high earning one as well. Per capita income in 2019 was estimated at $68,361 (2012 U.S. dollars) in the Airport's primary service area, 3.6 percent higher than the Commonwealth and 35.9 percent higher than the national average.[8]

6 MassBenchmarks. July 2020.

7 U.S. Bureau of Labor Statistics. 2020.

8 Woods & Poole Economics, Inc. 2019. ICF Analysis of Population and Personal Income Datasets.

Figure 4-4 **Unemployment Rate Comparison: U.S., Massachusetts, and Boston Metropolitan Statistical Area (MSA), 2010–2019**



Source: U.S. Bureau of Labor Statistics. 2020.

Logan Airport is a key transportation and economic resource in the New England region, the state, and the Boston metropolitan area, which is home to a broad range of industries. The industries accounting for the largest share of employees include: healthcare and social assistance; educational services; and professional, scientific, and technology services (which include Boston's thriving biotech industry).[9] In 2018 and 2019, Boston was ranked the #1 city in the U.S. for education, and #2 in healthcare.[10] The contribution of innovation and business start-ups in addition to the strong educational services and healthcare/biotech industries is also evident in the latest 2019 economic growth estimates. Furthermore, the Massachusetts economy saw 2.7 percent growth in 2019,[11] comparable to U.S. growth of 2.9 percent.[12]

9 U.S. Census Bureau via DataUSA. 2017. Boston-Cambridge, Newton, MA-NH Metro Area Profile. www.datausa.io.

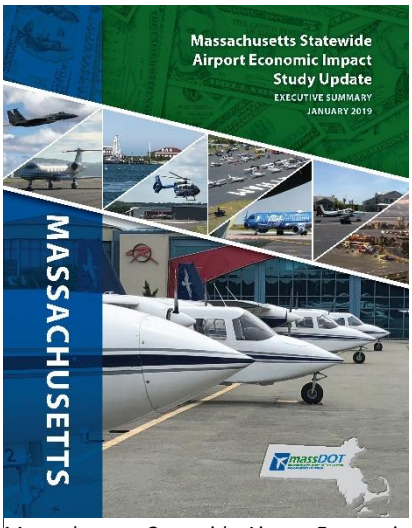
10 U.S. News & World Report 2020. Massachusetts

11 U.S. Bureau of Economic Analysis. 2020. Gross Domestic Product by State, Fourth Quarter and Annual 2019.

12 U.S. Bureau of Economic Analysis. 2020. Real Gross Domestic Product and Related Measures: Percent Change from Preceding Period.

Massachusetts Aviation Economic Impact Study

In addition to supporting the growth and economic success of the state, Logan Airport and the airport industry are important elements in the state and regional economy. The *Massachusetts Statewide Airport Economic Impact Study Update,* completed by the Aeronautics Division of MassDOT in 2014 and most recently updated in 2019,[13] assesses the contribution of the statewide airport system (the 39 public use airports, including Logan Airport) to the economy of Massachusetts. The analysis found that Massachusetts public use airports generated $24.7 billion in total economic activity (this includes on-Airport businesses, construction, visitor, and multiplier effects).[14] **Figure 4-5** shows the total impact of Massachusetts airports in terms of employment, payroll, and total output. In particular, the analysis noted that Massport's three airports make significant contributions to the regional economy, generating approximately $23.1 billion, or 94 percent of the overall economic benefits generated by the Massachusetts airport system. Specifically, Logan Airport supports over 162,000 direct and indirect jobs, while generating approximately $16.3 billion per year in total economic activity.[15] For every $100 spent by aviation-related businesses, an additional multiplier impact of $56 is created within Massachusetts, according to the study.



Massachusetts Statewide Airport Economic Impact Study Update, Report Cover. Source: MassDOT

While the economic impact of the region's airports was the focus of the study, it also noted qualitative benefits of the state's airports including:

- Providing police support and partnerships with first responders;
- Improving unmanned aircraft systems activities and training curriculums;
- Supporting aerial surveying, photography, and inspection operations;
- Conducting search-and-rescue operations;
- Supporting the U.S. military and other government operations;
- Prompting tenants/private developers to fund new airport infrastructure; and
- Stimulating workforce development challenges in the aviation industry. [16]

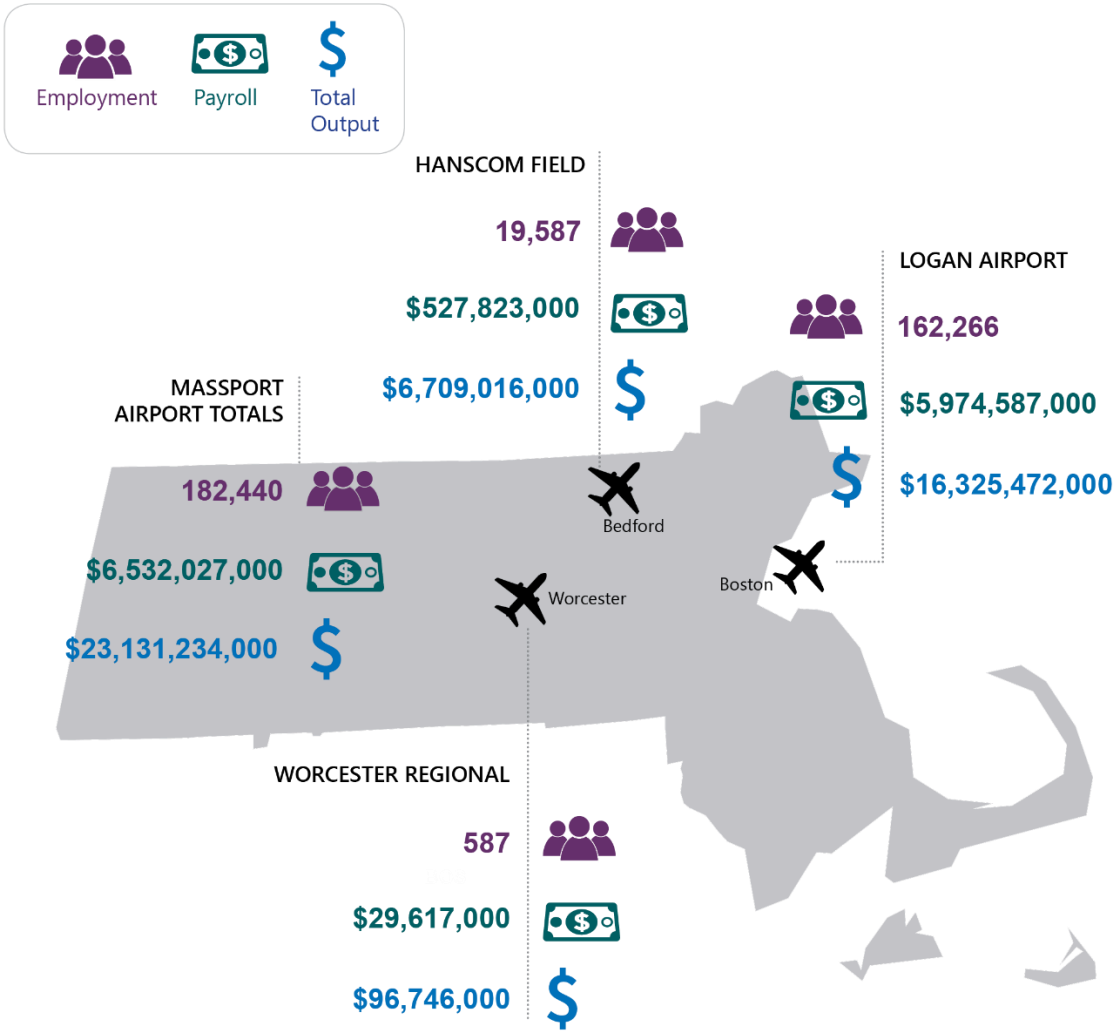
13 MassDOT. 2019. *Massachusetts Statewide Airport Economic Impact Study Update*. https://www.mass.gov/files/documents/2019/03/25/AeroEcon_ImpactStudy_January2019.pdf.

14 Multiplier effects refer to the recirculation of money in the local economy after initially being spent by the Airport, its tenants, or tourists. This recirculation increases the overall impact of the Airport's operation in the local economy.

15 MassDOT. 2019. *Massachusetts Statewide Airport Economic Impact Study Update.* https://www.mass.gov/files/documents/2019/03/25/AeroEcon_ImpactStudy_January2019.pdf.

16 *Ibid.*

Figure 4-5 Total Economic Impact of Massport Airports



Source: MassDOT, Massachusetts Statewide Airport Economic Impact Study Update, 2019.
Notes: "Massachusetts Totals" refers to the total economic output of all Massachusetts airports.

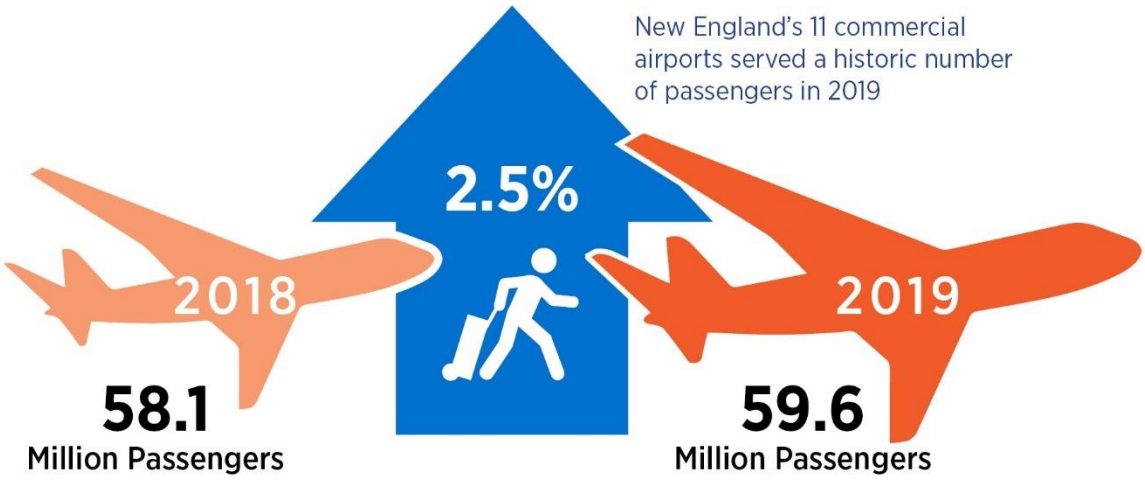
New England Regional Trends

Since 2000, as overall national and regional passenger activity levels have increased, aircraft operation activity levels have declined substantially due to trends of larger aircraft size, higher aircraft load factors, and reduced service in less profitable markets. The total number of aircraft operations at regional airports declined from 1.6 million in 2000 to approximately 1.0 million in 2018 and 2019.

Air Passenger Trends

Overall, passenger traffic at the New England airports grew at a higher rate than the overall U.S. air passenger market.[17] This New England passenger growth reflected increases at some New England regional airports and Logan Airport (**Figure 4-6**). Nationally, U.S. passenger traffic exceeded pre-2008/2009 recession levels in 2014, then continued to show growth and reached a new peak in 2019.

Figure 4-6 Passenger Activity at Logan Airport and Regional Airports in 2018 and 2019

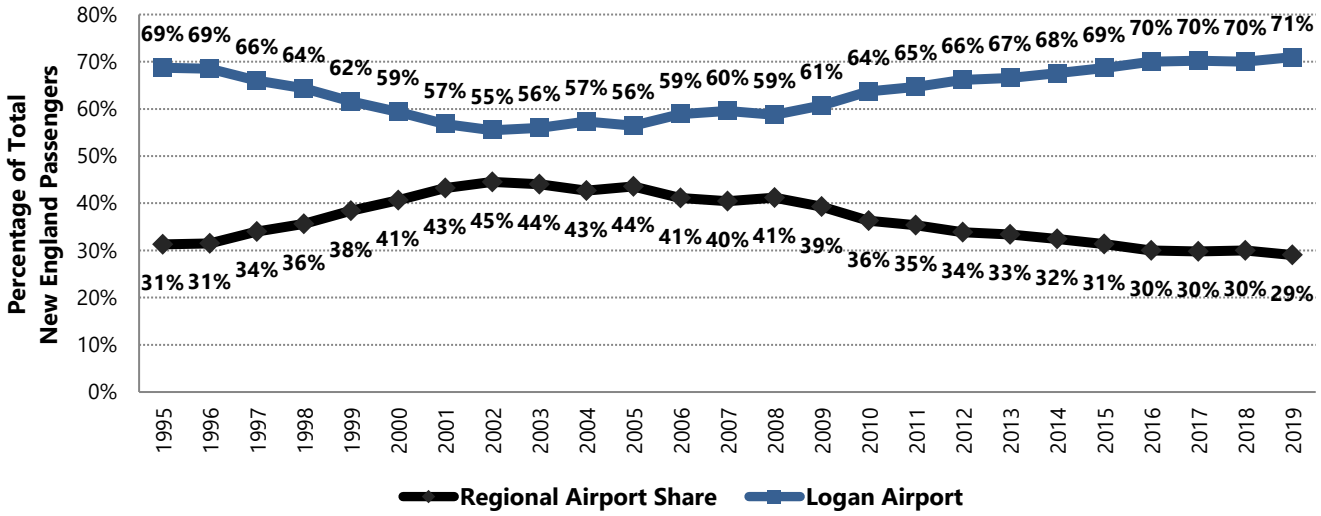


Source: VHB; Massport and individual airport data reports.

Logan Airport continued to drive regional air passenger traffic growth. In 2018 and 2019, Logan Airport saw year-to-year passenger growth of 6.6 and 3.9 and percent respectively, while total passenger traffic at other New England airports increased in 2018 by 5.3 percent, however declined in 2019 by 0.8 percent. The 10 regional airports accounted for a total of 17.2 million passengers in 2018 and 17.0 million passengers in 2019, compared to 16.3 million passengers in 2017. The 10 regional airports' share of total New England passengers decreased slightly to 29.7 percent in 2018 and 28.7 percent in 2019, compared to 29.8 percent in 2017 (see **Table 4-2** and **Figure 4-7**). The decline in passenger share at the regional airports in recent years reflects the growth of non-stop services by low-cost carriers, Delta Air Lines and jetBlue Airways' hub strategy focus at Logan Airport, and the reduction in industry-wide capacity from secondary and tertiary airports. Between 2000 and 2011, passenger traffic at secondary airports declined at an average annual rate of 1.7 percent and increased at a slower rate of 1.0 percent between 2011 and 2019. The regional airport passenger share decreased from 41.1 percent in 2006 to 29.0 percent in 2019 as low-fare options became available at Logan Airport and regional airports offered more limited services.

17 U.S. Department of Transportation. 2017. Bureau of Transportation Statistics for Total U.S. Scheduled Passenger Traffic.

Figure 4-7 Logan Airport's and Regional Airports' Share of New England Passengers, 1995-2019



Source: Massport and individual airport data reports.

