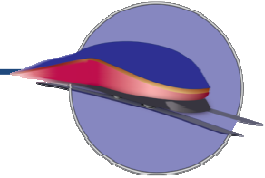


Corridor Program Name: MA Knowledge Corridor/Restore Vermonter Date of Submission: 10/2/09 Version Number:
1

High-Speed Intercity Passenger Rail (HSIPR) Program

Track 2–Corridor Programs:

Application Form



Welcome to the Application Form for Track 2–Corridor Programs of the Federal Railroad Administration’s High-Speed Intercity Passenger Rail (HSIPR) Program.

This form will provide information on a cohesive set of projects—representing a phase, geographic segment, or other logical grouping—that furthers a particular corridor service.

Definition: For purposes of this application, a “Corridor Program” is “a group of projects that collectively advance the entirety, or a ‘phase’ or ‘geographic section,’ of a corridor service development plan.” (*Guidance, 74 Fed. Reg. 29904, footnote 4*). A Corridor Program must have independent utility and measurable public benefits.

In addition to this application form and required supporting materials, applicants are required to submit a Corridor Service Overview.

An applicant may choose to represent its vision for the entire, fully-developed corridor service in one application or in multiple applications, provided that the set of improvements contained in each application submitted has independent utility and measurable public benefits. The same Service Development Plan may be submitted for multiple Track 2 Applications. Each Track 2 application will be evaluated independently with respect to related applications. Furthermore, FRA will make its evaluations and selections for Track 2 funding based on an entire application rather than on its component projects considered individually.

We appreciate your interest in the HSIPR Program and look forward to reviewing your entire application. If you have questions about the HSIPR program or the Application Form and Supporting Materials for Track 2, please contact us at HSIPR@dot.gov.

Instructions for the Track 2 Application Form:

- Please complete the HSIPR Application electronically. See Section G of this document for a complete list of the required application materials.
- In the space provided at the top of each section, please indicate the Corridor Program name, date of submission (mm/dd/yyyy), and an application version number assigned by the applicant. The Corridor Program name must be identical to the name listed in the Corridor Service Overview Master List of Related Applications. Consisting of less than 40 characters, the Corridor Program name must consist of the following elements, each separated by a hyphen: (1) the State abbreviation of the State submitting this application; (2) the route or corridor name that is the subject of the related Corridor Service Overview; and (3) a descriptor that will concisely identify the Corridor Program’s focus (e.g., HI-Fast Corridor-Main Stem).

- Section B, Question 10 requires a distinct name for each project under this Corridor Program. Please the following the naming convention: (1) the State abbreviation; (2) the route or corridor name that forms part of the Corridor Program name; and (3) a project descriptor that will concisely identify the project's focus (e.g., HI-Fast Corridor-Wide River Bridge). For projects previously submitted under another application, please use the **same name** previously used on the project application.
- For each question, enter the appropriate information in the designated gray box. If a question is not applicable to your Track 2 Corridor Program, please indicate "N/A."
- Narrative questions should be answered within the limitations indicated.
- Applicants must up load this completed and all other application materials to www.GrantSolutions.gov by October 2, 2009 at 11:59 pm EDT.
- Fiscal Year (FY) refers to the Federal Government's fiscal year (Oct. 1- Sept. 30).

Corridor Program Name: MA Knowledge Corridor/Restore Vermonter Date of Submission: 10/2/09 Version Number:
1

A. Point of Contact and Application Information

| | | | | |
|------------------------------------------------------------------------|------------------------|------------------------------------------------|---------------------------|------------------------------------------|
| (1) Application Point of Contact (POC) Name: Timothy Doherty | | POC Title: Director of Rail Programs | | |
| Applicant State Agency or Organization Name: Massachusetts | | | | |
| Street Address: 10 Park Plaza | City: Boston | State: MA | Zip Code: 02116 | Telephone Number: 617-973-7840 |
| Email: timothy.doherty@state.ma.us | | Fax: 617-973-8032 | | |

Corridor Program Name: MA Knowledge Corridor/Restore Vermonter Date of Submission: 10/2/09 Version Number:

1

B. Corridor Program Summary

(1) **Corridor Program Name:** MA Knowledge Corridor Restore Vermonter

(2) **What are the anticipated start and end dates for the Corridor Program?** (mm/yyyy)

Start Date: 01/2010

End Date: 11/2015

(3) **Total Cost of the Corridor Program:** (Year of Expenditure (YOE) Dollars*) \$ 75,638,305

Of the total cost above,, how much would come from the FRA HSIPR Program: (YOE Dollars**) \$ 72,888,305

Indicate percentage of total cost to be covered by matching funds: 3.64 %

Please indicate the source(s) for matching funds: Commonwealth of Massachusetts

* Year-of-Expenditure (YOE) dollars are inflated from the base year. Applicants should include their proposed inflation assumptions (and methodology, if applicable) in the supporting documentation.

** This is the amount for which the Applicant is applying.

(4) **Corridor Program Narrative.** *Please limit response to 12,000 characters.*

Describe the main features and characteristics of the Corridor Program, including a description of:

- The location(s) of the Corridor Program's component projects including name of rail line(s), State(s), and relevant jurisdiction(s) (include a map in supporting documentation).
- How this Corridor Program fits into the service development plan including long-range system expansions and full realization of service benefits.
- Substantive activities of the Corridor Program (e.g., specific improvements intended).
- Service(s) that would benefit from the Corridor Program, the stations that would be served, and the State(s) where the service operates.
- Anticipated service design of the corridor or route with specific attention to any important changes that the Corridor Program would bring to the fleet plan, schedules, classes of service, fare policies, service quality standards, train and station amenities, etc.
- How the Corridor Program was identified through a planning process and how the Corridor Program is consistent with an overall plan for developing High-Speed Rail/Intercity Passenger Rail service, such as State rail plans or plans of local/regional MPOs.
- How the Corridor Program will fulfill a specific purpose and need in a cost-effective manner.
- The Corridor Program's independent utility.
- Any use of new or innovative technologies.
- Any use of railroad assets or rights-of-way, and potential use of public lands and property.
- Other rail services, such as commuter rail and freight rail that will make use of, or otherwise be affected by, the Corridor Program.
- Any PE/NEPA activities to be undertaken as part of the Corridor Program, including but not limited to: design studies and resulting program documents, the approach to agency and public involvement, permitting actions, and other key activities and objectives of this PE/NEPA work.

This application will provide for the restoration of the Vermonter and the construction of the bikeway tunnel in the Knowledge Corridor in Massachusetts. The Amtrak intercity passenger train known as the Vermonter, operates daily in each direction between St. Albans, VT, and Washington, DC. Currently the Vermonter operates over the New England Central Railroad (NECR) and CSX lines

between East Northfield and Springfield, Massachusetts. The Project will restore the Vermonter to its former route over a Pan Am Southern (PAS) line between East Northfield and Springfield. The routing of the Vermonter north of East Northfield and south of Springfield will remain unchanged. A map depicting both the current route and the relocated route for this train is contained in the supporting documentation to this Application.

The importance and value of this Corridor was identified through a study sponsored by the Pioneer Valley Planning Commission (PVPC), in conjunction with the Executive Office of Transportation and Public Works (EOTPW). That study has determined that the expansion of intercity passenger rail service in the I-91 Knowledge Corridor, between White River Junction, VT and New Haven, CT, has the potential to be a major component in producing economic revitalization, spurring job creation, improving air quality, increasing overall mobility and reducing vehicular traffic congestion.

This project is the first phase of a longer term vision for the MA Knowledge Corridor. The completion of these two near term infrastructure improvements will enable consideration of additional corridor enhancements including enhanced intercity service, improved safety measures (e.g., Positive Train Control), and other infrastructure improvements. Detail related to the longer term vision for the Corridor is provided in the Service Development Plan. These further projects in the Corridor Development Plan will be developed over time as funding permits.

The important first step in this process is this Project to relocate the Vermonter, which has the independent utility of shortening the schedule and improving the effectiveness of an existing service, and will also provide the sound foundation for passenger rail service in this corridor in the future. The Project will leverage and increase the benefits from Vermont's continued support (through an operating subsidy) for the Vermonter service.

The current route within the Project area is 60.4 miles in length and follows the NECR from East Northfield to Palmer, MA and then on CSX to Springfield. The proposed relocated route from East Northfield directly to Springfield is 49.8 miles in length reducing the route distance by 11 miles. The use of the PAS route will also eliminate the need for a time-consuming reverse movement at Palmer that requires the engineer to "change ends" to operate the train in the reverse direction.

The Project will provide for two new station stops on the relocated route, one at the former Amtrak station in Northampton and another at the soon to be constructed intermodal transportation terminal in Greenfield (also funded through ARRA), in lieu of the single station stop in Amherst on the existing route. There is also the potential for a future additional station in Holyoke along the restored route. Existing Transit service will provide connection from Amherst to the Northampton station.

