



Northern Tier Passenger Rail Study

Working Group Meeting #4

March 21, 2024



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Agenda

- 1 Study Overview
- 2 Study Alternatives Review
- 3 Issues and Opportunities
- 4 Draft Recommended Next Steps
- 5 Draft Implementation Plan
- 6 Working Group Discussion
- 7 Public Comment
- 8 Next Steps



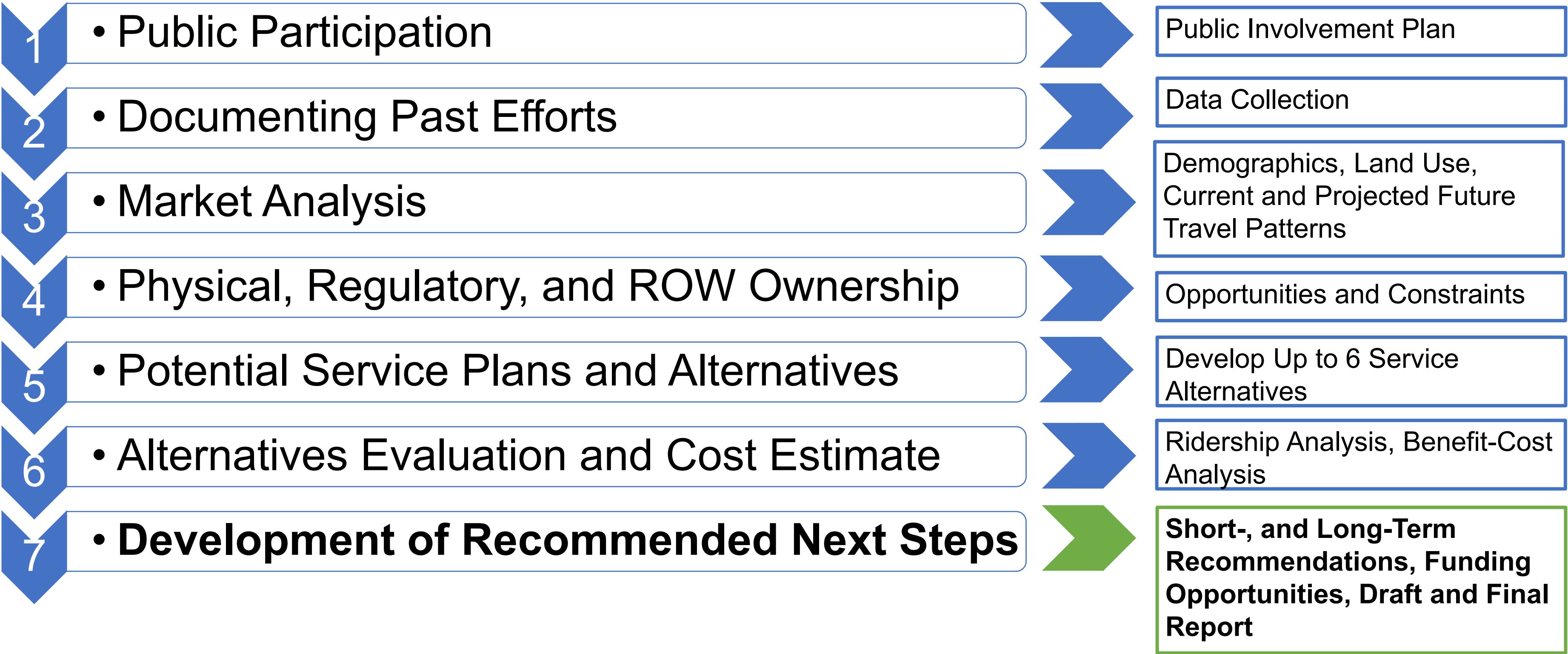
Study Overview

Overview

- Study initiated at the direction of the Massachusetts Legislature to conduct a feasibility study of rail access between the cities of North Adams and Boston
- Conceptual planning study to examine economic and environmental benefits, and identify all necessary improvements and any challenges



Study Process



The steps in **bold** represent the current stage of the study process

Study Goals and Objectives

- **Goal: Support economic development along the Northern Tier corridor**
 - Improve connectivity and access to destinations (e.g., jobs and services, academic institutions, tourist attractions, etc.)
 - Support the advancement of relevant economic development-related policies, plans, and designations
 - Minimize impacts to freight rail operations
- **Goal: Promote transportation equity**
 - Increase mobility options between Western and Eastern Massachusetts
 - Improve connectivity and reliability
 - Enhance safety
- **Goal: Minimize impacts on public health and the environment from transportation**
 - Improve public health outcomes
 - Minimize air/noise pollution and greenhouse gas emissions
 - Minimize or avoid impacts to cultural or natural resources