Apart from Hanscom Field and Worcester Regional Airport, the regional airports closest to Logan Airport are T.F. Green Airport in Warwick, Rhode Island and Manchester-Boston Regional Airport in Manchester, New Hampshire. Because of their proximity to Logan Airport and overlapping market areas, these airports may be convenient choices for some passengers in the Greater Boston Area.

Logan Airport is well-positioned in terms of access, competitive airfares, and available air services to meet the demands of the core Boston air passenger market. Passenger traffic at T.F. Green Airport and Manchester-Boston Regional Airport peaked in 2005. After the 2005 peak, there was an industry-wide trend of airline service reductions at smaller airports. The number of passengers at T.F. Green Airport increased in 2018, but declined slightly in 2019, while the number of passengers at Manchester-Boston Regional Airport decreased in both 2018 and 2019. T.F. Green Airport and Manchester-Boston Regional Airport, however, remain well situated to serve their own catchment areas.

In 2019, the two airports served 11.8 percent (5.7 million) of the combined passengers at the three main commercial airports serving the Greater Boston area, down from 13.3 percent (5.9 million) in 2017 and a high share of 27.9 percent (8.8 million) in 2002. **Figure 4-8** depicts the historical distribution of air passengers using Logan Airport, T.F. Green Airport, and Manchester-Boston Regional Airport.

Table 4-2 Passenger Activity at New England Regional Airports and Logan Airport, 2000, 2010, 2015-2019

	Passenger Levels (millions)[1]							Percent Change	
Airport	**2000**	**2010**	**2015[2]**	**2016[2]**	**2017[2]**	**2018[2]**	**2019[2]**	**(2017-2018)**	**(2018-2019)**
Bradley International, CT	7.34	5.34	5.93	6.06	6.44	6.67	6.75	3.6%	1.2%
T.F. Green, RI	5.43	3.94	3.57	3.65	3.94	4.30	3.99	9.1%	(7.2%)
Manchester-Boston Regional, NH	3.17	2.81	2.08	2.02	1.97	1.85	1.70	(6.2%)	(7.9%)
Portland International Jetport, NH	1.34	1.71	1.73	1.79	1.86	2.13	2.18	14.8%	2.1%
Burlington International, VT	0.90	1.30	1.19	1.21	1.18	1.32	1.37	11.6%	4.1%
Bangor International, ME	0.38	0.39	0.54	0.55	0.53	0.61	0.61	10.3%	0.2%
Worcester Regional, MA	0.11	0.07	0.12	0.12	0.11	0.15	0.19	31.8%	34.2%
Portsmouth International, NH	0.07	0.00[3]	0.09	0.13	0.19	0.09	0.12	(53.3%)	39.7%
Tweed-New Haven Regional, CT	0.08	0.07	0.07	0.06	0.06	0.08	0.10	35.9%	22.7%
Hanscom Field, MA[4]	0.16	0.00[3]	0.00[3]	0.00[3]	0.01	0.01	0.02	5.7%	33.0%
Regional Subtotal	**18.98**	**15.63**	**15.30**	**15.58**	**16.29**	**17.17**	**17.03**	**5.3%**	**(0.8%)**
Logan Airport	**27.73**	**27.43**	**33.45**	**36.29**	**38.41**	**40.94**	**42.52**	**6.6%**	**3.9%**
Total	**46.71**	**43.06**	**48.75**	**51.87**	**54.70**	**58.11**	**59.56**	**6.2%**	**2.5%**

Source: Massport and individual airport data reports. Non-Massport airports may be based on U.S. Department of Transportation, T-100 Database for scheduled and non-scheduled services, if direct airport records were unavailable.

Notes: Data for Logan Airport includes domestic, international, and general aviation passengers.
Numbers in parentheses ( ) indicate negative numbers.

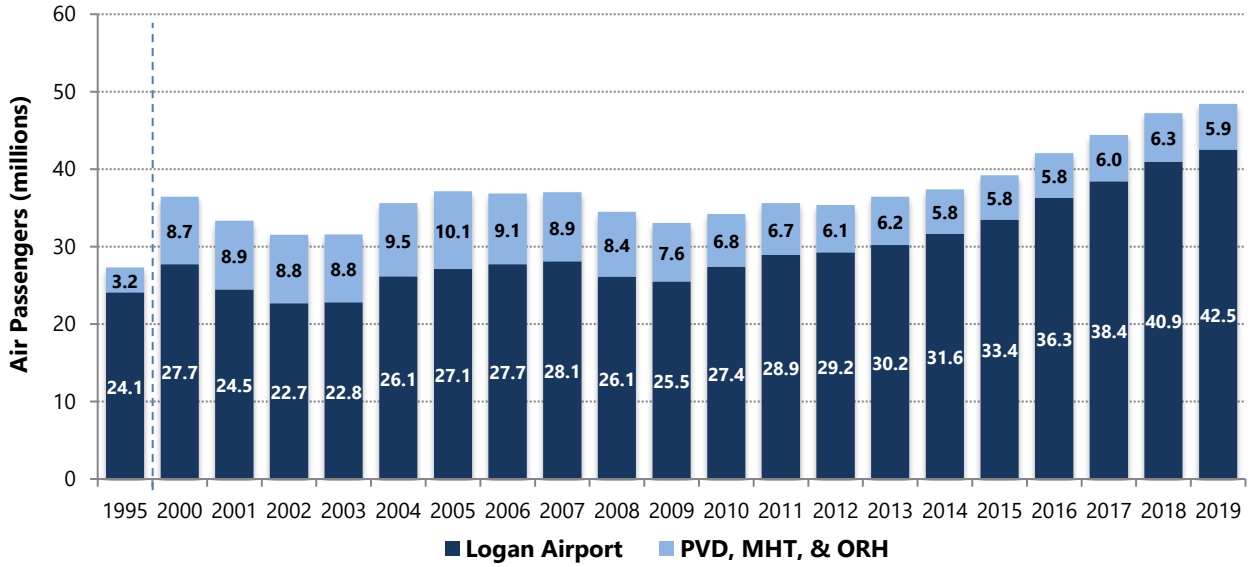
1 All passengers in millions. Passenger levels are enplaned plus deplaned passengers (where available) or FAA enplaned passengers times two.

2 Reflects most updated passenger statistics for Burlington International, Bangor International, and Portsmouth International airports based on latest available airport records as of December 2019.

3 Indicates fewer than 7,000, but more than zero scheduled commercial passengers.

4 Hanscom Field also reported annual non-scheduled passenger enplanements above 10,000 between 2011 and 2019 via U.S. DOT T-100.

Figure 4-8 **Passenger Activity Levels at Logan Airport (BOS), T.F. Green (PVD), Manchester-Boston Regional (MHT), and Worcester Regional (ORH) Airports, 1995, 2000-2019**



Source: Massport and individual airport data reports.

Aircraft Operation Trends

As shown in **Table 4-3**, total aircraft operations in the New England region (including Logan Airport) saw increases in 2018 (1,024,743 operations) and 2019 (1,036,707 operations) compared to 1,015,203 operations in 2017. An increase in aircraft operations at Logan Airport was accompanied by an overall decrease in aircraft operations at the 10 regional airports. Total aircraft operations at Logan Airport increased by 22,653 operations between 2017 and 2018 and by 3,152 between 2018 and 2019, while total operations at the regional airports decreased from 613,832 operations in 2017 to 609,531 operations in 2019.

Commercial operations in the New England region increased from 2017 to 2019 due to airlines gradually increasing capacity and services in more profitable markets, such as the Boston Metropolitan Area. These trends are seen across the industry. Combined GA operations in the New England region decreased in 2018 (309,595) compared to 2017 (326,679) but showed some recovery in 2019 (325,455 operations) compared to the prior year. The decrease in 2018 can be partially attributed to the increase in crude oil prices in 2017, which resulted in increased fuel prices. Fuel costs usually account for a significant portion of GA aircraft operating costs compared to commercial airlines, and therefore suggest an overall increased cost to GA flying. GA operations continue to be the dominant type of aircraft activity at the regional airports. GA represented 7.0 percent of aircraft activity at Logan Airport in 2018 and 2019, which primarily accommodates the region's domestic and international commercial airline operations.

Overall, the regional airports accommodated a much greater share of the region's aircraft operations than their share of air passengers due to high levels of GA traffic. In 2019, the regional airports accounted for 28.6 percent of the region's passenger traffic, but 58.8 percent of aircraft activity. On average, there were approximately 28.8 passengers per aircraft operation at the regional airports in 2018, which declined to 28.2 in

2019, compared to 96.6 (in 2018) and 99.5 (in 2019) passengers per operation at Logan Airport in their respective years, largely reflecting aircraft sizes.

Total aircraft operations in the region in 2018 and 2019 were well below the region's level of aircraft operations in 2000. Total aircraft operations decreased, falling from approximately 1.6 million operations in 2000 to just over 1 million operations in 2019. There were similarly large reductions in all three categories of activity: commercial, GA, and military. Several factors have contributed to the declining trend in commercial airline operations, including a shift to larger capacity aircraft, higher passenger load factors onboard an aircraft, and a concurrent reduction in airline services at smaller regional airports given airline network strategies evolving. Factors negatively affecting GA activity include increased fuel prices through the past decade and a declining private pilot base. Military operations have also declined, consistent with nationwide trends.

Table 4-3 Aircraft Operations by Classification for New England's Airports, 2017, 2018, 2019

	2017				2018				2019			
Airport	**Commercial[1]**	**GA[2]**	**Military[2]**	**Total**	**Commercial[1]**	**GA[2]**	**Military[2]**	**Total**	**Commercial[1]**	**GA[2]**	**Military[2]**	**Total**
Bradley International	78,435	13,233	3,006	**94,674**	78,463	13,280	2,898	**94,641**	76,352	12,652	2,379	**91,383**
T.F. Green	45,831	26,274	490	**72,595**	49,425	21,124	399	**70,948**	46,393	23,017	351	**69,761**
Portland International Jetport	32,845	18,392	568	**51,805**	35,534	20,717	675	**56,926**	35,855	21,731	646	**58,232**
Manchester-Boston Regional	37,850	13,169	697	**51,716**	36,085	15,664	423	**52,172**	34,965	15,762	412	**51,139**
Burlington	26,684	34,386	5,080	**66,150**	28,611	38,078	3,547	**70,236**	28,413	40,894	3,963	**73,270**
Bangor[5]	15,874	17,223	10,005	**43,102**	17,241	16,670	9,758	**43,669**	17,678	17,117	10,805	**45,600**
Portsmouth International	9,597	31,555	8,150	**49,302**	8,709	30,424	7,600	**46,733**	9,346	28,742	3,457	**41,545**
Tweed-New Haven	6,820	18,389	574	**25,783**	6,038	18,220	536	**24,794**	6,094	21,853	483	**28,430**
Worcester Regional	2,925	26,332	850	**30,107**	3,710	14,473	753	**18,936**	4,441	15,621	701	**20,763**
Hanscom Field [3 4]	292	127,726	580	**128,598**	286	120,945	433	**121,664**	426	127,755	490	**128,671**
Subtotal	**257,153**	**326,679**	**30,000**	**613,832**	**264,102**	**309,595**	**27,022**	**600,719**	**259,963**	**325,144**	**23,687**	**608,794**
Logan Airport	370,251	31,120	0	**401,371**	393,084	30,940	0	**424,024**	398,254	28,922	0	**427,176**
Total	**627,404**	**357,799**	**30,000**	**1,015,203**	**657,186**	**340,535**	**27,022**	**1,024,743**	**658,217**	**354,066**	**23,687**	**1,035,970**

	Percent Change (2017-2018)				Percent Change (2018-2019)			
Airport	**Commercial[1]**	**GA[2]**	**Military[2]**	**Total**	**Commercial[1]**	**GA[2]**	**Military[2]**	**Total**
Bradley International	**0.0%**	**0.4%**	**(3.6%)**	**(0.0%)**	**(2.7%)**	**(4.7%)**	**(17.9%)**	**(3.4%)**
T.F. Green	**7.8%**	**(19.6%)**	**(18.6%)**	**(2.3%)**	**(6.1%)**	**9.0%**	**(12.0%)**	**(1.7%)**
Portland International Jetport	**8.2%**	**12.6%**	**18.8%**	**9.9%**	**0.9%**	**4.9%**	**(4.3%)**	**2.3%**
Manchester-Boston Regional	**(4.7%)**	**18.9%**	**(39.3%)**	**0.9%**	**(3.1%)**	**0.6%**	**(2.6%)**	**(2.0%)**
Burlington	**7.2%**	**10.7%**	**(30.2%)**	**6.2%**	**(0.7%)**	**7.4%**	**11.7%**	**4.3%**
Bangor	**8.6%**	**(3.2%)**	**(2.5%)**	**1.3%**	**2.5%**	**2.7%**	**10.7%**	**4.4%**
Portsmouth International	**(9.3%)**	**(3.6%)**	**(6.7%)**	**(5.2%)**	**7.3%**	**(5.5%)**	**(54.5%)**	**(11.1%)**
Tweed-New Haven	**(11.5%)**	**(0.9%)**	**(6.6%)**	**(3.8%)**	**0.9%**	**19.9%**	**(9.9%)**	**14.7%**
Worcester Regional	**26.8%**	**(45.0%)**	**(11.4%)**	**(37.1%)**	**19.7%**	**7.9%**	**(6.9%)**	**9.6%**
Hanscom Field	**(2.1%)**	**(5.3%)**	**(25.3%)**	**(5.4%)**	**49.0%**	**5.6%**	**13.2%**	**5.8%**
Subtotal	**2.7%**	**(5.2%)**	**(9.9%)**	**(2.1%)**	**(1.6%)**	**5.0%**	**(12.3%)**	**1.3%**
Logan Airport	**6.2%**	**(0.6%)**	**0.0%**	**5.6%**	**1.3%**	**(6.5%)**	**0.0%**	**0.7%**
Total	**4.7%**	**(4.8%)**	**(9.9%)**	**0.9%**	**0.2%**	**4.0%**	**(12.3%)**	**1.1%**

Sources: Federal Aviation Administration (FAA) tower counts; Massport and individual airport data reports.

Notes: Ranked by commercial operations. FAA tower counts used for all airports except Logan Airport and Portsmouth International.
Numbers in parentheses ( ) indicate negative numbers. GA – General Aviation

1 May include some Air Taxi operations by fractional jet operators. FAA tower counts combine some fractional jet operations with small regional/commuter airline operations.

2 Includes itinerant and local operations at the regional airports. Military operations at Logan Airport are negligible and not included in Massport counts.

3 Value represents non-scheduled commercial activity.

4 Values sourced from *2017 L. G. Hanscom Field Environmental Status & Planning Report reflect updated* CY 2017 based on FAA tower counts since the publication of the 2017 ESPR report.

5 Reflects updated CY 2017 aircraft operation statistics based on updated FAA tower counts since the publication of the *2017 ESPR* report.

