



Massachusetts Port Authority

ENVIRONMENTAL NOTIFICATION FORM

Logan Airport Parking Project

Boston-Logan International Airport
EAST BOSTON, MASSACHUSETTS

PREPARED BY



IN ASSOCIATION WITH

LeighFisher, Inc.

March 2017



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

March 31, 2017

The Honorable Matthew Beaton, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900,
Boston, Massachusetts 02114

Re: Logan Airport Parking Project

Dear Secretary Beaton,

On behalf of the Massachusetts Port Authority (Massport), we are pleased to submit for your review an **Environmental Notification Form (ENF)** for the **Logan Airport Parking Project**. As you are aware, Massport is proposing to add 5,000 new on-Airport commercial parking spaces at Logan Airport. The additional parking spaces are being planned as one element of Massport's overall strategy to reduce local and regional vehicle miles traveled (VMT) and vehicle air emissions associated with ground access to Boston-Logan International Airport. As has occurred in the past, the existing constrained parking supply at Logan Airport is causing an increase in the drop-off/pick-up activity at the Airport. Drop-off/pick-up are the least desirable mode choices from an environmental and ground access perspective since they can generate up to four vehicle trips (and their associated emissions per air passenger trip) as compared to two vehicle trips for passengers who drive and park at the Airport.

In advance of submission of this ENF, Massport has been coordinating with the Massachusetts Department of Environmental Protection (MassDEP) to amend the existing Logan Airport Parking Freeze regulation (310 CMR 7.30) to allow for more on-Airport parking. This Parking Project can only move forward if the regulation is amended. This ENF is filed concurrent with MassDEP's issuance of a draft regulation to amend the Logan Airport Parking Freeze and is intended to help inform that process by describing how the addition of new on-Airport parking would be implemented.

The Logan Airport Parking Project is currently in the conceptual design phase. As described in this ENF, Massport initially considered six on-Airport sites for additional parking. With input from key community stakeholders, we have selected two sites to construct the additional commercial parking spaces. Since no single on-Airport site could efficiently accommodate all proposed 5,000 spaces, Massport plans to construct additional parking by adding spaces atop the existing Economy Garage and above the existing Terminal E surface parking lot. Potential phasing of the Project is still being developed, however Massport's goal is to have all 5,000 additional commercial parking spaces in service between 2022 and 2024.

This ENF describes the need for additional on-Airport parking, the benefits of reduced drop-off/pick-up activity, anticipated air quality improvements, and likely permit requirements. The Logan Airport Parking Project exceeds the Massachusetts Environmental Policy Act (MEPA) threshold for mandatory preparation of an Environmental Impact Report (EIR). A proposed scope for the Draft EIR is included as Attachment 3 for the reviewer's convenience. Massport will also coordinate with the Federal Aviation Administration (FAA) on the level of review required under the National Environmental Policy Act (NEPA).

The public comment period for the ENF will begin on April 5, 2017 the publication date of the next *Environmental Monitor*, and close on April 25, 2017, with the Certificate to be issued on May 5, 2017. All parties on the distribution list will be sent a printed copy of the ENF. The ENF will be available for inspection at a number of public libraries (as shown on the ENF distribution list) and on Massport's website (www.massport.com/environment). An ENF public consultation meeting will be held at 6:00 PM on April 20th, at East Boston High School, 86 White Street in East Boston.

We look forward to your review of this document and to close consultation with you and other reviewers in the coming weeks. Please feel free to contact me at (617) 568-3524, if you have any questions.

Sincerely,

Massachusetts Port Authority



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

cc: Distribution List (ENF Attachment 4)
H. Morrison, D. Gallagher, S. Sleiman - Massport
Richard Doucette - FAA
Beth Card - MassDEP

LOGAN AIRPORT PARKING PROJECT FACT SHEET
ENGLISH & SPANISH

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LOGAN AIRPORT PARKING PROJECT FACT SHEET

General Project Information

The Massachusetts Port Authority (Massport) has developed, and continuously implements, a comprehensive strategy to diversify and enhance ground transportation options for air passengers and employees to and from Boston-Logan International Airport (Logan Airport or Airport). Massport's ground transportation strategy is designed to maximize the use of high occupancy vehicle (HOV), transit, and shared-ride modes for travel to and from Logan Airport, as well as to minimize vehicle trips and provide convenient transit, shuttle, and pedestrian connections to the Airport. Massport has implemented multiple programs to reduce the number of private vehicles that access Logan Airport, and, in particular, to reduce the environmentally undesirable drop-off/pick-up modes,¹ which generate up to four vehicle trips per passenger.

Massport operates Logan Airport with a goal of maintaining and increasing HOV modes. Logan Airport continues to rank at the top of U.S. airports in terms of HOV/transit mode share, and current HOV mode share is close to 30 percent.² Measures implemented by Massport to increase HOV use include a blend of strategies related to pricing (incentives and disincentives), service availability, service quality, marketing, and traveler information. Because of the diverse market segments of the Logan Airport air passenger traveler, no single measure will accomplish the goal to increase HOV mode share. Section 2.2.1.1 of Attachment 2, *Project Narrative*, lists several of Massport's efforts to actively promote HOV/shared-ride modes.

Despite Massport's industry-leading efforts promoting and providing transit, shared-ride, and other HOV mode use, the number of private passenger vehicle trips to the Airport continues to increase as Logan Airport air traveler numbers increase. In particular, the constrained parking supply at Logan Airport, which results from the Logan Airport Parking Freeze (the Parking Freeze),³ has the unintended consequence of causing an increase in environmentally harmful drop-off/pick-up vehicle trips. Survey data collected from the 1970s to the present at Logan Airport have consistently shown that when demand for parking starts to exceed supply, approximately 75 percent of would-be parkers shift to drop-off/pick-up travel modes that generate higher vehicle miles traveled (VMT) and associated vehicle emissions and exacerbate vehicle congestion on the Airport's terminal area roadways and at the terminal curbs during peak travel periods.

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

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

3 310 Code of Massachusetts Regulations 7.30 and 40 Code of Federal Regulations 52.1120.

Airport commercial parking differs from other urban parking facilities in two important respects, which cause the drop-off/pick-up phenomenon. First, airport parking spaces turn over much less frequently; thus, more parking capacity is required at an airport to support the same number of vehicles than in an urban/workplace setting. Second, as a general matter, commuters traveling daily to an urban work location will not turn to drop-off/pick-up modes as an alternative means of travel if parking is constrained. Hence, in an urban core such as Boston, parking constraints tend to force commuters to travel by less environmentally harmful HOV transportation alternatives. Unlike urban commuters, air travelers do not go to the airport on a daily basis, so drop-off/pick-up modes are more practical options. Accordingly, constrained parking at Logan Airport can have the unintended negative environmental consequence of increased VMT and air emissions.

To address operational and environmental problems caused by the existing constrained parking supply, Massport developed a Long-Term Parking Management Plan, which was first published in the *2012/2013 Logan Airport Environmental Data Report (EDR)*.⁴ The Long-Term Parking Management Plan sets out a multi-element strategy for efficiently managing parking supply, pricing, and operations. Massport's goals are to maximize transit/shared-ride HOV ground access, while reducing parking demand and minimizing drop-off/pick-up activity.

As one element of its comprehensive strategy to maintain a balanced transportation system, Massport proposes to build 5,000 additional on-Airport commercial parking spaces at Logan Airport. The new spaces are intended to accommodate existing and anticipated air passenger demand for parking at the Airport while minimizing drop-off/pick-up activity, and will be planned, constructed, and operated in an environmentally sensitive manner. As demonstrated in this Environmental Notification Form (ENF), the new parking spaces would reduce drop-off/pick-up activity, thus reducing regional air passenger-related VMT and associated vehicle emissions.

The environmental analysis contained in the ENF presents the regional air quality benefits of reducing airport-related VMT by adding 5,000 on-Airport commercial parking spaces to be in service between 2022 and 2024.⁵ The analysis shows that, compared with not adding 5,000 more spaces (the No-Build Alternative), the added long-term parking spaces would decrease drop-off/pick-up travel and associated VMT. This would result in an over 25 percent annual reduction of carbon dioxide (CO₂), volatile organic compounds (VOC), and oxides of nitrogen (NO_x) in 2022 and an approximately 20 percent annual reduction in 2030 as compared to the No-Build Alternative.

The Massachusetts Department of Environmental Protection's (MassDEP) 1989 amendment of the Logan Airport Parking Freeze, the most recent substantive amendment to the Parking Freeze, increased the number of commercial parking spaces allowed at Logan Airport and was based on a similar premise. The U.S. Environmental Protection Agency (EPA) approval of the 1989 MassDEP Parking Freeze Amendment described the phenomenon, stating:

4 Massport. 2014. *Boston-Logan International Airport 2012/2013 Environmental Data Report*. <https://www.massport.com/environment/environmental-reporting/>. Accessed February 5, 2016.

5 If the Parking Project advances, a portion of the 5,000 parking spaces could go into service before 2024. Massport is currently evaluating potential phasing options. It is anticipated that all 5,000 spaces would be operational between 2022 and 2024.

“The existing parking freeze has had the unanticipated effect of vastly increasing passenger drop-off and pick-up, resulting in twice as many vehicle trips as would occur if each passenger drove to the Airport. The increase of... commercial spaces at the Airport, coupled with the program for exchanging employee spaces for commercial spaces and with continuing improvements in alternate means of access to the Airport, should lessen the drop-off/pick-up phenomenon.”⁶

As was the case in 1989, the construction of additional commercial parking spaces at Logan Airport is pending approval of a regulatory change,⁷ to be adopted by MassDEP, to amend the Parking Freeze to allow additional commercial parking spaces at Logan Airport. MassDEP has now initiated the public process to amend the Parking Freeze based on the same phenomenon. Consistent with the 1989 Amendment process, Massport has proposed several broad mitigation commitments to MassDEP associated with the proposed Parking Freeze amendment, including studies to aid Massport’s long-range efforts to address VMT and air quality impacts of different ground access modes for travel to and from Logan Airport and a commitment to continue Logan Express Service from the North Shore. Project-specific impacts and mitigation measures will be analyzed through the Massachusetts Environmental Policy Act (MEPA) review of the Logan Airport Parking Project. The Parking Project can only move forward if the Logan Parking Freeze regulation is amended.

This ENF serves as the first step in the environmental review of the Logan Airport Parking Project (the Parking Project or Project) under MEPA. The Project is subject to MEPA review under 301 CMR 11.03 (6)(a)7, which requires a mandatory Environmental Impact Report (EIR) for “Construction of 1,000 or more new parking spaces at a single location.” Massport’s proposed scope for the Draft EIR (DEIR) is included in the ENF as Attachment 3, *Proposed DEIR Scope*.

The ENF describes the proposed Logan Airport Parking Project, the concepts developed to date, potential benefits and impacts, and anticipated permit requirements. Massport initially considered six potential on-Airport parking locations for siting the additional parking spaces. With input from key community stakeholders, two preferred site locations for constructing 5,000 parking spaces (Build Alternative) were selected. These include new spaces above the existing Economy Garage and new spaces above the Terminal E surface lot. The new on-Airport parking spaces would be constructed in one or more phases.

Massport is in the conceptual design phase of the proposed parking additions. The new on-Airport parking spaces would be constructed in one or more phases and in two structures at the two selected locations.

Based on an operational and environmental screening, cost, and input from key community representatives, Massport proposes to construct the 5,000 new parking spaces at a combination of two sites: **Site 1**, additional levels atop the existing Economy Garage and **Site 2**, Terminal E Surface Lot. Both sites are within the Airport boundary and are located on previously developed

5 Approval and Promulgation of Air Quality Implementation Plans; Massachusetts; Amendment to the Massachusetts Port Authority/Logan Airport Parking Freeze and City of Boston/East Boston Parking Freeze, 58 Federal Register 14153 [March 1993].

7 310 Code of Massachusetts Regulations 7.30.

land currently in use for commercial parking. The Project is expected to have negligible site-specific environmental impacts, as both sites are fully paved.

Interested persons can provide comments to the MEPA office in writing (Secretary of Energy and Environmental Affairs, Executive Office of Energy and Environmental Affairs (EEA), Attn: MEPA Office, 100 Cambridge Street, Suite 900, Boston MA 02114). A full copy of this ENF can be found on the Massport website at www.massport.com/environment/environmental-reporting/.

PROYECTO DE ESTACIONAMIENTO DEL AEROPUERTO LOGAN

HOJA DE DATOS

Información general del proyecto

La Autoridad Portuaria de Massachusetts (Massport) ha elaborado, y continuamente implementa, una estrategia integral para diversificar y ampliar las opciones de transporte para pasajeros y empleados desde y hacia el Aeropuerto Internacional Boston-Logan (en adelante, «Aeropuerto Logan» o «Aeropuerto»). La estrategia de transporte terrestre de Massport está diseñada para maximizar el uso de vehículos de alta ocupación (HOV, por sus siglas en inglés), el transporte público y los medios de transporte compartido para trasladarse desde y hacia el Aeropuerto Logan, así como reducir al mínimo la cantidad de viajes en vehículo y brindar conexiones convenientes de transporte público, servicio gratuito de autobuses y traslado peatonal al Aeropuerto. Massport ha implementado diversos programas para reducir el número de vehículos privados que ingresan en el Aeropuerto Logan de manera de disminuir la modalidad de dejar y recoger pasajeros en el terminal,¹ que perjudica el medioambiente y genera hasta cuatro viajes particulares por pasajero.

Massport opera el Aeropuerto Logan con el objetivo de mantener y aumentar la modalidad de vehículos de alta ocupación (HOV). El Aeropuerto Logan sigue liderando la clasificación para los aeropuertos estadounidenses en la cantidad promedio de viajes en transporte público/HOV. Actualmente, el índice de viajes HOV está cerca al 30 %.² Las medidas implementadas por Massport para aumentar la modalidad HOV incluye una fusión de estrategias relativas a los precios (incentivos y desincentivos), disponibilidad de servicio, calidad del servicio, mercadeo e información para viajeros. Debido a la diversidad de mercadeo de los pasajeros del Aeropuerto Logan, no hay una medida única que pueda lograr el propósito de aumentar la cantidad de viajes del modo HOV. La Sección 2.2.1.1 del Anexo 2, *Descripción del proyecto*, enumera varias de los esfuerzos de Massport para promover activamente la modalidad de viajes compartidos del tipo HOV.

Pese a las iniciativas de liderazgo industrial de Massport para promover y ofrecer transporte público, viajes compartidos y otros modos tipo HOV, el número de viajes en vehículos particulares al Aeropuerto sigue en aumento a medida que la cantidad de pasajeros aéreos del Aeropuerto Logan se incrementa. En particular, la limitada disponibilidad de puestos de estacionamiento en el Aeropuerto Logan, a raíz de la reglamentación de Congelamiento de Estacionamiento (Parking Freeze) en el Aeropuerto Logan,³ ha tenido, como consecuencia, un

1 La modalidad de viajes para recoger y dejar pasajeros puede incluir vehículos privados, taxis y servicios de vehículos con chofer. Por ejemplo, si un pasajero aéreo se traslada en un vehículo que lo lleva solo para su partida y su llegada al aeropuerto, ese único pasajero genera un total de cuatro viajes terrestres: dos para dejarlo (un ingreso al Aeropuerto y una salida del Aeropuerto) y dos para recogerlo (un ingreso al Aeropuerto y una salida del Aeropuerto). Este pasajero puede ser trasladado para su partida y llegada al aeropuerto en un vehículo privado, un taxi o un automóvil con chofer que, posiblemente, no lleve un pasajero en todos los segmentos del viaje de y hacia el Aeropuerto Logan.

2 Según la Encuesta 2013 del Aeropuerto Logan sobre el Ingreso de pasajeros al aeropuerto por transporte terrestre, 27.8 % de los pasajeros que ingresaron al Aeropuerto usaron medios de transporte HOV.

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

aumento de los viajes particulares para recoger o dejar pasajeros, que perjudican el medioambiente. Según datos recabados en el Aeropuerto Logan desde la década de 1970 hasta el presente, cuando la demanda de estacionamiento supera la disponibilidad, aproximadamente el 75 % de los posibles usuarios del estacionamiento deciden optar al modo de dejar y recoger pasajeros, que generan más millas viajadas por vehículo (VMT, por sus siglas en inglés), así como mayor emisión de gases vehiculares y que exacerban la congestión en los accesos viales y entradas peatonales del terminal del Aeropuerto durante los períodos críticos de viaje.

Los estacionamientos comerciales en los aeropuertos ocasionan el fenómeno de viajes solo para recoger o dejar pasajeros y difiere de otras instalaciones de estacionamiento urbano en dos aspectos importantes. En primer lugar, los puestos de estacionamiento de aeropuertos rotan con mucha menos frecuencia, por lo tanto, en un aeropuerto se necesita mayor capacidad para alojar el mismo número de vehículos que en un entorno urbano o de oficina. En segundo lugar, en general, los pasajeros de transporte urbano que viajan a diario al trabajo no recurren a la modalidad de traslado particular para recoger o dejar pasajeros como alternativa de transporte si el estacionamiento es limitado. Por consiguiente, en un centro urbano como Boston, las limitaciones de estacionamiento obligan a los pasajeros urbanos a usar medios de transporte del tipo HOV, que no perjudican tanto el medioambiente. A diferencia de los pasajeros urbanos, los pasajeros aéreos no acuden al aeropuerto con frecuencia diaria, de modo que la modalidad de traslado particular es una opción más práctica. Por lo tanto, la limitación de lugar para estacionar en el Aeropuerto Logan puede tener el efecto ambiental negativo no deseado de aumentar las millas viajadas por vehículo (VMT) y la emisión de gases.

Para abordar los problemas ambientales y operativos causados por la actual disponibilidad limitada de puestos de estacionamiento, Massport elaboró un Plan de administración de estacionamiento a largo plazo, que fue publicado inicialmente en el *Informe de datos ambientales del Aeropuerto Logan 2012/2013* (EDR).⁴ El Plan de administración de estacionamiento a largo plazo fija una estrategia de varios puntos para la administración eficiente de la disponibilidad de puestos de estacionamiento, los precios y las operaciones. Las metas de Massport son maximizar los ingresos terrestres de transporte público y viajes compartidos tipo HOV y al mismo tiempo busca reducir la demanda de estacionamiento y la actividad de traslados particulares para recoger/dejar pasajeros.

Uno de los elementos de la estrategia integral para mantener un sistema de transporte equilibrado de Massport es construir 5,000 puestos adicionales de estacionamiento comercial en el Aeropuerto Logan. Los puestos nuevos buscan satisfacer la demanda actual y prevista de los pasajeros para estacionar en el Aeropuerto, al tiempo que se reduce la actividad de traslados particulares para recoger y dejar pasajeros. Los puestos serán planeados, construidos y operados teniendo en cuenta el medioambiente. Tal como lo demuestra este Formulario de Notificación Ambiental (ENF, por sus siglas en inglés), los nuevos puestos de estacionamiento podrían reducir la actividad de traslados solo para recoger/dejar pasajeros, así como las millas viajadas por vehículo (VMT) por parte de pasajeros de vuelos locales y la emisión de gases de los pasajeros aéreos regionales.

⁴ Massport. 2014. *Informe de datos ambientales del Aeropuerto Internacional Boston-Logan 2012/2013*. <https://www.massport.com/environment/environmental-reporting/>. Acceso: 5 de febrero de 2016.

El análisis medioambiental incluido en el ENF presenta los beneficios regionales en la calidad del aire que supone reducir las millas viajadas por vehículo al agregar 5,000 puestos de estacionamiento comercial en el Aeropuerto, para estar operativos entre 2022 y 2024.⁵ El análisis demuestra que, en comparación con la opción de no adicionar 5,000 puestos de estacionamiento (la Alternativa de No-Construir), esta ampliación de puestos reduciría los traslados para recoger/dejar pasajeros y las VMT asociadas. Esto generaría más de un 25 % de reducción anual de dióxido de carbono (CO₂), compuestos orgánicos volátiles (VOC) y óxidos de nitrógeno (NO_x) en 2022, y aproximadamente un 20 % de reducción anual en 2030, en comparación con la Alternativa de No-Construir.

La enmienda de 1989 de la reglamentación para la Congelación del Estacionamiento (Parking Freeze) en el Aeropuerto Logan emitida por el Departamento de Protección Ambiental de Massachusetts (MassDEP), la cual ha sido la enmienda más reciente y significativa para el Congelamiento del Estacionamiento, aumentó el número permitido de puestos de estacionamiento del tipo comercial en el Aeropuerto Logan y se basó sobre una premisa similar. La Agencia de Protección Ambiental de EE. UU. (EPA), en su aprobación de la enmienda de MassDEP de 1989 para el Congelamiento del Estacionamiento, describió el fenómeno de esta manera:

*«El congelamiento de estacionamiento vigente ha tenido un efecto no anticipado para el significativo aumento de viajes vehiculares para recoger y dejar pasajeros, duplicando el número de viajes que ocurrirían si cada pasajero condujera su vehículo al Aeropuerto. El aumento de... puestos de estacionamiento del tipo comercial en el Aeropuerto junto con el programa de intercambio de puestos de empleados por puestos comerciales y con las mejoras continuas de los medios alternativos de acceso al Aeropuerto deberán disminuir el fenómeno de viajes para recoger o dejar pasajeros».*⁶

De la misma forma que ocurrió 1989, la construcción de puestos de estacionamiento comerciales adicionales en el Aeropuerto Logan está en espera de la aprobación de un cambio regulatorio que será adoptado por MassDEP para modificar el Congelamiento de Estacionamiento permitiendo puestos de estacionamiento comerciales adicionales en el Aeropuerto Logan. MassDEP ha iniciado ahora el proceso público para enmendar el Congelamiento de Estacionamiento basándose en el mismo fenómeno. En conformidad con el proceso de enmienda de 1989, Massport ha propuesto a MassDEP varios compromisos amplios de mitigación ambiental asociados con la enmienda del Congelamiento de Estacionamiento, incluyendo estudios para respaldar las iniciativas a largo plazo de Massport para corregir el VMT y los impactos en la calidad del aire que causan los distintos medios de transporte terrestre para ingresar y salir del Aeropuerto Logan, y un compromiso para extender el Servicio Logan Express desde el sector North Shore. Los impactos específicos del proyecto y las medidas de

5 Si el Proyecto de estacionamiento prospera, una parte de los 5,000 puestos podrían estar funcionando antes del 2024. Massport actualmente está evaluando la potencial construcción en etapas. Se anticipa que la totalidad de los 5,000 puestos estarían en funcionamiento entre 2022 y 2024.

6 Aprobación y promulgación de los Planes de implementación de la Calidad del aire; Massachusetts; Enmienda para el Congelamiento de Estacionamiento en el Aeropuerto Logan/Autoridad Portuaria de Massachusetts y el Congelamiento de estacionamiento de la Ciudad de Boston/East Boston, Volumen 58 del Registro Federal 14153 [Marzo de 1993].

mitigación serán analizadas durante la revisión del Proyecto de estacionamiento del Aeropuerto Logan a través de la Ley de Política Medioambiental de Massachusetts (MEPA). El Proyecto de Estacionamiento solo podrá salir adelante si la enmienda para la regulación del Congelamiento del Estacionamiento se aprueba.

Este ENF sirve como primer paso en la revisión del Proyecto de Estacionamiento del Aeropuerto Logan (en adelante, Proyecto de Estacionamiento o Proyecto) conforme a la MEPA. El Proyecto está sujeto a la revisión por la MEPA conforme a la norma 301 del CMR, sección 11.03 (6)(a)7, que exige obligatoriamente un Informe de Impacto Ambiental (EIR, por sus siglas en inglés) para la “Construcción de 1,000 o más puestos de estacionamiento en un solo sitio”. El alcance de la propuesta de Massport para el Informe preliminar de Impacto Ambiental (DEIR) está incluido en el ENF como documento adjunto N° 3, *Alcance de propuesta del DEIR*.

El ENF describe la propuesta del Proyecto de Estacionamiento del Aeropuerto Logan, los conceptos desarrollados a la fecha, los posibles impactos y beneficios y los requisitos previstos para otorgar permisos para estacionarse. Massport inicialmente evaluó seis ubicaciones posibles en el Aeropuerto para construir los puestos de estacionamiento adicionales. Con la participación clave de miembros de la comunidad, se seleccionaron dos lugares para construir los 5,000 puestos de estacionamiento (Alternativa de Construcción). Estos incluyen nuevos puestos arriba del actual Estacionamiento Económico (Economy Garage) y nuevos puestos arriba del lote de la Terminal E. Los nuevos puestos de estacionamiento en el Aeropuerto serían construidos en una o más etapas.

Massport actualmente se encuentra en la etapa de diseño conceptual de la ampliación del estacionamiento. Los nuevos puestos de estacionamiento en el Aeropuerto se construirían en una o más etapas y en dos estructuras en las dos ubicaciones seleccionadas.

A partir de la evaluación operacional y medioambiental, de costos y de las opiniones clave de representantes de la comunidad, Massport propone construir los 5,000 puestos de estacionamiento en dos lugares combinados: **Sitio 1**, niveles adicionales sobre el Estacionamiento Económico (Economy Garage) existente y **Sitio 2**, en el área de la superficie de la Terminal E. Ambos sitios se encuentran dentro de los límites del Aeropuerto y están ubicados en terrenos previamente desarrollado y actualmente se usan para estacionamiento comercial. Se prevé que el Proyecto tenga impactos ambientales ínfimos para el lugar, dado que ambos sitios están completamente pavimentados.

Las personas interesadas pueden enviar sus comentarios por escrito a la oficina de la MEPA (Secretary of Energy and Environmental Affairs, Executive Office of Energy and Environmental Affairs (EEA), Attn: MEPA Office, 100 Cambridge Street, Suite 900, Boston MA 02114). Una copia completa de este ENF esta disponible en el sitio de internet de Massport: www.massport.com/environment/environmental-reporting/.

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**Boston-Logan International Airport
Logan Airport Parking Project**

Environmental Notification Form

Submitted to:

**Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act Unit**

Submitted by:



**Massachusetts Port Authority (Massport)
Logan Office Center, Suite 200S, East Boston, MA 02128**

**Prepared by VHB
In association with LeighFisher, Inc.**

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

<i>For Office Use Only</i>
EEA#: _____
MEPA Analyst: _____

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: Logan Airport Parking Project		
Street Address: Boston-Logan International Airport		
Municipality: Boston	Watershed: Boston Harbor	
Universal Transverse Mercator Coordinates: UTM 19, 46 92 654N, 3 36 223E	Latitude: 42° 22' 1.1" N Longitude: 71° 1' 20.5" W	
Estimated commencement date: 2018	Estimated completion date: 2022-2024	
Project Type: New Construction	Status of project design: <10% complete	
Proponent: Massachusetts Port Authority (Massport)		
Street Address: One Harborside Drive		
Municipality: East Boston	State: MA	Zip Code: 02128
Name of Contact Person: Stewart Dalzell		
Firm/Agency: Massport	Street Address: One Harborside Drive	
Municipality: East Boston	State: MA	Zip Code: 02128
Phone: 617-568-3524	Fax: 617-568-3531	E-mail: sdalzell@massport.com
Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:		
a Single EIR? (see 301 CMR 11.06(8))	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
a Special Review Procedure? (see 301CMR 11.09)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
a Waiver of mandatory EIR? (see 301 CMR 11.11)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
a Phase I Waiver? (see 301 CMR 11.11)	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)		
Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)? 301 CMR 11.03(6)(a)(7) Construction of 1,000 or more new parking spaces at a single location (Logan Airport).		
Which State Agency Permits will the project require? No state permits are anticipated. (MassDEP Amendment to Logan Airport Parking Freeze is anticipated as a concurrent process with the Logan Airport Parking Project environmental review)		
Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres: This is a project funded by, and on land owned by, Massport, an agency of the Commonwealth.		

Summary of Project Size & Environmental Impacts	Existing	Change	Total
LAND			
Total site acreage	10.5 acres ¹		
New acres of land altered		0	
Acres of impervious area	10.5 acres	0	10.5 acres
Square feet of new bordering vegetated wetlands alteration		0	
Square feet of new other wetland alteration		0	
Acres of new non-water dependent use of tidelands or waterways		0	
STRUCTURES²			
Gross square footage	TBD	TBD	TBD
Number of housing units	N/A	0	0
Maximum height (feet)	TBD	0	TBD ³
TRANSPORTATION⁴			
Vehicle trips per year (net change, 2022) (Airport-wide)	915,600 (No-Build)	581,100 (Build)	(334,500)
Vehicle trips per year (net change, 2030) (Airport-wide)	2,533,900 (No-Build)	1,809,800 (Build)	(724,100)
Commercial Parking spaces ⁵	18,640	5,000	23,640 commercial, 2,448 employee, 26,088 total spaces (per proposed MassDEP amendment)
WASTEWATER			
Water Use (Gallons per day)	N/A	N/A	N/A
Water withdrawal (GPD)	N/A	N/A	N/A
Wastewater generation/treatment (GPD)	N/A	N/A	N/A
Length of water mains (miles)	N/A	N/A	N/A
Length of sewer mains (miles)	N/A	N/A	N/A
Has this project been filed with MEPA before? <input type="checkbox"/> Yes (EEA # _____) <input checked="" type="checkbox"/> No			
Has any project on this site been filed with MEPA before? <input checked="" type="checkbox"/> Yes (<i>EEA #15434, #9791, #9324, MEPA Advisory Opinion, dated March 19, 2010; MEPA Advisory Opinion dated June 30, 2010</i>) <input type="checkbox"/> No			

1 Site acreage represents the footprint of the proposed parking structures.

2 The Parking Project is in the conceptual design phase. The gross square footage and building heights have not yet been finalized.

3 At this time, the specific building footprint and height of the garages has not been determined. Design has not yet advanced since construction of additional commercial parking spaces at Logan Airport is pending approval of a regulatory change (310 CMR 7.30) by MassDEP.

4 The comparison presents the number of annual vehicle trips per year of would-be parkers if they were not able to be accommodated on-Airport (No-Build) in contrast to if the Parking Project's 5,000 parking spaces were in place (Build).

5 Commercial parking spaces as allowed under the Logan Airport Parking Freeze.

6 The Terminal E Modernization Project is a separate project from the Logan Airport Parking Project. The Terminal E Modernization Project is in the vicinity of one of the proposed parking garage sites and was the subject of an ENF and joint EA/EIR. MEPA EEA issued a Certificate and determined that the Final EA/EIR properly complies and no further review is required. See Attachment 2, *Project Narrative* for more detail. Massport conducted a parking consolidation project at the Economy Garage, which was completed in 2011. MEPA EEA had issued two Advisory Opinions that no MEPA review was required for the consolidation.

GENERAL PROJECT INFORMATION

The Massachusetts Port Authority (Massport) has developed and continues to implement a comprehensive strategy to diversify and enhance ground transportation options for air passengers and employees to and from Boston-Logan International Airport (Logan Airport or Airport). Massport's ground transportation strategy is designed to maximize the use of transit, shared-ride and other high occupancy vehicle (HOV) modes for travel to and from Logan Airport, and to minimize regional and local vehicle trips. Massport's strategy aims to minimize impacts to the transportation system, environment, and community, while providing air passengers with as many alternatives as possible for convenient travel to and from Logan Airport. Massport is particularly focused on reducing the number of private vehicles that access Logan Airport via environmentally undesirable drop-off/pick-up modes,⁷ which generate up to four vehicle trips per passenger. These strategies and investments have proven successful at Logan Airport, an industry leader in HOV access.

Massport operates Logan Airport with a goal of maintaining and increasing HOV modes. Logan Airport continues to rank at the top of U.S. airports in terms of HOV/transit mode share, and current HOV mode share is close to 30 percent.⁸ Measures implemented by Massport to increase HOV use include a blend of strategies related to pricing (incentives and disincentives), service availability, service quality, marketing, and traveler information. Because of the diverse market segments of the Logan Airport air passenger traveler, no single measure will accomplish the goal to increase HOV mode share. Section 2.2.1.1 of Attachment 2, *Project Narrative*, lists several of Massport's efforts to actively promote HOV/shared-ride modes.

Despite Massport's industry-leading efforts promoting and providing transit, shared-ride, and other HOV mode use, the number of private passenger vehicle trips to the Airport continues to increase as Logan Airport air traveler numbers increase. In particular, the constrained parking supply at Logan Airport, which results from the Logan Airport Parking Freeze (the Parking Freeze⁹), has the unintended consequence of causing an increase in environmentally harmful drop-off/pick-up vehicle trips. Survey data collected from the 1970s to the present at Logan Airport have consistently shown that when demand for parking starts to exceed supply, approximately 75 percent of would-be parkers shift to drop-off/pick-up travel modes. These modes generate higher vehicle miles traveled (VMT) and associated vehicle emissions and exacerbate vehicle congestion on the Airport's terminal area roadway and at the terminal curbs during peak travel periods.

Airport commercial parking differs from other urban parking facilities in two important respects, which cause the drop-off/pick-up phenomenon. First, airport parking spaces turn over much less frequently; thus, more parking capacity is required at an airport to support the same number of vehicles than in an urban/workplace setting. Second, commuters traveling daily to an urban work location will not turn to drop-off/pick-up modes as an alternative means of travel if parking is constrained. Hence, in an urban core such as Boston, parking constraints tend to force commuters to travel by less environmentally harmful HOV transportation alternatives. Unlike urban commuters, air travelers do not go to the airport on a daily basis, so drop-off/pick-up modes are more practical options. Accordingly, constrained parking at Logan Airport can have the unintended adverse environmental consequence of increased VMT and air emissions.

⁷ Drop-off/Pick-up modes can include private vehicles, taxis, and black car/limousine services. For example, if an air passenger is dropped off when s/he departs on an air trip and is picked-up when s/he returns, that single air passenger generates a total of four ground-access trips: two for the drop-off trip (one inbound to Logan Airport, one outbound from Logan Airport) and two for the pick-up trip (one inbound to Logan Airport, one outbound from Logan Airport). The air passenger may be dropped off and picked up in a private vehicle, or in a taxi or limousine that does not carry a passenger during all segments of travel to and from Logan Airport.

⁸ According to the 2013 Logan Airport Air Passenger Ground Access Survey, 27.8 percent of air passengers accessing Logan Airport used HOV modes of travel.

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

To address operational and environmental problems caused by the existing constrained parking supply, Massport developed a Long-Term Parking Management Plan, which was first published in the *2012/2013 Logan Airport Environmental Data Report (EDR)*.¹⁰ The Long-Term Parking Management Plan sets out a multi-element strategy for efficiently managing parking supply, pricing, and operations. Massport's goals are to maximize transit/shared-ride HOV ground access, while both reducing parking demand and minimizing drop-off/pick-up activity. As one element of its comprehensive strategy to maintain a balanced transportation system, Massport proposes to build 5,000 additional on-Airport commercial parking spaces at Logan Airport. The new spaces are intended to accommodate existing and anticipated air passenger demand for parking at the Airport while minimizing drop-off/pick-up activity, and will be planned, constructed, and operated in an environmentally sensitive manner. As demonstrated in this Environmental Notification Form (ENF), the new parking spaces would reduce drop-off/pick-up activity and regional air passenger-related VMT and associated vehicle air emissions.

The environmental analysis contained in this ENF (Attachment 2, *Project Narrative*) presents the regional air quality benefits of reducing airport-related VMT by adding 5,000 on-Airport commercial parking spaces to be in service between 2022 and 2024.¹¹ The analysis shows that, compared with not adding 5,000 more spaces (the No-Build Alternative), the added long-term parking spaces would decrease drop-off/pick-up travel and associated VMT. This would result in an over 25 percent reduction of carbon dioxide (CO₂), volatile organic compounds (VOC), and oxides of nitrogen (NO_x) emissions in 2022 and an approximately 20 percent reduction in 2030 (see Section 2.5, *Environmental Analysis of Regional VMT and Air Emissions*) as compared to the No-Build Alternative.

The Project is subject to MEPA review under 301 CMR 11.03 (6)(a)7, which requires a mandatory Environmental Impact Report (EIR) for "Construction of 1,000 or more new parking spaces at a single location." Massport's proposed scope for the Draft EIR (DEIR) is included as Attachment 3, *Proposed DEIR Scope*.

This ENF describes the proposed Logan Airport Parking Project, the concepts developed to date, potential benefits and impacts, and anticipated permit requirements. Massport initially considered six potential on-Airport parking locations for siting the additional parking spaces. Each of these sites are described below. With input from key community stakeholders, two preferred site locations for constructing 5,000 parking spaces (Build Alternative), as described in Attachment 2, *Project Narrative*, were selected. These include new spaces above the existing Economy Garage and new spaces above the Terminal E surface lot. The new on-Airport parking spaces would be constructed in one or more phases.

As described in Section 2.2.2, *History of the Logan Airport Parking Freeze*, the shift to travel modes with a higher VMT was also the basis for the Massachusetts Department of Environmental Protection's (MassDEP's) last substantive amendment of the Parking Freeze in 1989 which increased commercial parking spaces at the Airport.

As was the case in 1989, the construction of additional commercial parking spaces at Logan Airport is pending approval of a regulatory change,¹² to be adopted by MassDEP, to amend the Parking Freeze to allow additional commercial parking spaces at Logan Airport. MassDEP has now initiated the public process to amend the Parking Freeze. Consistent with the 1989 Amendment process, Massport has proposed several broad mitigation commitments to MassDEP associated with the proposed Parking Freeze amendment, including studies to aid Massport's long-range efforts to address VMT and air quality impacts of different ground access modes for travel to and from Logan Airport. Further detail about the status of the MassDEP process is provided in Attachment 2, Section 2.2.2.2, *Concurrent MassDEP Regulatory Process*.

10 Massport. 2014. Boston-Logan International Airport 2012/2013 Environmental Data Report. <https://www.massport.com/environment/environmental-reporting/>.

11 If the Parking Project advances, a portion of the 5,000 parking spaces are likely to go into service before 2024. Massport is currently evaluating potential phasing options. It is anticipated that all 5,000 spaces would be operational between 2022 and 2024.

12 310 Code of Massachusetts Regulations 7.30.

Project-specific impacts and mitigation measures will be analyzed through the Massachusetts Environmental Policy Act (MEPA) review of the Logan Airport Parking Project, of which this ENF filing is the first step.

The range of potential project siting options initially considered by Massport and associated analyses are summarized below and in the attached Project Narrative; all locations initially considered are located within existing paved and developed areas of the Logan Airport campus already used for parking. The regional VMT and air emissions analysis of the Build Alternative (contained in Section 2.5, *Environmental Analysis of Regional VMT and Air Emissions*, of Attachment 2) apply equally to all of these on-Airport sites.

Massport initially considered the following six on-Airport parking facility sites before recommending two specific locations for the new structured parking facilities (see Attachment 1, Figure 1.4).

Site 1 – Economy Garage– additional floors atop existing garage;

Site 2 – Terminal E Surface Lot – garage in location of existing surface parking lot;

Site 3 – Southwest Service Area – garage in location of current bus/limousine pool and overflow parking;

Site 4 – North Cargo Area – expand Economy Garage over existing surface parking and the site of the Massachusetts State Police Building;

Site 5 – Harborside Drive – garage in location of existing vehicle layover space; and

Site 6 – Porter Street – garage over existing taxi pool.

Each of these on-Airport sites are comparable in terms of regional VMT and emissions reductions since regional access routes will not vary as a result of the garage siting. While total on-Airport VMT may slightly vary among sites, as the distance between regional roadway gateways and the sites can slightly vary, overall Airport VMT with the additional 5,000 on-Airport parking spaces at any of the six locations is significantly lower than if the additional 5,000 on-Airport parking spaces were not made available. All sites considered would be constructed on already paved parcels currently used for parking or vehicle storage, and therefore each would have similar, negligible localized environmental impacts.

Based on conceptual design and capacity estimates, a single facility located on one of the potential sites does not provide sufficient parking capacity reasonably or efficiently. Thus, two sites are required in the Build Alternative to provide the needed parking capacity. Based on an initial operational and environmental screening and discussions with the community, Massport proposes to construct the 5,000 new parking spaces at a combination of two sites: **Site 1** (additional levels atop the existing Economy Garage) and **Site 2** (Terminal E Surface Lot). See Attachment 2, Section 2.4, *Alternatives*, for a more detailed discussion.

For the better part of a year, Massport has had numerous meetings with the East Boston Logan Airport Impact Advisory Group (LIAG) to discuss a range of Logan Airport-related topics. As part of these discussions, the LIAG provided input on their preferred locations of the proposed additional parking. Attachment 2, *Project Narrative*, Section 2.4, *Alternatives*, describes the initial sites considered and the locations advanced for further analysis in the Draft EIR based on LIAG input. The LIAG also provided their list of preferred community benefits.

Attachment 2, *Project Narrative*, provides a detailed project description. The narrative includes:

- **Section 2.1, Introduction.** Provides a brief summary and introduces the reader to the Parking Project.
- **Section 2.2, Project Context.** Describes Massport's comprehensive ground transportation strategy, its Long-Term Parking Management Plan, and current and anticipated future parking conditions at the Airport. This section also describes the history of the Logan Airport Parking Freeze and coordination with the MassDEP regulatory process required to amend the Parking Freeze regulations.

- **Section 2.3, Detailed Project Description.** Describes the Parking Project, its benefits, and consistency with other projects and planning efforts. Anticipated permit requirements, the anticipated NEPA process, and stakeholder outreach (to date and future activities) are also discussed.
- **Section 2.4, Alternatives.** Discusses the No-Build Alternative and the analysis and screening of six initial feasible siting locations. Two sites are proposed which together will accommodate 5,000 parking spaces (Build Alternative).
- **Section 2.5, Environmental Analysis of Regional VMT and Air Emissions.** Provides a comparison of the environmental effects of the No-Build and Build Alternatives. This section is focused on anticipated regional VMT reductions and associated emissions improvements.
- **Section 2.6, Conclusion.** Summarizes the Project Narrative.

MEPA JURISDICTION:

Construction of 1,000 or more parking spaces at Logan Airport is subject to MEPA review under 301 CMR 11.03 (6)(a)7, which requires a preparation of a mandatory EIR for “Construction of 1,000 or more new parking spaces at a single location.” A copy of Massport’s proposed scope for the DEIR is included as Attachment 3, *Proposed DEIR Scope*, for the reviewer’s convenience.

Massport will also coordinate with the Federal Aviation Administration (FAA) regarding review under the National Environmental Policy Act (NEPA). The level of required NEPA review will depend on the chosen alternative and will be at the discretion of the FAA.

Massport is filing this ENF concurrent with MassDEP’s issuance of a draft regulation to amend the Parking Freeze, which will be subject to the provision of M.G.L. c. 30A. The draft regulation is expected to maintain the current structure and procedures of the existing Parking Freeze. The only substantive changes would be: the increase in the total number of commercial parking spaces permitted on the Airport, a commitment to maintain a North Shore Logan Express route, and the addition of three long-term studies on improvements to ground access, to be completed by Massport (see Section 2.3.2, *Potential Measures to Increase High Occupancy Vehicle [HOV] Capacity*). MassDEP is not planning any changes to the East Boston Parking Freeze.

The MassDEP regulatory amendment will provide the larger framework of the Parking Freeze, while Project-specific impacts and mitigation measures will be analyzed through this MEPA review process.

Table 1 shows the revised total of commercial spaces that would be in place under the amended regulation.

Table 1 Recommended Amendment to Commercial Spaces Available Under the Logan Airport Parking Freeze (subject to approval by MassDEP)

Regulation	Number of Commercial Spaces	Number of Employee Spaces	Total Spaces Permitted Under Parking Freeze Cap
1975 Logan Airport Parking Freeze	10,215	n/a ¹	10,215
1989 Logan Airport Parking Freeze Amendment	12,215	7,100	19,315
2016 Logan Airport Parking	18,640 ²	2,448	21,088 ³
Future Logan Airport Parking⁴	23,640	2,448	26,088

Source: Massport; 40 CFR. § 52.1135; 310 CMR 7.30.

- Notes:
- 1- The 1975 Logan Airport Parking Freeze did not regulate employee or rental car spaces or airport related spaces in East Boston.
 - 2- As described in the text, the increase in commercial spaces since 1989 is largely due to the conversion of the 4,652 employee spaces.
 - 3 – The increase in total spaces between 1989 and 2016 is due to the relocation of 1,773 park-and-fly spaces from East Boston to the Airport.
 - 4 – A portion of the 5,000 parking spaces would be planned to go into service before 2024. Massport is currently evaluating potential phasing options. It is anticipated that all 5,000 spaces would be operational between 2022 and 2024.

EXISTING CONDITIONS:

As described in the annual Logan Airport EDR and Environmental Status and Planning Report (ESPR) filings with the MEPA Office, Massport's comprehensive ground transportation strategy is designed to maximize HOV transit and shared-ride options for travel by passengers and employees to and from Logan Airport and to minimize vehicle trips by providing convenient transit, shuttle, and pedestrian connections at the Airport. The Airport is served by the Massachusetts Bay Transportation Authority (MBTA) Blue Line Airport Station, and Massport currently provides free shuttle bus service between Airport Station and all terminals. Massport also subsidizes the MBTA Silver Line Logan Airport route (SL1), a bus rapid transit service from South Station to the Airport, by providing free outbound Silver Line trips from the Airport on eight Silver Line buses purchased for this route by Massport. MBTA rapid transit services are supplemented by MBTA commuter ferry service and MBTA local and express bus service. Massport also operates its own extensive Logan Express Bus service, serving five locations. Other private express bus service and intercity bus service also serve Logan Airport, as part of the range of HOV modes available for ground access.

Total air pollutant emissions from all sources associated with Logan Airport in 2015 were dramatically less than they were a decade ago. This 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 VMT generated by Massport-controlled ground access systems. Massport reports on air quality associated with Logan Airport in the annual EDR/ESPR filings.¹³ The EDR/ESPR reports on VOCs, NO_x, carbon monoxide (CO), and particulate matter (PM). An inventory of greenhouse gases (GHGs) has also been recently added to the overall annual analysis. Although there has been a long-term trend of decreasing emissions since 1990, from 2010 to 2030 the emissions of VOCs and NO_x are predicted to increase slightly based on the forecast presented in the *2011 ESPR*; however, emissions are predicted to remain well below historical highs.¹⁴ Increasing the number of parking spaces available on-Airport through the Parking Project is one way to help reduce future emissions from motor vehicle sources (see Attachment 2, *Project Narrative*, Section 2.5, *Environmental Analysis of Regional VMT and Air Emissions*).