The Project will upgrade the existing PAS-owned rail line between East Northfield and Springfield. Major work elements of the Project include:

- Install of New Continuously-Welded Rail
- Replacement of crossties
- Rehabilitation of grade crossings
- Upgrading of switches
- Enhancements to the signaling and communications systems
- Surfacing and alignment of the track
- Structural improvements and strengthening of rail bridges
- Restoring the Northampton station and completing the Greenfield station.

The upgrading work on the rail line will also benefit the existing PAS freight service on this line, as it will allow those freight trains to travel at a higher rate of speed over the improved track and provide more reliable service to the freight customers on the line. There are no commuter rail operations on this line.

The second element of the project is to construct a bikeway tunnel under the mainline in Northampton. Bike paths approaching the proposed grade crossing will be completed in 2010, and final design and construction of a bike and pedestrian tunnel will be completed by the end of 2012. The tunnel will promote safety for passengers and rail operators, by providing a separation between the trains and the pedestrians and bicyclists.

The direct benefits of the Project will include a reduction in overall travel time for the Vermonter service of approximately 25 minutes, improved on-time performance, and an estimated 23% increase in ridership. In addition, a benefit-cost assessment of the project was conducted. Five categories of benefits were estimated in the assessment: benefits to existing riders; benefits to new riders; benefits to freight; congestion reduction benefits; and, bicycle benefits. The risk-adjusted median net present value of the realigned

passenger service is \$51.7 million from construction beginning in 2010, carrying through operations to 2041. The benefit-cost ratio (BCR) for the project is 1.8, suggesting that the benefits outweigh the costs and the project is economically feasible. Detail related to the analysis conducted for this project, as well as for the enhanced intercity service longer term, is provided in the Service Development Plan.

This is a critical near-term infrastructure project towards creating an enhanced intercity service in the Corridor. Although not specifically a part of this funding request, a Positive Train Control system, passing siding improvements in East Northfield, development of Holyoke Station, and improvements to the Springfield Interlocking are all part of the longer term vision for the Corridor. An enhanced intercity service, including four round-trip trains in the Pioneer Valley, is expected to generate substantial long-term benefits. As detailed in the Service Development Plan, ridership due to the realignment alone is expected to be 315 daily riders. Ridership due to the enhanced intercity service is 550 riders daily, a growth of 74.5 percent once the enhanced service is initiated. Significant transit-oriented development opportunities are also expected. It is estimated that the region as a whole can expect development impacts in terms of employment and population of at least 1,200 jobs and 2,400 new residents by 2030 under enhanced intercity service. Finally, the enhanced intercity service boasts an impressive benefit-cost ratio of 3.0.

The Preliminary Engineering for the Knowledge Corridor – Restore Vermonter has been completed and is attached to the application. A draft Environmental Assessment was submitted to the FRA on August 27, 2009. With comments incorporated from FRA, EOTPW released the Environmental Assessment for public comment period on September 23 through October 14 and comments received to date have been favorable. With the competition of the public comment period, a summary of public and agency comments/responses will be completed and forwarded to FRA by October 23.

(5) Describe the service objective(s) for this Corridor Program (check all that apply):

- Additional Service Frequencies
- Improved Service Quality
- Improved On-Time performance on Existing Route
- Reroute Existing Service
- Increased Average Speeds/Shorter Trip Times
- New Service on Existing IPR Route
- New Service on New Route
- Other (Please Describe): (1) Stimulus to economically distressed urban areas; (2) Service to larger urban population areas.

(6) Right-of-Way-Ownership. Provide information for all railroad right-of-way owners in the Corridor Program area. Where railroads currently share ownership, identify the primary owner. *If more than three owners, please detail in Section F of this application.*

| Type of Railroad | Railroad Right-of-Way Owner | Route Miles | Track Miles | Status of agreements to implement projects |
|-----------------------|-----------------------------|-------------|-------------|--------------------------------------------|
| Regional or Shortline | Pan Am Southern | 49.8 | 49.8 | Preliminary Executed Agreement/MOU |
| Class 1 Freight | | | | Master Agreement in Place |
| Class 1 Freight | | | | Master Agreement in Place |

(7) Services. Provide information for all existing rail services within Corridor Program boundaries (freight, commuter, and intercity passenger). *If more than three services, please detail in Section F of this application.*

| Type of Service | Name of Operator | Top Speed Within Boundaries | Number of Route Miles | Average Number of Daily | Notes |
|-----------------|------------------|-----------------------------|-----------------------|-------------------------|-------|
|-----------------|------------------|-----------------------------|-----------------------|-------------------------|-------|

| | | Passenger | Freight | Within Boundaries | One-Way Train Operations within Boundaries ¹ | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|---------|-------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Freight | Pan Am Southern | | 10 | 49.8 | 8 | Timetable speed for freight rail is 35 mph, but slow orders limit overall operating speed to 10 mph |
| Freight | | | | | | |
| Freight | | | | | | |
| <p>(8) Rolling Stock Type. Describe the fleet of locomotives, cars, self-powered cars, and/or trainsets that would be intended to provide the service upon completion of the Corridor Program. <i>Please limit response to 2,000 characters.</i></p> <p>It is anticipated that the existing Amtrak equipment used for the Vermonter will continue to be used on the Conn River Line. Currently the Amtrak train consists of a P42 Locomotive and 5 Amtrak cars, 4 coaches and a café car.</p> | | | | | | |
| <p>(9) Intercity Passenger Rail Operator. If applicable, provide the status of agreements with partners that will operate the benefiting high-speed rail/intercity passenger rail service(s) (e.g., Amtrak). If more than one operating partner is envisioned, please describe in Section F.</p> <p>Name of Operating Partner: Amtrak</p> <p>Status of Agreement: Final executed agreement on project scope/outcomes</p> | | | | | | |

¹ One round trip equals two one-way train operations.

(10) Master Project List. Please list all projects included in this Track 2 Corridor Program application in the table below. If available, include more detailed project costs for each project as a supporting form (see Section G below).

| Project Name | Project Type | Project Description | Project Start Date (mm/yyyy) | Estimated Project Cost (Millions of YOE Dollars, One Decimal) | | Was this Project included in a prior HSIPR application? Indicate track number(s). | Are more detailed project costs included in the Supporting Forms? |
|-------------------|--------------|--------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------|
| | | | | Total Cost | Amount Applied For | | |
| Restore Vermonter | Final Design | Restore Vermonter to its former route over a Pan Am Southern line between East Northfield and Springfield | 01/2010 | 75.1 | 72.9 | Track 1a | Yes |
| Bikeway Tunnel | PE/ NEPA | Tunnel for bike path and pedestrian passing underneath rail line approximately 1 mile north of Northampton Station | 01/2010 | 2.25 | 0 | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |
| | PE/ NEPA | | | | | | Yes |

Note: In addition to **program** level supporting documentation, all applicable **project** level supporting documentation is required prior to award. If project level documentation is available now, you may submit it; however, if it is not provided in this application, this project may be considered as a part of a possible Letter of Intent but will not be considered for FD/Construction grant award until this documentation has been submitted.

In narrative form, please describe the sequencing of the projects listed in Question 10. Which activities must be pursued sequentially, which can be done at any time, and which can be done simultaneously? Please limit response to 4,000 characters.

The Knowledge Corridor rail realignment is anticipated to occur in 2010 and 2011. Final design for the realignment is occurring in quarter 4 of 2009 and is anticipated to be completed in quarter 3 of 2010. The bicycle paths approaching the grade crossing will be completed in 2010, and final design will immediately begin on the bikeway tunnel. Both the realignment and bikeway tunnel construction efforts can occur simultaneously. Construction is expected to begin in late 2010 and be finished by the end of 2012, at which point the Vermonter service on the realignment will be initiated.

Corridor Program Name: MA Knowledge Corridor Restore Vermonter Date of Submission: 10/2/09 Version Number:

1

C. Eligibility Information

(1) Select applicant type, as defined in Appendix 1.1 of the HSIPR Guidance:

- State
 Amtrak

If one of the following, please append appropriate documentation as described in Section 4.3.1 of the HSIPR Guidance:

- Group of States
 Interstate Compact
 Public Agency established by one or more States
 Amtrak in cooperation with a State or States

(2) Establish completion of all elements of a Service Development Plan. Note: One Service Development Plan may be referenced in multiple Track 2 Applications for the same corridor service.

