Connecting the Commonwealth: Early Actions for the Inland Route

Applicant: Massachusetts Department of Transportation (MassDOT)

massDOT
Massachusetts Department of Transportation

An application to U.S. DOT’s Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program

December 1, 2022
# Table of Contents

I. Cover Page .................................................................................................................. 1

II. Project Summary ...................................................................................................... 1

III. Project Funding ....................................................................................................... 1

IV. Applicant Eligibility ................................................................................................. 2

V. Project Eligibility ...................................................................................................... 2

VI. Detailed Project Description ................................................................................. 2

   1.1 Transportation Challenges Addressed ............................................................... 2

   1.2 Expected Outcomes ............................................................................................. 4

   1.3 Users and Beneficiaries ....................................................................................... 5

      1.3.1 Users of the Project ...................................................................................... 5

      1.3.2 Beneficiaries of the Project ......................................................................... 5

   1.4 Components and Elements .................................................................................. 6

   1.5 Performance Measures ...................................................................................... 9

VII. Project Location .................................................................................................... 9

VIII. Evaluation & Selection Criteria ........................................................................... 10

   A. Evaluation Criteria .............................................................................................. 10

      1. Project Benefits ................................................................................................. 10

      2. Technical Merit .................................................................................................. 12

   B. Selection Criteria ............................................................................................... 15

      1. Proposed Federal Share is 50% or less .............................................................. 15

      2. Benefit – Cost Analysis ..................................................................................... 15

      3. Safety ................................................................................................................ 16

      4. Equitable Economic Strength and Improving Core Assets ......................... 17

      5. Equity and Barriers to Opportunity ................................................................. 17

      6. Climate Change and Sustainability ................................................................. 18

      7. Transformation ................................................................................................. 18

IX. Project Implementation and Management .............................................................. 19

X. Planning Readiness for Tracks 2 and 3 (Project Development and FD/Construction) ................................................................. 20

XI. Design Readiness for Track 3 (FD/Construction) .................................................... 21
XII. Environmental Readiness .......................................................... 21
XIII. Strategic Goals........................................................................... 22

List of Tables
Table 1: Project Funding (YOE$)......................................................... 1
Table 2: Proposed Performance Measures .......................................... 9
Table 3: Costs and Benefits of the Corridor Improvements .................. 16
Table 4: Proposed Schedule for the Work .......................................... 20
Table 5: Summary of How the Project Aligns with USDOT's Strategic Goals .... 22

List of Figures
Figure 1: Project Area and Components Descriptions ........................... 8
Figure 2: Income, Minority, and English Isolation Communities in the Project Area ................................................................. 10
Figure 3: Rail Provides a More Fuel-Efficient Travel Option for the Region .... 18

Attachments
Attachment 1 – Project Narrative
Attachment 2 – Scope of Work
Attachment 3 – Project Schedule
Attachment 4 – Project Budget
Attachment 5 – Project Performance Measures
Attachment 6 – BCA Technical Memo
Attachment 7 – BCA Workbook
Attachment 8 – Environmental Documentation
Attachment 9 – Preliminary Engineering Documentation
Attachment 10 – Letters of Support
Attachment 11 – Letters of Commitment
## I. COVER PAGE

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Connecting the Commonwealth: Early Actions for the Inland Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicant</td>
<td>Massachusetts Department of Transportation</td>
</tr>
<tr>
<td>Federal Funding Requested Under this NOFO</td>
<td>$108,085,280</td>
</tr>
<tr>
<td>Proposed Non-Federal Match</td>
<td>Cash: $27,021,320 In-Kind: $0</td>
</tr>
<tr>
<td>Does some or all of the proposed Non-Federal Match for the total project cost consist of preliminary engineering costs associated with Highway-rail Grade Crossing Improvement Project or trespassing prevention project incurred before project selection?</td>
<td>No</td>
</tr>
<tr>
<td>Other Sources of Federal funding, if applicable</td>
<td>Source: $0</td>
</tr>
<tr>
<td>Total Project Cost</td>
<td>$135,106,600</td>
</tr>
<tr>
<td>Was a Federal Grant Application Previously Submitted for this Project?</td>
<td>The improvements in Grafton, MA were included in the Grafton &amp; Upton Railroad’s application for the Main Line Congestion Mitigation and Capacity Improvement PPP in FY 2019-2021 CRISI program applications</td>
</tr>
<tr>
<td>Congressional District(s) Where the Project is Located</td>
<td>Massachusetts Congressional District 1</td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Is this a project eligible under 49 U.S.C. 22907(c)(2) that supports the development of new intercity passenger rail service routes including alignments for existing routes?</td>
<td>Yes, this project will support the development of a new intercity route, the Inland Route, and results in improvements to an existing route, the Lake Shore Limited.</td>
</tr>
<tr>
<td>Is this a Rural Project? What percentage of the project cost is based in a Rural Area?</td>
<td>No, approximately 62% of project costs ($84,127,756) take place in an urban area. Approximately 38% ($50,978,844) take place in a rural area.</td>
</tr>
<tr>
<td>Is this a project eligible under 49 U.S.C. 22907(c)(11) that supports the development and implementation of measures to prevent trespassing and reduce associated injuries and fatalities?</td>
<td>No</td>
</tr>
<tr>
<td>If YES to the previous question, is this project located in a county with the most pedestrian trespasser casualties as identified in the Federal Railroad Administration's National Strategy to Prevent Trespassing on Railroad Property?</td>
<td>NA</td>
</tr>
<tr>
<td>Is the application seeking consideration for funding under the Maglev Grants Program?</td>
<td>No</td>
</tr>
<tr>
<td>Is the project currently programmed in: State rail plan, State Freight Plan, TIP, STIP, MPO Long Range Transportation Plan, State Long Range Transportation Plan?</td>
<td>Yes. Massachusetts State Rail Plan</td>
</tr>
</tbody>
</table>
II. PROJECT SUMMARY