With annual air passenger levels now over 33 million,¹⁵ Logan Airport faces challenges in managing the associated demand for on-Airport parking, resulting in a growing number of days in which arriving vehicles are diverted or moved to non-garage parking areas on (and sometimes off) the Airport. Despite Massport's highly successful HOV/shared-ride mode use (close to 30 percent),¹⁶ private passenger vehicle trips continue to increase along with the increase in air passenger demand. With this growth in air traveler numbers, Logan Airport's constrained parking supply has resulted in a significant increase in environmentally undesirable drop-off/pick-up vehicle trips, particularly during periods throughout the year that consistently experience high demand.

ENVIRONMENTAL ANALYSIS:

The proposed parking garage(s) will be constructed entirely within the existing Airport campus on land that is fully paved. The two proposed sites are already used for commercial parking, and, combined would accommodate 5,000 spaces. No on- or off-Airport relocations of existing uses are anticipated.

This ENF provides an assessment of the VMT reduction and air quality benefits that are associated with additional parking on the Airport. The detailed analysis is provided in Attachment 2, Section 2.5,

13 The most recent Logan Airport Environmental Data Report (2015) can be accessed on Massport's website at: <https://www.massport.com/environment/environmental-reporting/>. Accessed December 23, 2015.

14 Massport. 2013. *Boston-Logan International Airport 2011 Environmental Status and Planning Report*.

15 As presented in the *2015 EDR*, Logan Airport served 33.4 million air passengers in 2015. Logan Airport reached a new high in 2016, serving over 36 million passengers.

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

Environmental Analysis of Regional VMT and Air Emissions. The VMT analysis contrasts the current constrained condition under the Logan Airport Parking Freeze with a range of increased levels of parking supply. Throughout this analysis, VMT is used as a proxy for vehicle air emissions; total VMT is typically multiplied by an emissions factor to determine overall vehicle emissions. Table 2 below compares the No-Build and Build Alternatives in the years 2022 and 2030.

Table 2 Vehicle Miles Traveled (VMT) and Emissions Estimates

Year	Condition	Regional Vehicle Miles Traveled of “would-be parkers”	CO ₂ (tons/year)	VOC (kg/year)	NO _x (kg/year)	
2022	No-Build	22,550,816	8,238	319	1,211	
	20% demand increase ¹	Build	16,847,702 ↓	6,114 ↓	237 ↓	901 ↓
		Reduction in VMT/tons	5,703,114	2,124	82	310
		Reduction %	25% ↓	25.8% ↓	25.5% ↓	25.6% ↓
2030	No-Build	62,407,654	17,679	632	1,989	
	40% demand increase ¹	Build	50,061,630 ↓	14,109 ↓	505 ↓	1,588 ↓
		Reduction in VMT/tons	12,346,024	3,570	127	401
		Reduction %	20% ↓	20.2% ↓	20.0% ↓	20.2% ↓

Source: VHB

Note: Since VMT is the constant factor in calculating total emissions of each pollutant, the percent reduction for all pollutants are relatively consistent with the reduction in VMT for each analysis year.

1 Assumptions are discussed in Attachment 2, *Project Narrative*, Section 2.5 and in Attachment 5, *Massport Request to Amend the Logan Airport Parking Freeze and Technical Memorandum*.

The Project Narrative (Attachment 2) includes a detailed description of the Parking Project, the site screening assessment, and environmental impacts and benefits. Further environmental analysis of potential environmental impacts and benefits will be detailed in a DEIR. A proposed scope for the DEIR (Attachment 3, *Proposed DEIR Scope*), includes the anticipated potential positive and adverse environmental consequences, including:

- Traffic, Transit, Pedestrian, and Bicycle Transportation
- Air Quality and Greenhouse Gas associated with VMT reduction
- Temporary Construction Impacts

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:

Is the project within or adjacent to an Area of Critical Environmental Concern?

- Yes (Specify _____)
- No

if yes, does the ACEC have an approved Resource Management Plan? ___ Yes ___ No;

if yes, describe how the project complies with this plan:

Will there be stormwater runoff or discharge to the designated ACEC? ___ Yes ___ No;

if yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC

RARE SPECIES:

Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhosp/regulatory_review/priority_habitat/priority_habitat_home.htm)

- Yes (Specify _____)
- No

HISTORICAL /ARCHAEOLOGICAL RESOURCES:

Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?

- Yes (Specify _____)
- No;

if yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources?

- Yes (Specify _____)
- No

WATER RESOURCES:

Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site?

Yes ___ No X; if yes, identify the ORW and its location:

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Are there any impaired water bodies on or within a half-mile radius of the project site?

Yes X No ___; if yes, identify the water body and pollutant(s) causing the impairment:

The Boston Harbor, which surrounds Logan Airport on three sides (Segment IDs MA 70-01, MA70-02, and MA 70-10), is listed as a Category 5 waterbody, requiring a Total Maximum Daily Load (TMDL). These segments of the Boston Harbor are impaired due to Enterococcus (MA70-02, MA70-10), Fecal Coliform (MA70-01, MA70-02, MA70-10), PCB in Fish Tissue (MA70-01, MA70-02, MA70-10), Dissolved Oxygen (MA70-02), and Other (MA70-01, MA70-02, MA70-10) according to the Final Massachusetts Year 2014 Integrated List of Waters.

The Parking Project would be constructed on fully paved land currently in use for Airport transportation functions. The two proposed sites, Economy Garage and Terminal E Surface Lot, have commercial parking as an existing use. The Project is expected to have negligible environmental impacts on water resources.

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission?

Yes ___ No X

STORMWATER MANAGEMENT:

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

Both of the proposed sites are currently fully developed for Airport uses and the Parking Project would not add any new impervious area. The new parking facilities would not increase the rate or volume of runoff since all potential building sites are already paved or covered with existing structures. The stormwater collection system would be modified and upgraded to accommodate any new drainage patterns, and additional water quality treatment measures would be implemented. The proposed parking structures are in the Boston Harbor watershed.

The Economy Garage site would continue to drain to the Porter Street Outfall and the Terminal E Surface Lot would continue to drain to the North Outfall. For additional information on existing conditions, refer to the *Logan Airport 2015 EDR* (EEA #3247).

Since the project involves construction disturbance of greater than one acre of land, a Stormwater Pollution Prevention Plan will be prepared in accordance with the U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Activities.

The Parking Project would meet Massport and MassDEP stormwater management guidelines. Massport will consider the parking garage sustainability rating system, Parksmart (formerly Green Garage Certification), and will assess its applicability to the Project. Parksmart applies Leadership in Energy and Environmental Design (LEED®)-like sustainability strategies to structured parking facilities, including in relation to stormwater.

Massport develops a dewatering and discharge plan for all construction projects at Logan Airport. If required, groundwater treatment and discharge construction practices will be defined and submitted to MassDEP for approval, and implemented during construction.

MASSACHUSETTS CONTINGENCY PLAN:

Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan?

Yes No ; if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome classification):

There are MCP sites located in the vicinity of the Terminal E Surface Lot site. Within the Economy Garage site is the Former Robie Property (RTN 3-23493) for which a regulatory closure has been achieved.

Additional details on Airport-wide MCP compliance are provided in the *Logan Airport 2015 EDR*.

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes No ; if yes, describe which portion of the site and how the project will be consistent with the AUL:

An Activity and Use Limitation (AUL) was recorded for the Former Robie Property (RTN 3-23493) site on December 16, 2009 and an amended AUL was recorded in December 9, 2010 which requires a Soil Management Plan, prepared by a Licensed Site Professional, prior to the commencement of any soil disturbing site activity.

Construction at the Economy Garage site would involve a vertical expansion on top of the existing garage. Massport does not anticipate soil disturbing activities.

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN? Yes No ; if yes, please describe:

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, (e.g., asphalt, brick, concrete, gypsum, metal, wood):

Massport will meet or exceed all state recycling guidelines to effectively and sustainably manage construction debris. Where possible, the pavement materials would be recycled and used elsewhere on the Airport. Any contaminated material encountered during construction would be managed in compliance with the Massachusetts Contingency Plan and Massachusetts General Law 21E. During construction, the soil and groundwater contamination at the existing terminal would be addressed, as needed, in compliance with the Massachusetts Contingency Plan. A Soil Management Plan may be required to determine whether any excavated soils generated through foundation construction could be reused on site and/or determine requirements for off-site reuse, recycling, or disposal.

(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes ___ No ; if yes, please consult state asbestos requirements at <http://mass.gov/MassDEP/air/asbhom01.htm>

Describe anti-idling and other measures to limit emissions from construction equipment:

To minimize air emissions, Massport requires that all contractors comply with construction guidelines that include: minimizing idling; retrofitting of diesel equipment with a diesel oxidation catalyst and/or particulate filters; and vehicle trip management for construction workers. Massport participates in MassDEP's Clean Construction Equipment Initiative and requires engine retrofits to reduce exposure to diesel exhaust fumes and particulate emissions.

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ___ No ; if yes, specify name of river and designation:

ATTACHMENTS:

1. List of all attachments to this document:
Attachment 1 – Figures
Attachment 2 – Project Narrative
Attachment 3 – Proposed DEIR Scope
Attachment 4 – Distribution List
Attachment 5 – Massport Request to Amend the Logan Airport Parking Freeze and Technical Memorandum
2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries:
Attachment 1, Figure 1.1
3. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities:
Attachment 1, Figure 1.2, Figure 1.3, Figure 1.6, Figure 1.7
4. Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts:
Attachment 1, Figure 1.7
5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase):
Attachment 1, Figure 1.5
6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2):
Attachment 4
7. List of municipal and federal permits and reviews required by the project, as applicable.
List of Permits Included in Attachment 2, Project Narrative

LAND SECTION

I. Thresholds / Permits

- A. Does the project meet or exceed any review thresholds related to land (see 301 CMR 11.03(1))
 Yes No; if yes, specify each threshold:
-

II. Impacts and Permits

- A. Describe, in acres, the current and proposed character of the project site, as follows:¹⁷

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Footprint of buildings	7 acres	TBD	TBD
Internal roadways	0 acres	0 acres	0 acres
Parking and other paved areas	3.5 acres	TBD	TBD
Other altered areas	0 acres	0 acres	0 acres
Undeveloped areas	0 acres	0 acres	0 acres
Total: Project Site Acreage	10.5 acres	TBD	TBD

- B. Has any part of the project site been in active agricultural use in the last five years?
 Yes No; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?
- C. Is any part of the project site currently or proposed to be in active forestry use?
 Yes No; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:
-
- D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97?
 Yes No; if yes, describe:
-
- E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction?
 Yes No; if yes, does the project involve the release or modification of such restriction?
 Yes No; if yes, describe:
-
- F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A?
 Yes No; if yes, describe:
-
- G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B?
 Yes No; if yes, describe:
-

¹⁷ The Parking Project is in the conceptual design phase. Each site within the Build Alternative is currently 100 percent impervious surface and the Parking Project will not add any additional impervious surface. The exact distribution of parking spaces and building massing have yet to be determined.

III. Consistency

A. Identify the current municipal comprehensive land use plan:

Title: _____ Date: _____

Boston-Logan International Airport is not subject to local zoning, but takes the parameters of the East Boston Neighborhood District Zoning Article (Article 53) into consideration.

B. Describe the project's consistency with that plan with regard to:

- 1) economic development;
- 2) adequacy of infrastructure;
- 3) open space impacts; and
- 4) compatibility with adjacent land uses.

Economic Development

Approximately 15,000 people are employed at Logan Airport, which includes the approximately 1,000 Massport staff. Including Airport-related activities, Logan Airport contributes \$13.4 billion annually to the local economy. The Massachusetts Department of Transportation (MassDOT) Aeronautics Division's *Statewide Airport Economic Impact Study* found that in 2014, Logan Airport supported approximately 132,000 jobs. The total economic impact includes on-Airport, visitor-related, construction, and all associated multiplier impacts.¹⁸ The Parking Project will improve customer service at the Airport and continue to ensure that Logan Airport serves as an efficient gateway to the national and international air transport network.

Construction of additional parking spaces will benefit the local economy during the construction period.

Adequacy of Infrastructure

The Parking Project is aligned with overall goals to preserve the current transportation infrastructure in a state of good repair and improve mobility throughout the region. The Parking Project seeks to address the current inadequate parking supply on-Airport. Building additional infrastructure would minimize environmental impacts associated with the growing drop-off/pick-up travel modes.

Open Space Impacts

The new parking spaces would not impact open space; all potential sites are located on the existing Airport campus, are currently impervious, and support existing Airport uses. The Parking Project area and proposed improvements are limited to the terminal area and service areas of Logan Airport. There will be no effect on the condition, use, or access to any nearby open space or recreation area.

Massport comprehensively evaluates the environmental impacts associated with Logan Airport in the ESPR and EDRs. The *Logan Airport 2015 EDR* (EEA #3247) was filed with EEA on December 15, 2016, and provides a detailed discussion of 2015 conditions at Logan Airport, including parking and ground access. The *2011 ESPR* was filed on April 12, 2013, and considered Airport activities and cumulative impacts out to 2030. The purpose of the EDR and companion ESPRs is to evaluate the cumulative effects of growth and change at the Airport and to provide a long-term planning and environmental impacts context within which specific assessments can be reviewed. The *2011 ESPR* describes the overall planning strategy for Logan Airport and provides a projection of environmental impacts associated with projected growth in passengers, aircraft operations, and ground access activity out to 2030. Impact analyses of ground transportation, noise, air quality, and greenhouse gases were completed that considered the cumulative impact of aircraft operations and passenger activities levels in 2030. The Parking Project is consistent with the analyses of future operational conditions contained in the *2011 ESPR*.

18 MassDOT Statewide Airport Economic Impact Study, 2014.

Compatibility with Adjacent Land Uses

The Parking Project is compatible with adjacent land uses and is located entirely within the Airport campus. Each site under consideration consists of impervious surface, used for parking, and the Project will not add any additional impervious surface. The new parking facilities will be located within the Boston Zoning Commission’s Logan International Airport (LIA) Subdistrict. Although Massport is not subject to local zoning, the Parking Project is consistent with the East Boston Neighborhood District Zoning Article (Article 53) which includes establishment of the LIA Subdistrict. The LIA has a stated purpose “to accommodate those uses necessary to the operation of an international airport while ensuring that land uses and development associated with operations of the airport are confined to the airport boundary and that such uses do not impose adverse impacts on other areas of the East Boston Neighborhood District.” The LIA Subdistrict Zoning regulations support the East Boston Neighborhood Plan, developed with the extensive participation of the East Boston Planning and Zoning Advisory committee, civic associations, business groups, and residents.

- C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)
RPA: **Boston Region Metropolitan Planning Organization, *Charting Progress to 2040***

Describe the project’s consistency with that plan with regard to:

- 1) economic development;
- 2) adequacy of infrastructure; and
- 3) open space impacts.

See Section B above.

RARE SPECIES SECTION

I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))?
___ Yes **X** No; if yes, specify, in quantitative terms:

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

- B. Does the project require any state permits related to **rare species or habitat**?
___ Yes **X** No
- C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)?
___ Yes **X** No
- D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

II. Impacts and Permits

- A. Does the project site fall within Priority or Estimated Habitat in the current Massachusetts Natural Heritage Atlas (attach relevant page)?
___ Yes ___ No; if yes;
 - 1. Have you consulted with the Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP)?

Yes No; if yes, have you received a determination as to whether the project will result in the "take" of a rare species?
 Yes No; if yes, attach the letter of determination to this submission.

2. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)?
 Yes No; if yes, provide a summary of proposed measures to minimize and mitigate rare species impacts.
3. Which rare species are known to occur within the Priority or Estimated Habitat?

4. Has the site been surveyed for rare species in accordance with the Massachusetts Endangered Species Act?
 Yes No
5. If your project is within Estimated Habitat, have you filed a Notice of Intent or received an Order of Conditions for this project?
 Yes No; if yes, did you send a copy of the Notice of Intent to the Natural Heritage and Endangered Species Program, in accordance with the Wetlands Protection Act regulations?
 Yes No

- B. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)?
 Yes No; if yes, provide a summary of proposed measures to minimize and mitigate impacts to significant habitat:

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))?
 Yes No; if yes, specify, in quantitative terms:

- B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**?
 Yes No; if yes, specify which permit:

- C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

- A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)?
 Yes No; if yes, has a Notice of Intent been filed?
 Yes No; if yes, list the date and MassDEP file number:
_____; and has a local Order of Conditions been issued?
 Yes No; was the Order of Conditions appealed?
 Yes No; will the project require a Variance from the Wetlands regulations?
 Yes No.

B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

<u>Coastal Wetlands</u>	<u>Area (square feet) or Length (linear feet)</u>	<u>Temporary or Permanent Impact?</u>
Land Under the Ocean	_____	_____
Designated Port Areas	_____	_____
Coastal Beaches	_____	_____
Coastal Dunes	_____	_____
Barrier Beaches	_____	_____
Coastal Banks	_____	_____
Rocky Intertidal Shores	_____	_____
Salt Marshes	_____	_____
Land Under Salt Ponds	_____	_____
Land Containing Shellfish	_____	_____
Fish Runs	_____	_____
Land Subject to Coastal Storm Flowage	_____	_____
<u>Inland Wetlands</u>		
Bank (If)	_____	_____
Bordering Vegetated Wetlands	_____	_____
Isolated Vegetated Wetlands	_____	_____
Land under Water	_____	_____
Isolated Land Subject to Flooding	_____	_____
Bordering Land Subject to Flooding	_____	_____
Riverfront Area	_____	_____

D. Is any part of the project:

1. proposed as a **limited project**?
 Yes No; if yes, what is the area (in sf)? ____;
2. the construction or alteration of a **dam**?
 Yes No; if yes, describe:

3. fill or structure in a **velocity zone** or **regulatory floodway**?
 Yes No
4. dredging or disposal of dredged material?
 Yes No; if yes, describe the volume of dredged material and the proposed disposal site:

5. a discharge to an **Outstanding Resource Water (ORW)** or an **Area of Critical Environmental Concern (ACEC)**?
 Yes No
6. subject to a wetlands restriction order?
 Yes No; if yes, identify the area (in sf):

7. located in buffer zones?

___ Yes ___ No; if yes, how much (in sf)? ___

E. Will the project:

1. be subject to a local wetlands ordinance or bylaw?

___ Yes ___ No

2. alter any federally-protected wetlands not regulated under state law?

___ Yes ___ No; if yes, what is the area (sf)? ___

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91?

___ Yes ___ No; if yes, is there a current Chapter 91 License or Permit affecting the project site?

___ Yes ___ No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

This parcel is within the Airport Boundary and is subject to exemption at 310 CMR 9.03(3)b.

B. Does the project require a new or modified license or permit under M.G.L.c.91?

___ Yes ___ No

D. Is the project located on landlocked tidelands?

___ Yes ___ No

E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations?

___ Yes ___ No

F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR?

___ Yes ___ No

G. Does the project include dredging?

___ Yes ___ No; if yes, answer the following questions:

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone?

___ Yes ___ No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management:

B. Is the project located within an area subject to a Municipal Harbor Plan?

___ Yes ___ No

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))?

___ Yes X No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**?

___ Yes X No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you

answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

II. Impacts and Permits

A. Describe, in gallons per day (gpd), the volume and source of water use for existing and proposed activities at the project site:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Municipal or regional water supply	_____	_____	_____
Withdrawal from groundwater	_____	_____	_____
Withdrawal from surface water	_____	_____	_____
Interbasin transfer	_____	_____	_____

(NOTE: Interbasin Transfer approval will be required if the basin and community where the proposed water supply source is located is different from the basin and community where the wastewater from the source will be discharged.)

B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project?
 ___ Yes ___ No

C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted?
 ___ Yes ___ No; if yes, attach a map of the drilling sites and a summary of the alternatives considered and the results:

D. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)?

Will the project require an increase in that withdrawal?
 ___ Yes ___ No; if yes, then how much of an increase (gpd)?

E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility?

___ Yes ___ No. If yes, describe existing and proposed water supply facilities at the project site:

	<u>Permitted Flow</u>	<u>Existing Avg Daily Flow</u>	<u>Project Flow</u>	<u>Total</u>
Capacity of water supply well(s) (gpd)	_____	_____	_____	_____
Capacity of water treatment plant (gpd)	_____	_____	_____	_____

F. If the project involves a new interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

G. Does the project involve:

1. new water service by the Massachusetts Water Resources Authority or other agency of the Commonwealth to a municipality or water district?
 ___ Yes ___ No

2. a Watershed Protection Act variance?
 ___ Yes ___ No; if yes, how many acres of alteration?

3. a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities?
 ___ Yes ___ No

III. Consistency

Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities and services:

WASTEWATER SECTION

I. Thresholds / Permits

- A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))?
 ___ Yes **X** No; if yes, specify, in quantitative terms:

- B. Does the project require any state permits related to **wastewater**?
 ___ Yes **X** No; if yes, specify which permit:
- C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

- A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Discharge of sanitary wastewater	_____	_____	_____
Discharge of industrial wastewater	_____	_____	_____
TOTAL	_____	_____	_____

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Discharge to groundwater	_____	_____	_____
Discharge to outstanding resource water	_____	_____	_____
Discharge to surface water	_____	_____	_____
Discharge to municipal or regional wastewater Facility	_____	_____	_____
TOTAL	_____	_____	_____

- B. Is the existing collection system at or near its capacity?
 ___ Yes ___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

- C. Is the existing wastewater disposal facility at or near its permitted capacity?
 ___ Yes ___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

- D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility?
 ___ Yes ___ No; if yes, describe as follows:

	<u>Permitted</u>	<u>Existing Avg Daily Flow</u>	<u>Project Flow</u>	<u>Total</u>
Wastewater treatment plant capacity (in gallons per day)	_____	_____	_____	_____

- E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?
- F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district?
 ___ Yes ___ No
- G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials?
 ___ Yes ___ No; if yes, what is the capacity (tons per day):

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Storage	_____	_____	_____
Treatment	_____	_____	_____
Processing	_____	_____	_____
Combustion	_____	_____	_____
Disposal	_____	_____	_____

- H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

III. Consistency

- A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:
- B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan?
 ___ Yes ___ No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

- A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))?
 _ Yes **_X_** No; if yes, specify, in quantitative terms:

- B. Does the project require any state permits related to **state-controlled roadways**?
 ___ Yes **_X_** No; if yes, specify which permit:

- C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Number of parking spaces (commercial)	_____	_____	_____
Number of vehicle trips per day	_____	_____	_____
ITE Land Use Code(s):	_____	_____	_____

B. What is the estimated average daily traffic on roadways serving the site?

<u>Roadway</u>	<u>Existing</u>	<u>Change</u>	<u>Total</u>
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement:

D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

E. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site?

Yes ____ No; if yes, describe if and how will the project will participate in the TMA:

F. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities?

____ Yes ____ No; if yes, generally describe:

G. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)?

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))?

X Yes ____ No; if yes, specify, in quantitative terms:

The project would exceed the threshold under 301 CMR 11.03 (6)(a)7, for “Construction of 1,000 or more new parking spaces at a single location.”

- B. Does the project require any state permits related to **roadways or other transportation facilities**?

Yes No; if yes, specify which permit:

- C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

- A. Describe existing and proposed transportation facilities in the immediate vicinity of the project site:

Boston-Logan International Airport is a major regional and international transportation facility. The Airport is well-served by access to public transportation and a major regional roadway network. HOV service to the Airport includes MBTA Blue Line rail rapid transit and Massport-subsidized Silver Line bus rapid transit, MBTA commuter ferry service, and MBTA local and express bus service. Massport also operates an extensive Logan Express Bus service serving five locations. Numerous other express bus and intercity bus services also serve Logan Airport. Massport provides free shuttle bus service between MBTA Airport Station and all terminals.

The Parking Project would add 5,000 additional commercial parking spaces at two proposed on-Airport locations. Massport initially considered six on-Airport sites and with input from key community stakeholders has selected two proposed sites (Economy Garage and Terminal E Surface Lot). Both sites are already used for parking. No on- or off-Airport impacts or relocations are anticipated. There are no substantive environmental or operational differences among any of the sites considered.

- B. Will the project involve any:
1. Alteration of bank or terrain (in linear feet)?
 Yes No
 2. Cutting of living public shade trees (number)?
 Yes No
 3. Elimination of stone wall (in linear feet)?
 Yes No

- III. **Consistency** -- Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan:

The Logan Airport Parking Project is consistent with recent Massport planning efforts and regional planning goals.

The Parking Project is aligned with overall goals to preserve the current transportation infrastructure in a state of good repair and improve mobility throughout the region. The project is included in Massport's Capital Program FY18-22.

The intent of the Logan Airport Parking Freeze has been to shift air passengers to HOV travel modes with lower VMT. However, from the 1970s through the present, survey data at Logan Airport have shown that when demand for parking starts to exceed supply, a constraint on parking supply at the Airport has the unintended consequence of shifting a larger share of air passengers to drop-off/pick-up travel modes. The greater number of

vehicle trips means increasing VMT and associated emissions – the opposite effect of what the Logan Airport Parking Freeze was intended to achieve.

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))?

___ Yes No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **energy**?

___ Yes No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

II. Impacts and Permits

A. Describe existing and proposed energy generation and transmission facilities at the project site:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Capacity of electric generating facility (megawatts)	_____	_____	_____
Length of fuel line (in miles)	_____	_____	_____
Length of transmission lines (in miles)	_____	_____	_____
Capacity of transmission lines (in kilovolts)	_____	_____	_____

B. If the project involves construction or expansion of an electric generating facility, what are:

1. the facility's current and proposed fuel source(s)?

2. the facility's current and proposed cooling source(s)?

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way?

___Yes ___No; if yes, please describe:

D. Describe the project's other impacts on energy facilities and services:

III. Consistency

Describe the project's consistency with state, municipal, regional, and federal plans and policies for enhancing energy facilities and services:

AIR QUALITY SECTION

The purpose of the Logan Airport Parking Project is to decrease local and regional air emissions by reducing the number of drop-off/pick-up trips to and from Logan Airport. By adding 5,000 on-Airport commercial parking spaces, the environmental analysis shows it would result in an over 25 percent annual reduction of carbon dioxide (CO₂), volatile organic compounds (VOC), and oxides of nitrogen (NO_x) emissions in 2022 and an approximately 20 percent annual reduction in 2030 as compared to the No-Build Alternative. Please see Attachment 2, *Project Narrative*, for additional information.

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))?

___ Yes X No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**?

___ Yes X No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

II. Impacts and Permits

A. Does the project involve construction or modification of a major stationary source (see 310 CMR 7.00, Appendix A)?

___ Yes ___ No; if yes, describe existing and proposed emissions (in tons per day) of:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Particulate matter	_____	_____	_____
Carbon monoxide	_____	_____	_____
Sulfur dioxide	_____	_____	_____
Volatile organic compounds	_____	_____	_____
Oxides of nitrogen	_____	_____	_____
Lead	_____	_____	_____
Any hazardous air pollutant	_____	_____	_____
Carbon dioxide	_____	_____	_____

B. Describe the project's other impacts on air resources and air quality, including noise impacts:

III. Consistency

A. Describe the project's consistency with the State Implementation Plan:

It is expected that once MassDEP amends the Logan Airport Parking Freeze, the Logan Airport Parking Project will be consistent with the Massachusetts State Implementation Plan (SIP). The Project would be consistent with the Massachusetts SIP goal of reducing VMT and associated emissions. The Parking Project would provide would-be parkers the option of parking instead of choosing an undesirable drop-off/pick-up ground access mode.

B. Describe measures that the proponent will take to comply with other federal, state, regional, and local plans and policies related to air resources and air quality:

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))?

___ Yes X No; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **solid and hazardous waste**?
 Yes No; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

II. Impacts and Permits

A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of solid waste?

Yes No; if yes, what is the volume (in tons per day) of the capacity:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Storage	_____	_____	_____
Treatment, processing	_____	_____	_____
Combustion	_____	_____	_____
Disposal	_____	_____	_____

B. Is there any current or proposed facility at the project site for the storage, recycling, treatment or disposal of hazardous waste?

Yes No; if yes, what is the volume (in tons or gallons per day) of the capacity:

	<u>Existing</u>	<u>Change</u>	<u>Total</u>
Storage	_____	_____	_____
Recycling	_____	_____	_____
Treatment	_____	_____	_____
Disposal	_____	_____	_____

C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:

D. If the project involves demolition, do any buildings to be demolished contain asbestos?

Yes No

E. Describe the projects other solid and hazardous waste impacts (including indirect impacts):

III. Consistency

Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission?

Yes No; if yes, attach correspondence.

For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources?

Yes No; if yes, attach correspondence.

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth?

Yes No; if yes, does the project involve the demolition of all or any exterior part of such historic structure?

Yes No; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth?
___ Yes ___X_ No; if yes, does the project involve the destruction of all or any part of such archaeological site?

___ Yes ___ No; if yes, please describe:

D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

II. Impacts

Describe and assess the project's impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

III. Consistency

Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

(Name) Boston Herald, The Boston Globe Date) March 31, 2017

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

Signatures:



Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing ENF (if different from above)
------	---	------	---

<u>Stewart Dalzell</u>			
Name (print or type)		Name (print or type)	

<u>Massport</u>			
Firm/Agency		Firm/Agency	

<u>Harborside Drive</u>			
Street		Street	

<u>Boston</u>			
Municipality/State/Zip		Municipality/State/Zip	

<u>617-568-3524</u>			
Phone		Phone	

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Attachment 1

FIGURES

- **Figure 1.1 - Logan Airport USGS Site Map**
- **Figure 1.2 - Existing Land Use**
- **Figure 1.3 - Photographs of Existing Parking Conditions During Periods of Peak Demand**
- **Figure 1.4 - Initial Site Options Considered for New Parking Garage Facilities**
- **Figure 1.5 - Proposed Sites for New Parking Garage Facilities**
- **Figure 1.6 - Project Context: Recent and Reasonably Foreseeable Projects**
- **Figure 1.7 - Environmental Resources**

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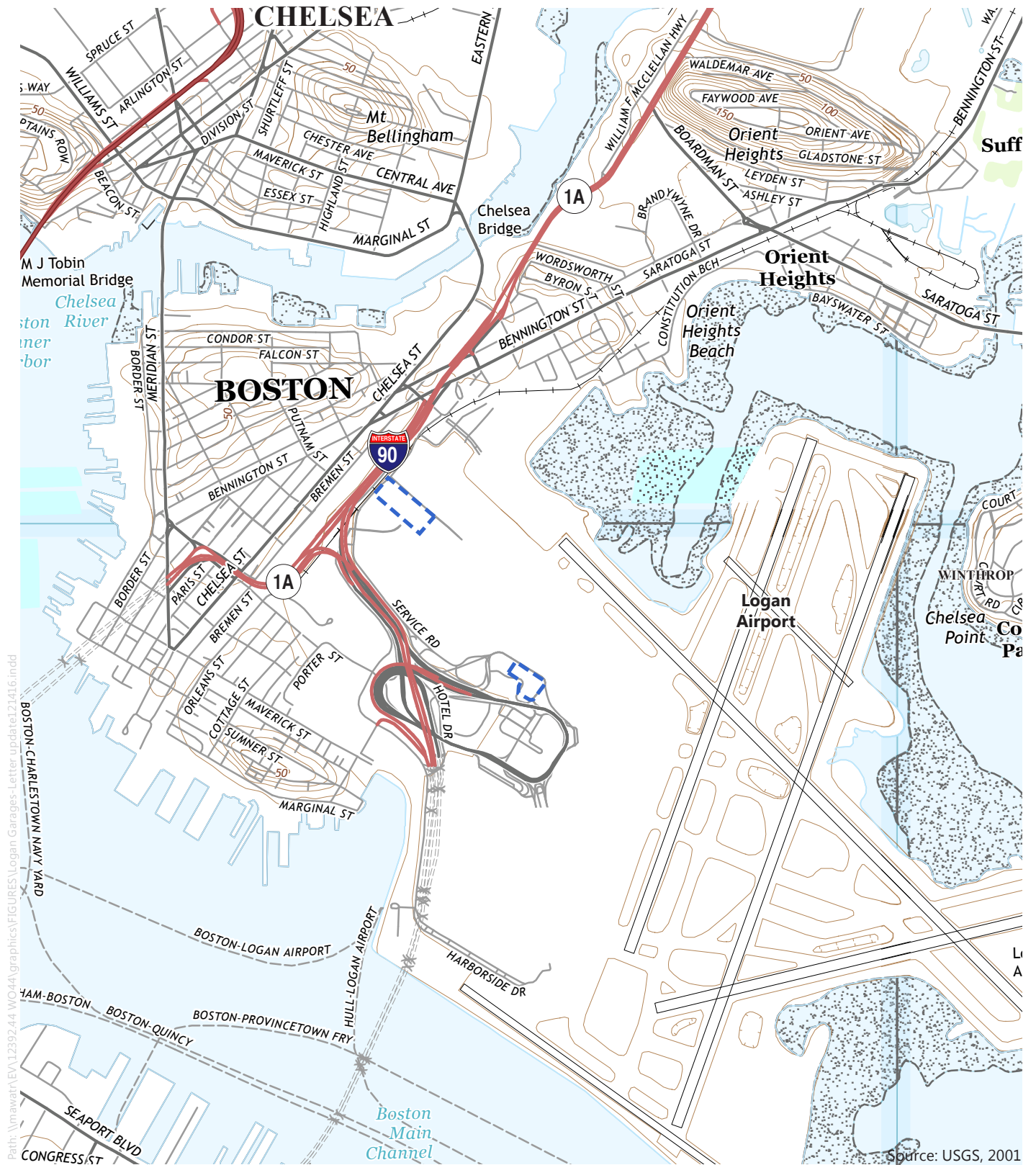



FIGURE 1.1 Logan Airport USGS Site Map

Logan Airport Parking Project

 Proposed location for Parking Garage Project
(5,000 new spaces split between the two existing parking sites)



Note: Study area includes two proposed sites for the new parking spaces.



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FIGURE 1.2 Existing Land Use

Logan Airport Parking Project





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FIGURE 1.3

**Photographs of Existing Parking Conditions
During Periods of Peak Demand**

Logan Airport Parking Project



FIGURE 1.4 Initial Site Options Considered for New Parking Garage Facilities





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Source: Massport

FIGURE 1.5 Proposed Sites for New Parking Garage Facilities

Logan Airport Parking Project

- 1 Economy Garage – additional floors atop existing garage
- 2 Terminal E Surface Lot – garage in location of existing surface parking lot


 Proposed Parking Sites





FIGURE 1.6 Project Context: Recent and Reasonably Foreseeable Projects

Logan Airport Parking Project

- 1 Economy Garage – additional floors atop existing garage
- 2 Terminal E Surface Lot – garage in location of existing surface parking lot

Proposed Parking Sites





FIGURE 1.7 Environmental Resources

- 1 Economy Garage – additional floors atop existing garage
- 2 Terminal E Surface Lot – garage in location of existing surface parking lot



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Attachment 2
PROJECT NARRATIVE

- **Introduction**
- **Project Context**
- **Detailed Project Description**
- **Alternatives**
- **Environmental Analysis of Regional VMT and Air Emissions**
- **Conclusion**

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PROJECT NARRATIVE

2.1 Introduction

The Massachusetts Port Authority (Massport) has developed and continues to implement a comprehensive strategy to diversify and enhance ground transportation options for air passengers and employees to and from Boston-Logan International Airport (Logan Airport or Airport). Massport's ground transportation strategy is designed to maximize the use of transit, shared-ride and other high occupancy vehicle (HOV) modes for travel to and from Logan Airport, and to minimize regional and local vehicle trips. Massport's strategy aims to minimize impacts to the transportation system, environment, and community, while providing air passengers with as many alternatives as possible for convenient travel to and from Logan Airport. Massport is particularly focused on reducing the number of private vehicles that access Logan Airport via environmentally undesirable drop-off/pick-up modes,¹ which generate up to four vehicle trips per passenger. These strategies and investments have proven successful at Logan Airport, an industry leader in HOV access.

Despite Massport's industry-leading efforts promoting and providing transit, shared-ride, and other HOV mode use, the number of private passenger vehicle trips to the Airport continues to increase as Logan Airport air traveler numbers increase. In particular, the constrained parking supply at Logan Airport, which results from the Logan Airport Parking Freeze (the Parking Freeze),² has the unintended consequence of causing an increase in environmentally harmful drop-off/pick-up vehicle trips. Survey data collected from the 1970s to the present at Logan Airport have consistently shown that when demand for parking starts to exceed supply, approximately 75 percent of would-be parkers among air passengers shift to drop-off/pick-up travel modes. These modes generate higher vehicle miles traveled (VMT) and associated vehicle emissions and exacerbate vehicle congestion on the Airport's terminal area roadways and at the terminal curbs during peak travel periods.

Airport commercial parking differs from other urban parking facilities in two important respects, which cause the drop-off/pick-up phenomenon. First, airport parking spaces turn over much less frequently; thus, more parking capacity is required at an airport to support the same number of vehicles than in an urban/workplace setting. Second, as a general matter, commuters traveling daily to an urban work location will not turn to drop-off/pick-up modes as an alternative means of travel if parking is constrained. Hence, in an urban core such as Boston, parking constraints tend to force commuters to travel by less environmentally harmful HOV transportation alternatives. Unlike urban commuters, air travelers do not go to the airport on a daily basis, so drop-off/pick-up modes are more practical options. Accordingly, constrained parking at Logan Airport can have the unintended adverse environmental consequence of increased VMT and air emissions.

To address operational and environmental problems caused by the existing constrained parking supply, Massport developed a Long-Term Parking Management Plan, which was first published in the *2012/2013 Logan Airport Environmental Data Report (EDR)*.³ The Long-Term Parking Management Plan sets out a

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

2 310 Code of Massachusetts Regulations 7.30 and 40 Code of Federal Regulations 52.1120.

3 Massport. 2014. *Boston-Logan International Airport 2012/2013 Environmental Data Report*. <https://www.massport.com/environment/environmental-reporting/>. Accessed February 5, 2016.

multi-element strategy for efficiently managing parking supply, pricing, and operations. Massport’s goals are to maximize transit/shared-ride HOV ground access, while both reducing parking demand and minimizing drop-off/pick-up activity. As one element of its comprehensive strategy to maintain a balanced transportation system, Massport proposes to build 5,000 additional on-Airport commercial parking spaces at Logan Airport. The new spaces are intended to accommodate existing and anticipated air passenger demand for parking at the Airport while minimizing drop-off/pick-up activity, and will be planned, constructed, and operated in an environmentally sensitive manner. As demonstrated in this Environmental Notification Form (ENF), the new parking spaces would reduce drop-off/pick-up activity and regional air passenger-related VMT and associated vehicle air emissions.

The environmental analysis contained in this ENF presents the regional air quality benefits of reducing airport-related VMT by adding 5,000 on-Airport commercial parking spaces to be in service between 2022 and 2024.⁴ The analysis shows that, compared with not adding 5,000 more spaces (the No-Build Alternative), the added long-term parking spaces would decrease drop-off/pick-up travel and associated VMT. This would result in an over 25 percent annual reduction of carbon dioxide (CO₂), volatile organic compounds (VOC), and oxides of nitrogen (NO_x) emissions in 2022 and an approximately 20 percent annual reduction in 2030 (see Section 2.5, *Environmental Analysis of Regional VMT and Air Emissions*) as compared to the No-Build Alternative.

This ENF serves as the first step in the environmental review of the Logan Airport Parking Project (the Parking Project or Project) under MEPA. The Project is subject to MEPA review under 301 CMR 11.03 (6)(a)7, which requires a mandatory Environmental Impact Report (EIR) for “Construction of 1,000 or more new parking spaces at a single location.” Massport’s proposed scope for the Draft EIR (DEIR) is included as Attachment 3, *Proposed DEIR Scope*.

This ENF describes the proposed Logan Airport Parking Project, the concepts developed to date, potential benefits and impacts, and anticipated permit requirements. Massport initially considered six potential on-Airport parking locations for siting the additional parking spaces. Each of these sites currently include structured parking, surface parking, or both, as an existing use. With input from key community stakeholders, two preferred site locations for constructing 5,000 parking spaces (Build Alternative), as described in Sections 2.3, *Detailed Project Description*, and 2.4, *Alternatives*, were selected. These include new spaces above the existing Economy Garage and new spaces above the Terminal E surface lot.

As described in Section 2.2.2, *History of the Logan Airport Parking Freeze*, the 1989 amendment of the Logan Airport Parking Freeze by the Massachusetts Department of Environmental Protection (MassDEP), the most recent substantive amendment to the Parking Freeze, increased the number of commercial parking spaces allowed at Logan Airport based on a similar premise. The U.S. Environmental Protection Agency (EPA) approval of the 1989 MassDEP Parking Freeze Amendment described the phenomenon, stating:

“The existing parking freeze has had the unanticipated effect of vastly increasing passenger drop-off and pick-up, resulting in twice as many vehicle trips as would occur if each passenger drove to the Airport.”⁵

As was the case in 1989, the construction of additional commercial parking spaces at Logan Airport is pending approval of a regulatory change,⁶ to be adopted by MassDEP, to amend the Parking Freeze to

4 If the Parking Project advances, a portion of the 5,000 parking spaces are likely to go into service before 2024. Massport is currently evaluating potential phasing options. It is anticipated that all 5,000 spaces would be operational between 2022 and 2024.

5 Approval and Promulgation of Air Quality Implementation Plans; Massachusetts; Amendment to the Massachusetts Port Authority/Logan Airport Parking Freeze and City of Boston/East Boston Parking Freeze, 58 Federal Register 14153 [March 1993].

6 310 Code of Massachusetts Regulations 7.30.

allow additional commercial parking spaces at Logan Airport. MassDEP has now initiated the public process to amend the Parking Freeze based on the same drop-off/pick-up phenomenon. Consistent with the 1989 Amendment process, Massport has proposed several broad mitigation commitments to MassDEP associated with the proposed Parking Freeze amendment, including studies to aid Massport’s long-range efforts to address VMT and air quality impacts of different ground access modes for travel to and from Logan Airport. Further detail about the status of the MassDEP process is provided below in Section 2.2.2.2, *Concurrent MassDEP Regulatory Process*. In addition to state air quality regulations, the Logan Airport Parking Freeze, referenced above, is an element of the Massachusetts State Implementation Plan (SIP) under the Federal Clean Air Act.⁷

Consistent with the 1989 Amendment process, Massport has proposed several broad mitigation commitments to MassDEP associated with the proposed Parking Freeze amendment. These proposed studies would aid Massport’s long-range efforts to address VMT and air quality impacts of different ground access modes for travel to and from Logan Airport. Massport has proposed three long-term studies:

- **Ways to improve HOV access to the Airport** – this study would evaluate the feasibility and effectiveness of potential measures to improve HOV access to Logan Airport. The study would consider, among other things, possible improvements to Logan Express bus service, additional Logan Express sites, and the benefit of improvements to the Silver Line service to Logan Airport.
- **Strategies for reducing drop-off/pick-up modes** – this study would evaluate the feasibility and effectiveness of potential operational measures to reduce drop-off/pick-up modes of access to Logan Airport.
- **Parking pricing strategies** – this study would assess parking pricing strategies and their effect on customer behavior and VMT.

See Section 2.2.1.1, *Massport’s Continued Support of HOV Improvements*, for a detailed description of Massport’s HOV efforts.

Massport will also coordinate with the Federal Aviation Administration (FAA) regarding review required under the National Environmental Policy Act (NEPA) for the addition of new parking spaces. The level of required NEPA review, if required, will depend on the chosen alternative and will be at the discretion of the FAA.

The narrative below is organized as follows:

- **Section 2.2, Project Context.** Describes Massport’s comprehensive ground transportation strategy, its Long-Term Parking Management Plan, and current and anticipated future parking conditions at the Airport. This section also describes the history of the Logan Airport Parking Freeze and coordination with the MassDEP regulatory process required to amend the Parking Freeze regulations.
- **Section 2.3, Detailed Project Description.** Describes the Parking Project, its benefits, and consistency with other projects and planning efforts. Anticipated permit requirements, the anticipated NEPA process, and stakeholder outreach (to date and future activities) are also discussed.
- **Section 2.4, Alternatives.** Discusses the No-Build Alternative and the analysis and screening of six initial feasible siting locations. Two sites are proposed which together will accommodate 5,000 parking spaces (Build Alternative).

⁷ 42 U.S.C. §7401 et seq. [1970].

- **Section 2.5, *Environmental Analysis of Regional VMT and Air Emissions*.** Provides a comparison of the environmental effects of the No-Build and Build Alternatives. This section is focused on anticipated regional VMT reductions and associated emissions improvements.
- **Section 2.6, *Conclusion*.** Summarizes the Project Narrative.

The proposed scope for the DEIR, which will further assess potential environmental impacts and benefits, is included as Attachment 3, *Proposed DEIR Scope*.

2.2 Project Context

Logan Airport is New England’s primary airport serving as a regional connecting hub with both domestic and international destinations. In 2015, passenger activity levels reached 33.4 million passengers.⁸ Located close to downtown Boston, Logan Airport is one of the most land-constrained airports in the nation; the Airport encompasses approximately 1,700 acres of land in East Boston and Winthrop, Massachusetts, and includes an additional 700 acres of water within Boston Harbor (for a combined total of 2,400 acres). The Airport, which is owned and operated by Massport, is well-served by public transportation, with close to 30 percent of travelers accessing the Airport via HOV (among the highest for U.S. airports), and is connected directly to the regional highway network.