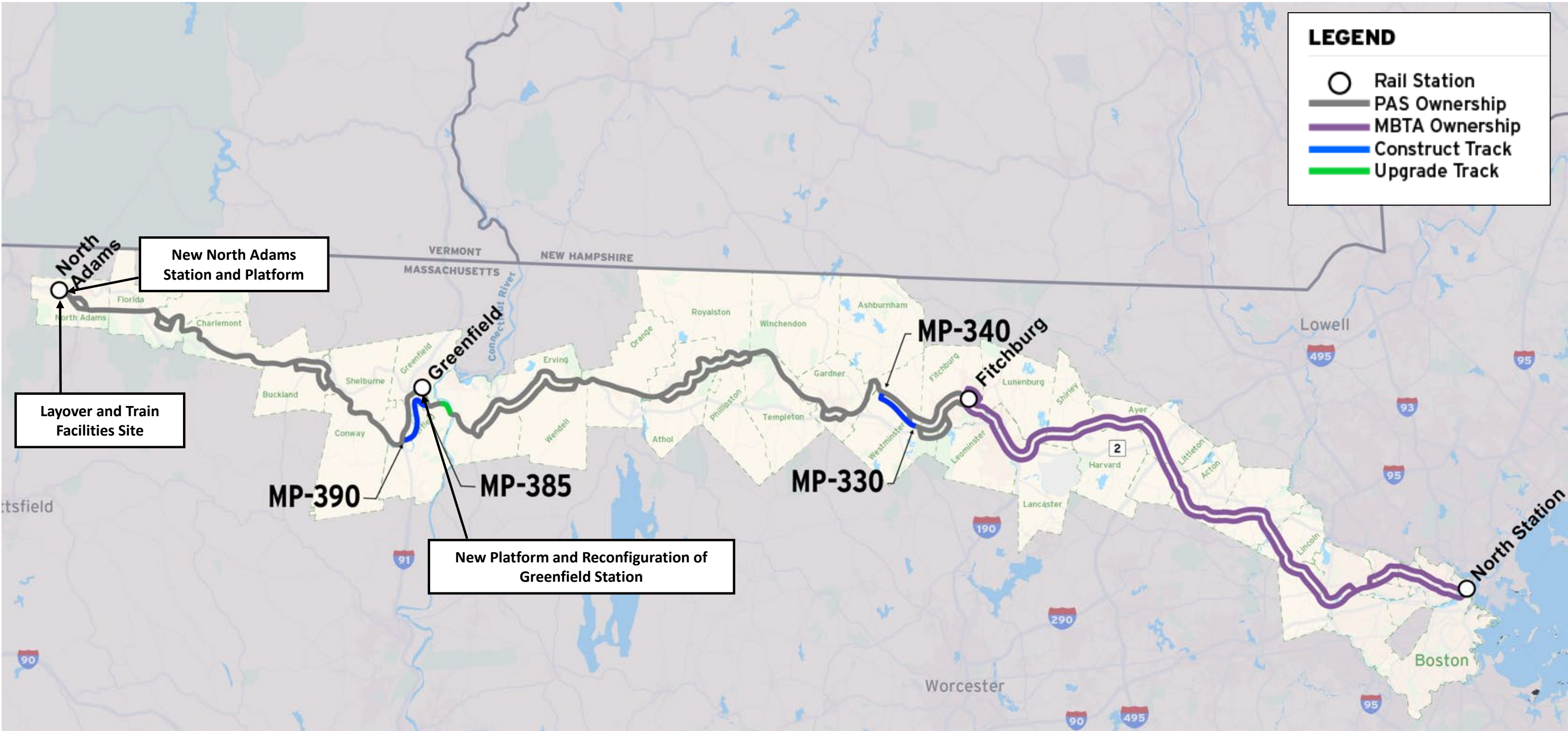
Study Alternatives Review

Alternatives Review - Two Phase Process

Alternatives Development Process



Alternative 1 – Lower Investment



Service Type

- 5 Trains/day
- All Stops

Stations

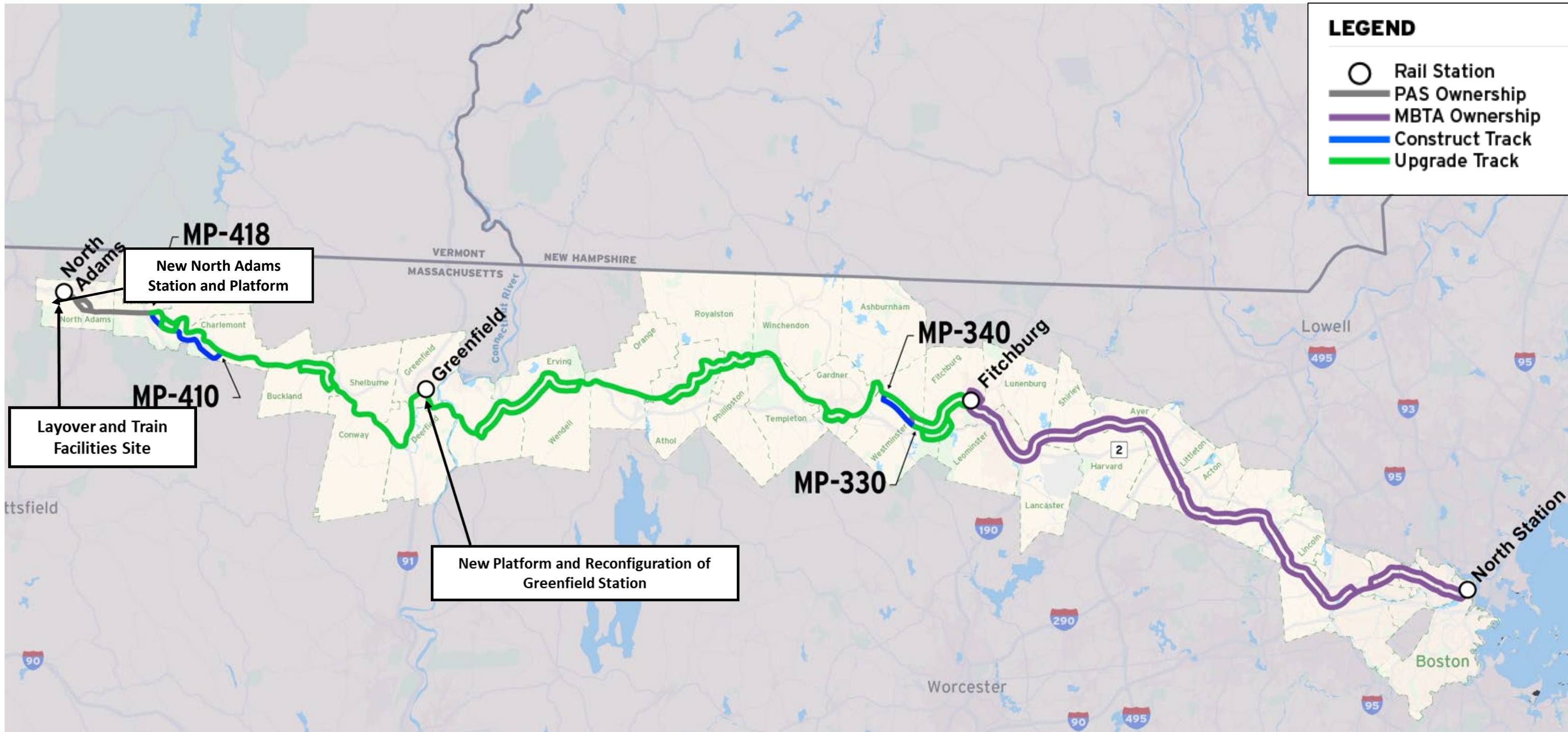
- North Adams
- Greenfield
- Fitchburg
- North Station

Proposed Improvements

- New double track in Greenfield
- Track upgraded to Class 2 at PAS East Deerfield Yard
- Crossing renewals
- Bridge rehabilitation
- Signal replacement & Positive Train Control
- North Adams layover

Track Work	Bridges	Signals & Grade Xings	Electrification	Stations	Layover	Rolling Stock	Total
\$188,974,450	\$429,711,003	\$138,189,055	\$0	\$23,113,097	\$15,660,145	\$82,945,944	\$878,593,696

Alternative 2 – Higher Investment



Service Type

- 5 Trains/day
- All Stops

Stations

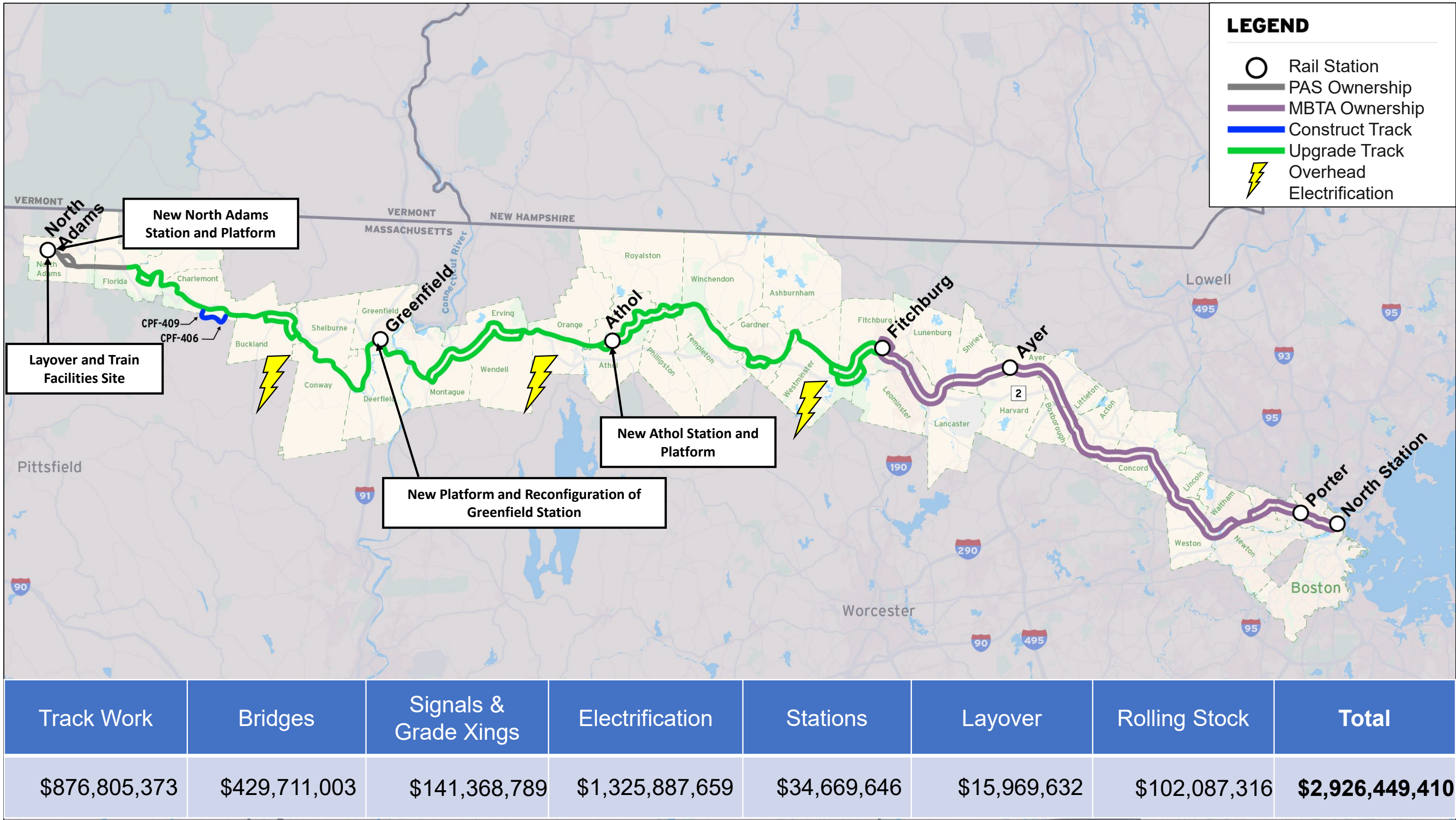
- North Adams
- Greenfield
- Fitchburg
- North Station