Airline Passenger Service in 2018 and 2019

Airlines can adjust service at an airport or on a specific route in two ways: by increasing or decreasing the number of flights operated and/or changing the size of the aircraft flown on the route. Changes in flight frequency and in aircraft size affect the number of seats available to passengers, also known as seat capacity. Airline services are therefore discussed in terms of seat capacity as well as the number of flight departures.[18] This section examines changes in airline departures and seat capacity and provides an overview of new and discontinued routes at the regional airports in 2018 and 2019.

Service Developments at the Regional Airports

In 2018, a total of 16 airlines and in 2019, a total of 16 airlines provided scheduled passenger service from the 10 regional airports.[19] Bangor, Burlington, Tweed-New Haven, Worcester Regional, and Portsmouth International airports saw an increase in scheduled commercial services between 2018 and 2019, while some of the other airports experienced service declines. The steep airline service cuts seen after 2007 due to the 2008/2009 economic recession and high fuel prices had largely come to an end, however, airlines continued to be conservative in growing capacity, resulting in reduced frequencies on less profitable routes or introducing larger aircraft with greater seat counts onboard (i.e. "upgauging" aircraft size) for particular routes. Much of this recent growth was lost in early 2020.

Worcester Regional Airport (ORH)

Worcester Regional Airport is located in Worcester and Leicester (central Massachusetts), approximately 50 miles west of Logan Airport. Worcester Regional Airport is an important aviation resource that accommodates both corporate GA activity and limited commercial airline services. Massport assumed operation of Worcester Regional Airport in 2000 and later acquired the airport from the City of Worcester in June 2010.

18 A departure is an aircraft take-off at an airport. While aircraft operations include both departures and arrivals, airline services are typically described in terms of departures, as the number of scheduled departures generally equals the number of scheduled arrivals. Changes in departures translate to changes in overall operations.

19 Includes Allegiant Air, which served Bangor International Airport (Orlando/Sanford and St. Petersburg/Clearwater service), T.F. Green Airport (Cincinnati, Punta Gorda, and Savannah service), and Portsmouth International Airport (Savannah, Myrtle Beach, Punta Gorda, and Orlando/Sanford service).

jetBlue E-190 aircraft at Worcester Regional Airport. Source: Massport.

Massport continues to invest in Worcester Regional Airport by modernizing the airport to better serve the commercial airline travel demands of the central Massachusetts region. Together with the City of Worcester and the Federal Aviation Administration (FAA), Massport initiated a 10-year, $100 million investment to revitalize and attract commercial operations to Worcester Regional Airport. Massport, in conjunction with the City of Worcester and other community stakeholders, actively promoted the reintroduction of scheduled airline service at Worcester Regional Airport and successfully secured new service provided by jetBlue Airways, including non-stop service to Orlando International and Fort Lauderdale-Hollywood airports. This service has proven to be popular, with jetBlue Airways achieving consistently high load factors (over 78 percent between 2017-2019[20]) and handling 132,800 passengers in 2018 and 150,200 passengers in 2019 representing a year-over-year growth of over 13 percent. In November 2019, Worcester celebrated its 750,000th passenger since the return of commercial service.

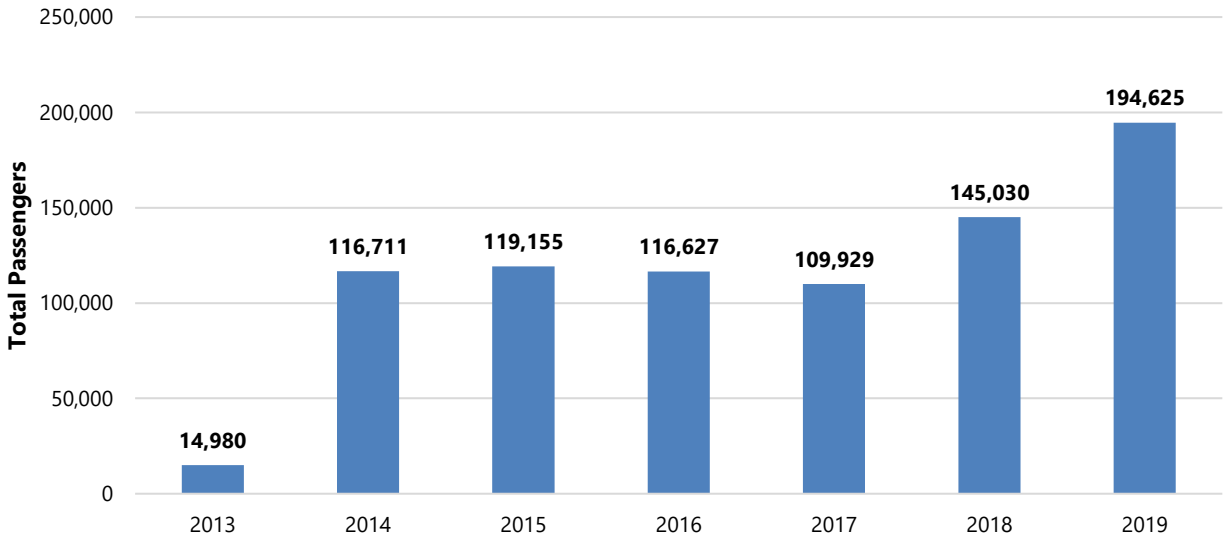
Passenger and Operation Trends

Worcester Regional Airport has experienced consecutive commercial passenger growth at an average rate of 30 percent per year since 2013, serving a cumulative total of 817,057 commercial air passengers (**Figure 4-9**). From 2017 to 2018 alone, Worcester Regional Airport saw passenger numbers increase by approximately 34 percent. Although commercial air passenger numbers have increased, GA operations and passengers have decreased. Aircraft operations declined in 2018 but recovered somewhat in 2019 (**Table 4-2** and **Table 4-3**), totaling 18,936 in 2018 and 20,763 in 2019, with GA accounting for nearly 75 percent of aircraft activity. The combined commercial and military[21] aircraft operations increased from 2017 by 18 percent in 2018, then another 15 percent in 2019 given Worcester gained new air service during the two-year period, while overall GA operations decreased (**Table 4-3)**.

20 jetBlue Airways services at Worcester Regional Airport had an average load factor of 84 percent in 2015, 81 percent in 2016, and 78 percent in 2017-2019 (U.S. Department of Transportation, T-100 Database).

21 Includes itinerant and local operations. "Itinerant" represents operations that arrive from outside the traffic pattern or depart from the airport traffic pattern. "Local" represents operations that stay within the traffic pattern airspace (non-itinerant). Definitions from FAA.

Figure 4-9 Passenger Activity at Worcester Regional Airport, 2013–2019



Source: Massport.

Service Developments

In 2019, Worcester Regional Airport was served by jetBlue Airways, American Airlines, and Delta Air Lines. jetBlue offered non-stop service to Fort Lauderdale and Orlando. Prior to the entry of jetBlue Airways in 2013, Worcester Regional Airport was served only by Direct Air, which operated regularly scheduled charter services from 2008 to 2012. When Direct Air filed for Chapter 7 bankruptcy in April 2012, Worcester Regional Airport no longer provided commercial service. After Direct Air ceased operations, Worcester Regional Airport returned to commercial service, initially with two daily scheduled departures operated by jetBlue Airways. In 2018, Worcester Regional Airport saw an average of three daily departures with the inclusion of American Airlines service (detailed below). According to OAG schedule data for August 2019, the Airport averaged five daily departures.

Massport, in conjunction with the City of Worcester and other community stakeholders, actively promoted the reintroduction of scheduled airline service at Worcester Regional Airport and successfully secured new service provided by jetBlue Airways. In November 2013, jetBlue Airways commenced non-stop services to Orlando International and Fort Lauderdale-Hollywood airports using 100-seat Embraer 190 aircraft. In 2017, jetBlue Airways maintained daily service on 100-seat Embraer 190 aircraft to Fort Lauderdale and Orlando, with no change in operations from 2016. In February 2017, jetBlue Airways announced daily service to New York JFK, which commenced in May 2018 following the completion of the CAT III Instrument Landing System (see below). American Airlines began offering flights to Philadelphia International Airport in October 2018 and Delta Air Lines initiated flights to Detroit Metropolitan Airport beginning in August 2019.

As of October 2020, in response to COVID-19, all three airlines have temporarily suspended service in and out of the Worcester Regional Airport.

Facility Improvements

As mentioned above, Massport, in collaboration with the City of Worcester and with the use of federal grants, has already initiated a 10-year, $100 million investment to revitalize and grow commercial operations at Worcester Regional Airport. Massport is committed to the long-term support of Worcester Regional Airport as demonstrated by the following initiatives:

- Massport completed construction of Worcester Regional Airport's CAT III Instrument Landing System in 2018, which has significantly improved operational conditions and enhanced safety to a level equal to that of all other commercial airports in New England. These improvements allow aircraft to land on Runway 11 during virtually all weather conditions. The CAT III system became fully operational after FAA certification in March 2018.
    - This project significantly improves Worcester Regional Airport's all-weather reliability, a long-standing impediment to greater utilization of this airport. The announced addition of new service to New York and two major airline hubs in the next several years reflects the impact of this investment.
    - This project included upgrading the Runway 11 Instrument Landing System from a CAT I to a CAT III system, and its associated required infrastructure and navigation aids, along with a partial parallel taxiway.

CAT III Instrument Landing System.
Source: Massport.

- Massport received a federal grant for two jet passenger boarding bridges through the FAA's Airport Improvement Program. The jet bridges will include ground power and preconditioned air for gates 3 and 4 in the commercial terminal building, which add environmental benefits by protecting air quality and conserving fuel.
- In January 2012, Massport approved a proposal by Rectrix Commercial Aviation Services, Inc. (Rectrix)—which was recently acquired by Ross Aviation[22] in February 2019—to develop an aircraft hangar and office space at Worcester Regional Airport. The project included 27,000 square feet of hangar and office space that house large corporate jets and a regional aircraft maintenance facility. Ross Aviation offers private jet charters and fixed base operator (FBO) services, including transient aircraft parking and fueling services, from the new facility. Construction (started by Rectrix entity) was completed in November 2015. A replacement fuel storage center ("fuel farm") commenced in 2019 and became operational in 2020. Located near the hangars, the new fuel farm makes the availability of fuel for airlines and private jets more reliable.
- In 2020, planning for Phase II of the Ross Rectrix Aviation redevelopment proceeded with the focus on siting of replacement hangars.

22 Ross Aviation already has fixed-base operations at airports in Alaska, California, Arizona, New York, and the Cayman Islands. Ross-Rectrix Aviation is now the fixed-base operator at Worcester Regional Airport, Hanscom Field, Westfield-Barnes, and Barnstable Municipal Airports in Massachusetts.

Hanscom Field (BED)

Located in Bedford, Massachusetts, approximately 20 miles northwest of Logan Airport, Hanscom Field is New England's premier facility for business/corporate aviation. Hanscom Field is a full-service GA airport that serves a critical role as a GA reliever airport for Logan Airport by accommodating a wide variety of GA activities, including corporate aviation, private flying, commuter air services, as well as charters and light cargo.

Hanscom Field accommodated 120,945 GA operations in 2018 and 127,755 operations in 2019 which is approximately four times the number of GA operations that occurred at Logan Airport. Consistent with Hanscom Field's role as a premier corporate airport, new and replacement hangars are being built to accommodate the need for corporate jet services. In addition to its role as a GA facility, in the past, Hanscom Field has also accommodated niche scheduled commercial airline services.

Passenger and Operation Trends

Passenger activity[23] at Hanscom Field is currently limited to non-scheduled passenger service, primarily because of charter flight operations. Total passenger activity has remained relatively consistent since 2013 (**Table 4-2**). Overall, aircraft operations decreased from 128,598 in 2017 to 121,664 in 2018 but increased to 128,671 in 2019. From 2005 to 2019, aircraft operations at Hanscom Field decreased by approximately 25 percent.

Facility Improvements

Massport continues to invest in Hanscom Field to improve and upgrade facilities and maintain a safe, secure, and efficient airport. Past and future capital investments ensure that Hanscom Field can continue to serve its role as a GA reliever to Logan Airport as well as a premier business aviation facility for the region. In FY 2018, Massport invested $13.4 million in airfield, terminal, equipment, and other facility improvements at Hanscom Field. These airport improvement projects are summarized in the annual reports on *The State of Hanscom*.[24]

Massport's recently completed and ongoing capital investment projects at Hanscom Field include:

- Rehabilitation of Runway 11/29 and Runway 23 safety area, beyond the runway end, and a portion of Taxiway Juliet, south of Taxiway Tango;
- Ongoing removal of vegetation obstructions on all four runway ends using recommendations in the 2014 to 2018 and 2019 to 2023 *Vegetation Management Plan* updates;
- Construction of a new Airport Rescue and Firefighting Facility (ARFF) and U.S. Customs and Border Protection (CBP) permanent facility, which opened in May 2019;
- Initiation of Massport Fire-Rescue operations in November 2015;
- Continued implementation of all aspects of Massport's *Wildlife Hazard Management Plan* for BED;
- Replacement of the field maintenance garage roof, which had reached the end of its useful life;

23 Passenger activity reports on "non-scheduled" passenger enplanements. There was no "scheduled" service or passenger activity at Hanscom Field.

24 Massport. March 2019. *The State of Hanscom*. http://www. http://www.massport.com/media/3115/state-of-hanscom-2018.pdf.

- An Airfield Geometry Study; and
- A new Boston MedFlight Leadership in Energy and Environmental Design (LEED®) certified hangar.

Upcoming projects at Hanscom Field include:

- Periodic replacement of T-Hangars in the terminal area;
- Improvements to airfield drainage;
- A replacement salt shed; and
- Updates to aging infrastructure, including new corporate hangars, and plans for replacement of hangars in the Pine Hill area and North Airfield.

In addition to Massport's investments, the Authority solicits third-party development of facilities that support and enhance Hanscom Field's role in the regional transportation system. Many of the hangars at Hanscom Field are owned or leased by tenants who are responsible for maintaining them. Ongoing third-party projects at Hanscom Field are listed below.

- In 2017, Massport continued working with General Services Administration (GSA) to acquire a parcel of land north of the airfield, which was at that time owned by the U.S. Navy. In April 2018, Massport declined the transfer of the Navy property and the land was sold to Runway Reality Ventures, LLC for $9 million in a GSA auction. Planning for redevelopment of that facility is underway.
- Massport issued a Request for Proposals (RFP) in February of 2018 for redevelopment of a site immediately west of the Navy Hangar. An Environmental Assessment (EA) for development of the property was filed for up to 110,000 square feet of corporate hangar development at this location.
- In March 2019, Massport issued an RFP for design services associated with replacement of the Pine Hill T-Hangars to a 7-acre site west of the Navy Hangar. As planned, the development will construct replacement T-Hangars and supporting taxilane with construction starting in the spring of 2021 and lasting approximately 18 months.