Logan Airport has a ground access pattern determined by its primary role as an origin and destination (O&D) airport rather than a “hub.” O&D activity refers to the passenger traffic that either originates or ends at a particular airport or market. Connecting hub airports have much smaller relative ground access activity since a high percentage of airport passengers are simply connecting between aircraft and never leave the terminal. A strong O&D market like Boston generates significant local passenger demand, with many passengers starting and ending their journey at Logan Airport. Over 90 percent of Logan Airport travelers are O&D passengers and therefore use some form of local ground transportation to reach their final destinations.

Massport is unique among state agencies and airports in the U.S. for publishing annual environmental reports specifically designed to describe, analyze, and project the cumulative effects of Logan Airport operations, based on current and anticipated future operating conditions. The Logan Airport EDRs are submitted for MEPA review, including public comments and issuance of a Certificate by the Secretary (EEA #3247). Approximately every five years, Massport prepares an Environmental Status and Planning Report (ESPR), which provides an historical and prospective view of Logan Airport. The most recent ESPR was the *2011 ESPR*, submitted and reviewed in 2013. EDRs, prepared annually in the intervals between ESPRs, provide a review of environmental conditions for the reporting year compared to the previous year. The most recent report was the *2015 EDR*, published in 2016. See Section 2.3.5.1, *Logan Airport Environmental Status and Planning Report (ESPR)/Environmental Data Report (EDR)* for more detail.

2.2.1 Massport’s Ground Transportation Strategy

As described in the Logan Airport EDRs and ESPRs, Massport’s comprehensive ground transportation strategy is designed to maximize use of transit, shared-ride, and other HOV options for travel by passengers and employees to and from Logan Airport and to minimize vehicle trips. Massport continues

⁸ Logan Airport reached a new high in 2016, serving over 36 million passengers.

to invest in and operate Logan Airport with a goal of building its nation-leading program to maximize the number of passengers who arrive at the Airport by transit and other HOV modes.

Air passengers have three major options for getting to Logan Airport: (1) transit and other shared-ride (HOV) services; (2) drive to Logan Airport and park; or (3) drop-off/pick-up modes, which can involve a private vehicle, taxi, limousine, or taxi alternative. HOV modes include:

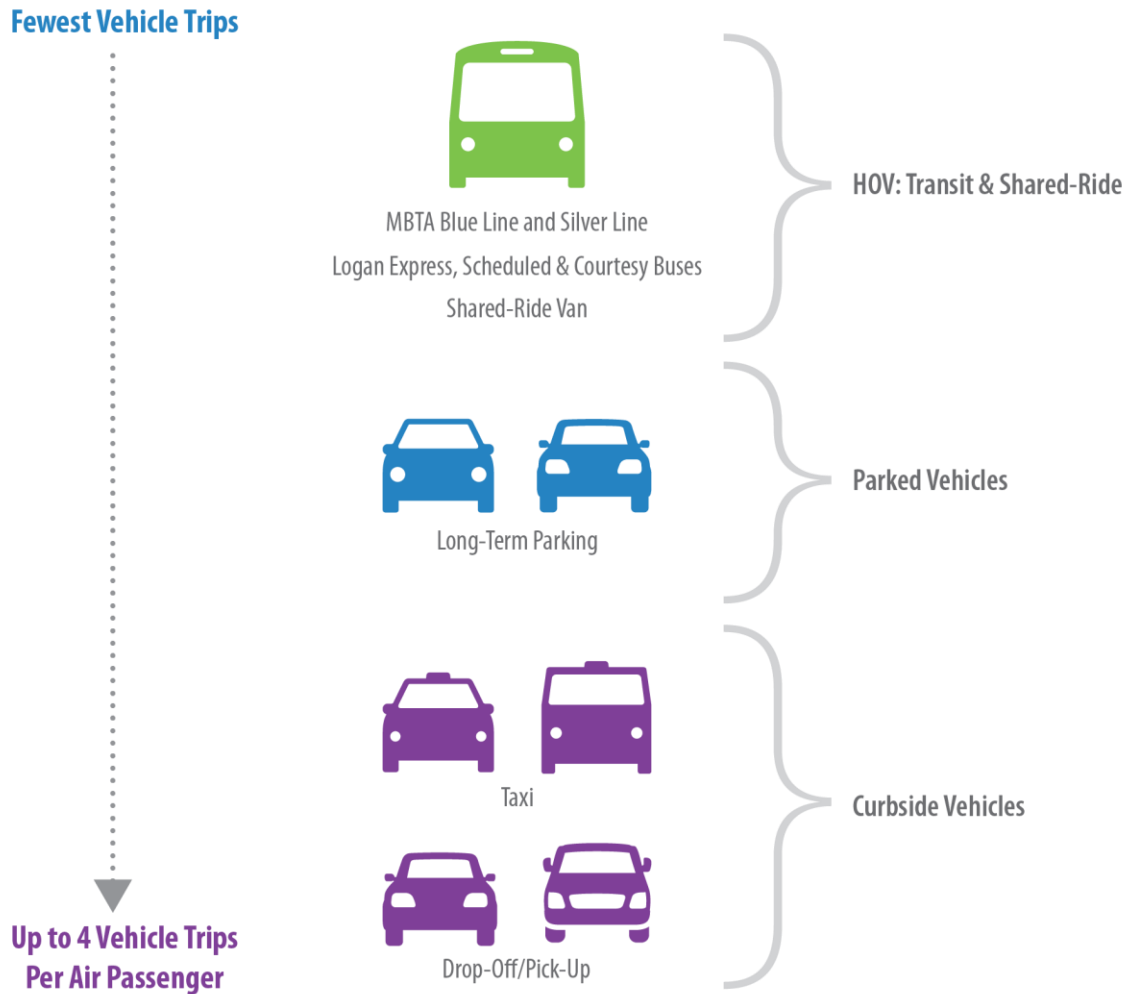
- Public transit (Blue Line rapid transit, Silver Line bus rapid transit, Massachusetts Bay Transportation Authority (MBTA) bus, and water transportation);
- Logan Express scheduled bus service;
- Scheduled private carrier buses and vans;
- Courtesy shuttle buses;
- Charter buses; and
- Unscheduled private HOV limousines and vans.

Non-HOV modes include private vehicles, rental cars, and taxis (regardless of the number of passengers in a vehicle).

Figure 2.1 shows the hierarchy of ground access mode share options for Logan Airport air passengers, ranked by their environmental performance, and the associated number of trips with each mode choice. Different travel modes to the Airport have a varying number of vehicle trips associated with them, ranging from HOV transit trips (lowest number of trips, lowest emissions per air passenger), to drop-off/pick-up modes (highest number of trips, highest emissions per air passenger). Massport’s ground access strategy strives to reduce the number of passengers arriving by drop-off/pick-up and other single occupancy travel modes by encouraging those passengers to use more environmentally beneficial modes.

Figure 2.1 Ground-Access Mode Choice and Associated Trips Hierarchy

Hierarchy of Ground-Access Mode Choices (Based on Vehicle Trips per Passenger)



Note: Short-term parking is included under "drop-off/pick-up"

Massport conducts periodic *Air Passenger Ground Access Surveys* as part of its ongoing review of ground access and strategic planning initiatives. **Table 2.1** presents the ground-access mode share percentages identified through the 2013 survey.

Table 2.1 Ground Access Mode Share (according to 2013 Passenger Survey)

Ground Access Mode	Percent of Passengers
Non-HOV/Automobile	
Private Automobile (including drop-off/pick-up)	43%
Taxi	19%
Rental car	10%
Total Non-HOV Share	72%
HOV/Shared-Ride	
Limousine/Van	8%
Logan Express Bus	4%
Other Express Bus	3%
MBTA Transit	8%
Courtesy Shuttle	3%
Other	2%
Total HOV Share	28%

Source: Spring 2013 Air Passenger Ground Access Survey.

Air passenger ground access modes are grouped into the following categories:

- Private Automobile: Includes all passengers that are dropped-off by a privately-owned automobile, and all passengers who drive and park their vehicles at the Airport.
- Taxi: A passenger driven to Logan Airport in a licensed, commercial taxi.
- Rental Car: A passenger who rents a car from an on-Airport or nearby off-Airport rental car agency.
- Express Bus Service: A passenger who arrives at Logan Airport via scheduled bus, limousine, or van service, including privately-operated services and Massport’s Logan Express.
- Limousine/Van Service: Includes passengers who travel to Logan Airport via unscheduled limousine or van providers.
- MBTA Transit: A passenger who takes an MBTA public transit service (including the Blue Line subway and Silver Line bus rapid transit) or one of the water transportation services (operated in conjunction with a dedicated Massport shuttle bus to/from Logan Airport terminals).
- Courtesy Shuttle: A passenger who arrives at the Airport in a courtesy shuttle, such as those offered by nearby hotels.
- Other: Includes passengers that access the Airport by walking, riding a bicycle, or taking a charter bus.

2.2.1.1 Massport’s Continued Support of HOV Improvements

Massport operates Logan Airport with a goal of maintaining and increasing HOV modes. Logan Airport continues to rank at the top of U.S. airports in terms of HOV/transit mode share, and current HOV mode share is close to 30 percent.⁹ Measures implemented by Massport to increase HOV use include a blend of strategies related to pricing (incentives and disincentives), service availability, service quality, marketing, and traveler information. Because of the diverse market segments of the Logan Airport air passenger traveler, no single measure will accomplish the goal to increase HOV mode share. Several of Massport’s efforts to actively promote HOV/shared-ride are listed below.

- The Airport is served by the MBTA Blue Line Airport Station, and Massport provides free shuttle bus service for passengers and employees between Airport Station and all terminals.

⁹ According to the 2013 Logan Airport Air Passenger Ground Access Survey, 27.8 percent of air passengers accessing Logan Airport used HOV modes of travel.

- Massport subsidizes the MBTA Silver Line Logan Airport route (SL1), a bus rapid transit service originating from South Station to the Airport, and provides free outbound Silver Line trips from the Airport on eight Silver Line buses purchased for this route by Massport.¹⁰
- Massport operates its own extensive Logan Express Bus service, currently serving five locations and over 1.5 million people. Massport regularly reviews these services and adjusts ride and parking rates to enhance ridership by both air passengers and Airport employees.
- MBTA rapid transit services are supplemented by MBTA commuter ferry service and MBTA local and express bus service.¹¹ Massport provides free bus service between the MBTA Blue Line, all terminals, and the Logan Airport water transportation dock along Harborside Drive.
- Massport provides priority, designated curb areas at all Airport terminals to support the use of HOV/transit modes.
- Other private express bus service and intercity bus service also serve Logan Airport, as part of the range of HOV modes available for ground access. These services account for approximately 6,500 of the total 20,000 plus HOV “seats” available to and from the Airport daily.
- Massport has also made substantial progress supporting pedestrian and bicycle access to the Airport.

Recent improvements to support HOV include: the Back Bay Logan Express pilot program (since May 2014); free MBTA Silver Line outbound boardings; a new 1,100-car parking garage at the Framingham Logan Express; reduced parking rates at Logan Express facilities; increased parking rates on the Airport; and support for private coach bus and van operators. To secure long-term operation of the Braintree Logan Express facility, Massport also recently purchased that property. Section 2.2.2.1, *1975 Logan Airport Parking Freeze and 1989 MassDEP Amendment*, below describes these recent HOV improvements.

2.2.1.2 Long-Term Parking Management Plan

In addition to supporting HOV, Massport actively manages parking supply as another strategy to reduce drop-off/pick-up modes. Massport manages the on-Airport parking supply at Logan Airport to: (1) promote long-term rather than short-term parking (thus reducing the number of daily trips to Logan Airport); (2) support efficient utilization of parking facilities; (3) provide good customer service; and (4) comply with the provisions of the Logan Airport Parking Freeze. Massport has dramatically reduced the number of on-Airport employee spaces since 1989, to further reduce VMTs.

The Long-Term Parking Management Plan, which was first included in the *2012/2013 EDR*, lays out a multi-part strategy for efficiently managing parking supply, pricing, and operations – both at Logan Airport and at Massport-controlled Logan Express locations – to maximize transit/shared-ride ground access while minimizing both drive-and-park and drop-off/pick-up modes. The Long-Term Parking Management Plan represents Massport’s current strategy to manage parking pricing, supply, and demand within the Logan Airport Parking Freeze.

¹⁰ In June 2001, Massport and the MBTA executed an interagency agreement for the purchase of eight Silver Line dual mode buses and the Massport Board approved the expenditure of approximately \$13 million for this purchase.

¹¹ Route 171 Dudley Station to Logan Airport via Andrew, Express bus 448 and 449 from Marblehead to Downtown via Logan Airport, and Express bus 459 from Salem to Downtown Crossing via Logan Airport, according to www.MBTA.com accessed on August 8, 2016.

Table 2.2 describes each parking plan element and progress to date. Massport is actively working to manage Airport parking and encourage the use of multi-occupant vehicle access to Logan Airport. Additional measures are currently under discussion as part of Massport’s strategic planning efforts.

The focus of the Long-Term Parking Management Plan is to identify efforts that Massport has undertaken, and will continue to implement in the future, to manage the supply, pricing, and operation of parking. The plan includes parking that Massport controls at both Logan Airport and Massport-controlled off-Airport locations.

Table 2.2 Long-Term Parking Management Plan Elements and Progress

Parking Plan Element	Progress since 2015
<p>Parking Supply:</p> <ul style="list-style-type: none"> • Add revenue-controlled parking spaces in the terminal area to bring supply up to the maximum number of spaces allowed under the Logan Airport Parking Freeze • Work to increase the supply of Massport-controlled off-Airport parking at Logan Express sites 	<ul style="list-style-type: none"> • Massport completed construction of approximately 1,700 commercial parking spaces at the Central Garage in late 2015. This project is consistent with the Logan Airport Parking Freeze and built out the maximum number of striped spaces under the existing Parking Freeze. • A new 1,100 car parking garage opened in Framingham on April 15, 2015, increasing on-site capacity at that location by approximately 550 spaces.
<p>Parking Pricing:</p> <ul style="list-style-type: none"> • Discourage air passengers from driving and parking at Logan Airport by ensuring that the least expensive Massport-controlled parking will be provided at remote Logan Express sites • Encourage more efficient use of available on-Airport parking by maintaining a meaningful price differential between rates at the Economy Parking Garage and terminal-area parking garages • Evaluate increased parking prices for terminal-area parking to encourage Airport passengers and visitors to consider transit and shared-ride alternatives 	<ul style="list-style-type: none"> • Massport has reduced parking rates at Logan Express facilities, from \$11.00 per day to \$7.00 per day. The least expensive parking at Logan Airport is \$23.00 per day. • Economy parking is currently \$23.00 per day; Central and Terminal B garage rates are currently \$32.00 per day. • Ongoing.

Table 2.2 Long-Term Parking Management Plan Elements and Progress (Continued)

Parking Plan Element	Progress since 2015
<p>Parking Demand:</p> <ul style="list-style-type: none"> Increase alternative HOV mode options to decrease use of private vehicles 	<ul style="list-style-type: none"> Implemented Back Bay Logan Express scheduled bus service pilot program in May 2014. Offers discounted parking and bus fares at all Logan Express locations during peak air travel periods. Placed signage in all terminals to help promote the use of the regional express bus carriers. Massport sponsors free outbound Silver Line bus service. Massport increased available parking from approximately 550 spaces to 1,100 spaces at its Framingham location to encourage the use of Logan Express. Massport works with private carriers to increase HOV options to and from Logan Airport. Massport supports the Sunrise Shuttle, which provides early morning bus service from East Boston prior to the start of MBTA service.
<p>Employee Parking:</p> <ul style="list-style-type: none"> Continue to work to reduce the number of Airport employees commuting by private automobile and parking at the Airport by: providing off-Airport parking both near Logan Airport and at Logan Express sites; and implementing measures to enhance employee commuting options. 	<ul style="list-style-type: none"> Massport provides employee parking in Chelsea with free bus transportation to the Airport. Massport offers discounted employee rates to encourage the use of Logan Express facilities. Additional early morning and late night bus service has been added to Logan Express sites to encourage use and better serve Logan Airport employee schedules. In April 2016, Massport further decreased the number of on-Airport employee parking spaces from 2,673 to 2,448 employee spaces.

Source: Massport

Constrained Parking Supply at Logan Airport

In 2016, there were a total of 18,640 commercial parking spaces at the Airport, supporting the approximately 12.5 percent of ground-access passengers who park their vehicles on-Airport. Logan Airport also provides 2,448 employee parking spaces on-Airport. The total number of spaces (21,088) is the total of commercial plus employee parking spaces permitted under the MassDEP Parking Freeze Regulation for Logan Airport. The baseline data year referenced for the environmental analysis in this ENF is 2014, which was the most recent year with a complete data set when the analysis was conducted and submitted to MassDEP (see Attachment 5, *Massport Request to Amend the Logan Airport Parking Freeze and Technical Memorandum*. The 2015 EDR was filed in December 2016 and in some cases, 2015 or 2016 data are provided (as available).¹²

¹² 2014 parking data are comparable to 2015 data presented in the 2015 EDR. As parking conditions presented in the 2015 EDR show, parking conditions are generally more constrained. As such, the analysis presented above represents a more conservative analysis in that more constrained conditions would result in higher VMT levels.

Massport has a long-standing history of reviewing air passenger and parking demand trends through the annual EDR/ESPR filings. The most recent analyses show that Logan Airport is experiencing sharp growth in passenger numbers and associated ground access and parking needs. Demand for passenger air service results from many external factors including economic growth, cost of travel, and demographic shifts. With annual air passenger levels now over 33 million,¹³ Logan Airport faces challenges in managing the associated demand for on-Airport parking, resulting in a growing number of days in which arriving vehicles are diverted or moved to non-garage parking areas on (and sometimes off) the Airport.

Despite Massport’s highly successful HOV/shared-ride mode use (close to 30 percent),¹⁴ private passenger vehicle trips continue to increase along with the increase in air passenger demand. With this growth in air traveler numbers, Logan Airport’s constrained parking supply has resulted in a significant increase in environmentally undesirable drop-off/pick-up vehicle trips, particularly during periods throughout the year that consistently experience high demand. Drop-off/pick-up is the least desirable mode choice since it can generate up to four vehicle trips per air passenger trip, compared to two trips per passenger for those who drive and park at the Airport (see **Figure 2.1**, and see the more detailed discussion in Section 2.5.2.2, *Ground-Access Mode Trips*).¹⁵

Massport expects that if parking supply is not constrained, VMT and parking activity will both grow at roughly the same pace as Airport passenger vehicle traffic volumes arriving from regional roadways. Data show that in 2014 gateway traffic volumes grew by 5.3 percent, although corresponding parking activity grew by only 1.3 percent. In 2015, gateway traffic volumes grew by 0.1 percent and parking activity decreased by 1.1 percent. Higher gateway volume growth coupled with lower parking activity growth suggests that vehicle drop-off/pick-up activity (and associated VMT to the Airport) is increasing.

In addition, increases in weekday peak commercial parking demand relative to supply places additional pressure on roadway and parking operations under the Logan Airport Parking Freeze. In 2015, over 100,000 cars were diverted or valeted.

The greater number of vehicle trips to and from the Airport caused by constrained parking supply means increasing regional and local VMT and associated vehicle emissions – the opposite of what the Logan Airport Parking Freeze and the Massachusetts SIP¹⁶ intended to achieve. Absent an increase in the on-Airport parking supply, the growing number of regional and local passenger trips will continue to cause an increase in automobile air emissions and curbside congestion due to drop-off/pick-up activity. As part of its Long-Term Parking Management Plan, Massport has been considering various options that will avoid and minimize increases in this type of drop-off/pick-up activity, including improvements to HOV capacity and other additional services.

2.2.1.3 Logan Airport Parking Project

Massport proposes to construct new parking facilities for an additional 5,000 in-service revenue commercial parking spaces. The facilities will target those air passengers who are currently using the drop-off/pick-up mode to access the Airport, or who in the future would do so because of insufficient parking at the Airport, and will provide parking for the portion of the additional air passengers who will seek to park at the

¹³ As presented in the 2015 EDR, Logan Airport served 33.4 million air passengers in 2015. Logan Airport reached a new high in 2016, serving over 36 million passengers.

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

¹⁵ For example, if an air passenger is dropped off when they depart on an air trip and is picked-up when they return, that single air passenger generates a total of four ground-access trips: two for the drop-off trip (one inbound to Logan Airport, one outbound from Logan Airport) and two for the pick-up trip (one inbound to Logan Airport, one outbound from Logan Airport).

¹⁶ The Clean Air Act requires states to develop a general plan to attain and maintain the National Ambient Air Quality Standards (NAAQS) in all areas of the country and a specific plan to attain the standards for each area designated nonattainment for NAAQS. These plans, known as State Implementation Plans (or SIPs), are developed by state and local air quality management agencies and submitted to EPA for approval.

Airport. Thus, the total number of commercial spaces within the Parking Freeze would increase from 18,640 to 23,640 commercial parking spaces (26,088 spaces total, including employee spaces). As described in more detail in Section 2.2.2.2, *Concurrent MassDEP Regulatory Process*, the Project is predicated on a MassDEP amendment to the Logan Airport Parking Freeze.

The Logan Airport Parking Project is expected to reduce local and regional VMT and associated vehicle emissions. The increased parking supply will be accompanied by continued improvements to HOV access to Logan Airport (MBTA transit, Logan Express, private bus carriers, and other services) to accommodate the proportional growth in demand as passenger levels increase, and to support Logan Airport's best-in-the-nation HOV mode share. The intent of the Logan Airport Parking Project is to provide an alternative to drop-off/pick-up modes for air passengers who fall outside of the public transit, Logan Express, and other HOV mode catchment areas.

The Parking Project would also enhance passenger customer level of service by reducing the need to divert parkers to off-Airport satellite parking locations, which increases air passenger Airport access time and VMTs and decreases convenience. Diminished customer service levels could have long lasting implications regarding mode share. As customer service levels related to parking diminish, air passengers are likely to choose other modes to access the Airport with increased environmental impacts. Survey data show that more than 75 percent of would-be parkers would choose environmentally undesirable drop-off/pick-up modes over HOV modes, if parking was not available to them. (See the more detailed discussion in Section 2.5.2.2, *Ground-Access Mode Trips*.) The Parking Project, coupled with maintained HOV capacity, would address the undesired air quality effects of drop-off/pick-up activity by decreasing the number of passengers choosing the drop-off/pick-up mode to access the Airport.¹⁷ Decreasing drop-off/pick-up activity also has the added benefit of reducing on-Airport roadway and terminal curbside congestion.

2.2.2 History of the Logan Airport Parking Freeze

The number of commercial and employee parking spaces allowed at Logan Airport is regulated by MassDEP through the Logan Airport Parking Freeze, which is an element of the Massachusetts SIP under the federal Clean Air Act. The section below describes the history of the Logan Airport Parking Freeze, beginning in 1975. This section also outlines current MassDEP regulatory requirements. Section 2.2.2.2, *Concurrent MassDEP Regulatory Process*, describes the regulatory amendment process currently underway.

2.2.2.1 1975 Logan Airport Parking Freeze and 1989 MassDEP Amendment

The Logan Airport Parking Freeze was originally adopted in 1975 by EPA under the federal Clean Air Act. The Logan Airport Parking Freeze was intended to reduce automobile emissions and to enable Massachusetts to achieve compliance with the National Ambient Air Quality Standards (NAAQS) for carbon monoxide (CO) at localized sites and for ozone on a regional basis. The original 1975 Parking Freeze set an upper limit of 10,215 commercial parking spaces on Airport property (**Table 2.3**). The original 1975 Parking Freeze did not regulate employee or rental car spaces, or Airport-related spaces in East Boston outside the Logan Airport boundary. The Logan Airport Parking Freeze was adopted by MassDEP in 1979/1980 as part of the SIP¹⁸ under the Clean Air Act.

The 1989 MassDEP Logan Airport Parking Freeze Amendment was developed to address evidence that constrained parking leads to increased drop-off/pick-up vehicle activity, resulting from an overall increase

¹⁷ Spring 2013 Logan Airport Air Passenger Ground Access Survey, Massport.

¹⁸ 40 Code of Federal Regulations 52.1120; 58 Fed. Reg. 14153.

in ground transportation VMT and emissions. The 1989 amendment was also intended to reduce parking impacts on the East Boston residential community, and to reduce employee parking at Logan Airport. The amendment was adopted by MassDEP as a regulation¹⁹ in 1989 and it was approved by EPA as part of the Massachusetts SIP. As shown in **Table 2.3**, the 1989 Parking Freeze Amendment increased the cap from 10,215 spaces to 19,315 (12,215 commercial spaces and 7,100 employee spaces).

While the intent of the Logan Airport Parking Freeze has been to shift air passengers to HOV travel modes with lower VMT, when demand for parking starts to exceed supply, the constraint on Airport parking has the unintended consequence of shifting a larger share of air passengers to drop-off/pick-up travel modes that generate a higher level of VMT. This pattern has been demonstrated in ground-access survey data collected from the 1970s to the present. The 1988 Metropolitan Planning Organization’s Policy Statement on the Logan Airport Parking Freeze, which provided the technical and policy basis for the 1989 MassDEP amendment, stated:

The Parking Freeze had been a partial success in that Massport had moved to aggressively encourage public transit access to Logan, but the Freeze has a major flaw: that is “severe parking shortages at the airport may cause an increase in both vehicle trips and traffic volume due to the phenomenon of drop-off/pick-up” ... “which increase automobile emissions both locally and regionally, which is contrary to the intended air quality goals.”

The situation that existed in 1989, and was the underpinning for the 1989 Logan Airport Parking Freeze Amendment, is also the case today. According to the 2013 *Logan Airport Air Passenger Ground Access Survey*, if parking was not an option for customers who parked on-Airport, 75 percent would use drop-off/pick-up vehicle modes (that is, dropped off by private vehicles, taxi, or black car/limousine services).

Under MassDEP’s 1989 Logan Airport Parking Freeze regulations, Massport was permitted to increase the number of commercial spaces under the cap by 2,000 spaces in acknowledgement of the approximately 2,000 non-commercial overflow spaces that Massport was making available during periods of peak demand. The 1989 regulations also allowed Massport to increase the number of commercial spaces if those spaces were permanently converted from employee spaces or if Massport relocated park-and-fly spaces from East Boston to the Logan Airport freeze area.²⁰ Since 1989, Massport has permanently converted 4,652 employee spaces to commercial use, resulting in a 66-percent reduction of employee parking spaces at Logan Airport. Since 1989, Massport also purchased three private park-and-fly facilities located in East Boston, containing a total of 1,773 park-and-fly spaces, and permanently relocated those spaces to the Airport. Consequently, as allowed under the MassDEP regulation, the total number of parking spaces at Logan Airport has increased to the current maximum of 18,640 commercial parking spaces and 2,448 employee parking spaces for a total of 21,088 spaces (see **Table 2.3**).

The 1989 amendment provided the impetus for Massport and the Commonwealth to build transportation infrastructure and implement programs to increase HOV and shared-ride options and improve access to Logan Airport. HOV measures implemented since 1989 include:

- ***MBTA Silver Line service to Logan Airport.*** Effective in 2005, Massport has made a significant investment in HOV access to Logan Airport through the purchase of eight Silver Line buses and ongoing funding of their operations and maintenance. To further promote Silver Line ridership, a pilot program was implemented by Massport starting in 2012 that allows all passengers who board the Silver

¹⁹ 310 Code of Massachusetts Regulations 7.30.

²⁰ When MassDEP amended the Logan Airport Parking Freeze in 1989 through the adoption of 310 CMR 7.30, MassDEP simultaneously adopted a regulation for a parking freeze affecting the area of East Boston immediately adjacent to Logan Airport, at 310 CMR 7.31.

Line at Logan Airport terminals to ride for free. Massport continues to provide a subsidy of over \$1 million per year for this program. Massport also provides free shuttle buses for passengers using the Blue Line to connect to/from the terminals, Airport Station, and the Logan Airport ferry terminal.

- ***MBTA Blue Line service to Logan Airport.*** The MBTA has completed the modernization and expansion of all Blue Line stations, including Airport Station, to accommodate six-car trains. This was a significant expansion of transit capacity serving Logan Airport. Massport provides a free shuttle bus for passengers using the Blue Line to connect to/from the terminals and Airport Station.
- ***Logan Express scheduled express bus service.*** Since its start in 1986, the two original Logan Express services have expanded to include five locations: Braintree, Framingham, Woburn, Peabody, and Boston’s Back Bay (started in 2014). Total ridership for Logan Express in 2015 was 1.7 million passengers, the highest ridership to date. Massport owns the park-and-ride sites and terminals in Braintree, Framingham, and Peabody; it is in a joint venture with the MBTA and the Massachusetts Department of Transportation (MassDOT) to operate the Anderson Regional Transportation Center in Woburn. In 2015, Massport opened its first parking garage at a Logan Express location, almost doubling the capacity at its Framingham facility to 1,100 spaces. Massport also recently reduced parking rates at Logan Express facilities from \$11.00 per day to \$7.00 per day, further incentivizing this HOV service.
- ***Private coach bus and van operators.*** Massport has supported the expansion of these services by designating priority curb areas at the terminals, including them on terminal count-down displays,²¹ and has periodically provided direct marketing support to providers for expanding their service to the Airport.
- ***Direct Connection to the MBTA Blue Line.*** As part of the Terminal E Modernization Project, Massport will provide a weather-protected direct pedestrian connection between Terminal E and the MBTA Blue Line Airport Station.

These efforts have resulted in a significant increase in air passenger HOV mode share and a reduction in employee parking demand since the mid-1970s. The HOV mode share for ground access to Logan Airport has consistently been at or close to 30 percent in recent years – making Logan Airport, and San Francisco Airport, the two best performers for airport HOV access in the nation.

2.2.2.2 Concurrent MassDEP Regulatory Process

Massport has coordinated with MassDEP regarding amendments to the Parking Freeze in parallel with development of this ENF. Massport is filing this ENF concurrent with MassDEP’s issuance of a draft regulation to amend the Parking Freeze, which will be subject to the provisions of M.G.L. c. 30A. The draft regulation is expected to maintain the current structure and procedures of the existing Logan Airport Parking Freeze. The substantive changes would be: the increase in the total number of commercial parking spaces permitted on the Airport and the addition of three long-term studies on improvements to ground access, to be completed by Massport (see Section 2.3.2, *Potential Measures to Increase High Occupancy Vehicle [HOV] Capacity*). MassDEP is not planning any changes in the East Boston Freeze.

The MassDEP regulatory amendment will provide the larger framework of the Logan Airport Parking Freeze, while Project-specific impacts and mitigation measures will be analyzed through this MEPA review

²¹ Count down displays provide passengers with an estimated arrival time for arriving buses.

process for additional parking at Logan Airport. **Table 2.3** shows the revised total of commercial spaces that would be in place under the amended regulation.

Table 2.3 Recommended Amendment to Commercial Spaces Available Under the Logan Airport Parking Freeze (subject to approval by MassDEP)

Regulation	Number of Commercial Spaces	Number of Employee Spaces	Total Spaces Permitted Under Parking Freeze Cap
1975 Logan Airport Parking Freeze	10,215	n/a ¹	10,215
1989 Logan Airport Parking Freeze Amendment	12,215	7,100	19,315
2016 Logan Airport Parking	18,640 ²	2,448	21,088 ^{3,4}
Future Logan Airport Parking⁵	23,640	2,448	26,088

Source: Massport; 40 CFR. § 52.1135; 310 CMR 7.30

- Note:
- 1- The 1975 Logan Airport Parking Freeze did not regulate employee or rental car spaces, or Airport related spaces in East Boston.
 - 2- As described in the text, the increase in commercial spaces since 1989 is largely due to the conversion of the 4,652 employee spaces.
 - 3- 21,088 space are allowed under the Parking Freeze. Not all of the spaces are active/in service at any one time due, for example, to construction.
 - 4 – As described in the text, the increase in total spaces since 1989 is due solely to the permanent relocation of 1,773 spaces from the East Boston Parking Freeze area.
 - 5 - A portion of the 5,000 parking spaces are likely to go into service before 2024. Massport is currently evaluating potential phasing options. It is anticipated that all 5,000 spaces would be operational between 2022 and 2024.

2.2.3 Air Quality at Logan Airport and in the Boston Region

Since 1989, when the MassDEP Amendment to the Logan Airport Parking Freeze was adopted (Section 2.2.2, *History of the Logan Airport Parking Freeze*), Eastern Massachusetts has achieved compliance with the federal standards for CO and ozone, the two criteria pollutants that were the focus of the original 1975 Parking Freeze and the 1989 MassDEP Amendment.

Total air pollutant emissions from all sources associated with Logan Airport in 2015 were dramatically less than they were a decade ago. This 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 VMT generated by Massport-controlled ground access systems. Massport reports on air quality associated with Logan Airport in the annual EDR/ ESRP filings.²² The EDR/ESRP reports on VOCs, NO_x, CO, and particulate matter (PM). An inventory of greenhouse gases (GHGs) has also been recently added to the overall annual analysis. Although there has been a long-term trend of decreasing emissions since 1990, from 2010 to 2030 the emissions of VOCs and NO_x are predicted to increase slightly based on the forecast presented in the *2011 ESRP*; however, emissions are predicted to remain well below historical highs.²³ Increasing the number of parking spaces available on-Airport through the Parking Project is one way to help reduce future emissions from motor vehicle sources (Section 2.5, *Environmental Analysis of Regional VMT and Air Emissions*).

2.2.3.1 Carbon Monoxide (CO)

Starting in the early 1970s, there had been regular air quality monitoring by MassDEP at a CO “hot spot” located at the East Boston ends of the Sumner and Callahan Tunnels. As of 1987, the monitoring still showed consistent levels of CO in excess of the federal 8-hour standard under the Clean Air Act. With the opening of the Ted Williams Tunnel in 1995, congestion at the Sumner and Callahan Tunnels and the resultant CO concentrations declined dramatically. CO monitoring in East Boston ended in June 1999.

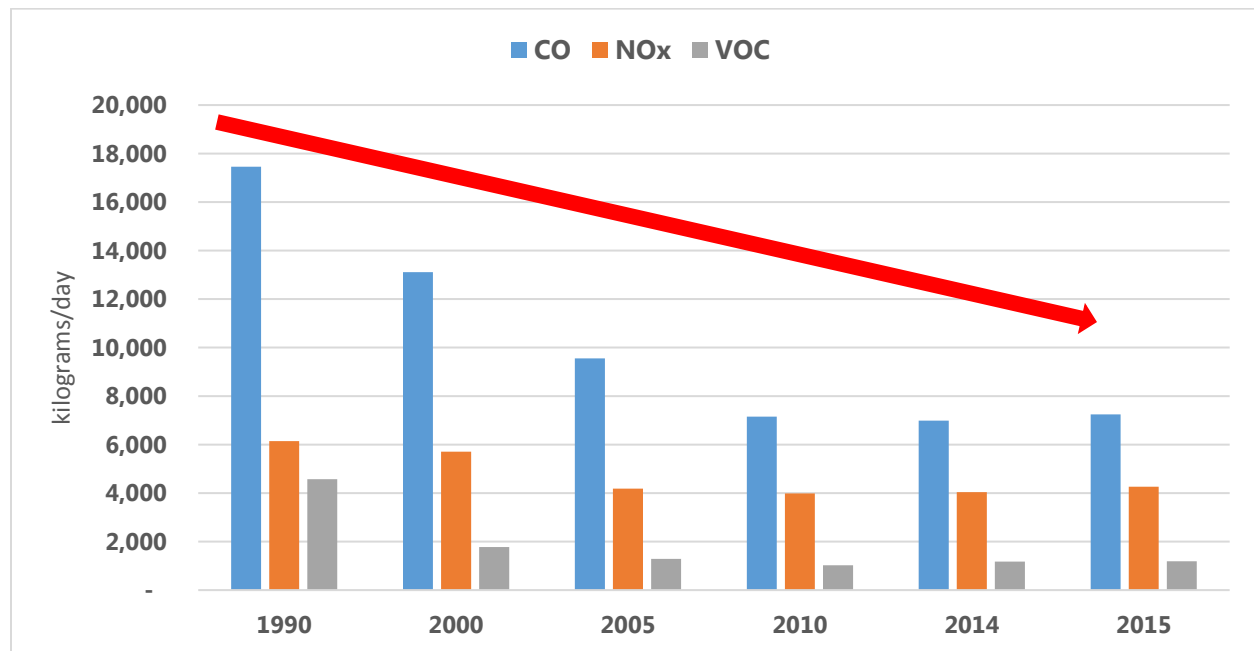
²² The most recent Logan Airport Environmental Data Report (2015) can be accessed on Massport’s website at: <https://www.massport.com/environment/environmental-reporting/>. Accessed December 23, 2015.

²³ Massport. 2013. *Boston-Logan International Airport 2011 Environmental Status and Planning Report*.

This local improvement paralleled dramatic improvements in CO in Massachusetts and nation-wide. Monitoring data showed that the Boston area had reached attainment for CO by 1988. In 1996, EPA promulgated a final rule re-designating the Boston Metropolitan area as in attainment for the federal CO standard under the Clean Air Act.²⁴

As reported in the 2015 EDR,²⁵ total modeled CO emissions at Logan Airport have declined further, by approximately 59 percent between 1990 and 2015 (Figure 2.2). Motor vehicle sources accounted for approximately 9 percent of CO emissions in 2015. Based on the forecast presented in the 2011 ESPR, CO emissions are projected to continue decreasing through the year 2030.

Figure 2.2 Modeled Emissions of CO, NO_x, and VOC at Logan Airport (kg/day)



Source: Massport and KBE, 2015

Note: Emissions are inclusive of aircraft, ground service equipment, motor vehicles, and other sources (including stationary sources such as the Central Heating and Cooling Plant, snow melter usage, firefighter training, etc.)

2.2.3.2 Volatile Organic Compounds (VOCs), Oxides of Nitrogen (NO_x), and Ozone

The other air quality goal of the 1975 Parking Freeze and the 1989 MassDEP Amendment was to support measures that reduced regional concentrations of ozone by reducing VMT and the accompanying emissions of VOCs and NO_x, the precursors to ozone.

Monitoring data for the original ozone standard showed that Eastern Massachusetts had reached attainment in 2007. In 2012, EPA promulgated a final rule finding that Eastern Massachusetts has attained the 1-hour and 1997 8-hour ozone standards under the Clean Air Act.²⁶

As reported in the 2015 EDR, total modeled VOC emissions at Logan Airport have declined by approximately 74 percent between 1990 and 2015 (Figure 2.2). Motor vehicle sources accounted for approximately 3 percent of Logan Airport VOC emissions in 2015. Total modeled NO_x emissions at Logan

²⁴ 61 Federal Register 2918.

²⁵ Massport. December 2016. *Boston-Logan International Airport 2015 Environmental Data Report*. <https://www.massport.com/environment/environmental-reporting/>.

²⁶ 77 Federal Register 31496.

Airport have declined by approximately 31 percent between 1990 and 2015 (**Figure 2.2**). Motor vehicle sources accounted for less than 2 percent of NO_x emissions in 2015.

With the anticipated increase in air passenger activity levels, regional and on-Airport VMT are expected to rise modestly, along with associated air emissions. Based on the forecast presented in the *2011 ESPR*, VOC and NO_x emissions are projected to continue increasing through the year 2030, but will remain significantly lower than historical levels.

As presented in Section 2.5, *Environmental Analysis of Regional VMT and Air Emissions*, the future Build Alternative would reduce VMT and associated emissions compared to the No-Build Alternative. The analysis shows that an addition of 5,000 spaces would result in CO₂, VOC, and NO_x reductions of 25.8 percent, 25.5 percent, and 25.6 percent respectively in 2022 and 20.2 percent, 20.0 percent, and 20.2 percent in 2030, compared to the emissions that would be produced without additional spaces (No-Build Alternative).

2.2.3.3 Other Emissions and Pollutant Reducing Ground Access Programs

In addition to the ground access HOV programs and the Long-Term Parking Management Plan described above, Massport has additional programs aimed at reducing ground access vehicle emissions. This section provides descriptions of some of these programs:

- ***Electric Vehicle Charging Stations*** – Massport offers a total of 26 charging ports in its Central, West, and Terminal B garages to support the charging of electric vehicles on-Airport. In addition, Massport offers four charging ports at its Framingham Logan Express garage. While normal parking rates apply, there is no cost for electricity use.
- ***Hybrid/Alternative Fuel Vehicle (AFV) Preferred Parking*** – In the state’s first preferred parking program for hybrid and AFVs, Massport began offering preferred parking for customers driving hybrid and AFVs in the spring of 2007. Massport provides 173 designated parking spaces at Logan Airport’s Central Garage, Terminal B Garage, Terminal E surface lot, and Economy Parking. Massport also offers a 50-percent discount on the ground access fees for AFVs that use compressed natural gas (CNG) or are powered by electricity.
- ***Green Cab Program*** – Since 2007, Massport has sponsored a “head-of-line” hybrid vehicle taxi incentive program, in partnership with the City of Boston. Under this program, Boston taxis that qualify as clean-fuel vehicles may obtain permission to proceed to the short job lane at Logan Airport’s taxi pool; this allows these “green cabs” to be dispatched to the terminals in a shorter amount of time.
- ***Cell Phone Waiting Lot*** - The cell phone waiting lot, in the vicinity of Terminal E, provides 61 parking spaces where drivers waiting for passengers on arriving flights may park. Before the creation of the Cell Phone Waiting Lot, drivers who were waiting for arriving passengers either used the short-term parking, circulated around the Airport, or dwelled at the curb until asked to move by State Police officers. This facility reduces vehicle emissions by minimizing idling and on-Airport VMT by such motorists. The maximum wait time permitted at this parking lot is 30 minutes and parking is free of charge.
- ***Sunrise Shuttle*** – Originally launched in August 2007, this shuttle service provides low-cost transportation to Airport employees who live in nearby East Boston and Winthrop. A second shuttle route was added in October 2011 that serves East Boston’s Orient Heights neighborhood and Winthrop. The Sunrise Shuttle services operate outside of MBTA service hours between

3:00 AM and 6:00 AM, with shuttles every half-hour transporting employees to the Airport terminals. Ridership levels have steadily increased since the shuttle’s launch. The two-route service has reached over 1,000 riders per month.

2.3 Detailed Project Description

The Parking Project is in the conceptual design phase. Massport has evaluated potential siting options and is currently evaluating potential construction phasing and configurations. It is anticipated that all 5,000 parking spaces would be operational between 2022 and 2024, but a portion of the 5,000 spaces is likely to go into service before 2024. The additional 5,000 on-Airport parking spaces would enable Massport to reduce some current vehicle drop-off/pick-up activity (and the associated VMT and air emissions), while ensuring that future drop-off/pick-up activity is not increased due to a lack of available parking spaces. Coupled with improvements to HOV capacity, the additional spaces would ensure that would-be parkers do not use more environmentally harmful vehicle drop-off/pick-up modes due to lack of parking spaces.

As described in more detail in Section 2.4, *Alternatives*, and shown in Figure 1.4 of Attachment 1, Massport initially considered six on-Airport sites before recommending two specific locations for the new structured parking facilities, which will constitute the Build Alternative. These initial sites included:

- **Site 1, Economy Garage** – additional floors atop existing garage;
- **Site 2, Terminal E Surface Lot** – garage in location of existing surface parking lot;
- **Site 3, Southwest Service Area** – garage in location of current bus/limousine pool and overflow parking;
- **Site 4, North Cargo Area** – expand Economy Garage in the location of existing surface parking and the site of the Massachusetts State Police Building;
- **Site 5, Harborside Drive** – garage in location of existing vehicle layover/overflow space; and
- **Site 6, Porter Street** – garage over existing taxi pool.

Based on an operational, cost, and environmental screening, and discussions with community representatives, Massport proposes to construct the new spaces at a combination of two sites: Site 1 (additional levels atop existing Economy Garage) and Site 2 (Terminal E Surface Lot). The 5,000 new parking spaces are not anticipated to have any adverse impacts on natural resources and are, in fact, environmentally beneficial. The proposed improvements will take place within areas of the Airport campus that are currently fully developed, and both proposed sites are currently in use for commercial parking. Section 2.4, *Alternatives* documents the other site options considered by Massport and the screening process used to identify the recommended site locations. Accordingly, it is expected that the DEIR environmental analysis will focus on the two selected garage locations in the Build Alternative with regards to noise, air quality, ground transportation, energy, sustainability, and short-term construction impacts.

2.3.1 Project Benefits

The addition of 5,000 on-Airport parking spaces would result in improved air quality as compared to the No-Build Alternative (see the detailed results in Section 2.5, *Environmental Analysis of Regional VMT and Air Emissions*). On-Airport parkers result in fewer VMT than their drop-off/pick-up counterparts, as parking on-Airport results in fewer trips than drop-off/pick-up modes. The VMT analysis shows that building more

parking spaces enables would-be parkers to use their preferred ground access mode, and the air quality analysis shows a decrease of vehicle emissions with additional parking. The Build Alternative would improve air quality and traffic congestion conditions associated with higher VMT and drop-off/pick-up compared to the No-Build Alternative.

Massport and local community leaders have worked together with a common goal of balancing the impact on East Boston local neighborhoods of specific Massport developments. Massport has worked hard to meet these goals and to fulfill its commitments to the community. Massport will implement measures to reduce construction related impacts including construction noise and dust from heavy equipment, disposal of construction debris, and air and water pollution. Massport has identified best practices that will minimize the likelihood of negative impacts to the natural and built environments during construction. These measures have been effectively implemented for the Logan Airport Rental Car Center, Green Bus Depot, and ongoing Terminal E Renovation construction.

Parking garage design will incorporate planned mitigation and sustainable design features similar to the Rental Car Center and Green Bus Depot. Massport is considering certification in the new “Parksmart”²⁷ certification program (formerly Green Garage Certification) which applies Leadership in Energy and Environmental Design (LEED)-like sustainability strategies to structured parking facilities. The DEIR will discuss sustainable design features in greater detail as the siting and conceptual design for the Parking Project evolves.

