Presentation Agenda

• Project Overview
• Seven Service Alternatives
• Example Operations Analysis
• Next Steps
Project Goal

Leverage the MBTA’s extensive commuter rail network to best meet the transportation and economic growth needs of the region.

Project Objectives

1. Match service with the growing and changing needs of the region
2. Enhance economic vitality
3. Improve the passenger experience
4. Provide an equitable and balanced suite of investments
5. Help the Commonwealth achieve its climate change resiliency targets
6. Maximize return on investment (financial stewardship)
Where We Are Now

Ideas Developed

Long List of Concepts

**Qualitative Screening:**
Do concepts meet one or more of the Objectives? If yes...

**Concept Evaluation:**
Uses sketch models to evaluate ideas against Objectives

**Alternatives Evaluation:**
Uses traditional ridership and operations analysis models

7 Service Alternatives

The Vision
Elements Covered in Rail Vision Service Alternatives

Alternatives aim to reduce travel time, increase service frequency, and improve system connectivity based on results from the first phase.

Alternatives to consider mix of service and investment elements:

<table>
<thead>
<tr>
<th>Service Elements</th>
<th>Investment Elements</th>
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</thead>
<tbody>
<tr>
<td>New vehicle technology</td>
<td>Station locations</td>
</tr>
<tr>
<td>System electrification</td>
<td>More express service</td>
</tr>
<tr>
<td>High level platforms</td>
<td>Span of service</td>
</tr>
<tr>
<td>Station typology and frequency</td>
<td>Transfer hubs</td>
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<tr>
<td>Double and triple tracking</td>
<td>Operational feasibility</td>
</tr>
<tr>
<td>Facility needs and expansions</td>
<td>Order of magnitude operating and capital costs</td>
</tr>
</tbody>
</table>
Station Typologies

Alternatives will consider a mix of service and investment elements to provide higher levels of service to:

• **Key stations**, due to their density, regional access, and transit connectivity

• **Inner core stations**, in and around Boston

• **Outer stations**, outside the Inner Core
High Level Platforms / Accessibility Upgrades

• Existing system has a mixture of platform types:
  • **High-level**, with a level boarding surface
  • **Mini-high**, with a portion of the platform at a high-level to provide a level boarding surface
  • **Low-level**, requiring use of stairs or ramp

• High-level boarding and powered doors on trains could reduce dwell times at stations

• The project will assume different levels of platform upgrades across the alternatives to test a range of capital improvements.
Electrification and Vehicle Technology

- Some alternatives will consider full or partial system electrification
- Vehicle options include locomotives paired with coaches or multiple units (multiple self-propelled vehicles) – either can be diesel, electric, or dual mode
- Vehicle powered by electricity produce lower emissions
- Multiple unit trains can provide travel time savings
- Procurement and O&M costs vary across the range of vehicle types
Terminal Capacity and System Expansions

Examples include North South Rail Link, South Station Expansion, South Coast Rail (Phase 1 and Full Build), Foxborough, Grand Junction
Seven Rail Vision Service Alternatives

- Alternative 1: Optimize Existing System
- Alternative 2: Regional Rail to Key Stations (Diesel)
- Alternative 3: Urban Rail (Diesel)
- Alternative 4: Urban Rail (Electric)
- Alternative 5: Regional Rail to Key Stations (Electric)
- Alternative 6: Full Transformation
- Alternative 7: Hybrid System
Comparing Alternatives

Evaluating relative benefits and costs across the seven alternatives will provide the foundation to build one or more Visions for the future of commuter rail, which may combine features from multiple alternatives to maximize the effectiveness of the MBTA rail network.

<table>
<thead>
<tr>
<th>Typical Frequency (Peak/Off-Peak)</th>
<th>1: Optimize Existing System</th>
<th>2: Regional Rail to Key Stations (Diesel)</th>
<th>3: Regional Rail to Key Stations (Electric)</th>
<th>4: Urban Rail (Diesel)</th>
<th>5: Urban Rail (Electric)</th>
<th>6: Full Transformation</th>
<th>7: Hybrid System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Stations</td>
<td></td>
<td>15/15 (North Side)</td>
<td>15/15</td>
<td>30/60</td>
<td>30/60</td>
<td>15/15</td>
<td>30/60</td>
</tr>
<tr>
<td>Inner Core</td>
<td></td>
<td>15/15 (South Side)</td>
<td>15/15</td>
<td>30/60</td>
<td>30/60</td>
<td>15/15</td>
<td>30/60</td>
</tr>
<tr>
<td>Outer Stations</td>
<td></td>
<td>15/15</td>
<td>15/15</td>
<td>30/60</td>
<td>30/60</td>
<td>15/15</td>
<td>30/60</td>
</tr>
</tbody>
</table>

**Fully Accessible High-Level Platforms**

- **Key Stations**
  - Existing or Programmed Upgrades Only
    - Yes
    - Yes
    - No
    - No
    - Yes
    - Yes
    - Yes
    - Yes

- **Inner Core**
  - Yes
  - Yes
  - Yes
  - Yes
  - Yes
  - Yes
  - Yes
  - No

- **Outer Stations**
  - Yes
  - Yes
  - Yes
  - Yes
  - Yes
  - Yes
  - Yes
  - No

**Electrification**

- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes

**Major Expansions**

- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes

Note: The alternatives as described above are subject to change during the modeling process. All text and maps describe a typical application at the system level but may vary to some extent at the line, station, or segment levels.
Alternative 1: Optimize Existing System

**Goal:**
Assess costs and benefits of providing predictable, bi-directional service every 30 minutes during peak periods and hourly during off-peak periods, with modest investments in new infrastructure.

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**Key Features**

<table>
<thead>
<tr>
<th>Typical Frequency (Peak/Off-Peak)</th>
<th>All Stations: 30/60 bi-directional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station Accessibility</td>
<td>High-level boarding platforms at stations where they are currently existing or programmed</td>
</tr>
<tr>
<td>Electrification</td>
<td>None</td>
</tr>
<tr>
<td>Train Type(s)</td>
<td>Diesel Locomotives</td>
</tr>
<tr>
<td>Major Expansions</td>
<td>South Coast Rail Phase 1</td>
</tr>
</tbody>
</table>
Alternative 1: Optimize Existing System – Initial Capital Improvements

Note: Systems and signal upgrades will be required. Some land acquisition may also be required.
Alternative 1: Optimize Existing System – Initial Capital Improvements

**Stations**
- Accessibility Upgrades
- Additional Platform/Track Capacity

**Tracks**
- Turn tracks
- Passing Sidings
- Additional Track (Double, Triple)

**Other Improvements**
- Electrification
- Grade Crossing or Bridge Improvements

**Terminal Improvements**
- Terminal Upgrade
- Terminal Expansion
- North South Rail Link

*Note: Systems and signal upgrades will be required. Some land acquisition may also be required.*
Next Steps: Alternatives Evaluation

- Complete modeling for operations, infrastructure and capital costs with Rail Traffic Controller (RTC) modeling tools
- Develop robust ridership estimates for all 7 Alternatives using the CTPS Travel Demand Model
- Identify potential land-use and demographic effects of one or more Alternatives using the Regional Dynamic Model (RDM)
- Develop capital and operating cost estimates
- Share results with Advisory Committee and public
Key Results

- Results will be summarized:
  - By alternative
  - For each line (for some metrics)

- Understand for each alternatives:
  - Operations (frequency, travel times, etc.)
  - Infrastructure required
  - Fleet requirements
  - Ridership
  - Costs
  - Benefits (emissions, equity, connectivity)
Project Contacts & Website

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