Bradley International Airport (BDL)

In 2011, the Connecticut Airport Authority (CAA) was established to oversee the operation and development of Bradley International Airport. The CAA, a quasi-public agency consisting of an 11-member board, manages day-to-day operations at Bradley International Airport, as well as at five GA airports in Connecticut (Danielson, Groton/New London, Hartford Brainard, Waterbury-Oxford, and Windham airports). The goal of the CAA is to transform Bradley International Airport and the five GA airports into economic drivers for the state. Bradley International Airport was previously run by a board under the Connecticut Department of Transportation (ConnDOT).

Passenger and Operation Trends

Passenger activity at Bradley International Airport increased by 1.2 percent from 2018 to 2019. This growth marked the eighth straight year of passenger traffic growth since 2012. In 2018, Bradley handled 6.67 million passengers and that grew to 6.75 million passengers in 2019. This recent peak remains below the historic peak of 7.34 million passengers in 2000 (**Table 4-2**). Aircraft operations at Bradley International Airport decreased from 94,674 in 2017 to 91,383 in 2019, however the number of passengers flown per operation at the airport

grew from 68 in 2017 to 74 in 2019, attributed by new ULCC service on relatively larger single-aisle aircraft (i.e. Frontier's A320) and enhancing passenger connectivity via legacy carrier hub cities like Detroit/Atlanta (Delta Air Lines), Charlotte/Chicago (American Airlines), and Chicago/Washington Dulles (United Airlines) on larger jet engine aircraft with fewer frequencies (**Appendix Table F-3**). From 2000 to 2019, aircraft operations decreased by approximately 46 percent.

Facility Improvements

The ongoing capital improvement program includes the following projects:

- A consolidated rental car facility;
- Ground Transportation Center (July 2019 groundbreaking);
- Demolition of the Murphy Terminal;
- Roadway demolition and re-alignment;
- Utility relocation; and
- Airfield improvements.

In March 2019, the airport published a $1.4-billion master plan that proposed a range of near-term (2017-2022), mid-term (2023-2027) and long-term (2028-2037) projects, which includes the following initiatives:

- New passenger Terminal B building;
- Reconfiguration of Schoephoester Road;
- Taxiway enhancement;
- New Baggage inspection/federal inspection service facility; and
- Additional parking.

T.F. Green Airport (PVD)

T.F. Green Airport, located in Warwick, Rhode Island, is the first state-owned and operated airport in the U.S. T.F. Green Airport is owned by the Rhode Island Airport Corporation (RIAC).

Passenger and Operation Trends

Passenger activity at T.F. Green Airport increased by 9.1 percent from 2017 to 2018 and declined by 7.2 percent from 2018 to 2019. Aircraft operations declined from 72,595 in 2017 to 70,948 in 2018 and 69,761 in 2019 (**Table 4-3**); commercial, GA, and military operations all saw reductions. The main driver behind decline in passenger data in 2019 was due to Frontier reducing its capacity footprint at T.F. Green by nearly 48 percent compared to its previous year's seat capacity, and route reductions and suspensions by Southwest Airlines and Norwegian Air. Nonetheless, T.F. Green Airport remains well situated to serve its own catchment area.

Facility Improvements/Master Plan Update

In April 2019, RIAC announced a $1.3-million update of the T.F. Green Master Plan to focus on defining plans to accommodate forecasted demand over a 20-year period. Initial workshops were held in June 2019. The long-range forecast is evaluating passenger growth from 1.9 million annual passengers to 3.7 million annual passengers and growth in annual aircraft operations from 72,000 to 89,000.

Manchester-Boston Regional Airport (MHT)

Manchester-Boston Regional Airport is in Manchester, New Hampshire, less than 50 miles north of Boston, Massachusetts. The airport is owned by the City of Manchester with airport management consisting of a five-member board. By 2005, over 4 million passengers were using Manchester-Boston Regional Airport. However, the passenger level has been declining for the past few years. In 2018, MHT served approximately 1.85 million passengers, and approximately 1.70 million passengers were served in 2019.

Passenger and Operation Trends

Passenger activity at Manchester-Boston Regional Airport continues to decrease annually as it has over the last decade, by 6.2 and 7.9 percent in 2018 and 2019 (**Table 4-2**). Overall, aircraft operations rose slightly by 0.9 percent, from 51,716 in 2017 to 52,172 in 2018 and fell by 2.0 percent in 2019 to 51,139. Although commercial and military operations decreased annually in 2018 and 2019, GA activity continued to increase (**Table 4-3).** From 2000 to 2019, aircraft operations at Manchester-Boston Regional Airport decreased by 52.6 percent.

Facility Improvements

Manchester-Boston Regional Airport completed its most recent Airport Master Plan Update in 2011. The Airport Master Plan Update provides a blueprint for development and improvement of airport facilities and infrastructure through 2030. Recent and ongoing improvement projects at the airport include:

- The Terminal Ramp Replacement Project, to rehabilitate the concrete apron areas adjacent to the terminal building, began in 2012 and was completed in 2013.
- Demolition of structures in the runway protection zone (RPZ)[25] of Runway 06 to remove buildings with usages deemed non-compatible with RPZs, as defined by the FAA. Elements of the project include demolishing the Highlander Inn and Conference Center and associated buildings.
- Upgrades to the terminal building heating, ventilation, and air conditioning (HVAC) systems to address certain deficiencies in the terminal cooling system and provide significant improvements to customer comfort levels within areas of the terminal building.
- Parking Lot A access improvements.
- Overlay of a portion of Taxiway M.

25 A runway protection zone (RPZ) enhances the safety of the area beyond the end of the runway in the event of a landing or crash beyond the runway end. Only compatible land uses are permitted within an RPZ. Land uses prohibited from an RPZ include residences and places of public assembly.

- Reconstruction of Taxiway H pavement of approximately 1,200 feet.
- Relocation of Taxiway B stub to meet design standards.

Other potential projects over the coming years include: wireless network and support services; a rental car customer service facility; security checkpoint consolidation; operations and maintenance of the in-line baggage handling system, and a passenger boarding bridge.

Portland International Jetport (PWM)

Portland International Jetport, located in Portland, Maine, is owned by the City of Portland. Passenger activity and operations increased each year between 2014 and 2019. Portland International Airport also experienced an increase in seat capacity from jetBlue Airways, United Airlines, Southwest Airlines, and Delta Air Lines.

In 2018, PWM published its Sustainable Master Plan. This master plan update was developed to "evaluate the airport's capabilities and role, to review forecasts of future aviation demand, and to plan for the timely improvement of facilities that may best meet that demand and maintain compatibility with the environs." The airport master plan is intended to "provide guidelines for the airport's overall development, maintenance, and operation for the next 20 years." In addition to new environmental goals, the Plan outlines a program of airside and landside improvements, including new passenger gates, expansion of parking, enhanced aircraft parking and de-icing facilities, cargo and GA improvements.

Passenger and Operation Trends

Passenger activity at Portland International Jetport continued to grow in 2018, with both years exceeding 2 million passengers. In 2018 and 2019, PWM served 2.1 million and 2.2 million passengers, respectively. Overall, aircraft operations increased from 51,805 operations in 2017 to 56,926 operations in 2018 and 58,232 in 2019. From 2001 (recent peak in operations) to 2019 operations at Portland International Jetport decreased by just over 48 percent.

Burlington International Airport (BTV)

Burlington International Airport, located in Burlington, Vermont, is owned by the City of Burlington. It is a joint-use civil-military airport. When comparing 2019 performance versus 2017, Burlington International Airport experienced an overall increase in passenger traffic, operations, and available seat capacity. In August 2020, the airport celebrated its 100th anniversary.

Burlington International Airport began the process of updating its Airport Master Plan, previously approved in 2012. The 2018 Master Plan update will provide an inventory of current facilities, present forecasts of growth, assess the need for additional development or rehabilitation of facilities, consider alternatives for future improvements, and provide a capital improvement plan.

Passenger and Operation Trends

Passenger activity at Burlington International Airport increased by 11.6 percent from 2017 to 2018, and 4.1 percent the year after. Overall, aircraft operations increased by 6.2 percent, from 66,150 operations in 2017 to 70,236 operations in 2018. The following year, total operations increased 4.3 percent to 73,270, led by

greater activity in GA and military **(Table 4-3)**. From 2000 to 2019, aircraft operations at Burlington International Airport decreased by 36.5 percent.

Bangor International Airport (BGR)

Bangor International Airport is located in Bangor, Maine and is owned by the City of Bangor. Bangor International Airport's overall passenger activity and operations increased in 2018 and 2019. Bangor International Airport also saw its seat capacity increase in 2018 by 10.9 percent, but then decline by 4.3 percent in 2019.

Passenger and Operation Trends

Passenger activity at Bangor International Airport increased by 10.3 percent from 2017 to 2018 and increased again by a margin of 0.2 percent from 2018 to 2019. Overall, aircraft operations increased from 43,016 operations in 2017 to 43,699 operation in 2018 and 45,600 operations in 2019. Bangor saw a net gain in both commercial and military operations between 2017 and 2019, however GA remained flat (**Table 4-3**). From 2000 to 2019, aircraft operations at Bangor International Airport decreased by approximately 45 percent.

Tweed-New Haven Airport (HVN)

Tweed-New Haven Airport, located in New Haven, Connecticut, is managed by a six-member board and is operated by the Tweed-New Haven Airport Authority. In 2018, passenger activity increased 35.9 percent while operations decreased 3.8 percent over 2017 performance. Passenger levels continued to rise by another 22.7 percent in 2019, along with total frequencies, which grew 14.7 percent. In 2019, Tweed-New Haven Airport saw a significant 31.0 percent increase in departing American Airlines seat capacity versus 2018 due to the carrier upgauging its 50-seat aircraft to 76-seat regional jets that operate to Philadelphia. American Eagle also introduced less than daily non-stop service to Charlotte in the beginning of 2019. Southern Airways Express also commenced summer seasonal service to Nantucket that began in June 2019.

Passenger and Operation Trends

Passenger activity at Tweed-New Haven Airport increased in both 2018 and 2019 compared to the previous year (**Table 4-2**). Overall, aircraft operations decreased from 25,783 operations in 2017 to 24,794 in 2018 but recovered to 28,430 in 2019 (**Table 4-3**). From 2000 to 2019, aircraft operations at Tweed-New Haven Airport decreased by approximately 54 percent.

Portsmouth International Airport (PSM)

Portsmouth International Airport, located in Portsmouth, New Hampshire, is operated by the Pease Development Authority. There have been $85 million in airfield infrastructure improvements in the past 15 years and a newly reconstructed 5.3-acre terminal apron.

Passenger and Operation Trends

Passenger activity at Portsmouth International Airport increased in 2018 to 2019 (**Table 4-2**). Overall, aircraft operations decreased from 49,302 operations in 2017 to 46,733 operation in 2018 and 41,545 operations in

2019. (**Table 4-3**). From 2000 to 2019, aircraft operations at Portsmouth International Airport has declined by 12.9 percent.

Local and Regional Long-Range Transportation Planning

A balanced regional intermodal transportation network reduces reliance on Logan Airport as the region's primary transportation hub and provides New England travelers with a greater range of viable transportation options. This section highlights efforts to promote an integrated, multimodal regional transportation network through cooperative transportation planning among transportation agencies and concerned parties.

Massport plays a fundamental role within the transportation systems of the Boston metropolitan area and New England and supports an integrated multimodal transportation policy to improve the efficient use of transportation infrastructure on both a metropolitan and a regional scale. Logan Airport functions as New England's premier commercial airport, providing an essential connection between the New England states and the global economy. Recent studies have indicated that there is a significant lack of usable aviation capacity in the coastal mega-regions[26] (although not in Boston itself) and identified a need for access to alternative forms of short-distance travel across these regions.[27]

Because the construction of a second major Boston airport has been deemed impractical, high-speed rail is increasingly viewed as a potential complement in the regional transportation system and aviation planning.[28] Given the comparable travel times, proximity of service to downtown Boston, and the potential for highly efficient electrified propulsion, high-speed rail could provide intercity connectivity for city-pairs in a corridor up to 600 miles long that would be competitive with air travel.[29] Boston's South Station is undergoing planning and design for expansion that would support current and future rail mobility in Massachusetts and along the Northeast Corridor (NEC), including future high-speed rail.

Boston and Statewide Long-Term Transportation Vision

The following sections describe long-term transportation initiatives that are part of the Boston and statewide transportation vision. Where applicable, these sections highlight Massport's commitment to and involvement in the regional transportation system.

Long-Range Transportation Plan of the Boston Region Metropolitan Planning Organization (MPO)

In July 2015, the Boston MPO published its quadrennial long-range plan for the region and its transportation network, titled *Charting Progress to 2040*.[30] The Boston MPO is updating its Long-Range Transportation Plan, *Destination 2040*, adopted in 2019. The plan focuses on six goals: safety; preservation of the existing system;

26 The coastal mega-regions are the continuously urbanized areas along the east and west coasts of the U.S. (Washington, DC, Philadelphia, New York City, Hartford, and Boston).

27 Federal Aviation Administration. 2007. *Capacity Needs in the National Airspace System 2007-2025* (commonly referred to as FACT-2). https://www.faa.gov/airports/resources/publications/reports/media/fact_2.pdf; Transportation Research Board. 2010. *ACRP Report 31: Innovative Approaches to Addressing Aviation Capacity Issues in Coastal Mega-regions.* http://rsginc.com/files/publications/24.RSG_ACRP_Report31.pdf.

28 Transportation Research Board. 2015. *ACRP 03-23: Integrating Aviation and Passenger Rail Planning*. https://crp.trb.org/acrp0715/acrp-report-118-integrating-aviation-and-passenger-rail-planning/.

29 America 2050. 2009. *Where High-Speed Rail Works Best.* http://www.america2050.org/pdf/Where-HSR-Works-Best.pdf.

30 Boston Region Metropolitan Planning Organization. *Charting Progress to 2040.* http://www.ctps.org/lrtp.

capacity management/mobility; clean air/clean communities; transportation equity; and economic vitality. It envisions the use of new technology and prioritizes safety, equitable access, mobility, and varied transportation options.

The plan also envisions the Boston metropolitan region as a continuing economic, educational, and cultural hub that contributes to a high quality of life. A high quality of life is supported by a well-maintained transportation system with safe, healthy, affordable, efficient, and varied transportation options, which in turn increase access to educational opportunities, jobs, and services. Increased opportunities to use active or high-occupancy modes of transportation can also reduce emissions of greenhouse gases and other pollutants, improving air quality and reducing the overall environmental impact attributable to the transportation sector. This vision is possible through attentive maintenance, cost-effective management, and strategic investment in the region's transportation system.

As a member of the MPO Board, Massport is an active participant in the development of the Boston MPO's long-range transportation plan. The plan's vision is broad-based; more specifically for the Airport, the long-range vision finds that support for air cargo is critical.