Connecting the Commonwealth: Early Actions for the Inland Route Project (the “Project”) is the first step to increase passenger rail service while preserving freight service on the Inland Route corridor, which connects New Haven, CT, Hartford, CT, Springfield, MA, Worcester, MA, and Boston, MA. The Project will make targeted investments along the corridor, primarily focused on the 54-mile section of the CSX-owned rail corridor known as the Boston and Albany (B&A) Line between Worcester and Springfield. The B&A line consists of a single track for 44 miles within the project area. Other investments along the corridor will include freight interchange track improvements along the Massachusetts Department of Transportation (MassDOT) owned segment in Grafton, MA. The objective of the Project is to improve the corridor’s infrastructure and add track capacity to accommodate increased passenger rail service operating safely at higher speeds, while maintaining current freight operations. At present, approximately 10 daily freight trains (8 CSX and 2 Norfolk Southern) share the Worcester to Springfield segment of the B&A with one daily Amtrak long-distance round trip (the Lake Shore Limited). Additional Amtrak, CT Rail, and regional freight trains operate through the Springfield Union Station terminal area. MassDOT, CSX, and Amtrak (hereafter the “Project Partners”) have developed this Project to accommodate the addition of two round trip intercity passenger trains per day. MassDOT is applying for the Federal Railroad Administration (FRA) 2022 Consolidated Rail Infrastructure and Safety Improvements (CRISI) program as the project qualifies for the Intercity Passenger Rail Set-Aside as outlined in the Notice of Funding Opportunity (NOFO).

III. PROJECT FUNDING

MassDOT is requesting $108,085,280 in CRISI federal funding for this project; this represents 80 percent of the total project cost of $135,106,600. Specifically, this project qualifies for the Intercity Passenger Rail Set-Aside outlined in the CRISI NOFO. These funds, amounting to at least $150,000,000, will be made available for Capital Projects that support more efficient travel and goods movement, and “the development of new Intercity Passenger Rail Service routes including alignments for existing routes,” which is the scope of this project. Table 1 outlines the Project Funding for the Project.

Table 1: Project Funding (YOE$)

<table>
<thead>
<tr>
<th>Task #</th>
<th>Task Name/Project Component</th>
<th>Cost</th>
<th>Percentage of total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detailed Project Work Plan, Budget, and Schedule</td>
<td>$70,000</td>
<td>0.1%</td>
</tr>
<tr>
<td>2</td>
<td>Preliminary Engineering / NEPA</td>
<td>$8,100,000</td>
<td>6.0%</td>
</tr>
<tr>
<td>3</td>
<td>Project Management and Final Design</td>
<td>$10,075,000</td>
<td>7.5%</td>
</tr>
<tr>
<td>4</td>
<td>Construction of Increased Track Speed Project Components</td>
<td>$21,921,600</td>
<td>16.2%</td>
</tr>
<tr>
<td>5</td>
<td>Construction of Passing Siding Upgrades</td>
<td>$5,900,000</td>
<td>4.4%</td>
</tr>
</tbody>
</table>
### IV. APPLICANT ELIGIBILITY

MassDOT is an eligible applicant in the NOFO for the CRISI grant per article C.1.d “A public agency or publicly chartered authority established by 1 or more States.” MassDOT was created in 2009 by Chapter 25 of the Acts of 2009, “An Act Modernizing the Transportation Systems of the Commonwealth of Massachusetts.” Section 2 of this Act “created a body politic and corporate to be known as the Massachusetts Department of Transportation,” constituted as a “public instrumentality” and “placed in the executive office of the governor.”

### V. PROJECT ELIGIBILITY

This project is eligible for CRISI funding per the NOFO article C.3.a.ii “A capital project as defined in section 22901 (2), except that a project shall not be required to be in a State rail plan developed under chapter 227.” The project tracks are Track 2 – Project Development and Track 3 – Final Design (FD)/Construction.

### VI. DETAILED PROJECT DESCRIPTION

This section describes the transportation challenges addressed by the Project, the expected outcomes, the expected users and beneficiaries of the Project, and the specific components of the project.

#### 1.1 Transportation Challenges Addressed

The Project will make necessary infrastructure upgrades to CSX’s B&A Line between Worcester and Springfield to accommodate two additional round-trip intercity passenger rail frequencies between Boston, MA and New Haven, CT, while preventing conflicts with vital freight.
transportation. The improvements along this segment are foundational for the additional growth in passenger and freight rail within the New England Region over the longer term, by facilitating advancement of passenger service expansion on both the Inland Route and the Boston to Albany Route.

MassDOT has submitted a FRA Corridor ID Expression of Interest for two new passenger rail corridors that utilize this section of the B&A Line: 1) the Inland Route (Boston to Springfield to New Haven), and 2) the Boston to Albany Route.

- **The Inland Route** provides an alternate route between Boston and New Haven serving several intermediate cities. This route provides independent transportation utility, but also serves as an alternative route to a portion of the Northeast Corridor (NEC), providing network resiliency for the 8,000 NEC riders per day on the Boston – New Haven corridor segment south of Providence.

- **The Boston to Albany Route** provides connectivity between communities in New York State, Western Massachusetts, and Boston, with additional direct Amtrak connections available to Vermont, Connecticut, and Montreal. Amtrak’s Adirondack service may be restored in March 2023.

Over 80 percent (44 of 54 total miles) of the Project corridor includes only a single track. It is shared by approximately 10 daily freight trains and two daily Amtrak long-distance trains (the Lake Shore Limited in each direction). The Project will provide improved safety and operating performance for the existing trains that use this section of track, as well as add necessary track capacity and flexibility to accommodate increased passenger rail service operating at higher speeds. The specific improvements are described in Section 1.4, but broadly address two constraints on the existing route that have limited passenger service expansion: capacity and speed. Track and signal system improvements will raise the track class in many locations from FRA Class 2 and 3 currently, to Class 4 and address multiple areas of track alignment within curves that were not designed for the 80-mph maximum speed allowed under Class 4 on railroads equipped with Positive Train Control. Expanded and upgraded sidings will add capacity and allow for freight and passenger trains to safely pass at more locations, increasing operational flexibility for increased train traffic.