Please provide information on the status of the below Service and Implementation Planning Activities:

| | Select <u>One</u> of the Following: | | | Provide Dates for all activities: | |
|--------------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------------|-------------------------------------------------|
| | No study exists | Study Initiated | Study Completed | Start Date (mm/yyyy) | Actual or Anticipated Completion Date (mm/yyyy) |
| Service Planning Activities/Documents | | | | | |
| Purpose & Need/Rationale | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 06/2008 | 09/2009 |
| Service/Operating Plan | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 12/2008 | 09/2009 |
| Prioritized Capital Plan | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 04/2009 | 09/2009 |
| Ridership/Revenue Forecast | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 02/2009 | 09/2009 |
| Operating Cost Forecast | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 05/2009 | 09/2009 |
| Assessment of Benefits | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 02/2009 | 09/2009 |
| Implementation Planning Activities/Documents | | | | | |
| Program Management Plan | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 07/2009 | 09/2009 |
| Financial Plan (capital & operating – sources/uses) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 07/2009 | 09/2009 |
| Assessment of Risks | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | 09/2009 | 09/2009 |

(3) Establish Completion of Service NEPA Documentation (the date document was issued and how documentation can be verified by FRA). The following are approved methods of NEPA verification (in order of FRA preference): 1) References to large EISs and EAs that FRA has previously issued, 2) Web link if NEPA document is posted to a website (including www.fra.gov), 3) Electronic copy of non-FRA documents attached with supporting documentation, or 4) a hard copy of non-FRA documents (large documents should not be scanned but should be submitted to FRA via an express delivery service). See HSIPR Guidance Section 1.6 and Appendix 3.2.9.

Note to applicants: Prior to obligation of funds for FD/Construction activities under Track 2, all project specific documents will be required (e.g. Project NEPA, Financial Plan, and Project Management Plan).

| Documentation | Date (mm/yyyy) | Describe How Documentation Can be Verified |
|--------------------|----------------|--------------------------------------------|
| Non-tiered NEPA EA | 08/2009 | Submitted to FRA |
| Tier 1 NEPA EA | | |
| Tier 1 NEPA EA | | |

(4) Indicate if there is an environmental decision from FRA (date document was issued and web hyperlink if available)

| Documentation | Date (mm/yyyy) | Hyperlink (if available) |
|----------------------------------|----------------|--------------------------|
| Finding of No Significant Impact | | |
| Finding of No Significant Impact | | |
| Finding of No Significant Impact | | |

Corridor Program Name: MA Knowledge Corridor/Restore Vermonter Date of Submission: 10/2/09 Version Number:

D. Public Return on Investment

(1) **1A. Transportation Benefits.** See HSIPR Guidance Section 5.1.1.1. Please limit response to 8,000 characters.

How is the Corridor Program anticipated to improve Intercity Passenger Rail (IPR) service? Describe the overall transportation benefits, including information on the following (*please provide a level of detail appropriate to the type of investment*):

- Introduction of new IPR service: Will the Corridor Program lead directly to the introduction of a new IPR service that is not comparable to the existing service (if any) on the corridor in question? Describe the new service and what would make it a significant step forward in intercity transportation.
- IPR network development: Describe projected, planned, and potential improvements and/or expansions of the IPR network that may result from the Corridor Program, including but not limited to: better intermodal connections and access to stations; opportunities for interoperability with other services; standardization of operations, equipment, and signaling; and the use of innovative technologies.
- IPR service performance improvements (*also provide specific metrics in table 1B below*): Please describe service performance improvements directly related to the Corridor Program, as well as a comparison with any existing comparable service. Describe relevant reliability improvements (e.g., increases in on-time performance, reduction in operating delays), reduced schedule trip times, increases in frequencies, aggregate travel time savings (resulting from reductions to both schedule time and delays, e.g., expressed in passenger-minutes), and other relevant performance improvements.
- Suggested supplementary information (*only when applicable*):
 - Transportation Safety: Describe overall safety improvements that are anticipated to result from the Corridor Program, including railroad and highway-rail grade crossing safety benefits, and benefits resulting from the shifting of travel from other modes to IPR service.
 - Cross-modal benefits from the Corridor Program, including benefits to:
 - ✓ Commuter Rail Services – Service improvements and results (applying the same approach as for IPR above).
 - ✓ Freight Rail Services – Service performance improvements (e.g., increases in reliability and capacity), results (e.g. increases in ton-miles or car-miles of the benefiting freight services), and/or other congestion, capacity or safety benefits.
 - ✓ Congestion Reduction/Alleviation in Other Modes; Delay or Avoidance of Planned Investments – Describe any expected aviation and highway congestion reduction/alleviation, and/or other capacity or safety benefits. Also, describe any planned investments in other modes of transportation (and their estimated costs if available) that may be avoided or delayed due to the improvement to IPR service that will result from the Corridor Program.

The realignment of the Vermonter service and the bikeway tunnel construction are anticipated to result in significant benefits to New England and the eastern U.S. Benefits result from a reduction in rail corridor length, an increase in the number of stations, improved average travel speeds, greater connectivity to Pioneer Valley economic and population centers, highway congestion relief, and improved opportunities to ship freight by rail. In addition, safety will be improved with the bikeway tunnel with pedestrians and bicyclists separated from the railroad.

Five categories of benefits were measured for this analysis: benefits to existing riders; benefits to new riders; benefits to freight; congestion reduction benefits; and, bicycle benefits. The Service Development Plan and technical memorandum provide additional details on the benefit-cost analysis and the ridership forecasting

Passenger Rail Improvements:

Intermodal and Station Benefits: Initial operations will double the number of stations from one to two. In Northampton the former station location will be restored. Intermodal bus connections will enable the Northampton Station to serve passengers using the station in Amherst. The second station will be located in Greenfield. The station will be integrated with the soon to be constructed intermodal transit station being built adjacent to the railroad right of way. The Project contemplates a near-term station stop in Holyoke.

Time Savings: The realigned route will be approximately 11 miles shorter thus reducing the annual length of train miles by 8,030 miles. The realignment also eliminates the time-consuming reverse maneuver at Palmer. Those improvements will lead to significant time savings for each train. (Schedule & TCP runs attached).

Ridership Increase: The proposed relocation of the Vermonter is estimated to increase ridership by 96 daily passengers during the first year of operation in 2012. Annual passenger miles are forecast to increase from 21.6 million to 29.8 million in 2015 – a 38% increase on a shorter route.

Benefits to Existing Riders: Travel time savings accrue to riders who currently travel on the Vermonter. The number of existing riders is estimated based on FY 2008 Amtrak data for the Vermonter service and projected over time based on socioeconomic forecasts. Benefits were quantified in relation to the average wage rate in the region of approximately \$21/hour. It was assumed that most trips are personal (e.g., college students, tourism) and thus receive a value equal to half the average hourly wage, while a small share (15%) are assumed to be business travelers and receive the full wage value. The realignment is expected to increase reliability and on-time performance due to improved track conditions. Travel reliability benefits are not included in average speed calculations, and the transportation literature values reliability gains at between 50% and 200% of the value of travel time. This cumulative reliability benefit is estimated to be \$32.7 million from 2012 to 2041.

Benefits to New Riders: Ridership forecasts of induced rail trips lead to additional user benefits consistent with consumer surplus theory – new riders would only use rail if they are better off by doing so. This benefit is measured by the difference between the generalized cost of highway and rail travel for each origin-destination pair, accounting for travel time, vehicle operating costs, rail fare, and an amenity/convenience factor.

Cross-Modal Improvements and Freight Benefits: The rail realignment will significantly enhance freight rail service and train speeds. The benefit will be an increase in freight traveling by rail. Railroad officials provided future rail freight estimates that envision cars and tons handled increasing by over 100% within 20 years from the date of the initial Project improvements. To reflect market uncertainty and thus provide a conservative estimate of the value of the benefits for increased freight rail use, the estimate was scaled back within the risk analysis (described in Section F). Thus, the additional freight rail carloads are conservatively projected to remove over 200,000 trucks from the highway corridor. This benefit of the project will mitigate highway congestion by reducing truck vehicle miles of travel (VMT) by 17.9 million miles by 2029. Increases in the amount of freight shipped by rail lead to decreased costs to shippers as estimated by the change in costs per ton-mile between truck and rail (accounting for trade-offs with travel time and reliability) and reflecting average haul lengths of about 350 miles. To produce a conservative estimate, the cost differential to shippers of using truck versus rail (about 4 cents per ton mile) was reduced to reflect the typically faster service by trucks. The cumulative freight shipping cost savings are a benefit to shippers and receivers of freight, but do not reflect the benefit to the railroad which is likely to be significantly lower when considering costs and profit margins.

Congestion Reduction Benefits: As discussed above, the realignment will induce additional passenger ridership and increases in freight shipped by rail, reducing auto and truck VMT. This traffic reduction produces 3 categories of benefits: environmental, highway maintenance cost savings, and highway congestion relief. Accident reduction benefits are also estimated in this analysis.