Focus40

Focus40 is the 25-year investment plan for the Massachusetts Bay Transportation Authority (MBTA) to meet the needs of the Boston Region through the year 2040. The Focus40 plan was released in draft form in March 2019. The plan considers all rapid transit, commuter rail, bus, ferry, and paratransit services.[31] The plan developed "a long-term investment strategy that recognizes both today's infrastructure challenges as well as the shifting demographics, changing climate, and evolving technologies that may collectively alter the role the MBTA will play in the Greater Boston of the future."[32] Massport actively participated in the Focus40 planning process to provide input on the role of Logan Airport and other Massport assets.

Massachusetts State Freight Plan

In 2016, MassDOT began the process of preparing a new, comprehensive Massachusetts State Freight Plan to look at the near-term and long-term vision for the freight system in Massachusetts. MassDOT released a final draft plan, which was approved by the Federal Highway Administration in 2017. The new plan will include all freight modes, including air, rail, truck, and maritime. This plan will help document and guide Massport's freight planning work at Logan Airport, the Port of Boston, and Massport's other assets. The plan includes the designation of new miles of Critical Urban and Rural Freight Routes to the National Highway Freight Network, improving connections to Logan Airport and Massport maritime facilities. The State Freight Plan will also assist in identifying cargo trends. For example, the 2010 Massachusetts State Freight Plan[33] found that air freight shipping will grow more quickly than any other shipping mode. Massport was actively engaged in the Statewide Freight Plan public process as a member of the leadership Freight Advisory Committee.

31 Transportation for persons with disabilities to supplement public transportation systems.

32 Massachusetts Department of Transportation. 2018. *Focus40*. https://www.mbtafocus40.com/.

33 Massachusetts Department of Transportation. September 2010. *State Freight Plan*. https://www.mass.gov/service-details/freight-plan.

Massachusetts State Rail Plan[34]

In 2010, MassDOT developed the first State Rail Plan to guide planning and investment in freight, commuter, and passenger rail services across Massachusetts. The current plan, which was issued in 2018, lays out a 20-year vision and a four-year action plan describing policies, planning, infrastructure, and investment to guide the state's rail system. Massport advised and supported MassDOT on this plan.

Regional Cooperative Planning Efforts

Massport participates in regional transportation planning efforts, which are listed below.

New England Regional Airport System Plan (NERASP)[35] – Commercial Service Airports

In fall of 2006, the FAA New England Region, in concert with the New England Airport Directors and New England State Aviation Directors, completed the NERASP.[36] The results of this study describe the foundation of a regional strategy for the air carrier airport system to support the needs of air passengers through 2020. To date, the development of that strategy has been instrumental in facilitating the investment and development of the primary commercial airport system in New England.

New England Regional Airport System Planning – General Aviation (NERASP-GA)

While preparing the 2006 NERASP study, the group recognized that a similar evaluation of GA would provide a greater understanding of infrastructure investment, as well as a common understanding of state airport systems in relation to the New England region as a whole. New England and state aviation officials, in partnership with the FAA, conducted a study of the GA airport system in New England, which includes primary commercial service airports that provide a GA service component. Assisted by this information, the FAA will be better positioned to make decisions regarding priority capital investments in the context of rising airport and aircraft operational costs, declining operational activity, aging infrastructure, and limited state funds to address improvements. The 2015 study, *The Evolving Role of our General Aviation Airports and Their Significance to New England* can be found at https://www1.maine.gov/mdot/aviation/docs/neraspgasummarybrochure.pd.pdf.[37]

Local Planning Efforts

At a local level, Massport engages with municipalities, particularly the City of Boston, to coordinate on transportation planning and land use issues. Three recent plans, released by the City of Boston and discussed below, provide a relevant policy framework.

34 Massachusetts Department of Transportation. 2018. *State Rail Plan*. https://www.mass.gov/service-details/rail-plan.

35 Information on the NERASP-GA study can be found at https://www.faa.gov/airports/new_england/planning_capacity/airport_system_plan/.

36 The *New England Regional Airport System Plan* (NERASP), which was published by the FAA in 2006, includes Logan International Airport and these 10 regional airports: Bangor International, Bradley International, Burlington International, Hanscom Field, Manchester-Boston Regional, Portland International, Portsmouth International, T.F. Green, Tweed-New Haven, and Worcester Regional airports.

37 The Evolving Role of our General Aviation Airports and Their Significance to New England - A Profile of the New England General Aviation Airports: Phase 1 Summary of Findings, September 2015, prepared for New England State Aviation Directors by Louis Berger, Airports Solutions Group, and ICF International.

Imagine Boston 2030

Imagine Boston 2030, the City of Boston's comprehensive plan, commenced in the fall of 2015 and was published in July 2017. This latest citywide plan provides a policy framework for future development in Boston, addressing key themes including: housing, mobility, climate adaptation, open space, equity, arts and culture, design and placemaking, and health. Many themes addressed in this plan will inform Massport's planning efforts. At the same time, Massport continues to engage with the City of Boston and other stakeholders to shape the implementation of relevant strategies.

GoBoston 2030

The City of Boston's long-range transportation plan, GoBoston 2030, is intended as both a visioning and action plan to guide transportation planning policy and infrastructure investments through 2030. The plan, released in 2017, expresses three guiding principles: equity, economic opportunity, and climate responsiveness, as well as primary goals and aspirational targets. These targets include expanding access to transportation options, improving safety, reducing commute times, and promoting mode shift. To meet these aspirational targets, the plan prioritizes capital investments in transportation improvements. Many of these transportation planning initiatives will impact Massport's facilities and include projects for which Massport is a key stakeholder.

Climate Ready Boston

Climate Ready Boston is an ongoing initiative to guide Boston toward a more affordable, equitable, connected, and resilient future. Components of the Climate Ready Boston plan include: updating climate projections (e.g., extreme temperatures, sea level rise, and precipitation); completing vulnerability assessments; identifying impacts to focus areas; and creating more climate resiliency initiatives through policy, planning, and financial initiatives. Climate Ready Boston is coordinated with Imagine Boston 2030 and Go Boston 2030. In December 2016, the study report was released and followed by neighborhood implementation strategies in 2017 and 2018.

Conference of New England Governors (CONEG) and the Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP)

The CONEG is a formally established body that coordinates regional policy programs in the areas of economic development, transportation, environment, energy, and health, among others. The CONEG also provides secretarial support to the separate Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP). The latter coordinates policies of common interest across borders including infrastructure, energy, the environment, economic development, and trade. The CONEG offers a forum for policy on aviation and intercity passenger rail, particularly in the northeastern coastal mega-region, as part of a larger transportation system that needs modal balance. Efficient use of this multi-state network affects the overall viability of the highway, aviation, freight, and commuter rail transportation networks that serve the region and the nation. Improved planning coordination between airports and intercity passenger rail services and related ground transportation offers the potential to achieve complementary investments in airport and rail capacity and services.

MassDOT has a representative on the NEG/ECP Transportation and Air Quality Committee, which covers regional transportation issues and infrastructure development, use, and efficiency. The NEG/ECP and other

policy decision makers throughout the region have been able to utilize strategies and information developed in the NERASP, which provides a framework for integrated regional aviation policy and planning. This organization helps to achieve a greater balance between air, rail, and auto trips, and ultimately increase overall transportation capacity without overburdening Logan Airport and the New England aviation system.

In 2015, the NEG/ECP passed and implemented the *Climate Change Action Plan,* which provided direction on reducing greenhouse gas emissions and a target range of at least 35 to 45 percent below 1990 levels by 2030.[38] Since 1973, the six New England states and the five Eastern Canadian provinces have worked cooperatively to address their shared interests across the border. Through the annual conferences of governors and premiers and discussions of joint committees, NEG/ECP encourages cooperation by:

- Implementing adaption strategies;
- Building resilience into infrastructure;
- Developing networks and relationships;
- Taking collective action;
- Engaging in regional projects;
- Undertaking research; and
- Increasing public awareness of shared interests.

Among the topics recently addressed by the governors and premiers are:

- Ensuring a clean, efficient, and reliable energy future for the region;
- Invoking energy innovation for a competitive economy via energy diversification and storage;
- Changing global energy markets and the region's energy landscape;
- Encouraging business-to-business programming;
- Cross-border partnerships for economic development and trade liberalization;
- Transportation and air quality;
- Climate change action plans and greenhouse gas emission reduction strategies;
- Energy-efficient vehicle and infrastructure technologies; and
- Cross-border mutual aid in emergency planning.[39]

38 Conference of New England Governors and Eastern Canadian Premiers. August 30, 2015. *Resolution 39-1, Resolution Concerning Climate Change*.

39 Coalition of Northeastern Governors. 2019. *New England Governors/Eastern Canadian Premiers*. http://www.coneg.org/negecp.

Regional Rail Transportation Initiatives

This section reports on recent developments and current rail service originating in Boston, the status of air-rail linkages in the NEC, and the expanding Pilgrim Partnership, which provides commuter rail between Massachusetts and Rhode Island. While information in the following subsections reflects conditions as of 2019, current conditions and ridership may differ because of service adjustments and changes in demand due to the COVID-19 pandemic.

Amtrak 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, Rhode Island; New Haven, Connecticut; Philadelphia, Pennsylvania; and Baltimore, Maryland. Logan Airport passengers can connect directly to Boston-South Station via Silver Line bus rapid transit (BRT) service or via taxi or other unscheduled mode. Amtrak operates two services between Boston and Washington, DC: the Acela Express (high-speed, limited-stop service) and the Northeast Regional (lower-speed service that makes local stops along the route). Travel times on the Acela Express range from approximately 3.5 hours from Boston to New York to approximately 6.75 hours from Boston to Washington, DC. Travel times on the Northeast Regional range from about 4.25 hours from Boston to New York to approximately 7.75 hours from Boston to Washington, DC. On weekdays, a total of 19 daily departures are offered from Boston-South Station to New York-Penn Station, of which about half are Acela Express. On Saturdays and Sundays, a total of 12 departures and 15 departures are offered from Boston-South Station to New York, respectively.[40] Most trips continue south to Washington, DC, and a smaller number of Northeast Regional trains continue further south to Central and Eastern Virginia.

System-wide Amtrak ridership was 31.7 million trips in FY 2018 and 32.5 million trips in FY 2019.[41, 42] In FY 2018, the NEC carried 12.1 million passengers on its Acela Express and Northeast Regional services, up about 1 percent from the prior year. Acela Express accounted for more than 3.4 million passengers, while the Northeast Regional accounted for 8.6 million passengers. In FY 2019, the NEC carried 12.5 million passengers on those services, up about 3 percent from the prior year. Acela Express accounted for nearly 3.6 million passengers, while the Northeast Regional accounted for approximately 8.9 million passengers. Overall NEC ridership reached a new record in 2019, surpassing record levels each of the previous three years and representing a 4 percent growth as compared to 2017 ridership. Amtrak's share of the Northeast total passenger market has increased substantially since the introduction of Acela Express service in 2000. This share may rise as Amtrak introduces new rail cars into service over the next five years, replacing the old "Amfleet I" cars on the NEC with contemporary rail equipment.[43] Amtrak will also introduce next-generation Acela rail cars (scheduled to enter service in 2021), which will increase the number of seats per train by 27 percent.[44]

40 Amtrak. 2019. Train Schedules and Timetables. https://www.amtrak.com/train-schedules-timetables.

41 Amtrak. September 2018. *Amtrak Facts*. https://www.amtrak.com/national-facts.

42 Amtrak. *FY 2019 Company Profile*. https://www.amtrak.com/national-facts.

43 Amtrak. "*Amtrak Five Year Equipment Asset Line Plan: Base (FY 2019) + Five Year Strategic Plan (2020-2024)*," https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/businessplanning/Amtrak-Equipment-Asset-Line-Plan-FY20-24.pdf.

44 Ted Mann for The Wall Street Journal. May 12, 2019. "Next-Generation Acela Rail Cars Taking Shake in N.Y. Factory." https://www.wsj.com/articles/next-generation-acela-rail-cars-taking-shape-in-n-y-factory-11557662401.

Northeast Corridor Capital Investment Program and Next-Generation High Speed Rail Plan

The *Northeast Corridor Infrastructure Master Plan*, a regional rail planning study, was released in May 2010. The Master Plan[45] documents NEC growth needs through 2030, including expanded capacity and improvements in Boston-New York and New York-Washington intercity travel times. Forecasted growth and corresponding investment needs over the 20-year study period include: a 76 percent increase in rail ridership from 13 million to 23 million,[46] a 36 percent increase in train movements from 154 average weekday to 210 average weekday, and $52 billion in additional capital investment.

To follow up on the release of the *Northeast Corridor Infrastructure Master Plan*, Amtrak also unveiled a next-generation high-speed rail proposal in September 2010, titled *A Vision for High-Speed Rail in the Northeast Corridor*. The proposal outlines a brand-new 427-mile two-track corridor running from Boston to Washington, DC, offering high-speed rail service with sustained maximum speeds of 220 mph. Operations simulations estimate 83-minute trip times between Boston and New York by 2040 and 3-hour and 23-minute trip times between Boston and Washington, DC. Under this Next-Generation high-speed rail plan, the New York City – Boston market would see a further shift in demand from auto and air to rail due to the dramatic improvements in rail travel times, and the air market between the two city-pairs is projected to be nearly eliminated by 2050.[47] This plan states that traveler's shift to high-speed rail would reduce delays on competing modes (air and auto) and the shift away from shorter and smaller intraregional flights would free up air transport capacity for higher-value transnational and international flights.[48]

An update to the *Northeast Corridor Infrastructure Master Plan* and *A Vision for High-Speed Rail in the Northeast Corridor* was released in July 2012. Since these two documents were released, the two programs have been integrated into a single coherent service and investment program, called the Northeast Corridor Capital Investment Program. The Northeast Corridor Capital Investment Program would advance the near-term projects outlined in the Master Plan to benefit the NEC, while incrementally phasing improvements to the Acela Express high-speed service to support the proposed next-generation high-speed rail.[49] The near-term NEC improvements, which include new equipment for high-speed trainsets, are identified to occur between 2012 and 2025, and the long-term Next-Generation High-Speed Rail improvements are identified to occur between 2025 and 2040. The publication of the 2012 update is the first step in "improving the NEC for all users in order to sustainably support the population and economic growth facing the Northeast over the next 30 years," but a considerable amount of additional planning work is required by all stakeholders.[50] The Federal Railroad Administration (FRA) prepared a comprehensive plan for the NEC, entitled NEC FUTURE. The FRA has worked closely with NEC states, railroads, stakeholders, and the public to define a long-term vision for the corridor's future. In July 2017, the FRA issued the Record of Decision for NEC FUTURE, which describes the

45 The NEC Master Plan Working Group. 2017. *The Northeast Corridor Infrastructure Master Plan*. https://nec.amtrak.com/resource/northeast-corridor-infrastructure-master-plan/northeast-corridor-infrastructure-master-plan/.