2.3.2 Potential Measures to Increase High Occupancy Vehicle (HOV) Capacity

As described in Section 2.2.1.1, Massport has undertaken significant measures over many years to support HOV modes for trips to and from Logan Airport. Massport currently spends nearly \$33 million annually on HOV operations and has made over \$158.9 million in amortized capital expenditures since 2002 to enhance HOV. Furthermore, as described in Section 2.5, the regional air quality impacts of the proposed additional 5,000 spaces are significantly better than the no-build scenario, due to the preponderance of would-be parkers who opt for more VMT-intensive drop-off/pick-up modes. The additional parking spaces are necessary to help mitigate the adverse impacts of increased drop-off/pick-up activity in response to constrained parking. In addition to the overall Project benefits, Massport will undertake certain HOV related measures as part of the proposed MassDEP amendment to the Logan Parking Freeze, and is considering undertaking additional HOV measures in conjunction with the construction of the proposed 5,000 parking spaces.

2.3.2.1 Potential Additional Measures to Promote HOV

- **Enhancing existing Logan Express scheduled bus service.** Massport recently increased parking supply at Framingham Logan Express by building a 1,100-space garage. Massport is evaluating whether any of the other Logan Express sites would experience increased ridership growth if additional parking were added. Massport continues to increase service by running buses more frequently than the current 30-minute schedule, during peak periods, as passenger levels warrant it.
- **Expanding Logan Express scheduled bus service.** This service has had success in capturing the ground-access market from various suburban areas. Massport is exploring whether there are additional locations where a significant number of riders may be attracted if the service/location were provided.

²⁷ Green Business Certification Inc. *Parksmart*. <http://parksmart.gbci.org/>. Accessed August 26, 2016.

- **Exploring Logan Express scheduled bus service in the urban/downtown area.** The Back Bay Logan Express pilot program is a test of whether a frequent, direct, express bus service could be supported in the Boston urban area. This particular service has been valuable in providing an alternative to air passengers and employees who have been impacted by the temporary, two-year Government Center station closure (a key connection to the Blue Line and Logan Airport), and it provides a new transit alternative to the Airport. After the re-opening of Government Center Station in March 2016, this pilot program has continued.
- **Investing in Additional MBTA Silver Line buses.** The Silver Line is an important HOV link to Logan Airport from downtown and the burgeoning South Boston Waterfront/Seaport District. Massport has already purchased eight Silver Line buses and provides ongoing funding of their operations and maintenance. Massport also subsidizes Silver Line boardings at Logan Airport so that all passengers who board at Logan Airport terminals ride the Silver Line for free. Massport is considering purchasing additional Silver Line buses to increase service capacity to Logan Airport.

Massport will continue to strive to maintain the current HOV mode share levels, and expanded overall HOV capacity will be necessary as total passenger trips increase. Enhancement to the Logan Express system and the additional parking spaces through the Parking Project will work in tandem to reduce environmentally harmful Airport drop-off/pick-up activity, reducing regional roadway demands and improving air quality.

2.3.3 Required Permits and Approvals

Massport anticipates the following permits and approvals may be required for the Parking Project.

2.3.3.1 Local

- Boston Water and Sewer Commission Sewer Permit Modification (if required).

2.3.3.2 State

- MassDEP Amendment to Parking Freeze Regulation, 310 CMR 7.30 (this process will run parallel to the permitting and MEPA review of the Parking Project, and will need to be completed before MEPA review fully advances).

2.3.3.3 Federal

- EPA Amendment to SIP (follow-on to MassDEP Amendment to Parking Freeze);
- FAA NEPA compliance;
- FAA Airspace review (Notice of Construction Form 7460); and
- National Pollutant Discharge Elimination System (NPDES) General Permit for Construction Related Stormwater Discharge.

2.3.4 Preferred On-Airport Site Selection

The Parking Project is currently in the conceptual design phase (described in Section 2.4, *Alternatives*). Both of the proposed sites in the Build Alternative are within the Airport campus and are on parcels that are fully paved and currently in regular use for commercial parking. Neither of the two sites is likely to

accommodate all 5,000 spaces. Both sites will be fully evaluated in the DEIR analysis of the Build Alternative, based on the following categories:

- Roadways and circulation;
- Terminal access;
- Parking configuration and operations;
- Land use;
- Consistency with strategic plan and future land use;
- Environmental impacts;
- Constructability; and
- Phasing.

The DEIR will place the proposed construction within the context of the cumulative assessments of Airport-wide conditions and impacts provided in the Logan Airport EDRs and ESPRs (see Section 2.3.5.1, *Logan Airport Environmental Status and Planning Report [ESPR]/Environmental Data Report [EDR]*).

2.3.5 Consistency with Planning and Other Projects

The ESPR/EDR process, described below, holistically and cumulatively evaluates environmental impacts occurring at Logan Airport. The Logan Airport Parking Project is consistent with recent Massport planning efforts, the emission reduction goals of the Massachusetts SIP, and regional planning goals. Other ongoing and reasonably foreseeable projects at Logan Airport include the Terminal E Renovation and Enhancements Project (currently under construction), the Terminal E Modernization Project (EEA #15434 in the design phase). A full list of recent and reasonably foreseeable projects is included in the *2015 EDR*.²⁸

2.3.5.1 Logan Airport Environmental Status and Planning Report (ESPR)/ Environmental Data Report (EDR)

Massport is unique among state agencies and airports in the U.S. for publishing detailed annual environmental reports specifically designed to describe, analyze, and project the cumulative effects of Logan Airport operations based on current and anticipated future operating conditions. This process, which has been in place since 1979, was developed to allow individual projects at Logan Airport to be considered and analyzed in the broader, airport-wide context analyzed within the EDRs/ESPRs. The environmental reports are submitted for MEPA review, including public comments and issuance of a Certificate by the Secretary (EEA #3247).

Approximately every five years, Massport prepares an ESPR, which provides an historical and prospective view of Logan Airport. The most recent report was the *2011 ESPR*, for which the MEPA certificate was issued on April 24, 2013. EDRs, prepared annually in the intervals between ESPRs, provide a review of environmental conditions for the reporting year compared to the previous year. The most recent report was the *2015 EDR*, which was published in 2016. The purpose of the ESPR and companion EDRs is to evaluate the cumulative effects of growth and change at the Airport and to provide a long-term planning and environmental impacts context within which specific assessments can be reviewed. Since 2000,

²⁸ Massport. September 2015. *Boston-Logan International Airport 2014 Environmental Data Report*. <https://www.massport.com/environment/environmental-reporting/>. Accessed December 13, 2015.

environmental impacts associated with Logan Airport have been steadily decreasing, as reported on each year in the EDR/ESPR filings. Through the ESPR and EDR filings, Massport continues its practice of providing the community with an extensive, almost three-decade record of Logan Airport environmental trends, development planning, operations and passenger levels, and Massport’s mitigation commitments.

Clarification on the difference between project-specific and Airport-wide issues was provided by the EEA in the December 2015 Secretary’s Certificate for the Terminal E Modernization Project ENF (EEA #15434), which stated:

“The EIR is not intended to address broad concerns associated with airport operations and growth. The venue for addressing cumulative environmental impacts is through the Environmental Status and Planning Reports (ESPR) and Environmental Data Reports (EDR).”

Thus, this ENF and forthcoming DEIR will focus on the project-specific impacts of the Logan Airport Parking Garage Project. Consistent with that guidance from the EEA Secretary, Airport-wide impacts that are associated with Airport operations and growth will continue to be addressed in the EDR and ESPR documents.

The Logan Airport Parking Project is consistent with the findings and planning initiatives reported in the 2015 EDR, which describes issues related to constrained parking supply and analysis of broader Airport issues.

2.3.5.2 Massport Strategic Planning

In 2013, Massport began a strategic planning effort to position the Authority’s aviation, maritime, and real estate lines of business, and its administrative support structures and workforce to meet the Boston region’s 21st century transportation and economic development challenges. The strategic planning initiative’s primary goal was to formulate a vision for Massport as a transportation and economic development engine for the Commonwealth of Massachusetts focusing on the horizon years of 2022 and beyond. While Massport has periodically prepared and implemented strategic plans for its various lines of business and major assets, the most recent effort is the first time that Massport has ever prepared an Authority-wide strategic plan. One outcome of this effort is Massport’s updated vision:

A world class organization of people moving people and goods – and connecting Massachusetts and New England to the world – safely and securely and with a commitment to our neighboring communities.

During this process, the importance of viewing the Authority as a single consolidated entity has become clear: Massport’s transportation and economic assets have a synergistic impact on many key sectors of the regional economy. Boston’s knowledge economy benefits simultaneously from Logan Airport’s growing network of international destinations, Hanscom Field’s general aviation facilities used by major corporations, Worcester Regional Airport’s growing passenger activity, port facilities in Boston Harbor, and real estate development on Massport properties in the South Boston Waterfront. Through the “One Massport” lens, Massport’s critical role in the region’s economy becomes clear.

The strategic planning analysis identified several strategic challenges. The increase in passengers at Logan Airport will continue to result in pressure points on terminal and landside facilities. Ground access at Logan Airport will continue to face strategic challenges as Massport strives to continue its efforts to minimize the traffic, environmental, and community impacts of surface transportation while providing the

growing number of air passengers with effective options for convenient travel to and from the Airport. To meet these challenges, Massport's overarching ground access goal is to minimize the number of motor vehicles used traveling to and from Logan Airport.

The Logan Airport Parking Project is consistent with Massport's strategic planning, which has a goal of minimizing environmental impacts and the number of motor vehicle trips while accommodating rising passenger demand.

2.3.5.3 Massachusetts State Implementation Plan (SIP)/Logan Airport Parking Freeze

The Logan Airport Parking Project is consistent with the Massachusetts SIP goal of reducing VMT and associated emissions. The Parking Project would reduce the number of passengers choosing the least desirable access mode, drop-off/pick-up.

2.3.5.4 Terminal E Renovation and Enhancements Project

The Terminal E Renovation and Enhancements Project includes interior and exterior improvements to accommodate regular service by wider and longer Group VI aircraft at Terminal E. The project does not include any new gates, but reconfigures three existing gates to accommodate Group VI aircraft (including the Airbus A380 and Boeing 747-8 primarily used by international air carriers). An addition to the west side of Terminal E will allow passenger holdrooms to be reconfigured to accommodate the larger passenger loads associated with larger aircraft. The project also includes modifications to the airfield to meet required FAA safety and design standards to accommodate the larger aircraft. An Environmental Assessment (EA) was filed, and FAA issued a Finding of No Significant Impact (FONSI) on July 29, 2015. Construction is scheduled to be complete in 2017.

2.3.5.5 Terminal E Modernization Project

To accommodate existing and long-range forecasted demand for international service in an efficient, environmentally sound manner that also improves customer service, Massport is proposing to modernize the existing international Terminal E.

The Terminal E Modernization Project consists of the phased addition of seven aircraft gates, passenger holdrooms, concourse area, concessions, and passenger processing (including Customs and Border Patrol and Federal Inspection Services facilities). This project is expected to result in environmental improvements in several areas. Aircraft at Terminal E will have better access to gate plug-ins and preconditioned air, reducing air emissions. When completed, Terminal E will act as a noise barrier to the adjacent neighborhood and Memorial Stadium Park, in a manner similar to the new Rental Car Center, Terminal A, and other buildings at Logan Airport. A new direct pedestrian connection between Terminal E and the MBTA Blue Line Airport Station will improve HOV access to the entire Airport. Existing Terminal E access roadways and curbs will also be reconfigured and enhanced.

The project is in the conceptual design phase; initial construction would likely begin in 2018. Massport filed an ENF in October 2015 and received a Certificate in December 2015 (EEA #15434) outlining the required analysis for a DEIR. The federal/state EA/DEIR was filed with FAA and the MEPA Office on July 15, 2016 and the DEIR Certificate was issued on September 16, 2016. Massport filed the Final EA/EIR on September 30, 2016, and the MEPA office issued the FEIR certificate on November 10, 2016. Also on November 10, 2016, the FAA issued a FONSI and on November 14, 2016, FAA issued a Record of Decision (ROD) on the

project, stating that Massport can now update the Airport Layout Plan (ALP) with the proposed Terminal E Modernization Project.

The Logan Airport Parking Project is consistent with the goals of the Terminal E Modernization Project; both projects strive to accommodate passenger demand while reducing environmental impacts. The Terminal E Modernization Project and Logan Airport Parking Project will address different needs at the Airport and have distinct purposes. They are each separate and independent projects and would proceed regardless of one another or other projects underway or planned. Neither project would interfere with or preclude one another. The construction-period cumulative impacts of both projects are or will be considered in the respective DEIRs. Cumulative environmental effects of all projects at Logan Airport will continue to be considered in subsequent ESPR and EDR filings.

2.3.5.6 Terminal B Optimization Project

Similar to the recent renovations and improvements at Terminal B, Pier A, Massport is upgrading its facilities on the Pier B side to meet airlines' needs (primarily reflecting the merger of American Airlines and US Airways) and to provide facilities that improve the passenger traveling experience. Planned improvements include an enlarged ticketing hall, improved outbound bag area, expanded bag claim hall, expanded concession areas, and expanded holdroom capacity at the gate. The project will consolidate American Airlines operations to one pier of the terminal (now operating on two different sides of the terminal); all Terminal B Pier B gates will be connected post security. The project will also consolidate checkpoint operations for better passenger throughput and improved passenger experience. This project is subject to review under NEPA and Massport plans to submit an EA in Spring/Summer 2017.

2.3.6 Community Outreach Overview

Massport has a history of proactive and collaborative interaction with the Airport's adjacent communities. Massport has engaged in a concerted outreach effort involving various stakeholders including elected officials, municipalities, and community groups. In addition to the public outreach conducted by Massport as part of the MEPA process, for several recent Logan Airport projects, the public has also been engaged through the East Boston Logan Airport Impact Advisory Group (LIAG). The group includes Presidents/leaders of 12 East Boston community groups and local elected officials/City of Boston including:

- Neighborhood of Affordable Housing, Inc. (NOAH)
- East Boston Piers Project Advisory Council (Piers PAC)
- Eagle Hill Civic Association
- East Boston Chamber of Commerce
- East Boston Neighborhood Health Center
- Jeffries Point Neighborhood Association
- Airport Impacts Relief, Inc. (AIR, Inc.)
- Vilma's Boutique
- East Boston Greenway Council
- Orient Heights Neighborhood Association
- Gove Street Citizens Association
- Friends of the East Boston Greenway
- Mayor's Office, City of Boston
- City of Boston Transportation Department
- East Boston District City Councilor Sal LaMattina
- East Boston State Representative Adrian Madaro
- East Boston State Senator Joe Boncore

2.4 Alternatives

Massport is in the conceptual design phase of the proposed parking additions. The Project would provide 5,000 additional on-Airport commercial parking spaces to alleviate current commercial parking supply deficiencies and accommodate forecasted growth in passenger demand. The new on-Airport parking spaces would be constructed in one or more phases and in two structures at the two selected locations (Site 1, Economy Garage and Site 2, Terminal E). The range of potential project siting options developed by Massport and associated analyses are summarized below.

2.4.1 No-Build Alternative

Under the No-Build Alternative, passenger demand would increase as projected in the air passenger forecast, but there would be no additional commercial parking spaces on-Airport. The existing parking supply already does not meet existing demand. Under the No-Build Alternative, the commercial parking supply would become more inadequate and the drop-off/pick-up mode share would increase, as approximately 75 percent of would-be parkers switch to drop-off/pick-up modes. The No-Build Alternative would have substantial (and avoidable) adverse environmental consequences, compared to the Build Alternative. The No-Build Alternative will cause higher pollutant emissions and roadway congestion impacts due to the higher VMT associated with the drop-off/pick-up mode.

2.4.2 Initial Screening of Potential Sites

The discussion that follows outlines the screening of six initial sites under consideration and the rationale for advancing the two selected site options to serve as the basis of the Build Alternative.

Massport initially considered six on-Airport parking facility sites before recommending two specific locations for the new structured parking facilities (see Attachment 1, Figure 1.4). These initial sites included:

- **Site 1, Economy Garage** – additional floors atop existing garage;
- **Site 2, Terminal E Surface Lot** – garage in location of existing surface parking lot;
- **Site 3, Southwest Service Area** – garage in location of current bus/limousine pool and overflow parking;
- **Site 4, North Cargo Area** – expand Economy Garage in the location of existing surface parking and the site of the Massachusetts State Police Building;
- **Site 5, Harborside Drive** – garage in location of existing vehicle layover space; and
- **Site 6, Porter Street** – garage over existing taxi pool.

Each of these on-Airport sites are comparable in terms of regional VMT and emissions reductions since regional access routes generally will not vary as a result of the garage siting. While total on-Airport VMT may vary among sites, as the distance between regional roadway gateways and the sites can slightly vary, overall Airport VMT with the additional 5,000 on-Airport parking spaces at any of the six locations is significantly lower than if the additional 5,000 on-Airport parking spaces were not made available. All sites considered are already paved parcels currently used for parking or vehicle storage, and therefore each would have similar, negligible localized environmental impacts.

For the better part of a year, Massport has had numerous meetings with the East Boston LIAG to discuss a range of Logan Airport-related topics. As part of these discussions, the LIAG provided input on their preferred locations of the proposed additional parking. This section describes the initial sites considered and the locations advanced for further analysis in the Draft EIR based on LIAG input. The LIAG also provided their list of preferred community benefits.

2.4.2.1 Site 1, Economy Garage

This option would construct additional floors above the existing Economy Garage, located in the northwest corner of the Airport Campus. Based on preliminary analysis, this site could accommodate approximately 4,000 additional parking spaces. Further vertical expansion is limited due to air space restrictions.

The site provides the most efficient use of Airport property; this site option would involve a vertical expansion of the existing Economy Garage and does not expand its existing footprint. Access to the site is also well defined, does not require significant changes to existing roadway infrastructure, and is adjacent to compatible land uses. A taller Economy Garage can also serve as an additional noise barrier to the adjacent neighborhood. Massport proposes this site as part of the Build Alternative, in combination with Site 2, for construction of the new parking spaces.

2.4.2.2 Site 2, Terminal E Surface Lot

This site is located in front of the existing Terminal E facility within the existing surface parking lot, wrapping around the existing Airport central utility plant. Based on preliminary analysis, this site could accommodate approximately 3,000 parking spaces.

The site is currently used for surface parking, so advancing this site option would be compatible with existing uses. This site is located within the Airport interior and therefore has minimal impact on the adjacent communities. Its proximity to the Airport terminals provides an opportunity for parkers to walk to their respective terminals, reducing the need for operational resources (such as shuttle bus service) and reducing resultant on-Airport VMT. Massport proposes this site as part of the Build Alternative, in combination with Site 1, for the new parking spaces.

2.4.2.3 Site 3, Southwest Service Area

The Southwest Service Area site is located along the southern edge of the Airport Campus and is currently used for the Airport bus and limousine pool and overflow parking. The site boundaries are defined by Harborside Drive to the north, Tomahawk Drive to the south and east, and Jeffries Street to the west. For this option, the existing uses would be integrated into the ground floor of a new structured parking facility.

The site provides an opportunity for a parking facility given its shape, size, regional access, and other physical attributes. This site would require the construction of a new structured parking facility, while Economy Garage (Site 1), which would house the majority of the proposed parking spaces, would vertically expand an existing structured parking facility, rendering that option more efficient. Due to the collective ability of Sites 1 and 2 to achieve the necessary capacity, Massport is not including Site 3 as part of the Parking Project.

2.4.2.4 Site 4, North Cargo Area

Additional parking at this site could potentially be combined with additional parking at the Economy Garage. This site is currently the location of Massachusetts State Police Troop F headquarters and kennel, along with supporting surface parking. This option would require the relocation of these existing uses. While the current land uses could be incorporated into the development or relocated on-Airport, Massport has dropped this site from further consideration due to the required relocation of existing uses.

2.4.2.5 Site 5, Harborside Drive

The Harborside Drive site is located in the southwest corner of the Airport Campus. The site boundaries are defined by Harborside Drive to the east, the Logan Office Center Garage to the north, the Hyatt Regency Hotel and Boston Harbor to the south and west. This parcel is fully paved and has been used for parking for over 20 years and most recently served as the temporary taxi pool while the new Rental Car Center was under construction. Massport has dropped this site from consideration due to potential wayfinding and operational challenges.

2.4.2.6 Site 6, Porter Street

The Porter Street site is located along the western edge of the Airport Campus. The site boundaries are defined by Porter Street to the south, Transportation Way to the East, and East Boston Memorial Field to the north and west. This is the site of the existing Airport taxi pool; this use would be integrated into the ground floor of a new parking facility. Massport has dropped this site from consideration due to potential impacts on adjacent open space uses, and potential wayfinding and operational challenges associated with operating a parking facility at this site.

2.4.3 Build Alternative and Project Phasing

Based on initial conceptual design and capacity estimates, a single facility located on one of the potential sites does not provide sufficient parking capacity reasonably or efficiently. Thus, two sites are required in the Build Alternative to provide the needed parking capacity. Based on an initial operational and environmental screening and discussions with the community, Massport proposes to construct the 5,000 new parking spaces at a combination of two sites: Site 1 (additional levels atop existing Economy Garage) and Site 2 (Terminal E Surface Lot). Both sites are within the Airport boundary, are located on previously developed land, and are currently in use for commercial parking. The Project is expected to have negligible site-specific environmental impacts, as both sites are fully paved.

Phasing of new parking is still under consideration, and further detail on phasing will be included in the DEIR as conceptual planning moves forward. Based on preliminary evaluation, no on-Airport or off-Airport impacts or relocations are anticipated.

The DEIR environmental analysis will focus on potential impacts and benefits at the two proposed garage locations with regards to noise, air quality, ground transportation, energy, sustainability, and short-term construction impacts.

2.5 Environmental Analysis of Regional VMT and Air Emissions

This section analyzes the resultant regional VMT impacts and emissions of reducing drop-off/pick-up associated with the Build Alternative. It contrasts the constrained conditions under the current Logan Airport Parking Freeze with a range of increased levels of parking supply, including the proposed space increase. The analysis presumes that there remains sufficient HOV capacity so that HOV mode share can be maintained as total passenger trips increase.

To assess the potential benefits, net regional VMT was assessed assuming the addition of 5,000 on-Airport spaces. On-Airport VMT impacts will be analyzed as part of the DEIR (see Attachment 3, *Proposed DEIR Scope*). Existing data were used to calculate the net difference in ground-access-related vehicular emissions between two future conditions:

- **No-Build Alternative.** Commercial parking supply would remain constrained under the current Parking Freeze cap levels; therefore, would-be parkers would need to choose an alternative mode to travel to the Airport; and
- **Build Alternative.** Commercial parking supply would be increased by 5,000 spaces, allowing would-be parkers to park at the Airport rather than choosing drop-off/pick-up.

The No-Build and Build Alternatives assess the projected future years of 2022, the earliest year that all 5,000 spaces could feasibly be constructed on-Airport (assuming two phases of construction), and 2030 (consistent with the 2011 *ESPR* air passenger forecast), a future year to demonstrate long-term results. A parking demand growth rate of 2.54 percent²⁹ per year was assumed, a moderate growth rate where the share of passengers choosing to park continues to increase following the recent growth trend.³⁰

In this analysis, VMT is used to help determine the net change in regional vehicle pollutant emissions between the No-Build and Build Alternative; total VMT is multiplied by an emission factor (see Section 2.5.3, *Air Quality Analysis*) to determine overall the net difference in vehicle emissions.

Throughout the analysis, ground-access mode shares are presumed constant unless otherwise noted (i.e., no external circumstances are altering mode shares, other than the ability or inability to park). This enables the analysis to isolate the net VMT as it relates to parking and the different ground-access modes that air passengers would choose if adequate parking were not available. The analysis also presumes that under all scenarios, employee parking would continue to be constrained at the current Logan Airport Parking Freeze cap level.

In particular, the analysis assumes that the availability of MBTA transit, Logan Express, private bus carriers, and other HOV modes of access to Logan Airport remain and that these services will accommodate the proportional growth in demand for HOV modes.

A detailed technical analysis is provided as an attachment to the narrative (Attachment 5, *Massport Request to Amend the Logan Airport Parking Freeze and Technical Memorandum*).

²⁹ Projection developed by LeighFisher, Inc. based on recent parking demand growth.

³⁰ Future parking trends (such as transportation network companies [for example, Uber and Lyft] driverless cars, and reduced car ownership in urban areas) may impact demand further into the future; however, given the current understanding of these issues, they are not anticipated to impact the analysis presented in this ENF over the relatively near-term timeframe

2.5.1 East Boston Neighborhood Traffic Assessment

The proposed new parking at Logan Airport will have a beneficial impact on local East Boston roadway and intersection operations by reducing VMT, relative to the No-Build Condition. In addition, the few access points between the East Boston residential neighborhoods and the Airport and the physical and geometric barriers currently in place, movement between the Airport and adjacent neighborhoods is already limited. The new parking facility will accommodate long-term parking, which has less parking space turnover and generates fewer entering and exiting movements compared to typical commercial parking facilities. Entering and exiting movements into Logan Airport parking facilities typically do not coincide with East Boston roadway and intersection peaks, minimizing the impact to critical peak hour operations.

2.5.2 Analysis of VMT Changes

In large part, the difference in VMT and resultant emissions between the No-Build and Build Alternatives are the result of two key factors: the ground access modes that air-passengers would use if parking were not available to them; and how many trips typically associated with each ground-access mode. The following sections explain each of these key factors.

2.5.2.1 Air Passenger Mode Choices

Using data from the 2013 *Logan Airport Air Passenger Ground Access Survey*, Massport took a closer look at parkers, their places of origin, and which modes they would use if parking was not an option for them. Air passengers who park at Logan Airport come from all over New England, from Downtown Boston to outside of Massachusetts. That geographic distribution is summarized in **Table 2.4** below.

Table 2.4 Geographic Origin Distribution of Logan Airport Air Passenger Parkers

Area of Origin	% of Parkers Arriving
Urban Core (defined as Boston, Brookline, Cambridge, and Somerville)	12%
Between Urban Core and Route 128	19%
Between Route 128 and I-495	36%
Outside of I-495, within Massachusetts	17%
Outside of Massachusetts	16%
Total	100%

Source: Massport, 2013 Logan Airport Air Passenger Ground Access Survey.

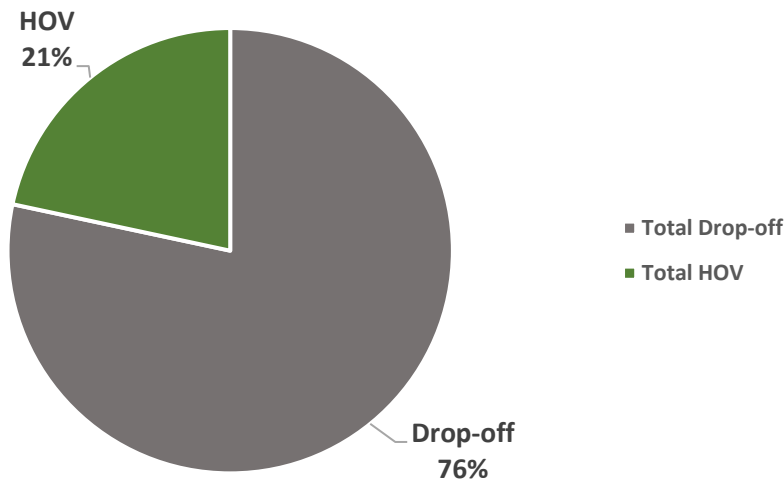
The survey asked parkers which mode they would most likely take to the Airport if they could not park at the Airport. These responses varied greatly depending on the area of origin (given both travel time and access to different alternative modes). **Table 2.5** presents the area of origin and the mode that air passengers would have used if parking was not an available option. As the origin gets further from the Airport, there is a significant increase in air passengers being dropped-off by private vehicles with a significant decline in use of taxis. Use of black car/limousine services as an alternative to parking increases further from the Urban Core, but declines sharply if originating from outside of Massachusetts. HOV/transit use increases outside of Route 128, most likely on Logan Express routes and private express bus carriers.

Table 2.5 Alternative Ground Access Mode if Parking was not an Option

	Urban Core	Between Urban Core and Route 128	Between Route 128 and I-495	Outside I-495, within MA	Outside of MA	Overall Distribution to other Modes
Curbside Drop-off Mode						
Drop-off by Private Vehicle	16%	27%	31%	38%	44%	32%
Drop-off by Taxi	59%	40%	9%	3%	5%	20%
Drop-off by Black Car/Limousine Services	9%	19%	39%	25%	7%	24%
Total Drop-off	84%	86%	79%	66%	56%	76%
HOV/ Shared-ride Mode						
Shared Ride Van/Other Limousine Service	0%	2%	1%	12%	4%	3%
HOV/Transit	16%	10%	17%	20%	30%	18%
Total HOV	16%	12%	18%	32%	34%	21%
Other Modes						
Other	0%	2%	3%	2%	10%	3%

Source: Massport, 2013 Logan Airport Air Passenger Ground Access Survey.

Figure 2.3 Alternative Ground Access Mode if Parking was not an Option



Source: Massport, 2013 Logan Airport Passenger Grand Access Survey

Note: Pie chart does not total to 100 percent. The remaining 3 percent represents "other modes."

As shown in **Table 2.5** (on the column furthest to the right) and **Figure 2.3**, approximately 76 percent of all would-be parkers would use a curbside drop-off mode (private vehicle [32 percent]), taxi [20 percent], and

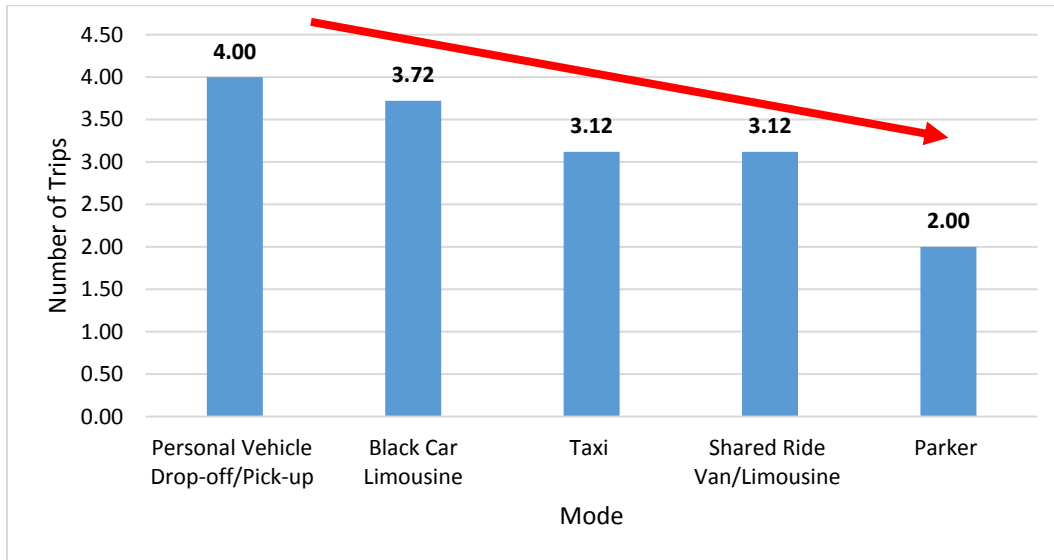
black car/limousine services drop-off [24 percent]) if parking were not an option. **Table 2.1** above presents current mode choices based on the *2013 Air Passenger Ground Access Survey*.

It is important to understand that airport commercial parking differs from other urban parking facilities in two important respects. First, airport parking spaces turn over much less frequently; thus, it takes more parking capacity at an airport to support the same number of vehicles as in an urban/workplace setting. Second, as a general matter, commuters traveling daily to an urban work location will not turn to drop-off/pick-up modes as an alternative means of travel if parking is constrained. Hence, in an urban core, parking constraints force commuters to travel by less environmentally harmful alternatives. Unlike urban commuters, air travelers do not go to the airport on a daily basis, so drop-off/pick-up modes are more practical options. Therefore, constrained parking at Logan Airport can have the unintended negative environmental consequence of increased VMT and air emissions.

2.5.2.2 Ground-Access Mode Trips

The next key factor in determining the net difference in VMT and resultant emissions between the No-Build and Build Alternatives is the number of trips associated with each mode. The number of trips to support an air passenger accessing the Airport varies by mode. Compared with all other curbside drop-off modes, parkers result in fewer trips than drop-off/pick-up (e.g., a resident traveling on a business trip typically will make one trip to the Airport from their place of residence, make their round trip flight, and make one return trip back to their place of residence). Personal vehicle drop-off/pick-up modes typically will make four trips to support an air-passenger (e.g., a resident traveling on a business trip is dropped off at the Airport, the drop-off driver returns to their residence, the driver returns to the Airport when the air passenger returns, and drives the air passenger back to the place of residence). Taxis and black car/limousine services drop-off/pick-up modes do not always have fares each inbound and outbound trip. Often, these modes will travel empty in one direction to or from the Airport. For example, if a cab from outside the City of Boston drops off a passenger at Logan Airport, it cannot pick up a return fare, as taxis are required to have a valid Boston Hackney License to recirculate into the taxi pool. **Figure 2.4** presents the estimated number of vehicle trips generated per air passenger round trip.

Figure 2.4 Number of Vehicle Trips to Support Air-Passenger Round-Trip



Source: Logan Airport GEIR, July 1993.

As shown, the number of trips to support air-passenger round-trips ranges from two (parking mode) to four trips (personal vehicle drop-off/pick-up mode). Given that taxi and black car/limousine services airport trips do not always involve a deadhead or empty trip, the number of trips for these modes is less than four, but still greater than three.

2.5.2.3 Methodology and Results

Using the stated preference for alternative modes if parking wasn't available and the number of trips associated with each mode, the net difference in VMT and emissions can be calculated. Additional inputs to this analysis include existing VMT per trip, vehicle occupancy rate (VOR), and origin area.

The overall approach to determining the resulting net difference in regional VMT between the No-Build and Build Alternatives is to:

- Determine the annual number of vehicles unable to park on-Airport given the existing Parking Freeze cap (i.e., would-be parkers required to use other modes) and assumed growth rate of 2.54 percent through the years 2022 and 2030;
- Distribute air passengers to alternative ground-access modes per their stated preference based on their origin;
- Calculate the VMT for the alternative mode used based on number of trips for alternative mode and distance between origin and the Airport; and
- Compare the VMT of the alternative mode with the VMT if they were able to park on-Airport.

Based on this methodology, the resultant No-Build Alternative VMT was calculated for the years 2022 and 2030, assuming that parking demand grows at a rate of 2.54 percent per year and no additional parking spaces were available above and beyond the existing Parking Freeze commercial cap. The resulting total parking demand increase is approximately 20 percent in the year 2022 and 40 percent in the year 2030.

These growth assumptions were applied to existing baseline 2014 parking demand³¹ data to calculate the number of days parking demand would exceed the effective commercial parking cap at Logan Airport and the total number of unaccommodated vehicles (would-be parkers).

The resultant Build Alternative VMT was calculated, assuming that an additional 5,000 spaces are available for would-be parkers in the years 2022 and 2030. **Table 2.6** presents the VMT for would-be parkers under the No-Build and Build Alternatives.

Table 2.6 No-Build/Build Alternatives Vehicle Miles Traveled (VMT) Estimates

Year	Alternative	Regional Vehicle Miles Traveled of “would-be parkers”
2022	No-Build	22,550,816
	Build	16,847,702
	Reduction in VMT/tons	5,703,114
	Reduction %	25%
2030	No-Build	62,407,654
	Build	50,061,630
	Reduction in VMT/tons	12,346,024
	Reduction %	20%

Source: VHB

As shown in **Table 2.6**, the provision of 5,000 additional parking spaces under the Build Alternative would reduce regional VMT for would-be parkers by 25 percent in 2022 and by 20 percent in 2030. These VMT reductions would result in air quality benefits which are described below.

2.5.3 Air Quality Analysis

To quantify the air quality benefits that a reduction in drop-off/pick-up resulting from additional parking at Logan Airport would produce, emissions inventories for CO₂, VOCs, and NO_x were modeled based on the VMT estimates described above in Section 2.5.2, *Analysis of VMT Changes*. These inventories utilized a vehicle emissions simulation model to determine emission factors for application to the VMT values. The analysis considered typical vehicle pollutants at a mesoscale level, namely CO₂, VOCs, and NO_x. CO₂ is a greenhouse gas (GHG) that is emitted in large quantities from the transportation sector. VOCs and NO_x are ozone precursors that form ozone when emitted to the atmosphere. Ozone, from a regional perspective, has historically been an issue in the Boston metropolitan area, as it was most recently in non-attainment in the region under the 8-hour (1997) and 1-hour (1979) ozone standard. Emission factors were determined and applied to the VMT corresponding to each analysis scenario. Each scenario’s emissions were then analyzed to determine the resultant air quality benefits from reduced drop-off/pick-up associated with 5,000 additional on-Airport commercial parking spaces that would be constructed with the Logan Airport Parking Project.

³¹ 2014 parking data are comparable to 2015 data presented in the 2015 EDR. As parking conditions presented in the 2015 EDR show, parking conditions are generally more constrained. As such, the analysis presented above represents a more conservative analysis in that more constrained conditions would result in higher VMT levels.

2.5.3.1 Emission Factor Modeling

EPA’s Office of Transportation and Air Quality (OTAQ) has developed the Motor Vehicle Emission Simulator (MOVES) to be used in modeling motor vehicle mobile sources. MOVES2014a is EPA’s latest motor vehicle emissions model for state and local agencies to estimate GHGs and other pollutants from cars, trucks, buses, and motorcycles.

All the vehicle emissions used in the mobile emissions analysis were obtained using EPA’s MOVES2014a emissions model. MOVES2014a calculates emission factors from motor vehicles in grams per mile for existing and future conditions. The emissions calculated for this air quality assessment include Tier 3 emission standards (which is an EPA program that sets new vehicle emissions standards, lowering the sulfur content of gasoline), heavy-duty engine and vehicle GHG regulations (2014 through 2018), and the second phase of light-duty vehicle GHG regulations (2017 through 2025). It also includes Massachusetts specific conditions, such as the state vehicle registration age distribution and the statewide Inspection and Maintenance (I&M) Program.

The emission factors of this analysis were calculated at the county scale for Suffolk County. The MOVES runs were set up to calculate the emission factors of the county for a summer weekday in 2014 (existing), 2022, and 2030. Emission factors for each pollutant consider the summation of factors for each “running” emission process that is associated with that pollutant. The model made use of MOVES 2014 data inputs for Suffolk County for the traffic analysis years of 2014, 2022, and 2030. The input data were primarily obtained from the MassDEP Department of I&M Programs. These data reflected Suffolk County specific data including vehicle populations and meteorology, among others. The inputs also made use of the detailed data pertaining to the Massachusetts I&M Program and Lower-Emission Vehicle (LEV) Standards.

2.5.3.2 Emission Factors

Emission factors were determined for two MOVES2014a vehicle types: a passenger car and a passenger truck. A 70-percent to 30-percent (70/30) passenger car to passenger truck ratio (based on Suffolk County population data) was assumed for mode types: drop-off/pick-up, taxi, black car/limousine services, and parker (shown in the VMT analysis). The shared ride van/limousine mode was assumed to be exclusively passenger trucks. Total emissions factors were a summation of the individual “running” emissions processes where appropriate for each pollutant. The results of the emission factor calculations are presented as grams per mile in **Table 2.7**.

Table 2.7 Emission Factors by Access Mode (g/mi)

Access Mode	Emission Parameter	Analysis Year			
		2014	2020	2022	2030
Drop off by Private Vehicle	CO ₂	409.2	352.1	329.2	255.2
	VOC	0.047	0.016	0.014	0.010
	NO _x	0.211	0.069	0.053	0.032
Drop off by Taxi	CO ₂	409.2	352.1	329.2	255.2
	VOC	0.047	0.016	0.014	0.010
	NO _x	0.211	0.069	0.053	0.032
Drop off by Black Car/Limousine Services	CO ₂	409.2	352.1	329.2	255.2
	VOC	0.047	0.016	0.014	0.010
	NO _x	0.211	0.069	0.053	0.032
Parker	CO ₂	409.2	352.1	329.2	255.2
	VOC	0.047	0.016	0.014	0.010
	NO _x	0.211	0.069	0.053	0.032
Shared Ride Van/Other Limousine Service	CO ₂	493.9	420.6	391.1	304.9
	VOC	0.059	0.018	0.015	0.011
	NO _x	0.254	0.077	0.060	0.037

Source: EPA Motor Vehicle Emission Simulator (MOVES) 2014a

2.5.3.3 Vehicle Emission Results

The emissions analysis compared the No-Build and Build Alternatives’ emission results for the projected years 2022 and 2030. The analysis shows that building additional parking would decrease regional VMT and thus reduce regional vehicle emissions for all would-be parkers. The VMT analysis shows that building additional parking spaces enables would-be parkers to use their preferred ground access modes. Parkers result in fewer VMT than their drop-off/pick-up counterparts, as parking on-Airport results in fewer trips than drop-off/pick-up modes per air passenger. This result is demonstrated in the air quality analysis, as emissions of CO₂, VOC, and NO_x are substantially reduced (on the order of 20 to 25 percent) when comparing the Build Alternative (with additional parking on-Airport) to the No-Build Alternative (without additional parking on-Airport) of the same year. The results are shown in **Table 2.8**.

The analysis presents the effects of adding 5,000 spaces between 2022 and 2024. The analysis shows that this 5,000-space addition will result in CO₂, VOC, and NO_x reductions of 25.8 percent, 25.5 percent, and 25.6 percent respectively in 2022 and 20.2 percent, 20.0 percent, and 20.2 percent in 2030 (**Table 2.8**).

Table 2.8 Vehicle Miles Traveled (VMT) and Emissions Estimates

Year	Condition	Regional Vehicle Miles Traveled of “would-be parkers”	CO ₂ (tons/year)	VOC (kg/year)	NO _x (kg/year)
2022	No-Build	22,550,816	8,238	319	1,211
20% demand increase	Build	16,847,702 ↓	6,114 ↓	237 ↓	901 ↓
	Reduction in VMT/tons	5,703,114	2,124	82	310
	Reduction %	25% ↓	25.8% ↓	25.5% ↓	25.6% ↓
2030	No-Build	62,407,654	17,679	632	1,989
40% demand increase	Build	50,061,630 ↓	14,109 ↓	505 ↓	1,588 ↓
	Reduction in VMT/tons	12,346,024	3,570	127	401
	Reduction %	20% ↓	20.2% ↓	20.0% ↓	20.2% ↓

Source: VHB

Note: Since VMT is the constant factor in calculating total emissions of each pollutant, the percent reduction for all pollutants is relatively consistent with the reduction in VMT for each analysis year.

2.6 Conclusion

Construction of 5,000 additional on-Airport commercial parking spaces is one element of Massport’s comprehensive ground transportation strategy, designed to maximize transit and shared-ride HOV options for travel to and from the Airport, and to decrease the number of air passengers choosing more environmentally harmful drop-off/pick-up modes. Drop-off/Pick-up modes generate up to four vehicle trips per air passenger trip, compared to two trips per passenger for those who drive and park. As a result of the increased number of trips, drop-off/pick-up modes generate higher levels of emissions than parking on-Airport or HOV modes. The Build Alternative would add 5,000 commercial parking spaces between 2022 and 2024 in one or more locations. This would result in reductions of drop-off/pick-up trips and associated VMT and air emissions as compared with the No-Build scenario. Emission and traffic benefits are the result of would-be parkers shifting from drop-off/pick-up modes. Compared to the No-Build Alternative, the analysis presented above shows that the 5,000-space addition would result in CO₂, VOC, and NO_x reductions of 25.8 percent, 25.5 percent, and 25.6 percent respectively in 2022 and 20.2 percent, 20.0 percent, and 20.2 percent in 2030.

Massport anticipates providing further analysis of potential localized environmental impacts of the additional on-Airport parking sites in the DEIR. A proposed scope for the DEIR (Attachment 3, *Proposed DEIR Scope*), includes review of potential environmental consequences at the proposed parking locations. The DEIR will identify and analyze localized on-Airport and community ground access and air quality conditions associated with the selected sites for the proposed facilities, and it will also assess other key environmental conditions as required under the MEPA regulations. The DEIR will describe potential temporary construction related impacts including construction noise, dust from heavy equipment, disposal of construction debris, and air and water pollution control measures. Soils management procedures will also be described in the DEIR.

Attachment 3
PROPOSED DRAFT ENVIRONMENTAL IMPACT REPORT SCOPE

- **Introduction/Executive Summary**
- **Project Description**
- **Project Alternatives**
- **Planning and Sustainable Design**
- **Existing Environment and Assessment of Beneficial and Adverse Environmental Impacts**
- **Beneficial Measures/ Draft Section 61 Findings**
- **Responses to Comments**
- **Distribution**

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LOGAN AIRPORT PARKING PROJECT PROPOSED DEIR SCOPE

The Logan Airport Parking Project (the Proposed Project or Parking Project) meets review thresholds for a mandatory Massachusetts Environmental Policy Act (MEPA) Environmental Impact Report (EIR). Massport will prepare an EIR in accordance with Section 11.07 of the MEPA Regulations for outline and content. Massport will coordinate with the Federal Aviation Administration (FAA) on the level of review required under the National Environmental Policy Act (NEPA). The level of NEPA review will depend on the chosen alternative and will be at the discretion of the FAA.

Massport respectfully submits the following proposed Scope for the Draft EIR (DEIR) for the Logan Airport Parking Project.

3.1 Introduction/Executive Summary

A concise summary in English and Spanish suitable for understanding by non-technical reviewers will be included in the DEIR that adequately and accurately summarizes the document including:

- The name and location of the Proposed Project;
- A brief description of the Proposed Project, including the purpose of and need for the project, sustainable design features, and any changes to the project since the filing of the ENF (Environmental Notification Form);
- A list of anticipated permits and approvals;
- Summary of alternatives considered;
- Summary of potential beneficial and adverse environmental consequences of the Proposed Project; and
- A list of project mitigation measures and Draft Section 61 Findings.

3.2 Project Description

The DEIR will include a detailed description and analysis of the nature and location of the Proposed Project including:

- Type, size, and proposed use of the Proposed Project;
- Objectives and anticipated benefits of the Proposed Project;
- Description of the physical characteristics of the Proposed Project and its surroundings, illustrated with a location map, a site plan, and a conceptual plan showing the preferred alternative, at an appropriate scale and level of detail; and

- A timetable and the methods and timing of construction of the Proposed Project.