Environmental benefits are calculated based on the reduction of emissions from both trucks and autos diverted from the highway and explained more fully in Section (3). The emissions benefits are estimated to increase over time due to the phasing-in of freight diverted to rail. Reduced VMT also leads to a reduction in the wear on pavement and thus lower future highway maintenance costs. This benefit is estimated on a cost per mile basis from the FHWA with significantly higher costs per VMT for freight trucks than autos. The reduction in VMT also relieves congestion for those vehicles remaining on the highway, resulting in higher speeds and reduced travel time (VHT). Similar to rail time savings, a value of time based on average wages is used to compute the congestion relief benefit, with a higher value of time for truck VHT savings which reflects the on-the-clock nature of the trip and the value of the goods being transported. The total congestion reduction benefits - including environmental, highway maintenance, accident reduction and congestion relief - are \$1.3 million in 2012, increasing to \$7.4 million in 2015 and \$86.9 million in 2030.

Due to the tunnel improvements, more individuals are expected to ride their bikes or walk. The health benefits and reduction in VMT and VOC equal \$64.1 million.

Capital/O&M Costs: The capital costs are estimated to be \$75.1 million with expenditures from 2010 to 2011. The public subsidy for the realignment, to cover the difference between operating costs and fare revenue, is estimated to decrease due to: a shorter distance, more direct rail trip; and an increase in fare revenue due to increased ridership. To be conservative, operating cost levels are assumed to remain the same through 2041 (in real dollars), despite that the route length is reduced.

Benefit-Cost Analysis Summary:

The present value of all benefits is \$118.6 million, with costs at \$69.0 million, and the NPV a positive \$51.7 million with a benefit-cost ratio of 1.8. Benefits and costs are in millions of 2009 dollars. The B-C methodology is in Section F.

BENEFITS

- Travel Time Savings - Existing Riders: \$32.7
- User Benefits - Induced Riders: \$16.7
- Reduced Emissions: \$5.8
- Reduced Highway Maintenance: \$32.6
- Congestion Relief Benefits: \$152.7
- Northampton Bike Tunnel Benefits: \$64.1
- Freight Shipping Cost Savings: \$69.2
- TOTAL BENEFITS: \$373.8
- PV of Total Benefits: \$118.6

COSTS

- Capital Costs: \$75.1
- PV of Costs: \$69.0

Net Present Value (NPV): \$51.7

Benefit-Cost Ratio (BCR): 1.8

1B. Operational and Ridership Benefits Metrics: In the table(s) below, provide information on the anticipated levels of transportation benefits and ridership that are projected to occur in the corridor service or route, following completion of the proposed Corridor Program.

Note: The “Actual—FY 2008 levels” only apply to rail services that currently exist. If no comparable rail service exists, leave column blank.

| Corridor Program Metric | Actual – FY 2008 levels | Projected Totals by Year | | |
|------------------------------------------------------------------------------------------------|-------------------------|------------------------------|------------------------------|------------------------------|
| | | First full year of operation | Fifth full year of operation | Tenth full year of operation |
| Annual passenger-trips | 72,655 | 96,539 | 114,986 | 116,324 |
| Annual passenger-miles (millions) | 21.6 | 29.5 | 30.0 | 30.4 |
| Annual IPR seat-miles offered (millions) | 117.3 | 115.2 | 115.2 | 115.2 |
| Average number of daily round trip train operations (typical weekday) | 1 | 1 | 1 | 1 |
| On-time performance (OTP) ² — percent of trains on time at endpoint terminals | 55% | 90% | 90% | 90% |
| Average train operating delays: minutes of en-route delays per 10,000 train-miles ³ | 1553 min. | 322 minutes | 322 minutes | 322 minutes |
| Top passenger train operating speed (mph) | 55 mph | 60 mph | 60 mph | 60 mph |
| Average scheduled operating speed (mph) (between endpoint terminals) | 41 mph | 46 mph | 46 mph | 46 mph |

² 'On-time' is defined as within the distance-based thresholds originally issued by the Interstate Commerce Commission, which are: 0 to 250 miles and all Acela trains—10 minutes; 251 to 350 miles—15 minutes; 351 to 450 miles—20 minutes; 451 to 550 miles—25 minutes; and 551 or more miles—30 minutes.

³ As calculated by Amtrak according to its existing procedures and definitions. Useful background (but not the exact measure cited on a route-by-route basis) can be found at pages E-1 through E-6 of Amtrak's May 2009 Monthly Performance Report at <http://www.amtrak.com/pdf/0905monthly.pdf>

(2) A. Economic Recovery Benefits: *Please limit response to 6,000 characters. For more information, see Section 5.1.1.2 of the HSIPR Guidance.*

Describe the contribution the Corridor Program is intended to make towards economic recovery and reinvestment, including information on the following:

- How the Corridor Program will result in the creation and preservation of jobs, including number of onsite and other direct jobs (on a 2,080 work-hour per year, full-time equivalent basis), and timeline for achieving the anticipated job creation.
- How the different phases of the Corridor Program will affect job creation (consider the construction period and operating period).
- How the Corridor Program will create or preserve jobs or new or expanded business opportunities for populations in Economically Distressed Areas (consider the construction period and operating period).
- How the Corridor Program will result in increases in efficiency by promoting technological advances.
- How the Corridor Program represents an investment that will generate long-term economic benefits (including the timeline for achieving economic benefits and describe how the Corridor Program was identified as a solution to a wider economic challenge).
- If applicable, how the Corridor Program will help to avoid reductions in State-provided essential services.

Creation and Preservation of Jobs

Investment in the Knowledge Corridor is anticipated to produce significant near-term economic stimulus and job creation benefits in the Pioneer Valley region and nationally. The short-term construction activity will provide a variety of construction, manufacturing and supporting industry job opportunities domestically.

The economic impact analysis for construction of the realignment and tunnel analyzed the major construction labor and material expenditures of the capital cost budget. Major expenditures include steel rail, ties (wood products), pavement, and ballast. This analysis was conducted using the nationally-recognized economic model IMPLAN economic impact modeling system. IMPLAN was selected by the US Department of Agriculture to estimate job creation due to ARRA investments. The economic impact analysis includes estimates of multiplier and total impacts based on direct, indirect, and induced impacts.

Project construction is assumed to occur entirely in 2010 and 2011 with YOY being 60% and 40% of purchases, respectively. The total Project cost is \$75.1 million dollars.

Direct jobs are estimated to be 217 in 2010 and 150 in 2011 for a total of 367 job years during construction. The total short-term job creation, including multiplier effects, is estimated to be 742 jobs in 2010 nationwide with another 510 jobs in 2011 for 1,252 job years.

Additional details of the estimated near-term economic stimulus impacts:

- Beyond construction, several other industries are also expected to benefit, including: engineering and related services; iron and steel manufacturing; wood and truss manufacturing; and maintenance and repair construction.
- The total business sales by national industries will increase by \$222 million during the 2010 and 2011 period, with \$102 million in GDP growth, and \$67 million of labor income.

Economic Distress and Opportunities in the Pioneer Valley

The region served by the Project has experienced virtually no growth in recent decades. Two of the region's larger cities, Springfield and Holyoke, are clearly economically distressed. As evidence:

- The Pioneer Valley's population has only grown by 7.1% since 1970 in comparison to the U.S. which grew by 50%. Holyoke and Springfield have experienced significant population decreases with 20.3 percent and 8.1 percent declines, respectively.
- Springfield's unemployment rate was 8.5%, and Holyoke's was 8.3% compared to the U.S. average of 6.3% over the past 2 years; neither has experienced any growth in the number of private jobs since 1960; and both have high poverty rates.
- The Pioneer Valley region has experienced a decline in key sectors since 2001 including IT, financial and professional services, and manufacturing has lost one of every 5 jobs since 2001.

In terms of near-term job opportunities for the Pioneer Valley region, direct jobs are estimated to be 168 in 2010 and 112 in 2011,

largely due to construction labor. The full regional economic impact, including multiplier effects is approximately 742 new jobs in 2010 and 510 jobs in 2011. Longer-term economic benefits are one of the primary objectives for the region as part of rail corridor improvement alternatives, and a complete economic development analysis technical report has been attached. (see supporting documentation). The Service Development Plan also describes the economic development opportunities for the region.

The realignment of rail service along the I-91 Knowledge Corridor in the Pioneer Valley of Massachusetts has the potential to provide economic development impacts for the cities along the corridor that will have station stops as well as the broader region. The realignment of the Vermonter and tunnel construction will lay the groundwork for potential enhanced intercity service, which has implications for both population and employment. An analysis of the economic development potential for this enhanced service suggests that Northampton will experience the largest population impacts, partly due to the strong desire for alternative transportation in the area, attracting a range of 446 to 1,768 new residents by 2030. Springfield is also expected to see a fairly large impact with nearly 800 new residents under the most likely scenario, while Holyoke and Greenfield are expected to experience slightly less population growth attributable to rail service. Enhanced level rail service is estimated to induce between 2,446 and 10,063 new residents for the Corridor region as a whole by 2030, and between 1,213 and 3,998 jobs. A more extensive description of the economic development potential for the region is provided in the Service Development Plan. The complete analysis is offered as a supplemental technical memorandum.

