Meeting Agenda

• Presentation
  • Welcome and Introductions
  • Meeting Objectives
  • Study Overview
  • Corridor Existing Conditions
  • East-West Corridor Alternatives
    • Alternatives development and screening
    • Six proposed alternatives
  • Next Steps

• Questions and Discussion
Meeting Objectives

Inform
Review the purpose and goals for improving connectivity and mobility in the East – West Corridor
Narrow a wide range of options for improving mobility to six (6) alternatives for analysis

Learn and Solicit Feedback from Advisory Committee
How well do the proposed alternatives reflect public and advisory committee priorities?
Are there any refinements you would suggest?
Study Overview

**Purpose:** To conduct a conceptual planning study to evaluate benefits, costs, and impacts of a range of alternatives for improved connectivity and mobility in the East – West Corridor.
East-West Corridor Existing Conditions

Existing Rail Conditions
Challenges and Opportunities
Study Corridor

CSX
- 14 regularly operated freight trains each day
- Additional freight trains as needed/on-demand

MBTA
- 27 weekday round-trips on the Worcester Line

Amtrak
- 1 daily round-trip between Boston and Albany / Chicago

Source: MassDOT
Existing Rail Conditions

Physical and operating conditions inform capital investments needed for improved rail service.

Physical Inventory
- Curves
- Terrain (grades)
- Track maintenance standards (track class)
- Track condition
- Train control
- Station stops
- Vehicle type
- Number of tracks
- Terminal capacity
- Adjacent development/structures
- Wetlands/protected resources

Operations
- MBTA service
- Amtrak Lake Shore Limited
- CSX freight service
Existing Freight Conditions

• Boston – Albany rail line is owned by CSX from Worcester to New York

• Freight rail reduces truck traffic, reduces CO2 emissions, and provides economic benefits to MA consumers and businesses

• Shared track for freight and passenger rail is challenging due to capacity constraints, safety concerns, and expectations of higher speed for passenger service

• Under federal law, Amtrak has the right to provide passenger service on freight-owned lines, but the host railroad has the right to set the terms for an operating agreement

Recent right-of-way upgrades and expansion of the Worcester intermodal facility have increased freight operations on the CSX rail corridor west of Worcester
Existing Conditions – Physical Constraints

Key Constraints Along the Corridor

- Large number of private at-grade crossings between Springfield and Pittsfield
- Greater curvature (>2°30') affects rail speeds at several locations between Worcester and Springfield
- Capacity, infrastructure, and environmental constraints along CSX mainline from Worcester to Springfield
- Steeper vertical grades (>1%) and greater curvature (>2°30') reduce operating speeds through Leicester
- Significant grade and ROW (ledge) constraints between Springfield and Pittsfield
- Heavy passenger and freight use poses capacity constraint to new services
- Greater curvature (>2°30') affects rail speeds at several locations between Boston and Worcester
- Complex at-grade crossings near Framingham
- Long-term capacity constraints at South Station
- At-Grade Crossings
- Capacity Issues
- Vertical Grades
- Horizontal Curvature
- Wetlands within 500 Feet
- Two or More Tracks
- Single Track

Miles

0 5 10 15 20

WEST

MASSDOT
Massachusetts Department of Transportation

Rail & Transit Division
Existing Conditions – Travel Speeds

Existing Maximum Passenger Speeds

- Pittsfield
- Chester
- Palmer
- Springfield
- Worcester
- Boston

MAP:
- Massachusetts
- Connecticut

Legend:
- **<= 20 mph**
- **21 - 40 mph**
- **41 - 60 mph**
- **61 - 80 mph**
- **81 - 110 mph**
- **111 - 150 mph**
East-West Corridor Alternatives Development

Goals for Service Alternatives
Alternatives Screening and Development Process
Goals for Service Alternatives

Based on input from Advisory Committee, residents, and stakeholders

• Provide better transportation options to/from Western MA
• Support economic development
• Improve attractiveness of Western MA as an affordable place to live
• Reduce the number of automobile trips along the corridor
• Reduce greenhouse gas emissions and air quality impacts from transportation