The proposed improvements are required as the current volume of trains already cause schedule delays, due to interaction between passenger and freight activity. The addition of two more passenger trains without necessary infrastructure improvements would intensify these delays to existing passenger and freight service and diminish the competitiveness of both freight and passenger services. The typical passenger delay between Worcester and Springfield has been approximately nine (9) minutes per trip during the past 10 years. However, the delay is highly variable with the maximum delay in the same ten years at over three hours (198 minutes). The maximum delay in every individual year in that 10-year period spanning 2013 to 2022 has
exceeded an hour. It is difficult for passenger trains to gain market share if the trains are routinely late, particularly if the delay time is unpredictable. The range in annual delay suggests that capacity is currently tight in this section of the corridor. However, when an unexpected operating event occurs, such as a disabled train, there is no buffer or operating contingency in the system allowing train dispatchers to route trains around the event or recover late trains, leading to even longer delays. The addition of two more trains would intensify this pressure on both passenger trains and freight trains.

1.2 Expected Outcomes

The Project delivers benefits that provide independent utility for both freight and passenger service, while also supporting a much-needed future expansion of passenger rail service that is being advocated by local stakeholders. Expected outcomes of the track investments outlined in this application include:

- Two new daily passenger rail round trips
- A reduction in the travel time for Amtrak’s Lake Shore Limited passengers.
- A reduction in Amtrak’s operating costs in providing the Lake Shore Limited service.
- A similar reduction in run time and operating costs for the 10 daily freight trains that use the corridor.
- To the degree that the passengers on the two new daily round trips divert from auto travel on busy roads, an incremental improvement in roadway congestion for drivers who remain on the roads.
- A reduction in Greenhouse Gas (GHG) emissions as the time that trains are kept idling during delays is diminished.
- Reduction of freight delivery times, measured in days, for all shippers/receivers along the Grafton & Upton Railroad

Connectivity with other regional destinations will improve as the two new Inland Route trips will provide direct connections between Amtrak and the MBTA’s commuter rail, the CTRail Hartford Line service, and the multiple rail and transit services that operate along the Northeast Corridor through New Haven. Connections to other Amtrak services such as the Vermonter and Valley Flyer will be enhanced as well.

The speed improvements within this Project’s limits are 18 minutes eastbound and 20 minutes westbound per passenger train and 37 minutes per freight train, with an extra savings for those freight trains that use the Grafton Yard. These travel time savings will contribute to faster overall travel times between Boston and Springfield—dropping to two hours and ten minutes, a time savings of 30 minutes (or 20% of run time) from current conditions.
This Project supports the initiative to expand regional passenger and freight rail as:

- A way to expand how intercity rail can meet the regional travel needs by adding service that connects currently underserved or unconnected travel markets.
- A necessary step to re-establish the Inland Route, which represents a secondary route from New Haven to Boston and provides resiliency in cases where the primary route on the NEC through Providence is unavailable.
- A step to support the continued 20% year over year growth of the Grafton and Upton Railroad in supporting the freight needs of the region.
- A means to increase rail-oriented development at Worcester and Springfield stations as the number of trains and destinations with one-seat rides increases.

1.3 Users and Beneficiaries

This section describes who will use and who benefits from the infrastructure investments made by this Project.

1.3.1 Users of the Project

Existing freight and passenger rail traffic in the corridor will use the Project. This includes the approximately 10 daily freight trains and the passengers traveling via the one daily round trip long-distance passenger train (the Lake Shore Limited). Passengers on the two new regional round trip Inland Route passenger trains will also use the improved corridor. When future plans to expand service further in this corridor come to fruition, all of those future passengers will also benefit.

Travel survey data for the Lake Shore Limited finds that 60 percent of riders are female; over 70 percent have a college degree or better, and 60 percent are employed at least part time. Of those responding to the income question, 15 percent report an annual income of $50,000 or less.

1.3.2 Beneficiaries of the Project

This Project provides increases in capacity/efficiency for freight and passenger services and the ability to offer new types of passenger services. Beneficiaries of the Project include CSX, Grafton & Upton Railroad, and the shippers who rely on this corridor. It also includes Amtrak and the passengers who ride the existing Lake Shore Limited and future two regional Inland Route round trip trains between Boston, MA and New Haven, CT including the residents of Framingham, Worcester, and Springfield, MA and the station communities along the existing Amtrak Hartford Line service. The 12 colleges and universities in the Springfield Metropolitan area will also benefit from the improved rail service to the region, both in terms of annual recruitment as well as improved travel options for their students and faculty.
Non-users of the Project will also benefit. First, to the extent that the new regional Inland Route trains attract passengers who otherwise would have made the trip by car, those drivers who remain on the roads face incrementally less congestion. In addition, the public in general will enjoy air quality benefits as trains are not held in place idling during delays. As illustrated in Figure 2, in Section VII: Project Location, several environmental justice communities lie along the route. Data from the Environmental Protection Agency’s EJScreener show that many communities along the route are at higher risk for Asthma—at the 80 percent level or higher.

1.4 Components and Elements

Project elements, illustrated in Figure 1, will include new sidings and extensions of existing passing sidings to add mainline capacity. Track and signal system improvements will raise the FRA track class from Class 2 and 3 to Class 4 where possible, permitting an increase in the maximum authorized passenger train track speed (MAS) from the current 60 mph to a maximum of 80 mph where track conditions permit. Some curved alignment sections of track along the route will be redesigned to allow for higher speeds where possible. Specific elements include:

- **Track Speed**
  
  - Upgrade of existing track components to allow for 80 mph maximum authorized speed (MAS) provided wherever possible.
  