2B. Job Creation. Provide the following information about job creation through the life of the Corridor Program. Please consider construction, maintenance and operations jobs.

| Anticipated number of onsite and other direct jobs created (on a 2080 work-hour per year, full-time equivalent basis). | FD/ Construction Period | First full year of operation | Fifth full year of operation | Tenth full year of operation |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|---------------------------------|------------------------------------|
| | 183 direct, 626 total | 30 | 155 | 300 |

(3) Environmental Benefits. *Please limit response to 6,000 characters.*

How will the Corridor Program improve environmental quality, energy efficiency, and reduce in the Nation’s dependence on oil? Address the following:

- Any projected reductions in key emissions (CO₂, O₃, CO, PM_x, and NO_x) and their anticipated effects. Provide any available forecasts of emission reductions from a baseline of existing travel demand distribution by mode, for the first, fifth, and tenth years of full operation (*provide supporting documentation if available*).
- Any expected energy and oil savings from traffic diversion from other modes and changes in the sources of energy for transportation. Provide any available information on changes from the baseline of the existing travel demand distribution by mode, for the first, fifth, and tenth years of full operation (*provide supporting documentation if available*).
- Use of green methods and technologies. Address green building design, “Leadership in Environmental and Energy Design” building design standards, green manufacturing methods, energy efficient rail equipment, and/or other environmentally-friendly approaches.

The Knowledge Corridor rail realignment is expected to produce significant environmental and energy savings benefits.
Reduced Emissions

Realignment of the Vermonter service to the Connecticut River Line and the construction of the bikeway tunnel is anticipated to result in a reduction in highway traffic congestion and emissions. By expanding passenger rail services, rail ridership will increase thereby reducing auto Vehicle Miles Traveled (VMT) from northern Connecticut through Massachusetts and into Vermont. Improved service also will reduce the number of vehicle trips as cited in FHWA’s “Multi-Pollutant Emissions Benefits of Transportation” (2006), and the realignment is expected to result in diversion of freight traffic from truck to rail, reducing truck VMT and emissions.

The projected emissions reduction from decreased auto traffic is based on anticipated reduced VMT for automobiles. Realigned rail service is expected to reduce auto VMT by 4.27 million in 2012 the first year of full operation, increasing to 4.33 million in 2017. The reduction in truck VMT from diverting a portion of shipments to rail will be 2.7 million in 2012 and grow to 4.4 million by 2017 and 17.9 million by 2030 as increased freight rail volumes are assumed to phase-in over time rather than immediately. Auto and truck VMT reductions result in fewer emissions of: VOC, CO, NO_x, SO₂, PM_x, and CO₂. To develop emissions

reductions, the projected VMT reductions for autos and trucks were applied to the grams per mile estimates for each emission type. Per unit estimates were derived from EPA's Mobile6 and FHWA's HERS model.

The emissions benefits are estimated to include a CO₂ reduction of 6,845 tons in 2012, growing to just over 10,030 tons in 2017, and 35,565 tons in 2030. CO emissions are expected to decrease by 7.7 tons in 2012, 8.1 tons in 2017, and 11.6 tons in 2030. NO_x emissions are projected to decline by 4.5 tons in 2012, with a reduction of 5.8 tons in 2017, and 15.9 tons in 2030. Other emissions factors are estimated to decrease as well from 2012 to 2017 through 2030: VOC (1.48 to 1.88 to 5.08 tons); SO₂ (0.18 to 0.29 to 1.15 tons); and PM₁₀ (0.21 to 0.34 to 1.3 tons).

Energy and Oil Savings from Traffic Diversion

Increased passenger ridership and freight rail volumes should also lessen our demand for energy and oil. Similar to the emissions analysis, fuel and oil consumption savings were estimated for both auto and truck based on VMT reductions. The per unit consumption estimates for fuel and oil were obtained from the Bureau of Transportation Statistics (BTS) "National Transportation Statistics" (2008) and the National Cooperative Highway Research Program (NCHRP) "Report 456" for auto and truck classes. The annual fuel savings for truck shipments diverted to rail will be more than 463,000 gallons of diesel and 175,200 gallons of gasoline for autos in 2012. Auto fuel savings growth is relatively flat from 2012, growing modestly to 177,450 gallons by 2017. Fuel savings for trucks grows over time to more than 747,700 gallons in 2017 as VMT decreases. Reduced auto and truck VMT also will decrease vehicle maintenance cost, including oil consumed by vehicles. In 2012, the annual oil savings for autos and trucks combined will be 4,128 gallons, growing to 4,580 gallons saved by 2017.

(4) Livable Communities Corridor Program Benefits Narrative. *(For more information, see Section 5.1.1.3 of the HSIPR Guidance, Livable Communities). Please limit response to 3,000 characters.*

How will the Corridor Program foster Livable Communities? Address the following:

- Integration with existing high density, livable development: Provide specific examples, such as (a) central business districts with walking/biking and (b) public transportation distribution networks with transit-oriented development.
- Development of intermodal stations: Describe such features as direct transfers to other modes (both intercity passenger transport and local transit).

The Knowledge Corridor is uniquely well-situated to produce livable community and transit-oriented development (TOD) benefits as the realignment re-connects the larger cities and towns. The region hosts several prominent colleges and universities, and integrating the cities of the Knowledge Corridor into the regional rail network is consistent with regional growth patterns.

The restored route will provide stations or improved access to rail for the region's larger cities such as Greenfield, Northampton, Easthampton, Holyoke, and Chicopee. The realigned rail corridor will provide improved rail access and connectivity to a population of 352,270 within five miles of the stations in comparison to the existing route that serves a population of only 227,395, an increase of 55%. The construction of a bikeway tunnel will improve safety.

For TOD potential, each of the station cities to be served by the Project already has a TOD-friendly downtown and infrastructure including dense development patterns, historically active and mixed use central business districts, and existing or under-construction intermodal transit facilities.

In Greenfield, rail service will directly integrate with the Franklin Regional Transit Center, an intermodal transit facility providing direct bus linkage as well as close access to the Franklin Bikeway. Rail service is likely to lead to new mixed use development opportunities, including residential development, as Greenfield becomes a more attractive place with regional connections to the south.

In Northampton, the Sustainable Master Plan specifically calls for TOD growth in the CBD and Northampton has a large retail and service sector. The arts and creative economy has a very large presence in Northampton, so a strong rail connection south to New York City has great potential. Northampton is home to numerous cultural events as well as a vibrant nightlife which attracts a variety of visitors that could take advantage of rail connections.

Northampton also has excellent bus and biking connections to Amherst and an extremely walkable downtown. The bikeway tunnel will benefit these bikers. Holyoke (planned for possible future station development) is economically distressed along multiple indicators. The traditional downtown has unique assets and promising revitalization efforts are underway led by an urban renewal plan for the downtown area. Specifically:

- The downtown Canalwalk project is expected to help revitalize areas along the canal and construction has begun.
- The multimodal transportation center in the downtown area is scheduled for completion in May 2010. This center will bring intercity bus service back to the downtown for the first time in 20 years.

Finally in Springfield, which already has rail service, the Union Station Redevelopment Plan is moving forward to develop a truly intermodal facility that combines rail with regional and inter-city bus service and will further leverage multi-modal transit alternatives.

Corridor Program Name: MA Knowledge Corridor/Restore Vermonter Date of Submission: 10/2/09 Version Number:

1

E. Application Success Factors

(1) Project Management Approach and Applicant Qualifications Narrative. *Please provide separate responses to each of the following. Additional information on program management is provided in Section 5.1.2.1 of the HSIPR Guidance, Project Management.*

1A. Applicant qualifications.

Management experience: Does the applicant have experience in managing rail investments and Corridor Programs of a similar size and scope to the one proposed in this application?

Yes - Briefly describe experience (brief project(s) overview, dates)

No- Briefly describe expected plan to build technical and managerial capacity. Provide reference to Project Management Plan.

Please limit response to 3,000 characters.