The DEIR will provide a description of the Logan Airport Parking Project in sufficient detail to demonstrate that this project has been designed to provide environmental benefits while avoiding adverse environmental impacts. Massport's incorporation of sustainable elements in the new parking garage facilities design and construction will be described. The project background and history, including the status of the MEPA review, will be included in the DEIR.

The Logan Airport Parking Project will be placed in context of existing parking conditions, ground access to Logan Airport, and the history of the Logan Airport Parking Freeze. The Proposed Project will also be placed within a cumulative context of existing Airport planning efforts, provided through the Logan Airport Environmental Data Reports (EDRs) and Environmental Status and Planning Reports (ESPRs), as well as other projects before MEPA. The DEIR will explain how the Proposed Project's emission reduction goals are consistent with the Massachusetts State Implementation Plan (SIP) air quality goals, as well as other applicable regional and state plans and policies.

The DEIR will include a summary of the state permits or agency actions required or potentially required, and will demonstrate that the Proposed Project will meet applicable requirements.

3.3 Project Alternatives

The DEIR will evaluate feasible and reasonable project alternatives to ensure that all feasible means to avoid, minimize, or mitigate environmental impacts have been considered. The DEIR will present a detailed description of the Parking Project elements and will summarize the initial sites considered and screening process undertaken, along with the findings. This section would include discussion of a future No-Build Alternative. The DEIR will also summarize the community process that guided the site selection.

The DEIR will provide a comparison of potential environmental impacts between the future No-Build Alternative and the Proposed Action. The future No-Build Alternative will describe conditions at Logan Airport without new parking garage facilities. As part of the next phase of design, Massport will evaluate additional design and construction refinements to further avoid and minimize any adverse effects; this would be analyzed in the DEIR

3.4 Planning and Sustainable Design

The DEIR will describe the sustainable design elements of the Proposed Action, including:

- Ground access.
- Sustainable building design elements. Massport will consider the parking garage sustainability rating system, Parksmart, and assess its applicability.
- The DEIR will describe consistency with existing plans and policies, including:
 - Massport/Logan Airport Parking Freeze Regulation, 310 CMR 7.30;

- ❑ Executive Order 385 (Planning for Growth);
- ❑ Executive Order 484 (Leading by Example);
- ❑ Executive Order 569 (Establishing an Integrated Climate Change Policy);
- ❑ Massachusetts Global Warming Solutions Act;
- ❑ Local and Airport related plans and policies;
- ❑ Logan Airport ESPRs/ EDRs; and
- ❑ Massport strategic planning.

3.5 Existing Environment and Assessment of Beneficial and Adverse Environmental Impacts

The DEIR will describe the existing environment, environmental impacts, and mitigation of the Parking Project in accordance with applicable environmental categories identified in Section 11.07 of the MEPA Regulations. The DEIR will refer to the *2011 ESPR* and the *2015 EDR* for the assessment of current conditions at the Airport and for future forecasted conditions for the Airport as a whole.

The following conditions will be analyzed:

- **2015 Existing Condition:** As outlined in the ENF, this represents the level of air passenger activity and environmental conditions in 2015 (as detailed in the *2015 EDR*).
- **2024 Date of Occupancy:** 2024 is the anticipated date of occupancy for the Logan Airport Parking Project. The No-Build Alternative and Preferred Alternative will be analyzed under the forecasted 2024 conditions. Passenger numbers will be consistent with projections generated by Massport (in the *2011 ESPR*) and the FAA’s terminal area forecast for Logan Airport. Massport is currently evaluating potential phasing options and it is likely that a portion of the 5,000 proposed parking spaces will go into service before 2024.
- **2030 Future Condition:** To be consistent with the *2011 ESPR* forecast, the future condition analysis will focus on 2030. Passenger numbers will be consistent with projections generated by Massport and the FAA’s terminal area forecast (TAF).

The Proposed Project is not affected by airside operations and aircraft activity, nor will it change airfield activity. Therefore, the DEIR will focus on landside operations. The DEIR will address the resources categories listed below.

3.5.1 Traffic, Transit, Pedestrian, and Bicycle Transportation

The traffic, transit, and pedestrian and bicycle transportation analysis will compare the 2015 existing conditions (EDR baseline) to the 2024 No-Build Alternative and Build Alternative conditions. The analysis will also consider 2030 conditions. This section will discuss analysis methodologies, study area, and assumptions.

The DEIR will provide a detailed description of existing conditions including on and off-Airport access, on-Airport circulation, and parking. This section will report on existing traffic volumes

and vehicular accident history at the Airport. Existing public transportation, pedestrian, and bicycle facilities will also be described.

The traffic and parking analysis for the Logan Airport Parking Project will include the following sections:

- Comparison of existing and future parking inventory and demand in context of the Logan Airport Parking Freeze. Existing parking management programs will also be described.
- Methodology description and analysis of the potential shifts in travel mode to the Airport produced by the addition of proposed parking facilities as outlined in Massport’s technical memorandum to MassDEP.
- Description of Proposed Action garage(s) conceptual design including: pedestrian, transit, and vehicular access and egress locations; access and revenue control systems; anticipated rate structure; and proposed hybrid, alternative fuel, and electric vehicle parking benefits.
- Description of proposed parking garage connections (pedestrian and/or transit) to terminal area.

3.5.2 Air Quality and Greenhouse Gas (GHG)

The Proposed Project is anticipated to shift mode share from drop-off/pick-up modes and result in reductions in regional off-Airport VMT. Thus, additional Airport parking will provide air quality benefits associated with the reduction in VMT. The air quality analysis presented in the ENF will be included and updated.

A stationary source GHG emissions assessment will be conducted, if needed.¹

3.5.3 Construction

The DEIR will evaluate construction period impacts, including noise, air quality, traffic, solid and hazardous waste, and water quality. The construction analysis presented in the DEIR will include a description of each phase of construction, including truck routes, staging areas, labor, and equipment levels, soil remediation and duration, and other short-term impacts. The construction analysis will build on other recent analyses, such as the Terminal E Renovation and Enhancements Project and the Terminal E Modernization Project. The cumulative impacts from projects that are planned or under construction at the Airport will be described along with how these construction efforts will be coordinated.

Demolition activity will comply with both Solid Waste and Air Quality control regulations. Massport already participates in MassDEP’s Clean Construction Equipment Initiative and requires engine retrofits to reduce exposure to diesel exhaust fumes and particulate emissions. The DEIR will include Best Management Practices (BMPs) that would be used to avoid and minimize adverse environmental impacts, and will address potential impacts and mitigation related to land disturbance, wetlands and rare species impacts (if any), noise, dust, vehicle

¹ A stationary source greenhouse gas assessment will only be conducted for the Logan Airport Parking Project if a portion of the garage is enclosed and spaces are air conditioned.

emissions, and construction debris. Massport’s construction mitigation guidelines to contractors will form the basis for developing mitigation strategies.

Specific quantitative analysis of short-term construction period impacts will be conducted for traffic, noise, and air quality as described below.

3.5.3.1 Construction Traffic

The DEIR will describe anticipated construction routes and traffic impacts that may result from construction of the Proposed Project for the anticipated build year(s) (to be determined), including measures to restrict construction traffic from local roads. Massport is currently evaluating potential phasing options and a portion of the 5,000 proposed parking spaces could go into service before 2024. Traffic associated with the Proposed Project is expected to be related to vehicles delivering construction materials and vehicles required to move equipment to/from the site. The traffic impacts due to construction activities associated with the Proposed Project will be evaluated including:

- The estimated number of average daily round-trip truck trips that would be required (by quarter) throughout the entire construction process.
- The estimated number of round-trip truck trips formerly developed in support of other planned and ongoing projects in the area.
- The presence of construction-related vehicles (trucks or other heavy equipment) on the Airport’s roadway system.
- Truck haul routes from each major highway to the Airport.
- Deployment of temporary on-street roadway staging and detours as a result of ongoing construction (if any).
- The effect of any temporary facility relocations required as part of the construction phasing plan.
- Proposed mitigation measures to offset impacts during construction and analyze effectiveness of measures. These measures could include travel time or route restrictions, changes to signal timing and/or phasing, as well as other measures identified during the completion of this task.

3.5.3.2 Construction Period Air Quality

The DEIR will describe air quality impacts due to construction activities associated with the Proposed Project and will be evaluated based on:

- An emissions inventory of construction-related emissions, including emissions from heavy construction equipment, construction, and related-activities. The emissions inventory will evaluate EPA criteria pollutants and their precursors.
- A Clean Air Act General Conformity Rule “Applicability” Assessment.
- A qualitative assessment of mitigation measures for nuisance dust and traffic congestion.

3.5.3.3 Construction Period Noise

The DEIR will characterize noise and vibration impacts associated with construction activities, particularly with truck activities on primary construction haul routes and any other residential streets used as construction routes. The analysis will characterize noise and vibration impacts associated with trucking and construction equipment, discuss consistency with applicable state and federal guidelines and regulations, and identify mitigation measures as appropriate.

The noise impacts due to construction activities associated with the Proposed Project will be evaluated including:

- The quantity and type of heavy construction equipment used in the conduct of the Proposed Project;
- A detailed estimate of pile driving activities (if any); and
- The total number of truck trips to and from the site(s).

3.5.3.4 Construction Period Solid and Hazardous Waste

The DEIR will provide a characterization of expected construction waste and a waste handling plan for construction activities. Massport would ensure that any areas of subsurface contamination discovered within the Project Area are properly assessed, remediated, and brought to regulatory closure in accordance with the Massachusetts Contingency Plan (MCP). The DEIR will outline construction requirements, including requirements for contractors to implement control plans for hazardous materials, pollution prevention, and solid waste. Opportunities for recycling construction materials will be considered.

3.5.3.5 Construction Period Water Quality and Pollution Prevention

The DEIR will describe proposed mitigation measures to protect water quality during the construction period. Because the ultimate receiving waters are part of the Boston Harbor, these resources are sensitive to turbidity and require stringent erosion and sedimentation control measures and an elevated level of monitoring during construction. Massport anticipates the project would require a NPDES General Permit for Construction Activities.

3.6 Beneficial Measures/Draft Section 61 Findings

The DEIR will specify the measures to be taken by Massport to avoid, minimize, and mitigate potential environmental impacts of the Project. The DEIR will include a summary identifying the beneficial measures provided by the Parking Project and opportunities for mitigation of any unavoidable permanent impacts to each resource. The chapter will include proposed mitigation measures, implementation schedule, monitoring measures during construction, and post-construction monitoring, as appropriate. The mitigation summary will include commitments to sustainable design elements.

The DEIR will include Draft Section 61 Findings developed in accordance with M.G.L. c. 30, Section 61, for each action to be taken on the Proposed Project.

3.7 Responses to Comments

The DEIR will include responses to comment letters received on the ENF and will respond to comments to the extent that they are within MEPA jurisdiction. The DEIR will present any additional narrative or quantitative analysis necessary to respond to the comments received.

3.8 Distribution

In accordance with Section 11.16 of the MEPA Regulations, the DEIR will be circulated to those parties submitting comments on the ENF and to those state agencies from which permits or approvals are sought. Copies will also be made available to Massport's standard MEPA mailing list. Copies will also be provided to City of Boston, Chelsea, Winthrop, and Revere Library branches for public review. Copies of the DEIR will be available for download on the Massport website (www.massport.com).

Massport will present its plans for the Logan Airport Parking Project to a range of stakeholders. Massport will provide updates about the Proposed Project to public agencies, community representatives, advocacy groups, and other interested parties. Massport will provide a concise summary in English and Spanish.

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**Attachment 4
DISTRIBUTION LIST**

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DISTRIBUTION LIST

The ENF will be circulated and distributed in accordance with 301 CMR 11.16 (2). This distribution list also includes representatives of governmental agencies and community groups and/or local residents concerned with activities at Logan Airport.

This ENF is available on Massport’s website at www.massport.com. Printed copies of the ENF may be requested from Stewart Dalzell by telephone (617) 568-3507 or email sdalzell@massport.com. Printed and electronic copies of this report are available for review at the following public libraries.

Library	Address	Library	Address
Boston Public Library Main Branch	700 Boylston Street Boston, MA 02116	Winthrop Public Library	2 Metcalf Square Winthrop, MA 02151
Boston Public Library Charlestown Branch	179 Main Street Charlestown, MA 02129	Chelsea Public Library	569 Broadway Chelsea, MA 02150
Boston Public Library East Boston Branch	365 Bremen Street East Boston, MA 02128	Revere Public Library	179 Beach Street Revere, MA 02151

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Attachment 5
MASSPORT REQUEST TO AMEND THE LOGAN AIRPORT PARKING FREEZE
AND TECHNICAL MEMORANDUM

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June 6, 2016

Martin Suuberg, Commissioner
Massachusetts Department of Environmental Protection
One Winter Street, 2nd Floor
Boston, MA 02108

Re: Proposed Amendment to Massport / Logan Airport Parking Freeze Regulation,
310 CMR 7.30

Dear Commissioner Suuberg:

The Massachusetts Port Authority (“Massport”), owner and operator of Boston Logan International Airport (“Logan Airport” or “Airport”), respectfully requests that the Massachusetts Department of Environmental Protection (“MassDEP”) amend MassDEP’s Massport/Logan Parking Freeze Regulations, 310 CMR 7.30 (the “Logan Parking Freeze”) by increasing the commercial parking freeze limit by five thousand spaces at the Airport.

The Logan Parking Freeze was established in 1975 as a strategy to reduce air pollution caused by automobile emissions and to achieve the air quality standards established by the federal Clean Air Act. Today, Eastern Massachusetts has achieved compliance with the federal standards for carbon monoxide (CO) and ozone, the two criteria pollutants that were the focus of the original 1975 freeze.

The Logan Parking Freeze has been effective to a point, as Massport has achieved the broad goals of the original freeze and the 1989 Amendment. As result of the Logan Parking Freeze and the constrained parking at Logan Airport, Massport has continued to prioritize transit and HOV access to the airport through the significant expansion of Logan Express sites and service and by its financial support of MBTA Silver Line access to Logan Airport. Since 2005, Massport has purchased eight Silver Line buses that access the Airport and has financially supported Silver Line bus trips from the Airport terminals since 2012. Massport has also expanded from its two original Logan Express sites to include five locations, resulting in an increase of the total capacity of HOV/shared-ride mode service by 154% since 1989. As contemplated by the 1989 Amendment to the Logan Parking Freeze, Massport has also acquired Park-and-Fly lots in East Boston, permanently removing these spaces from East Boston and transferring them to the Airport. Massport has also permanently shifted a large number of employee spaces to commercial use, in keeping with the goal of the 1989 Parking Freeze Amendment.

Despite Massport’s industry leading efforts to bolster transit and HOV travel to and from Logan Airport, as described in more detail in the attached Policy Memorandum (Exhibit A) and Technical Analysis (Exhibit B), due to the significant increase in air passengers using Logan Airport and the trend toward more longer term parking at Logan, limiting the commercial parking supply at Logan Airport to its currently constrained (capped) level under the Logan

Parking Freeze is now having the unintended effect of negatively impacting air quality. Recent analysis shows that the constrained parking supply at Logan Airport causes 75% of passengers who would otherwise choose to park to use a private pick up/drop off mode, thereby resulting in up to four trips to the Airport rather than two. As a result, the Logan Parking Freeze in its current form is having the unintended effect of causing an increase in overall airport-related ground access VMT and associated vehicle emissions in the metropolitan Boston region. As discussed in the attached exhibits, increasing on-airport commercial parking spaces will cause a significant corresponding decrease in VMTs and associated emissions, as compared with not amending the Logan Parking Freeze. Adding 5,000 spaces to the Logan Parking Freeze will allow for a substantial decrease in VMT at the airport and will provide a significant air quality benefit.

Accordingly, Massport proposes that MassDEP amend the Massport / Logan Airport Parking Freeze Regulation, 310 CMR 7.30, by increasing the commercial parking freeze limit by 5,000 spaces. In keeping with the structure of the 1989 Logan Parking Freeze Amendment, Massport proposes to couple increasing the commercial parking freeze limit with requirements designed to support transit and HOV travel to and from Logan Airport. Under the proposed amendment, Massport would continue to maintain the substantial transit and HOV improvements described earlier in this letter and further described in Exhibit A.

As with the 1989 Amendment, the proposed Logan Parking Freeze amendment would also require Massport to undertake studies to further Massport's long-range efforts to address VMT and air quality impacts of different ground access modes for travel to and from Logan Airport. Three long-term studies are proposed in Exhibit A by which Massport will consider: (1) ways to improve HOV access to Logan; (2) strategies for reducing pick-up / drop-off modes; and (3) parking pricing strategies. Massport would also commit to Logan Express service from the North Shore, as well as continue to identify and implement additional suitable Logan Express site(s) and service(s). When Massport proposes to build a new parking garage(s) pursuant to this new freeze cap, the garage would be subject to review under the Massachusetts Environmental Policy Act (MEPA). Massport would then commit, in Section 61 Findings adopted under MEPA, to additional mitigation measures with respect to the garage's environmental impacts.

In summary, the proposed modification of the Logan Parking Freeze would be environmentally beneficial, through decreases in regional VMT and vehicle emissions. The modification would provide for a moderate increase in the number of commercial parking spaces at Logan Airport, while requiring Massport to continue its strong commitment to maintaining, developing and supporting alternative transit and HOV modes to Logan Airport.

This letter is accompanied by the following documents for your consideration:

- 1) Policy Memorandum, describing the history and policy goals of the Logan Parking Freeze and elements of the proposed regulatory amendments and associated mitigation commitments, attached as Exhibit A; and
- 2) Technical Analysis, analyzing the transportation and air quality impacts of current conditions and increases in the parking supply, attached as Exhibit B.

We appreciate your consideration of our proposal and look forward to working together with MassDEP on this important initiative.

Sincerely,



Betty Desrosiers
Director – Strategic and Business Planning
Massachusetts Port Authority

Attachments

- Exhibit A: Policy Memorandum
- Exhibit B: Technical Analysis

Exhibit A: Policy Memorandum

POLICY MEMORANDUM

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- V. MASSACHUSETTS ENVIRONMENTAL POLICY ACT (MEPA)**
- VI. LOGAN'S ROLE IN THE MASSACHUSETTS ECONOMY**
- VII. PUBLIC PARTICIPATION**
- VIII. REFERENCES**

I. EXECUTIVE SUMMARY

Boston Logan International Airport (“Logan Airport” or “Airport”), which is owned and operated by the Massachusetts Port Authority (“Massport”), has been subject to a freeze on the number of commercial parking spaces since 1975. Originally conceived as a strategy to reduce air pollution caused by automobile emissions and achieve the air quality standards established by the federal Clean Air Act, the Logan Parking Freeze has continued to the present day, although Eastern Massachusetts has achieved compliance with the federal standards for carbon monoxide (CO) and ozone, the two criteria pollutants that were the focus of the original 1975 freeze and the 1989 Amendment. The Logan Parking Freeze has helped maintain a supportive framework within which transit and other HOV modes of travel to Logan Airport have been developed and supported by Massport, thereby reducing VMT and associated vehicle emissions in the region.

The Logan Parking Freeze has been effective in part, as Massport has achieved the broad goals of the original freeze and the 1989 Amendment. As result of the Logan Parking Freeze and the constrained parking at Logan Airport, Massport has continued to prioritize transit and HOV access to the airport through the significant expansion of Logan Express sites and service and by its financial support of MBTA Silver Line access to Logan Airport, resulting in an increase of the total capacity of HOV/shared-ride mode service by 154% since 1989. As contemplated by the 1989 Amendment to the Logan Parking Freeze, Massport has also acquired Park-and-Fly lots in East Boston, permanently removing these spaces from East Boston and transferring them to the Airport. Massport has also permanently shifted a large number of employee spaces to commercial use, in keeping with the goal of the 1989 Parking Freeze Amendment.

Despite Massport’s efforts to bolster transit and HOV travel to and from Logan Airport, as described in more detail in this document and Exhibit B, the Technical Analysis, limiting the commercial parking supply at Logan Airport to its currently constrained (capped) level under the Logan Parking Freeze is having the unintended effect of negatively impacting air quality. Recent analysis shows that the constrained parking supply at Logan Airport causes 75% of passengers who would otherwise choose to park to use a private pick up/drop off mode, thereby resulting in up to four trips to the Airport rather than two. As a result, the Logan Parking Freeze in its current form is having the unintended effect of causing an increase in overall airport-related ground access VMT and associated vehicle emissions in the metropolitan Boston region. As discussed in Section III and as described in detail in Exhibit B, increasing on-airport commercial parking spaces will cause a significant corresponding decrease in VMTs and associated emissions as compared with the no build scenario. Adding 5,000 spaces to the Logan Parking Freeze will allow for a substantial decrease in VMT at the airport and will provide a significant air quality benefit.

Accordingly, Massport proposes that Massachusetts Department of Environmental Protection (“MassDEP”) amend the Massport / Logan Airport Parking Freeze Regulation, 310 CMR 7.30 (the “Logan Parking Freeze”) by increasing the commercial parking freeze limit by 5,000 spaces. In keeping with the structure of the 1989 Logan Parking Freeze Amendment, increasing the commercial parking freeze limit would be coupled with requirements designed to support transit

and HOV travel to and from Logan Airport. Massport proposes that the limits on employee parking would be reduced, to reflect the prior conversion of employee spaces to commercial spaces under the current regulation, and that there would be no change to the constraints on parking under the companion East Boston parking freeze.

As with the 1989 Amendment, Massport proposes that it be required to undertake studies to aid Massport's long-range efforts to address VMT and air quality impacts of different ground access modes for travel to and from Logan Airport. Massport will undertake three long-term studies to further the substantial results it has achieved with respect to transit and HOV access: (1) ways to improve HOV access to Logan, (2) strategies for reducing pick-up / drop-off modes; and (3) parking pricing strategies. Massport will also be required to commit to Logan Express service from the North Shore, as well as continue to identify and implement additional suitable Logan Express site(s) and service(s). When Massport proposes to build a new parking garage(s) pursuant to this new freeze cap, the garage will be subject to review under the Massachusetts Environmental Policy Act (MEPA) and Massport will commit, in Section 61 Findings, to additional mitigation measures with respect to the garage's environmental impacts.

The proposed modification of the Logan Parking Freeze would be environmentally beneficial, through decreases in regional VMT and vehicle emissions. The modification would provide for a moderate increase in the number of commercial parking spaces at Logan Airport, while requiring Massport to continue its strong commitment to developing and supporting alternative transit and HOV modes to Logan Airport.

II. HISTORY AND PURPOSE OF LOGAN FREEZE

1. Establishment of Freeze and 1989 Amendment

A) 1975 Establishment of Logan Parking Freeze by EPA

The Logan Parking Freeze was originally adopted in 1975 by the U.S. Environmental Protection Agency (EPA) as part of a transportation control plan for Massachusetts under the federal Clean Air Act, 42 U.S.C. §7401 et seq.¹ The Massachusetts transportation control plan also included parking freezes for downtown Boston and the City of Cambridge.² The 1975 Logan Parking Freeze capped the number of commercial spaces on airport property controlled by the Massachusetts Port Authority (“Massport”) at 10,215. It did not regulate employee or rental car spaces or airport-related spaces in East Boston outside the Logan Airport boundary.

In 1975, Massachusetts was in non-attainment status for the criteria pollutants carbon monoxide (CO) and ozone. The intent of the 1975 Logan Parking Freeze was to limit automobile emissions of CO and of VOCs, a precursor to ozone, by encouraging travel to and from Logan Airport via transit, ride-sharing, and other high-occupancy vehicle (HOV) travel modes. [See 1973 and 1975 EPA documents in Fed. Reg., note 1] However, no particular effects upon CO or ozone concentrations were ever established by EPA or the Massachusetts Department of Environmental Protection (“MassDEP”) in relation to the Logan Parking Freeze, nor were any reduction credits ever assigned to the Logan Parking Freeze. [1988 Policy Statement, discussed below, p. 1]

The Logan Parking Freeze was adopted by MassDEP as part of measures to control CO and ozone under the Massachusetts State Implementation Plan (SIP) in 1979 – 80 and again in 1983; see 58 Fed. Reg. 14153 (March 16, 1993).

B) 1989 Amendment of Logan Parking Freeze

In 1989, MassDEP amended the Logan Parking Freeze significantly, through the adoption of a new regulation, at 310 CMR 7.30. MassDEP simultaneously adopted a regulation for a parking freeze affecting the area of East Boston immediately adjacent to Logan Airport, at 310 CMR 7.31. Both regulations were published in the *Massachusetts State Register* on Nov. 24, 1989. Both the MassDEP regulations for Logan and East Boston were accepted by EPA as part of the SIP in 1993; see 58 Fed. Reg. 14153 (March 16, 1993).

¹ The EPA parking freeze for Logan was originally proposed in 1973 and finally promulgated in 1975, as part of the federal transportation control plan for Massachusetts; see 40 Fed. Reg. 25152, 25161 (June 12, 1975) and 40 Fed. Reg. 39863 (Aug. 29, 1975). The 1975 EPA parking freeze regulations for Logan are found at 40 CFR § 52.1135.

² The downtown Boston freeze remains in effect, enforced by the City of Boston, as does a separate freeze for South Boston that was adopted in 1993. The Cambridge freeze was superseded in 1998 with a Vehicle Trip Reduction Plan (VTRP); see 310 CMR 60.04.

The purpose and structure of the 1989 Logan Parking Freeze amendment and the 1989 East Boston parking freeze were described in detail in a Policy Statement issued by the Boston Metropolitan Planning Organization on November 14, 1988 (“Policy Statement”). The Policy Statement stated that the original freeze had been only a “partial success,” because it regulated only on-airport commercial spaces. In particular, the Policy Statement noted that a high percentage of all passenger-related trips were “drop-offs.” Each two-way drop-off trip resulted in twice as much vehicle miles traveled (VMT) and associated air pollution, compared with the VMT and emissions from a one-way trip to or from a commercial parking space. Therefore, an overly restrictive limitation on commercial parking spaces could actually cause increased air pollution, by shifting more travel to drop-off trips. [Policy Statement, pp. 1 – 7, 18 - 20]

Based on the factual and policy analysis in 1989 – particularly the expectation of increases in demand for trips to Logan Airport over time due to increased passenger levels – the Policy Statement set forth that the intended goals of the 1989 amendment to the Logan Parking Freeze:

“[I]ncrease the incentives for Massport to take action that would reduce auto VMT caused by Logan. In addition, there is expected to be a reduction in the neighborhood traffic congestion currently exacerbated by the Park-and-Fly and rental operations. These actions would strengthen the framework within which transit and other, non-auto or VMT-intensive modes can be emphasized and expanded with consequent beneficial effects in maintaining air quality gains being achieved through the SIP as a whole. The proposed amendment would be more effective than the current freeze in reducing air quality impacts and in meeting the basic transportation needs of the Commonwealth.” [Policy Statement, pp. 3 – 4]

The 1989 Amendment to the Logan Parking Freeze was codified in MassDEP’s Air Pollution regulations at 310 CMR 7.30. The regulation largely reflects the provisions proposed in the Policy Statement.³ When EPA approved the SIP amendment, in March 1993, its approval expressly agreed with the MPO’s rationale:

“[T]he existing parking freeze has had the unanticipated effect of vastly increasing passenger drop-off and pick-up, resulting in twice as many vehicle trips as would occur if each passenger drove to the airport. The increase of 2000 commercial spaces at the airport, coupled with the program for exchanging employee spaces for commercial spaces and with continuing improvements in alternate means of access to the airport, should lessen the drop-off/pick-up phenomenon.” 58 Fed. Reg. 14153.

Under the 1989 Amendment, as further modified in 2000, the coverage of the Logan Parking Freeze was extended beyond regulated commercial spaces (at the time, 10,215), to include non-

³ MassDEP has modified the regulation only once, in 2000, to reflect numerical adjustments through that date, due to Massport’s purchase of Park-and-Fly lots in East Boston, and its conversions of employee parking to commercial spaces. EPA approved the MassDEP modification as a revision to the Massachusetts SIP in 2001; see 66 Fed. Reg. 14318 (March 12, 2001).

regulated employee spaces (at the time, 7,100) and non-regulated overflow spaces (at the time, 2,000). All three categories were combined under a single cap of 19,315 spaces. Massport could allocate these between commercial and employee spaces, provided that the number of employee spaces could not exceed 7,100 (a limit that was subsequently been reduced by the 2000 modification to no more than 5,225 employee spaces). [310 CMR 7.30(2)]

The MassDEP regulation also contains incentives for Massport to acquire Park-and-Fly lots and bring those spaces onto the Airport, and to convert employee parking spaces to commercial use. Under the 2000 modification to the regulation, the cap could increase by this procedure, up to a maximum total of 21,790 spaces, if Massport acquired Park-and-Fly lots in East Boston (these totaled 2,475 spaces). Such spaces are automatically added to the Logan freeze cap, as commercial spaces. [310 CMR 7.30(2, 5)]⁴ The regulation also requires Massport to target further reductions of employee parking in the future. Any conversions of existing employee spaces to commercial would be permanent. [310 CMR 7.30(4)]

The regulation permits Massport to maintain “restricted use” parking spaces, to address “extreme peaks” in air travel. Such spaces may be used no more than 10 days within any calendar years. Restricted use spaces may be located at Logan; they cannot be located in the East Boston freeze area, or in any other parking freeze area (i.e., South Boston or Downtown). Massport must report annually on the restricted use spaces, including any exceeding of the 10-day limit. [310 CMR 7.30(7)]

Finally, the regulation requires Massport to submit a current inventory of the number of spaces at Logan Airport to MassDEP for its review, on a continuing 6-month schedule. [310 CMR 7.30(3)] Massport must also report annually on its efforts to “identify, analyze, implement and communicate to the public transportation management programs.” [310 CMR 7.30(8)] The EDR/ESPR reports on these efforts, as does the CY report to MassDEP.

C) The East Boston Parking Freeze

The Policy Statement also proposed the creation of an East Boston parking freeze, to be administered by the City’s Boston Air Pollution Control Commission (BAPCC). [Policy Statement, pp. 2 – 6, 33 - 34] The East Boston freeze was codified in MassDEP’s Air Pollution regulations at 310 CMR 7.31. There are also BAPCC rules, on the City’s website.

Under the MassDEP regulation, the East Boston freeze affects only commercial park-and-fly spaces and rental car spaces within a specific geographic area of East Boston adjacent to the airport. [310 CMR 7.31(1, 2)] The BAPCC is required to perform an inventory for East Boston, and to administer the freeze through a system of permits. [310 CMR 7.31(3 - 7)] The regulation anticipates that park-and-fly and rental spaces might be transferred to Logan, in which case that

⁴ The existing regulation also requires Massport to work with the City of Boston to develop and implement a plan to relocate rental car spaces from the East Boston freeze area to Logan. Upon the relocation, those spaces will be permanently removed from the East Boston freeze. [310 CMR 7.30(5)]

number of spaces would be added to the Logan freeze cap and permanently removed from the East Boston freeze bank. [310 CMR 7.31(3)(d, e)]

According to the City's website, there are currently two active permits for park-and-fly parking lots in East Boston, with a total of 702 spaces.⁵ The website states that there are no spaces in the East Boston parking freeze bank, and that the BAPCC is not accepting applications for new East Boston permits.

2. Implementation of 1989 Amendment to Logan Parking Freeze

Since 1989, Massport has implemented a number of measures on an on-going basis to implement the principal goals of the 1989 Amendment to the Logan Parking Freeze. These include:

- Measures to strengthen HOV/shared-ride mode access to the airport, including expansion and improvement of Logan Express and the MBTA Silver Line;
- Acquisition of Park-and-Fly lots in East Boston and transfer of those spaces onto the airport;
- Conversion of employee parking spaces to commercial use; and
- Increasing rates for commercial parking

A) Measures to Strengthen HOV/ Shared-Ride Mode Access to the Airport

Since the 1989 Amendment, and as contemplated by that Amendment, Massport has continued to strengthen HOV/shared-ride mode access to Logan Airport. Collectively, these services have resulted in a HOV/shared-ride mode share for access to Logan of about 30% – making Logan Airport the top-ranked U.S. airport for HOV/shared-ride mode share, based on airports with known ground-access mode shares.

The 1989 Amendment required Massport to report annually on its transportation management programs. Massport does so by filing its annual Environmental Data Report (EDR) with MassDEP and the MEPA Office. The EDR is supplemented every five years with the more extensive Environmental Status and Planning Report (ESPR).

As reported in the most recent 2012 / 2013 EDR, filed in December 2014, there are three major components for HOV/shared-ride mode access to Logan Airport:

- *MBTA service, consisting of the Silver Line (SL1 bus) and the Blue Line (subway).* Starting in 2005, Massport made financial commitments to improved transit access to Logan Airport by purchasing 8 Silver Line buses and by providing ongoing support of operations and maintenance. Starting in 2012, Massport has collaborated with other transportation agencies to provide underwriting so that all passengers who board the Silver Line at Logan Airport terminals may ride for free. Massport provides a free shuttle

⁵ <http://www.cityofboston.gov/environment/airpollution/parkingfreezes.asp>, accessed April 14, 2016.

bus for passengers using the Blue Line to connect to/from the terminals and Airport Station.

- *Logan Express scheduled express bus service (LEX).* Since its start in 1986, Massport has expanded from its two original LEX sites established in 1986 to include five locations in the region: Braintree, Framingham, Woburn, Peabody, and Boston / Back Bay (started in 2014 as a pilot program). Total ridership for LEX in 2014 was 1.42 million passengers – a five-fold increase since 1989. Massport owns the park-and-ride sites and terminals in Braintree, Framingham, and Peabody; it is in a joint venture with the MBTA and MassDOT to operate the Anderson Regional Transportation Center in Woburn. In 2015, Massport opened its first parking garage at a Logan Express location, doubling the capacity at its Framingham facility.
- *Private coach bus and van operators.* Massport encourages private coach buses and vans to operate at Logan Airport by designating priority curbs areas at the terminals, and by providing direct marketing support to providers for expanding their service to the airport.

Since the 1989 Amendment, the total capacity of HOV/shared-ride mode services to Logan Airport has increased by 154%. In other words, Logan Airport now has 2½ times more scheduled bus service today than it did 26 years ago with the addition of Logan Express sites, introduction of the Silver Line SL1 service, and increased service from private scheduled bus carriers.

B) Acquisition of East Boston Park-and-Fly lots

A principal goal of the 1989 Amendment was to reduce traffic congestion in the residential East Boston community by incentivizing Massport to acquire private Park-and-Fly lots and bring those spaces onto airport property. This goal has been achieved. To date, Massport has acquired the park-and-fly licenses from three separate Park-and-Fly facilities. The acquisitions were (1) the Park-Ex facility (now Bremen Street Park) (1,377 spaces), acquired in 2001; (2) 135B Bremen Street (Paul's Parking) (246 spaces), acquired in 2012; and (3) 413-419 Bremen Street (also Paul's Parking) (150 spaces), acquired in 2013. As a result of these acquisitions, 1,773 Park-and-Fly spaces have been permanently removed from East Boston, and that number of spaces has been added to the commercial component of the Logan Airport parking freeze.

C) Conversion of Employee Parking Spaces to Commercial Use

Another principal goal of the 1989 Amendment was to incentivize Massport to shift the use of spaces within the Logan Airport freeze cap from employee to commercial use. In response to the 1989 Amendment, Massport has permanently shifted 4,652 spaces from employee to commercial use to date. The conversions occurred in 1994 (675 spaces), in 1998 (1,200 spaces), in 2007 (1,852 spaces), in 2011 (700 spaces), and in 2016 (225 spaces). In total, Massport has reduced employee parking spaces 66% since 1989 (from 7,100 spaces in 1989 to 2,448 spaces in 2016).

The reduction in on-airport parking spaces for employees has occurred despite the number of workers at Logan Airport (more than 15,000) remaining constant over the years. Massport has

satisfied employee parking demand via off-site park-and-ride facilities in areas outside of the Boston parking freezes and via increases in transit services to meet employee needs.

- For those employees commuting from suburban locations, for example, Massport subsidizes use of the Logan Express park-and-ride lots and bus service.
- Closer to Logan Airport, Massport leases a 1,550-space garage in Chelsea exclusively for employee use, and provides 24/7 shuttle service between the garage and the airport.
- East Boston employees also have the option of using the Massport-funded Sunrise Shuttle bus service, which provides scheduled service beginning at 3 a.m. through 5:30 a.m., when the MBTA services are not yet in operation.

Operational constraints prevent any further conversion of the relatively small number of remaining employee parking spaces. Because Logan Airport is a 24-hour facility with critical safety and operational demands, there are some shifts for which transit is not an option.

D) Increasing Rates for Commercial Parking

Since the initial imposition of the Logan Parking Freeze in 1975, when parking at Logan cost only \$3/day, Massport has sought to incentivize travelers who are price-sensitive to continue using less expensive HOV/shared-ride modes of travel by regularly increasing the cost of commercial parking at Logan. In 1989, the Logan Airport daily parking rate was \$10; since then Massport has increased the rate to \$29/day (with an approved increase to \$32/day in 2016, \$35 in 2017, \$38 in 2019, and \$41 in 2021). In constant dollars, this amounts to an increase in the daily parking rate of 60% since 1989 (in other words, the \$10/day rate corresponds to about \$18/day in 2014 dollars, \$11 less than today's rate).

Recent analysis [LeighFisher, 2011 and 2015] of Logan Airport's parking pricing modeling has demonstrated that increases in parking rates do not have a significant effect on reducing peak parking demand. Business passengers, in particular, are significantly less sensitive to changes in parking prices than leisure passengers, and business travelers are more likely to park.

Logan Airport's parking garages are often near/at capacity on weekdays during non-vacation periods and spaces are typically available at Logan Airport on weekends and vacation weeks (including summer months), demonstrating that it is business travel that drives peak parking demand.

E) Current Inventory of Logan Parking Freeze Spaces

Massport submitted its most recent parking inventory report on the Logan Airport parking freeze to MassDEP on April 15, 2016. The report listed the following allocation of spaces:

In-service commercial spaces	18,640
<u>Designated commercial spaces⁶</u>	<u>0</u>
Total commercial spaces	18,640
In-service employee spaces	2,448
<u>Designated employee spaces</u>	<u>0</u>
Total employee spaces	2,448
Total Parking Freeze Spaces	21,088
(Commercial + Employee)	

F) Recent Reporting on Restricted Use Parking Spaces

The existing parking freeze regulation requires Massport to report to MassDEP if it invokes the use of restricted-use spaces by more than six times by July 1 of any calendar year. Restricted-use spaces means parking spaces that are provided by Massport for use by Logan Airport air travelers and visitors for free when commercial parking space demand exceeds the supply of on-Logan airport commercial parking spaces, and which are not otherwise available for use by Logan Airport air travelers and visitors.

Most recently, on August 24, 2015, Massport filed with MassDEP a report on the strategies it committed to undertake during the remainder of the 2015 calendar year so as not to have to invoke the use of the restricted-use parking spaces. The report detailed Massport's strategies related to parking demand reduction for the fall of 2015. These include additional Logan Express scheduled bus service, pricing incentives, and marketing of HOV/shared-ride services.

G) Air Quality Improvements at Logan Airport and in Eastern Massachusetts Since 1989

Since the 1989 Amendment to the Logan Parking Freeze was adopted, Eastern Massachusetts has achieved compliance with the federal standards for CO and ozone, the two criteria pollutants that were the focus of the original 1975 freeze and the 1989 Amendment.

Carbon Monoxide (CO). Starting in the early 1970s, there have been regular air quality monitoring at a CO "hot spot" located at the East Boston ends of the Sumner and Callahan Tunnels. As of 1987, the monitoring still showed consistent levels of CO in excess of the federal 8-hour standard under the Clean Air Act. With the opening of the Ted Williams Tunnel in 1995, congestion at the Sumner and Callahan Tunnels and the resultant CO concentrations declined dramatically. CO monitoring in East Boston ended in June 1999. As reported in the 2012/ 2013

⁶ Designated spaces are those that either do not physically exist or are temporarily being used for non-parking purposes.

EDR, total modeled CO emissions at Logan Airport have declined 58% between 1990 and 2013. Motor vehicle accounted for 14% of CO emissions in 2013.

This local improvement paralleled dramatic improvements in CO in Massachusetts and nationwide. Monitoring data showed that the Boston area had reached attainment for CO by 1988. In 1996, EPA promulgated a final rule re-designating the Boston Metropolitan area as in attainment for the CO standard under the Clean Air Act; see 61 Fed. Reg. 2918 (Jan. 30, 1996).

VOCs, NOx, and Ozone. The other air quality goal of the 1975 Freeze and the 1989 Amendment was to support measures that reduced regional concentrations of ozone, by reducing VMT and the accompanying emissions of VOCs and NOx, the precursors to ozone. As reported in the 2012/ 2013 EDR, total modeled VOC emissions at Logan Airport have declined 75% between 1990 and 2013. Motor vehicle accounted for 3% of VOC emissions in 2013. [EDR, pp. 7-10 – 13] As reported in the 2012/ 2013 EDR, total modeled NOx emissions at Logan Airport have declined 35% between 1990 and 2013. Motor vehicle accounted for 4% of NOx emissions in 2013.

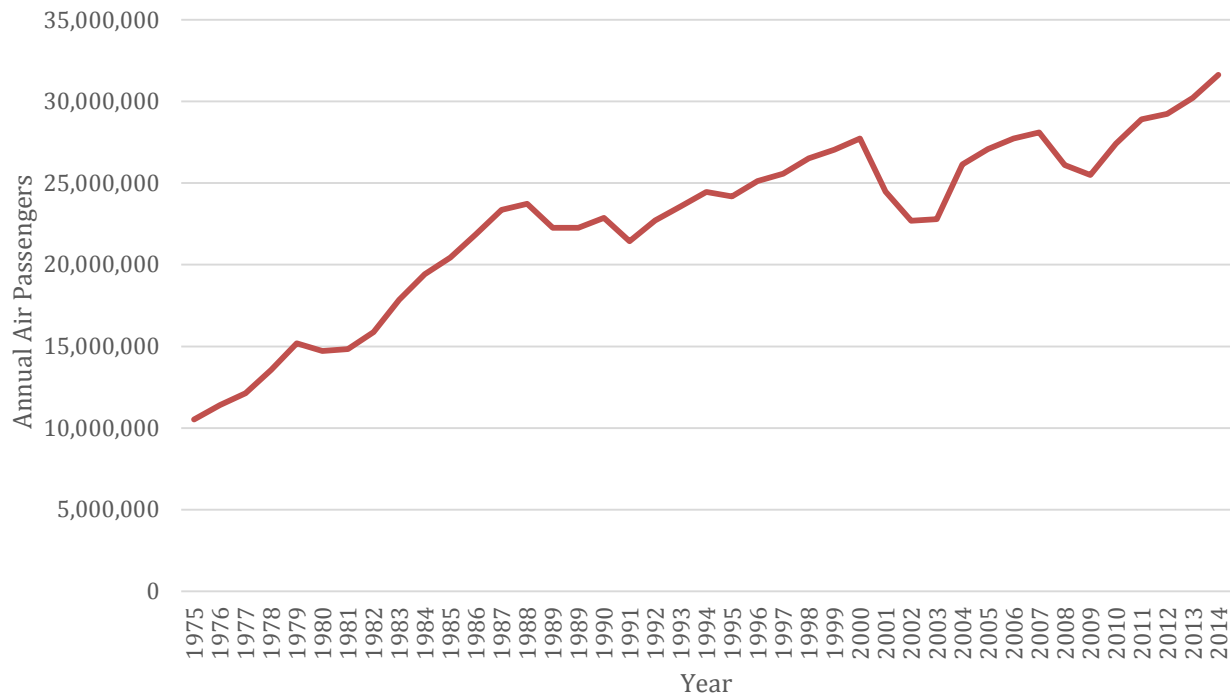
Monitoring data for the original ozone standard showed that Eastern Massachusetts had reached attainment in 2007. In 2012, EPA promulgated a final rule finding that Eastern Massachusetts has attained the 1-hour and 1997 8-hour ozone standards under the Clean Air Act; see 77 Fed. Reg. 31496 (May 29, 2012).

III. AIR QUALITY IMPACTS

This section summarizes the technical analysis of transportation and air quality impacts associated with parking availability at Logan Airport contained in the report prepared by Vanasse Hangen Brustlin (VHB) dated December 11, 2015 and attached as Exhibit B (the “Technical Analysis”). The Technical Analysis demonstrates that the air quality impacts of amending this regulation to enable Massport to propose construction of up to 5,000 additional commercial parking spaces are favorable. Increasing the available parking supply at Logan Airport to this extent would produce significantly better regional VMT and air quality results than the no-build scenario.