  - Track Speed Improvement locations:
    » QB 44.4 – QB 44.7 Class 2 to Class 3
    » QB 45.3 – QB 51.7 Class 3 to Class 4
    » QB 53.2 – QB 56.8 Class 3 to Class 4
    » QB 58.3 – QB 64.0 Class 3 to Class 4
    » QB 75.8 – QB 76.8 Class 3 to Class 4
    » QB 83.5 – QB 83.7 Class 3 to Class 4
    » QB 96.1 – QB 98.6 Class 3 to Class 4

- **Curves**
  
  - Redesign and realignment of curves to achieve Amtrak Track Specification #63 and CSX Track Design Standards. Current design assumptions include:
    » Not more than 1-foot maximum track shift is required to new design.
    » 4.5 inches maximum superelevation.
    » 5 inches maximum unbalance for proposed trains.
    » 4 inches maximum unbalance for *Lake Shore Limited*. 
Mainline Track Capacity Improvements – Additional track capacity along the corridor to minimize passenger rail impacts to freight rail operations. Pending additional detailed freight rail service operations analysis, current assumptions include:

+ MP 36.5 – 37.2: Install third track and Grafton & Upton RR wye track
+ MP 48.2 – 51.2: Extend second main track 3 miles
+ MP 57 – 64: Upgrade 7 mile siding to second main track
+ MP 79 – 83: Upgrade 4 mile siding to second main track
+ MP 83.5 – 92: Extend second main track 9 miles
+ Mainline Track Capacity Improvements will include bridge repair and rehabilitation, grade crossing modifications, utility relocation, installation of additional interlockings, Positive Train Control and necessary changes to dispatching/operations control center. Engineering analysis will analyze possible use of #24 60 mph turnouts for diverging speeds from single to double track.

Amtrak will utilize reconditioned or existing equipment to begin the new corridor service. New train equipment is not included in the Project.
Figure 1: Project Area and Components Descriptions
1.5 Performance Measures

MassDOT proposes the following Performance Measures as outlined in Table 2 and included in as an attachment to this application.

Table 2: Proposed Performance Measures

<table>
<thead>
<tr>
<th>Rail Measures</th>
<th>Unit Measures</th>
<th>Measurement Period</th>
<th>Measurement Frequency</th>
<th>Primary Strategic Goal</th>
<th>Secondary Strategic Goal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passenger Train Count</td>
<td>Daily Trains</td>
<td>Three months prior to project construction to three years following</td>
<td>Three months prior to project construction and then Annually after project for 3 years</td>
<td>Economic Competitiveness</td>
<td>State of Good Repair</td>
<td>Total number of intercity trains operated between Boston and Springfield</td>
</tr>
<tr>
<td>Travel Time</td>
<td>Time per Trip</td>
<td>Three months prior to project construction to three years following</td>
<td>Three months prior to project construction and then Annually after project for 3 years</td>
<td>Economic Competitiveness</td>
<td>Quality of Life</td>
<td>Scheduled Lake Shore Limited trip time between Boston and Springfield</td>
</tr>
<tr>
<td>Ridership</td>
<td>passengers</td>
<td>Three years following construction</td>
<td>Quarterly</td>
<td>Market development</td>
<td>Quality of Life</td>
<td>Annual boardings on the Inland Route Service</td>
</tr>
</tbody>
</table>

VII. PROJECT LOCATION

The Inland Route is a corridor designation between Boston, MA and New Haven, CT and utilizes portions of the Amtrak Hartford Line and the CSX B&A Line to connect the two cities, along with intermediate destinations as seen in Figure 1. Although there have been passenger services along all portions of the corridor since the 1800s, any direct connection between New York/New Haven and Boston along the Inland Route ceased in the early 2000s. The project improvements will be along the Massachusetts segment of the B&A line located in Grafton (MP 36.5 - 37.2) and Worcester (MP 44.4) and Springfield (MP 98.6), running through 15 municipalities and two congressional districts. The line is a regional connector, and it carries CSX and NS regional freight, MBTA commuter rail service, and Amtrak’s Lake Shore Limited east to Boston and west through Albany to Chicago.

As the freight operator of the B&A Line and owner of the line between Worcester and Springfield, CSX, a Class I freight railroad, owns, dispatches trains, and operates on the line. It maintains an operating agreement with Amtrak for passenger service over the Worcester-Springfield segment. Springfield is the northern terminus for the Amtrak Northeast Regional,
Amtrak Hartford Line, and CTRail Hartford Line services. The station is also served by two north-south through Amtrak services (the Valley Flyer and Vermonter).

The project area consists of work on 41.3 miles of track within a larger 62.2-mile corridor. Work will take place on approximately 24.34 urban miles running through two census-designated urbanized areas: Springfield (10.55 miles) and Worcester (13.79).

The line segment also impacts environmental justice communities as defined by the United States Environmental Protection Agency (EPA). There are 58 environmental justice block groups within ¼ mile of the corridor. These communities are home to approximately 70,000 residents and are largely in Springfield and Worcester. Air quality is a challenge in these communities as 13 of these 58 block groups have air toxic respiratory health indexes in the 96th percentile.

VIII. EVALUATION & SELECTION CRITERIA

This section describes how the Project meets the evaluation and selection criteria as set forth in the NOFO.

A. Evaluation Criteria

1. Project Benefits
   a) Effects on system and service performance

The Project investments will allow for increased levels of Amtrak service and connectivity between densely developed communities along the corridor. The Project will result in much needed improvement in rail connections along a corridor that connects five of the 100 most populated metropolitan areas in the U.S. The new service will enhance the Amtrak system in the northeast by providing additional direct connections and enhancing connections between corridor communities and the remainder of the Northeast Corridor.
The Project will upgrade main track sidings and provide additional track capacity that will lessen or eliminate delays from capacity constraints on existing services caused by rail and passenger trains sharing the same single-track corridor. This will allow reliability improvements, enhancing the ability to coordinate connections among services.

While the Project has independent utility for existing users, the investments are a continuation of regional rail service expansion in central Massachusetts.

b) Effects on safety, competitiveness, reliability, trip or transit time, and resilience

The Project will add capacity at an existing constrained area of the corridor, averting conflicts between the 10 daily freight trains and the one long distance round trip. These trains and passengers will benefit from a travel time savings of approximately 18 minutes eastbound and 20 minutes westbound in addition to the avoidance of conflict delays. The average conflict delay has been approximately 9 minutes but there is tremendous variability with some delays lasting an hour or more. As a consequence, an additional benefit will be greater reliability.