EOTPW owns and oversees active railroad corridors and is the umbrella organization for transportation agencies with significant experience in building rail projects and in administering ARRA funds. EOTPW's rail office has overseen significant repair and rehabilitation projects on its rail lines over the past 20 years, with the support of consultants and other experienced staff at agencies within the transportation secretariat (including the Massachusetts Bay Transportation Authority (MBTA), and other agencies). In carrying out this Project, EOTPW will augment its internal capacity with staff and other expertise from the MBTA and the Massachusetts Highway Department. The MBTA has managed numerous complex commuter rail development and extension projects (including the recent Old Colony and Greenbush expansion projects) and regularly undertakes maintenance and capital improvement projects (estimated annual value of \$125m) along its commuter rail network, including portions of the network shared with intercity passenger rail services operated by Amtrak. EOTPW is presently adapting a Project Management Plan developed for an FTA-funded MBTA project for use in managing this Project, and will incorporate recommended and required ARRA provisions into the PMP and relevant Stakeholder Agreements. (See submitted Draft Project PMP and Stakeholder Agreements discussed in Section E.2 below). The expertise of the MBTA and the Massachusetts Highway Department (both ARRA grantees under FTA and FHWA grants) will be employed to assure full ARRA compliance. EOTPW's staff capacity can also be augmented quickly and as necessary by a range of highly skilled independent contractors available to it under a contract structure that has been in place for several years, and through other available contract mechanisms consistent with applicable state and federal requirements.

1B. Describe the organizational approach for the different Corridor Program stages included in this application (e.g., final design, construction), including the roles of staff, contractors and stakeholders in implementing the Corridor Program. For construction activities, provide relevant information on work forces, including railroad contractors and grantee contractors. *Please limit response to 3,000 characters.*

EOTPW will undertake final design and permitting of the Project, in cooperation with the other Stakeholders. EOTPW will also directly or indirectly oversee the construction and installation of improvements to the Knowledge Corridor in accordance with the Project Management Plan and the Project Schedule. The PMP and Project Schedule will be finalized during final design, and will become a part of the Work Program and Funding Agreement (WPFA) to be executed by EOTPW, PAS. EOTPW will draw upon staff and resources available through its related transportation departments as necessary and appropriate to ensure the successful completion of the Project in accordance with applicable contractual agreements, including the terms and conditions of the ARRA funding agreement, and related regulatory requirements. EOTPW contemplates retaining the engineering and consulting team that performed the preliminary engineering and environmental analyses for the Project to complete the final design and support oversight of project construction, subject to compliance with applicable state and federal (including ARRA) contracting and funding requirements. The intention is that construction will be carried out by PAS and its affiliated companies under a force account agreement, and that the MBTA will oversee construction activities with support from the Commonwealth's transportation agencies and departments.

The host railroad Pan Am Southern as well as its owners Pan Am Railways and Norfolk Southern has demonstrated the ability to perform similar work to what is proposed for the Knowledge Corridor under force account agreements in the past,

including completion of multiple construction activities associated with the Amtrak Downeaster service – which also operates on a line owned by Pan Am Railways. Further, PAS is in the process of its own \$87 million investment in the rehabilitation, capacity improvements and auto and intermodal facilities in the rail corridor between Mechanicville, NY and Ayer, MA. PAS will play a significant role in performing the required improvements. Any outstanding issues regarding construction activities and results will be addressed in the WPFA, which will be executed prior to obligation of the funds requested by this Application. The Applicant expects that any schedule, budget or funding issues (including allocation of risk among the Stakeholders) will likewise be resolved through and addressed in the WPFA and other Stakeholder Agreements.

1C. Does any part of the Corridor Program require approval by FRA of a waiver petition from a Federal railroad safety regulation? (Reference to or discussion of potential waiver petitions will not affect FRA’s handling or disposition of such waiver petitions).

- YES- If yes, explain and provide a timeline for obtaining the waivers
 NO

Please limit response to 1,500 characters.

1D. Provide a preliminary self-assessment of Corridor Program uncertainties and mitigation strategies (consider funding risk, schedule risk and stakeholder risk). Describe any areas in which the applicant could use technical assistance, best practices, advice or support from others, including FRA. Please limit response to 2,000 characters.

EOTPW and the other Stakeholders believe that Project design and construction poses few uncertainties and minimal risks. The Project construction program in this application, which consists of the Restore Vermonter Project and Bikeway Tunnel, is not complex and is not expected to present any unusual or insurmountable challenges. A discussion of management of risk Construction, Design, Costs, QA/QC and Schedule are included in Section 4 of the Project Management Plan. The MBTA which has extensive experience managing complex projects has a proven methodology for risk assessment and management.

The principal risk to the Project schedule is lead time for material, but that risk is believed to be manageable and will not be unique to this Project.

A secondary risk is the capabilities of the stakeholders and partners; however their experience with similar projects and commitment to this project serves mitigate this risk. Pan Am Railways has demonstrated the ability to perform similar work under force account agreements in the past, including completion of multiple construction activities associated with the Amtrak Downeaster service – which also operates on a line owned by Pan Am Railways. While PAS is a newly formed entity, both Pan Am Railways and STR, which will continue to maintain and operate rail freight service over the Connecticut River Main Line, will play a significant role in performing the required improvements. Any outstanding issues regarding construction activities and results will be addressed in the WPFA, which will be executed prior to obligation of the funds requested by this Application. The Applicant expects that any schedule, budget or funding issues (including allocation of risk among the Stakeholders) will likewise be resolved through and addressed in the Project Management Plan, WPFA and other Stakeholder Agreements discussed below.

(2) Stakeholder Agreements Narrative. *Additional information on Stakeholder Agreements is provided in Section 5.1.2.2 of the HSIPR Guidance.*

Under each of the following categories, describe the applicant's progress in developing requisite agreements with key stakeholders. In addition to describing the current status of any such agreements, address the applicant's experience in framing and implementing similar agreements, as well as the specific topics pertaining to each category.

2A. Ownership Agreements – Describe how agreements will be finalized with railroad infrastructure owners listed in the “Right-of-Way Ownership” and “Service Description” tables in Section B. If appropriate, “owner(s)” may also include operator(s) under trackage rights or lease agreements. Describe how the parties will agree on Corridor Program design and scope, benefits, implementation, use of Corridor Program property, maintenance, scheduling, dispatching and operating slots, Corridor Program ownership and disposition, statutory conditions and other essential topics. Summarize the status and substance of any ongoing or completed agreements. *Please limit response to 3,000 characters.*

PAS and its affiliate Pan Am Railways have been closely involved in Project development over the past several years. PAS has entered into an Agreement in Principle with EOTPW and will work in good faith to arrive at an agreement that will establish both operational and performance requirements (including maintenance) consistent with the goals of the Agreement in Principle. PAS and Amtrak expect to negotiate an agreement (a "Host Railroad Agreement") consistent with the terms of the funding agreement to be entered into by Amtrak and VTrans (by which VTrans will support operation of the Vermonter). Station Agreements will also be negotiated so that the stations in Massachusetts are maintained in the same way as the stations in Vermont. Letters of intent to enter into station agreements are attached for Northampton and Greenfield. The EOTPW / PAS Agreement in Principle is attached to this Application. Benefits to freight rail service and customers are discussed in Section D.

2B. Operating Agreements – Describe the status and contents of agreements with the intended operator(s) listed in “Services” table in the Application Overview section above. Address Corridor Program benefits, operation and financial conditions, statutory conditions, and other relevant topics. *Please limit response to 3,000 characters.*

Amtrak will operate the Vermonter on the relocated line under a contract with VTrans as it has operated the Vermonter on the current route. Savings are expected from the shorter route and increased revenue is expected from the greater ridership. Incentives and penalties will be included to assure reliable and timely service. EOTPW will work with VTrans to monitor performance and analyze and address any significant or chronic shortfalls in service. The MA / VT Agreement in Principle, and Amtrak / MA / VT Agreement in Principle are attached to this Application.

2C. Selection of Operator – If the proposed operator railroad was not selected competitively, please provide a justification for its selection, including why the selected operator is most qualified, taking into account cost and other quantitative and qualitative factors, and why the selection of the proposed operator will not needlessly increase the cost of the Corridor Program or of the operations that it enables or improves. *Please limit response to 3,000 characters.*

Amtrak currently operates the Vermonter and will continue to operate the service in accordance with the Agreements in Principle and a modification of the current agreement between VTrans and Amtrak. Should Amtrak (or a comparable operator) be unable or unwilling to provide service in the future despite the best efforts of the other Stakeholders, EOTPW will consult with VTrans and FRA to identify and undertake an appropriate course of action.

2D. Other Stakeholder Agreements – Provide relevant information on other stakeholder agreements including State and local governments. *Please limit response to 3,000 characters.*

The subsidy for the operation of the Vermonter is to be provided by VTrans. See the MA / VT Agreement in Principle, which describes Vermont's commitment to continue to subsidize the Vermonter service. EOTPW and VTrans will coordinate their rail planning and work together to monitor performance and ridership of the Vermonter, as well as any increase in service that may be achievable. EOTPW and PAS intend to enter into a Work Program and Funding Agreement (“WPFA”) describing in detail the contributions of the parties, and their responsibilities for preparation and implementation (including permitting, final design and construction) of the required improvements. The WPFA will also address funding and risk allocation issues, and will establish the performance metrics which will be achieved through the

Project, including time, speed, and reliability standards described in the Agreements in Principle.