Proposed Improvements

- New double track in Florida, Charlemont, and Westminster
- Track upgraded to Class 3 and 4
- Crossing renewals
- Bridge rehabilitation
- Signal replacement & Positive Train Control
- North Adams layover

Track Work	Bridges	Signals & Grade Xings	Electrification	Stations	Layover	Rolling Stock	Total
\$877,993,288	\$429,711,003	\$141,368,789	\$0	\$23,113,097	\$15,969,632	\$82,945,944	\$1,571,101,755

Alternative 3 – Electrified Service



Service Type

- 5 Trains/day
- All Stops

Stations

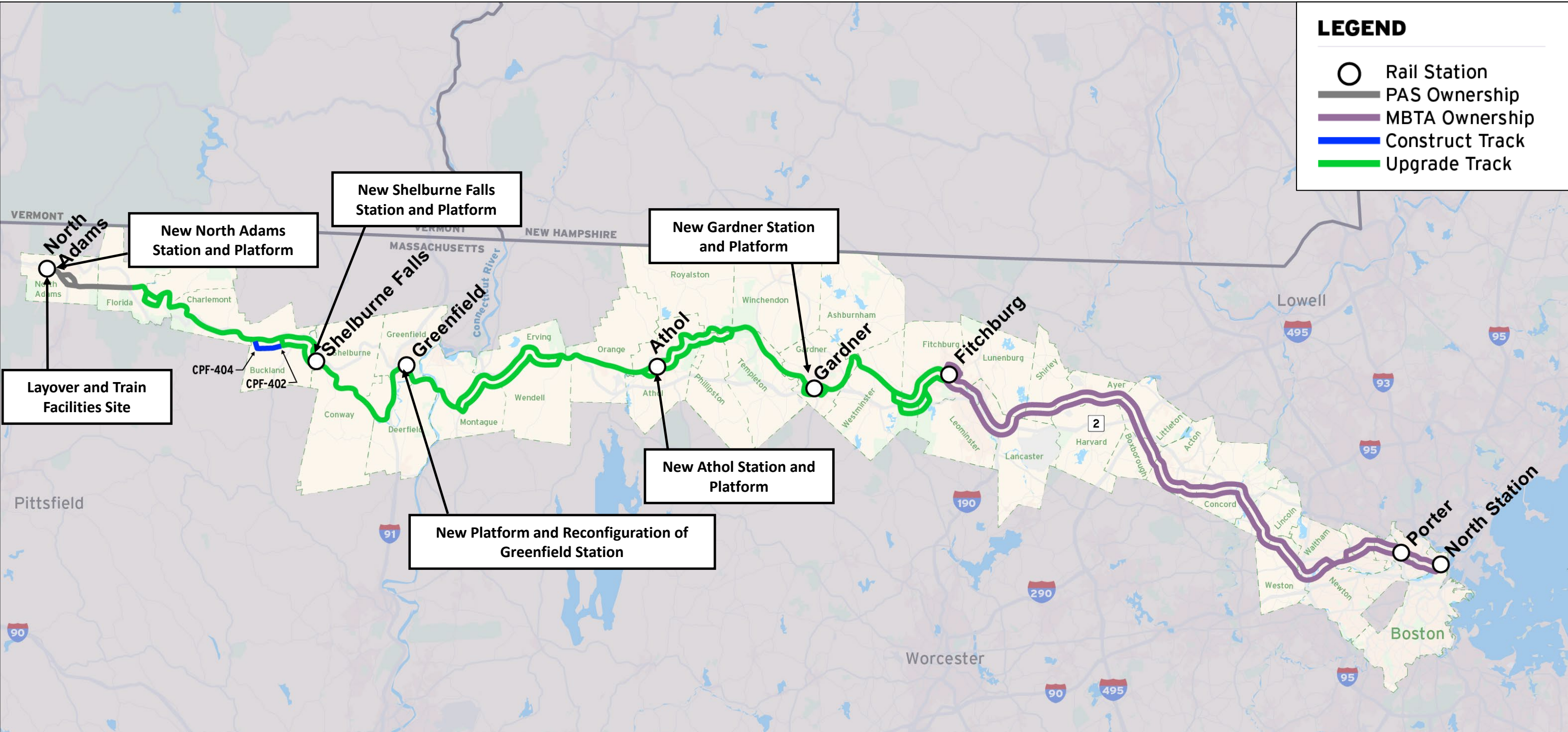
- North Adams
- Greenfield
- Athol
- Fitchburg
- Ayer
- Porter
- North Station

Proposed Improvements

- New double track in Charlemont
- Track upgraded to Class 3 and 4
- Overhead electrification
- Crossing renewals
- Bridge rehabilitation
- Signal replacement & Positive Train Control
- North Adams layover

Cost of electrification for the corridor west of the MBTA Fitchburg Line

Alternative 4 – Full Local Service



LEGEND

- Rail Station
- PAS Ownership
- MBTA Ownership
- Construct Track
- Upgrade Track