In addition, the rail segment between Worcester and Springfield is a critical segment of the larger Inland Route that connects New Haven to Boston. The NEC currently uses the NEC Shore Line route to travel from New York City to Boston and this would reestablish an additional connection for increased flexibility and resiliency as climate change has more and more impact on coastal corridors.

c) Efficiencies from improved integration with other modes

The two new Inland Route trips will provide direct connections between Amtrak and many transit services and other transportation modes. These include:

- Connections to the MBTA commuter rail and transit network in Worcester, Framingham, and Boston. The Amtrak Inland Route trains are being directly planned with the MBTA to allow for integration and ease of transfers between the two modes.
- Connections to the Metrowest Regional Transit Authority service in Framingham, MA, the Worcester Regional Transit Authority service in Worcester, MA, and the Pioneer Valley Transit Authority service in Springfield, MA.
- Connections and integration with the CTRail service, through both service schedule integration and ticket system integration.
- Improved access between Massachusetts communities and Bradley International Airport through bus connections in Windsor Locks and/or Hartford.
- Connections to CTRail Shoreline East service, Metro-North rail service and New Haven area transit services.
d) Ability to meet existing or anticipated demand

An estimated 69,600 people are anticipated to use the new service in its first year of operation, rising to 71,300 within three years of operation, according to projections from Amtrak. This represents solid demand for travel along this route.

2. Technical Merit

This section describes how the Project meets the technical merit as set forth in the NOFO.

a) Tasks of the Statement of Work are appropriate to achieve the expected outcomes

The tasks outlined in the statement of work (SOW), which is included in Attachment 2, are appropriate to meet the expected project outcomes of advancing the Project through the completion of NEPA, preliminary engineering, final design, and into construction. As the Worcester-Springfield segment of the B&A rail line is owned by CSX, it would be the entity overseeing the actual construction of the sidings, track, and signal system improvements. The work in Grafton would be managed and overseen by the MBTA and Grafton & Upton Railroads. This is similar to work that the operating railroads performs every year in multiple locations across their networks. MassDOT would administer the Grant, receive the funds from the FRA, and be responsible for overseeing the Project while providing overall Project direction to CSX and Amtrak.

MassDOT is continuing multiple improvement projects at and near Springfield Union Station as part of a larger program of work to facilitate freight and passenger service improvements in Western Massachusetts. Having MassDOT involved in the track element of this project will help ensure that it is well coordinated with the larger station program.

b) Strong Project Readiness under Track 2 and Track 3

As noted, the Project is part of a larger program of rail investment for which a Finding of No Significant Impact (FONSI) was previously issued. While this FONSI may need to be updated given the time that has passed since it was issued, this is anticipated to be a straightforward update; no material conditions have changed since the first decision. This will allow the project to address environmental requirements quickly, while completing preliminary engineering (PE) and design requirements prior to starting construction.
c) Technical Qualifications and Experience of Key Personnel

MassDOT has recent relevant experience managing and overseeing similar projects under oversight of FRA. The Project will be managed by MassDOT’s Rail & Transit Division staff with support from specialized consultant staff as required. Amtrak staff will also advise.

Amtrak is unique in its position of responsibility for an intercity rail infrastructure while managing a complex intercity passenger rail operation on a national scale. Amtrak has the largest group of railroad-trained employees in the USA who provide the qualified technical resources necessary to support a highly complex rail infrastructure and systems shared simultaneously, and at high capacities, by several transit entities, freight, and passenger rail operations. Amtrak’s technical expertise, engineering acumen, historical accomplishments, and dedicated support for providing passenger railroad service to communities through the nation is justification for the soundness of the investment and minimal risk of awarding federal funds. Amtrak’s management approach for implementation blends traditional railway organizational structures with a program management organization.

CSX employs multiple in-house teams which specialize in the construction and maintenance of rail infrastructure. CSX has proven experience with the timely delivery of the construction works proposed in the Project corridor so that no learning curve is expected. The engineering design will be accomplished by a combination of CSX staff and on-call engineering design firms with whom CSX has worked extensively before and are already under contract. Similarly, the construction of all the projects will be overseen by experienced CSX senior staff and constructed by a combination of experienced CSX employees and outside contractors hired by CSX so that they represent the best in their field and understand both what CSX wants to accomplish and how CSX wants the work to be done. CSX has the experience, management capability, manpower, machinery and financial strength to build all of the subject projects. The Project Manager overseeing the CSX construction and delivery of the project scope will be Will Roseborough, Director of Project Development for CSX.

d) Private Sector Involvement

MassDOT has been working collaboratively with all private sector stakeholders along the B&A railroad corridor to advance rail improvements for many years. MassDOT has recently worked with the Springfield Redevelopment Authority, CSX, and Amtrak to make improvements to Springfield Union Station and its platforms. MassDOT has worked directly with Amtrak and Pan Am Railways (now part of CSX) in making improvements to the 49.5 mile Knowledge Corridor in addition to the on-going service operation. MassDOT acquired the Knowledge Corridor in 2014 and continues State-of-Good-Repair and infrastructure improvements to support regional and intercity freight and passenger service.
Since this Project will require the participation of the private and public railroads that utilize the track throughout the corridor, MassDOT project team has already engaged these entities. CSX and Grafton & Upton Railroad have endorsed this application by MassDOT for federal funds to advance engineering and construction to improve the facilities for both freight and passenger services, as discussed in their letter of support for this CRISI grant application. Because the proposed track and signal improvements will impact CSX owned/operated property, they will be a partner throughout the design process.

e) Legal, Financial, and Technical Capacity

This CRISI Track 2 and Track 3 project is well within the realm of MassDOT’s capabilities and is similar to many of the projects involving the Federal Railroad Administration that MassDOT has completed in the last decade, including:

- Restore Vermonter – Knowledge Corridor project
- Patriot Corridor Double-Stack Clearance Initiative
- South Station Expansion Project
- Northern New England Intercity Rail Initiative
- Springfield Union Station Platform Improvement Project
- Closing the Gap in New England: Western Massachusetts Freight Rail Upgrade Project
- Springfield Area Track Reconfiguration Project

MassDOT has a robust legal staff with significant experience managing federally funded projects and rail-related projects. MassDOT legal staff are in regular communication with the legal staff of the railroad stakeholders on this project (Amtrak and CSX). The finance staff at MassDOT is also experienced in projects of this magnitude, as MassDOT coordinates the procurement of dozens of federally funded, multi-million-dollar infrastructure projects each year.