KEY CONSIDERATIONS
- Impacts to freight
- Environmental and community impacts
- Cost
Public Feedback Informing Alternatives

• Feedback received at Advisory Committee Meeting #1 (Dec 18, 2018), Public Meeting #1 (March 12, 2019), and via email/website (~75 comments)

• Key issues and suggestions from public and Advisory Committee input:
  • Rail will spur economic development and quality of life in western MA
  • Affordable homes in western MA will become more accessible in eastern MA
  • Rail service should be provided to the smaller towns, such as Palmer and Chester
  • Better connections between western & eastern MA are paramount, and could include bus service
  • Faster service is a high priority
  • Launching service sooner is more of a priority than faster service
  • Frequent service (multiple trips per day) is a high priority
  • Getting cars off the roads and reducing congestion on I-90 is an important benefit
  • It is important to connect other western MA towns to Springfield
  • Express service between Springfield and Boston is a priority
  • Connections for western MA residents to Logan Airport are important
  • Look at other corridors besides the existing CSX route, e.g. the Pan Am Railways “Northern Tier”
Rail Service in East – West Corridor

Factors that affect rail service characteristics

Demand Factors
- Demographics (population, density, income)
- Travel patterns (employment, other)
- Competitiveness of other modes
- Major destinations

Rail Service Parameters
- Travel time
- Frequency
- Cost of fare
- Amenities (both on-board and at stations)
- Span of service
- Connections
Alternatives Development & Analysis Process

High Level Alternatives Screening
Development and screening of a wide range of different options: alignments, infrastructure investments, speeds, stopping patterns, service levels

6 Preliminary Alternatives
Analysis of physical & environmental impacts, ridership, scheduling & costs

3 Final Alternatives
Operations simulation, economic analysis

Spring 2019
Summer 2019
Summer/Fall 2019
Fall 2019
Alternatives Screening – Options Reviewed
Alternatives Screening – Key Characteristics

• Corridor type
  • Shared corridor – existing CSX rail corridor
    • Upgrade existing railroad track – double-track, track and signal upgrades, shared freight – passenger operations on the same tracks
    • Build new track infrastructure – new tracks next to existing tracks in existing CSX property, with some realignments onto private property
  • Separate corridor – Massachusetts Turnpike/Interstate 90

• Travel speed
  • Corridor type (shared v. separate, above)
  • Curvature and grade
  • Track infrastructure
  • Conflicts with other rail traffic – MBTA commuter rail, CSX freight, Amtrak

• Stopping patterns
  • Direct service v. transfers
  • Express/limited stop v. more local stops

• Frequency
• Anticipated impacts
Screening of Maglev, Hyperloop Options

• MagLev lines in service – very expensive to build and operate (compared to HSR)

• HyperLoop technology completely untested/unproven – planning level evaluation not possible due to highly experimental nature

• Neither technology can share existing rail infrastructure with existing rail modes
  • Completely new alignment required along entire corridor (I-90 not adequate) – very large number of property acquisitions, environmental impacts
  • Inability to share existing infrastructure at main stations

• Physical constraints in Route 128 – Boston segment would require new tunnel for both technologies

• Prohibitive costs and impacts (property, homes, environmental)
East-West Corridor Alternatives

6 Potential Service Alternatives
  Progressive Increases in Speed, Cost, Impacts
Summary of Key Parameters
Existing Conditions (No-Build)

• Shared corridor on existing rail alignment
  • Existing infrastructure and services
  • 1 round trip train per day on E-W Corridor (Lake Shore Limited)
• Infrastructure – No new track improvements
• Connections
  • Pittsfield – direct rail service, no transfer
  • Springfield – direct rail service, no transfer
• Maximum speed – 80 mph
• Travel times:
  • Springfield – Boston 2:05 – 2:30
  • Pittsfield – Boston 3:15 – 3:50
Alternative 1 – Worcester – Springfield Rail Service

• Shared corridor on existing rail alignment
  • Up to 6 round trip trains per day on E-W Corridor (SPG – WOR)

