

## Chapter 1 – Introduction, and Purpose and Need

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The Massachusetts Department of Transportation (MassDOT), the Massachusetts Bay Transportation Authority (MBTA), and the National Railroad Passenger Corporation (Amtrak) have for decades identified the expansion of rail and passenger capacity at South Station as a crucial transportation need, one that is articulated in multiple local, regional, state, and Northeast Corridor (NEC)-wide planning documents. In cooperation with the Federal Railroad Administration (FRA), Amtrak, and the MBTA, MassDOT is now pursuing the expansion of South Station through this Environmental Assessment (EA). Historic South Station is a critical component of transportation infrastructure for the City of Boston and the Boston metropolitan area, and is the second busiest transportation center in New England, after Logan International Airport. Although expansion of South Station is a critical component for the region, it also plays an important role for the entire Northeast. The improvements recommended in this document will address travel needs as identified for the year 2035. However, to accommodate the goals for travel throughout the NEC for 2040 and beyond will require additional investments at South Station, beyond those proposed and examined as part of this project, but will build on the necessary improvements accomplished through this project.

As shown on Figure 1-1, the South Station Expansion (SSX) project consists of the 49-acre site located in and around the existing South Station Transportation Center, which consists of the South Station Rail/Transit Terminal, South Station Bus Terminal, and existing United States Postal Service (USPS) property and adjacent roadways. The SSX project would expand South Station Rail Terminal capacity, improve service reliability, and provide related layover capacity in order to meet current and future (2035) high-speed, intercity, and commuter rail service needs. The SSX project consists of four primary components (presented in order of the proposed construction sequence):

- Acquire and demolish the USPS facility;
- Reopen Dorchester Avenue and extend the Harborwalk;
- Expand the South Station Rail Terminal; and
- Construct rail layover facilities.

### 1.1. Project Background

FRA created the High Speed Intercity Passenger Rail Program (HSIPR) to allocate funds to programs aimed at developing new high-speed or intercity passenger rail services or substantially upgrading existing corridor services. MassDOT secured a \$32,500,000 HSIPR grant in 2011 to complete state and federal environmental review and preliminary engineering for the SSX project. This project has concluded the state level, Massachusetts Environmental Policy Act (MEPA), environmental review process with the issuance of a final Certificate on August 12, 2016, on the Final Environmental Impact Report (FEIR). In order to utilize federal funds, the project also requires review under the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] 4321 et seq.). FRA and MassDOT (the Project Team) have prepared this EA pursuant to NEPA, the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and FRA's *Procedures for Considering Environmental Impacts* (64 Federal Register [FR] 28545 [May 26, 1999] and 78 FR 2713 [January 14, 2013]).

In May 2013, FRA and MassDOT invited the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) to be NEPA cooperating agencies, and in December 2014, invited the USPS to be a NEPA cooperating agency. While no formal acceptance of these invitations were received, FRA and MassDOT have continued to provide the NEPA cooperating agencies with project documents for review as appropriate. Amtrak has been involved in the project since 2013 as an official project stakeholder, as well as a cooperating agency for the NEPA process. Amtrak has a significant presence at South Station and the Project Team has engaged them throughout the project via recurring meetings and workshops.

This EA identifies a No Build Alternative and a Build Alternative; provides an assessment of effects on the natural and built environment for both the No Build Alternative and Build Alternative; and identifies measures to avoid, minimize, or mitigate any negative effects. A horizon year of 2035 and an approximate opening year of 2025 are used for analysis of the SSX project.

## 1.2. Project Context

### 1.2.1. South Station Passenger Services

South Station is the northern terminus of the current NEC as defined by Amtrak and the eastern terminus of Amtrak's Lake Shore Limited service, and is the sixth busiest station in the national Amtrak system and the fourth busiest station on the NEC.<sup>1</sup> Approximately 1.57 million Amtrak passengers traveled through South Station in 2016.<sup>2</sup> From 2003 to 2016, the number of Amtrak passenger arrivals and departures through the Station increased by approximately 61%, demonstrating the growing demand for rail transportation within the NEC region.<sup>3</sup> In fiscal year (FY) 2016, on the NEC (which runs from Boston to Washington, D.C.), Amtrak carried 11.9 million passengers via Acela Express and Northeast Regional service.<sup>4</sup> In addition to Amtrak services, the MBTA manages and runs the fifth largest commuter rail system in the nation, which terminates its south side services at South Station. The south side portion of the MBTA's commuter rail system that terminates at South Station serves central and southeastern Massachusetts.

Weekday ridership at South Station in 2013 included an average of approximately 4,100 combined Amtrak boardings and alightings, and 42,000 combined MBTA commuter rail boardings and alightings, for a total of more than 46,000 combined intercity and commuter rail boardings and alightings daily.<sup>5</sup> South Station also provides connections to the MBTA Red Line, the transit spine for communities north and south of Downtown Boston; to Logan International Airport via the MBTA Silver Line; and to intra- and inter-city bus services via nine MBTA bus routes and 11 private bus companies operating out of South Station's Bus Terminal. The SSX project will improve connectivity between the Bus Terminal and the Rail Terminal, but the expansion focuses primarily on the Rail Terminal.

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<sup>1</sup> Amtrak Media Relations. *State of Massachusetts Fact Sheet: Fiscal Year 2016*. November 2016.

<sup>2</sup> Amtrak Government Affairs. *Amtrak Fact Sheet, Fiscal Year 2016, State of Massachusetts*. November 2016.

<sup>3</sup> Amtrak Government Affairs. *Amtrak Fact Sheets, Fiscal Years 2003- 2007, 2010- 2012, 2015, 2016 State of Massachusetts*; Amtrak Media Relations. *National Fact Sheets: Fiscal Years 2008 and 2009*.

<sup>4</sup> Amtrak Media Relations. Amtrak Fiscal Year 2016 Ridership (October 2015 to September 2016, preliminary and unaudited figures). November 17, 2016. <http://media.amtrak.com/2016/11/amtrak-delivers-strong-fy-2016-financial-results/>

<sup>5</sup> Massachusetts Department of Transportation. South Station Expansion Project, *Draft Environmental Impact Report. Appendix 9 (Part 3) Final South Station Expansion Project Ridership Results, Base Year Pedestrian Transfer Matrices*. October 2014.