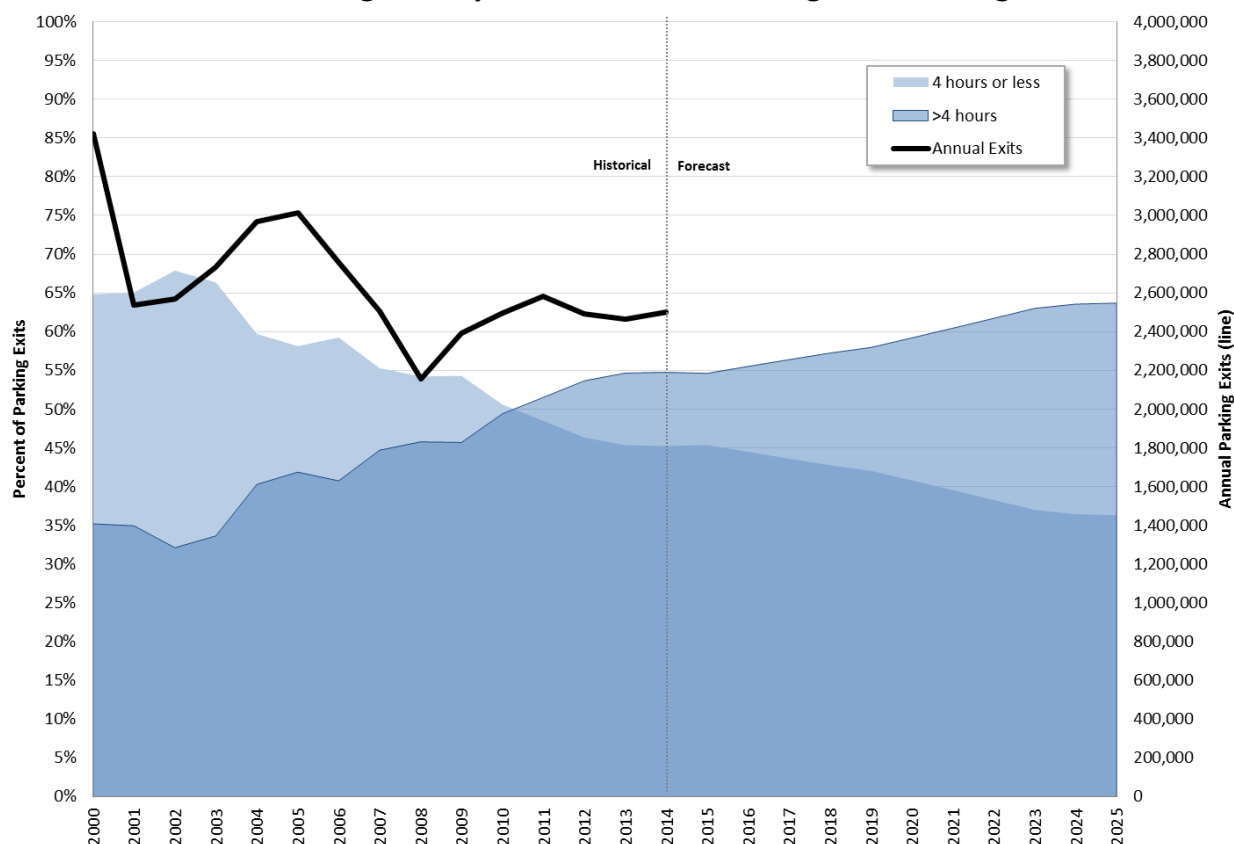
Air passenger levels at Logan Airport have increased by over 200% over the past 40 years; 20% in the past 10 years, to reach the current level of over 30 million passengers a year. Massport projects that air passenger levels will reach approximately 36 million by 2022. (p. 43)

Trends in Passenger Levels at Logan Airport



Peak day (Tuesday through Thursday) demand for on-Airport parking has been increasing, resulting in daily demand frequently nearing the Logan Parking Freeze cap. In 2014, Massport diverted or valet-parked passenger vehicles on 103 out of 260 working days. Massport diverts vehicles to other on-Airport facilities or to off-site facilities such as Suffolk Downs, or resort to valet parking vehicles, stacking them with parking facilities or at other on-Airport locations. Such operations are not only highly inconvenient to customers and increase VMT at the airport, but also have potential long-term ramifications for mode choice; passengers who are unable to park at Logan Airport are more likely to use pick-up/drop-off modes in the future. The data shows that the level of parking constraint at Logan Airport is increasing and for longer periods of time. (p. 43)

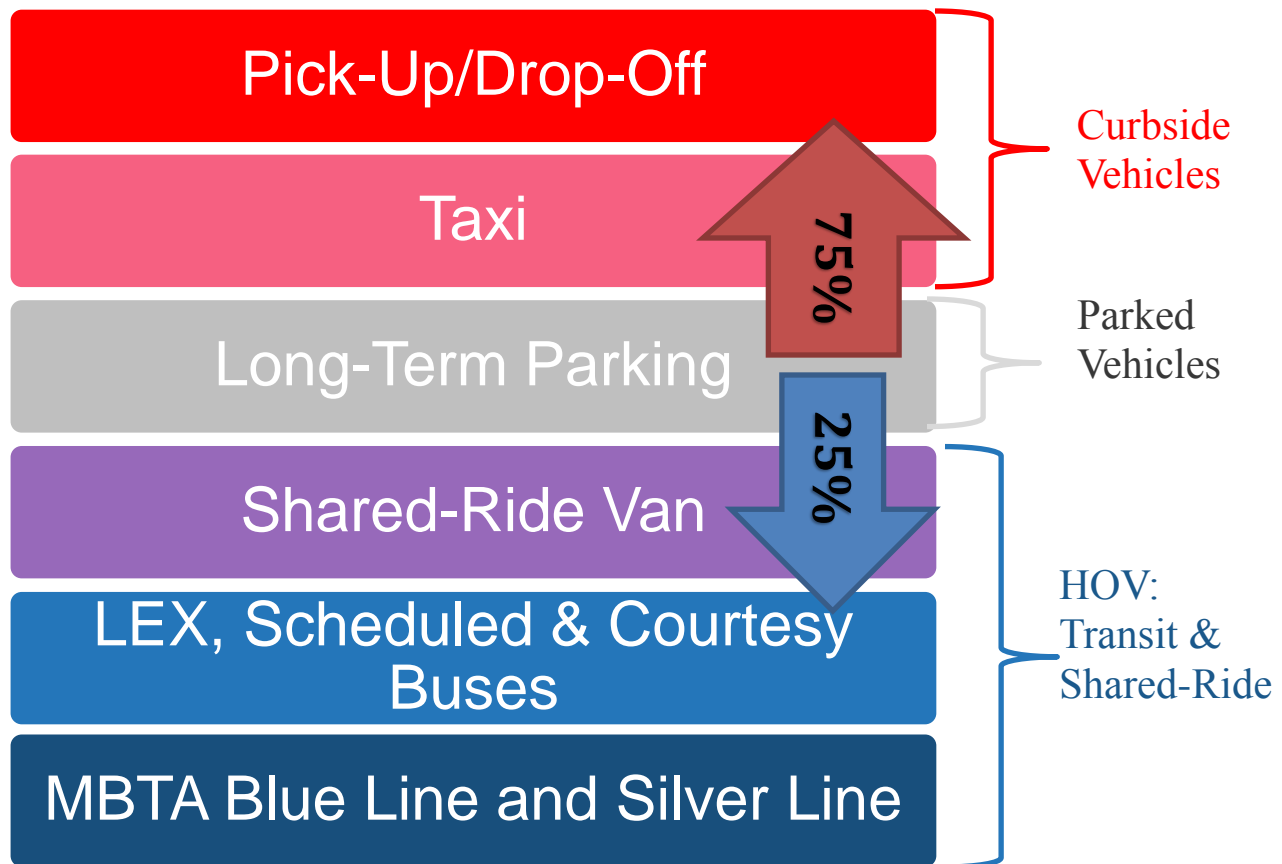
% Parking Exits by Duration: Short vs. Long-Term Parking



With respect to future parking constraint projections, the Technical Analysis assessed two trends. First, there are more long-duration parking transactions at Logan. This trend correlates to an overall decrease in the total number of parkers the airport is able to service. (p. 43) Second, the parking demand is growing with increased air passengers. At the current growth rate of air passengers, the demand for parking is expected to steadily increase. (p. 44)

The Technical Analysis then considered how people who use commercial parking at Logan Airport would get to and from Logan Airport if parking was not available. The analysis draws from the *2013 Logan Airport Air Passenger Ground Access Survey*. The *Survey* asked parkers which mode would they most likely have taken if the mode they took to the airport was not available. While the survey results show considerable variation, the overall survey results show that approximately 75% of parkers would opt for a more environmentally harmful pick-up/drop-off mode of travel if parking was not available.

Below is a graphic that illustrates the various modes available to an air traveler and their propensity to choose pick up/drop off modes over HOV:

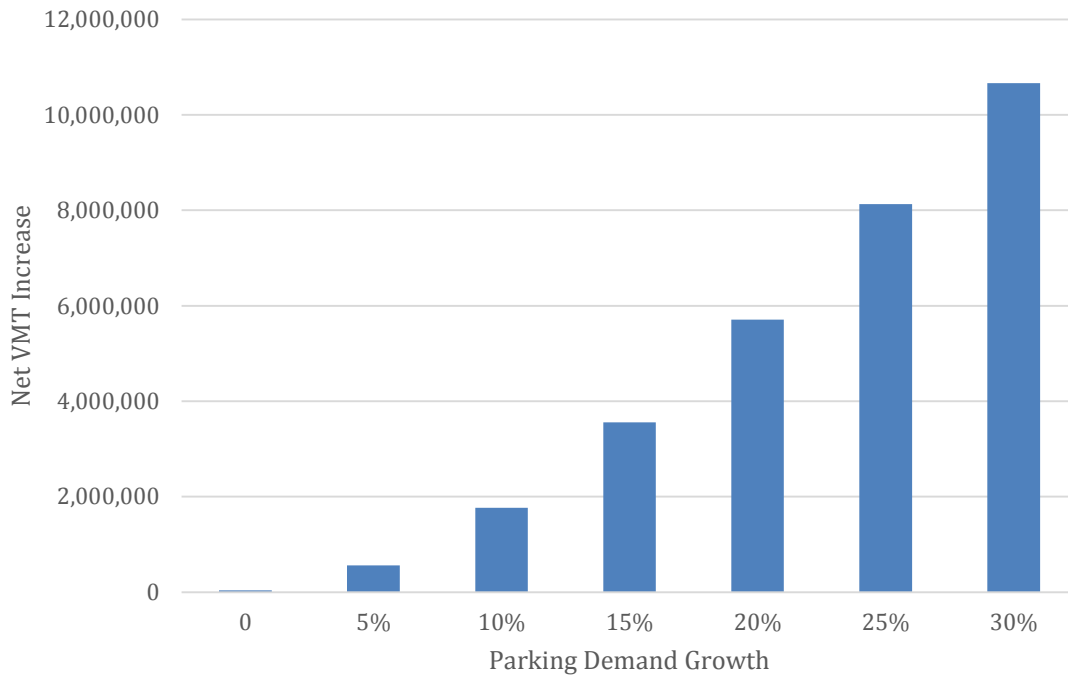


The Technical Analysis notes that airport commercial parking differs from urban parking facility in two important respects. First, airport parking spaces turn over much less frequently; thus, it takes more parking capacity at an airport to support the same number of vehicles as in an urban/workplace setting. Second, as a general matter, commuters travelling daily to an urban work location will not turn to pick-up/drop-off mode as an alternative means of travel if parking is constrained. Hence, in an urban core, parking constraints force commuters to travel by less environmentally harmful alternatives. Unlike urban commuters, air travelers do not go to the airport on a daily basis, so pick-up/drop-off modes are more practical options. Therefore, constrained parking at the airport can have the unintended negative environmental consequence of increased VMT and air emissions. (p. 54-55)

The Technical Analysis combined the 2014 parking demand data with the estimated growth assumptions for air travelers/parkers. It calculates the number of days in which parking demand would exceed the effective commercial parking cap at Logan, and the total number of vehicles that would not be accommodated with available parking. (Exhibit 18) The number of vehicles was then translated into number of air passengers, who were in turn distributed to the regional areas of origin based on the distribution of parkers. The survey data determined which modes these passengers would use if they were not able to park at the airport. Next, the analysis calculated the VMT of the would-be parkers' alternative trips, taking into consideration the number of trips required by the mode, the average distance from the origin area, and the vehicle occupancy rate. (p. 60-62)

Exhibit 19 of the Technical Analysis shows the extent to which VMT would rise if commercial parking at Logan remains constrained at current levels. For example, if daily parking demand were to increase by 30% -- which is forecasted to occur in the 2030-2035 timeframe at the forecasted growth in air passenger rate – the annual net VMT increase would be over 10 million additional vehicle miles.

Would-be Parkers Who Shift to Vehicle Modes Results in Generating Higher VMT



The Technical Analysis then demonstrated the impact of increasing commercial parking at Logan Airport on this VMT projection. The analysis reviewed net VMT, assuming increases of the commercial cap in increments of 1,000 spaces. Net VMT decreases as the commercial parking freeze cap is increased. For example, if the parking cap was increased by 5000 spaces and the daily parking demand increases by 25 percent, the unmet parking demand increases ground-access VMT by over 120,000 miles per year. However, if the parking freeze cap remained at its current level with the same 25 percent parking demand growth assumption, the increase ground-access VMT would be *sixty times that amount* -- over 8.1 million miles per year. (Exhibit 20)

Net VMT Change based on Varying Increased Levels of Daily Parking Demand and Increase in Parking Supply

Percent Increase in Parking Demand:	On-Airport Commercial Parking Supply (Spaces)*							
	17,875**	18,875	19,875	20,875	21,875	22,875	23,875	24,875
	Spaces Above Existing Commercial Parking Cap							
	+0 spaces	+1,000 spaces	+2,000 spaces	+3,000 spaces	+4,000 spaces	+5,000 spaces	+6,000 spaces	+7,000 spaces
0%	40,200	-	-	-	-	-	-	-
5%	562,000	52,500	700	-	-	-	-	-
10%	1,763,900	591,000	68,900	2,900	-	-	-	-
15%	3,554,900	1,775,800	620,100	85,500	5,100	-	-	-
20%	5,710,400	3,529,500	1,789,200	649,100	103,600	7,300	-	-
25%	8,128,400	5,645,100	3,504,300	1,803,100	678,200	123,300	9,500	-
30%	10,664,400	8,016,000	5,581,500	3,482,600	1,818,100	707,300	144,800	11,700

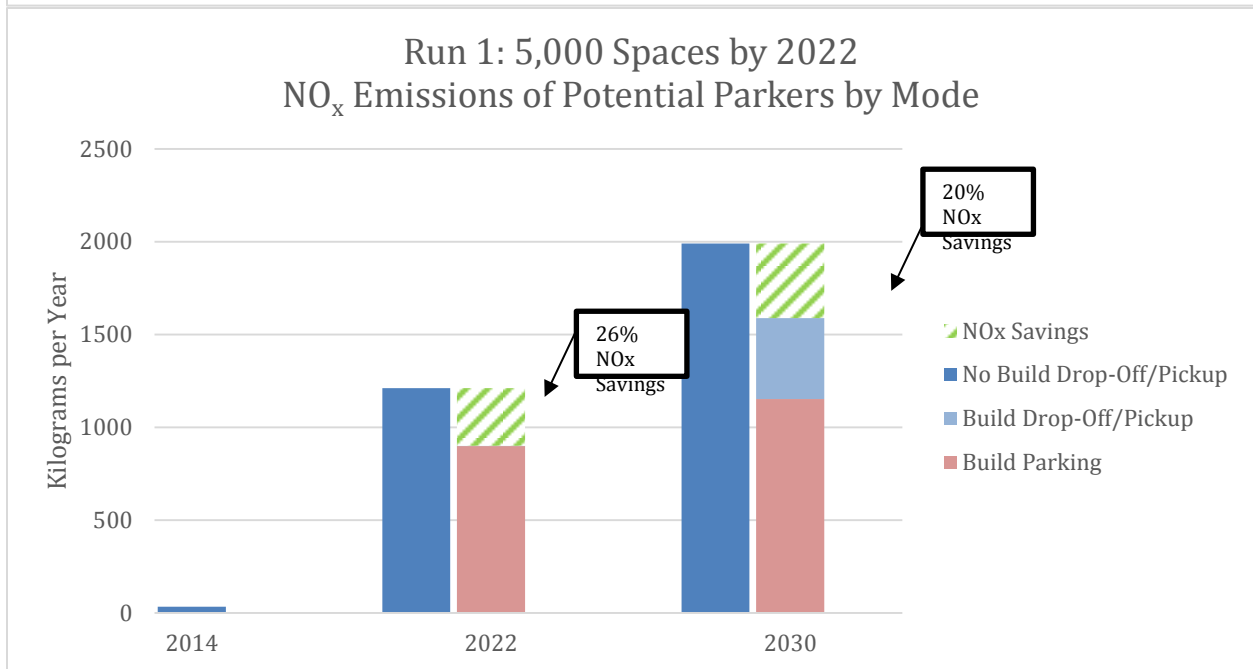
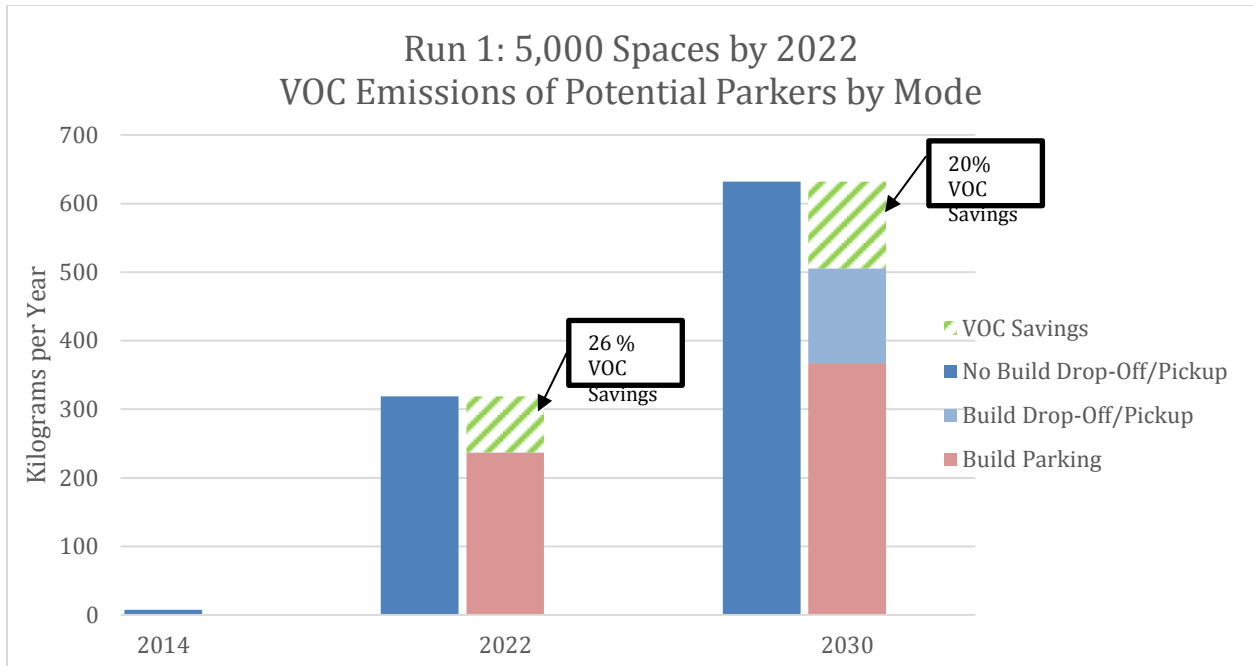
* Assumes supply built to meet commercial cap

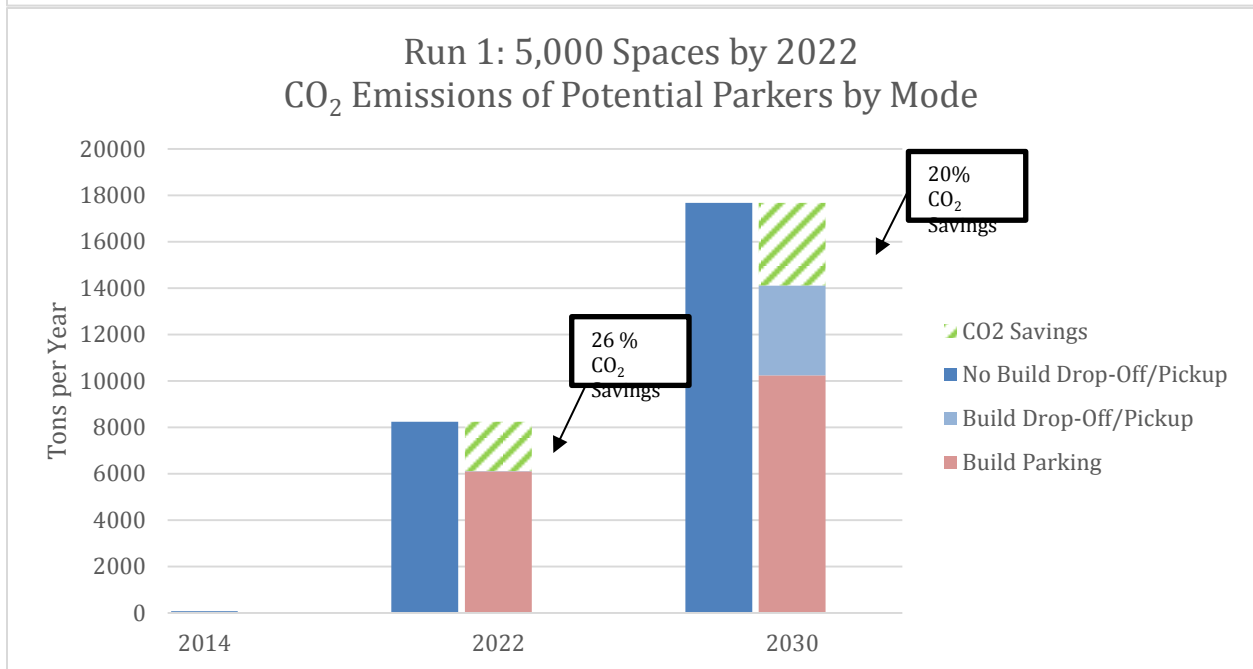
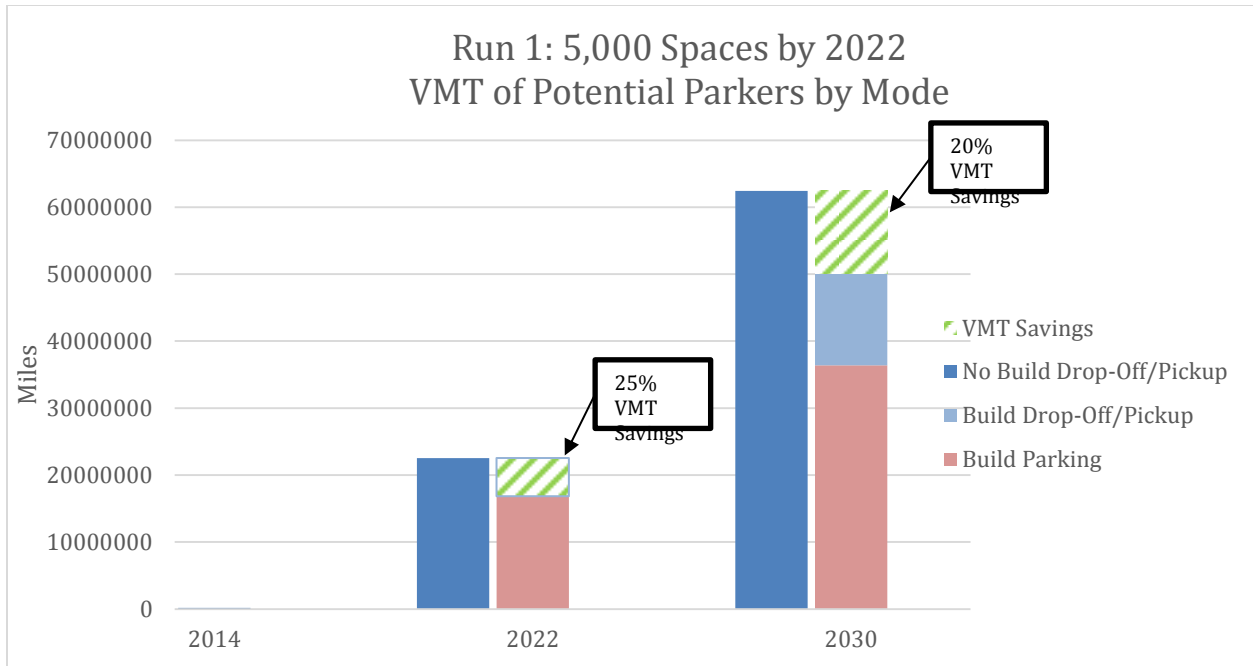
** Current Parking Freeze cap less reserved general aviation and hotel parking

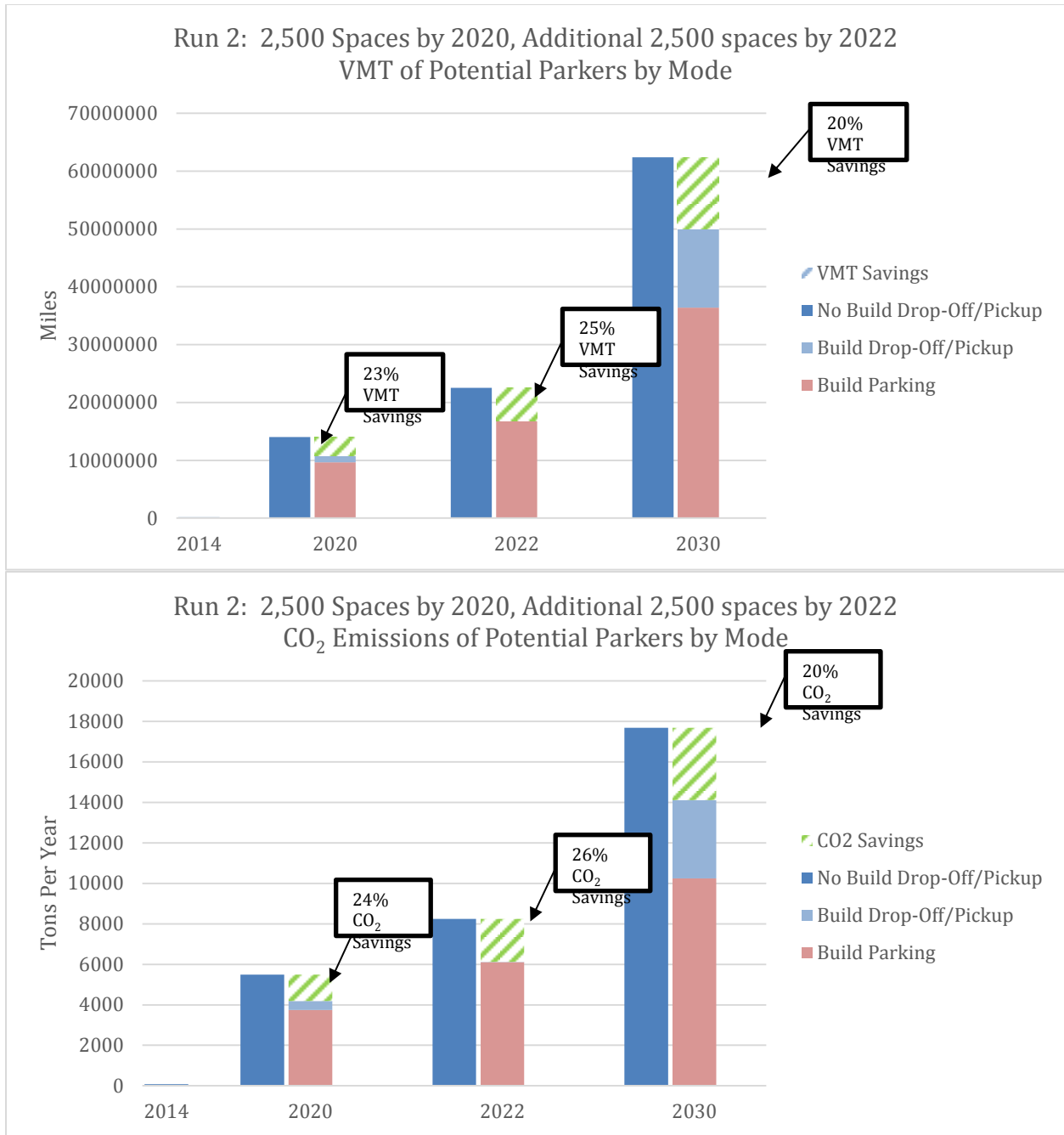
*** Assumes all other mode shares stay at current levels

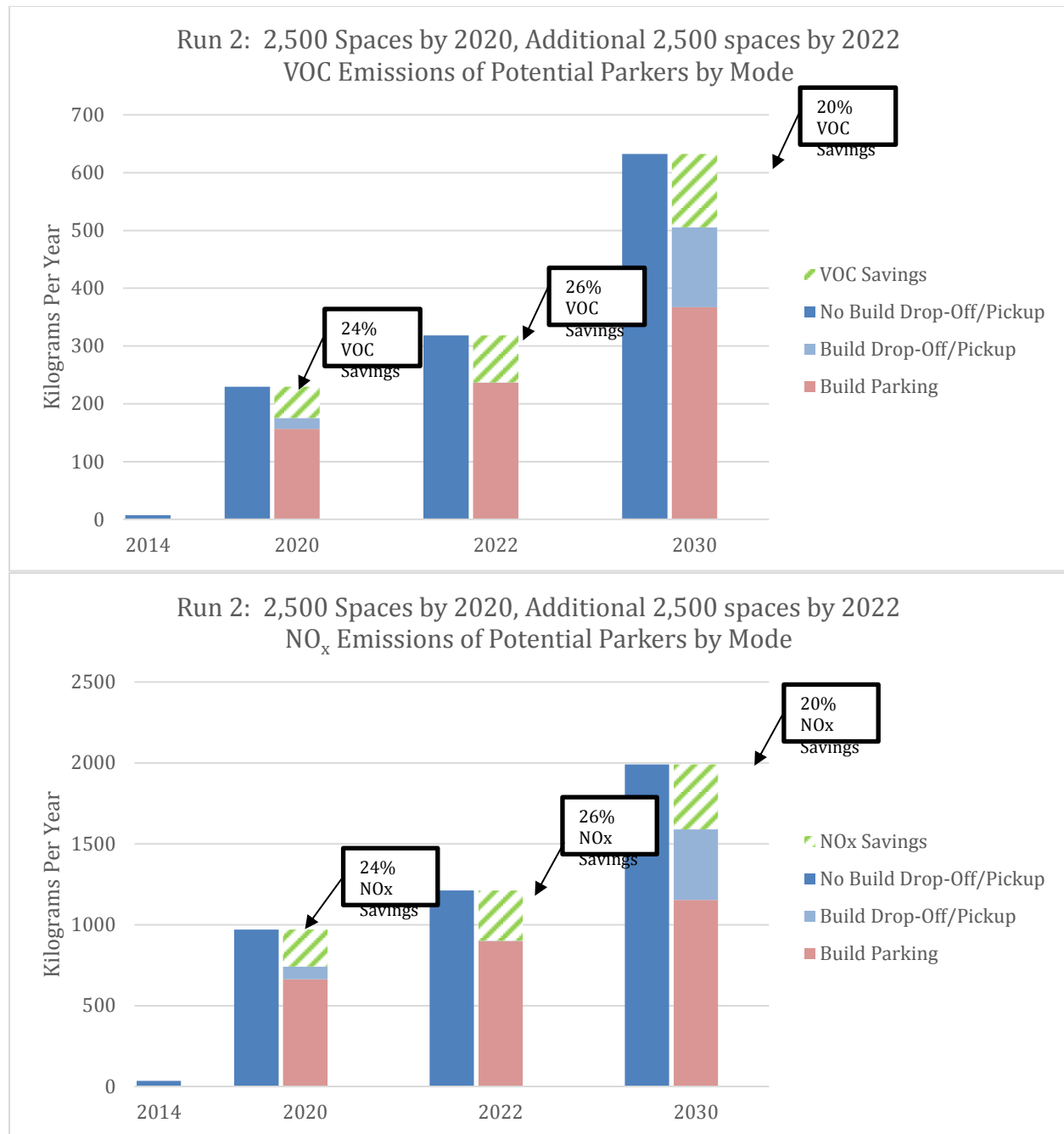
Note: Numbers presented here represent the net difference in VMT between would-be parkers who are not able to park on-airport and would-be parkers who are able to park on airport.

Based on this VMT data, the Technical Analysis then identified the air quality benefits that additional commercial parking at Logan would produce. The analysis used a vehicle emissions simulation model to determine emissions factors for application to the VMT values. The analysis considered two scenarios: one where Massport builds 5,000 additional commercial spaces by 2022; a second where Massport builds 2,500 spaces by 2020 and an additional 2,500 spaces by 2022. Under both scenarios, the reduced VMTs would result in significant emissions reductions. For example, under scenario 1, the addition of 5,000 spaces in 2022 would produce a 26% reduction in the emission of CO₂, VOCs and NO_x. The air quality benefits to be realized are significant under both scenarios. (Exhibits 23 and 24)









IV. ELEMENTS OF PROPOSED REGULATORY AMENDMENTS AND MITIGATION COMMITMENTS

The proposed regulatory amendment to 310 CMR 7.30 would retain the basic structure of the Logan Parking Freeze as set out in the 1989 Amendment. To encourage HOV modes of travel access and thereby reduce regional VMT and air emissions, the Logan Parking Freeze would retain a cap on the maximum total number of commercial plus employee parking spaces at Logan Airport. The East Boston parking freeze, as set forth in 310 CMR 7.31 and the BAPCC

rules, would not be affected by the proposed regulatory amendment. The provisions affecting “restricted use” parking spaces at Logan would also remain unchanged.

A) Elements of proposed regulatory amendments

The maximum numbers of parking spaces permitted at Logan Airport under the Parking Freeze, at set forth in Section 2 of the regulation, would be modified as follows:

- The maximum total number of commercial and employee spaces within the Logan Airport Parking Freeze would be 26,088.
- The maximum total number of employee spaces would be reduced to 2,448, reflecting the conversion of employee spaces to commercial spaces since 2000.
- The minimum number of commercial spaces would be increased to 23,640, reflecting the conversion of employee spaces and the acquisition of Park and Fly spaces since the last amendment in 2000, and the addition of 5,000 new spaces.
- In the event that the remaining 702 Park-and-Fly spaces in the East Boston Freeze cap were converted to commercial spaces at Logan Airport in the future, the maximum total number of spaces permitted would be 26,790.

Section 4 of the regulation would be amended, to reflect the conversions of employee to commercial spaces that Massport has accomplished since the 1989 Amendment. Section 6 of the regulation would be deleted, to reflect the relocation of rental car spaces from the East Boston Freeze area onto Logan Airport, which Massport accomplished with the completion of the Consolidated Rental Car Facility in 2013.

Section 9 of the regulation would be modified to permit Massport to satisfy its annual reporting requirements through its submission of annual Environmental Data Reports or similar airport-wide documents under the Massachusetts Environmental Policy Act (MEPA), M.G.L. ch. 30, ss. 61 – 62H.

B) Proposed mitigation commitments

Section 8(a) of the regulation would be modified to delete the listing of two prior transportation studies that were required under the 1989 Amendment and were completed. In their place, Massport would be required to submit the following three new studies within 24 months of the date of adoption of the regulatory amendment, as Massport continues its substantial efforts to encourage and facilitate alternative ground access to Logan Airport on an ongoing basis.

1. A study of the feasibility and effectiveness of potential measures to improve high occupancy vehicle access to Logan Airport. The study will consider, among other things, possible improvements to Logan Express bus service and the benefit of adding additional Silver Line buses with service to Logan Airport.
2. A study of the feasibility and effectiveness of potential operational measures to reduce pick-up / drop-off modes of access to Logan Airport
3. A study assessing parking pricing strategy to effect customer behavior and VMT. .

Section 8(b) of the regulation would be modified to obligate Massport to maintain and improve its Logan Express bus service from a North Shore location, in addition to the western and South Shore locations specified in the 1989 Amendment. All other mitigation measures currently required of Massport under Section 8(b) would be retained.

As described below in Section IV, following the adoption of the proposed regulatory amendments, the construction of any parking facility at Logan Airport containing at least 1,000 new parking spaces will trigger environmental review of a mandatory Environmental Impact Report (EIR) under the Massachusetts Environmental Policy Act (MEPA). Massport will commit, in Section 61 Findings adopted under MEPA, to additional mitigation measures with respect to the garage's environmental impacts.

V. MASSACHUSETTS ENVIRONMENTAL POLICY ACT (MEPA)

The proposed regulatory amendments are exempt from the "Regulations Governing the Preparation of Environmental Impact Reports," 301 CMR 11.00, in that no MEPA review threshold set forth in 310 CMR 11.03 is met or exceeded. In addition, the proposed amendments do not reduce standards for environmental protection, nor do they reduce opportunities for public participation in review processes or public access to information generated or provided in accordance with the regulations. (See MEPA review threshold pertaining to promulgation of regulations at 301 CMR 11.03(12).)

With respect to standards for environmental protection, as this Policy Memo and the accompanying Technical Analysis makes clear, increasing the commercial parking freeze cap at Logan Airport by 5,000 spaces, thereby freeing Massport to propose to construct additional commercial parking up to this amount (subject to MEPA review as discussed below), will, if acted upon by Massport, produce better VMT and air quality results than not amending the Logan Parking Freeze.

As noted above, the proposed amendment to 310 CMR 7.30 will not, in and of itself, establish an entitlement for the development of new or expanded parking facilities at Logan Airport. Under the MEPA Regulations, the construction of 300 or more new parking spaces requires the submission and review of an Environmental Notification Form (ENF). The construction of 1,000 or more new parking spaces exceeds the mandatory threshold for the submission and review of an Environmental Impact Report (EIR). (See MEPA review thresholds at 301 CMR 11.03(6)(a.7) and 11.03(6)(b.15). Following the review of the EIR, the enforceable mitigation commitments relating to the new parking facility will be incorporated into a Section 61 Finding. (See 301 CMR 11.12(5).)

Separate from the review of individual projects at Logan Airport, Massport reports and analyzes the cumulative environmental impacts of its operations and activities at Logan Airport to the MEPA Office on an annual basis. This reporting, which has taken place continuously since 1979, occurs through the Environmental Data Reports (EDR), submitted annually, and the more detailed Environmental Status and Planning Report (ESPR), submitted on a five-year cycle. The EDR / ESPR process provides a public forum for reporting on airport-wide data and trends, and

it supplies the context for the more focused MEPA review of individual projects. For this reason, the proposed regulatory amendment would permit Massport's annual reporting under the Parking Freeze to be incorporated into its annual EDR / ESRP submissions.

VI. LOGAN'S ROLE IN THE MASSACHUSETTS ECONOMY

The proposed changes to the Logan Parking Freeze regulation will provide more flexibility to Massport as the operator of Logan Airport. According to the 2014 EDR, in 2014 Logan Airport was the 18th busiest U.S. commercial airport in North America as ranked by aircraft operations, and the 19th busiest in North America ranked by number of passengers. In the international sector, in 2014 Logan Airport ranked as the 7th largest U.S. international transatlantic gateway, and 12th largest international gateway globally.

In 2014, approximately 12,000 people were employed at Logan Airport. This included approximately 960 Massport airport staff and administration employees. Including airport-related activities, Logan Airport contributes \$13.4 billion annually to the local economy. The Massachusetts Department of Transportation (MassDOT) Aeronautics Division's Statewide Airport Economic Impact Study found that in 2014, Logan Airport supported approximately 132,000 jobs. The total economic impact includes on-Airport, visitor-related, construction, and all associated multiplier impacts.

VII. PUBLIC PARTICIPATION

Massport anticipates cohosting an informal stakeholder process with MassDEP on the proposed regulatory amendments, to be held in July 2016. The stakeholder process would be followed by the formal public notice and comment process required under M.G.L. Chapter 30A, to begin in late summer 2016.

VIII. REFERENCES

Massachusetts Port Authority, 2014 Environmental Data Report (September 2015).

Massachusetts Port Authority, 2011 Environmental Planning and Status Report (April 2013).

Boston Metropolitan Planning Organization, Policy Statement Regarding the Proposed Amendment to the Logan Airport Parking Freeze (November 1988).

Exhibit B: Technical Analysis

I. EXECUTIVE SUMMARY

The Logan Airport Parking Freeze was originally adopted in 1975 by the U.S. Environmental Protection Agency (EPA) as part of a transportation control plan for Massachusetts under the federal Clean Air Act, 42 U.S.C. §7401 et seq.⁷ The Massachusetts transportation control plan also included parking freezes for downtown Boston and the City of Cambridge.⁸

In 1989, DEP made significant amendments to the Logan Parking Freeze, the new DEP regulations for Logan and East Boston were accepted by EPA as part of the State Implementation Plan (SIP) in 1993; see 58 Fed. Reg. 14153 (March 16, 1993). The Amended Logan Freeze / East Boston Freeze were adopted by DEP in 1989, and approved by EPA as part of the SIP in 1993.

When EPA approved the SIP amendment, its approval expressly agreed with the Boston Region Metropolitan Planning Organization's rationale for the amendment: "the existing parking freeze has had the unanticipated effect of vastly increasing passenger drop-off and pick-up, resulting in twice as many vehicle trips as would occur if each passenger drove to the airport. The increase of 2000 commercial spaces at the airport, coupled with the program for exchanging employee spaces for commercial spaces and with continuing improvements in alternate means of access to the airport, should lessen the drop-off/pick-up phenomenon." 58 Fed. Reg. 14153.

The purpose of this technical memo is to provide technical background on the effect of the Logan Parking Freeze on trip generation to the Logan Airport. Details include:

- The Massachusetts Port Authority (Massport) engaged Vanasse Hangen Brustlin (VHB) to help determine the changes in existing and future airport-related emissions generated from ground-access modes, under the condition of a constrained parking supply, which is controlled by the Logan Airport (Logan) Parking Freeze.

⁷ The EPA parking freeze for Logan was originally proposed in 1973, as part of the federal transportation control plan for Massachusetts; see 39 Fed. Reg. 30960 (Nov. 8, 1973). The entire plan was suspended and remanded by the First Circuit in 1974, largely on technical grounds. *South Terminal Corp. v. EPA*, 504 F.2d 646 (1st Cir. 1974). Following public hearings, EPA re-promulgated the state-wide plan and the Logan parking freeze; see 40 Fed. Reg. 25152, 25161 (June 12, 1975) and 40 Fed. Reg. 39863 (Aug. 29, 1975). The 1975 EPA parking freeze regulations for Logan are found at 40 CFR § 52.1135.

⁸ The downtown Boston freeze remains in effect, enforced by the City of Boston, as does a separate freeze for South Boston that was adopted in 1993. DEP replaced the Cambridge freeze in 1998 with a Vehicle Trip Reduction Plan (VTRP); see 310 CMR 60.04. The VTRP is based on a performance standards approach to ensure that vehicle miles traveled and air pollutants do not increase over a defined baseline. DEP submitted the new Cambridge regulation to EPA as a proposed SIP amendment; EPA issued a proposed rule approving the change in 2000 (see 65 Fed. Reg. 56278 - 56283 (Sept. 18, 2000)), but never took final action on it.

- The principal purpose of this effort is to identify the change in modal use (particularly vehicle modes) under alternative future scenarios for the supply of on-airport commercial parking, and how these different scenarios would affect ground access activity.
- This study determined that limiting parking supply at the airport to its currently constrained (capped) level under the Logan Parking Freeze, is increasing the use of ground-access vehicle modes, such as drop-off/pick-up private vehicles and taxis, which generally have a higher intensity of vehicle miles traveled associated with them. As such, the Logan Airport Parking Freeze is causing an increase in overall Airport ground access vehicle miles traveled (VMT) and emissions.
- Resulting increases in VMT and emissions will be significantly exacerbated as air passenger activity increases at Logan Airport.
- The findings of this report support modifying the Logan Airport Parking Freeze, since the current DEP regulation is having the unintended consequence of increasing VMT and vehicle emissions, and those increases are likely to worsen in the future.

II. INTRODUCTION

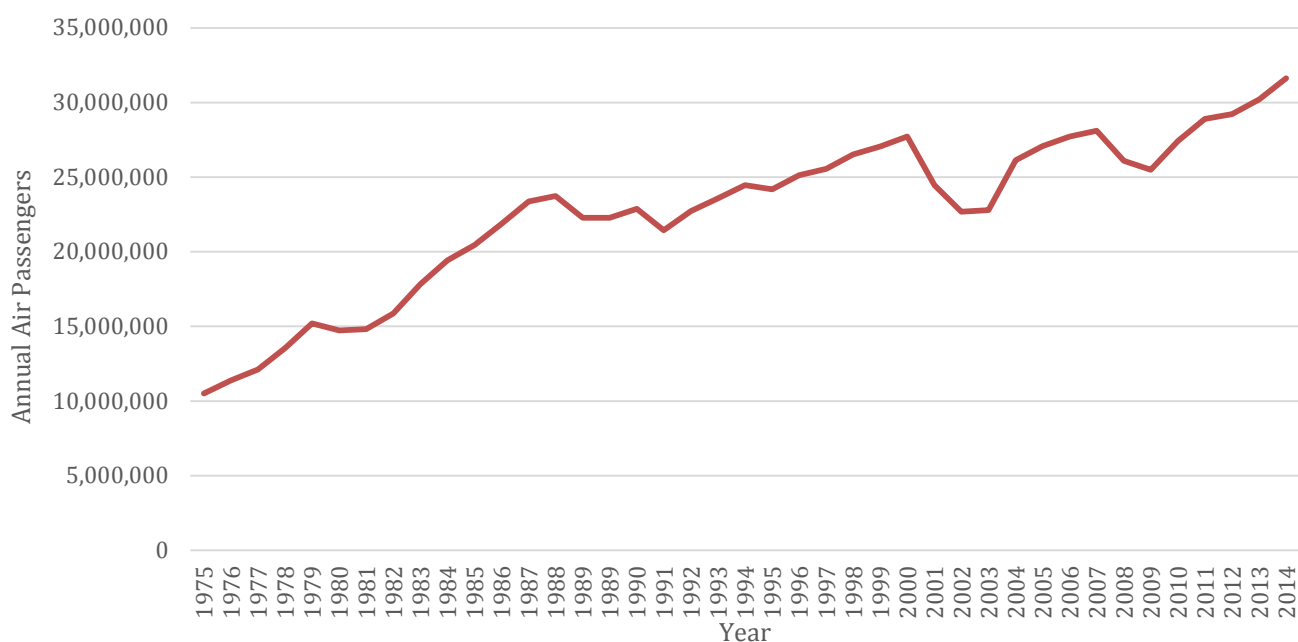
The intent of this technical memorandum is to examine: (1) the change in Logan Airport-related vehicle miles traveled as a result of air passengers shifting from parking on-airport to other ground-access modes due to constrained parking conditions; and (2) the air quality implications are of this trend. Logan Airport, like most airports, experiences fluctuations in on-Airport parking demand throughout the year. Air passenger levels and peak parking demand has increased annually for the past several years. As a result, the number of days where Logan operates under constrained parking conditions has increased yearly. Some of the constrained condition is due to the changing of parking characteristics, namely an increase in the share of long-term parkers (low turnover) relative to short-term parkers (high turnover). Some of the constraint is due to increase in overall air passengers. Future air passenger growth will only exacerbate the already constrained parking conditions. The ability to reduce or accommodate the increased parking demand is limited given the lack of control Massport has over improving the quality of certain shared-ride/transit ground-access modes, while some interventions may increase demand for modes that cause greater environmental impacts.