• Infrastructure
  • Restore double-track in missing sections
  • Upgrade tracks and signals

• Direct rail connections from Boston – Worcester
• Rail-to-rail transfer required at Worcester – Palmer, Springfield
• Bus-to-rail transfer required at Springfield or Worcester – Pittsfield, Lee, Blandford Service Plaza

• Maximum speed – 80 mph
• Equipment – New diesel-powered trainsets

• Travel times:
  • Springfield – Boston 2:05 – 2:50 (MBTA express v. local)
  • Pittsfield – Boston 3:15 – 4:10 (MBTA express v. local)
Alternative 2 – Boston – Springfield Rail Service

- Shared corridor on existing rail alignment
  - Up to 6 round trip trains per day on E-W Corridor (SPG – BOS)
- Infrastructure
  - Restore double-track in missing sections
  - Upgrade tracks and signals
- Direct rail connections from Boston – Worcester, Palmer, Springfield
- Bus-to-rail transfer required – Pittsfield, Lee, Blandford Service Plaza
- Maximum speed – 80 mph
- Equipment – New diesel-powered trainsets
- Travel times:
  - Springfield – Boston 1:55 – 2:20
  - Pittsfield – Boston 3:05 – 3:40
Alternative 2: Passenger Rail to Springfield with Upgrades to Existing Track

MAXIMUM ALLOWABLE SPEEDS
- Rail Service with No Transfer
- Existing Single-Track Segments
- Existing Double-Track Segments
- New Double-Track in Existing Alignment
- New Passing Siding

Rail Station
- Rail Service with Transfer
- Bus Service with Transfer
- Bus Station

Pittsfield
Lee
Blandford Service Plaza
Springfield
Palmer
Worcester
South Station
Back Bay

CTRail & Amtrak Shuttle

PIT LEE CST BLD SPG PLM WOR BBY BOS

GFD

SPG

PLM

WOR

BBY

BOS

HFD

NHV

Springfield
Palmer
Worcester
Back Bay
South Station
Alternative 3 – Boston – Pittsfield Rail Service

• Shared corridor on existing rail alignment
  • Up to 6 round trip trains per day on E-W Corridor (PIT – BOS)

• Infrastructure
  • Restore double-track in missing sections
  • Upgrade tracks and signals
  • Straighten curvature and increase speeds in priority segments

• Direct rail connections from Boston – Worcester, Palmer, Springfield, Chester, Pittsfield

• Maximum speed – 90 mph

• Equipment – New diesel-powered trainsets

• Travel times:
  • Springfield – Boston 1:40 – 2:00
  • Pittsfield – Boston 2:40 – 3:10
Alternative 4 – Boston – Pittsfield Rail Service

• Shared corridor with new track in existing rail corridor
  • Up to 10 round trip trains per day on E-W Corridor (PIT – BOS)

• Infrastructure
  • WOR – SPG
    • New track infrastructure and signal system
    • New alignment within existing CSX ROW (25’ away from existing track)
  • PIT – WOR
    • Restore double-track in missing sections
    • Upgrade tracks and signals

• Direct rail connections from Boston – Worcester, Palmer, Springfield, Chester, Pittsfield

• Maximum speed – 110 mph

• Equipment – New diesel-powered trainsets

• Travel times:
  • Springfield – Boston 1:35 – 1:55
  • Pittsfield – Boston 2:35 – 3:05
Alternative 4: Passenger Rail with New Track in Existing Alignment

MAXIMUM ALLOWABLE SPEEDS

- <= 20 mph
- 21 - 40 mph
- 41 - 60 mph
- 81 - 110 mph
- 111 - 150 mph

Rail Service with No Transfer
Existing Single-Track Segments
Existing Double-Track Segments
New Double-Track in Existing Alignment
New Separate Track Next to Existing Alignment

Other Improvements
Rail Station
Rail Service with Transfer
Alternative 5 – New Boston – Springfield Rail Service

• Shared corridor with new track in existing rail corridor
  • Up to 10 round trip trains per day on E-W Corridor (SPG – BOS)