MassDOT, CSX, and Amtrak will enter into a design agreement as well as a financial agreement prior to Track 2 – Development activities commencing. Amtrak and CSX have a lengthy history of undertaking programs together involving rail corridor rehabilitation and upgrading of network infrastructure to ensure greater safety and the maintenance or improvement of operational efficiencies. Both Amtrak and CSX have experience with the timely delivery of the design and construction work proposed and there is no learning curve expected.

The exact terms of the on-going control and maintenance of the Project improvements will be determined as part of agreements to be negotiated with both Amtrak and CSX at the conclusion of PE/NEPA project phase. However, it should be noted that MassDOT has committed to the continued operation of Amtrak service through the Springfield area as part of other federally
f) **Project Deployment of Innovative Technology**

The service planning for the two new Amtrak round-trip frequencies is being planned in coordination with MBTA and CTRail to synchronize schedules and minimize connection times.

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**g) Consistent with Planning Guidance and Documents**

The Project is being advanced consistent with FRA planning guidance. Changes to the track configuration were contemplated in the Inland Route Service Development Plan (SDP) completed in conjunction with FRA. The Inland Route SDP outlined a series of incremental improvements along the entire corridor. Those recommendations included track improvements in this project and is an appropriate next step following the funding granted to the Springfield Area Track Reconstruction Project. These two projects will do a great deal to advance the Inland Route SDP.

The project is also consistent with the Massachusetts State Rail Plan. The State Rail Plan, conforming with Title 49 US Code Chapter 227, identified both the New Haven to Springfield Passenger Rail Service (now known as the *Amtrak Hartford Line*) and Springfield to Greenfield Passenger Rail Service (now known as the *Amtrak Valley Flyer*) as being in the Priority for Implementation Beyond a State of Good Repair. The Project will support improved service along these two Amtrak routes that were identified as one of the priorities for the Commonwealth of Massachusetts. The Project is consistent with both the applicable statewide rail planning and rail corridor planning processes.

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**B. Selection Criteria**

This section describes additional Selection Criteria.

1. **Proposed Federal Share is 50% or less**

   The proposed Federal share for this project is 80% which is greater than the 50% preference identified in the NOFO.

2. **Benefit – Cost Analysis**

   The analysis results in a total Project BCR of 1.1 when discounted at a rate of 7 percent. Table 3 provides a summary of the BCA results for the Project. A detailed description of the benefit cost analysis is provided in the technical memorandum provided with this application. The Project delivers a positive rate of return despite carrying all capital costs for the improvements and the operating costs of the new passenger frequencies. It should be noted that this is the first step in a planned expansion of passenger rail to create the Inland Route, as noted above. The addition of...
other trains in the future will benefit from the investments made in this Project. While these future benefits are NOT included in the assessment below, they are a qualitative consideration when reviewing the results. The Project delivers a positive return on its own and the expected benefit stream is expected to grow with the addition of passenger traffic in the future—there is significant upside potential to the results presented below.

<table>
<thead>
<tr>
<th>Table 3: Costs and Benefits of the Corridor Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Costs (2020$ M)</strong></td>
</tr>
<tr>
<td>Capital Costs</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
</tr>
<tr>
<td><strong>Benefits (2020$ M)</strong></td>
</tr>
<tr>
<td>Effects on System and Service Performance</td>
</tr>
<tr>
<td>Passenger Train Operating Cost</td>
</tr>
<tr>
<td>Pavement Maintenance Savings</td>
</tr>
<tr>
<td>Residual Value</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
</tr>
<tr>
<td>Effects on Safety, Competitiveness, Reliability, Trip Time, and Resilience</td>
</tr>
<tr>
<td>Safety Savings</td>
</tr>
<tr>
<td>Freight Train Operating Cost Savings</td>
</tr>
<tr>
<td>Vehicle Operating Cost Avoided</td>
</tr>
<tr>
<td>Auto, Bus, and Air Emissions Avoided</td>
</tr>
<tr>
<td>Train Emissions Avoided</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
</tr>
<tr>
<td>Ability to Meet Existing or Anticipated Demand</td>
</tr>
<tr>
<td>Passenger Travel Time Savings</td>
</tr>
<tr>
<td>Network Redundancy Benefits</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
</tr>
<tr>
<td><strong>Total Benefits</strong></td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
</tr>
<tr>
<td>Benefit-Cost Ratio</td>
</tr>
<tr>
<td>Net Present Value (2020$ M)</td>
</tr>
</tbody>
</table>

3. Safety

While this Project is primarily designed to improve travel time, capacity and reliability in the corridor, there are important safety benefits as well. These are:

- The addition of new track will improve train operations and reduce conflicts between freight and passenger trains in the corridor.
- New interlocking and signal system improvements, including Positive Train Control will facilitate safe and efficient train movements.
- The improvements will create capacity that allows for the addition of two new regional passenger trains. As rail has a statistically lower crash rate than automobile travel, the addition of this service offers travelers a safer mode of travel.

4. **Equitable Economic Strength and Improving Core Assets**

The Project is a commitment to intercity passenger rail transportation in the Commonwealth. It supports numerous state and federal rail initiatives that are intended to support increased passenger rail service and also improve freight rail activity in Massachusetts. Completion of this Project will support better connectivity between housing and employment centers in Worcester and Springfield once the project is completed. The service will improve access to the education and medical services as well.

5. **Equity and Barriers to Opportunity**

The Project addresses equity, in part, through its environmental impact. As shown in the maps in the Project Location section, the rail line traverses a number of disadvantaged communities and communities with a higher than usual incidence of asthma. The Project will reduce the number of delays and instances when trains are stopped but locomotives remain idling. These communities may not have stations, and thus do not have the benefit of direct rail access in their local town, but they have the cost of idling trains that will be largely mitigated by this Project.

In addition, the two additional rail frequencies allow for a day trip between Boston, Worcester, Springfield, Hartford, and New Haven. This is a major change as it allows for passenger rail travel among these communities without having to incur an overnight stay. Business travel becomes easier, reducing a barrier to new employment opportunities. Workers in Worcester and Springfield can access a wider range of work opportunities facilitated by the greater rail service. In the post-pandemic work world, a greater number of businesses are willing to have workers take advantage of remote or hybrid work models (part work site/part home site) where employees may commute to an office a portion of workdays. Passenger rail can be an attractive option for hybrid work schedules. Commuters can also work on the train, with sufficient personal space to use a laptop computer.