III. PROJECT BACKGROUND/CONTEXT

A. Trends in Passenger Levels at Logan Airport

Passenger levels at Logan Airport, New England’s primary international and domestic airport, increased by 200 percent over the past forty years, 20 percent in the last ten years. Passenger levels can increase or decrease year-to-year due a many internal and external factors such as airport operational capacity and regional economic trends to name a few. Exhibit presents the number of annual air passengers at Logan from 1975 to 2014.

Exhibit 1. Trends in Passenger Levels at Logan Airport



B. 1975 EPA Development of Logan Airport Parking Freeze

In 1975, the federal Environmental Protection Agency, in cooperation with State agencies, developed a transportation control plan for Massachusetts, to be implemented under the federal Clean Air Act, which included: parking freezes in Cambridge and in portions of Boston, incentive programs to reduce single-passenger commuter vehicle use, and the Logan Airport parking freeze. These measures along with other State actions were intended, cumulatively, to reduce automobile emissions and to enable Massachusetts to achieve compliance with the national air quality standards for carbon monoxide (CO) at localized sites and for ozone on a regional basis through the constraint of parking at these destinations.⁹ The Logan Airport Parking Freeze, as adopted by EPA, set an upper limit of 10,000 spaces to the supply of commercial parking spaces at Logan Airport. The Logan Airport Parking Freeze was adopted by the

⁹ EPA established NAAQS for a group of criteria air pollutants to protect public health, the environment, and the quality of life from the detrimental effects of air pollution. These NAAQS are set for the following seven pollutants: CO, lead (Pb), NO₂, ozone (O₃), PM₁₀, PM_{2.5}, and sulfur dioxide (SO₂). Standards are designed to protect human health while the secondary standards are designed to protect human welfare

Massachusetts DEP in 1979–80 as part of the State Implementation Plan (SIP) under the Clean Air Act.

C. 1989 DEP Amendment to the Logan Airport Parking Freeze

The 1989 Logan Airport Parking Freeze Amendment was developed to address evidence that constrained parking leads to increased drop-off/pick-up vehicle activities, resulting in an overall increase in ground transportation VMT and emissions. The 1989 amendment was also intended to reduce parking impacts on the East Boston residential community, and to reduce employee parking at Logan. The amendment was adopted by DEP as a regulation, 310 CMR 7.30, in 1989, and it was approved by EPA in 1993 as part of the Massachusetts SIP.

While the intent of the Logan Parking Freeze has been to shift air passengers to HOV travel modes with lower VMT, from the 1980s through the present, survey data at Logan has shown that when demand for parking starts to exceed supply, a constraint on airport parking has the unintended consequence of shifting a larger share of air passengers to “drop-off/pick-up” travel modes that generate a higher level of VMT. The 1988 MPO Policy Statement on the Logan Parking Freeze, which provided the technical and policy basis for the 1989 DEP amendment and its subsequent approval by EPA, stated that:

- The Parking Freeze had been a partial success in that Massport had moved to aggressively encourage public transit access to Logan, but
- The Freeze has a major flaw, that is “severe parking shortages at the airport may cause an increase in both vehicle trips and traffic volume due to the phenomenon of drop-off/pick-up” ... “which increase automobile emissions both locally and regionally, which is contrary to the intended air quality goals.”

As detailed in the next section, the situation that existed in 1989 and was the underpinning for the 1989 Parking Freeze amendment, continues to be the case today. According to the *2013 Logan Airport Air Passenger Ground Access Survey*, if parking was not an option for customers who parked on-Airport, **three-quarters** would use drop-off/pick-up vehicle modes (i.e., dropped off by private vehicles, taxi, or black car/limo service).

Under the Parking Freeze regulations adopted by DEP, Massport was allowed to increase the number of commercial spaces under the cap if those spaces were permanently converted from employee spaces; this has been done four times since 1989 to relieve commercial parking constraints. Massport can also increase the on-airport commercial parking supply if park-and-fly spaces located in the East Boston freeze area are transferred to the Logan freeze area; this has been done three times, as noted in Exhibit 2. The Logan Parking Freeze cap was also increased to incorporate existing overflow spaces at the airport. Under the DEP regulation, the total number of commercial parking spaces at Logan increased to the current maximum of 18,640.

Under the Logan Parking Freeze regulation, if the number of commercially parked vehicles exceeds the allocated commercial parking limit under the freeze on any day, those additional vehicles are considered to be using “Restricted Use Parking Spaces.” Use of Restricted Use Parking Spaces is allowed under the regulation when Logan Airport experiences “extreme peaks of air travel and corresponding demand for parking spaces” and may be made available for use only at such times, up to ten days in any calendar year, and must be provided free of charge

when demand exceeds the limit. Additional information on parking demand and conditions under constrained parking is provided later in this section.

The 1989 amendment provided impetus for Massport and the Commonwealth to build transportation infrastructure and implement programs to increase HOV and shared-ride options and improve access to Logan, resulting in a significant increase in air passenger HOV mode share and a reduction in employee parking demand. However, the analysis presented in Section 3 reveals how the Parking Freeze creates would-be parkers, those who want to park at Logan but cannot due to constrained conditions, three quarters of whom opt to use drop-off/pick-up modes, resulting in counter-productive air quality effects.

Exhibit 1. Logan Airport Parking Freeze: Allocation of Parking Spaces

Year	Annual Air Passengers	Total On-Airport Spaces Permitted	On-Airport Parking Spaces by Type		Employees Spaces as a Share of Total
			Commercial Spaces	Employee Spaces	
1992	22,723,138	19,315	12,215	7,100	37%
1993	23,579,726	19,315	12,215	7,100	37%
1994	24,468,178	19,315	12,215	7,100	37%
1995	24,192,095	19,315	12,890	6,425	33%
1996	25,134,826	19,315	12,890	6,425	33%
1997	25,567,888	19,315	12,890	6,425	33%
1998	26,526,708	19,315	14,090	5,225	27%
1999	27,052,078	19,315	14,090	5,225	27%
2000	27,726,833	19,315	14,090	5,225	27%
2001	24,474,930	20,692 ¹	15,467	5,225	25%
2002	22,696,141	20,692	15,467	5,225	25%
2003	22,791,169	20,692	15,467	5,225	25%
2004	26,142,516	20,692	15,467	5,225	25%
2005	27,087,905	20,692	15,467	5,225	25%
2006	27,726,252	20,692	15,467	5,225	25%
2007	28,102,455	20,692	17,319	3,373	16%
2008	26,102,651	20,692	17,319	3,373	16%
2009	25,504,845	20,692	17,319	3,373	16%
2010	27,429,823	20,692	17,319	3,373	16%
2011	28,907,938	20,692	18,019	2,673	13%
2012	29,235,643	20,938 ²	18,265	2,673	13%
2013	30,218,631	21,088 ³	17,875	2,673	13%
2014	31,634,445	21,088	18,415	2,673	13%

Source: Massport.

Notes:

1. In 2001, Massport acquired the Park-Ex facility (now Bremen Street Park) (1,377 spaces) and these spaces were moved into the Logan parking inventory.
2. In July 2012, Massport acquired property at 135B Bremen Street in East Boston, which supported 246 park-and-fly spaces that were in the East Boston Parking Freeze inventory.
3. In June 2013, Massport acquired property at 413-419 Bremen Street in East Boston, which had 150 park-and-fly spaces that were located within the East Boston Parking Freeze Area.
4. As a result of these acquisitions, 1,773 Park-and-Fly spaces have been permanently removed from East Boston, and that number of spaces has been added to the commercial component of the Logan parking freeze.
5. In 2016 Massport converted 225 employee parking spaces to commercial, bringing the total number of commercial parking spaces to 18,640 in 2016.

IV. Analysis of Current Parking Conditions and Trends at Logan Airport

A. Overview

Recent trends and air passenger forecasts indicate that peak-day parking demand will continue to grow at Logan Airport. Annual air passenger levels at Logan Airport were over 31.6 million (as of 2014), and the levels have increased by over 200 percent in the past 40 years. We are currently projecting that air passenger levels will reach approximately 36 million by 2022. Air passenger levels are generally the product of broad socio-economic trends and are largely independent of the capacity of airport-specific facilities. This is particularly more so at Logan given the airport is an origin and destination airport where over 90% of all trips originate and terminate at the airport (versus a hub airport where a large percentage of trips are connection between airplanes).

B. Methodology

Available, existing data was used to calculate the net difference in ground-access emissions between two future conditions:

- Commercial parking supply would be constrained under the current Parking Freeze cap levels and “would-be” parkers would need to choose an alternative mode to travel to the airport
- Commercial parking supply would be increased, at different levels, above the current Parking Freeze cap level, and “would-be” parkers would be able to park at the airport.

The reader should note that throughout this analysis, VMT is often used as a proxy for vehicle emissions: total VMT is typically multiplied by an emissions factor to determine overall vehicle emissions. Resulting vehicle emissions for this analysis are calculated and presented in the Section 4.C, *Analysis of Vehicle Emissions Resulting from Increased VMT*.

It is also important to note that throughout the analysis, ground-access mode shares are held constant unless otherwise noted (i.e., no external circumstances are altering mode shares other than the ability or inability to park). Holding ground-access mode shares constant enables the analysis to isolate the net VMT as it relates to parking and the ground-access modes air passengers would choose if parking was not available. The analysis also presumes that under all scenarios, employee parking will continue to be constrained at the current Parking Freeze cap level.

Finally, the analysis assumes that the availability of alternative modes remain and these services accommodate the proportional growth in demand for such modes (e.g., availability of HOV/shared-ride services or taxis, for e.g., will always be able to meet the demand for these modes).

The approach to the analysis was to understand:

- How constrained are the parking conditions at Logan Airport?
- How many people want to park at Logan in the future?
- Which ground-access mode would they use if they can't park at Logan?
- What is the resulting system VMT under these conditions?

- What are the resulting system ground-access emissions?

This overall approach is presented in Exhibit 2.

Exhibit 2. Analysis Approach

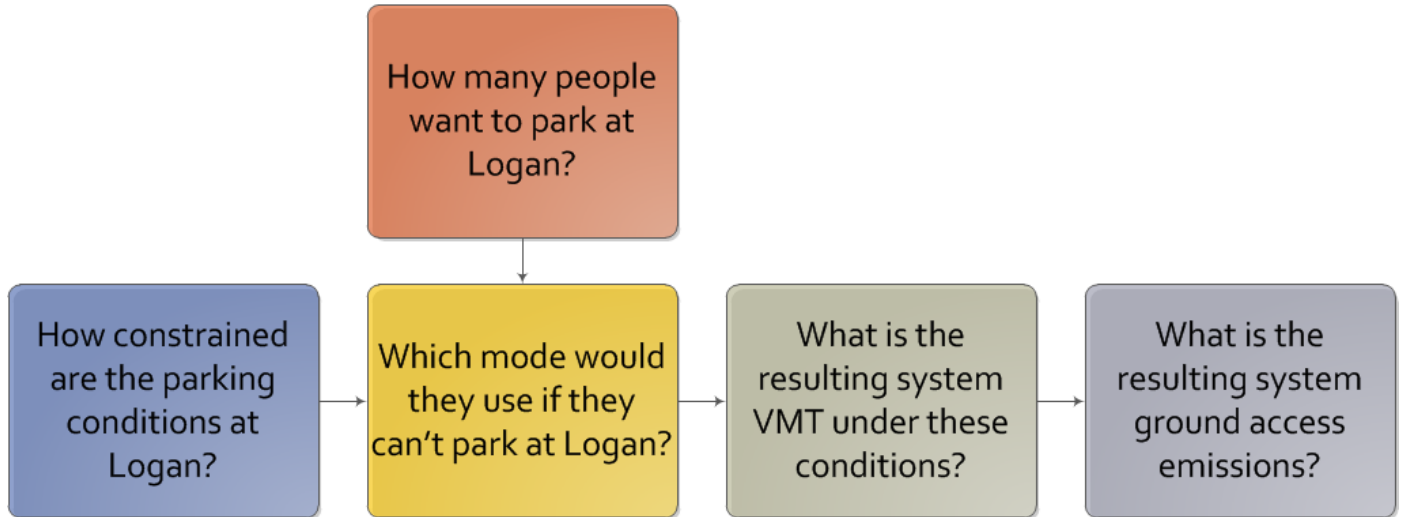
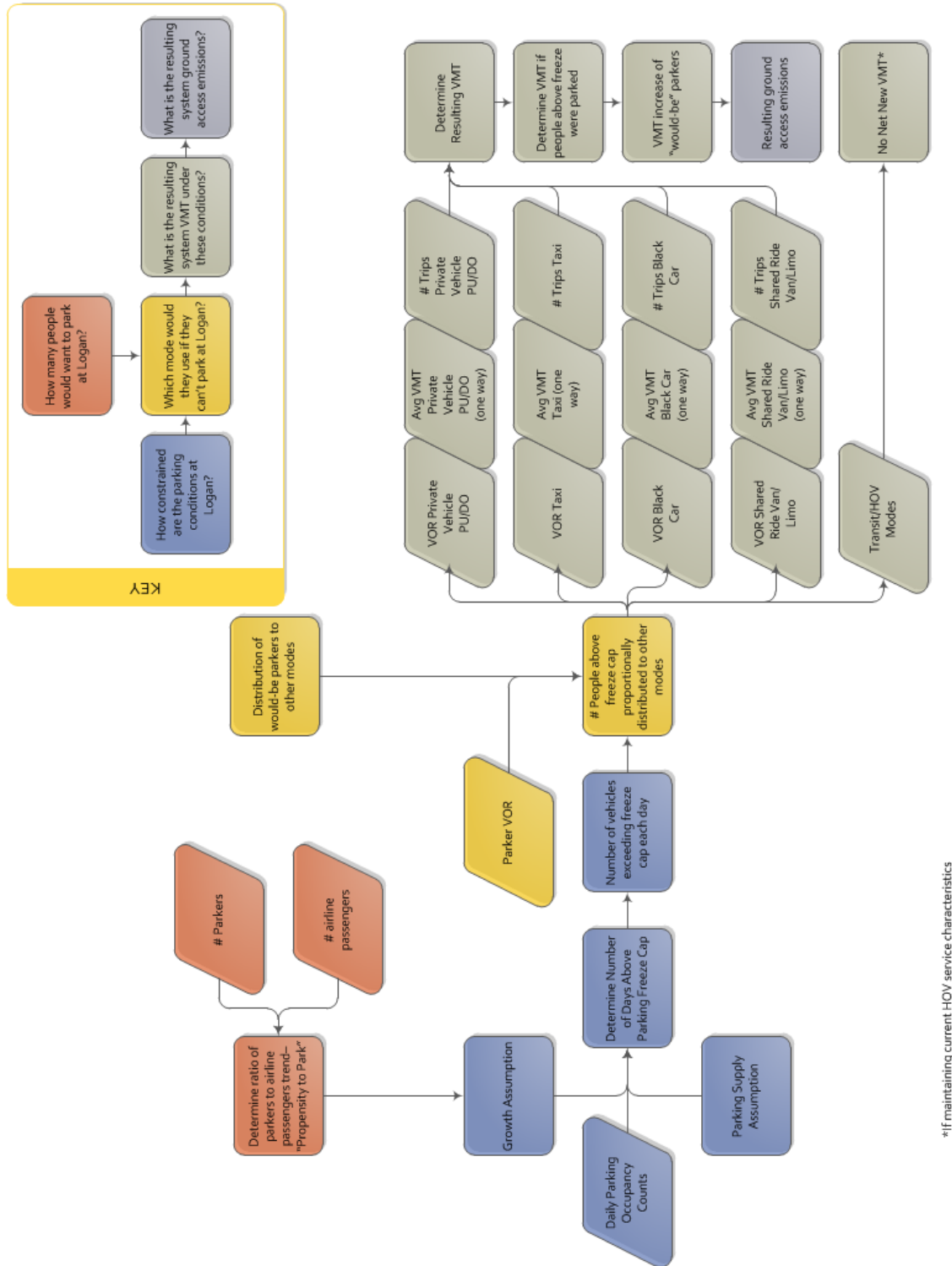


Exhibit 3 (next page) presents a detailed diagram of the analysis approach and the analysis inputs.

Exhibit 3. Detailed Analysis Approach



*if maintaining current HOV service characteristics

C. How do People Travel to Logan Airport?

Massport has continued to invest in and operate Logan Airport with a goal of building upon its nation-leading program to maximize the number of passengers who arrive at the Airport by transit and other high-occupancy vehicle modes. Logan Airport continues to rank at the top, if not the top, of U.S. airports with respect to HOV/transit/shared-ride mode share. HOV modes include transit and shared-ride modes, including MBTA public transit, Logan Express, scheduled bus, and shared-ride vans and limousines; whereas private vehicles, rental cars, and taxicabs are classified as automobile or non-HOV modes (regardless of the number of passengers in a vehicle). Exhibit 4 presents the ground-access mode shares determined using the Air Passenger Ground Access Surveys.

Exhibit 4. Ground Access Mode Share (All Passengers) by Survey Year

Ground Access Mode	2004	2007	2010	2013
<u>Non-HOV/Automobile</u>				
Private Automobile	36.0%	40.2%	40.4%	43.2%
Taxi	22.8%	19.7%	18.8%	18.6%
Rental car	10.9%	12.4%	10.9%	10.4%
Total Non-HOV Share	69.7%	72.3%	70.1%	72.2%
<u>HOV/Shared-Ride</u>				
Unscheduled HOV	8.1%	7.3%	7.6%	8.3%
Scheduled HOV	10.6%	6.9%	8.2%	6.9%
Transit	6.5%	6.7%	7.6%	7.6%
Courtesy Shuttle	3.1%	3.5%	4.6%	3.3%
Other	2.0%	3.4%	1.8%	1.7%
Total HOV Share	30.3%	27.8%	29.9%	27.8%

Source: Spring 2004, 2007, 2010 and 2013 Air Passenger Ground Access Surveys.

For this table, air passenger ground access modes are grouped into the following categories:

- Private Automobile: Includes all passengers that are dropped-off by a privately-owned automobile, and all passengers who drive and park their vehicles at the Airport.
- Taxi: A passenger driven to Logan Airport in a licensed, commercial taxi.
- Rental Car: A passenger who rents a car from an on-Airport or nearby off-Airport rental car agency.
- Scheduled HOV Service: A passenger who arrives at Logan Airport via scheduled bus, limousine or van service, including privately-operated services and Massport's Logan Express.
- Unscheduled HOV Service: Includes passengers who travel to Logan Airport via unscheduled limousine or van providers.
- Transit: A passenger who takes an MBTA public transit service (including the Blue Line subway, Silver Line bus rapid transit) or one of the water transportation services (operated in conjunction with a dedicated Massport shuttle bus to/from Logan Airport terminals).
- Courtesy Shuttle: A passenger who arrives at the Airport in a courtesy shuttle, such as those offered by nearby hotels.
- Other: Includes passengers that access the Airport by walking, riding a bicycle, or taking a charter bus.

D. How Constrained Are the Parking Conditions at Logan Airport?

The Logan Airport Parking Freeze sets an upper limit to the supply of commercial and employee parking spaces at Logan Airport. As permitted (and encouraged) by the Parking Freeze provisions, Massport has converted employee spaces to commercial spaces, within the overall limit imposed by the Parking Freeze. The Logan Parking Freeze Commercial Cap is 18,640.

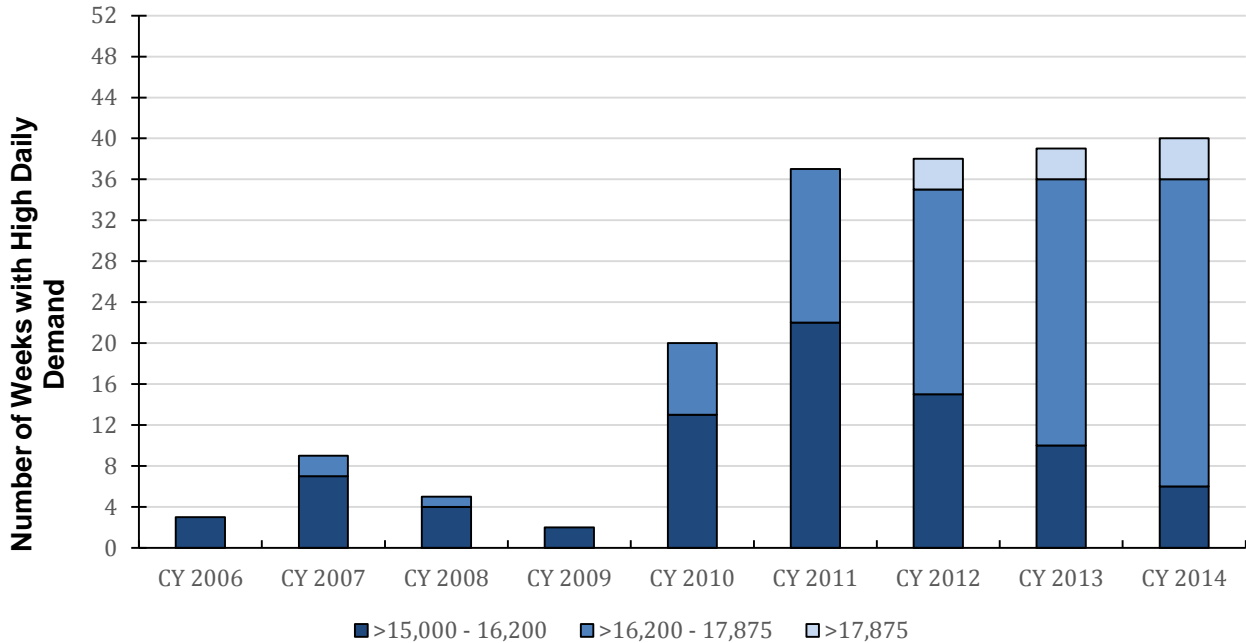
The Logan Airport's Ground Transportation Unit (GTU) parking supervisor reports on peak-day parking demand were used to quantify the total Airport parking demand during the 2014 calendar year. These reports summarize the number of parked vehicles at each on-airport parking facility (and off-airport facility, if used) on each midweek day (Tuesday, Wednesday, and Thursday) for every week of the year. Typically, Airport parking demand Friday through Monday is significantly lower (and below capacity) than on midweek days.

Peak day demand for on-Airport parking has been increasing, resulting in daily demand frequently nearing the Logan Airport Parking Freeze cap. Massport continued to be in full compliance with the Logan Airport Parking Freeze throughout 2014. Massport diverted or valet-parked passenger vehicles 103 out of 260 working days. Vehicle diversions primarily occurred on Tuesdays and Wednesdays, during hours of peak parking demand. Activity in 2014 seems to indicate that peak day parking demand has not dampened despite the July 2014 parking rate increases for on-Airport parking.

Of the 159 days reviewed, total parking demand exceeded the then effective commercial parking freeze limit of 17,875 on six days and above the actual commercial parking freeze on two days. Peak day demand for on-Airport parking has been increasing, resulting in daily demand frequently nearing the Logan Airport Parking Freeze cap. Massport continued to be in full compliance with the Logan Airport Parking Freeze throughout 2014. While in full compliance with the Logan Airport Parking Freeze, there are many days poised to exceed the parking freeze limit with marginal parking demand increases.

Exhibit 5 presents the number of weeks per calendar year where Logan experienced a high daily parking demand. As shown, the number of weeks where parking demand exceed the effective commercial parking freeze limit has been increasing over the last several years. In general, there is an overall growth in the number of weeks with high daily demand, particularly in the last 5 years.

Exhibit 5 Demand for Parking: Number of Weeks per Calendar Year with High Daily Parking Demand



The Logan Parking Freeze Regulation expressly allows a limited number of “Restricted Use” spaces, exceeding the cap number up to 10 days per year. In 2014, Massport invoked the use of restricted-use spaces four times. In the first half of 2015, Massport has already used restricted-use spaces eight times – evidence that parking demand at Logan continues to grow, despite Massport’s increased HOV service offerings. Furthermore, in 2014, Massport diverted cars to Suffolk Downs twice, and in 2015, six times. Diverting cars from the airport to Suffolk Downs adds VMT.

Separate from these “Restricted Use” spaces, because there are not currently enough “lined” spaces on airport to fulfill the entire Freeze cap, Massport frequently must resort to other parking methods. These methods, which are also fully compliant with the Parking Freeze regulation, are described in our answers to Questions 7 and 8 below.

The recent expansion of the West Garage was an effort to bring the total striped commercial parking capacity up to the current parking freeze cap limit, approximately 1,700 spaces of additional striped commercial parking spaces. The effort did not in any way alter the current parking freeze cap on commercial spaces but instead better defined where commercial spaces are located. Prior to the construction of the West Garage expansion, Logan’s Ground Transportation Unit valeted and diverted parkers to non-striped spaces, an effort and cost intensive process which degrades customer service levels.

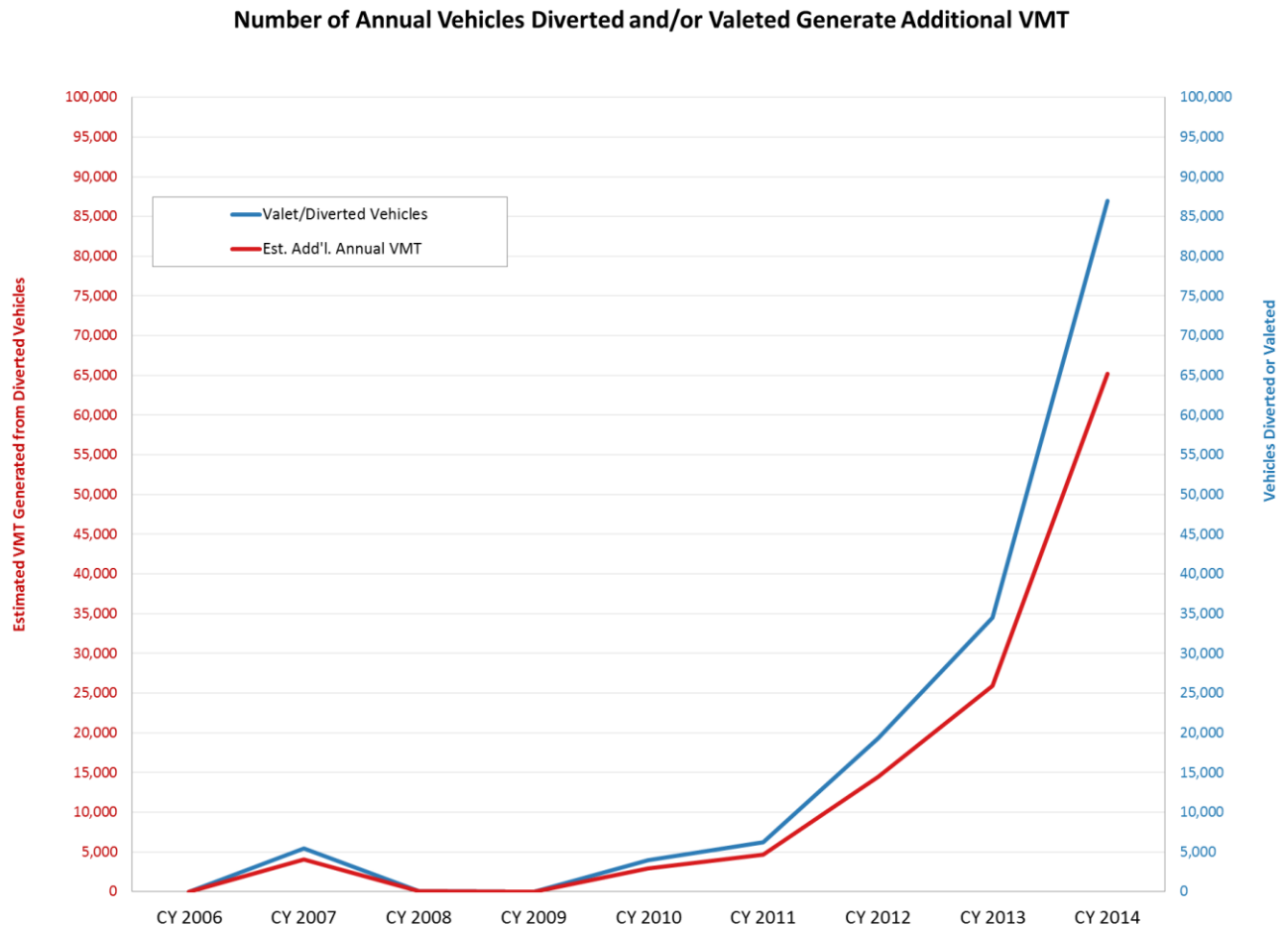
While Logan experiences constrained parking conditions during weeks of peak activity annually, recent observations show that the level of constraint is increasing and for longer periods, requiring Logan to adjust its parking operations to meet this increased demand. Exhibit 6 presents the number of annual vehicles that are diverted and/or valeted at Logan Airport. This data represents operational adjustments Massport has undertaken to accommodate parkers that

are not afforded their first choice in parking accommodations due to constrained parking conditions.

Parking cars beyond the supply of lined spaces occurs in four ways: (1) vehicles are “stuffed and stacked”, utilizing the unlined areas in the parking garages and lots that can fit a vehicle without impact to circulation, (2) overflow lots, which currently are available in the Southwest Service Area of the airport, (3) paved areas on airport that are not parking lots (e.g., under roadway viaducts), and (4) off-airport at Suffolk Downs, outside of the East Boston Parking Freeze area.

In 2014, Massport diverted or valet-parked passenger vehicles 103 out of 260 working days. Vehicle diversions primarily occurred on Tuesdays and Wednesdays, during hours of peak parking demand. Activity in 2014 demonstrates that peak day parking demand has not dampened despite the July 2014 parking rate increases for on-Airport parking. These diversions and valet operations present operational and customer service challenges to the Airport and increase on-Airport vehicle miles traveled. The following chart presents growth in diversion and valet operations at the Airport in recent years and the estimated additional annual number of vehicle miles traveled associated with these activities.

Exhibit 6. Number of Annual Vehicles Diverted and/or Valeted



Furthermore, diversions and valet operations are not preferred customer service conditions. Diminished customer service levels could have long lasting implications regarding mode share. As customer service levels related to parking diminish, air passengers may choose to use other modes to access the Airport. As presented in the response to Question 21, would-be parkers decidedly choose drop-off/pick-up modes over HOV modes if parking was not available to them.

E. How Many People Want to Park at Logan Airport?

A future Logan Airport parking demand growth assumptions based on two datasets was developed:

- Recent trends in Logan air passengers' propensity to park, including the impact of changes to parking transaction lengths (i.e., duration of parking) on parking demand;
- Future air passenger growth.

Parking transactions are traditionally represented by two categories:

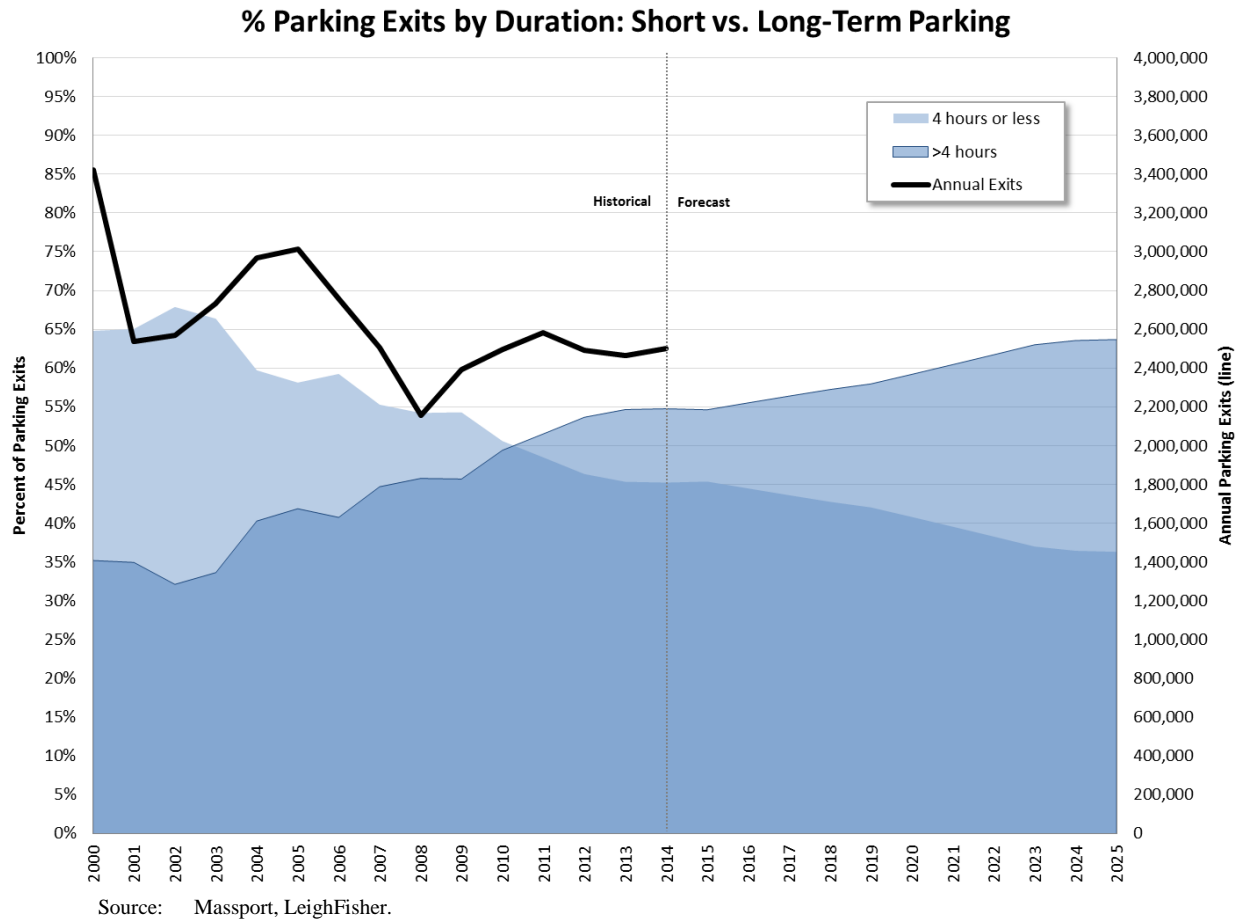
- Short-duration transactions: transactions of less than four hours represent parking customers who are meeters/greeters, well-wishers, and those doing business at the airport; spaces occupied by short duration customers turn over several times a day and thus serve many customers (or transactions)
- Long-duration transactions: transactions of four hours and longer represent passengers actually taking a flight and leaving their vehicle at the airport for the duration of their air travel; spaces occupied by long-duration customers may be occupied for several days and thus have a larger impact on the number of required spaces than do short-term transactions

In 2014, short-duration transactions accounted for roughly 46% of all transactions and short-duration spaces accounted for just over 2% of all occupied spaces. However, the number of available spaces for short-duration use has decreased due to the increase in use of spaces for long-duration parking.

Long-duration propensity to park continues to slowly increase based on recently observed trends while short-duration propensity to park continues to decrease as the number of available spaces becomes more difficult to find. Exhibit 7 presents the percent of parking exits that are short-duration and long-duration and their forecasted trajectories. In addition, Exhibit 7 presents the total annual parking exits, a value that can be used as a proxy for total number of short-duration and long-duration Airport parkers. In general, the percentage of short-duration parkers is trending downward. This trend may be correlated to an overall decrease in the total number of parkers the airport is able to service.

As such, long-term trends could show increased curbside drop-off/pick-up since meeters and greeters are not able to park and wait for their air party to arrive. Furthermore, passengers who plan to leave their vehicle at the airport for their air trip may be unable to find a space at their garage of choice (or anywhere on-airport) and may be diverted to another facility. If this same customer is a regular traveler, he/she may ultimately not choose to park on-airport for a subsequent trip, and instead choose a drop-off/pick-up vehicle mode.

Exhibit 7. Percent of parking Exits by Duration: Short vs. Long-Term Parking



Recent trends and air passenger forecasts indicate that peak-day parking demand will continue to grow at Logan Airport. Annual air passenger levels at Logan Airport were over 31.6 million (as of 2014), and the levels have increased by over 200 percent in the past 40 years. We are currently projecting that air passenger levels will reach approximately 36 million by 2022. Air passenger levels are generally the product of broad socio-economic trends and are largely independent of the capacity of airport-specific facilities. This is particularly more so at Logan given the airport is an origin and destination airport where over 90% of all trips originate and terminate at the airport (versus a hub airport where a large percentage of trips are connection between airplanes).

Taking these trends into account, three growth rates were developed to help determine future parking demand on typical busy (peak) days. We explain these three growth rates below.

Low Growth Rate. Share of passengers choosing to park does not increase — assumes that parking demand grows at a rate consistent with long-term projections of average annual growth in air passengers; this reflects the slowest growth rate.

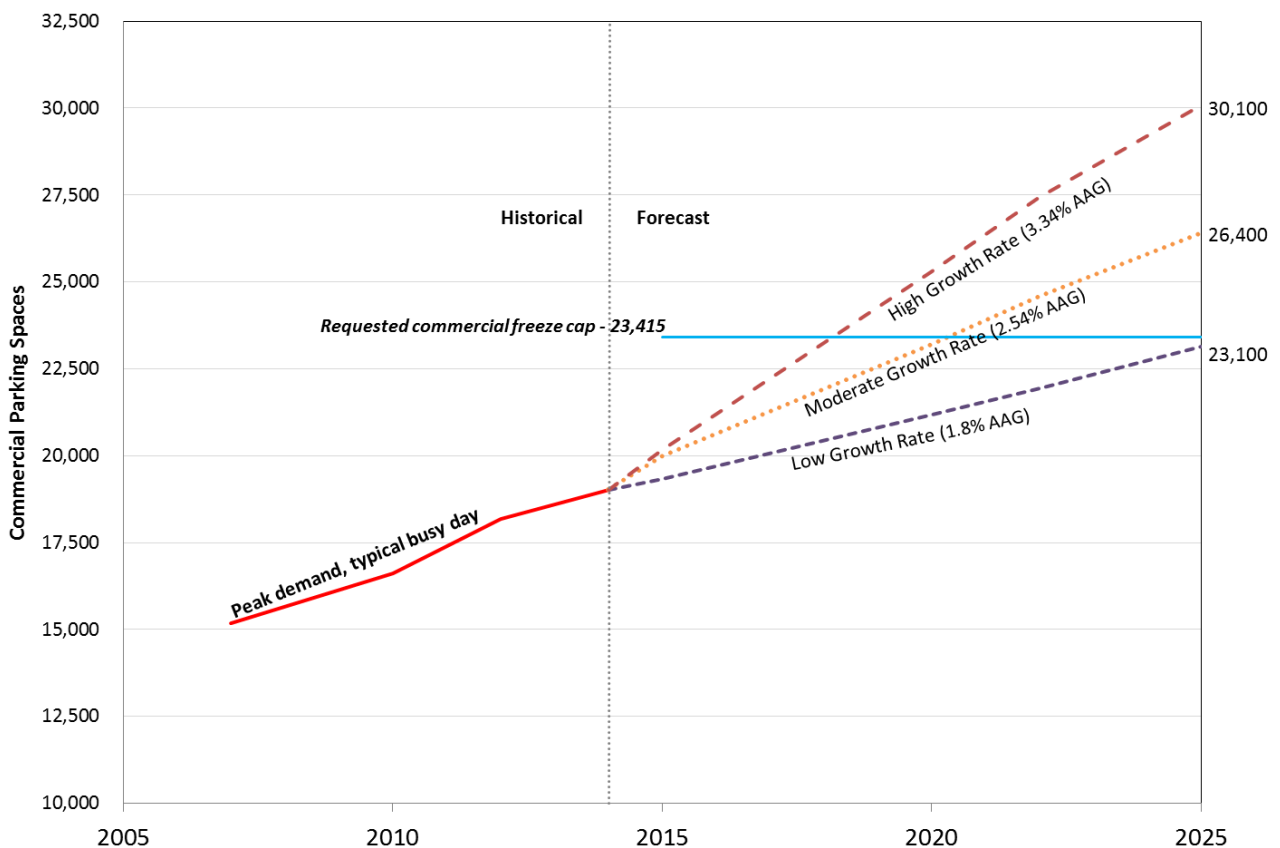
Moderate Growth Rate. Share of passengers choosing to park continues to increase at historical growth rate — assumes that parking demand grows at a faster rate than the low growth rate, but at a slower pace than has been observed recently; this reflects a moderate growth rate. (Note that

both the “Moderate” and “High” growth rates do not assume any decline in HOV mode share; the increase in parking demand would accompany reductions in non-HOV mode shares.)

High Growth Rate. Share of passengers choosing to park increases at most recently observed parking demand growth rate.

Exhibit 8 presents the peak demand for parking on a typical busy day both from a historical perspective and using the growth rates presented above. As shown, parking demand on a typical busy weekday is anticipated to reach approximately 22,900, 26,400, and 30,100 spaces by 2025 using the low, moderate, and high growth rates, respectively.

Exhibit 8. Estimated Future Parking Requirement



As shown in the Exhibit 8, an increase in the Logan Airport parking freeze cap of 5,000 spaces will provide the capacity to support projected future parking demand on a typical busy day (peak-days). For example, if parking demand on a typical busy day grows at the low growth rate, the relief in the freeze cap will enable Logan Airport to provide sufficient parking to accommodate approximately 10 years of peak-day parking demand. However, if growth trends continue as they have in recent years (as demonstrated by the moderate and high growth rates), the requested relief in the cap of 5,000 spaces will provide enough potential capacity on airport to support less than 5 years of peak-day parking demand growth.

Whenever the growth curves cross the commercial freeze cap level—thus increasing the level of parking constraint parking on-airport—the ability for Logan Airport to achieve its air quality and customer service goals significantly diminishes, as a high percentage of would-be parkers – approximately 75 percent – can be expected to turn to VMT-intensive curbside drop-off vehicle modes rather than HOV/shared-ride modes.

F. Which Ground-Access Mode Would People Use If They Cannot Park at Logan?

Massport continues to invest in and operate Logan Airport with a goal of building upon its nation-leading program to maximize the number of passengers who arrive at the Airport by transit and other high-occupancy vehicle modes. Logan Airport continues to rank at the top of U.S. airports with respect to HOV/transit/shared-ride mode share. (HOV modes have traditionally been defined to include transit and shared-ride modes, including MBTA public transit, Logan Express, scheduled bus, and shared-ride vans and limousines; whereas private vehicles, rental cars, and taxicabs are classified as automobile or non-HOV modes (regardless of the number of passengers in a vehicle).)

Using data from the *2013 Logan Airport Air Passenger Ground Access Survey*, a closer look was taken at parkers and their place of origin, the modes they use to get to the airport, and which modes they would use if parking was not an option for them. People who park at Logan come from all over New England, from Downtown Boston to outside of Massachusetts. The distribution of where they come from is presented in Exhibit 9.

Exhibit 9. Geographic Origin Distribution of Logan Airport Air Passenger Parkers

Area of Origin	% of Parkers Arriving to Logan from Area
Urban Core (defined as Boston, Brookline, Cambridge, and Somerville)	12%
Between Urban Core and Route 128	19%
Between Route 128 and I-495	36%
Outside of I-495, within Massachusetts	17%
Outside of Massachusetts	16%
Total	100%

Source: Massport 2013 Logan Airport Air Passenger Ground Access Survey

The survey asked parkers if they couldn't use the mode they took to the airport, which mode would they most likely have taken. These responses varied greatly depending on the area of origin given both travel time and access to different alternative modes from their respective origins. Exhibit 10 presents the area of origin and the mode that air passengers would have used if parking was not an available option.

Exhibit 10. Alternative Ground-Access Mode if Parking Wasn't an Option

	Urban Core	Between Urban Core and Route 128	Between Route 128 and I-495	Outside I-495, within MA	Outside of MA	Overall Distribution to other Modes	
Drop-off by Private Vehicle	16%	27%	31%	38%	44%	32%	Curbside Drop off Mode
Drop-off by Taxi	59%	40%	9%	3%	5%	20%	
Drop-off by Black Car Limo	9%	19%	39%	25%	7%	24%	
Shared Ride Van/Other Limo Service	0%	2%	1%	12%	4%	3%	HOV/ Shared-ride Mode
HOV/Transit	16%	10%	17%	20%	30%	18%	

Source: Massport 2013 Logan Airport Air Passenger Ground Access Survey

Note: Column "Overall Distribution to other Modes" does not total 100 percent. The remaining 3 percent did not respond or responded with a mode other than the modes presented.

As shown in Exhibit 10, alternative mode choice varies greatly based on the origin of the air passenger. As the origin gets further from the Airport, there is a significant increase in air passengers being dropped-off by private vehicle with a significant decline in use of taxis. Use of black car limos as an alternative to parking increases further from the Urban Core, but declines sharply declines if originating from outside of Massachusetts. HOV/transit use increases outside of Route 128, most likely on Logan Express routes and private express bus carriers.

G. Airport Parking Characteristics

It is important to note that air passenger parking characteristics at airports are vastly different than parking characteristics at commercial parking facilities in a city. If an urban parking facility supports commercial or even commuter activity, it is anticipated that parking spaces turn over more than once per day, often several times per day. At airports, parking spaces turn over much less frequently, often supporting air passengers on trips with durations numbering several days. As such, it takes more parking at an airport to support the same number of vehicles than in an urban/workplace parking setting. Furthermore, commuters traveling daily to an urban work location will not turn to pick-up/drop-off modes as an alternative means of travel. Thus, in the urban core, parking constraints force commuters to travel by less environmentally harmful alternatives: HOV, bicycling, or walking. For air passengers traveling to an airport, pick-up/drop-off modes are highly viable and attractive as alternative modes of travel, if parking is unduly constrained - thus causing the associated negative environmental consequences of increased VMT and air emissions.