Service Type

- 5 Trains/day
- All Stops

Stations

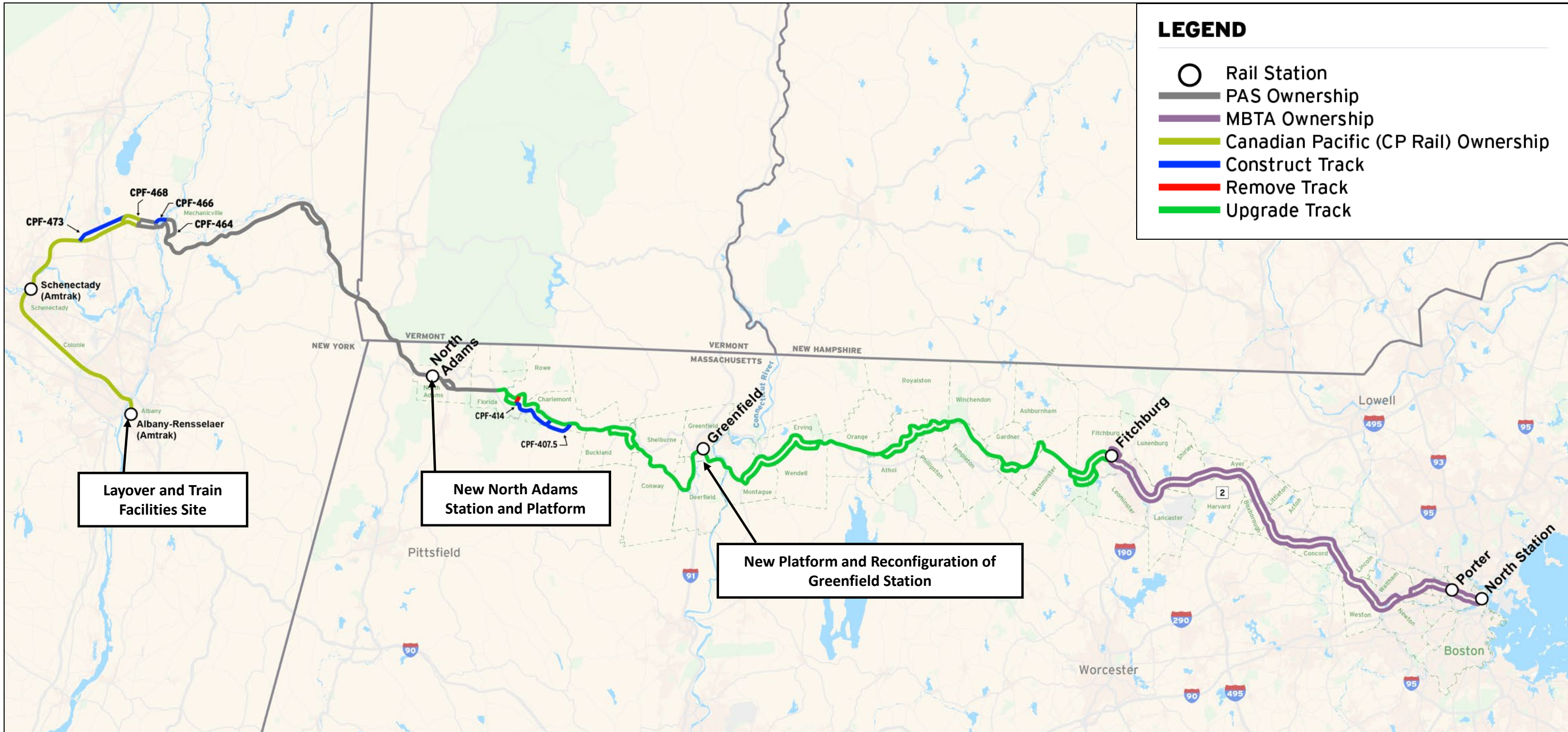
- North Adams
- Shelburne Falls
- Greenfield
- Athol
- Gardner
- Fitchburg
- Porter
- North Station

Proposed Improvements

- New double track in Buckland
- Track upgraded to Class 3 and 4
- Crossing renewals
- Bridge rehabilitation
- Signal replacement & Positive Train Control
- North Adams layover

Track Work	Bridges	Signals & Grade Xings	Electrification	Stations	Layover	Rolling Stock	Total
\$862,686,962	\$429,711,003	\$141,368,789	\$0	\$57,782,743	\$15,969,632	\$82,945,944	\$1,590,465,076

Alternative 5 – Albany Extension



Service Type

- 5 Trains/day
- All Stops

Stations

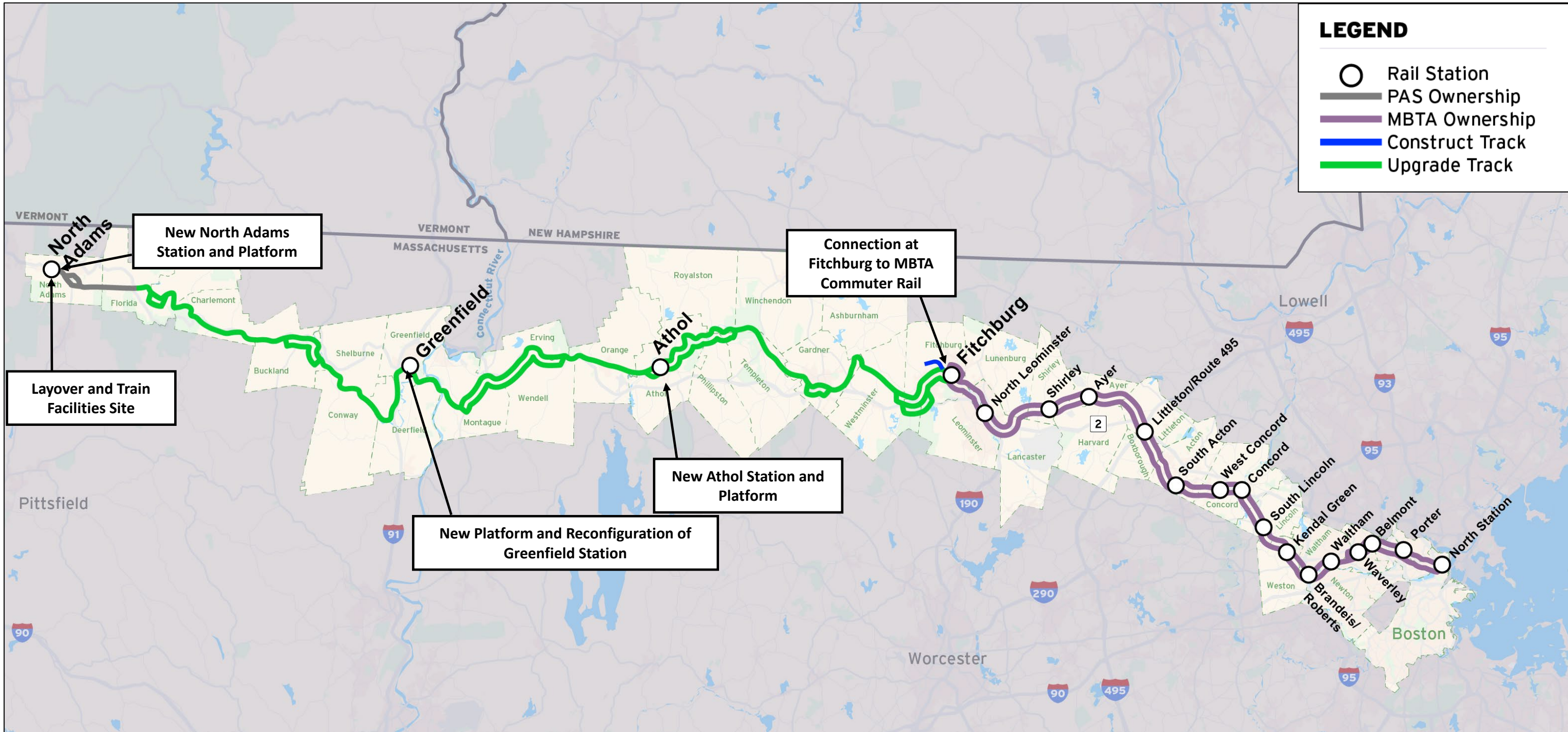
- Albany (NY)
- Schenectady (NY)
- North Adams
- Greenfield
- Fitchburg
- Porter
- North Station