Both Springfield, MA and Hartford, CT have poverty levels approaching nearly 30% of their respective populations. These lower income communities currently are less able to access regional opportunities afforded to other communities with better intercity rail access. Reestablishing the Inland Route to the new services proposed in this project will provide greater access to a broader range of employment opportunities in the region for these communities, in line with the overall goals of the Knowledge Corridor.
6. Climate Change and Sustainability

**Climate Change.** The Project is a necessary capacity expansion that supports the development of the Inland Route from New Haven to Boston, which serves as an alternative to the NEC Shore Line route. The coastal route is vulnerable to flooding from severe coastal storms and sea level rise, and may not be as reliable a route over the next 30 to 50 years\(^1\). The nation has seen this scenario play out on the Pacific Coast already with the disruption of Pacific Surfliner service (which carries eight million passengers a year) due to coastal erosion. The lack of an alternate rail route in California required bus bridges and suspensions of rail service. The Shore Line route faces similar risks. These are long-lived infrastructure assets and the investments today in an alternative Inland Route represent a prudent “insurance” investment. If the NEC Shore Line route was shut down without the Inland Route having the capacity to absorb traffic, the NEC spine would be severed, and the rail connection between Boston and New York would be lost. The Inland Route also offers a regional alternative for air travel by providing connectivity to Bradley International Airport in Hartford as an alternative location for air travel. (both TF Green and Logan Airports are in coastal areas).

**Sustainability.** The Project delivers on sustainability as well. First, increased rail frequencies provide Massachusetts travelers with expanded options to use a more fuel efficient and sustainable mode of travel. See Figure 3. In addition, the Project will utilize older equipment not elsewhere in use, essentially recycling older equipment, to use for the two new frequencies. This is a sustainable use of equipment and materials already available and avoids the commitment of new resources.

7. Transformation

The addition of two new round-trip trains between Boston and New Haven will increase the economic integration along the bi-state corridor that incorporates several of the nation’s largest metropolitan areas. The transformation comes as these investments allow the smaller metropolitan areas of Worcester, Springfield, New Haven, Hartford, and Albany to connect with Boston and New York City, but also to compete together and have greater economic synergies. Rather than one individual area competing on its own for business

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relocations and the retention of labor, the Project will support efforts for the region to compete for talent and businesses as an integrated whole, supported by the rail service improvements that tie the region together, allowing the region to compete on a large scale.

IX. PROJECT IMPLEMENTATION AND MANAGEMENT

MassDOT will serve as the grantee and the primary contact to FRA throughout the Grant. MassDOT, in coordination with FRA, will finalize development of the project scope as well as the execution and implementation of the Grant Agreement and Statement of Work. MassDOT will be responsible for procurement and contract administration of the required technical support and design services. MassDOT will be responsible for coordination with key Project participants, including Amtrak and CSX, other stakeholders, and regulatory agencies and will work with these participants to advance the Project through NEPA, PE and Final Design. MassDOT will oversee the development of PE drawings and specifications; scale drawings at the 30 percent design level, including track geometry; design criteria, schematics and/or track charts that support the development of PE; and work that can be funded in conjunction with developing PE, such as operations modeling, surveying, project work/management plans, preliminary cost estimates, and preliminary project schedules.

MassDOT will identify and document the appropriate design criteria for the project components incorporating appropriate national, state, local, AREMA, and applicable railroad standards. Engineering at the completion of the project will be sufficiently developed to progress to Final Design and then to Construction activities. MassDOT has extensive experience working with each of the primary project stakeholders; the ongoing work at Springfield Union Station is a prime example.

MassDOT is qualified to lead PE, NEPA, and Final Design activities as well as construction. MassDOT has recent relevant experience managing and overseeing similar projects funded by FRA. Most notably is the successful completion of the Knowledge Corridor “Restore Vermonter” project, funded with a 2011 ARRA grant (FRA HSR-0040-11) that provided for capital improvements to upgrade track, signals, grade crossings, bridge improvements, and construct new stations. In addition, MassDOT is working cooperatively with the New England Central Railroad and FRA on a project funded through the BUILD program called “Closing the Gap,” which will provide track and bridge infrastructure improvements to increase 263K load ratings to 286K load ratings on the 50-mile rail corridor from Monson, MA, through Palmer, MA, to Northfield, MA in Western Massachusetts.
The project schedule is located in Attachment 3 and in the table below. The schedule is based on an executed Grant Agreement / NTP by May 2023.

### Table 4: Proposed Schedule for the Work

<table>
<thead>
<tr>
<th>Task #</th>
<th>Task Name/ Project Component</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Detailed Project Work Plan, Budget, and Schedule</td>
<td>August 31, 2023</td>
</tr>
<tr>
<td>2</td>
<td>Preliminary Design and NEPA Documentation (as needed)</td>
<td>December 31, 2024</td>
</tr>
<tr>
<td>2</td>
<td>Final Design</td>
<td>July 31, 2026</td>
</tr>
<tr>
<td>2</td>
<td>Pre-Performance Reporting</td>
<td>April 30, 2028</td>
</tr>
<tr>
<td>3</td>
<td>Construction of Increased Track Speed Project Components</td>
<td>July 31, 2028</td>
</tr>
<tr>
<td>4</td>
<td>Construction of Passing Siding Upgrades</td>
<td>July 31, 2028</td>
</tr>
<tr>
<td>5</td>
<td>Construction of Additional Track</td>
<td>July 31, 2028</td>
</tr>
<tr>
<td>6</td>
<td>Construction of Improvements at Springfield Station</td>
<td>July 31, 2028</td>
</tr>
<tr>
<td>7</td>
<td>Final Performance Report</td>
<td>October 31, 2028</td>
</tr>
<tr>
<td>7</td>
<td>Post Performance Reporting</td>
<td>October 31, 2031</td>
</tr>
</tbody>
</table>

### X. PLANNING READINESS FOR TRACKS 2 AND 3 (PROJECT DEVELOPMENT AND FD/ CONSTRUCTION)

The Project is part of the Inland Route Service Development Plan (SDP) completed in 2016 as part of the Northern New England Intercity Rail Initiative (NNEIRI). Additionally, MassDOT completed a separate study in January 2021 examining the potential for increased passenger rail service through the Springfield area, connecting Boston with Pittsfield, MA. This East-West Passenger Rail Study identified potential services that would include between 8 to 10 daily weekday trips, each traveling through the Springfield area.