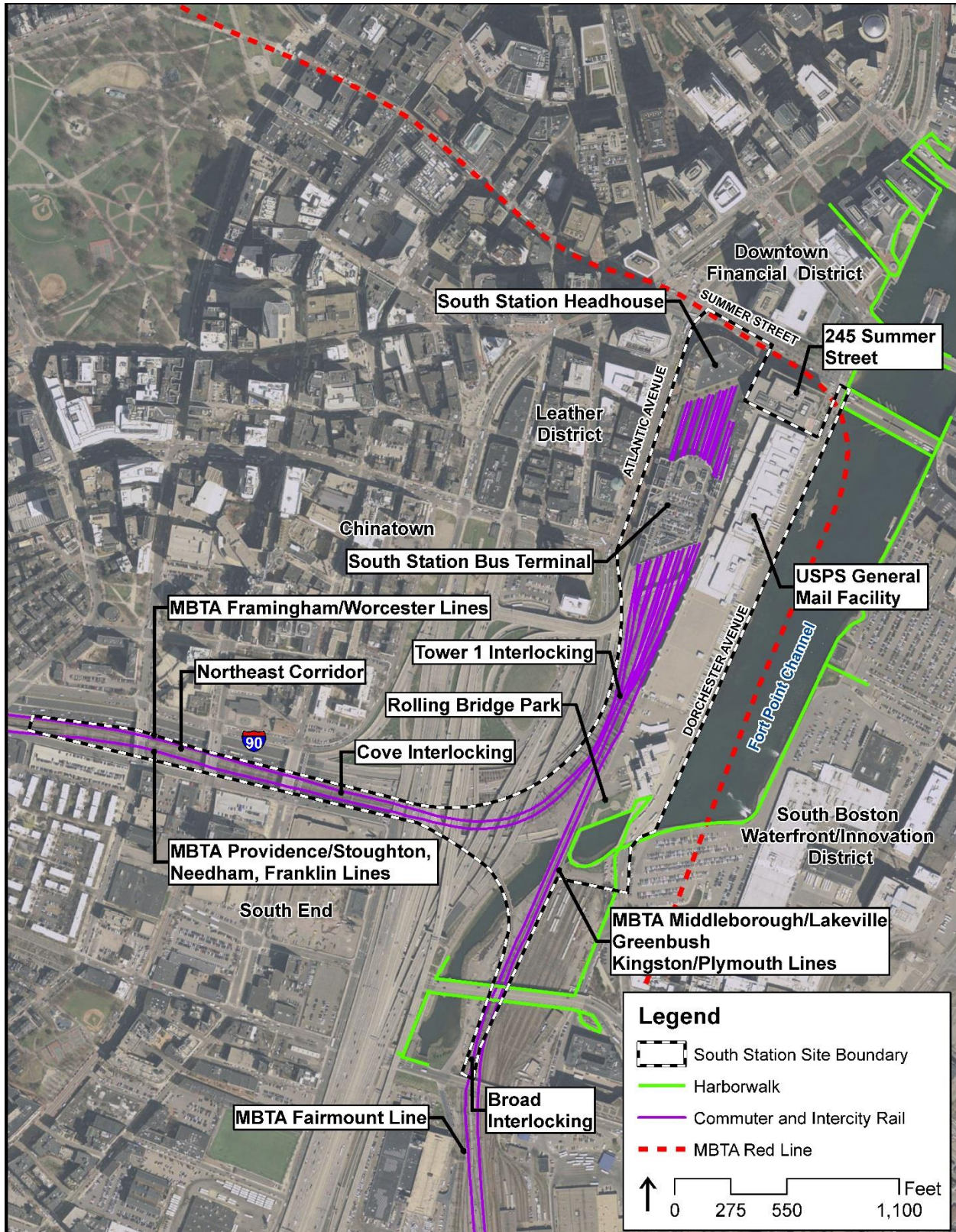


Figure 1-1 — South Station Site – Existing Conditions

South Station was originally constructed in 1899 with 28 total tracks. As a result of various redevelopment projects, including co-location with the USPS in the 1930s, South Station today has fewer than half the original number of tracks, but it continues to serve as the most heavily used passenger rail facility in New England. Currently, all 13 existing tracks are fully used by Amtrak and the MBTA, and both operators are severely limited in their ability to increase service or offer new services due to the constrained size and configuration of the station and terminal facilities. The terminal facilities are constrained by natural geography (Fort Point Channel) as well as significant infrastructure including: the existing South Station headhouse; the Interstate Highway 90/Massachusetts Turnpike (I-90) tunnels and ramps; the Interstate Highway 93 (I-93) and ramps; the Central Artery/Tunnel vent buildings; and the MBTA Red Line. South Station's passenger facilities, including platforms, waiting areas, and customer support services, do not meet current design standards for passenger transit facilities and passenger circulation. As a result of these deficiencies, South Station is experiencing increasing congestion, contributing to declining service reliability of intercity passenger and commuter rail operations, as well as losing opportunities for expanding existing passenger rail services and adding new services in response to growing demand in the Northeast.

### **1.2.2. Existing Station Description**

South Station is located near Chinatown, the Leather District, Fort Point Channel, the South Boston Waterfront/Innovation District, and the Financial District. The approximate 49-acre site includes the South Station Rail/Transit Terminal, South Station Bus Terminal, existing USPS property, Dorchester Avenue, and adjacent roadways. The South Station Rail Terminal area consists of 13 tracks, eight platforms, and a system of trackwork (also referred to as interlockings<sup>6</sup>) that allow Amtrak and MBTA trains to serve the station from the NEC, the Framingham/Worcester Line from the west, and the MBTA's Fairmount Line and Old Colony Line from the south and east. There are nine main line approach tracks that currently converge into the South Station terminal area. Of these nine tracks, five arrive at South Station from the west on NEC Main Line Tracks 1, 2, and 3 and the Framingham/Worcester Line Tracks 5 and 7. The remaining four tracks arrive at South Station from the south and consist of the Fairmount Line and the Old Colony Line. Amtrak and the MBTA currently utilize one main and two approach interlockings for routing trains into and out of South Station. The three South Station interlockings, in order from closest to most distant from South Station, are as follows: Tower 1, Cove, and Broad Interlockings. Other components of the rail system are signal systems, traction power, overhead contact system (OCS), communications, and civil works as well as appurtenant structures. Figure 1-1 and Figure 1-2 present the existing South Station site, including terminal, approach interlockings, and key facilities.

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<sup>6</sup> An interlocking is a segment of railroad infrastructure comprised of track, turnouts, and signals linked (interlocked) in a way that allows trains to move from one track to another, or across tracks safely, preventing conflicting train movements. The interlockings enable train dispatchers to route incoming trains over a variety of tracks to/from available station tracks.

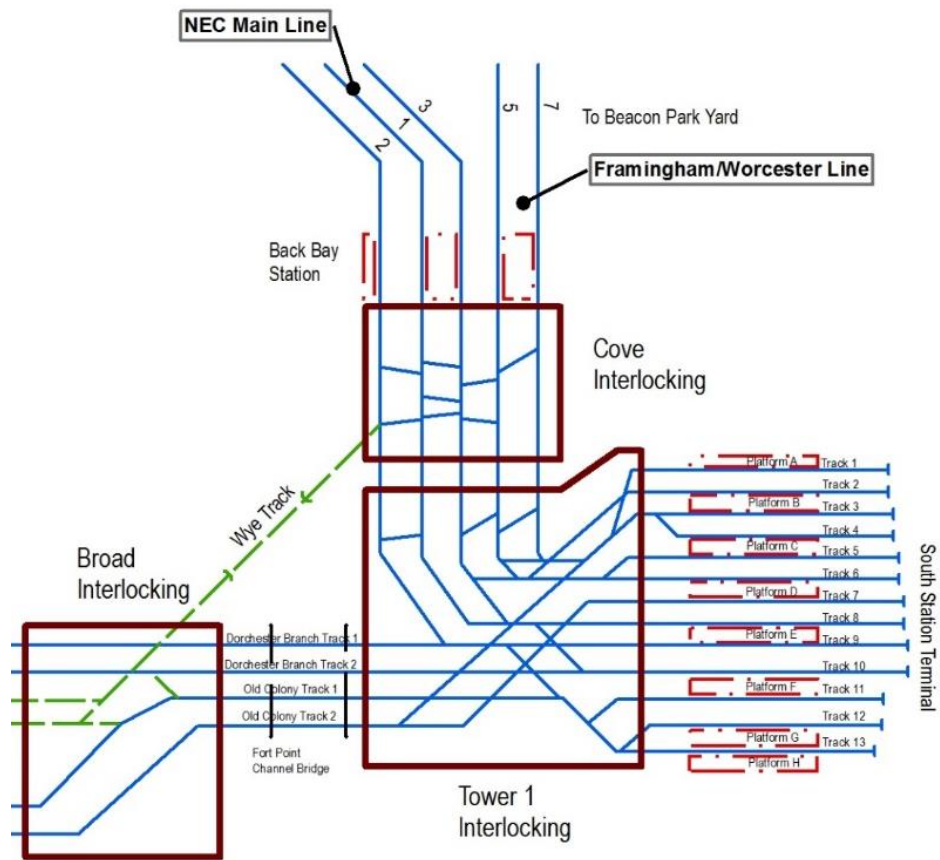


Figure 1-2 — Schematic of South Station Terminal and Interlockings

### 1.2.3. South Station Development History

South Station opened to the public on New Year’s Day, 1899. Today, South Station is the second largest transportation facility in New England (second only to Logan Airport), but is substantially smaller than its original size. Prior to the construction of South Station, passenger railroads serving Boston and New England had their own passenger terminals within Boston. In 1896, the Boston Terminal Company consolidated five railroad lines into one terminal, to be known as “South Union Station.”

South Station is Boston's first and now only remaining public example of the Classical Revival Style architecture. With the post-war rise of the automobile and a decline in rail travel, the headhouse fell into disrepair by the 1960s, and was proposed for demolition. Large sections of the east and west wings were demolished in the early 1970s for construction of the 245 Summer Street building for Stone & Webster; for expansion of the USPS General Mail Facility (GMF) on Dorchester Avenue; and for construction of a bus depot on Atlantic Avenue. Only the central portion of the original station remains. In 1975, the headhouse was placed on the National Register of Historic Places and efforts were made to restore the building. The MBTA bought South Station from the Boston Redevelopment Authority (BRA) (now the Boston Planning and Development Agency or BPDA) in 1978. Working with FRA and Amtrak, the MBTA undertook a major renovation of South Station in the 1980s that resulted in the station that exists today. In 1995, the MBTA also completed work on an intercity Bus Terminal adjacent to and above the Rail Terminal, with direct connections to I-93 and I-90.

Prior to the expansion of South Station proposed in this project, MassDOT anticipates that the improvements contemplated in the planned South Station Air Rights (SSAR) project will already be incorporated into the site. The SSAR project consists of approximately 1.8 million square feet of mixed-use development to be located directly above the railroad tracks and the existing South Station headhouse. The SSAR project would also include expansion of the existing Bus Terminal towards the existing headhouse. The Massachusetts Secretary of the Executive Office of Energy and Environmental Affairs (EEA) reviewed the SSAR project in 2006. The developer filed a Notice of Project Change (NPC) with the EEA and the Boston Redevelopment Authority (now known as the Boston Planning and Development Agency [BPDA]) in 2016 and received a Certificate from the Secretary of EEA on that NPC on October 7, 2016<sup>7</sup> and received BPDA Board Approval on December 15, 2016. The changes were primarily the adjustment of the proportion of residential and commercial use and also touchdown points of the overbuild. None of the changes proposed present a significant impact to the SSX project. Although construction of the SSAR project has not yet begun, the Project Team has assumed the SSAR project to be an existing condition and part of the SSX project's No Build Alternative. Coordination between MassDOT and the SSAR project proponent will continue as engineering and design of each project advances. Construction of the SSAR project is anticipated to commence in 2017.

#### 1.2.4. Planning Context

The proposed expansion of South Station has long been considered in federal, state, regional, and local planning and has been cited in documents dating back to 2002.<sup>8</sup> According to the NEC Commission, major investment in the NEC is essential to reduce delays, achieve a state-of-good-repair, and build capacity for growth.<sup>9</sup> The Commission cites the need to expand South Station as one of the critical infrastructure needs of the NEC.<sup>10</sup> Existing South Station operations are near capacity during the peak periods<sup>11</sup> and even minor delays can create cascading delays from which the terminal operation cannot recover until well after the peak periods.