Proposed Improvements

- New double track:
 - Charlemont,
 - Stillwater (NY)
 - Clifton Park (NY)
- Track upgraded to Class 3 and 4
- Crossing renewals
- Bridge rehabilitation
- Signal replacement & Positive Train Control
- Uses Albany layover

Track Work	Bridges	Signals & Grade Xings	Electrification	Stations	Layover	Rolling Stock	Total
\$1,286,096,089	\$429,711,003	\$141,368,789	\$0	\$23,113,097	\$0	\$82,945,944	\$1,963,234,923

Alternative 6 – Northern Tier Rail Link



Service Type

- 5 Trains/day
- Connection to MBTA System at Fitchburg

Stations

- North Adams
- Greenfield
- Athol
- Fitchburg (for connections to MBTA Commuter Rail)

Proposed Improvements

- Track upgraded to Class 3 and 4
- Rehabilitate siding in Fitchburg
- Crossing renewals
- Bridge rehabilitation
- Signal replacement & Positive Train Control
- North Adams layover

Track Work	Bridges	Signals & Grade Xings	Electrification	Stations	Layover	Rolling Stock	Total
\$853,049,390	\$429,711,003	\$141,368,789	\$0	\$34,669,646	\$15,969,632	\$82,945,944	\$1,557,714,406

Alternatives Review – Evaluation Summary

Evaluation Criteria	Alt. 1 – Lower Investment	Alt. 2 - Higher Investment	Alt. 3 – Electrified Service	Alt 4. - Full Local Service	Alt. 5 - Albany Extension	Alt 6. – Northern Tier Rail Link
Frequency	5 Trains per day	5 Trains per day	5 Trains per day	5 Trains per day	5 Trains per day	5 Trains per day
Coverage Area and Populations Served	North Adams, Greenfield, Fitchburg, North Station	North Adams, Greenfield, Fitchburg, North Station	North Adams, Greenfield, Athol, Fitchburg, Ayer, Porter, North Station	North Adams, Shelburne Falls, Greenfield, Athol, Gardner, Fitchburg, Porter, North Station	Albany (NY), Schenectady (NY), North Adams, Greenfield, Fitchburg, Porter, North Station	North Adams, Greenfield, Fitchburg, MBTA Commuter Rail Stations (via Transfer at Fitchburg)
Eastbound Travel Times						
North Adams to Boston	3 hours, 48 mins	2 hours, 48 mins	2 hours, 50 mins	2 hours, 59 mins	2 hours, 49 mins	3 hours, 22 mins
Greenfield to Boston	2 hours, 31 mins	2 hours, 0 mins	2 hours, 4 mins	2 hours, 8 mins	2 hours, 2 mins	2 hours, 34 mins
Maximum Speeds	60 mph (PAS), 80 mph (MBTA)	60 mph (PAS), 80 mph (MBTA)	60 mph (PAS), 80 mph (MBTA)	60 mph (PAS), 80 mph (MBTA)	60 mph (PAS), 80 mph (MBTA)	60 mph (PAS), 80 mph (MBTA)
Environmental Impacts	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Passenger Rail Impacts	None	None	None	None	None	None
Freight Rail Impacts	Minimal delay estimated	Minimal delay estimated	Minimal delay estimated	Minimal delay estimated	Delays west of North Adams TBD	Minimal delay estimated
Community/Safety Impacts						
Grade Crossings Impacted	69 crossings	69 crossings	69 crossings	69 crossings	119 crossings	69 crossings

* The average time travel by car between North Adams and Boston is 2 hours and 48 minutes, between Greenfield and Boston 2 hours and 8 minutes

* Schedules were built with the goal to minimize conflicts with freight rail service and to create no conflict with MBTA service

Alternatives Review – Evaluation Summary

Evaluation Criteria	Alt. 1 - Lower Investment	Alt. 2 - Higher Investment	Alt. 3 - Electrified Service	Alt. 4 - Full Local Service	Alt. 5 - Albany Connector	Alt. 6 - Northern Tier Rail Link
Estimated Annual Ridership	65,880 to 111,460	100,780 to 148,200	196,520 to 304,200	168,040 to 255,460	100,340 to 149,160	3,900 to 23,900
Capital Cost Per Mile	\$6,187,280	\$11,064,097	\$20,609,150	\$11,200,458	\$8,803,744	\$10,969,819
Capital Cost Per Rider	\$7,882 to \$13,336	\$10,601 to \$15,589	\$9,620 to \$14,891	\$6,225 to \$9,464	\$13,161 to \$19,565	\$65,176 to \$399,413
Operating and Maintenance Cost Per Rider	\$ 265 - \$449	\$ 200 - 294	\$97 - \$151	\$116 - \$176	\$311 - \$462	\$1,941 – 4,950
Transportation Cost Savings ¹						
Low Ridership	\$734,353	\$3,756,019	\$6,274,625	\$5,840,958	\$3,784,831	\$140,113
High Ridership	\$1,932,315	\$4,749,951	\$8,151,215	\$7,617,419	\$4,846,631	\$714,576
Annual VMT Reductions						
Low Ridership	3,481,260	7,651,340	11,868,826	11,531,674	7,749,424	283,408
High Ridership	6,040,280	10,539,688	17,322,166	16,694,040	10,834,998	1,952,786
Economic Impacts from Construction ²						
Output (in millions)	\$1,206 over 3 years	\$2,263 over 4 years	\$4,298 over 4 years	\$2,337 over 4 years	\$2,834 over 4 years	\$2,285 over 4 years
Peak Employment (direct, indirect + induced)	2,679 jobs	3,763 jobs	7,167 jobs	3,980 jobs	4,745 jobs	3,857 jobs

Notes:

1. Defining Transportation Cost Savings: Parking, fuels, tolls, etc.

2. Alt. 1 duration is 3 years due to smaller scale of infrastructure modifications

Alternatives Review – Total Costs

Alternative	Total Capital Cost	Total Annual Operations and Maintenance Cost*
Alternative 1 – Lower Investment	\$878,593,696	\$29,584,447 (\$265 - \$449 per rider)
Alternative 2 – Higher Investment	\$1,571,101,755	\$29,584,447 (\$200 - \$294 per rider)
Alternative 3 – Electrified Service	\$2,926,449,410	\$29,584,447 (\$97 - \$151 per rider)
Alternative 4 – Full Local Service	\$1,590,465,076	\$29,584,447 (\$116 - \$176 per rider)
Alternative 5 – Albany Extension	\$1,963,234,923	\$46,388,580 (\$311 - \$462 per rider)
Alternative 6 – Northern Tier Rail Link	\$1,557,714,406	\$19,305,989 (\$1,941 – 4,950 per rider)

Note: Annual Operating and Maintenance Costs calculated based on length of operating service