H. Current Airport Parking Rates

Parking rates on-Airport are related to the parking facility's proximity to the terminals and the duration a vehicle is parked. Exhibit 11 presents current and anticipated on-Airport parking rates.

Exhibit 11 On-Airport Parking Rates, 2013, 2014, and 2016 (anticipated)

Location	2013 Cost (\$)	2014- 2015 Cost (\$)	2016 Cost (\$)	Location	2013 Cost (\$)	2014- 2015 Cost (\$)	2016 Cost (\$)
Central Parking, Terminal B Garage, Terminal E Lots				Economy Parking			
0 to 30 minutes	\$3	\$3	\$3	Daily rate	\$18	\$20	\$23
31 minutes to 1 hour	\$6	\$6	\$6	Additional days 0 to 6 hours	\$9	\$10	\$12
1 to 1.5 hours	\$9	\$10	\$12	Additional days 6 to 24 hours	\$18	\$20	\$23
1.5 to 2 hours	\$12	\$14	\$17	Weekly rate (6-7 days)	\$108	\$120	\$132
					\$108	\$120	\$132
				More than 7 days	for 7 days +	for 7 days +	for 7 days +
2 to 3 hours	\$17	\$19	\$22		\$18/each additional day	\$20/each additional day	\$23/each additional day
3 to 4 hours	\$21	\$23	\$26				
4 to 7 hours	\$25	\$27	\$30				
7 to 24 hours (daily)	\$27	\$29	\$32				
Additional days 0 to 6 hours	\$14	\$15	\$16				
Additional days 6 to 24 hours	\$27	\$29	\$32				

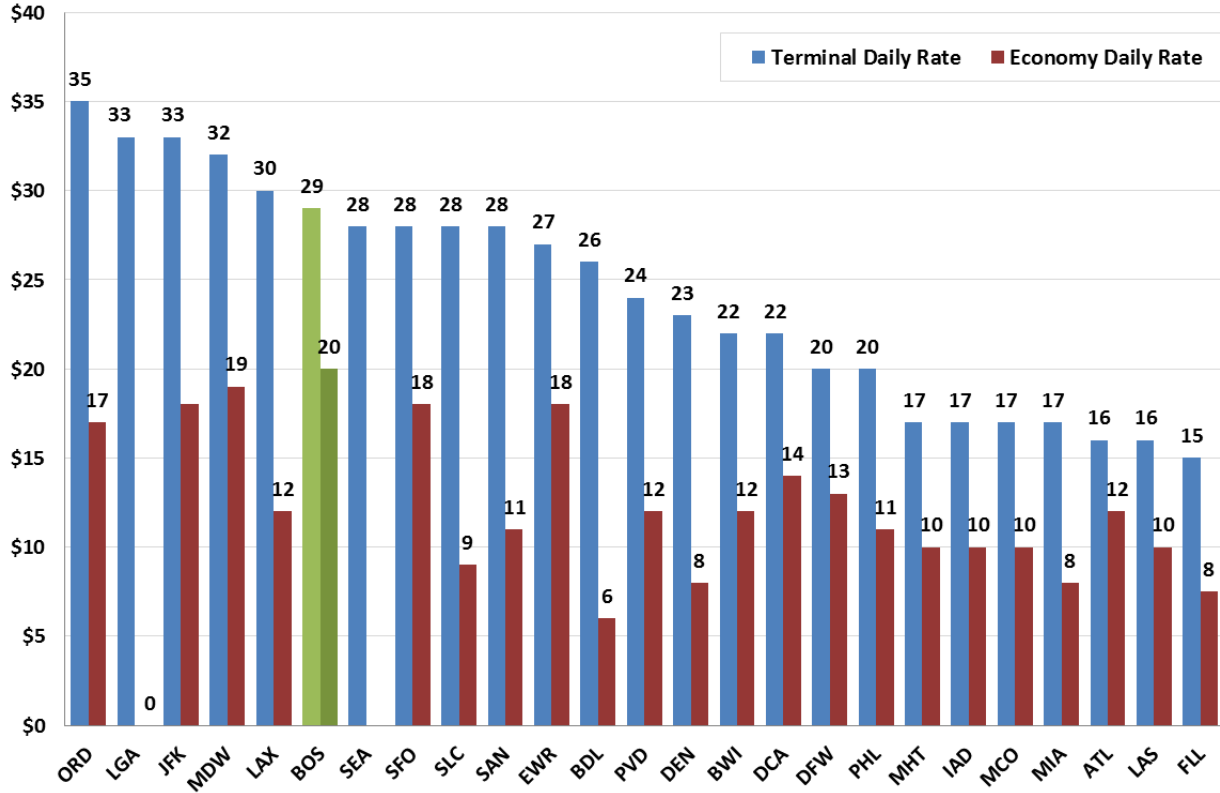
*Note: 2014 rates are effective as of July 1, 2014.
2016 rates expected to be in effect on July 1, 2016.*

The daily parking rate was \$10 in 1990, the first full year when the 1989 freeze regulation was in effect. That rate equates to \$18.11 in 2014 inflation-adjusted dollars.

Exhibit 12 illustrates Terminal-area daily rates and Economy daily rates charged at several major U.S. airports. BOS/Logan Airport's respective rates are highlighted in green. (Not reflected in the chart is the \$34 daily rate that Parking PASSPORT Gold customers are charged for parking at Logan Airport.)

Exhibit 12 Large U.S. Airport Parking Rates (2013-2014)

Large U.S. Airport Parking Rates (2013-2014)



Massport has observed that demand for parking is quite inelastic during the mid-week days, as its recent parking rate increases have not lessened demand.

IV. Analysis of Alternative Future Scenarios for Parking Supply at Logan, and Impacts on VMT and Air Quality

This section of the memo analyzes the resultant VMT and air quality impacts of alternative future scenarios for parking supply at Logan. It contrasts the current constrained condition under the Logan Parking Freeze with a range of increased levels of parking supply. Significantly constrained parking conditions at the airport decreases the overall level of customer service due to increased need to divert vehicles to available parking on-airport, valet vehicles within existing parking facilities, and divert park vehicles at off-airport facilities. Over time, the diminished level of service causes changes in travel behavior and shifts to alternative modes, potentially shifting to modes that may increase the total number of trips to the airport and increase the system VMT and associated air quality impacts. As shown earlier in Exhibit 6, constrained parking conditions is a recent and accelerating development. As passenger levels increase, the impacts of the constrained parking supply increase significantly.

A. Methodology

Exhibit 13 presents key concepts and inputs utilized in this analysis. Included in this exhibit are definitions of the input and the source from which the data to calculate the input was drawn.

Exhibit 13. Key Concepts and Inputs to the Analysis

Input	Definition	Source
Vehicle Miles Traveled (VMT)	Miles traveled by vehicles in a specified region for a specified time period ¹⁰	2013 Logan Airport Air Passenger Ground Access Survey
Vehicle Occupancy Rate (VOR)	Number of air passengers in vehicle, by mode. Presented in Exhibit 16	2013 Logan Airport Air Passenger Ground Access Survey
Average number of vehicle trips, by mode	Total number of one way trips to transport air passenger(s) to and from airport. Presented in Exhibit 14	Logan Airport GEIR, July 1993
Origin Area	Where an air passenger starts ground-access trip to Logan Airport	2013 Logan Airport Air Passenger Ground Access Survey

The overall approach to determining the resulting system VMT is to:

- Determine the annual number of vehicles unable to park on-airport given the parking freeze cap
- Distribute air passengers to alternative ground-access modes
- Calculate the VMT of the alternative mode used
- Compare the VMT of the alternative mode with the VMT if they were able to park on-Airport

¹⁰ U.S. EPA, http://iaspub.epa.gov/sor_internet/registry/termreg/searchandretrieve/termsandacronyms/search.d
[o](http://iaspub.epa.gov/sor_internet/registry/termreg/searchandretrieve/termsandacronyms/search.d)

The 2014 parking demand data was combined with the estimated growth assumptions to calculate the number of days parking demand would exceed the effective commercial parking cap at Logan and the total number of unaccommodated vehicles. The number of vehicles was then translated into number of air passengers by dividing the number of vehicles exceeding the cap by the vehicle occupancy rate (VOR) of cars parked at Logan.

$$(A) \quad \frac{\text{Number of Vehicles Above Freeze}}{\text{Vehicle Occupancy Rate (Parkers)}} = \# \text{ of would be parkers}$$

These air passengers were then distributed to the five areas of origin based on the distribution of parkers, determined from the 2013 Logan Airport Air Passenger Ground Access Survey. Using survey data, we determined which modes parked air passengers would use if they were not able to park at the airport, cross-tabulated based on their area of origin (see Exhibit 10). Distributed air passengers were then segregated by the mode they would most likely take if parking was not an option. The result is the number of air passengers arriving to the airport via alternative (non-parking) modes by area of origin.

$$(B) \quad \text{Results from (A)} * \% \text{ of Passengers from Origin Area } i = \# \text{ Air Passengers from Area } i$$

$$(C) \quad \begin{aligned} &\text{Results from (B)} * \% \text{ parkers from Area } i \text{ alternatively using Mode } j \\ &= \# \text{ Air Passengers from Area } i \text{ using Mode } j \end{aligned}$$

Next, the VMT of would-be parkers is calculated by multiplying (a) the resulting air passenger arriving to the airport by specific mode from an area by (b) the number of trips required by that mode (Exhibit 14), and (c) the by the average one-way distance from that origin area to the Airport (Exhibit 15). This product is then divided by the VOR of that mode (Exhibit 16). The sum of all of these values equals the total VMT of would-be parkers.

$$(D) \quad \sum \frac{\text{Results from (C) for Area } i \text{ and Mode } j * \text{Avg Distance from Area } i * \text{number of trips for Mode } j}{\text{VOR for Mode } j} \\ = \text{Total VMT of would be parkers}$$

Exhibit 14. Number of Vehicle Trips to Support Air-Passenger Round-Trip

Mode	# of Trips
Parker	2.00
Drop-off/Pick-up	4.00
Taxi	3.12
Black Car	3.72
Shared Ride Van/Limo	3.12

Source: Logan Airport GEIR, July 1993.

Exhibit 15. Average Distance from Origin Area

Area of Origin	Average Distance to/from Airport [miles]
Urban Core	7.4
Between Urban Core and Route 128	12.2
Between Route 128 and I-495	24.5
Outside of I-495, within Massachusetts	49.2
Outside of Massachusetts	53.6

Source: Massport 2013 Logan Airport Air Passenger Ground Access Survey

Exhibit 16. Vehicle Occupancy Rate

Mode	VOR
Parker	2.17
Drop-off/Pick-up	2.42
Taxi	1.80
Black Car	2.10
Shared Ride Van/Limo	3.50

Source: Massport 2013 Logan Airport Air Passenger Ground Access Survey

Next, the VMT of parked air-passengers was calculated by multiplying the number of trips and average travel distance of parkers.

$$(E) \quad \begin{aligned} & \text{Number of Vehicles above Freeze} * \text{Avg travel distance of parkers} \\ & \quad * \text{number of trips for parkers} = \text{Total VMT of parkers} \end{aligned}$$

The net VMT difference of would-be parkers vs parkers was calculated by subtracting the results from (D) by the results from (E).

$$(F) \quad \text{Total VMT of would be parkers} - \text{Total VMT of parkers} = \text{Net VMT}$$

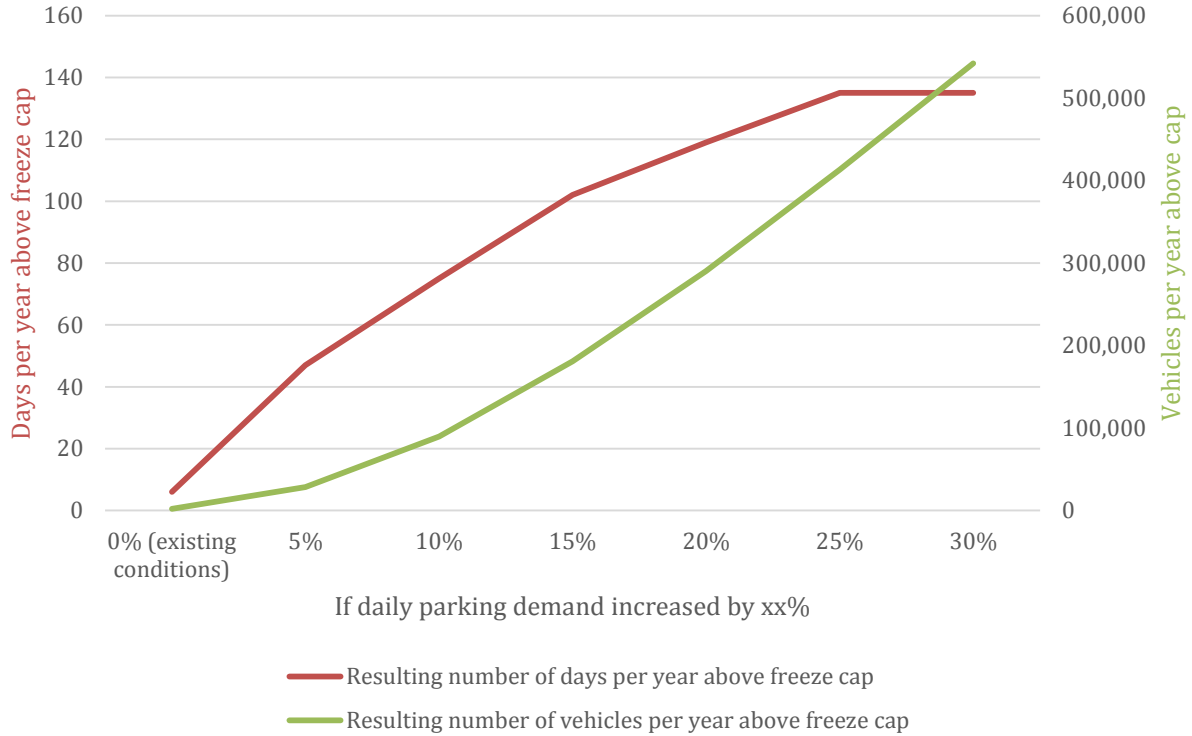
The net VMT under several scenarios, calculated using the above methodology, is presented in the following section.

VI. Analysis of VMT Increases under Alternative Future Parking Supply Scenarios

The above methodology was used to analyze several scenarios as part of a sensitivity analysis. Existing parking demand was increased in 5 percent increments up to 30 percent and analyzed to determine the resulting difference in VMT between air passengers parking on airport and taking alternative modes if not able to park.

Exhibit 17 presents the resulting number of days and vehicles per year above the Freeze cap if no additional vehicles were able to park at Logan. A demand increase of 0 percent represents current parking demand. Even with a modest 5 percent increase in daily parking demand yields a significant increase in the number of days per year above the freeze cap. This represents the fact that there are currently many days that are very close to the cap level and the slight increase bumps them above that threshold. This analysis demonstrates that the current level of parking constraint at Logan has pushed parking conditions to a tipping point. With a modest level of passenger growth, the number of days above the freeze cap will increase, reducing the ability to park, diminishing customer service levels, and pushing would-be parkers to alternative modes (the majority of which will switch to modes with higher VMT and emissions).

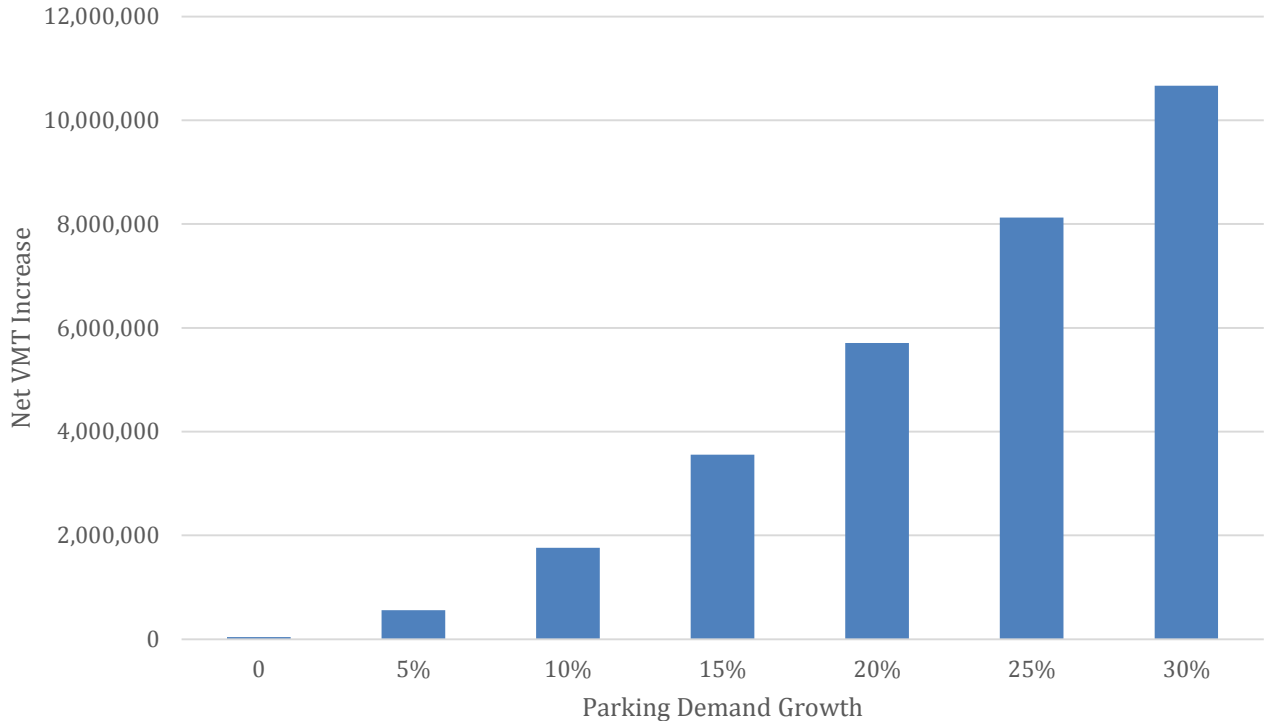
Exhibit 17. Resulting Annual Number of Days and Vehicles Above the Parking Freeze Cap



The next step was to determine the net VMT if would-be parkers were to select another mode to access the airport. In general, three-quarters of would-be parkers would choose vehicle curbside drop-off modes such as drop-off by private vehicle and taxi and black car limo services. These modes typically have a higher number of trips associated with them. Drop-off/pick-up modes generate up to twice as many vehicle trips as parking one's vehicle on-airport. For example, if an air passenger is dropped off by a friend when they depart on an air trip and is picked-up by a friend when they return, that single air passenger generates a total of four ground-access trips: two for the drop-off trip (one inbound to Logan, one outbound from Logan) and two for the pick-up trip (one inbound to Logan, one outbound from Logan). While, if the same air passenger drives their vehicle to the airport and parks it for the duration of their air travel, that air passenger generates two ground-access trips (one inbound to Logan, one outbound from Logan). The number of trips for each ground-access mode to support a single air passenger is quantified in Exhibit 14.

Using the methodology presented above in Section 4.A, the net VMT change was calculated based on different assumed parking demand growth without any change in parking freeze cap (i.e., assuming same allowance of parked commercial vehicles on-airport). As shown in Exhibit 19, if daily parking demand were to increase by 30 percent (which could occur sometime in 2030–2035 if increased at the forecast air passenger growth rate), the annual net VMT increase would be over 10 million additional vehicle miles.

Exhibit 19. Would-be Parkers Who Shift to Vehicle Modes Results in Generating Higher VMT



In addition to reviewing conditions assuming maintenance of the current on-airport commercial parking cap, net VMT were reviewed assuming increase of the commercial cap in increments of 1,000 spaces. For example, if the parking cap was increased by 4,000 spaces and the daily parking demand increases by 20 percent, the unmet parking demand increases ground-access VMT by over 100,000 miles per year. However, if the parking freeze cap remained at current levels with the same 20 percent parking demand growth assumption, the increase ground-access VMT would be over 5.7 million miles. If the parking cap was increased by 6,000 spaces under the same 20 percent parking demand growth assumption, all parking demand would be met and the net increase in ground-access VMT would be negligible.

Exhibit 18. Net VMT Change based on Varying Increased Levels of Daily Parking Demand and Increase in Parking Supply

		On-Airport Commercial Parking Supply (Spaces)*																			
		17,875**	18,875	19,875	20,875	21,875	22,875	23,875	24,875												
		<i>Spaces Above Existing Commercial Parking Cap</i>																			
Percent Increase in Parking Demand:	+0 spaces																				
0%	40,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5%	562,000	52,500	700																		
10%	1,763,900	591,000	68,900	2,900																	
15%	3,554,900	1,775,800	620,100	85,500	5,100																
20%	5,710,400	3,529,500	1,789,200	649,100	103,600	7,300															
25%	8,128,400	5,645,100	3,504,300	1,803,100	678,200	123,300	9,500														
30%	10,664,400	8,016,000	5,581,500	3,482,600	1,818,100	707,300	144,800														

* Assumes supply built to meet commercial cap
 ** Current Parking Freeze cap less reserved general aviation and hotel parking
 *** Assumes all other mode shares stay at current levels
 Note: Numbers presented here represent the net difference in VMT between would-be parkers who are not able to park on-airport and would-be parkers who are able to park on airport.

VII. Analysis of Vehicle Emissions Resulting from VMT Changes

In order to quantify the air quality benefits that additional parking at Logan Airport would produce, emissions inventories were calculated based on the VMT estimates presented above. These inventories required the use of a vehicle emissions simulation model to determine emission factors for application to the VMT values. The analysis considered typical “concerning” vehicle pollutants at a mesoscale level: Carbon Dioxide (CO₂), Volatile Organic Compounds (VOCs), and Oxides of Nitrogen (NO_x). CO₂ is a potent greenhouse gas (GHG) that is emitted in large quantities from the transportation sector. VOCs and NO_x are Ozone precursors that form Ozone when emitted to the atmosphere. Ozone, from a regional perspective, is particularly of concern in the Boston metropolitan area, as it was most recently in non-attainment in the region under the 8-hour (1997) and 1-hour (1979) ozone standard. The emissions assessment considered two phasing scenarios each netting a total of 5,000 additional commercial parking spaces at Logan Airport. Emission factors were determined and applied to the VMT corresponding to each analysis scenario. Each scenario’s emissions were then analyzed to determine the resultant air quality benefits resulting from the increase in parking freeze cap spaces.

Analysis Scenarios

The analysis considered two different timelines, where varying amounts of parking are brought online in different years. Run 1 includes:

- a 2014 base year in which there are no additional parking spaces and demand has not grown,
- a 2022 interim year in which demand for parking grows 20 percent and 5,000 spaces are added to Logan Airport, and
- a 2030 design year in which demand for parking grows 40 percent and no additional parking spaces are added beyond the 5,000 spaces added in 2022.

Run 1 presents a situation in which the parking demand relief is managed in a single effort, in the form of a full build of 5,000 spaces.

Run 2 includes:

- a 2014 base year in which there are no additional parking spaces and demand has not grown,
- a 2020 interim year in which demand for parking grows 15 percent and 2,500 spaces are added to Logan Airport,
- a 2022 interim year in which demand for parking grows 20 percent and an additional 2,500 spaces are added to Logan Airport (for a net addition of 5,000 spaces), and
- a 2030 design year in which demand for parking grows 40 percent and no additional parking spaces are added beyond the total of 5,000 spaces, added in 2020 and 2022.

For each interim and design year, emissions of a scenario with parking (“build”) was compared to a “no-build” scenario where the demand for parking is held constant and no additional spaces are constructed. The analysis scenarios are summarized in Exhibit 19.

Exhibit 19 Vehicle Emissions Analysis Scenarios

	Run 1				Run 2			
	No-Build		Build		No-Build		Build	
	Parking Demand Growth ¹	Net Parking Spaces ²	Parking Demand Growth ¹	Net Parking Spaces ²	Parking Demand Growth ¹	Net Parking Spaces ²	Parking Demand Growth ¹	Net Parking Spaces ²
2014	0%	0	-	-	0%	0	-	-
2020	-	-	-	-	15%	0	15%	2,500
2022	20%	0	20%	5,000	20%	0	20%	5,000
2030	40%	0	40%	5,000	40%	0	40%	5,000

(-) Not considered in the scenario or not applicable to the scenario

1. Percent growth in parking demand since the base year (assumes a 2.54 percent per year average annual growth)

2. Net parking spaces constructed, including those constructed in the previous interim years

Emission Factor Modeling

The U.S. Environmental Protection Agency’s (EPA’s) Office of Transportation and Air Quality (OTAQ) has developed the Motor Vehicle Emission Simulator (MOVES)¹¹. MOVES2014a is EPA’s latest motor vehicle emissions model for state and local agencies to estimate greenhouse gases and other pollutants from cars, trucks, buses, and motorcycles.

All the vehicle emissions used in the mobile emissions analysis were obtained using EPA’s MOVES2014a emissions model. MOVES2014a calculates emission factors from motor vehicles in grams per mile for existing and future conditions. The emissions calculated for this air quality assessment includes things such as Tier 3 emission standards (which is an EPA program that sets new vehicle emissions standards, lowering the sulfur content of gasoline), heavy-duty engine and vehicle greenhouse gas regulations (2014-2018), and the second phase of light-duty vehicle GHG regulations (2017-2025). It also includes Massachusetts-specific conditions, such as the state vehicle registration age distribution and the statewide Inspection and Maintenance (I/M) Program.¹²

The emission factors of this analysis were calculated at the county scale for Suffolk County. These MOVES runs were set up to calculate the emission factors of the county for a summer weekday in the base, interim, and design years. Emission factors for each pollutant consider the summation of factors for each “running” emission process that is associated with that pollutant. The model made use of MOVES 2014 data inputs for Suffolk County for the traffic analysis years of 2014, 2020, 2022, and 2030. The input data was primarily obtained from the MassDEP-Department of I&M Programs. The data reflected Suffolk county specific data including Vehicle Populations, Meteorology, etc. The inputs also made use of the detailed data pertaining to the Massachusetts I&M program and Lower-Emission Vehicle (LEV) Standards.

Emission Factors

Emission factors were determined for two MOVES2014a vehicle types: a passenger car and a passenger truck. A 70% to 30% passenger car to passenger truck ratio (based on Suffolk County

¹¹ MOVES2014a (Motor Vehicles Emission Simulator), 2015, US EPA, Office of Mobile Sources, Ann Arbor, MI.

⁵ The Stage II Vapor Recovery System is the process of collecting gasoline vapors from vehicles as they are refueled. This requires the use of a special gasoline nozzle at the fuel pump.

population data) was assumed for mode types drop-off/pick-up, Taxi, Black Car, and Parker that are seen in the VMT analysis. The Shared Ride Van/Limo mode was assumed to be exclusively passenger trucks. Total emissions factors were a summation of the individual “running” emissions processes where appropriate for each pollutant. The results of the emission factor calculations are presented as grams per mile in Exhibit 20.

Exhibit 20 Emission Factors by Access Mode (g/mi)

Access Mode	Pollutant	Analysis Year			
		2014	2020	2022	2030
Drop off by Private Vehicle	CO ₂	409.2	352.1	329.2	255.2
	VOC	0.047	0.016	0.014	0.010
	NO _x	0.211	0.069	0.053	0.032
Drop off by Taxi	CO ₂	409.2	352.1	329.2	255.2
	VOC	0.047	0.016	0.014	0.010
	NO _x	0.211	0.069	0.053	0.032
Drop off by Black Car Limo	CO ₂	409.2	352.1	329.2	255.2
	VOC	0.047	0.016	0.014	0.010
	NO _x	0.211	0.069	0.053	0.032
Parker	CO ₂	409.2	352.1	329.2	255.2
	VOC	0.047	0.016	0.014	0.010
	NO _x	0.211	0.069	0.053	0.032
Shared Ride Van/Other Limo Service	CO ₂	493.9	420.6	391.1	304.9
	VOC	0.059	0.018	0.015	0.011
	NO _x	0.254	0.077	0.060	0.037

Vehicle Emission Results

The emissions analysis compared no build and build emission results under base, interim, and design years. The analysis shows that building additional parking will result in a decrease of vehicle emissions of all would-be parkers. The VMT analysis shows that building more parking spaces enables would-be parkers to use their preferred ground access mode, parking. Parkers result in less VMT than their drop-off/pick-up counterparts, as parking on-Airport results in fewer trips than drop-off/pick-up modes per air-passenger. This result is demonstrated in the air quality analysis, as emissions of CO₂, VOC, and NO_x are substantially reduced (on the order of 20-25 percent) when comparing build conditions (with additional parking on-airport) to no build conditions (without additional parking on-airport) of the same year. The results are shown in Exhibit 21 and Exhibit 22.

Run 1 considered the effects of adding 5,000 spaces at once in 2022. The analysis shows that this 5,000 space addition will result in CO₂, VOC, and NO_x savings of 25.8%, 25.5%, and 25.6% respectively in 2022 and 20.2%, 20.0%, and 20.2% in 2030. In 2022, the need for additional parking to meet increasing air passenger demand is apparent and demonstrated by the significant emissions savings that the construction of these 5,000 spaces provides. As demand increases further in 2030, the benefits of the 5,000 spaces decreases, but still presents less emissions than a no build scenario.

Run 2 considered a scenario where 2,500 parking spaces are added to the airport in 2020 and additional 2,500 are added in 2022 for a net total of 5,000 spaces. The analysis shows that this 2,500 space addition in 2020 will result in CO₂, VOC, and NO_x savings of 23.8%, 23.6%, and 23.6% respectively. The savings are the same for 2022 and 2030 as they were in Run 1, as the

assumed growth is the same between both runs and it is assumed that 5,000 parking spaces are on line in both analysis years. In Run 2, the pollutant savings of 2020 show substantial benefit, but not as much as the savings of 2022. This phenomenon occurs because the Airport parking supply in 2020 falls short of meeting parking demand, shifting would-be parkers to drop-off/pick-up modes, a more VMT and emission intense ground access mode. With the addition of 2,500 parking spaces in 2022, Airport parking supply is able to meet parking demand. As such, the emissions savings of would-be parkers is realized as those whose preference is to park on airport are able to do so.

The annual percentage savings decreases with time, assuming that air passenger and parking demand continue to grow. A fixed parking cap minimizes Massport's ability to build additional parking on-airport to meet parking demand and deter would-be parkers from using drop-off/pick-up modes when parking is no longer available. Assuming a 2.54 percent average annual growth in parking demand, Logan will experience exceedances of the parking freeze cap, even with an increase of 5,000 commercial spaces, by the year 2021, with the number of exceedances increasing annually as air passenger growth continues.

Exhibit 23 presents a line representing a parking capacity "breakeven point". This line follows the forecasted parking demand curve. Should the Airport parking capacity fall below the curve for a given year, it is anticipated that demand will exceed capacity which will lead to excess VMT and emissions from drop-off/pick-up use. If the Airport parking capacity falls above the line (within the green area), parking capacity can meet anticipated demand and no excess VMT or emissions will result.

Exhibit 21 VMT and Emissions Estimates - Run 1: 5,000 Spaces by 2022

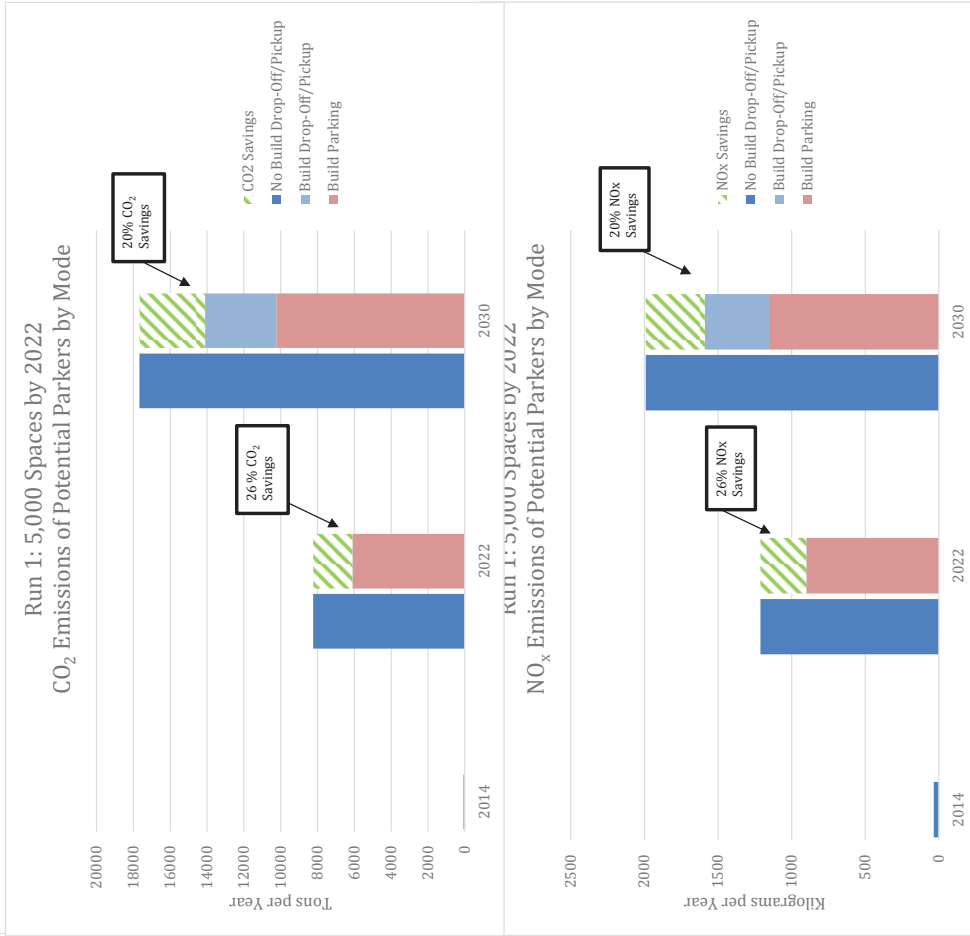
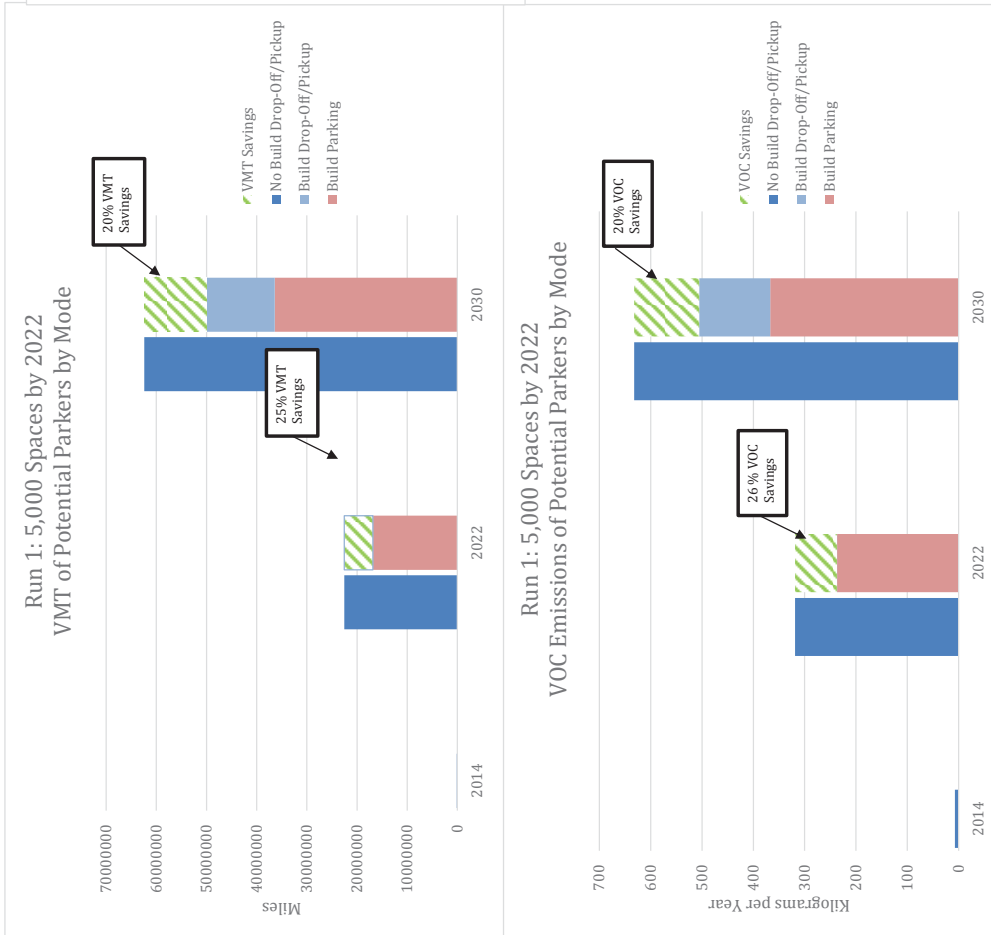


Exhibit 22 VMT and Emissions Estimates - Run 2: 2,500 Spaces by 2020, Additional 2,500 Spaces by 2022

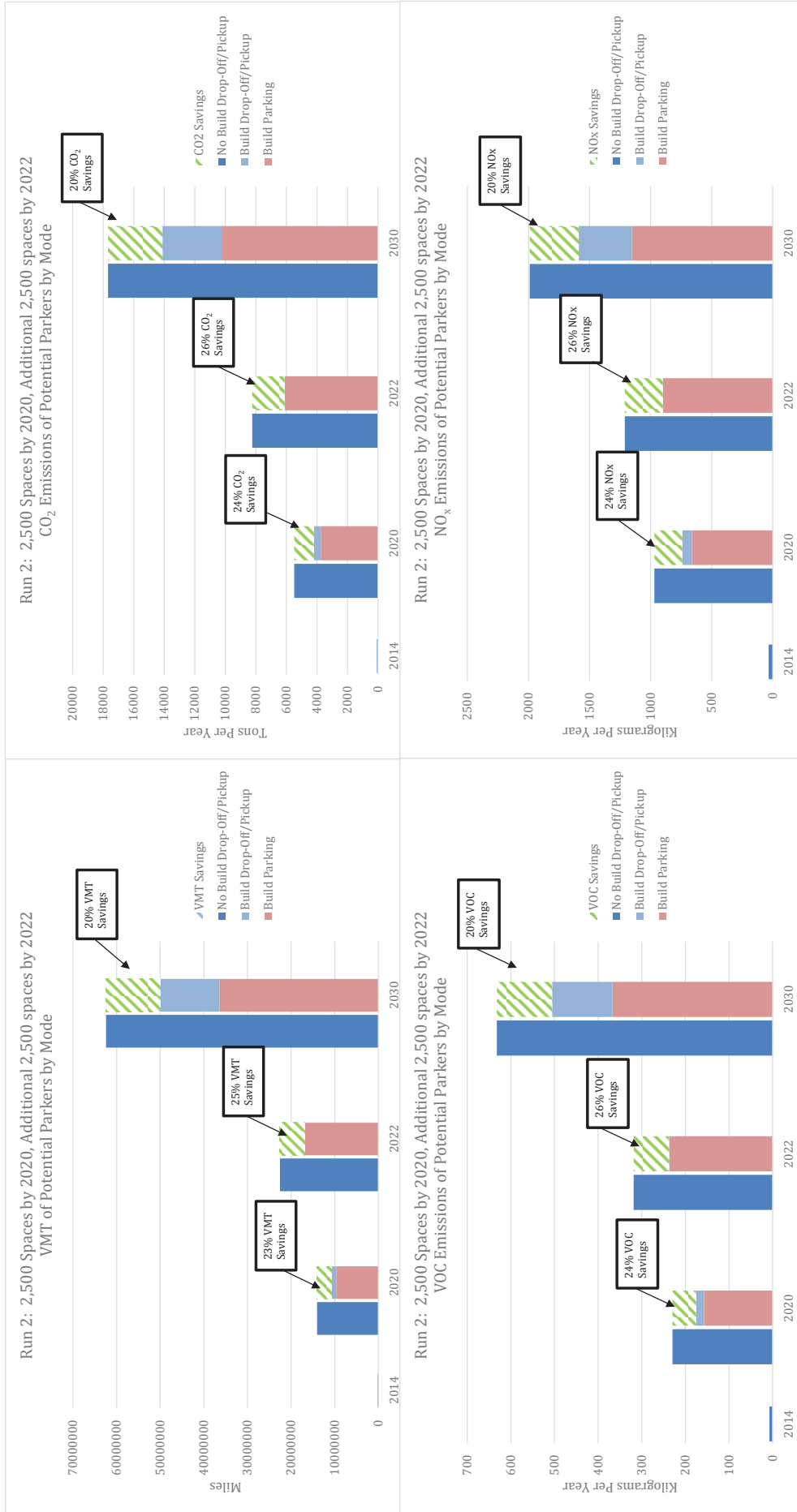
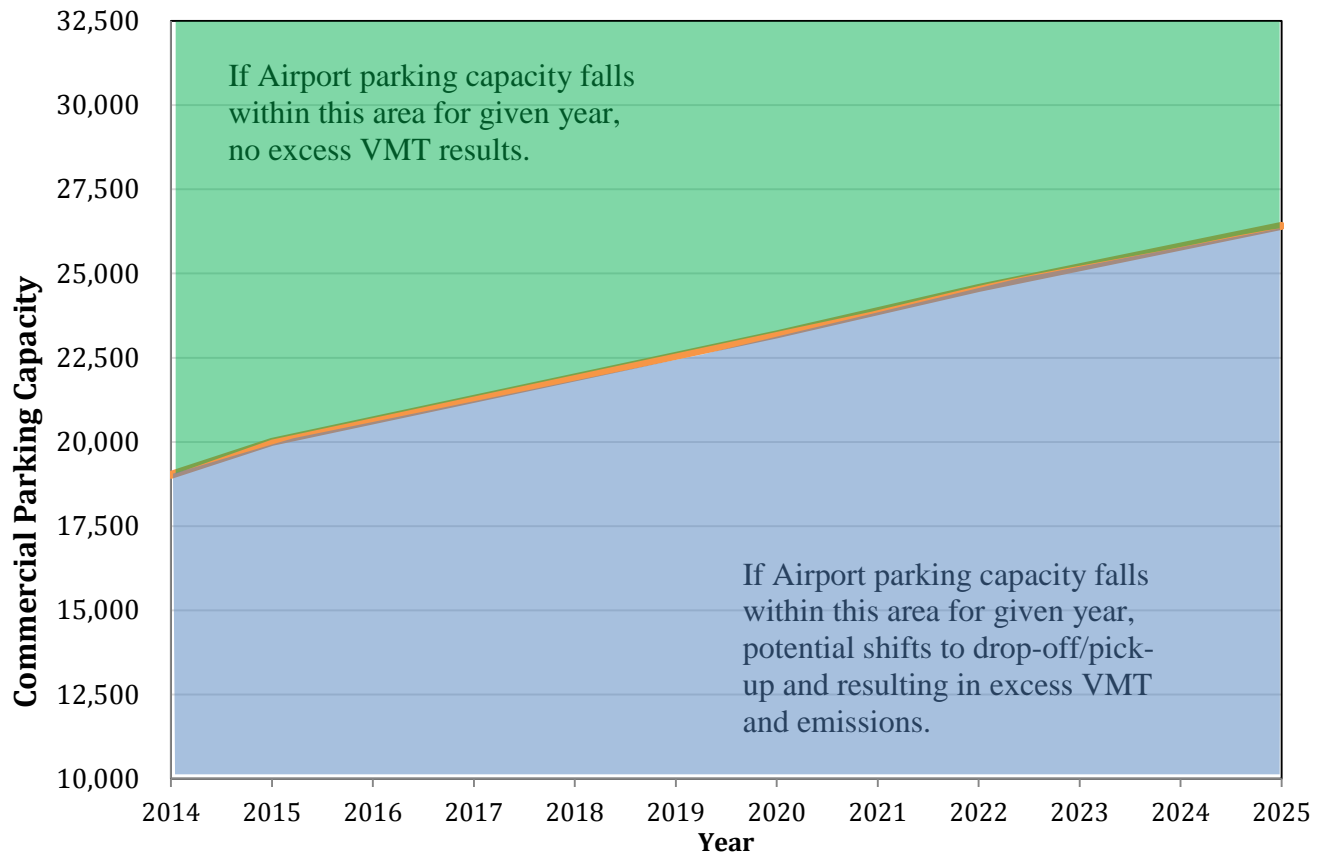


Exhibit 23 Parking Capacity Breakeven Line



VIII. CONCLUSION

Despite Massport’s industry-leading efforts to dampen ground-access vehicle trips and vehicle miles traveled through a capped parking supply and implementing HOV/shared-ride mode initiatives, vehicle trips continue to increase with growth in air travel. As air passenger numbers increase, the lack of available parking at Logan Airport has resulted in an increase in “drop-off/pick-up” vehicle trips – thereby increasing VMT/trips and contributing to emissions – the exact effect the original regulation was intended to offset.

Amending the Parking Freeze cap at Logan (i.e., allowing more air passengers to park on-airport) would decrease the number of overall vehicle trips, decrease overall ground-access VMT, and result in a net decrease in pollutant emissions (by approximately 20-25 percent) compared to conditions where the parking supply at Logan Airport is kept constant at its current levels.

An additional 5,000 parking spaces on-airport enables Logan Airport to reduce some current vehicle pick-up/ drop-off activity (and the associated VMT and air emissions), while ensuring future pick-up/drop-off activity is not increased due to a lack of available parking spaces. Approximately 2,000 spaces of the proposed 5,000-spaces are expected to ease pick-up/drop-off activity by providing spaces for current demand levels (2015 as

shown on the chart above). The additional 3,000 spaces should provide adequate parking to the year 2022 in order to prevent a parker returning to a vehicle pick-up/drop-off mode due to lack of parking spaces.

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