At a national level, the rail corridors through the Springfield area have been identified as important for future service expansion. The Northern New England Corridor is one of ten federally designated high-speed rail corridors in the United States. The Inland Route through Springfield was added to the Northern New England Corridor designation along with the rail line between Springfield, Massachusetts and Albany, New York in the Consolidated Appropriations Act, 2005 (Public Law 108-447) on December 8, 2004.

The Federal Railroad Administration’s NEC Future identified that increasing service between New Haven and Springfield was part of the preferred alternative. The increased service considered in NEC Future required reconfiguration of the track and signal system throughout the Springfield area and east to Worcester. Furthermore, Amtrak’s Connects US plan includes
additional service through the Springfield area, providing improved connections between Boston and Albany. Two round trips between the three major cities are included in addition to the previous service expansion efforts mentioned above.

MassDOT also wrote a letter of interest to the Federal Railroad Administration for the Corridor Identification and Development Program for this service to be one of the future intercity passenger rail projects ready for federal investment and technical assistance.

The proposed increased service provided under the Project will increase mobility for western Massachusetts, connections to Connecticut, and improve service options between upstate New York to the Boston Area and broader Northeast region connections.

XI. DESIGN READINESS FOR TRACK 3 (FD/CONSTRUCTION)

Due to previous planning of this and other related service improvement projects during the past five years, this project is ready to enter the design phase. Through planning efforts and coordination of proposed work with previous successful projects, the scope of this project has been defined and construction contained within the existing railroad right-of-way. Design of the improvements for this project are typical in nature for similar railroad infrastructure improvements and can be completed in a timely fashion through coordination with the appropriate railroad stakeholders. As a result, PE and Final Design have been combined in a single application scope. MassDOT is capable of leading the design and construction efforts for Track 3 in coordination with CSX and Amtrak.

XII. ENVIRONMENTAL READINESS

In 2016 the Northern New England Rail Initiative (NNEIRI) Project completed a Tier 1 Environmental Assessment (EA) that resulted in a FONSI by the FRA. This EA was prepared by the FRA, MassDOT, and the Vermont Agency of Transportation (VTrans), in coordination with the Connecticut Department of Transportation (CTDOT). It can be found in Attachment 8. The EA included the opportunities and impacts of adding more frequent and higher speed intercity passenger rail service on the Inland Route, which is part of this project.

The EA was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, 42 U.S.C. §§ 4321 et. seq.; its implementing regulations, 40 Code of Federal Regulations (CFR) 1500-1508; and FRA’s Procedures for Considering Environmental Impacts, 64 Federal Register (FR) 28545 (May 26, 1999) and Update to NEPA Implementing Procedures, 78 FR 2713 (January 14, 2013). The EA followed FRA’s High-Speed Intercity
Passenger Rail (HSIPR) NEPA guidance, 74 FR 29900 (June 23, 2009), for compliance with NEPA at the service or corridor level.

Under this project, MassDOT will consult with FRA, via the process outlined in 23 CFR 771.129 and 771.130, to determine if the FONSI remains valid and determine if any supplemental documentation is needed through a formal request to re-evaluate the Tier 1 EA. The request for re-evaluation will be to tailor to this specific project and detail any changes in circumstances since the 2016 documentation. FRA will then, based on the re-evaluation, determine if the existing FONSI is still valid. If determined not to be valid for this project, FRA will provide direction on the nature and scope of the Tier 2 (project level) NEPA analysis and documentation needed which MassDOT will complete. The project documentation for this grant takes into account that a re-evaluation and a Tier 2 NEPA analysis will be needed to move forward through design and construction.

XIII. STRATEGIC GOALS

The Project addresses multiple U.S. DOT Strategic Goals as summarized in Table 5 below.

Table 5: Summary of How the Project Aligns with USDOT’s Strategic Goals

<table>
<thead>
<tr>
<th>Strategic Goal</th>
<th>How Project Addresses the Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Track and signal system improvements including PTC will enhance passenger and railroad operating safety.</td>
</tr>
<tr>
<td>Equitable Economic Strength</td>
<td>The Project will improve rail frequencies between multiple regional urban centers, supporting the increase in regional ties.</td>
</tr>
<tr>
<td>Equity and Barriers to Opportunity</td>
<td>Reduces locomotive idling in the vicinity of communities with a documented high incidence of asthma</td>
</tr>
<tr>
<td>Climate Change and Sustainability</td>
<td>Supports the development of the Inland Route that provides an alternative rail connection between New York City and Boston, if NEC Shore Line route along the NEC was not available. The Shore Line route is vulnerable to sea level rise and flooding that is projected to intensify over the next few decades.</td>
</tr>
<tr>
<td>Transformation</td>
<td>The Worcester to Springfield segment of the corridor is an essential part of the larger New England regional rail system that will tie together the region’s educational and medical institutions and link them to the larger Boston and New York economies. This will allow the corridor cities of Framingham, Worcester, Springfield, Hartford, and New Haven to compete as parts of a larger region. This Project is an essential next step to realizing that vision.</td>
</tr>
<tr>
<td>Infrastructure Investment and Job Creation</td>
<td>With the travel time improvements and greater service reliability, workers in Boston, Framingham, Worcester Springfield, Hartford, and New Haven could use the service to connect with employment in the other corridor cities, particularly in a post pandemic world where employees are no longer expected to be in the physical workplace 5 days a week. With greater flexibility on remote work and hours of work, comes workers’ ability to pursue opportunities in adjacent or nearby labor markets that would have been too costly to access in the absence of rail connectivity and work flexibility.</td>
</tr>
<tr>
<td>Resilient Supply Chains and Economic Opportunity</td>
<td>Faster and more reliable travel times are anticipated to benefit CSX and the shippers that use the service in this corridor.</td>
</tr>
</tbody>
</table>