Benefit-Cost Analysis

Benefit-Cost Metric	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
O&M Net Savings	- \$265.7	- \$238.5	- \$206.5	- \$223.5	- \$387.4	- \$182.5
Safety Benefits	\$2.3	\$3.8	\$6.1	\$6.2	\$3.8	\$0.1
Avoided Road Wear and Tear	~\$0.0	\$0.1	\$0.1	\$0.1	\$0.1	~\$0.0
Avoided Congestion	\$2.0	\$3.3	\$5.4	\$5.4	\$3.3	\$0.1
Avoided Emissions (except CO ₂)	- \$0.2	- \$0.1	\$0.1	- \$0.1	- \$0.2	- \$0.1
Avoided Emissions (CO ₂ only)*	\$0.8	\$1.3	\$2.4	\$2.2	\$1.3	~\$0.0
Property Value Increase	\$21.9	\$20.5	\$27.9	\$42.6	\$20.5	\$31.9
Total Benefits	- \$238.8	- \$209.5	- \$164.5	- \$167.0	- \$358.7	- \$150.6
Total Costs	\$542.1	\$941.7	\$1,701.3	\$953.4	\$1,177.8	\$964.5
Net Present Value	- \$780.9	- \$1,151.2	- \$1,865.8	- \$1,120.4	- \$1,536.5	- \$1,115.1
Benefit-Cost Ratio	- 0.44	- 0.22	- 0.10	- 0.18	- 0.30	- 0.16
O&M Net Savings	- \$265.7	- \$238.5	- \$206.5	- \$223.5	- \$387.4	- \$182.5

* Discounted at 3% rate

Note: In millions of 2021 \$

Note: A ratio of 1.0 or higher makes a project more competitive for discretionary grants under current federal rules

Key Takeaways

- All alternatives estimated to provide connectivity, mobility, and choice
- All alternatives estimated to provide positive environmental and economic impacts
- **Alternative 3 (Electrified Service) and Alternative 4 (Full Local Service)** generate higher ridership levels and the measurements associated with them, including transportation cost savings and VMT reduction



Issues and Opportunities

Issues and Opportunities - Governance

Western Massachusetts Passenger Rail Commission

Purpose

- “more thorough vetting of the call for a new public entity to build and manage intercity passenger rail serving western Massachusetts.”

Members

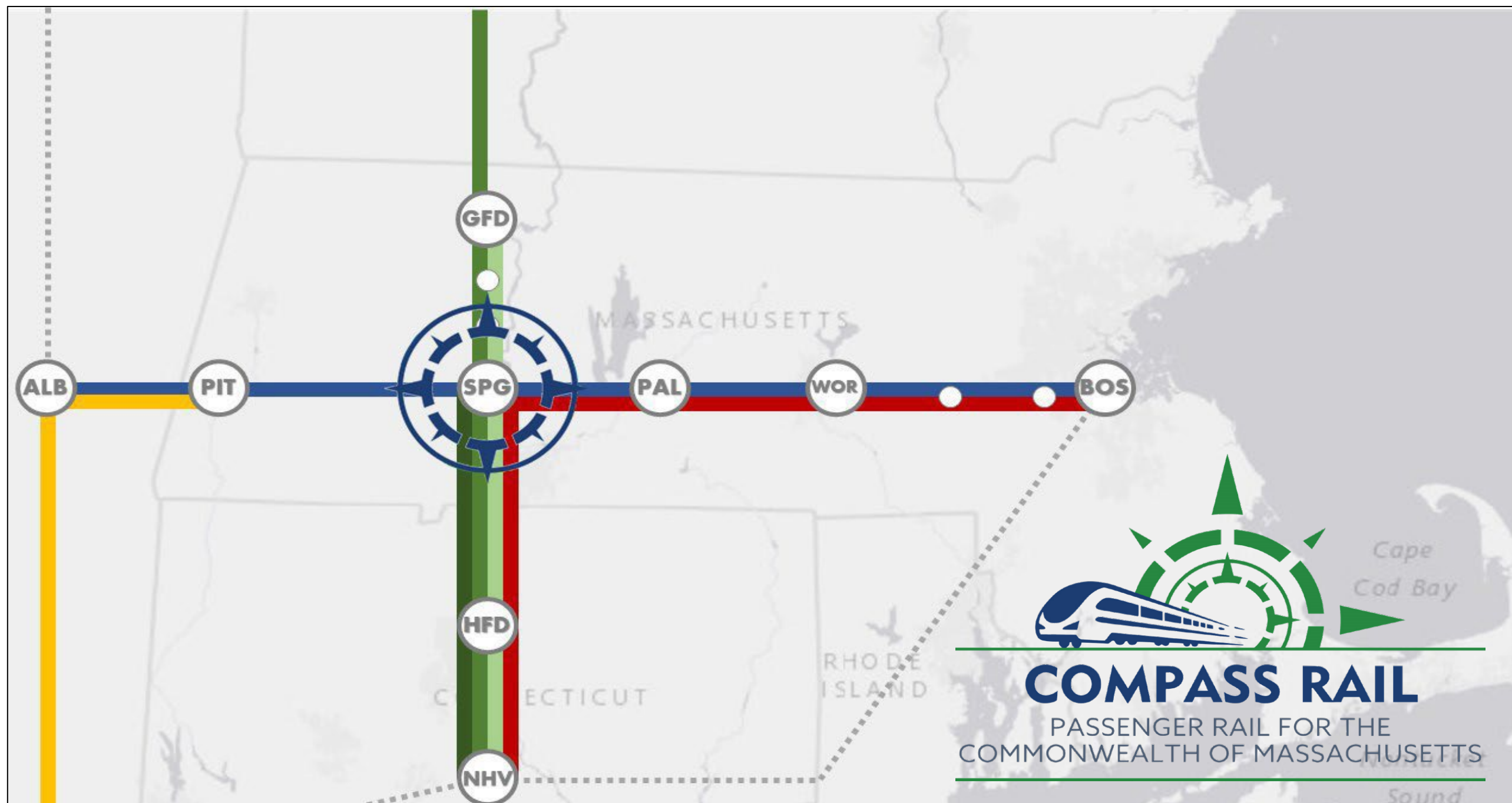
- Transportation Committee Chairs, legislative leadership/designees, corridor legislators and planning/transportation agency representatives, and MassDOT officials

Commission recommends

- That MassDOT should continue to serve as the agency responsible for the development, construction, procurement and oversight of both existing intercity passenger rail service in Massachusetts and any enhanced or new intercity passenger service connecting Boston, Springfield, Pittsfield and other cities and towns within the Commonwealth

Issues and Opportunities – Integration with Other Services

Regional Rail Network Initiatives/Context – Compass Rail



Source: MassDOT

- East-West and North-South services comprise Compass Rail
- Intercity rail not commuter rail, includes robust Springfield hub
- Administered by MassDOT Rail and Transit Division, with partners Amtrak, CSX, CT/NY/VT, and others

Issues and Opportunities - Access Considerations

Agreements with Pan Am Southern/Berkshire & Eastern and MBTA for Access to Pan Am Southern and Fitchburg Line

- Host Railroads (Owners) negotiate terms with the passenger rail sponsor (MassDOT) for access to protect their finances, property, and services from impacts of new passenger rail services
- Passenger rail operator (Amtrak) and host railroads would need to consent for service to occur and to obtain federal funds
- Host railroads usually require the passenger rail sponsor to fund:
 - Capital cost of railroad infrastructure improvements
 - Operations and maintenance costs
 - Insurance and other liability costs
 - Amtrak access rights may limit some of these costs
- Passenger rail sponsor usually tries to negotiate terms to optimize safety and service quality
 - Host railroad management of service on-time performance, e.g., incentives/penalties
 - Safety requirements above legal requirements, e.g., safety reports and programs