46 Includes ridership on Amtrak and state rail lines but excludes ridership on commuter rail lines.

47 Amtrak. September 2010. *A Vision for High-Speed Rail in the Northeast Corridor*. http://www.america2050.org/upload/2011/04/Amtrak_NECHSRReport92810RLR.pdf.

48 *Ibid.*

49 Amtrak. July 2012. *The Amtrak Vision for the Northeast Corridor: 2012 Update Report*. http://www.gcpvd.org/wp-content/uploads/2012/07/Amtrak_Amtrak-Vision-for-the-Northeast-Corridor.pdf.

50 *Ibid.*

vision.[51] The FRA will work with the NEC Commission, as well as states and railroads, on service development planning in support of this vision.

In 2017, the Rhode Island Department of Transportation (RIDOT) and Amtrak completed work on the Kingston Station Capacity Expansion project. The project included construction of a third track at Kingston Station, enabling higher speed Acela trains to safely bypass regional trains.[52] The project supports improvements to train operations and the passenger experience along the Rhode Island stretch of the Northeast Corridor.

RIDOT is also planning improvements to Providence Station, including interior and exterior station enhancements. This project will rehabilitate the station, create capacity, and provide a higher level of service to support increased demand.[53,54]

Northern New England Intercity Rail Initiative

Completed in 2016, the Northern New England Intercity Rail Initiative is an interstate, interagency collaboration between MassDOT, the Vermont Agency of Transportation, and ConnDOT "to examine the benefits, opportunities, and impacts of more frequent and higher speed intercity passenger rail service on two major rail corridors."[55] The studied corridors are the Inland Route (between South Station and Western Massachusetts via Worcester and Springfield) and the Boston to Montreal Route. The study evaluated ridership, environmental impacts, and service plans of the 470 miles along these two corridors.

Boston-South Station Expansion

In support of the Northeast Corridor Capital Investment Program, MassDOT is planning to expand Boston's South Station Rail Terminal capacity and related layover capacity to meet current and anticipated future (2035) high-speed, intercity, and commuter rail services needs on the NEC and on the MBTA's South Side commuter rail system. At present, South Station operates above its design capacity for efficient train operations and orderly passenger queuing. Operating with only 13 tracks, South Station constrains the current and future rail mobility within Massachusetts and throughout New England and the NEC.[56] The proposed South Station Expansion Project will result in a number of benefits to rail mobility, including:[57]

- Growth in passenger rail transportation along the NEC and within Massachusetts;
- Improved service reliability through updates to rail infrastructure and related layover capacity;
- Improved passenger capacity and experience of using South Station;

51 Available online at: https://www.fra.dot.gov/necfuture/project_docs/reports.aspx.

52 Amtrak. *Kingston Station Capacity Expansion.* https://nec.amtrak.com/content/kingston-station-capacity-expansion.

53 Reed, Jack. "Reed Delivers New Federal Funds for $25 Million Upgrade to Modernize Providence Rail Station," August 19, 2019. https://www.reed.senate.gov/news/releases/reed-delivers-new-federal-funds-for-25-million-upgrade-to-modernize-providence-rail-station.

54 U.S. Department of Transportation, "U.S. Transportation Secretary Elaine L. Chao Announces $272 Million in 'State of Good Repair' Program Grants 10 projects in 10 states to receive funding," August 21, 2019. https://www.transportation.gov/briefing-room/us-transportation-secretary-elaine-l-chao-announces-272-million-%E2%80%98state-good-repair%E2%80%99.

55 Massachusetts Department of Transportation. Northern New England Intercity Rail Initiative. http://www.massdot.state.ma.us/northernnewenglandrail/Home.aspx.

56 Massachusetts Department of Transportation. *About this Project.* http://www.massdot.state.ma.us/southstationexpansion/Home.aspx.

57 Massachusetts Department of Transportation. October 2017. *South Station Expansion Final Environmental Assessment and Section 4(f) Determination.* https://www.massdot.state.ma.us/southstationexpansion/Documents/FinalEnvironmentalAssessment.aspx.

- City-building in a key area of Boston; and
- Reopening of Dorchester Avenue for public use and enjoyment for the first time in decades.

The Massachusetts Environmental Policy Act (MEPA) environmental review process for this project concluded with the issuance of a Secretary's Certificate on August 12, 2016 on the Final Environmental Impact Report (FEIR).[58] The National Environmental Policy Act (NEPA) environmental review process for this project concluded with the issuance of a Final EA and Section 4(f) Determination and Finding of No Significant Impact (FONSI) on October 27, 2017.[59] Prior to issuance of the final EA, FRA and MassDOT had collected comments on the Draft EA and Draft Section 4(f) Determination for a 30-day public comment period, which concluded May 27, 2017. The draft document was circulated to agencies, project stakeholders, and individuals on the project distribution list for review and comment. Written responses to comments were provided in the FONSI.

In August 2019, the U.S. Department of Transportation awarded MassDOT a grant to improve South Station's Tower 1 interlocking, critical infrastructure that distributes trains to and from the station.[60] This early action project will provide immediate operating benefits once completed and will improve reliability and resiliency.

North-South Rail Link

Boston is served by two commuter rail systems, one extending to the north of the city, the other to the south. They are disconnected from each other, limiting north to south connectivity for the MBTA commuter rail system as well as Amtrak's intercity rail system. The North-South Rail Link is a proposed pair of rail tunnels that would connect North and South Stations in downtown Boston. MassDOT completed a Draft Environmental Impact Report (DEIR) between 1995 and 2003, but the project was not pursued at that time. MassDOT recently completed a Feasibility Reassessment for the North-South Rail Link Project to update the prior work and inform MassDOT's and state policy makers' decisions about appropriate next steps for the proposed project. The North-South Rail Link Feasibility Reassessment Draft Report was released in September 2018.[61]

58 Massachusetts Department of Transportation. June 2016. *South Station Expansion Final Environmental Impact Report.* http://www.massdot.state.ma.us/southstationexpansion/Documents/FEIR.aspx.

59 Massachusetts Department of Transportation. October 2017. *South Station Expansion Final Environmental Assessment and Section 4(f) Determination and Finding of No Significant Impact.* https://www.massdot.state.ma.us/southstationexpansion/Documents/FinalEnvironmentalAssessment.aspx.

60 Massachusetts Department of Transportation. *South Station Expansion – Study Update.* https://www.mass.gov/service-details/south-station-expansion-study-update.

61 Available online at: https://www.mass.gov/lists/north-south-rail-link-feasibility-reassessment-study-documents.

East West Rail Study

MassDOT is conducting a study to examine the costs, benefits, and investments necessary to implement passenger rail service from Boston to Springfield and Pittsfield, with the speed, frequency, and reliability necessary to be a competitive option for travel along this corridor. The study will assess up to six alternatives, which will feature a range of approaches including high speed rail and potential infill stations.[62] MassDOT released a draft of the study report in October 2020 for public comment.

Commuter Rail Services

The Pilgrim Partnership is an arrangement between the MBTA and RIDOT, under which RIDOT allocates some of its federal funding to the MBTA in return for commuter rail service between Boston and Rhode Island, and new equipment purchases and improvements to facilities in Massachusetts. The Pilgrim Partnership provides residents in the greater Boston area with improved access to jobs located in Providence. On weekdays, 20 round trips are provided between Boston and Providence. On Saturdays, nine round trips are provided between Boston and Providence, while seven round trips are provided on Sundays.[63] Expanded weekday commuter rail service to T.F. Green Airport in Warwick, Rhode Island was introduced in December 2010, which provides more options for inter-city travel for Boston residents and costs passengers $12.75 each way. Travel time between Boston and Warwick is approximately 1.3 to 1.7 hours. On weekdays, eight of the 20 daily outbound trips from Boston to Providence currently continue to Warwick as well as Wickford, Rhode Island. Expanded weekday service to Wickford, Rhode Island commenced in 2012, with a potential extension further into South County as service in the state expands and ridership grows. Additionally, RIDOT, in cooperation with the City of Pawtucket, is currently investing $40 million in the construction of a new commuter rail station in Pawtucket, Rhode Island, which will serve MBTA commuter trains. The new Pawtucket-Central Falls Commuter Rail Station is scheduled to open in 2022.

The expansion of commuter rail service into Rhode Island enhances ground access options from the Boston metropolitan area to T.F. Green Airport. The passenger catchment areas of T.F. Green Airport and Logan Airport overlap, and this commuter rail service has the potential to attract passengers in the overlapping catchment area who live along the MBTA's Providence Line to T.F. Green Airport.

Massachusetts officials cleared funding hurdles in April 2019 to begin expansion of MBTA commuter rail service to major cities like New Bedford and Fall River (located within approximately 50 miles of Boston and without regular commuter rail service to the capital) via the South Coast Rail corridor. This two-phase, $3.42-billion construction will extend the existing Middleborough Line from Boston and bring six new stations and two new layover facilities, with a target date for operational service for Phase I ($1.05 billion) by late 2023.[64] The first phase includes reconstruction of existing tracks and upgrades to the Middleborough Secondary track. The second phase of the project will provide service to the South Coast through the Town of Stoughton. Some

62 Available online at https://www.mass.gov/east-west-passenger-rail-study

63 Massachusetts Bay Transportation Authority. 2019. Providence/Stoughton Timetable. https://www.mbta.com/schedules/CR-Providence/timetable.

64 Chris Lisinski, State House News Service, for WBUR. 2019. "Permit, Funding Hurdles Cleared for South Coast Rail." https://www.wbur.org/bostonomix/2019/04/23/south-coast-commuter-rail-permit-funding.

service will begin in 2023, but several portions of the project are expected to reach completion no sooner than 2030.

In October 2019, the MBTA launched a one-year pilot to test weekday commuter rail service to Foxboro. The MBTA operated 10 daily round-trips as part of the Service Pilot, with 500 parking spaces available at Foxboro Station. The MBTA suspended the service pilot in 2020 as part of service changes across the commuter rail system as a result of the COVID-19 pandemic.

MBTA Rail Vision

The MBTA's Rail Vision planning study identified cost-effective strategies to transform the MBTA's existing Commuter Rail system to better support improved mobility and economic competitiveness in the Boston region. The study evaluated how best to serve riders and determined which investments support the final vision. The project identified and evaluated six alternatives for a future MBTA rail system to understand the costs, ridership potential, and operational feasibility of these alternatives. The results of this evaluation were presented at a public meeting in late 2019. The evaluation, enhanced by broad public conversation in 2019, will inform the ultimate vision for the future of the MBTA rail system.[65]

Other Regional Cooperative Planning Efforts

Recognizing that Logan Airport is a substantial trip generator and key transportation resource in the metropolitan area, Massport participates in several interagency transportation planning forums that strive to enhance a variety of travel modes.

South Boston Waterfront Transportation Plan

Massport, the City of Boston, MassDOT, and the Massachusetts Convention Center Authority all participate in and manage the new sustainable transportation plan for the South Boston Waterfront. The resulting plan, featuring an unprecedented collaboration of the private and public sectors, is a blueprint for improving the growth of the Waterfront, proposing solutions to meet the growing and changing transportation needs of the district, and improving the public realm of the area, all while preserving the quality of life for the surrounding neighborhoods. The plan benefitted from the input of area stakeholders through five community meetings and more than 50 outreach meetings throughout the process. Massport continues to engage in implementation of recommendations from this plan, in collaboration with other agency partners.

The City of Boston published the *Coastal Resilience Solutions for South Boston* report in October 2018. This plan presents near-term and long-term visions for reducing risk due to sea level rise and coastal flooding in South Boston. This is the second neighborhood coastal resilience plan to come out of the Climate Ready Boston initiative.

Water Transportation Advisory Council and Ferry Study

Massport participates in planning for water transportation in the Boston region as a member of the Water Transportation Advisory Council, convened by MassDOT. Massport also participated in a comprehensive study of commuter, recreational, and landside access needs to support water transportation in Boston Harbor, which was completed in April 2019. The study identified three potential corridors for water transportation service and

65 Massachusetts Bay Transportation Authority. *Rail Vision.* https://www.mbta.com/projects/rail-vision.

developed business plans to assess ridership and implementation feasibility. Massport served on the steering committee for this study led by Boston Harbor Now with support from MassDOT and other stakeholders.

Boston Metropolitan Planning Organization (Boston MPO)

Massport supports multimodal transportation planning and improved integration of its facilities with Boston area transportation through its permanent voting membership on the Boston MPO and by providing input on the Boston MPO's policy and programming decisions.

MPOs are established in large metropolitan areas and are responsible for conducting a federally required cooperative, comprehensive, and continuous metropolitan transportation planning processes. Based on this planning, MPOs determine which surface transportation system improvements will receive federal capital (and occasionally, operating) transportation funds. The Boston MPO´s mission is to establish a vision and goals for transportation in the region and then develop, evaluate, and implement strategies for achieving them.

Massport plays an active role on the MPO's decision making board, participating in policy decisions related to the *Long-Range Regional Transportation Plan,* and project programming for the Transportation Improvement Program. The MPO also guides the work conducted by Central Transportation Planning Staff (CTPS) via its Unified Planning Work Program. CTPS also supports Massport's ground transportation planning initiatives.

Metropolitan Area Planning Council (MAPC)

Massport is also an ex-officio member of the Executive Committee of MAPC, a regional planning agency that serves the people who live and work in the cities and towns of Metropolitan Boston. The MAPC mission is to promote smart growth and regional collaboration, which includes protecting the environment, supporting economic development, encouraging sustainable land use, improving transportation, ensuring public safety, advancing equity and opportunity among people of all backgrounds, and fostering collaboration among municipalities. MAPC membership includes 101 municipal government representatives, 21 gubernatorial appointees, 10 state officials (including Massport), and three City of Boston officials. A staff of approximately 40 individuals supports the Council and its Executive Committee of 25 selected members.

This Page Intentionally Left Blank.

5

Ground Access to and from Logan Airport

This *2018/2019 Environmental Data Report (EDR)* was filed during the ongoing COVID-19 worldwide pandemic. Flights in and out of Logan Airport are dramatically reduced and passenger levels dropped over 90 percent during spring 2020. As a result, there are far fewer aircraft operations and passengers and a dramatic drop in overall Logan Airport activity. While activity levels began a slow recovery in mid-summer 2020, the ongoing wave of COVID-19 cases has resulted in continued historically low levels of activity, with a full recovery years away. As of October 2020, total flight operations for the year were down by 50 percent and passenger levels were down by about 70 percent compared to January through October 2019.

As a result, while passenger numbers are beginning a slow recovery, there are far fewer passengers and employees traveling to and from Logan Airport and there is far less roadway congestion both in Boston and the metropolitan area. In addition, the public's interest in using high-occupancy vehicle (HOV) transportation services like buses, rapid transit and commuter rail, has also been significantly affected by concerns about COVID-19. Within that context, Massport continues to evaluate and plan for the recovery of air passenger activity and remains committed to implementing the broad range of ground access strategies that are outlined throughout this chapter. Massport continues to carefully review both on and off-Airport activity levels and will adjust its ground access programs to align with ridership levels. The schedule for HOV and ground access improvements will be adjusted due to the current conditions. Massport remains committed to implementing project-related mitigation strategies, as documented in Chapter 9, *Environmentally Beneficial Measures and Project Mitigation Tracking*.