• Infrastructure
  • New track infrastructure and signal system
  • New alignment mostly within existing CSX ROW (25’ away from existing track)
  • Several segments of new track outside CSX ROW – straighter track, higher speeds

• Direct rail connections from Boston – Worcester, Springfield
• Bus-to-rail transfer required – Pittsfield, Lee, Blandford Service Plaza
• Maximum speed – 110 mph
• Equipment – New diesel-powered trainsets

• Travel times:
  • Springfield – Boston    1:25 – 1:45
  • Pittsfield – Boston    2:35 – 3:05
Alternative 6 – Boston – Pittsfield Rail Service

• Separate corridor with new track in Interstate 90 corridor
  • Up to 16 round trip trains per day on E-W Corridor (PIT – BOS)

• Infrastructure
  • New track infrastructure, signal system
  • New alignment mostly within existing I-90 ROW
  • Electrification of railroad to enable train speeds
  • Use of Housatonic RR corridor for connection from Pittsfield to I-90 corridor

• Direct rail connections from Boston – Worcester, Palmer, Springfield, Blandford Service Plaza, Lee, Pittsfield

• Maximum speed – 150 mph

• Travel times:
  • Springfield – Boston 1:20 – 1:40
  • Pittsfield – Boston 2:10 – 2:40
Alternative 6 – Separate Corridor

Difference in Curvatures between Existing Rail and Highway

- I-90 corridor has significantly fewer curves than existing rail corridor
- I-90 grades are steeper than existing rail corridor
Alternative 6: High Speed Rail in I-90 Corridor with Direct Downtown Service

MAXIMUM ALLOWABLE SPEEDS

- Rail Service with No Transfer
- Existing Single-Track Segments
- Existing Double-Track Segments
- Separate High Speed Rail Next to Existing Alignment
- High Speed Rail and I-90 Corridor
- I-90 Corridor
- Other Improvements
- Rail Station
- Rail Service with Transfer
- Freight Railroad