FRA is currently working with NEC stakeholders to develop a long-range, integrated investment plan for the NEC between Washington, D.C., and Boston, Massachusetts. FRA initiated this planning effort, the NEC FUTURE program, in early 2012. FRA released a Tier 1 Final Environmental Impact Statement (EIS) in December 2016, which identified a Preferred Alternative. The purpose of the NEC FUTURE program is to create a vision for the NEC that upgrades aging infrastructure and improves the reliability, capacity, connectivity, performance, and resiliency of future passenger rail service on the NEC for both intercity and regional trips, while promoting environmental sustainability and continued economic growth. Through the NEC FUTURE program, FRA identified and analyzed a broad program of service and infrastructure improvements documented in the Tier 1 EIS. FRA will release a Record of Decision (expected in 2017), in which it will document the selected alternative to be implemented, and a Service Development Plan (SDP), which will provide additional details on the business case and phasing plan for implementing the selected alternative.

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<sup>7</sup> The South Station Air Rights Project Notice of Project Change received a Certificate from the Secretary of EEA on October 7, 2016. <http://209.80.128.250/EEA/emepa/mepacerts/2016/sc/npc/3205%20-9131%20NPC3%20South%20Station%20Air%20Rights%20Boston.pdf>

<sup>8</sup> Documents citing the need for an expanded South Station include: *Critical Infrastructure Needs on the Northeast Corridor* (2013), *The Northeast Corridor Infrastructure Master Plan* (2010), *A Amtrak Vision for High-Speed Rail in the Northeast Corridor* (2010), *The Amtrak Vision for the Northeast Corridor* (2012), the *Massachusetts Department of Transportation Rail Plan* (2010), the *Massachusetts Department of Transportation Freight Plan* (2010), and the two most recent long range transportation plans of the Boston Region Metropolitan Planning Organization (MPO) (2007, 2011).

<sup>9</sup> The NEC Commission was created by Congress in order to coordinate, finance, and implement major systems improvements for the NEC. The Commission is comprised of members from each of the NEC states, Amtrak, and the United States Department of Transportation (U.S. DOT), with non-voting representatives from freight railroads and states with connecting corridors. <http://www.nec-commission.com>

<sup>10</sup> NEC Infrastructure and Operations Advisory Commission. *Critical Infrastructure Needs on the Northeast Corridor*. January 2013.

<sup>11</sup> Approximate AM peak period is 6:30 – 9:00. Approximate PM peak period is 3:30 – 6:30.

FRA used a 2040 horizon year for making ridership projections and determining future travel conditions when developing alternatives and conducting the analysis in the NEC FUTURE program; here, the Project Team is developing the SSX project based on a 2035 horizon year. In order for South Station to accommodate the 2040 service levels in the NEC FUTURE Preferred Alternative, additional infrastructure improvements beyond those proposed in this SSX project would need to occur at South Station as well as throughout the NEC. FRA is advancing the NEC FUTURE program concurrent and in coordination with the SSX project. The SSX project will not preclude the improvements proposed by the NEC FUTURE program; rather, the SSX project includes investments that can later be leveraged by MassDOT and FRA to implement the additional improvements proposed by the NEC FUTURE program to accommodate service levels beyond 2035. The selected alternative FRA identifies in the Tier 1 Record of Decision for the NEC FUTURE program will be implemented incrementally and in coordination with the phasing of the SSX project. MassDOT will continue to work with FRA to accommodate the projected service and any additional infrastructure improvements included in the NEC FUTURE selected alternative.

### **1.3. Purpose**

The purpose of the SSX project is to expand South Station Rail Terminal capacity and related layover capacity to meet current and anticipated future (2035) high-speed, intercity, and commuter rail service needs to:

- Enable growth in passenger rail transportation along the NEC and within the Commonwealth of Massachusetts;
- Improve service reliability through updates to rail infrastructure and related layover capacity;
- Improve the passenger capacity and experience of using South Station;
- Promote city-building in a key area of Boston; and
- Allow for Dorchester Avenue to be reopened for public use and enjoyment for the first time in decades.

### **1.4. Need**

There are three fundamental transportation deficiencies (project needs) that the project intends to address to improve both current and future railroad operations:

- Terminal capacity constraints;
- Inadequate station facilities; and
- Insufficient layover space.

#### **1.4.1. Terminal Capacity Constraints**

Current South Station Terminal capacity constrains existing service reliability and limits opportunities to expand intercity passenger rail and commuter rail services. Terminal capacity infrastructure constraints currently degrade service reliability and will inhibit future service delivery. One of the goals of the SSX project is to reduce the constraints at the terminal in order to improve service reliability. In order to achieve the project goals, MassDOT needs to acquire the adjacent USPS property, demolish the USPS GMF, and expand the Rail Terminal onto that property.

## Infrastructure Constraints

Recurring train delays at the South Station Terminal area are directly attributable to the limited number of platform tracks and the configuration(s) of the track infrastructure (one main and multiple approach interlockings). As South Station is a terminal facility, every arriving train must reverse to leave the station as a new revenue trip or to access a layover facility. Every arriving trip is followed by a departing trip, further limiting station capacity. Figure 1-2 shows the existing platform configuration as well as the layout of existing Tower 1, Cove, and Broad Interlockings.

Constraints associated with the interlockings near or at South Station include:

- **Tower 1 Interlocking**, South Station’s main interlocking located immediately south of the terminal, consists of nine main line approach tracks converging into 13 station tracks and eight platforms. Today, all trains enter or exit the station through Tower 1 Interlocking. Tower 1 Interlocking contains two long ladder tracks, tracks that link a series of parallel tracks, which allow a train approaching South Station on any track to reach nearly every platform. Although this layout provides operational flexibility, it creates a bottleneck for Amtrak and MBTA operations by limiting the number of trains that can simultaneously move through the interlocking. For example, a train approaching from the west that is destined for an easterly platform track will block other trains from entering or exiting South Station, disrupting those trains and causing delay-inducing congestion.
- **Cove and Broad Interlockings** are two approach (or “setup”) interlockings, located west and south of Tower 1 Interlocking. Cove Interlocking, located approximately 0.5 miles from South Station on the NEC and Framingham/Worcester lines, serves as a universal interlocking<sup>12</sup> for four of the five tracks approaching South Station, meaning trains can be rerouted to other tracks in both directions. Broad Interlocking, located adjacent to the MBTA’s South Side Service and Inspection Facility, provides limited access between the MBTA Fairmount and Old Colony mainline tracks and does not allow universal access to all tracks in both directions. As a result of the limitations at both Cove and Broad Interlockings, moves that could take place outside of the South Station terminal area to “set up” trains for appropriate tracks entering the station must instead take place within the Tower 1 Interlocking area. This lack of operational flexibility outside of the terminal area increases the number of conflicting movements at the already constrained Tower 1 Interlocking and further increases congestion, inefficiency, and delays for trains and passengers.

Infrastructure modifications are needed to allow additional and more efficient train movements at the South Station Terminal interlockings. By making improvements at Broad Interlocking, conflicting train movements can be moved to areas outside the terminal that accommodate higher speeds, operations at Tower 1 Interlocking and into South Station would be improved, and flexibility of train movements within the station would be improved. These infrastructure improvements would allow for an operating plan that provides for faster and more efficient crossover moves in preparation for station platform berthing, and would reduce congestion at Tower 1 Interlocking. The layout would also continue to provide the operational flexibility needed in the event of an emergency or equipment failure.

## Service Reliability Issues

Service reliability at South Station, measured by on-time performance (OTP) and delay, is adversely impacted by chronic terminal congestion.<sup>13</sup> Due to the interconnectedness and complexity of service at

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<sup>12</sup> A universal interlocking allows for the safe movement of trains from track to track in either direction.

<sup>13</sup> OTP is calculated as a percentage measure of train performance, by taking the total number of trains arriving “on-time” at the end-point of a run divided by the total numbers of trains operated on the run.



South Station (as described above), individual train delays not only directly impact overall station operations, but also produce cascading effects upon service line operations.

Service reliability is an important factor in a traveler’s mode choice decision.<sup>14</sup> To continue to offer NEC travel market consumers a safe,<sup>15</sup> energy-efficient,<sup>16</sup> and reliable transportation choice, FRA and Amtrak have established OTP goals for NEC intercity passenger rail service. Amtrak’s service delivery policy goal is 95% OTP for Acela Express and 90% OTP for Northeast Regional services.<sup>17</sup> Amtrak regional trains are considered late if they arrive at their end-point terminals more than ten minutes after their scheduled arrival times for trips of up to 250 miles, with a tolerance of an additional five minutes per additional 100 miles. All Acela trips, regardless of run length, are considered late if they arrive at their endpoint terminal more than ten minutes past their scheduled arrival time.<sup>18</sup>

Table 1-1 presents Amtrak’s OTP trends from FY2008 through FY2015.<sup>19</sup> Over this eight-year period, the OTP ranges for both Amtrak’s Acela Express service (71 to 90%) and its Northeast Regional service (75 to 87%) were consistently below the OTP goals of 95 and 90%, respectively.

The MBTA has a stated goal of 95% OTP for all commuter rail service, meaning that 95% of all commuter rail trips are operated within five minutes of scheduled trip time over the entire service day.<sup>20</sup> Table 1-2 presents the MBTA’s OTP trends from 2008 through 2015.<sup>21</sup> MBTA commuter rail service OTP over this eight-year period fluctuated, ranging from approximately 82% to 94%.

**Table 1-1 — Amtrak NEC Service On-Time Performance Trends**

Fiscal Year (10/1- 9/30)	On-Time Performance	
	Acela Express	Northeast Regional
2008	84.5%	75.8%
2009	87.2%	80.0%
2010	80.6%	74.7%
2011	84.0%	79.1%
2012	89.6%	86.6%
2013	82.9%	82.3%
2014	74.8%	75.2%
2015	70.9%	75.2%
<i>2015 Goal</i>	<i>95.0%</i>	<i>90.0%</i>

<sup>14</sup> TRB Record 794, Household Activities and Consumer Perspectives. *Understanding the Effect of Transit Service Reliability on Work-Travel Behavior*. 1981.

<sup>15</sup> Motor vehicle accidents or highway fatalities are responsible for the largest share (93 percent) of transportation-related deaths. *Centers for Disease Control, National Vital Statistics Reports (Volume 60, Number 4), Deaths: Preliminary Data for 2010 (Jan. 11, 2012)*, as of June 2012.

<sup>16</sup> Intercity rail is a proven energy efficient mode of travel. *Oak Ridge National Laboratory Transportation Energy Data Book 33, Table 2.12*.

<sup>17</sup> Amtrak. *Intercity Passenger Rail On-Time Performance. Twentieth Quarterly Report to Congress*. February 2013. Viewed June 12, 2013 at [www.fra.dot.gov](http://www.fra.dot.gov).

<sup>18</sup> Federal Railroad Administration. *Quarterly Report on the Performance and Service Quality of Intercity Passenger Train Operations*. March 2013. <https://www.fra.dot.gov/Page/P0001>.

<sup>19</sup> Federal Railroad Administration. *Amtrak On-Time Performance (OTP) Reports*, provided to The Committee on Appropriations, United States Senate. December 17, 2008; December 29, 2009; January 21, 2011; January 27, 2012; February 15, 2013.

<sup>20</sup> Massachusetts Bay Transportation Authority. *Service Delivery Policy*. June 2, 2010. [www.mbta.com/uploadedfiles/About\\_the\\_T/T\\_Projects/T\\_Projects\\_List/2010ServiceDeliveryPolicy.pdf](http://www.mbta.com/uploadedfiles/About_the_T/T_Projects/T_Projects_List/2010ServiceDeliveryPolicy.pdf)

<sup>21</sup> Massachusetts Bay Transportation Authority. *Commuter Rail OTP 2008-2012*. Personal communication. June 20, 2013.

**Table 1-2 — MBTA Commuter Rail Service On-Time Performance Trends**

Year	On-Time Performance <sup>a</sup>
2008	81.7%
2009	88.7%
2010	85.8%
2011	87.0%
2012	93.3%
2013	93.8%
2014	92.6%
2015	84.2%
<i>Annual Goal</i>	<i>95.0%</i>

<sup>a</sup> OTP is not adjusted for approved delays, including maintenance delays.

As shown in Table 1-1 and Table 1-2, neither Amtrak nor the MBTA achieved their stated goals for OTP. While the statistics shown are based on systemwide or route services and are not specific to South Station only, existing operations are at or near capacity during the peak periods and even minor delays can create cascading delays from which the terminal operation cannot recover until well after the peak periods. Continued delays at South Station will further exacerbate both Amtrak and the MBTA’s ability to meet their OTP goals.

### Future Service Demands

South Station is a key gateway linking Downtown Boston and the emerging South Boston Waterfront/Innovation District. With recent growth in the area, including the addition of General Electric Co. headquarters and other economic development opportunities in the area, there is an increased demand for improved transportation services, specifically at South Station. The substantial land use growth projected for the South Boston Waterfront translates to approximately 9,200 new residents and 22,900 new jobs in the Waterfront by 2035.<sup>22</sup> At a regional level, travel demand is expected to grow faster than the 14% population growth rate anticipated by 2025.<sup>23</sup>

By the year 2035, Amtrak projects that daily intercity rail ridership at South Station could be approximately 5,500 combined boardings and alightings (2035 No Build), representing an approximate 35% growth in ridership.<sup>24</sup> The Central Transportation Planning Staff (CTPS) of the Boston Region Metropolitan Planning Organization (MPO) projects South Station MBTA commuter rail daily boardings and alightings in the year 2035 to be approximately 56,000 (2035 No Build). Therefore, the combined Amtrak and MBTA commuter rail ridership in 2035 is projected to increase to more than 61,000 daily boardings and alightings. In 2012, there were 46,000 combined daily boardings and alightings for Amtrak and commuter rail.<sup>25</sup>

<sup>22</sup> A Better City, *South Boston Waterfront Sustainable Transportation Plan*, January 2015:

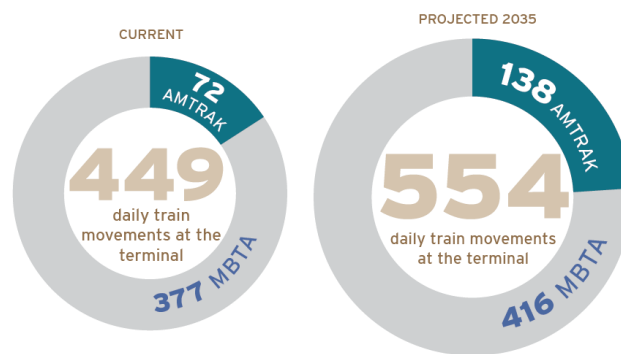
[https://www.massdot.state.ma.us/Portals/17/docs/Studies/SBostonWaterfrontFullReport\\_jan2015.pdf](https://www.massdot.state.ma.us/Portals/17/docs/Studies/SBostonWaterfrontFullReport_jan2015.pdf).

<sup>23</sup> Amtrak. *Northeast Corridor Infrastructure Master Plan*. June 4, 2010. <http://www.amtrak.com/ccurl/870/270/Northeast-Corridor-Infrastructure-Master-Plan.pdf>.

<sup>24</sup> *Ibid.*

<sup>25</sup> Massachusetts Department of Transportation, South Station Expansion Project. *Draft Environmental Impact Report, Appendix 9 (Part 3), Ridership Forecasting Technical Report*. October 2014. All results rounded to nearest 100, except for Commuter Rail results, which are rounded to the nearest 1,000.

Weekday operations in 2013 at South Station included 40 Amtrak intercity and 280 MBTA revenue trips and 32 Amtrak intercity and 97 MBTA non-revenue trips,<sup>26</sup> for a total of 449 daily train movements at the terminal. By the year 2035, 80 weekday intercity (Amtrak and New England Regional)<sup>27</sup> revenue trips and 58 weekday non-revenue trips are anticipated, representing a 100% revenue service increase above current levels. By 2035, the MBTA projects 315 weekday revenue trips and 101 weekday non-revenue trips, representing a 13% revenue service increase above current levels. A total of 554 daily train movements in and out of South Station is projected by the year 2035, representing an increase of 23% above current revenue service levels.<sup>28</sup> Table 1-3 provides a breakdown of the existing and projected 2035 daily revenue trips for MBTA and intercity services, by route, at South Station. Table 1-4 provides a breakdown of the existing and projected 2035 daily non-revenue trips for MBTA, and intercity services, by route, at South Station.



**Table 1-3 — Existing and Projected 2035 Daily Revenue Trips at South Station**

Service Route	Existing (2013) Daily Revenue Trips		Future (2035) Daily Revenue Trips	
	Inbound	Outbound	Inbound	Outbound
<b>MBTA</b>				
Framingham/Worcester	22	21	22	22
Needham	16	16	17	17
Franklin	19	18	20	18
Providence	18	18	19	19
Stoughton (existing service)/ New Bedford/Fall River (future service)	16	16	20	20
Fairmount	14	14	24	25
Middleborough/Lakeville	12	12	12	12
Kingston/Plymouth	12	12	12	12
Greenbush	12	12	12	12
<b>Total</b>	<b>141</b>	<b>139</b>	<b>158</b>	<b>157</b>
<b>Intercity</b>				
Amtrak Acela	10	10	14	14
Amtrak Regional	9	9	9	9
Amtrak Regional via Inland	-	-	4	4
Amtrak Lake Shore Limited via Inland	1	1	1	1
New England Regional via Inland	-	-	12	12
<b>Total</b>	<b>20</b>	<b>20</b>	<b>40</b>	<b>40</b>

Sources:

(Existing Revenue Trips) MBTA Schedules and Equipment Cycle Effective April 23, 2013, and Amtrak Schedules Effective January 14, 2013. (Future Revenue Trips) Northeast Corridor Intercity Service Alternative: "B-Low 2020-2030" operating plan provided by Amtrak on November 11, 2013.

Massachusetts Department of Transportation, *South Station Expansion Project, Final Environmental Impact Report*, Appendix E, Rail Operations Analysis Technical Report, June 2016.

<sup>26</sup> Non-revenue is a railroad industry term used to describe the movement of equipment and/or crews between locations when trains are not in revenue service (such as to and from layover).

<sup>27</sup> Final service provider for future New England Regional service has not been determined.

<sup>28</sup> Massachusetts Department of Transportation. *Basis of Operations Analysis and Assumptions Verification Report*. Version 3. June 2014.

**Table 1-4 — Existing and Projected 2035 Daily Non-Revenue Trips**

Yard/Facility	Existing Service (2013)				Future Service (2035)					
	MBTA		Amtrak		MBTA		Amtrak		New England Regional	
	To Yard	From Yard	To Yard	From Yard	To Yard	From Yard	To Yard	From Yard	To Yard	From Yard
Amtrak Southampton Street Facilities and MBTA S&I	39	38	16	16	6	5	25	25	4	4
Readville – Yard 2	10	10	-	-	7 <sup>a</sup>	7 <sup>a</sup>	-	-	-	-
Beacon Park Yard	-	-	-	-	15	15	-	-	-	-
Widett Circle	-	-	-	-	30	30	-	-	-	-
<b>Total</b>	<b>49</b>	<b>48</b>	<b>16</b>	<b>16</b>	<b>58</b>	<b>57</b>	<b>25</b>	<b>25</b>	<b>4</b>	<b>4</b>

<sup>a</sup> These 14 future MBTA non-revenue moves travel to/from Readville – Yard 2 for revenue Fairmount Line service at Readville.

Sources:

(Existing Revenue Trips) MBTA Schedules and Equipment Cycle Effective April 23, 2013, and Amtrak Schedules Effective January 14, 2013.

(Future Revenue Trips) NEC Intercity Service Alternative: "B-Low 2020-2030" operating plan provided by Amtrak on November 11, 2013.

Massachusetts Department of Transportation, *South Station Expansion Project, Final Environmental Impact Report*, Appendix E, Rail Operations Analysis Technical Report, June 2016.

As Amtrak and MBTA commuter train volumes increase, the existing capacity constraints at South Station will make reliable operations increasingly difficult to achieve within the existing infrastructure, which will in turn negatively impact service reliability on the northern portion of the NEC and on the south side of the MBTA commuter rail operations. Furthermore, existing constraints will greatly inhibit the ability of both Amtrak and the MBTA to serve potential demand by supplementing existing services or adding new rail service to South Station. Without infrastructure improvements to increase capacity, these services cannot be accommodated and their projected benefits will not be realized.

#### 1.4.2. Inadequate Rail Station Facilities

Pedestrian platforms, circulation, and waiting areas for transit and rail facilities should be designed to provide a reasonable level of service (LOS) for passengers and other station visitors.<sup>29</sup> The existing South Station headhouse facilities which consist of the Rail Terminal and waiting areas, do not adequately support current and future passenger service needs. Station performance is typically assessed based on the station's ability to accommodate morning and evening peak period passenger demand. Figure 1-3 depicts the passenger experience at various different levels of service. LOS C would allow for freely selected walking speeds, with passing possible in unidirectional streams and only minor conflicts resulting from reverse or cross movement. As stated in Section 1.2.3, the South Station Bus Terminal expansion is being included as part of the SSAR project and MassDOT is coordinating the two projects.

#### Poor Passenger Level of Service

The existing passenger waiting area and circulation zones are inadequately sized and configured to accommodate the current daily demand. This results in an unacceptable passenger experience of LOS E/F (minimum five square feet per person) that occurs for short periods during peak boarding and alighting. An LOS E/F results in reduced walking speeds, restricted passing, and intermittent stopping, and it approaches the maximum occupant capacity of the walkway. The concourse configuration forces passenger queues to overlap. In addition, many of the current passenger amenities at South Station are obsolete and do not meet the standards for a major, modern rail passenger transit facility.

<sup>29</sup> LOS for pedestrian flow and queuing range from LOS A (no crowding) to LOS F (extreme crowding).

Another goal of the SSX project is to provide adequate space and appropriate facilities to safely and conveniently manage the projected peak-hour pedestrian demand. The station's size is designed relative to the pedestrian circulation elements that are fundamental to servicing the passenger demand.

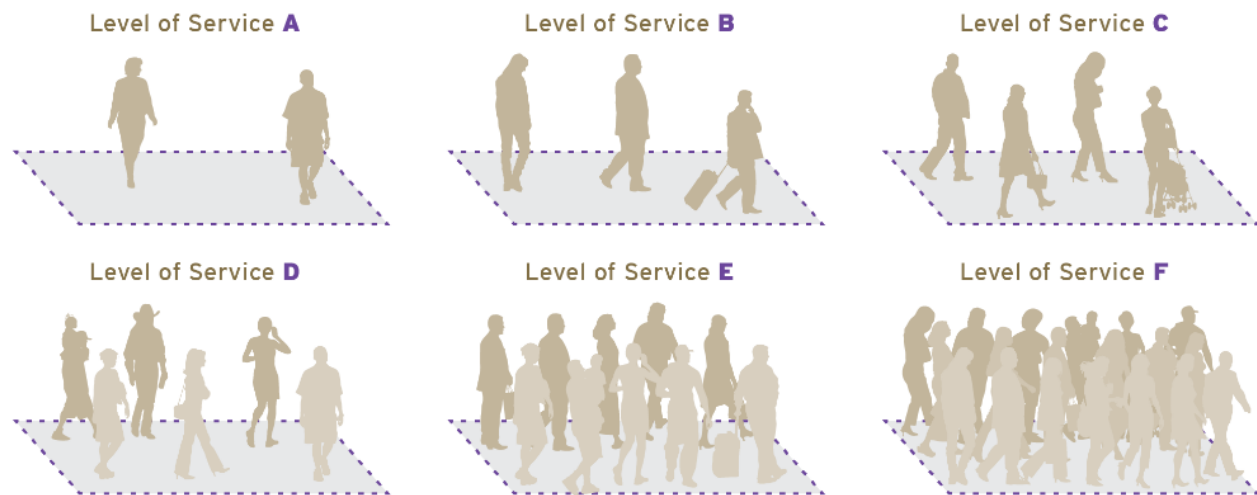


Figure 1-3 — Level of Service Diagram<sup>30</sup>

### Platform Deficiencies

Last upgraded approximately 30 years ago, the station platforms do not comply with modern design standards, including MassDOT's current standard island platform requirements. The station's platforms are exposed to the elements, forcing riders to walk through rain, snow, and extreme temperatures to reach their trains. Existing platform lengths do not meet the MBTA's and Amtrak's future berthing desires of 850 feet and 1,050 feet, respectively, to accommodate longer trainsets needed to meet future demand. For the most part, the existing platforms have adequate area to provide a LOS D with an occupant load of only one MBTA commuter rail bi-level coach trainset of eight cars, but the service declines sharply when concurrent train arrivals occur on the same platform. Additionally, upgrades are required to stay current with Americans with Disabilities Act (ADA) and life safety regulations, including emergency egress considerations.

### Ability to Accommodate Increased Ridership

The existing headhouse includes the Main Hall that provides access to rapid transit, bus, commuter rail, and intercity passengers daily. The existing passenger waiting area and circulation zone constitutes a net area of approximately 15,000 square feet and is inadequately sized and configured to accommodate the current daily demand. This often results in an unacceptable passenger LOS E/F (minimum 5 square feet/person) that occurs for short periods during peak boarding and alighting. The projected service increase for Amtrak and commuter rail will add 35,000 combined boardings and alightings per day to the already congested station.<sup>31</sup> South Station serves various transportation modes, but the wayfinding program directing passengers to transfers between modes is unclear and confusing. The station needs to have an improved wayfinding and signage program directing passengers between all modes, but in particular the connection

<sup>30</sup> Information referenced from *Pedestrian Planning and Design*, Dr. John Fruin, 1971.

<sup>31</sup> Massachusetts Department of Transportation. *South Station Expansion Project, Draft Environmental Impact Report*, Appendix 9 (Part 3), *Ridership Forecasting Technical Report*, October 2014. All results rounded to nearest 100, except for commuter rail results, which are rounded to the nearest 1,000.

between the bus and train terminals needs to be clarified and illuminated. In addition, the passenger amenities available at the station will need to be improved to accommodate the anticipated growth.

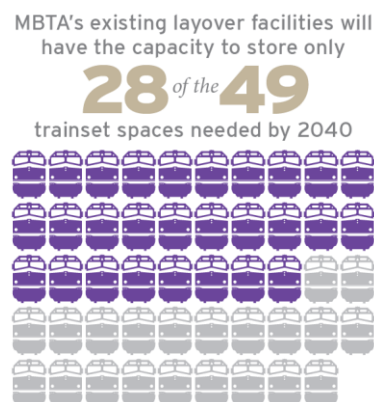
To remedy the existing public space deficit and to accommodate the future increase in service, additional platform, public circulation, and waiting area space in close proximity to the platforms is required to achieve the MBTA’s desired pedestrian LOS. Passenger support facilities are needed to update South Station to a first-class rail transportation hub comparable to a modern airport, enabling large numbers of people to travel with a level of comfort that is expected in a modern city and an improved wayfinding and signage program throughout the station will ease congestion and improve passenger experience. The ability of South Station to meet passenger needs and comfort expectations associated with a modern intermodal and multimodal transportation center is an important strategy to ensuring that rail travel along the NEC remains a viable and attractive transportation choice, responsive to the economic and transportation needs of the region.

### 1.4.3. Insufficient Layover Space

A goal of the SSX project is to meet current and future MBTA commuter rail layover capacity to support projected service increase. The MBTA’s current south side vehicle layover facilities are insufficient; neither the capacity nor the location of vehicle layover facilities meets existing and proposed layover facility program needs and railroad operational requirements. Figure 1-4 shows the location of the existing layover facilities and Figure 1-5 shows SSX project locations, including potential future layover expansion areas.

#### Total Layover Facility Deficit

Current MBTA service levels require midday layover space for 28 trainsets (locomotives and coaches), but space exists for only 22 trainsets. This shortfall in six layover spaces forces the MBTA to store non-revenue trains at the station platforms while waiting for available slots at existing south side layover facilities. Use of the South Station platform tracks for train layovers is inefficient and increases congestion at the terminal and creates operational conflicts, especially during morning and evening peak periods. Platform space that should be used to provide mobility for passengers is instead used to “park” trains with nowhere else to wait for their next trip. This situation is exacerbated in inclement weather; when trains operate behind schedule; when equipment needs to be changed; or when other issues, such as equipment failures or passenger emergencies, occur.



Based on information received from Amtrak in June 2013, the peak layover capacity for Amtrak’s current South Station service is eight trainsets during the daytime and 13 trainsets overnight.<sup>32</sup> All of Amtrak’s existing layover needs (daytime and overnight) are accommodated at Amtrak’s Southampton Street Yard. Amtrak’s Front Yard is not used by Amtrak for layover functions. It is currently used for MBTA layover and Amtrak non-revenue, rail-bound equipment storage, as well as for Amtrak maintenance-of-way material storage needs.

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<sup>32</sup> Personal communication with Amtrak, dated June 14, 2013.

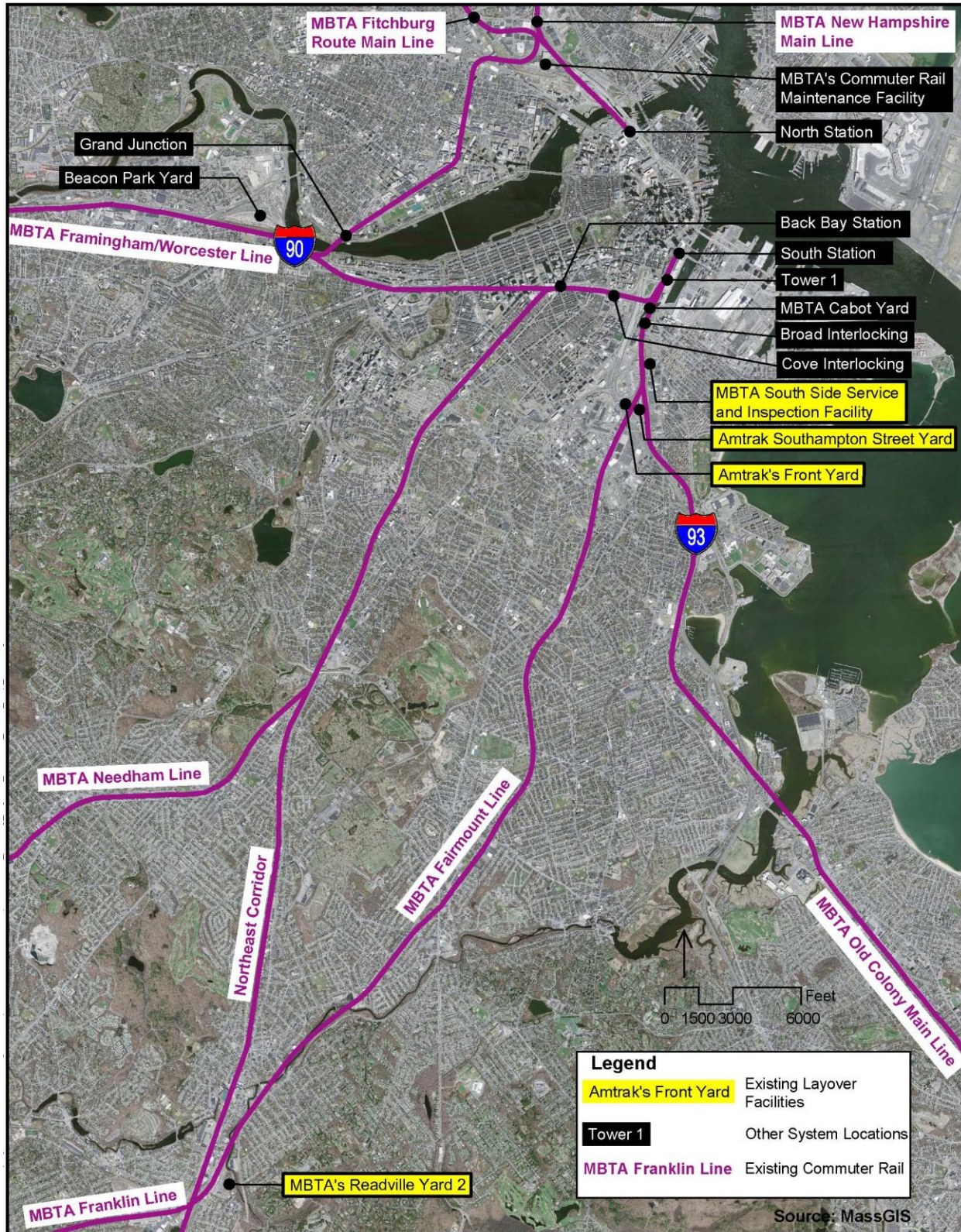


Figure 1-4 — Existing Layover Facilities

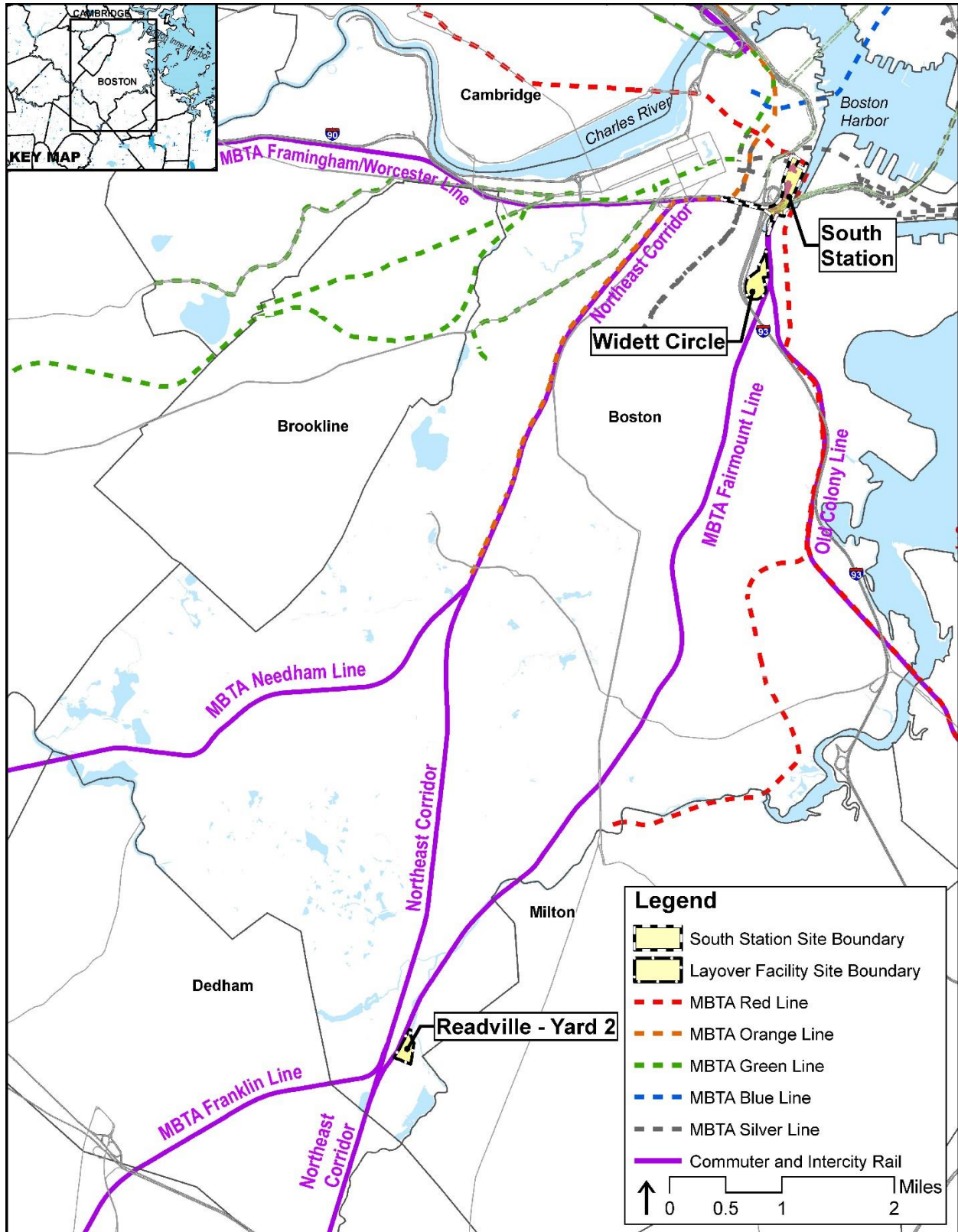


Figure 1-5 — Project Location Map, showing Proposed Layover Facilities and South Station Site Boundary



Based on the MBTA's needs for longer trainsets, increased services and fleet acquisitions,<sup>33</sup> as well as Amtrak's need to expand within its existing facilities, the MBTA projects that by 2040 it will have the capacity to store only 28 of the 49 trainset spaces needed – a shortfall of space for 21 trainsets.<sup>34</sup> Based on guidance provided by FRA and Amtrak in October 2013,<sup>35</sup> in the future Amtrak will require overnight layover for 20 trainsets (eight Acela/High Speed, 11 Regional/New England Regional and one long distance trainset) to operate its service.<sup>36, 37</sup> The location of where future Amtrak layover needs will be met has not been confirmed; however, Amtrak indicates that it does not foresee a need for additional overnight layover capacity beyond the use of current Amtrak-owned facilities in other locations around New England and the Northeast.

Layover space is needed to accommodate future MBTA service increases and fleet expansions. With anticipated increased service demands for both Amtrak and the MBTA into South Station, the lack of sufficient layover capacity for the MBTA will become a major constraint and will substantially limit planned rail service growth in the region. The expansion of South Station, along with additional layover capacity, would improve operating capacity and on-time performance for service into the station.

### Operational Requirements

The location of layover facilities is one of the main factors that determines the required diverging moves within Tower 1 Interlocking and the approach interlockings for both revenue and non-revenue trains moving in and out of South Station. Currently, all layover facilities are located south of South Station, which does not correspond to existing service requirements. Approximately 60% of MBTA revenue trains approach South Station from the western routes, and 40% of trains approach South Station from the southern routes. With the addition of Amtrak revenue trains, the split is approximately 30% on the south and 70% on the west. The location of the layover facilities exclusively south of the terminal creates serious capacity constraints within the terminal area.

Existing non-revenue train movements are dispatched with the same precision as revenue train movements. This is a critical piece of the overall operations of South Station because both revenue and non-revenue trains must pass through Tower 1 Interlocking. Given the constraints of the existing terminal infrastructure, including both the limited number of platforms and the approach interlockings at Tower 1, Cove, and Broad Interlockings, balancing competing revenue and non-revenue movements can impact operational performance on a daily basis. As shown in Figure 1-2 and Figure 1-4, for example, non-revenue yard movements from the lower numbered tracks at the westerly side of the terminal must crossover to the Fairmount Line that provides access to Amtrak's Southampton Street Yard and Readville Yard, the MBTA's primary layover facilities. These crossover moves cut off access to most of the South Station platforms, obstructing operations on the NEC into the terminal. As Amtrak and MBTA commuter train volumes increase, these conflicting movements will increasingly hinder operations within the existing infrastructure. Revenue trains will be competing not only for limited capacity and terminal track space, but also with non-revenue trains moving between the terminal and layover yards.

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<sup>33</sup> Massachusetts Department of Transportation, South Station Expansion Project, *Environmental Notification Form, Appendix C – Layover Facility Alternatives Analysis Report*, March 2013.

<sup>34</sup> This analysis assumed that by 2025, the MBTA would be using a four-track layover yard on an MBTA easement at Beacon Park Yard (BPY) for layover of 12 trainsets. This analysis also assumed reduced capacity by six trainsets at Southampton Street Yard and Front Yard due to proposed expansion of the MBTA's fleet to eight-car trainsets.

<sup>35</sup> Personal communication with FRA and Amtrak dated October 11, 2013.

<sup>36</sup> These figures do not include Amtrak's Next Generation High Speed Rail train layover needs, which will be identified and developed independently from the scope of the SSX project.

<sup>37</sup> Amtrak. *South Station Boston Expansion Project, Projected Intercity Train Movement and Ridership Data to Support the Evaluation of Yard and Training Servicing Needs and Pedestrian Modeling of the Station*, Memorandum to Massachusetts Department of Transportation. Revised, September 26, 2013.

As South Station has two approach routes, increasing the layovers to the west of the terminal, instead of solely to the south, would make railroad operations at South Station more efficient and better able to accommodate future service growth. By creating a situation with such a split layover facility, operations would be improved by keeping trains to one side of the terminal or the other.

## **1.5. Performance Objectives**

To evaluate the SSX project alternatives, MassDOT developed four measurable performance objectives directly related to the SSX project purpose and need. Additionally, MassDOT and FRA evaluated the SSX project alternatives relative to potential environmental impacts.

### **1.5.1. Meet 95% On-time Performance and Minimize Delays**

Consistent with current Amtrak and MBTA service delivery policy goals,<sup>38,39</sup> MassDOT established a goal of 95% OTP for trains arriving at the South Station complex (see Table 1-1 and Table 1-2). It is the intent of this project to provide greater service capacity and reliability to the greatest extent possible with operational improvements.

### **1.5.2. Provide Sufficient Track and Platform Capacity**

By the year 2035, as projected by MassDOT, 554 train movements (arrivals and departures) are anticipated at South Station, consisting of 80 weekday Amtrak revenue trips, 315 weekday MBTA commuter rail revenue trips, and 159 Amtrak and MBTA non-revenue trips. Simulation tests showed that 20 station tracks would be sufficient to accommodate Amtrak's and the MBTA's future service plans, taking into account the geographic constraints of the Tower 1 Interlocking.<sup>40</sup> Therefore, proposed capacity improvements include the construction of seven new tracks and four new platforms to provide a total of 20 tracks and 11 platforms. In addition, several existing tracks and platforms would be lengthened and/or widened, as required. Tower 1 and Broad Interlockings would also be reconfigured to meet requirements.

MassDOT established platform capacity standards to accommodate Amtrak's future berthing requirement of 1,050 feet and the MBTA's future berthing requirement of 850 feet. The existing platforms are approximately 18 feet wide and meet current ADA and National Fire Protection Association (NFPA) 130 standards and the new platforms would be 26 feet wide and exceed those standards.

### **1.5.3. Accommodate Passenger Service Needs**

The project would improve South Station facilities by expanding capacity, providing a more comfortable passenger environment, and providing better connections to surrounding neighborhoods. The new expanded station would provide both a physical and visual link between South Station and the waterfront via the new entrances along a reopened Dorchester Avenue and an extension of the Harborwalk. The additional public access on Dorchester Avenue is critical to accommodating the anticipated increase in ridership at the proposed platforms. The station design would provide adequate space and appropriate facilities to safely and conveniently manage the projected peak-hour pedestrian demand while also providing new passenger amenities, passenger services, station retail, and food and beverage concessions.

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<sup>38</sup> Amtrak. *Intercity Passenger Rail On-Time Performance: Twentieth Quarterly Report to Congress*. February 2013. Viewed June 12, 2013 at [www.fra.dot.gov](http://www.fra.dot.gov).

<sup>39</sup> According to the June 2, 2010 MBTA *Service Delivery Policy*, a train is considered 100% on time if it is arriving or departing at a terminal station within 5 minutes of scheduled arrival and departure times. The MBTA Commuter Rail Schedule Adherence Standard for OTP is 95%. The MBTA is currently updating their Service Delivery Policy, but do not have an anticipated release date at the time of publication.

<sup>40</sup> Massachusetts Department of Transportation, *Massachusetts Department of Transportation Boston South Station HSIPR Expansion Project, Technical Memorandum: Network Simulation Analysis of Proposed 2030 MBTA/Amtrak Operations at South Station. Final Report*. August 1, 2010. [http://www.massdot.state.ma.us/Portals/25/Docs/FRA\\_HSIPR/Appendix\\_A1.pdf](http://www.massdot.state.ma.us/Portals/25/Docs/FRA_HSIPR/Appendix_A1.pdf).

To create a comfortable and contemporary transportation facility, MassDOT established an overall goal of LOS C to accommodate passengers of the South Station public circulation and waiting areas. These goals are typically established for a facility of this type as they safely and conveniently accommodate passengers during peak times, while not being oversized for the non-peak times.

#### **1.5.4. Provide Adequate Vehicle Layover Capacity**

MassDOT has determined the amount and location of preferred vehicle layover capacity according to the MBTA's layover facility program needs and railroad operational requirements. Based on ongoing conversations with Amtrak, Amtrak's current and future layover needs are accommodated within its existing facilities. The MBTA requires immediate midday layover space for six additional trainsets and, by 2035, midday layover space for 21 additional trainsets.<sup>41</sup>

### **1.6. Other Transportation-related Goals**

While the purpose of the SSX project is to expand South Station Rail Terminal and related layover capacity, the project also supports other broad-based transportation, community, and economic development goals of the NEC, the Boston metropolitan region, and the City of Boston.

#### **1.6.1. Support Regional and Local Economic Development**

The NEC's population, 51 million people,<sup>42</sup> represents approximately one in every seven Americans; jobs in the NEC region account for approximately one out of every five jobs in the United States.<sup>43</sup> The NEC region is forecast to grow substantially, from approximately 51 million residents in 2010 to 58 million residents in 2040, representing a 14% growth over 30 years. Currently, the NEC region generates approximately \$1 in every \$5 of gross domestic product (GDP). By 2040, the region's GDP is expected to more than double to over \$7 trillion.<sup>44</sup>

At a regional level, the SSX project would meet a critical infrastructure need of the NEC and a regional goal of building capacity for growth in passenger railroad infrastructure. Travel demand in the NEC region is expected to grow faster than the 14% population growth rate. Ridership on Amtrak's NEC services is projected to increase from 13 million in 2010 to 23 million in 2030.<sup>45</sup> With capacity nearly or fully consumed, however, the rail system's ability to absorb future demand is limited. By expanding capacity at South Station, the SSX project would address a long-standing, previously identified chokepoint on the NEC.

At a local level, South Station is viewed as a key gateway linking Downtown Boston and the emerging South Boston Waterfront/ Innovation District. The South Boston Waterfront/Innovation District is one of the fastest growing neighborhoods in the City of Boston, and in 2010, the City re-branded the area as the Innovation District to attract research-based, innovative companies, and mixed-use residential and commercial development. According to the *Fort Point District 100 Acres Master Plan*, an expanded South Station is an essential component of the continued growth and expansion of the District. Without the

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<sup>41</sup> This analysis assumed that by 2025, the MBTA would be using a four-track layover yard on an MBTA easement at Beacon Park Yard for layover of 12 trainsets. This analysis also assumed reduced capacity by six trainsets at Southampton Street Yard and Front Yard due to proposed expansion of the MBTA's fleet to eight-car trainsets.

<sup>42</sup> Northeast Corridor Infrastructure and Advisory Commission. *The Northeast Corridor and the American Economy*. April 2014. [http://www.nec-commission.com/wp-content/uploads/2014/02/NEC\\_american\\_economy\\_report.pdf](http://www.nec-commission.com/wp-content/uploads/2014/02/NEC_american_economy_report.pdf).

<sup>43</sup> Northeast Corridor Infrastructure and Operations Advisory Commission. *State of the Northeast Corridor Region Transportation System*. February 2014.

<sup>44</sup> Federal Railroad Administration. *NEC Future, NEC Facts and Figures*. Accessed August 22, 2013. [http://www.necfuture.com/facts\\_figures/](http://www.necfuture.com/facts_figures/).

<sup>45</sup> Northeast Corridor Commission. *The Northeast Corridor and the American Economy*. Accessed April 2014. [http://www.nec-commission.com/wp-content/uploads/2014/02/NEC\\_american\\_economy\\_report.pdf](http://www.nec-commission.com/wp-content/uploads/2014/02/NEC_american_economy_report.pdf).

addition of tracks at South Station, the *Fort Point District 100 Acres Master Plan* does not recommend a full “build-out” of the South Boston Waterfront/Innovation District area.<sup>46</sup>

### **1.6.2. Potential for Joint Development**

The expansion of South Station requires the acquisition of the adjacent USPS parcel that includes a portion of Dorchester Avenue which is limited to USPS use only. The station expansion is not anticipated to require all of the USPS property and MassDOT intends to return the included portion of Dorchester Avenue to a public right-of-way. The expectation is that there will be undeveloped land fronting Dorchester Avenue remaining after completion of the transportation elements of the SSX project that could have potential to accommodate future transit oriented development. MassDOT is coordinating with the City of Boston to develop a plan that will direct any potential future joint development in a manner that is complementary to the existing and future neighborhood plans. MassDOT and FRA also examined opportunities to incorporate joint development as part of the project (see Chapter 2).

### **1.6.3. Improve and Expand Boston’s Intermodal and Multimodal Transportation Network**

South Station is a critical piece of transportation infrastructure for the City of Boston and the Boston metropolitan area, and is Boston’s busiest intermodal and multimodal transportation hub. In addition to providing Amtrak and MBTA commuter rail service, and MBTA rapid transit and fixed-route bus service, South Station is a portal for private carrier bus service. South Station currently handles approximately 128,000 daily combined Amtrak, MBTA, and intercity bus boardings and alightings.<sup>47</sup> The South Station Bus Terminal, located adjacent to the Rail Terminal, is a hub for intercity, regional, and local bus service in eastern Massachusetts. There are 10 MBTA bus routes that stop in the vicinity of South Station. Eleven private bus companies operate out of the terminal; of these bus companies, five companies provide commuter service between South Station and the Greater Boston metropolitan area, and six companies provide regional service to New England and points beyond. On an average weekday, there are approximately 590 combined bus departures and arrivals at the terminal, serving approximately 12,200 daily Bus Terminal passengers.<sup>48</sup> South Station also has facilities to accommodate bicyclists, pedestrians, and taxi cab patrons. Hubway’s South Station location has experienced a notable increase in use, increasing from approximately 4,000 trips in August 2011 to approximately 8,200 trips in August 2013, an increase of over 100%. Additionally, there are approximately 950 taxicab pickups/drop offs on Atlantic Avenue at South Station each weekday.

The SSX project would enhance and expand the existing intermodal and multimodal transportation network. By increasing the rail capacity of South Station, the SSX project would directly support increased transit use for local and intercity travel. Currently, there is a limited connection between the existing South Station headhouse and the South Station Bus Terminal. With a proposed expanded Rail Terminal and passenger concourse area, opportunities exist with both the SSX project and the SSAR project to improve the interconnections between the two terminals, as well as with the MBTA Red and Silver Lines.

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<sup>46</sup> Boston Redevelopment Authority with Fort Point Channel Working Group. *The Fort Point District 100 Acres Master Plan*. September 2006. <http://www.bostonredevelopmentauthority.org/getattachment/0a9d9d1c-9906-4a26-b94e-35762ad08c07>.

<sup>47</sup> Existing year combined South Station boardings and alightings, 2012; See Massachusetts Department of Transportation. *South Station Expansion Project, Draft Environmental Impact Report*, Appendix 9 (Part 3), *Ridership Forecasting Technical Report*, October 2014. All results rounded to nearest 100, except for Commuter Rail results, which are rounded to the nearest 1,000.

<sup>48</sup> Central Transportation Planning Staff. *Massachusetts Regional Bus Study*, June 2013.

### 1.6.4. Restoration of Dorchester Avenue

Currently, access along the majority of Dorchester Avenue in the immediate vicinity of South Station is restricted for use by the USPS in support of its operations, with very limited public access allowed for USPS customers and MBTA commuters. The project would restore approximately 0.5 miles of Dorchester Avenue for public use and provide for multiple access points into the expanded station from Dorchester Avenue. These access points would allow passengers multiple station arrival and departure options and would provide connectivity through the station between Atlantic Avenue and Dorchester Avenue. Restoration of Dorchester Avenue would include enhanced pedestrian and bicycle connections and facilities, including sidewalks, crosswalks, and bicycle lanes; and expanded bicycle access through and around South Station and its adjacent neighborhoods. Reopening Dorchester Avenue would provide the MBTA with an opportunity to reroute buses to provide more direct connections to downtown, and would provide relief for the current congestion along Atlantic Avenue.

### 1.6.5. Extend the Harborwalk and Reactivate the Fort Point Channel Area

Restoration of Dorchester Avenue would also include construction of a long-awaited 0.5-mile section of the Harborwalk network. Not only would the SSX project add approximately 2,500 linear feet to the Harborwalk and complete the last remaining gap in a continuous waterfront walkway in this part of Downtown Boston, it also would provide linkages to the waterfront from neighborhoods around South Station, including Chinatown and the Leather District. By providing South Station users as well as the general public with direct access to Fort Point Channel via an extended Harborwalk, the SSX project would advance an objective of the *Fort Point Channel Watersheet Activation Plan* to enhance “the civic role” of Fort Point Channel.<sup>49</sup> Further, direct access to the Fort Point Channel waterfront would present opportunities to expand the multimodal network in the South Station area to include water travel.

## 1.7. Permits and Approvals

Table 1-5 lists federal, state, and local agency permits and approvals that are anticipated for the project.

**Table 1-5 — Anticipated Permits, Approvals, and Notifications**

Agency	Permit, Approval, or Notification	South Station	Layover Facilities
<b>Federal</b>			
Federal Railroad Administration (FRA)	<ul style="list-style-type: none"> <li>Finding of No Significant Impact</li> <li>Section 4(f) Determination</li> <li>Section 106 Finding</li> <li>Federal Funding Approval</li> </ul>	yes	yes
Federal Aviation Administration (FAA)	<ul style="list-style-type: none"> <li>Notice of Proposed Construction or Alteration</li> </ul>	yes	no
Massachusetts Historical Commission (MHC)	<ul style="list-style-type: none"> <li>State Register Review</li> <li>Section 106 Review</li> </ul>	yes	yes
Massachusetts Office of Coastal Zone Management (CZM)	<ul style="list-style-type: none"> <li>Federal Consistency Certification</li> </ul>	yes	Widett Circle only
U.S. Army Corps of Engineers (USACE)	<ul style="list-style-type: none"> <li>Section 404 Clean Water Act Permit</li> </ul>	no	if required
U.S. Environmental Protection Agency (U.S. EPA)	<ul style="list-style-type: none"> <li>National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Construction Sites</li> </ul>	yes	yes

<sup>49</sup> Boston Redevelopment Authority. *Fort Point Channel Watersheet Activation Plan*. May 2002.

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Agency	Permit, Approval, or Notification	South Station	Layover Facilities
U.S. Environmental Protection Agency (U.S. EPA) <i>(Cont'd)</i>	• NPDES Industrial Stormwater Permit for Stormwater Discharges	no	if required
	• Notification of Building Demolition	yes	yes
U.S. Postal Service (USPS)	• Approval of the sale of its property on Dorchester Avenue	yes	no
<b>State</b>			
Massachusetts Department of Environmental Protection (MassDEP)	• Chapter 91 Waterways License	yes	no
	• Stormwater Management Standards Compliance Review	yes	yes
	• Sewer Extension/Connection Compliance Certification	yes	yes
	• Massachusetts Contingency Plan Review/Preliminary Determination	yes	yes
	• Notification Prior to Construction or Demolition	yes	yes
	• Asbestos Notification/Mass Department of Labor and Workforce Development, Division of Occupational Safety	yes	yes
	• Section 401 Water Quality Certificate	no	if required
Massachusetts Department of Public Safety	• Building Permit	yes	yes
Massachusetts Executive Office of Energy and Environmental Affairs (EEA)	• Massachusetts Environmental Policy Act Review <i>(Completed Summer 2016)</i>	yes	yes
	• Public Benefit Determination <i>(Completed Summer 2016)</i>	yes	Widett Circle only
Massachusetts Water Resources Authority (MWRA)	• Temporary Construction Site Dewatering Discharge Permit	if required	if required
	• 8(m) Permit	if required	if required
<b>Local</b>			
Boston Conservation Commission	• Order of Conditions (Massachusetts Wetlands Protection Act)	yes	Readville – Yard 2 only
Boston Department of Parks and Recreation	• Review of construction within 100 feet of a park	yes	no
Boston Fire Department	• Demolition and construction-related permits	yes	Widett Circle only
Boston Public Improvement Commission (PIC)	• Approvals	yes	yes
Boston Transportation Department (BTD)	• Signal Change Approval	yes	yes
	• Construction Management Plan	yes	yes
Boston Water and Sewer Commission (BWSC)	• Demolition Termination Verification Approval	yes	yes
	• Building Site Plan Review and Approval	yes	yes
	• Drainage Discharge Permit	yes	yes