Key Findings for 2018 and 2019

- Boston Logan International Airport (Logan Airport or the Airport) continues to be one of the top U.S. airports in terms of high-occupancy vehicle (HOV) and transit mode share. The Massachusetts Port Authority (Massport) promotes numerous HOV, transit, and shared-ride options to improve on Airport roadway and curbside operations, alleviate constraints on parking, and improve customer service. Key initiatives include:
  - A goal to double Logan Express ridership, by the time Logan Airport reaches 50 million passengers, by expanding parking, frequency, and facility upgrades;
  - Massport plans to purchase eight Massachusetts Bay Transportation Authority (MBTA) Silver Line buses as part of a forthcoming MBTA procurement; and
  - Implementation of a RideApp (e.g., Uber and Lyft, previously referred to as transportation network companies [TNCs]) management plan to reduce congestion on-Airport, including a focus on ride rematch[1] and shared-ride.
- Average weekday on-Airport vehicle miles traveled (VMT) increased by about 4.5 percent from approximately 196,500 in 2017 to 205,344 in 2018. Between 2018 and 2019, average weekday on-Airport VMT increased by 2.2 percent to 209,900. The change in average daily traffic can be attributed primarily to the increases in air passenger activity, passenger drop-off/pick-up, cargo, and non-aviation related Airport uses. It is anticipated that the Airport activity and on-Airport VMT will be lower in 2020 due to the impact of COVID-19.
- RideApp transactions totaled more than 7 million in 2018 and increased to over 8 million in 2019, growth of over 16 percent. RideApps are impacting other access modes to the Airport and contributing to on-Airport congestion.
- Partially due to the continued rise of RideApp activity, the number of black car limousines and scheduled van seats coming to the Airport dropped by nearly 23 percent from 2017 to 2019. Taxi dispatches declined 14 percent in 2018 compared to 2017 and 7 percent between 2018 and 2019. MBTA Blue Line ridership increased by 4 percent between 2017 and 2018 and declined by 29 percent the following year.
- In 2017, the Logan Airport Parking Freeze was amended to allow for an increase of up to 5,000 on-Airport commercial parking spaces, which was the first step in allowing for the construction of additional parking to reduce drop-off/pick up modes and alleviate constrained on-Airport parking conditions. In January 2020, Massport received the Final Environmental Impact Report (FEIR) certificate from the Secretary of the Executive Office of Energy and Environmental Affairs (EEA), completing the environmental review process for the construction of 5,000 additional parking spaces. While the project has completed the environmental review process, construction of these additional parking spaces has been deferred.
- Massport has committed to a goal of 35.5 percent HOV by 2022 and 40 percent by 2027. Based on the results of the 2019 Air Passenger Ground-Access Survey, HOV mode share has reached 40.4 percent, exceeding both near-term and longer-term goals. COVID-19 has had a range of impacts on ground transportation, particularly on the use of ground-access HOV modes. While it is anticipated that the HOV mode share will drop as a result of COVID-19 over the short term, Massport remains committed to meeting the HOV mode share goals going forward.

1 Rematch allows drivers who are dropping off to instantly pick up another passenger without needing to circle the Airport or leave empty.

Introduction

Massport has a comprehensive, multi-pronged, trip reduction strategy to diversify and enhance ground transportation options for passengers and employees traveling to and from Logan Airport. The ground transportation strategy is designed to offer passengers traveling to and from Logan Airport with a choice of HOV, transit, and shared-ride options that are convenient and reliable, and that reduce environmental and community impacts.

The strategy also aims to provide sufficient on-Airport parking for air passengers choosing automobile access modes and/or who have limited HOV options. Improving the multimodal connectivity of the Airport can provide traffic and environmental benefits by reducing vehicle trips, VMT, and greenhouse gas (GHG) emissions associated with travel to and from Logan Airport. The cost, speed, convenience, safety, and reliability of all modes of transportation connecting to the Airport affect how passengers and employees choose among these access modes. Offering a range of ground access options also improves customer service for air passengers, employees, and other Airport users.

Along with reducing congestion and limiting impacts to the environment:

- Massport continues to invest in and operate Logan Airport with a goal of increasing the HOV mode share—the number of passengers (and Airport employees) arriving by transit or other HOV and shared-ride modes. Measures implemented by Massport to increase HOV use include initiatives related to pricing (incentives and disincentives), service availability, service quality, infrastructure improvements, marketing, and traveler information.
- Massport aims to reduce the number of private vehicles that access Logan Airport and, in particular, reduce the associated environmentally undesirable drop-off/pick-up modes, which generate up to four vehicle trips instead of two and contribute to greater terminal area roadway congestion.[2]
- Massport actively manages parking supply as another strategy to reduce drop-off/pick-up modes by promoting long-term rather than short-term parking (thus reducing the number of daily trips to Logan Airport); supporting efficient use of parking facilities; providing good customer service; and complying with the provisions of the Logan Airport Parking Freeze.[3]

In addition to highlighting more recent changes to ground transportation services, operations, and pricing, this chapter reports on ground access conditions and activity levels in 2018 and 2019, which are compared to past conditions. Activity levels include measures of ridership on various ground access modes and traffic volumes. The chapter provides an overview of parking demand and its impacts under Logan Airport's constrained parking supply. Regional transportation efforts related to the Airport, as well as planning efforts

2 If an air passenger is dropped off when departing on an air trip and is picked up upon 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, taxi, RideApp, or a black car limousine and the vehicle may not carry a passenger during all segments of travel to and from Logan Airport.

3 310 Code of Massachusetts Regulations 7.30; 40 Code of Federal Regulations 52.1120.

to diversify transportation options in the New England region (primarily through high-speed, commuter, and passenger rail), are discussed in Chapter 4, *Regional Transportation*.

Ground Transportation Modes of Access to Logan Airport

The Logan Airport EDRs and Environmental Status and Planning Reports (ESPRs) provide over three decades of tracking and reporting on ground access and ground transportation at the Airport. Air passengers have a variety of options for getting to Logan Airport, including:

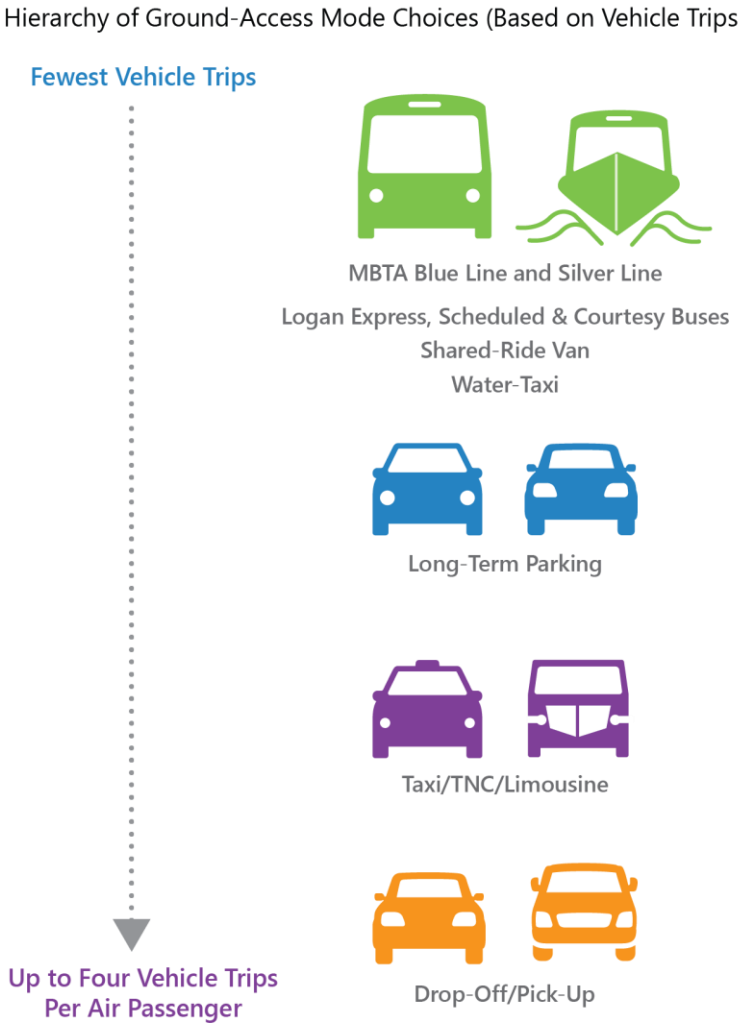
- Public transit (Massachusetts Bay Transportation Authority [MBTA] Blue Line subway, Silver Line bus rapid transit, other MBTA buses, and water transportation);
- Logan Express scheduled bus service;
- Scheduled buses and vans;
- Courtesy shuttle buses;
- Charter buses;
- Private automobiles;
- Unscheduled private black car limousines and vans;
- Taxis;
- Rental cars; and
- RideApps, such as Uber and Lyft.

Mobile application ride-booking services, such as Uber and Lyft, are increasingly becoming a mode of choice for ground access at airports throughout the country. In February 2017 (pursuant to Massachusetts state law, An *Act Regulating Transportation Network Companies* (Bill H.4570), and Massport *Rules for Safe and Efficient Operation of TNCs at Logan Airport* and in cooperation with state regulators), Massport began allowing RideApps to pick up arriving air passengers after entering a dedicated RideApp pick-up lot. This service was tracked for reporting beginning in 2017 and contributed an estimated 15,000 vehicle trips per day, excluding deadhead trips (deadhead trips are those trips to or from the Airport that do not contain a passenger). RideApp operations at the curb and on roadways are affecting ridership on HOV services and contributing to on-Airport congestion. Massport provided a comprehensive plan to address these impacts in the *2017 ESPR*, and a status update of that plan is provided later in this chapter.

Transit, HOV, and shared-ride modes are designed for efficient transport of multiple travelers. With a higher occupancy and bi-directional transport of air passengers (arriving at and departing from the Airport), the number of vehicle trips per passenger for these modes is comparatively low. On the other hand, private vehicles that park at the Airport (or an off-Airport lot) generate a single vehicle trip to the Airport for the departing air passenger and a single vehicle trip from the Airport for the arriving air passenger. Even less desirable, vehicles that do not remain on the Airport for an air passenger's trip duration, such as those private vehicles that have dropped off an air passenger at the curb, generate a trip to and a trip from the Airport for a departing air passenger and an additional two trips for the arriving passenger. Taxis, RideApps, and black

car limousines also produce deadhead trips when they depart Logan Airport empty after dropping off an air passenger (particularly in the morning) or arrive at the Airport empty to pick up air passengers. As **Figure 5-1** shows, when measured in terms of vehicle trips generated, the most environmentally desirable mode is HOV (transit and shared-ride), followed by drive-and-park, with the least desirable modes being drop-off and pick-up.

Figure 5-1 Ground Access Mode Choice Hierarchy



Source: VHB.
Notes: Short-term parking is included under "Drop-off/Pick-up."
Rental cars are included in the "Long-Term Parking" category.

2018/2019 On-Airport Vehicle Traffic: Volumes and Vehicle Miles Traveled (VMT)

This section reports on Logan Airport's traffic-related activity for 2018 and 2019, specifically:

- Gateway traffic volumes; and
- On-Airport VMT calculations.

Massport's leadership in and commitment to developing, promoting, and providing alternative means of ground transportation for access to and from Logan Airport are key to reducing gateway traffic volumes and on-Airport VMT. The diverse range of environmentally responsible ground transportation modes by which air travelers, employees, and other Airport users can access the Airport reduces reliance on automobile travel, minimizes traffic congestion, and contributes to improvements in air quality.

Gateway Traffic Volumes

Gateway roadways are defined as access points to and from Logan Airport, which primarily include Route 1A to and from the north, the Sumner and Callahan Tunnels (Route 1A to and from the south), the Interstate-90 Ted Williams Tunnel ramps (east/west), and Frankfort Street/Neptune Road. **Figure 5-2** shows the roadway infrastructure at Logan Airport in 2018 and 2019.

Data Collection and Annual Average Daily Calculation Method

All of the Airport's gateway roadways are equipped with permanent traffic count stations, as part of the Airport-wide Automated Traffic Monitoring System (ATMS). These stations provide data to calculate:

- Annual average daily traffic (AADT);
- Annual average weekday daily traffic (AWDT); and
- Annual average weekend daily traffic (AWEDT).

Since these data are automatically collected continuously throughout the year, seasonal adjustment factors are only necessary when significant gaps in the data occur (typically due to equipment failure/malfunction or construction activity). Seasonal adjustment factors, when used, are generally based on a combination of the monthly variation of counts from other ATMS stations or of the same station in the previous year.

Annual Average Daily Activity Levels

Table 5-1 summarizes the average daily gateway traffic volumes at Logan Airport for the years 2011, 2017 (the two most recent ESPR submission years), and 2018 through 2019. A full table with average daily gateway traffic volumes data for years 2010 through 2019 is found in Appendix G*, Ground Access to and from Logan Airport*. It includes AADT, AWDT, AWEDT, and annual air passengers, for reference.

The AADT entering and departing Logan Airport via its gateway roadways increased by 5.4 percent and 4.5 percent between 2017 and 2018 and between 2018 and 2019, respectively. The change in average daily traffic can be attributed primarily to:

- A 6.6- and 3.9-percent increase in air passenger activity in 2018 compared to 2017 and 2019 compared to 2018, respectively;
- The impact of RideApps, whose activity increased 16 percent between 2018 and 2019; and
- A general increase in drop-off/pick-up activity by private and commercial automobiles.

Although daily traffic volumes on the Airport roadway system have been increasing, it is important to place this growth in the context of overall Airport activity and Massport's efforts to promote HOV ground access. In 2019, air passenger volumes were approximately 47 percent higher than in 2011; while AADT volumes grew at approximately 38 percent over the same time period.

Growth in gateway traffic volumes is also partially attributable to growth in non-air passenger activity such as air cargo, aviation services, and other Airport activities. Even accounting for both non-air passenger and air passenger activity, the fact that gateway traffic volume is growing at a lower rate than air passenger volume reflects the use of HOV modes to access the Airport.

Table 5-1 Logan Airport Gateways: Annual Average Daily Traffic, 2011, 2017–2019

	AADT		AWDT		AWEDT		Annual Air Passengers	
Year	Volume	Percent Change	Volume	Percent Change	Volume	Percent Change	Level of Activity	Percent Change
2011	99,449	5.6%	104,863	6.0%	85,879	4.0%	28,907,938	5.4%
2017	124,646	4.1%	130,601	3.9%	109,723	5.0%	38,412,419	5.9%
2018	**131,432**	**5.4%**	**137,105**	**5.0%**	**117,425**	**7.0%**	**40,941,925**	**6.6%**
2019	**137,331**	**4.5%**	**143,189**	**4.4%**	**122,678**	**4.5%**	**42,522,411**	**3.9%**

Source: Massport.
Notes: Gateway roadways include access to/from: Route 1A (including the Sumner and Callahan tunnels), I-90/Ted Williams Tunnel, Frankfort Street/Neptune Road, and Maverick Street.
AADT Annual average daily traffic.
AWDT Annual average weekday daily traffic.
AWEDT Annual average weekend daily traffic.