2E. Agreements with operators of other types of rail service - Are benefits to non-intercity passenger rail services (e.g., commuter, freight) foreseen? Describe any cost sharing agreements with operators of non-intercity passenger rail service (e.g., commuter, freight). *Please limit response to 3,000 characters.*

No other rail passenger or freight carriers operate over the Connective River Line.

(3) Financial Information

3A. Capital Funding Sources. Please provide the following information about your funding sources (if applicable).

| Non FRA Funding Sources | New or Existing Funding Source? | Status of Funding ⁴ | Type of Funds | Dollar Amount (millions of \$ YOE) | % of Program Cost | Describe uploaded supporting documentation to help FRA verify funding source |
|-------------------------------|---------------------------------|--------------------------------|---------------|------------------------------------|-------------------|------------------------------------------------------------------------------|
| Commonwealth of Massachusetts | Existing | Budgeted | State | 2.75 | 3.64% | |
| | New | Committed | | | | |
| | New | Committed | | | | |
| | New | Committed | | | | |

3B. Capital Investment Financial Agreements. Describe any cost sharing contribution the applicant intends to make towards the Corridor Program, including its source, level of commitment, and agreement to cover cost increases or financial shortfalls. Describe the status and nature of any agreements between funding stakeholders that would provide for the applicant’s proposed match, including the responsibilities and guarantees undertaken by the parties. Provide a brief description of any in-kind matches that are expected. *Please limit response to 3,000 characters.*

EOTPW understands that it will be the federal grantee primarily responsible to FRA for any construction shortfall, as well as grant management, although the agreements to be executed in furtherance of the Agreements in Principle may allocate responsibility among the parties. EOTPW recognizes the contributions the parties have already made in developing this Project, including an extensive public involvement process conducted through the Pioneer Valley Planning Commission, the completion of PE, and the accompanying environmental work. As ridership increases due to the realignment, fare revenue will also increase, resulting in a reduction of the subsidy required to sustain the service.

3C. Corridor Program Sustainability and Operating Financial Plan.

Please report on the Applicant’s projections of future financial requirements to sustain the service by completing the table below (in YOE dollars) and answering the following question. Describe the source, nature, share, and likelihood of each identified funding source that will enable the State to satisfy its projected financial support requirements to sustain the operation of the service addressed in this Corridor Program. *Please limit response to 2,000 characters.*

Total operating revenue is the combination of fare revenue and food/beverage revenue. In addition, a subsidy from the State of Vermont is provided as a revenue line item.

In 2008, operating revenue was nearly \$4.1 million. Of this total, \$3.9 million was fare revenue and \$200,000 was food and beverage revenue. The remaining \$2.8 million represents the subsidy for that year. The subsidy represents 41% of the total revenue.

To project subsidy requirements going forward, operating cost and revenue information was obtained from the State of Vermont’s FY2008 Profit and Loss Statement for the Vermonter. This profit and loss statement, as well as guidance by the State of Vermont, was used to project operating costs and revenues to 2030. Using base year operating costs provided by the state, an escalation factor of 3.5 percent was applied to the 2008 costs to project operating costs going forward. To be

⁴ Reference Notes: The following categories and definitions are applied to funding sources:

Committed: Committed sources are programmed capital funds that have all the necessary approvals (e.g. legislative referendum) to be used to fund the proposed phase without any additional action. These capital funds have been formally programmed in the State Rail Plan and/or any related local, regional, or State Capital Investment Program CIP or appropriation. Examples include dedicated or approved tax revenues, State capital grants that have been approved by all required legislative bodies, cash reserves that have been dedicated to the proposed phase, and additional debt capacity that requires no further approvals and has been dedicated by the sponsoring agency to the proposed phase.

Budgeted: This category is for funds that have been budgeted and/or programmed for use on the proposed phase but remain uncommitted, i.e., the funds have not yet received statutory approval. Examples include debt financing in an agency-adopted CIP that has yet to be committed in their near future. Funds will be classified as budgeted where available funding cannot be committed until the grant is executed, or due to the local practices outside of the phase sponsor’s control (e.g., the phase development schedule extends beyond the State Rail Program period).

Planned: This category is for funds that are identified and have a reasonable chance of being committed, but are neither committed nor budgeted. Examples include proposed sources that require a scheduled referendum, requests for State/local capital grants, and proposed debt financing that has not yet been adopted in the agency’s CIP.

conservative, operating cost levels are assumed to remain the same through 2030 (in real dollars). Given the 11 mile reduction in miles of operation for each train, operating costs may actually decrease.

Fare revenue projections were calculated using the most current fare revenue estimate for the existing service and existing and forecast passenger miles. Food/beverage revenue is estimated using existing and projected ridership, as well as current food/beverage revenue. Estimated revenue sources are escalated by 3.5 percent each year. The subsidy from the State of Vermont is calculated to be the difference between operating costs and the combined fare and food/beverage revenue for each year. For 2012, the subsidy is anticipated to account for 19% of the total operating revenue. In 2017, the figure is 17% and in 2022, the subsidy represents 16% of the total operating revenue. It is anticipated that the State of Vermont will continue to provide this operating subsidy, as they have historically done since 1995.

Note: Please enter supporting projections in the Track 2 Application Supporting Forms, and submit related funding agreements or other documents with the Supporting Materials described in Part G of this Track 2 Application. The numbers entered in this table must agree with analogous numbers in the Supporting Forms.

| Funding Requirement (as identified on the Supporting Form) | Projected Totals by Year (\$ Millions Year Of Expenditure (YOE)* Dollars - One Decimal) | | | |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------|------------------------------|------------------------------|
| | Baseline Actual-FY 2009 Levels (State operating subsidy for FY 2009 if existing service) | First full year of operation | Fifth full year of operation | Tenth full year of operation |
| Indicate the Fiscal Year | 2009 | 2012 | 2017 | 2022 |
| Surplus/deficit after capital asset renewal charge ⁵ | \$2,903,581 | \$1,514,214 | \$1,617,271 | \$1,781,913 |
| Total Non-FRA sources of funds applicable to the surplus/deficit after capital asset renewal | \$2,903,581 | \$1,514,214 | \$1,617,271 | \$1,781,913 |
| Funding Requirements for which Available Funds Are Not Identified | 0 | 0 | 0 | 0 |

* Year-of-Expenditure (YOE) dollars are inflated from the base year. Applicants should include their proposed inflation assumptions (and methodology, if applicable) in the supporting documentation.

Note: Data reported in this section should be consistent with the information provided in the Operating and Financial Performance supporting form for this application.

⁵ The “capital asset renewal charge” is an annualized provision for **future** asset replacement, refurbishment, and expansion. It is the annualized equivalent to the “continuing investments” defined in the FRA’s Commercial Feasibility Study of high-speed ground transportation (*High-Speed Ground Transportation for America*, September 1997, available at <http://www.fra.dot.gov/us/content/515> (see pages 5-6 and 5-7).

(4) Financial Management Capacity and Capability – Provide audit results and/or other evidence to describe applicant capability to absorb potential cost overruns, financial shortfalls identified in 3C, or financial responsibility for potential disposition requirements (include as supporting documentation as needed). Provide statutory references/ legal authority to build and oversee a rail capital investment. *Please limit response to 3,000 characters.*

EOTPW is authorized (MGL Ch 6A, Sec. 19 and 19A and Ch 161C and continued through the provisions of Chapter 29 of the Acts of 2009 (An Act Modernizing the Transportation Systems of the Commonwealth)) to fund rail capital projects. EOTPW annually commits approximately \$3m to that purpose. PAS and Amtrak will review all plans and monitor construction to make sure that the outcome is satisfactory to the operating goal. An Agreement between Amtrak and EOTPW will establish the means by which new stations in Massachusetts will be served and maintained. Amtrak and Vtrans have an agreement by which Amtrak operates and Vtrans subsidizes the Vermonter. VTrans will continue to provide operating support through an annual appropriations process and an Agreement between VTrans and EOTPW will establish the states' rights and obligations if operations should be discontinued.

