MBTA
State of the Service:
Red Line Heavy Rail

January 25, 2015
Key Facts: Red Line

- Over 280,000 trips each weekday—the MBTA’s busiest line, and about 22% of all MBTA ridership
- Asset value: $2.2b
- Overall SGR rating: 2.27
- SGR Backlog: $1.5b
- 22 stations
- Right of Way
  - 54 track miles (yard + revenue)
  - 165 switches, 16 signal bungalows
  - 64 bridges (31 transit, 22 road, 11 pedestrian)
  - 9 miles of tunnel section
- 218 Red Line vehicles
  - 168 for peak service
  - 1.1 million miles per month
Key Facts: Red Line

• Core frequencies:
  – Peak: every 4-5 minutes
  – Off-peak: every 6-8 minutes

• Staff:
  – