

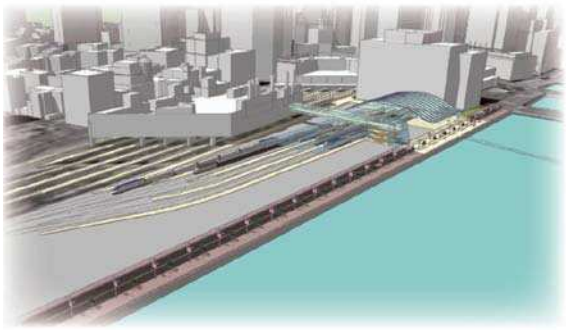
August 6, 2010

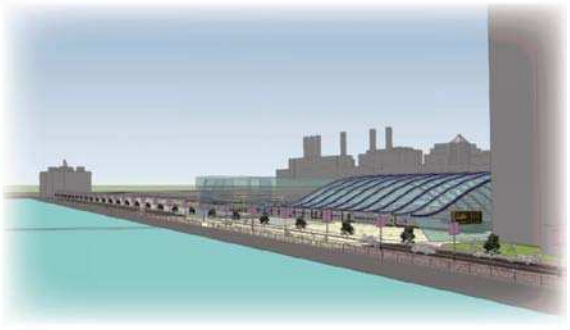
Boston South Station High Speed Intercity Passenger Rail Expansion Project

Boston, Massachusetts

Submitted by:

Moving Massachusetts Forward. massDOT





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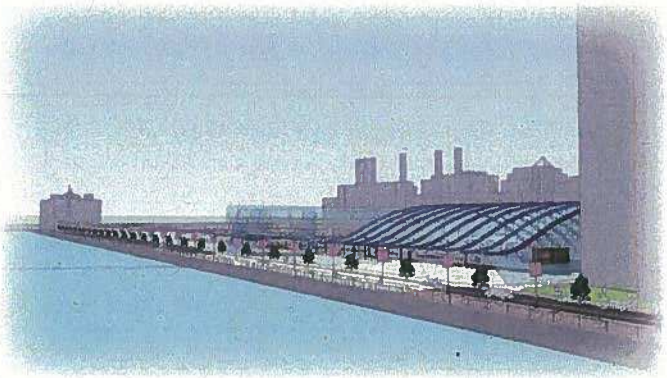


August 5, 2010

Joseph C. Szabo, Administrator
Federal Railroad Administration
United States Department of Transportation
MS-20, 1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Administrator Szabo:

On behalf of Governor Patrick and the Massachusetts Department of Transportation, I am pleased to submit this application for $32,500,000 for the Preliminary Engineering /National Environmental Policy Act phase of the Boston South Station High Speed Intercity Passenger Rail (HSIPR) Expansion Project.

South Station, the northern terminus of the Northeast Corridor (NEC), is New England's most significant transportation asset. Its expansion presents a unique 100-year opportunity to implement a project of national significance that will ensure sufficient capacity for NEC operations for generations to come. The project will advance design and complete environmental permitting to expand South Station from thirteen existing terminal platform tracks to twenty total platform tracks. The Commonwealth of Massachusetts proposes as a match a parallel effort to advance through the Preliminary Engineering /National Environmental Policy Act of a layover facility solution for trainsets using the station. Together with track junction, rail system, and passenger terminal improvements, the station terminal expansion would enhance the NEC by improving HSIPR service delivery and making HSIPR growth in and out of Boston possible.

As conceived, the Boston South Station HSIPR Expansion Project will make the transportation, economic, community, and environmental benefits identified in the newly-released *Northeast Corridor Infrastructure Master Plan (NEC Master Plan)* possible. Capacity enhancements at the station and surrounding terminal are essential for faster, more reliable, efficient and attractive Amtrak service and are required for the NEC Master Plan to be

implemented. Awarding grant funds for environmental permitting and preliminary design is the first step towards achieving the nationally-significant benefits that the project promises.

As you know, the NEC Master Plan lays the framework for a 50% increase in Amtrak Acela Express high-speed passenger service to Boston and other Corridor cities north of New York. It also proposes an alternate intercity passenger rail connection between Boston, New York, and Washington, DC: the Inland Route. Designated by the Federal Railroad Administration (FRA) as a high-speed rail corridor, this route would link Boston with New Haven, CT and add interstate service at existing Massachusetts stations, including Springfield, Worcester, and Framingham.

The project also helps make increased Massachusetts Bay Transportation Authority (MBTA) commuter rail service possible. The MBTA operates the nation's fifth largest commuter rail network, with over two-thirds of its service connecting to South Station. Because it currently operates at its design capacity, South Station limits growth for the MBTA in Boston, just as it does for Amtrak intercity Service.

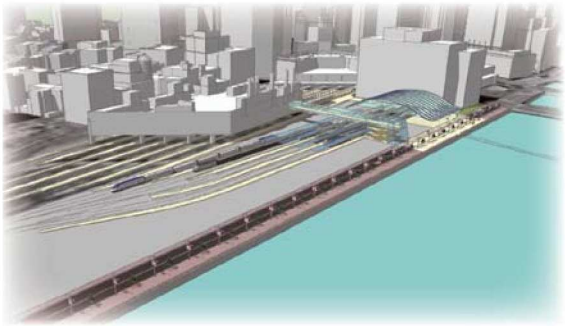
Lastly, to secure the site for the expansion of South Station, we envision the acquisition and relocation of the United States Postal Service's (USPS) adjacent general mail facility, and we are working cooperatively with the USPS. The project would begin design and deliver environmental permits for a new USPS facility. This efficient and LEED-certified facility will replace one of the oldest general mail facilities in the country providing a benefit to this federal organization

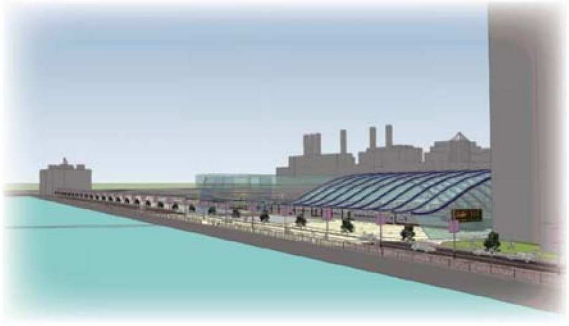
I am pleased to submit this proposal and look forward to building on the success of the projects made possible by the ARRA Grant Program. In addition to the Application Form, I invite you to review the attached Executive Summary. It contains a complete overview of the Project and an introduction to technical analyses supporting the application.

Sincerely,

Massachusetts Department of Transportation

Jeffrey B. Mullan
Secretary and Chief Executive Officer



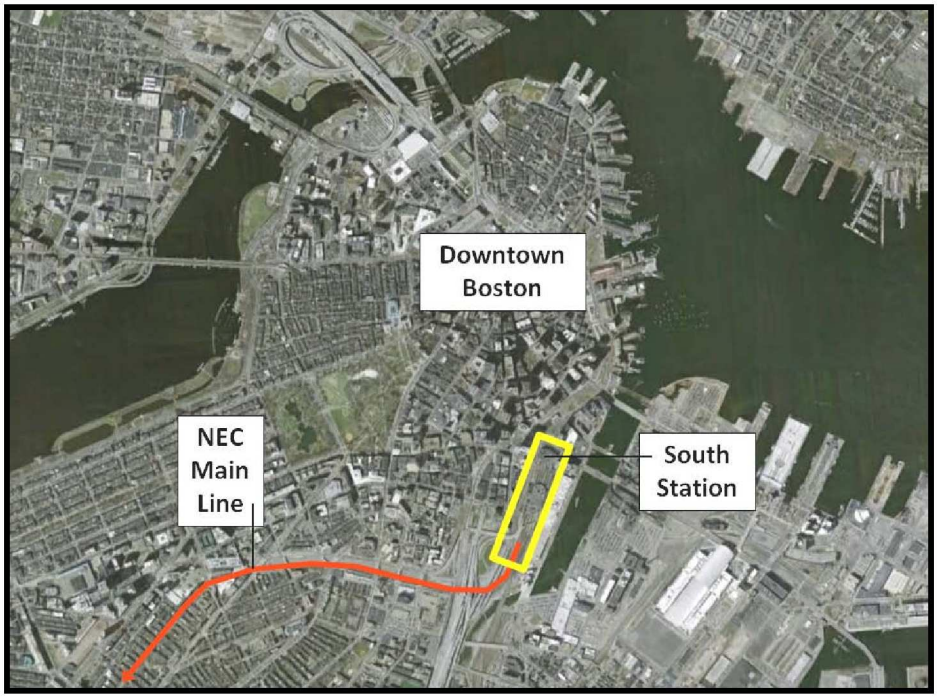


Executive Summary

INTRODUCTION

The Massachusetts Department of Transportation (MassDOT) is requesting federal funding for environmental clearance and preliminary design for an expansion of Boston's South Station, one of three major high speed rail terminals on Amtrak's Northeast Corridor (NEC). This project affords Massachusetts and the entire Northeast corridor a once in a generation opportunity to expand one of the most critical pieces of rail infrastructure on the East Coast. The importance of this station is clearly established in the newly-released Northeast Corridor Infrastructure Master Plan ("NEC Master Plan") by Amtrak. Strong local and regional support for this expansion, coupled with the strong support for rail by both the Obama and Patrick-Murray Administrations, has created the ideal moment to expand South Station.

The Boston South Station High Speed Intercity Passenger Rail (HSIPR) Expansion Project (the "Project") would enable faster and more efficient operations, as well as planned



Downtown Boston and South Station

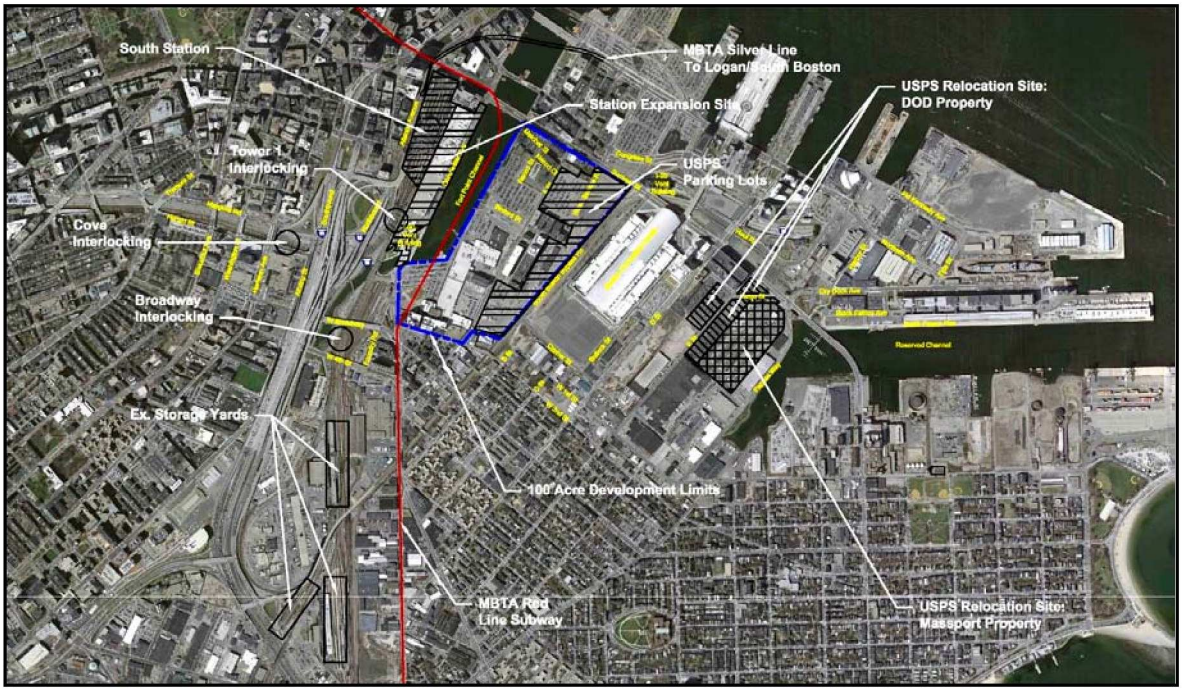
Historic South Station Terminal

Acela at South Station, existing USPS South Annex structure to left

increases in both Amtrak and Massachusetts Bay Transportation Authority (MBTA) Commuter Rail services. This Project enjoys the strong support of and partnership with Amtrak. This application seeks funding under the Fiscal Year 2010 Individual Project solicitation for Preliminary Engineering and National Environmental Policy Act compliance (PE/NEPA) activities.

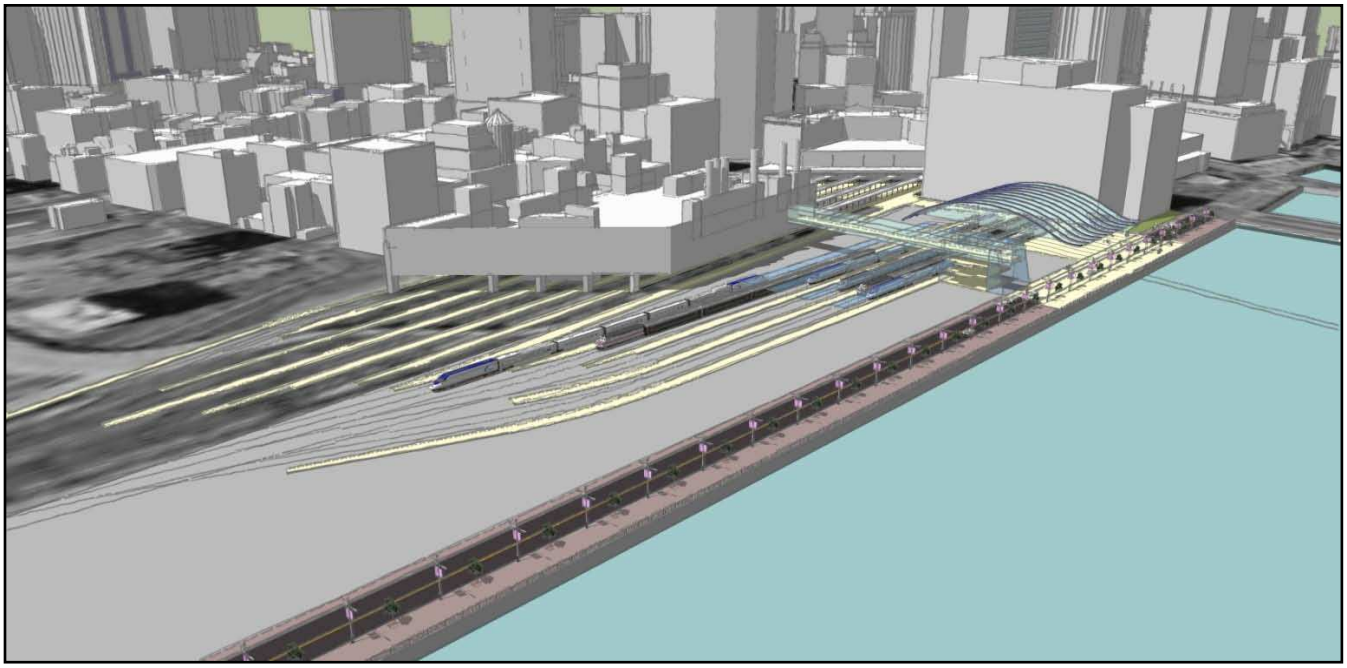
South Station currently hosts high speed intercity passenger rail (HSIPR), including Amtrak *Acela Express* and *Northeast Regional* services. It is also the terminus for Amtrak's *Lake Shore Limited* service between Boston and Chicago. The MBTA operates commuter rail, subway, and guideway bus services at the station. The station's Bus Terminal is the hub for private intercity and regional motor coach carriers in eastern Massachusetts. South Station is situated in downtown Boston, at the convergence of the Financial District, Chinatown, Fort Point Channel and the Rose F. Kennedy Greenway. It is the most heavily used and widely known passenger rail facility in New England.

The importance of rail along Northeast Corridor cannot be better emphasized than by comments made by JetBlue Chief Operating Officer Robert Maruster in a June 2010 conference. Mr. Maruster said of his company's five daily flights between Boston and New York, "it just may not make that much sense for an airplane on a 150-mile route to fly over 300 air miles to get there. Maybe there's a different mode of transportation that may be better to carry those customers from point A to point B." He went on to tout the potential for high speed rail in the corridor.[1] A more credible expression of the need for South Station expansion is hard to find.



South Station Terminal Expansion overview

[1] Comment made at "Airports: 21st Century Makeovers for the New York Metro Region," June 2010. Http://consumerist.com/2010/06/jet-blue-flying-from-nyc-to-boston-is-stupid.html



Overview of South Station Expansion elements at the Terminal

The enclosed HSIPR Application Form provides further detail on both the ultimate Project and the PE/NEPA activities the awarded grant funds would provide.

THE CASE FOR THE BOSTON SOUTH STATION HSIPR EXPANSION PROJECT

Purpose

The Purpose of the South Station HSIPR Expansion Project is to improve Northeast Corridor service delivery in Boston and enable growth in high speed and other intercity passenger rail service throughout the Northeast. The Project also allows more attractive and increased MBTA Commuter Rail service. The MassDOT and our stakeholders including Amtrak intend to leverage transportation investments to generate economic development and maximize livability and sustainability benefits in Boston and Northeast Corridor metropolitan areas. The overarching Project purpose is to facilitate a more efficient and attractive passenger rail network for the northeastern United States.

Benefits of an Expanded South Station

The expansion of South Station would eliminate operating capacity constraints—at the terminal, approach interlockings, in traction power and other systems—that currently impact on-time performance for services into the station. Boston's South Station currently operates near or above its realistic design capacity for efficient train operations. In the first half of 2010, Amtrak reported eights delays of at least one-half hour, attributed at least in part to terminal congestion. In the same timeframe, MBTA

Commuter Rail reported 467 minutes of delay associated with South Station congestion. Over 20 of these incidents caused delays of about 10 minutes or more.

The South Station HSIPR Expansion Project supports Amtrak's efforts to meet its on-time performance goals. Today's Northeast Corridor on time performance is approximately 85% for *Acela Express* and 75% for *Northeast Regional* trains. The 2030 target on-time performance is 95% for *Acela Express* and 90% for *Northeast Regional*. Without expanding South Station, not only would these targets be missed, but on time performance would deteriorate even further from today's existing percentages.

Amtrak's NEC Master Plan proposes a robust 50% increase in both high speed express service and cumulative intercity passenger rail service to Boston. These service increases are not possible without additional operational capacity at South Station. Different state and local transportation plans highlight South Station's current limitations on existing Northeast Corridor and MBTA operations and growth potential.

Expansion also makes possible a new service along an alternate Boston to New York corridor, the proposed *Inland Route*. The Inland Route is a Federal Railroad Administration (FRA) designated HSIPR corridor. MassDOT is working with Amtrak and the State of Connecticut on a long-term plan to upgrade the Inland Route corridor. In addition to serving new markets, this corridor is expected to relieve capacity constraints on the NEC Main Line between New Haven, Providence, and Boston. The 60-mile segment between New Haven and Springfield is the subject of a HSIPR application by the Connecticut Department of Transportation (ConnDOT). Nearly identical in length to the NEC Main Line between Boston and New Haven, CT, the *Inland Route* would serve the metropolitan areas of Worcester, MA, Springfield, MA, and Hartford, CT. Both the NEC Main Line and the *Inland Route* can support frequent intercity passenger rail service and both depend on expanded capacity at South Station for these services.

Increased Northeast Corridor HSIPR service can reasonably be expected to reduce both highway traffic congestion and short-haul flights. Amtrak data indicates that the train and air travel market share for HSIPR is strong between the end cities (Boston, Washington) and the midpoint (New York). Amtrak reports that its share of the market grew significantly since the introduction of *Acela Express* and electrified *Regional* service in 2000. Along the New York to Boston corridor, the rail market share grew from 20% to 41% by 2002, and to 49% by 2008.[2] Additional and more-reliable HSIPR service would logically shift even more trips to rail.

Locally, South Station's expansion would enable a planned expansion of MBTA Commuter Rail service, including growth on most lines connecting to South Station. These lines currently represent about 67% of MBTA commuter rail service to Boston. The expansion would also improve safety and convenience for all train services at South Station.

[2] Amtrak (2009). Presentation by Thomas C. Carper, Chairman, Board of Directors, Amtrak, before the Subcommittee on Railroads, Pipelines, and Hazardous Materials of the House Committee on Transportation and Infrastructure. October 14, 2009.

Travelers switching from highways to rail will mean fewer users on the roadways, resulting in a reduction in emissions, congestion, and other costs to society.

The Boston South Station HSIPR Expansion Project is also an investment in the New England and Northeastern States economies. Project-attributed jobs were calculated using the methodology and assumptions described in the Executive Office of the President, Council of Economic Advisers, May 2009 memorandum regarding jobs estimates associated with federal infrastructure investments. It is estimated that 466 jobs will be generated as a result of the PE/NEPA spending alone. Of this, nearly 300 are expected to be direct or indirect jobs. The constructed Project is expected to generate nearly 8,000 jobs, over 5,000 of which would be directly or indirectly generated. The Project would help invigorate economic recovery in New England.

Project Description

The South Station HSIPR Expansion Project will advance design and complete state and federal environmental permitting to expand South Station from the 13 current terminal platform tracks to 20 total platform tracks. The Project would accomplish this expansion by extending South Station onto the current United State Postal Service (USPS) South Annex site, an 8-acre parcel that was historically part of South Station. USPS previously agreed to relocate from the site to support rail terminal expansion and site redevelopment. Due to the economic downturn, that redevelopment plan is no longer being pursued. MassDOT is now pursuing a new relocation agreement with USPS to create the space required for station expansion. A relocation site, owned by the Port Authority of Massachusetts (MassPort), has been identified in South Boston. A relocation agreement between MassPort and MassDOT is included with this application.

The Project also includes improvements at track junctions, to rail systems, and at the passenger terminal. Existing station platforms have a single access and egress point: the rail heads. The Project would design a new, elevated passenger concourse spanning all station platforms at their midpoint. This concourse would provide an alternate route to and from train cars, particularly those at the far end of platforms relative to the headhouses. The concourse would also speed emergency egress from the center and southern end of the platforms. The Project also includes a train layover solution, to be located near South Station for efficiency. Together, these improvements would improve HSIPR service delivery and enable HSIPR growth in and out of Boston. This station expansion is the only practical solution for more reliable operations and future service growth. Project elements include:

- Relocating the USPS facility to South Boston;
- Demolishing the existing USPS South Annex;
- Adding seven (7) tracks and four (4) canopied platforms at the terminal, while lengthening several of the existing platforms;
- Expanding the passenger terminal, including a secondary headhouse for the new tracks and two new concourses;

- Reconfiguring track interlockings and improving signals, traction power, and communication systems;
- Restoring Dorchester Avenue, a historic South Boston connection along the Station's harbor edge, for station access, station properties access, and public use; and
- Preparing available Station parcels and air rights for potential private real estate development.

Project Management

MassDOT has broad powers and responsibilities for transportation in the Commonwealth of Massachusetts. Under Massachusetts General Laws Chapter 161 c, it is directed to improve the rail system in the state. MassDOT owns and oversees active railroad corridors and is the umbrella organization for transportation agencies, with significant experience in designing and building rail projects and in administering ARRA funds. The agency's rail office has overseen repair and rehabilitation projects of its stations and on its rail lines for the past 20 years, with the support of consultants and experienced staff at agencies within the transportation secretariat.

A "Project Team" will be formed and will include the combined staffs of MassDOT, MBTA, and a consultant team. The Project Team will also include members of, or be responsible for regular consultation with, other key support and stakeholders such as MassPort, USPS, Amtrak, and the City of Boston. The Team will also include support staff from MassDOT Planning and other state agencies involved in programming federal funds and providing requisite reports to state and federal oversight personnel. The hierarchy of the Project Team is further explained in the attached Project Management Plan (Attachment 3).

The Project Team will work towards the common goal of successfully completing the Project, and complying with the FRA Cooperative Agreement and applicable terms of associated Stakeholder Agreements. The PE/NEPA Consultant will be responsible for moving the design from the conceptual Engineering accomplished to date through completion of the PE/NEPA documents required for final design and construction. The Consultant will also be responsible for completion of any environmental documents, as well as all documents and submittals required as part of the FRA's grant program. The approach for Final Design and Construction will be developed during the PE/NEPA Process.

Conclusion

Expanded capacity at Boston South Station is critical for growth in Northeast Corridor High Speed Intercity Passenger Rail services, particularly those between Boston and New York. A rail network simulation, performed to support this application, demonstrates that existing South Station cannot reliably support projected 2030 Amtrak and MBTA rail operations. The simulation, included as Appendix A1, also demonstrates that the proposed Project improvements would establish an efficient and reliable terminal for the projected 2030 operations.

The Boston South Station HSIPR Project makes possible the transportation, economic, community and environmental benefits identified in the NEC Master Plan. Capacity enhancements at the station are essential for faster, more reliable, efficient and attractive Amtrak service. Realistically, failure to address capacity issues at South Station will hinder long-term connectivity within the Northeast Corridor, and will prevent this critical business corridor from growing. The station expansion also promotes a Smart Growth opportunity for metropolitan Boston and sets an example for other Northeast Corridor regions. Awarding grant funds for environmental permitting and preliminary design is the first step towards achieving the nationally-significant benefits that the Boston South Station HSIPR Expansion Project promises.

PROJECT DEVELOPMENT SUPPORTING DOCUMENTATION

The primary planning document for the South Station Expansion is the *Northeast Corridor Infrastructure Master Plan* (NEC Master Plan, 2010), July 2010 revised version. This and other referenced planning documents are included in Appendix F. The NEC Master Plan makes clear the terminal capacity constraints in Boston and at the other major NEC terminals: New York Penn Station and Washington union Station. The NEC Master Plan proposes a 50% increase in both high speed and total intercity service to Boston. As a necessary result, the Plan includes an expanded South Station terminal and additional layover capacity in its 2030 operating plan. The proposed service increases and resulting benefits are unattainable without the South Station expansion.

The decision to expand terminal track and operating capacity at South Station results not from a formal Alternatives Analysis process, but is an established direction based on commonly understood necessity. The South Station footprint was reduced in the 1970s, when the eastern half of the track area was replaced by the USPS distribution facility and Dorchester Avenue was truncated. Prior to the development of the Northeast Corridor (NEC) high-speed main line and maturity of the MBTA Commuter Rail system, the station's reduced footprint seemed adequate.

The South Station Bus Terminal was built above the terminal tracks in the 1990s. This addition and vertical constraints south of the terminal station eliminated the option of aerial rail track expansion. Aerial expansion would have required preservation of the at-grade platform tracks to increase capacity, further complicating the alternative. Underground rail expansion would have to avoid interference with highway tunnels and building foundations. This would require double decking the track platform area to increase capacity and would be exceedingly expensive even if feasible. The final option is to relocate a single, relocatable user (USPS) occupying the former track footprint. Both the elevated and underground alternatives would be difficult and very expensive, if not impossible. Horizontal expansion emerged as the only feasible and prudent alternative to provide sufficient terminal capacity within a 10-year horizon.

In addition to the NEC Master Plan, various regional planning initiatives have supported this conclusion. Some of these documents are referenced as attachments and appendices to this application. The Metropolitan Boston Regional Transportation Plan (RTP) *Journey to 2030 Amendment* (2009)—specifically identifies the need to expand South Station. The station's expansion and layover facilities for both Amtrak and MBTA are included among unfunded "Illustrative Projects".

The MBTA *Program for Mass Transportation* (2009) identifies South Station as having reached its terminal capacity. It also mentions the anticipated expansion of the terminal onto the USPS property. The document goes on to identify track expansion as the proposed solution to terminal capacity at South Station.

The 2009 *Vision for New England High-Speed and Intercity Rail*, a four-page document on high-speed rail concepts, was prepared by a multi-state coalition. While not specifically mentioning South Station improvements, this document identifies the Inland

Route as a future HSIPR corridor and proposes a structure for HSIPR planning in the corridor. The Vision recommends that NEC coordination and planning be directed through the NEC Master Plan process. It also looks to the NEC Master Plan effort as a model for the Northern New England High Speed Rail Corridor, which includes the Inland Route.

The *NEC Transportation Plan--New York City to Boston* (1994) proposed a NEC Main Line operating plan following electrification of the corridor. This plan assumed that capital improvements would enable 3 hour trips between New York and Boston by 2010 (as opposed to the existing 3.5-hour trip for Acela Express). It also assumed that capacity enhancements would be implemented, including an expanded South Station, to enable the proposed operation. Several of these capacity enhancements have yet to be implemented.

The Project's compatibility with City of Boston planning is evident in three plans: the *Access Boston 2000-2010* municipal Transportation Plan (2003), the *Fort Point Channel Watersheet Activation Plan* (2002) and the *Fort Point District 100 Acres Master Plan* (2006). Access Boston identifies terminal track capacity constraints at South Station, and hints at USPS' willingness to relocate for a track expansion. This plan also identifies opportunities for air rights development above the tracks and a demand for improved pedestrian circulation within and through the station.

The Watersheet Activation Plan identifies the station expansion site as a priority area for water edge public space improvements and redevelopment. It proposes a re-opened Dorchester Avenue, including an extension of the Boston HarborWalk running the length of the station expansion site. The 100 Acres Plan proposes a major planned district, one-third of which is currently occupied by USPS employee parking lots. By relocating USPS to a new facility with structured parking, redevelopment of the 100 Acres parcels is made possible. The plan includes a future pedestrian bridge connection between the district and South Station. The proposed location for this bridge lines-up with both new concourses proposed in the South Station Expansion.

ELIGIBILITY DOCUMENTATION

MassDOT is an eligible recipient for HSIPR funding and is submitting using the guidance in Section 302 of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA). PRIIA authorizes US DOT to make grants to States for "financing the capital costs of facilities, infrastructure, and equipment for high priority rail corridor projects necessary to reduce congestion or facilitate ridership growth in intercity rail passenger transportation…Eligible projects would be those identified by Amtrak to reduce congestion or facilitate ridership growth in heavily traveled rail corridors, those identified by the STB to improve on time performance and reliability, and those designated by US DOT as meeting the purpose of the program and being sufficiently advanced so as to be ready for implementation." (FRA, PRIIA overview, March 10, 2009)

Amtrak, through the NEC Master Plan and a letter of support for the Project (included as Attachment 5) has identified the Project as providing benefits to Amtrak and intercity passenger rail service.

PROJECT DELIVERY SUPPORTING DOCUMENTATION

Project Management Plan Summary

A Project Management Plan (PMP) for the Boston South Station HSIPR Expansion Project is included as Attachment 3. This plan would be revised as the Project enters the PE/NEPA phase. The purpose of the PMP is to assure effective project management and successful project completion, and to ensure that the Project is undertaken in accordance with the requirements of the HSIPR grant programs, including the terms and conditions of the grant award and related statutory and regulatory provisions, as well as the Stakeholder Agreements executed in connection with the Project.

The HSIPR Program notice of funding availability for Individual Projects requires that rail projects funded with HSIPR funds be undertaken in accordance with a written Project Management Plan (PMP). This Plan has been developed in accordance with that requirement and to assure effective project management and successful project completion. The PMP draws heavily from the practices of the Federal Transit Administration's (FTA's) Project Management Oversight Program and incorporates the extensive rail experience of the Massachusetts Bay Transportation Authority. This Plan covers MassDOT's detailed project management strategy to control the project budget, schedule and quality.

PE/NEPA Financial Plan Summary

A Project Financial Plan (Attachment 4) explains that MassDOT requests HSIPR Program funding of $32.5 million for the Project's PE/NEPA activities. The Commonwealth of Massachusetts proposes a match of $10.5 million toward the Project. This match represents the cost of PE/NEPA for the Project's layover solution. Additional layover capacity for both Amtrak and the MBTA is a long-standing need. MassDOT has identified candidate locations and will soon begin an extensive Alternatives Analysis to identify the preferred site. The layover solution will advance on a faster track than the South Station Expansion and will be operational before the station expands.

Summary of Operating Agreement

In the Project Area, Amtrak operates over MBTA track and dispatches all trains by means of a long term operating agreement, known as the "Attleboro Agreement." This existing agreement is included as Attachment 5B. A master operating agreement for both the expanded South Station and layover facilities will be developed during the PE/NEPA phase.

OPTIONAL SUPPORTING DOCUMENTATION: SUMMARY OF TECHNICAL MEMORANDA

This HSIPR application is supported by the following technical memoranda:

Network Simulation Analysis of Proposed 2030 MBTA/Amtrak Operations at South Station

This technical memorandum, included as Appendix A1, describes simulated 2030 Amtrak and MBTA operating plans at an expanded South Station. This analysis models the operation of proposed Project improvements, including 20 station tracks and multiple interlocking improvements: a redesigned Cove Interlocking, a completely reconfigured Tower 1 interlocking, and a new Fort Point Channel Bridge interlocking. The simulation results show two conclusions: 1) that the current station configuration is entirely inadequate to support proposed service increases, and 2) that the configuration provides the necessary capacity to support a very stable operation of projected 2030 train volumes. The analysis concludes that delay caused by remaining train movement conflicts is well within the acceptable range for a terminal of this size.

Operations Analysis Work Program Technical Memorandum

During PE/NEPA, the Station Expansion and Layover Facility engineering tasks will need to be supported with operations analysis. A Technical Memorandum on this work program is included as Appendix A2. Operations analysis support will be needed during all phases of the Project, and specifically:

- At the beginning of the project to confirm the basic operating requirements of the new designs and define the Full-Build operating plan;
- During design, to test possible configurations against the operating plan;
- After the final design, to confirm the feasibility of the final configuration; and
- During construction phasing, to confirm that existing service can be provided during each phase or to confirm that minimal delays to existing operations can be accommodated.

The Work Program describes specific tasks and provides estimated service fees for these tasks.

Environmental Constraints Memorandum

This Technical Memorandum is included as Appendix C. A Draft Environmental Assessment/Environmental Impact Report (EA/EIR) for the Project would provide a reasonably complete and stand-alone description and analysis of the Project, its alternatives, and Project environmental impacts. Mitigation commitments proposed in this document are anticipated to be sufficient, such that the Draft EA/EIR may be

deemed adequate by both federal and state environmental protection offices as a Final EIR for the Project.

Environmental permitting would be required for the following:

- Construction of a new United States Postal Service General Mail Facility (USPS GMF), to be constructed on land in Boston identified and acquired by MassDOT;
- Site preparation at South Station, including demolition of the existing USPS GMF between Dorchester Avenue and Track 13 and installation of foundations to allow for future over-build;
- South Station Construction, including installation of four new platforms, seven new tracks, an additional headhouse, and two new pedestrian concourses. Three existing track interlockings—Tower 1, Cove, and Broadway—would be reconfigured to accommodate the new terminal tracks, anticipated train movements, and higher travel speeds. An additional interlocking would be constructed between the Tower 1 and Broadway interlockings, along the approach to Amtrak's Southampton Street Yard;
- Pedestrian, vehicular and transit access improvements, including a restoration of Dorchester Avenue to extend the HarborWalk and create a multi-modal, "complete street" connection between the station area and South Boston; and
- A layover solution, which is anticipated to be located within four miles of South Station. A comprehensive Alternatives Analysis for the layover solution would be conducted at the start of the PE/NEPA phase.

The Project is affected by federal, state, and local environmental regulations, which are summarized in Appendix C. A review of laws and regulations that would be applicable to the Project was undertaken to determine the extent to which these regulations constrain the redevelopment of either of the two parcels under consideration. The two sites in question are the South Station Expansion Site, currently the USPS site, and the USPS Relocation site, referred to as the Fargo Street Site.

Regulatory programs applicable to one or both sites are:

1. Massachusetts Public Trust Act (Chapter 91)
2. National Pollutant Discharge Elimination System
3. Massachusetts Wetland Protection Act
4. Massachusetts Stormwater Management Standards
5. Massachusetts Municipal Harbor Plan Regulations
6. City of Boston Zoning Code, and
7. City of Boston Water and Sewer Commission Regulations

An evaluation of these regulatory programs indicates that there are no regulatory constraints to site redevelopment at the Fargo Street Site that would restrict the amount of the site that could be redeveloped, the specific area that could be redeveloped, or the height of buildings.

At the USPS Site, the proposed work is subject to the Massachusetts Public Trust Act, Chapter 91. The Chapter 91 Waterways regulations require that infrastructure facilities on tidelands must "provide open spaces for active or passive recreation at or near the water's edge, wherever appropriate." There are constraints that would apply to a commercial development above the rail station expansion. These constraints are described in detail in Appendix C.

Conceptual Design Technical Memorandum

This memorandum, included as Appendix A, summarizes the technical aspects of conceptual design undertaken for the track and track related elements of the Boston South Station HSIPR Expansion Project. The three primary areas evaluated during this conceptual design effort were track layout, platforms, and station layout. The conceptual designs developed reflect MBTA design standards, Amtrak design standards, industry practice and engineering judgment in the application of these guidance documents.

Work Program for Preliminary Engineering and NEPA Compliance

A scope of services for Preliminary Engineering and National Environmental Policy Act compliance (PE/NEPA) is included as Appendix D. The Work Program includes a detailed scope of services with associated tasks and deliverables. It also includes a Project Schedule, budget for PE/NEPA services, and order of magnitude capital, operating and maintenance estimates for a full Project build-out. Projects tasks are arranged by the following categories:

- Project Management
- Public Participation
- Data Collection
- Conceptual Engineering
- Preliminary Capital And Operating Cost Estimates
- Alternatives Analysis
- Environmental Notification Form (ENF) and a Draft Environmental Assessment/Environmental Impact Report (Draft EA/EIR) for the Boston South Station HSIPR Expansion Project.

Cost-Benefit Analysis

A Cost-Benefit Analysis for the Project is included as Attachment 4A. The analysis measures three general categories of benefits associated with the South Station improvements: 1) Benefits to rail users; 2) Benefits to remaining highway users; 3) Environmental benefits. These benefits are monetized in the Analysis using standard industry methods. Project costs include the initial capital construction costs, as well as the operating and maintenance (O&M) costs associated with the enhanced service out of South Station. Details related to the methodology, assumptions, and results of the analysis are provided in the attached Analysis.

Using a reasonable discount rate of 7%, the Analysis concluded that South Station improvements will result in:

- Total benefits of $2,265.9 million in present value terms
- Total costs of $1,674.9 million in present value terms
- Total net present value of $591.0 million, with a benefit-cost ratio of 1.35, indicating that the project is economically feasible.

The analysis concluded that 62 percent of the benefits associated with the Boston South Station HSIPR Expansion Project are attributable to Amtrak (not including the *Inland Route*), while 38 percent are attributable to the commuter rail service improvements.