Issues and Opportunities - Existing Infrastructure

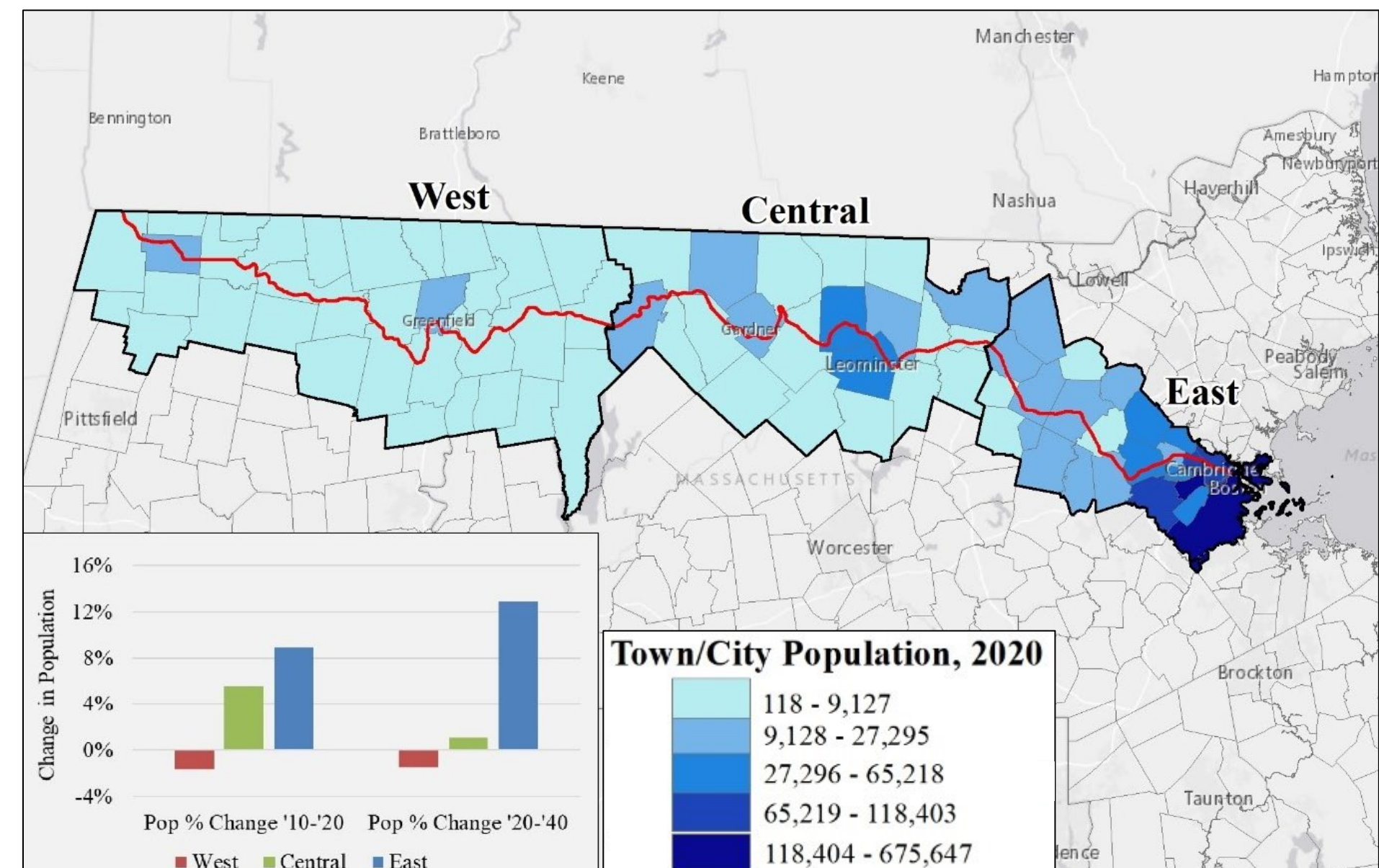
Potential Increases in Infrastructure Construction and Maintenance Costs

- Pan Am Southern is a strategic asset for freight/resiliency
- Hoosac Tunnel has significant State of Good Repair issues
 - Service outages for future Improvement may be required
- Unknowns about state of infrastructure, e.g., bridges may inflate costs
 - Cost estimates include contingencies that cover most of these, but costs still could increase

Issues and Opportunities – Current Population Projections

**Population in western segment of the corridor projected to decline
and Central segment to have modest growth**

- Influence of pandemic-induced changes on population and travel patterns needs additional evaluation
- Factors that partner with future rail service to encourage other forms of growth in the corridor could be identified



Issues and Opportunities – Intersection of Housing and Transportation

Communities Should Prepare for Any Rail Induced Increase in Population

Consideration of Housing and Supporting Infrastructure

- Master planning and zoning
- Schools, other city services may be needed to attract new residents and businesses

Economy and Trends

- Follows population trends
- Corridor college and university transportation market needs further analysis
- Tourism market

Issues and Opportunities - Potential Funding Opportunities

Federal Funding Programs

Consolidated Rail Infrastructure and Safety Improvements (CRISI)	<ul style="list-style-type: none">• Safety, efficiency, and reliability of intercity passenger and freight rail
Federal-State Partnership for Intercity Passenger Rail Grant	<ul style="list-style-type: none">• State of good repair backlog, improve performance, or expand or establish new intercity passenger rail service
National Infrastructure Project Assistance Program (MEGA)	<ul style="list-style-type: none">• Large, complex projects that are likely to generate national or regional economic, mobility, or safety benefits
Nationally Significant Multimodal Freight & Highway Projects (INFRA)	<ul style="list-style-type: none">• Projects of national or regional significance to improve the safety, efficiency, and reliability of the movement of freight and people
Rural Surface Transportation Grant Program	<ul style="list-style-type: none">• Improve and expand the surface transportation infrastructure in rural areas to increase connectivity, improve the safety and reliability of the movement of people and freight
Railroad Crossing Elimination Grant Program	<ul style="list-style-type: none">• Highway-rail grade crossing improvement projects
Rebuilding American Infrastructure with Sustainability and Equity	<ul style="list-style-type: none">• Road, rail, transit, and port projects that promise to achieve national objectives
Restoration and Enhancement	<ul style="list-style-type: none">• Operating costs of new passenger train services that decline from 90% to 30% over six years

Issues and Opportunities - Potential Funding Opportunities

State Funding Programs

Capital Projects

- Direct legislative appropriation/authorization
- State Bond Cap funds

Commonwealth Rail Enhancement Program (REP)

- Operations and Maintenance - state appropriations from
- Massachusetts Transportation Trust Fund
- Commonwealth Transfer Fund

Local Funding and Financing Programs

- **Local contributions to regional agencies** - e.g., RTAs
- **Parking user fees**
- **Value Capture** - strategy to capture the increase in land value from infrastructure improvements and apply that land value to improvements
- **Naming Rights**
- **Joint Development** - Private and Public/Private
- **Transit-oriented development** - Private and Public/Private



Draft Recommended Next Steps

Draft Recommended Next Steps

Continue to improve understanding of travel demand along the Northern Tier corridor, corridor segments, and linkages to key regional destinations

Continue to advance planning efforts at the intersection of economic development needs and opportunities, including at potential station locations