Pittsfield
Lee
Blandford Service Plaza
Springfield
Worcester
South Station
Back Bay
<table>
<thead>
<tr>
<th>Corridor Type</th>
<th>Alternative</th>
<th>Frequency</th>
<th>Transfers for Pittsfield</th>
<th>Transfers for Springfield</th>
<th>Transfers for CTRail and Vermonter</th>
<th>Travel Time BOS-SPG</th>
<th>Travel Time BOS-PIT</th>
<th>Max Speed (mph)</th>
<th>Rail Stations Served</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Rail Corridor -- Existing Rail Alignment</td>
<td>No Build (Existing infrastructure, service)</td>
<td>1</td>
<td>Direct Rail (no transfer)</td>
<td>Direct Rail (no transfer)</td>
<td>Rail Transfer at SPG</td>
<td>2:05 – 2:30</td>
<td>3:15 – 3:50</td>
<td>80 mph</td>
<td>Pittsfield, Springfield, Worcester, Framingham, Back Bay, Boston</td>
</tr>
<tr>
<td>Shared Rail Corridor -- Existing Rail Alignment</td>
<td>Alt. 1 – WOR – SPG, Upgraded Track</td>
<td>up to 6</td>
<td>Bus Transfer at SPG</td>
<td>Rail Transfer at WOR</td>
<td>Rail Transfer at SPG</td>
<td>2:05 – 2:50</td>
<td>3:15 – 4:10</td>
<td>80 mph</td>
<td>SPG, PLM, WOR, BBY, BOS</td>
</tr>
<tr>
<td>Shared Rail Corridor -- Existing Rail Alignment</td>
<td>Alt. 2 – BOS – WOR, Upgraded Track</td>
<td>up to 6</td>
<td>Bus Transfer at SPG</td>
<td>Direct Rail (no transfer)</td>
<td>Rail Transfer at SPG</td>
<td>1:55 – 2:20</td>
<td>3:05 – 3:40</td>
<td>80 mph</td>
<td>SPG, PLM, WOR, BBY, BOS</td>
</tr>
<tr>
<td>Shared Rail Corridor -- Existing Rail Alignment</td>
<td>Alt. 3 – BOS – PIT, Upgraded Track &amp; Alignment</td>
<td>up to 6</td>
<td>Direct Rail (no transfer)</td>
<td>Direct Rail (no transfer)</td>
<td>Rail Transfer at SPG</td>
<td>1:40 – 2:00</td>
<td>2:40 – 3:10</td>
<td>90 mph</td>
<td>PIT, CST, SPG, PLM, WOR, BBY, BOS</td>
</tr>
<tr>
<td>Shared Rail Corridor -- New Track in Existing Rail Corridor</td>
<td>Alt. 4 – BOS – PIT, New Track in Existing Rail Corridor</td>
<td>up to 10</td>
<td>Direct Rail (no transfer)</td>
<td>Direct Rail (no transfer)</td>
<td>Rail Transfer at SPG</td>
<td>1:35 – 1:55</td>
<td>2:35 – 3:05</td>
<td>110 mph</td>
<td>PIT, CST, SPG, PLM, WOR, BBY, BOS</td>
</tr>
<tr>
<td>Shared Rail Corridor -- New Track in Existing Rail Corridor</td>
<td>Alt. 5 – BOS – SPG, New Track in Existing Rail Corridor, w/ Realignments</td>
<td>up to 10</td>
<td>Bus Transfer at SPG</td>
<td>Direct Rail (no transfer)</td>
<td>Rail Transfer at SPG</td>
<td>1:25 – 1:45</td>
<td>2:35 – 3:05</td>
<td>110 mph</td>
<td>SPG, WOR, BBY, BOS</td>
</tr>
<tr>
<td>Separate Corridor (I-90)</td>
<td>Alt. 6 – BOS – PIT, New High Speed Rail Line in I-90 Corridor</td>
<td>up to 16</td>
<td>Direct Rail (no transfer)</td>
<td>Direct Rail (no transfer)</td>
<td>Rail Transfer at SPG</td>
<td>1:20 – 1:40</td>
<td>2:10 – 2:40</td>
<td>150 mph</td>
<td>PIT, LEE, BLD, SPG, WOR, BBY, BOS</td>
</tr>
</tbody>
</table>

All Time, Speed, Frequency and Station Stops are approximate, pending detailed analysis.
Next Steps

Preliminary Alternatives Analysis: Benefits, Impacts, Costs, and Tradeoffs
Project Schedule
Alternatives Development & Analysis Process

**High Level Alternatives Screening**
Development and screening of a wide range of different options: alignments, infrastructure investments, speeds, stopping patterns, service levels

- Spring 2019

**6 Preliminary Alternatives**
Analysis of physical & environmental impacts, ridership, scheduling & costs

- Summer 2019
- Summer/Fall 2019

**3 Final Alternatives**
Operations simulation, economic analysis

- Fall 2019
Analysis of the 6 Preliminary Alternatives

• **Ridership**
  • Computer model
  • Based on demographics (residents & jobs) and key service parameters (speed, frequency, stations served, and direct service v. transfers)

• **Physical impacts**
  • Property impacts
  • Wetlands and natural resources impacts
  • Surrounding infrastructure – bridges, roads, utilities

• **Environmental and community impacts**
  • Permitting
  • Noise
  • Air quality
  • Additional impacts

• **Cost**
  • Capital costs – railroad construction, surrounding infrastructure, trains
  • Operating & maintenance
# Study Schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>December</td>
<td>January</td>
<td>February</td>
</tr>
<tr>
<td>Task 1: Document Past Efforts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 2: Current Conditions: Market Analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 3: Physical, Regulatory, ROW Ownership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 4: Potential Service Plan and Alternatives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 5: Analysis of 5 Preliminary Alternatives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 6: Analysis of 3 Final Alternatives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 7: Development of Recommended Next Steps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task 8 – Public Involvement Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Advisory Committee Meetings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Informational Meetings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Final Report</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We Are Here
Contact

Makaela Niles
Makaela.Niles@dot.state.ma.us

Ethan Britland
Ethan.Britland@dot.state.ma.us