FIGURE 5-2 Logan Airport Roadway Network | **2018/2019 Environmental Data Report**

Parking Garages

Terminal Buildings

Airport Roadways

0 450 900 1800 Feet

On-Airport VMT

On-Airport VMT is calculated based on the total number of miles traveled by all vehicles on the Logan Airport roadway system. VMT is an important metric because it is used to calculate motor vehicle air quality emissions. It is also one indication of the level of traffic on roadways in specific areas and at specific times.

Calculation Method and Model Description

Over the past nine years, Massport has modeled on-Airport VMT using a VISSIM[4] microsimulation model, an upgrade to a previous model developed in 1994. This year, Massport created a new spreadsheet-based volumetric model to estimate on-Airport VMT. This model takes advantage of the data available through Massport's various transportation and transaction-based data collection systems. There are several benefits of using the new model over the previous VISSIM VMT model. The most noteworthy benefit the model brings is that it is based on actual hourly ground access activity data instead of depending on gross factors. For example, the previous VISSIM model used mode share data collected as part of the Logan Air Passenger Ground Access Survey to project the number of vehicles by mode to estimate the morning and evening peak period volumes and resultant VMT. Temporal factors were then applied to these volumes to project VMT during other analysis periods. While this method provides a reasonable estimate of general ground access modal use, it did not account for air passenger mode choice fluctuation throughout the day; which occurs due to a number of factors such mode availability and other time-based factors. Using hourly data does a better job of modeling these nuances and provides a more accurate estimate of air passenger ground access activities for all time periods.

To ease the transition, the new model is built around the previous roadway network and link configuration developed for the VISSIM model. The new model was run using 2017 data and the results were compared to the 2017 VISSIM model output. The VMT results from the new model (using 2017 data) were similar to the previous 2017 VISSIM and fell within a reasonable margin of error, given the change in methodology.

Estimated VMT Calculations and Modeling Results

Consistent with previous years, the following specific time periods were analyzed for 2018 and 2019:

- Morning peak hour;
- Evening peak hour;
- Highest consecutive 8-hour (High 8-Hour); and
- Average weekday VMT.

Table 5-2 summarizes the VMT estimates for Logan Airport-related traffic from 2018 and 2019 and provides 2011 and 2017 data for historical context. Absent any major shift in traffic volumes entering the gateways, the change in VMT is expected to generally mirror the change in traffic volume. The change in average weekday

4 PTV America. 2011. Verkehr In Städen Simulationsmodell – VISSIM version 5.40 [computer software].

VMT between 2017 and 2018 was approximately 4.5 percent, while gateway volumes increased by 5.4 percent. Weekday VMT increased by 2.2 percent between 2018 and 2019, while gateway traffic volume increased 4.5 percent. These increases can be attributed to three primary factors: increased air passenger demand, increased commercial and private drop-off/pick-up activity by passengers, and a change in general travel patterns to and from and within the Airport over the past several years. In 2018, Massport relocated the RideApp Pool from the Red Lot to the taxi pool location on Porter Street and moved the Taxi Pool to the Blue Lot (next to the Logan Office Center). In 2019, Massport relocated the gas station from Terminal E to the Red Lot, locating it closer to the Rental Car Center (i.e., rental car returns) and the limousine, taxi, and RideApp pools. Each of these relocations generally improved on-Airport routing by shortening the distances between key, active nodes. Details of the 2018 and 2019 VMT modeling results are presented in Appendix G*, Ground Access to and from Logan Airport*.

Table 5-2 Airport Study Area Vehicle Miles Traveled (VMT) for Airport-Related Traffic, 2011, 2017-2019

Analysis Year[1]	AM Peak Hour	PM Peak Hour	High 8-Hour	Average Weekday	Average Weekday Percent Change
2011	8,391	10,978	76,920	167,647	2.9%
2017	9,844	12,009	86,678	196,503	11.1%
2018	**9,452**	**12,447**	**91,450**	**205,344**	**4.5%**
2019	**9,477**	**12,577**	**91,336**	**209,900**	**2.2%**

Source: VHB and Massport.
1 Data provided for 2011 and 2017 used the previous VISSIM model. Data from 2018 to 2019 used the new VMT model discussed above.

2018/2019 Ground Transportation Ridership and Activity Levels

This section of the chapter:

- Provides an overview of transportation services available to Logan Airport users from the Boston metropolitan area;
- Reports on 2018/2019 ridership levels and recent historical trends;
- Reports on Massport's progress in meeting ground access goals; and
- Describes Massport's cooperative planning ventures with other transportation agencies in Massachusetts.

Logan Express, MBTA Transit, and Water Transportation Modes

Annual ridership levels for HOV, transit, and shared-ride transportation modes serving Logan Airport are summarized in **Table 5-3**.

Logan Express Bus Service

In 2018/2019 Massport provided frequent, scheduled, express coach bus service to Logan Airport for air passengers and Logan Airport employees from suburban park-and-ride lots in Braintree, Framingham, Woburn, and Peabody. Full-service bus terminals and secure parking were provided at all four locations. In addition, a pilot urban service from Back Bay was introduced. No customer parking is provided at the Back Bay location. **Figure 5-3** depicts Logan Express bus locations with respect to the regional transportation network.

Table 5-3 compares 2018 and 2019 ridership on Logan Express to the previous respective years. Notably, Logan Express passenger ridership from suburban park-and-ride locations increased by over 5 percent between 2017 and 2018 and over 14 percent between 2018 and 2019. Between 2017 and 2018, there continued to be a decrease in ridership to and from Back Bay, which has been a noted trend since the MBTA's Government Center Station reopened; however, Back Bay ridership grew in 2019, attributable to incentives such as security line preferences and discounted fares (free to Downtown Boston/$3 to the Airport). A detailed breakdown of Logan Express ridership is presented in Appendix G, *Ground Access to and from Logan Airport*.

At suburban locations, Logan Express operated daily between 4:00 AM to 11:00 PM, with some earlier and later bus service provided that varies by location and day of the week. The round-trip adult fare is $22, with reduced fares offered to seniors; children under the age of 17 ride for free. Parking rates at the facility park-and-ride lots were $7 per day. At the start of 2019, scheduled half-hour frequencies were provided between the Braintree and Framingham locations and Logan Airport on weekdays and Saturday/Sunday afternoon to evening. Starting mid-2019, Braintree Logan Express service increased frequency to three trips per hour. One-hour frequencies were provided at these locations on Saturday and Sunday mornings. Woburn provided half-hour bus service on weekdays and Sunday afternoon to evening, and hourly service all day Saturday and on Sunday mornings. Scheduled bus service to and from Peabody was provided hourly. In 2019, Massport increased total Logan Express seat capacity by over 10 percent.

While this report focuses primarily on activity in 2018 and 2019, as a result of the pandemic, a number of Massport's broad HOV and trip reduction measures temporarily changed in 2020. The COVID-19 pandemic has had a substantial impact on Massport operations including a dramatic reduction in the number of daily flights and an approximately 90 percent reduction in passenger levels in spring 2020. As a result, while operational and passenger levels have recovered somewhat as of mid-2020, overall, there are far fewer passengers and employees traveling to and from Logan Airport and there is far less peak period roadway congestion both in Boston and the metropolitan area. In addition, the public's interest in using HOV transportation services like buses, rapid transit and commuter rail, has also been significantly affected by concerns about the COVID-19 virus. Therefore, a dramatic decline in ridership was experienced on the Logan Express buses during the early months of the pandemic. Logan Express schedules were adjusted in March

2020 in response to the COVID-19 pandemic and this decline in ridership. As such, the schedule for implementing the action plan below has been adjusted. As a point of reference, Logan Express ridership is 84 percent lower in October 2020 compared to the same month the previous year.

Within that context, Massport continues to evaluate and plan for the recovery of air passenger activity and remains committed to implementing the broad range of ground access strategies that were outlined in the *2017 ESPR*. The schedule for those services and planned improvements has, however, been adjusted due to the continuing operational constraints and revenue reductions. Massport continues to carefully review both on and off-Airport activity levels and will adjust its ground access programs to align with ridership levels. Future EDRs will provide detailed updates on all service adjustments and activity levels.

Table 5-3 Annual Ridership and Activity Levels on Logan Express, MBTA, and Water Transportation Services, 2011, 2017–2019

	MBTA Transit		Logan Express Bus			Water Transportation[1]	
Year	**Blue Line[2]**	**Silver Line[3]**	**Air Passengers**	**Employees**	**Total**	**MBTA Ferry**	**Private Water Taxis**
2011	2,277,311	900,359	649,609	536,513	1,186,122	33,403	58,879
2017	2,197,783	N/A	1,140,235	695,504	1,835,736	7,424	83,689
2018	**2,295,250**	N/A	**1,182,097**	**750,574**	**1,932,671**	**6,609**	**77,813**
2019	**1,635,147**	N/A	**1,381,700**	**824,084**	**2,205,784**	**7,467**	**61,071**
Percent Change (2017-2018)	**4.4%**	**N/A**	**3.7%**	**7.9%**	**5.3%**	**(11.0%)**	**(7.0%)**
Percent Change (2018-2019)	**(28.8%)**	**N/A**	**16.9%**	**9.8%**	**14.1%**	**13.0%**	**(21.5%)**

Source: Massport.
Notes: Numbers in parentheses ( ) represent a decrease in annual ridership.
N/A Not available.
1 MBTA Ferry includes the Harbor Express F2/F2H service, Hingham/Hull-Logan and Long Wharf. Service from Quincy Fore River was suspended in 2013. Private water taxis include: City Water Taxi and Rowes Wharf Transport.
2 Airport Station fare gate entrances facing Logan Airport only. Station activity is not limited to only Airport-related passengers.
3 Boardings at Logan Airport. Silver Line boardings have not been available since 2013.

Massport has a goal to double Logan Express ridership from 2 million to 4 million passengers, by the time Logan Airport reaches 50 million passengers, thereby reducing VMT, congestion, and air quality emissions. At suburban locations, Massport proposes the following action plan:

- Increase Braintree Logan Express service from two to three trips per hour (implemented in May 2019 but reduced to hourly service in March 2020 due to the impacts of COVID-19).
- Add about 1,000 additional spaces to the Framingham garage (permitting completed in 2020 however construction is deferred).
- Provide security line priority status to Logan Express Back Bay riders (implemented in 2019; this service is temporarily suspended due to COVID-19).
- Marketing to support Logan Express strategy and increase ridership.
- Implement Logan Express electronic ticketing (pending).
- Evaluate new Logan Express suburban locations, with a plan to open at least one new site (deferred due to COVID-19).
- Explore RideApp Last Mile connections.
- Continue to monitor parking capacity at all Logan Express sites.

Massport has provided Logan Express service from Woburn for many years, however in early December 2020, this service was suspended. Roughly 90 percent of the users were Logan Airport employees who will now be accommodated on-Airport.

Until March 2020, the Back Bay Logan Express operates daily trips between the hours of 5:00 AM and 10:00 PM. One-way fares in 2017 were $7.50 per passenger. Riders with a current, valid MBTA pass received reduced $3 fare. Massport recently implemented a number of improvements to the service with a focus on boosting urban Logan Express ridership and is considering the following additional services:

- Change pick-up/drop-off location from Copley to Back Bay Station (implemented in 2019);
- Discount one-way fare from $7.50 to $3.00 (implemented in 2019);
- Provide free service from Logan Airport (implemented in early 2019);
- Pilot priority security line status for riders (implemented in 2019);
- Marketing campaign to support increased ridership (ongoing);
- Implement Logan Express electronic ticketing (pending); and
- Implement a second urban Logan Express service at North Station. (Although Massport procured buses for this service in 2020, due to COVID-19, this new service has been deferred.)

The service enhancements implemented at Back Bay reversed the downtrend in ridership at this location, however, this service is currently on-hold due to the drop in ridership.

Rapid Transit

Table 5-3, previously shown, compares 2018 and 2019 ridership on rapid transit to prior years. Almost 15 percent of passengers with trip origins in Boston, Cambridge, Brookline, and Somerville used MBTA public transit to travel to the Airport via the Blue Line or Silver Line. Both services are important for reducing automobile travel to the Airport; as survey results show, over three quarters of users of the Blue Line and Silver Line indicated that their alternative mode of travel to Logan Airport would have been a taxi or RideApp, or that they would have been dropped off at the Airport by private vehicle. **Figure 5-4** illustrates the public transportation options to access Logan Airport.

The data indicate that overall ridership on the Blue Line has increased by 4.4 percent between 2017 and 2018. There was a significant decrease of 29 percent in Blue Line fare gate activity between 2018 and 2019. As noted in previous reports, fare gate data do not distinguish between Airport related riders and East Boston users, nor do they distinguish between Logan Airport air passengers and employees. Therefore, Airport passenger ridership levels on the Blue Line cannot be directly identified.[5] However, the decline in Blue Line activity may be related to the significant increase in Back Bay Logan Express ridership and continuing growth in RideApp activity given that the Blue Line ridership catchment area overlaps with both the Back Bay Logan Express and general RideApp catchment areas.

On the Silver Line, bus service from Logan Airport is free and has eliminated the need for fareboxes; thus, 2018 and 2019 figures of passenger boardings are not available. Transfers between the Silver Line and the Red Line at South Station are free. Eliminating fare collection allows all three doors to be used for boarding, thus improving Logan Airport's curb operations and schedule adherence, and reducing idling.

In 2018, Massport funded mid-life rebuilds of four additional Silver Line buses (four buses were also rebuilt in 2017). The mid-life rebuild extends the useful life of each vehicle by approximately eight years. This will allow the MBTA to maintain reliability and quality of operations along the Silver Line today while initiating the procurement process to acquire new vehicles in the future. Eight Silver Line buses were purchased in 2005 by Massport and are operated by the MBTA, with Massport paying operating costs. Since the existing Silver Line fleet is reaching the end of its useable life, the MBTA and Massport have been working together on a plan to procure a replacement Silver Line fleet. As part of this initiative, Massport and the MBTA developed a *Silver Line Capacity Study* to determine the mid-term fleet and facility needs as well as to assess other ways to improve the reliability and capacity of the system. Based on this analysis, the MBTA plans to procure 45 new enhanced electric hybrid vehicles to replace the existing fleet of 32 dual mode vehicles. Massport plans to purchase eight MBTA Silver Line buses as part of a forthcoming MBTA procurement.

5 Based on automated fare gate entrance counts, approximately 50 percent of entrances occur via the Bremen Street Park fare gates at Airport Station. Based on Massport curbside observations, approximately 45 percent of Airport Station entrances are attributable to Airport users.