Explore scheduled motor coach service to Northern Tier corridor destinations

Evaluate alternative phasing or implementation strategies

Evaluate express service between Fitchburg and Boston

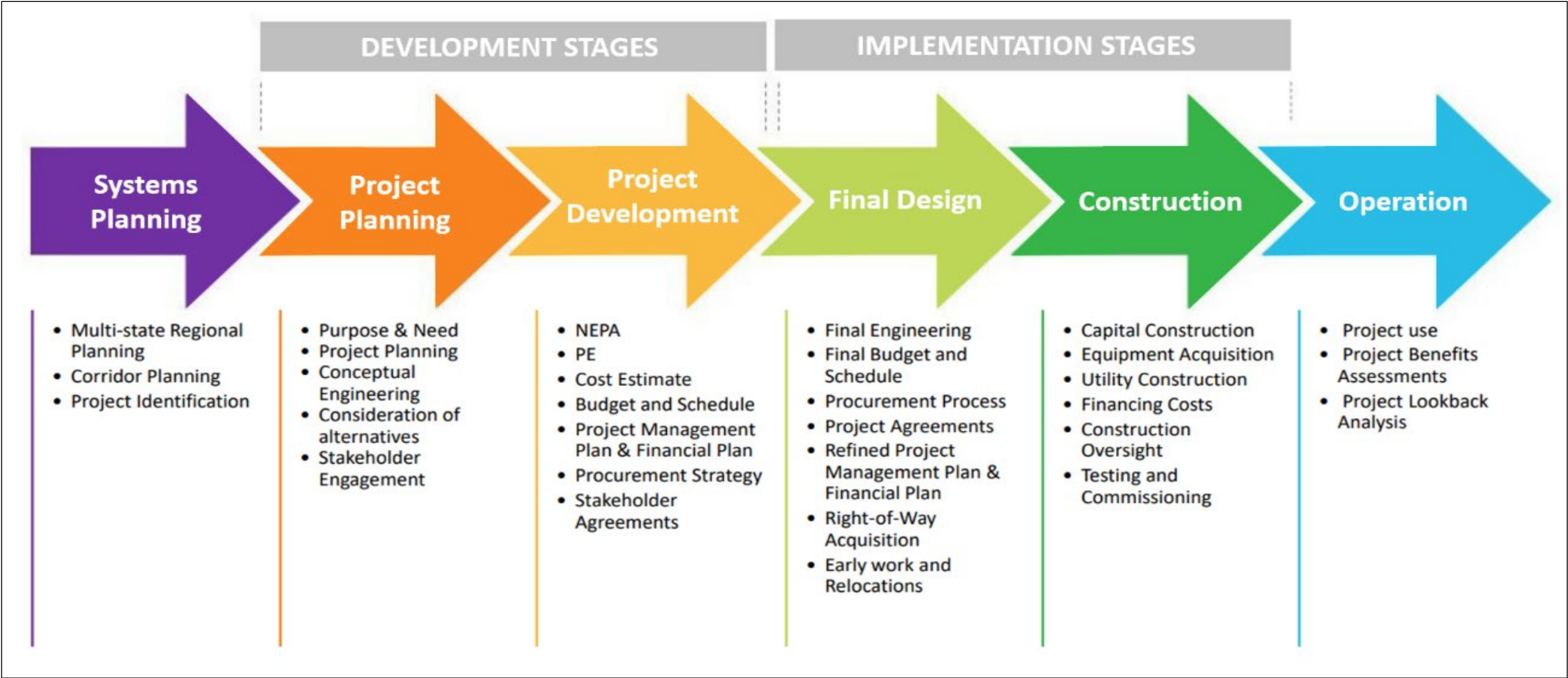
Monitor freight use and trends in the corridor to explore needs/opportunities for public investment

Develop strategies for improving rail connections within the corridor to meet study goals of supporting economic development, transportation equity, and minimizing impacts to public health and the environment



Draft Implementation Plan

Draft Implementation Plan – Federal Railroad Administration Project Development Process



Source: Guidance on the Development and Implementation of Railroad Capital Projects U. S. Department of Transportation Federal Railroad Administration
January 11, 2023

Draft Implementation Plan – Sample Timeline

Sample Implementation Timeline												
Year	1	2	3	4	5	6	7	8	9	10	11	12
FRA planning funds secured (Federal Fiscal Year)												
Commitments with Amtrak/PAS for modeling schedules												
System and Project Planning Progress												
Modeling completed. Final phase of access negotiations begins												
Host railroad access and Section 209 agreements executed												
Preliminary Engineering/environmental permitting complete												
Final Engineering complete												
Construction advertised/awarded/performed - Alts 2-6												
Infrastructure Acceptance Testing												
Employee hiring and training/other commissioning activities												
Start of service												

Note: Sample timeline includes permitting, design, construction and rolling stock procurement activities



Working Group Discussion

Working Group Discussion

- **General comments or questions?**
- **Upon completion of the Northern Tier Passenger Rail Study, what next steps would you suggest?**



**Public
Comment**

Questions and Answers



- “Raise your hand” to be unmuted for verbal questions



- Submit your questions and comments using the Q&A button



- Please state your name before your question



- Please share only **1** question or comment at a time, limited to **2** minutes, to allow others to participate



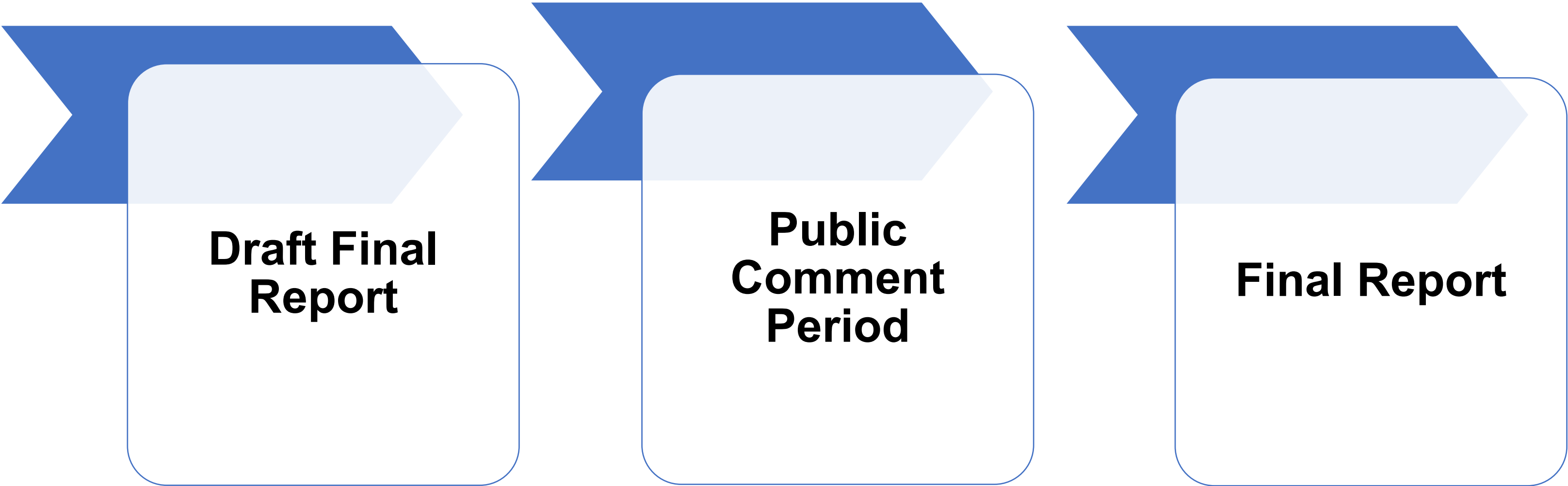
- To ask a question via phone, dial *9 and the moderator will call out the last 4-digits of your phone number and unmute your audio when it is your turn.

**All questions and comments are subject to disclosure for public records.
Please use these functions for project related business only.**



Next Steps

Next Steps





Learn More

Please visit the Study website to receive Study updates and to view past materials and meeting recordings:

<https://www.mass.gov/northern-tier-passenger-rail-study>



Please visit the PIMA website to submit your comments and questions:

<https://tinyurl.com/NTPRS-COMMENTS>