(5) Timeliness of Corridor Program Completion – Provide the following information on the dates and duration of key activities, if applicable. For more information, see Section 5.1.3.1 of the HSIPR Guidance, Timeliness of Corridor Program Completion.

| | |
|---------------------------------------------------|-------------------|
| Final Design Duration: | 4 months |
| Construction Duration: | 19 months |
| Rolling Stock Acquisition/Refurbishment Duration: | NA months |
| Service Operations Start date: | 10/2011 (mm/yyyy) |

(6) If applicable, describe how the Corridor Program will promote domestic manufacturing, supply and industrial development, including furthering United States-based equipment manufacturing and supply industries. *Please limit response to 1,500 characters.*

The Project will order material and equipment from domestic suppliers in accordance with the Buy America provisions of ARRA. This project requires materials that can all be produced domestically and will support manufacturing industries who supply steel rail, ties, ballast, and other materials.

(7) If applicable, describe how the Corridor Program will help develop United States professional railroad engineering, operating, planning and management capacity needed for sustainable IPR development in the United States. *Please limit response to 1,500 characters.*

The Connecticut River Valley has a history of skilled craftsmanship and a high unemployment rate. EOTPW will coordinate workforce development initiatives with the state's larger ARRA program and other resources made available through Massachusetts Executive Office of Labor and Workforce Development.

F. Additional Information

- (1) Please provide any additional information, comments, or clarifications and indicate the section and question number that you are addressing (e.g., Section E, Question 1B). This section is optional.

BENEFIT-COST ANALYSIS METHODOLOGY

The benefit-cost analysis was conducted by HDR/HLB Decision Economics using methods and parameters consistent with US DOT guidance as well as past benefit-cost models of transit and passenger rail applied by HDR/HLB on studies in Virginia, Texas, and throughout the country. The discounted present value (PV) of all benefits is \$118.6 million, with present value costs at \$69.0 million, and the net present value a positive \$51.7 million. This results in a benefit-cost ratio of 1.8, meaning that for every one dollar invested in this proposed project, there is a \$1.80 return to the public in benefits. Based on a risk analysis of benefits, the BCR ranges from 1.5 to 2.2, and if a lower real discount rate is used, the BCR increases substantially as future benefits are weighed more heavily against the immediate capital costs. This provides more confidence that the results will produce a positive NPV.

RISK ANALYSIS DISCUSSION OF BENEFIT-COST RESULTS

Risk is inherent in any forecast of costs and benefits so this analysis included both a formal risk analysis of all key parameters and assumptions, as well as sensitivity testing to determine the impact of a few key variables in the analysis. Examples of the risk variables that use low-to-high ranges include the value of travel time, average speed on rail and highway corridors, fuel prices, cost of emissions, shipper costs and tons per car for freight benefits. The uncertainty is modeled using the statistically based Monte Carlo simulation method to determine the range of likely future benefits. Based on the risk analysis, the BCR ranges from 1.5 to 2.2, meaning, for example, that there is a 90% likelihood that the BCR will be at least as high as 1.5 providing more confidence that the results will produce a positive NPV. One of the largest determinants of the BCR for this analysis is the discount rate. The 1.8 BCR uses a 7% real discount rate as suggested by the OMB, which is well above recent interest rates. If applying a 3% real discount rate (as suggested by the TIGER guidance as a sensitivity test), the BCR jumps to 3.0 – increasing as future benefits are weighed more heavily against the immediate capital costs. To be conservative, increases in fare revenue that reduce the public subsidy by approximately \$850,000 per year are not included in the cost-benefit analysis, as they are treated as a transfer from riders to the public rail agency.

JOB CREATION ESTIMATES

Job creation impacts in Section D, 2B are based on a combination of economic analysis of the employment benefits of the proposed rail project. The construction period job estimate is based on an annual average of job impacts in 2010 and 2011 as described in Section D, 2A. It is derived from the IMPLAN economic model and is presented in terms of both direct jobs, as well as total jobs, which includes multiplier effects nationally. The methodology to determine job impacts during the operation phase is different and is focused on the job creation and retention potential of the project. Since this application is focused on re-routing the Vermonter service and anticipates lower operating costs, the direct passenger rail jobs related to this service will be similar to current activity. However, the

improved rail corridor will lead to: a) potential for transit-oriented development job and population impacts in the new station cities; and b) manufacturing and distribution industry job retention and creation for current and potential freight rail customers. Both impacts are assumed to be phased-in over time as the fifth year of operations impact of 155 jobs is anticipated to grow to 560 jobs by 2030. The transit-oriented development effects are estimated based on the Knowledge Corridor economic development analysis results (see attached file), reflecting a proportional impact based on the number of trains. The freight-related job impacts are based on industry-standard relationships between lower shipping costs and job creation.

ASSESSMENT OF PROJECT RISKS

The Assessment of Project Risks is included in the Program Management Plan.

Corridor Program Name: MA Knowledge Corridor/Restore Vermont Date of Submission: 10/2/09 Version Number:
1

G.Summary of Application Materials

Note: In addition to the requirements listed below, applicants must comply with all requirements set forth in the HSIPR Guidance and all applicable Federal laws and regulations, including the American Recovery and Reinvestment Act of 2009 (ARRA) and the Passenger Rail Investment and Improvement Act of 2008 (PRIIA).

| Application Forms | Required for Corridor Programs | Required for Projects [See Note Below] | Reference | Comments |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------|--------------------------------|----------------|
| <input checked="" type="checkbox"/> This Application Form | ✓ | | HSIPR Guidance Section 4.3.3.3 | |
| <input checked="" type="checkbox"/> Corridor Service Overview (Same Corridor Service Overview may be used for multiple applications) | ✓ | | HSIPR Guidance Section 4.3.3.3 | |
| Supporting Forms (Forms are provided by FRA on Grant Solutions and the FRA website) | Required for Corridor Programs | Required for Projects [See Note Below] | Reference | Comments |
| <input checked="" type="checkbox"/> General Info | ✓ | ✓ | HSIPR Guidance Section 4.3.5 | FRA Excel Form |
| <input checked="" type="checkbox"/> Detailed Capital Cost Budget | ✓ | ✓ | HSIPR Guidance Section 4.3.5 | FRA Excel Form |
| <input checked="" type="checkbox"/> Annual Capital Cost Budget | ✓ | ✓ | HSIPR Guidance Section 4.3.5 | FRA Excel Form |
| <input checked="" type="checkbox"/> Operating and Financial Performance and Any Related Financial Forms | ✓ | | HSIPR Guidance Section 5.3.5 | FRA Excel Form |

| | | | | |
|-------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------|----------------------------------------|-----------------|
| <input checked="" type="checkbox"/> Program or Project Schedule | ✓ | ✓ | HSIPR Guidance Section 4.3.5 | FRA Excel Form |
| Supporting Documents <i>(Documents to be generated and provided by the applicant)</i> | Required for Corridor Programs | Required for Projects [See Note Below] | Reference | Comments |
| <input checked="" type="checkbox"/> Map of Corridor Service | ✓ | | Corridor Service Overview Question B.2 | |
| <input checked="" type="checkbox"/> Service Development Plan | ✓ | | HSIPR Guidance Section 1.6.2 | |
| <input checked="" type="checkbox"/> "Service" NEPA | ✓ | | HSIPR Guidance Section 1.6.2 | |
| <input checked="" type="checkbox"/> Project Management Plan | ✓ | | HSIPR Guidance Section 4.3.3.2 | |
| <input checked="" type="checkbox"/> "Project" NEPA (Required before obligation of funds) | | ✓ | HSIPR Guidance Section 1.6.2 | |
| <input checked="" type="checkbox"/> PE Materials | ✓ | ✓ | HSIPR Guidance Section 1.6.2 | |
| <input checked="" type="checkbox"/> Stakeholder Agreements | ✓ | ✓ | HSIPR Guidance Section 4.3.3.2 | |
| <input checked="" type="checkbox"/> Financial Plan | ✓ | ✓ | HSIPR Guidance Section 4.3.3.2 | |
| <input checked="" type="checkbox"/> Job Creation | ✓ | ✓ | HSIPR Guidance Section 1.6.2 | |

| Standard Forms <i>(Can be found on the FRA website and www.forms.gov)</i> | Required for Corridor Programs | Required for Projects [See Note Below] | Reference | Comments |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------|-----------------|
| <input checked="" type="checkbox"/> SF 424: Application for Federal Assistance | ✓ | | HSIPR Guidance Section 4.3.3.3 | Form |
| <input checked="" type="checkbox"/> SF 424C: Budget Information-Construction | ✓ | | HSIPR Guidance Section 4.3.3.3 | Form |
| <input checked="" type="checkbox"/> SF 424D: Assurances-Construction | ✓ | | HSIPR Guidance Section 4.3.3.3 | Form |
| <input checked="" type="checkbox"/> FRA Assurances Document | ✓ | | HSIPR Guidance Section 4.3.3.3 | Form |
| Note: Items checked under “Corridor Programs” are required at the time of submission of this Track 2 Corridor Programs application. Items checked under “Projects” are optional at the time of submission of this Track 2 Corridor Programs application, but required prior to FD/Construction grant award. | | | | |

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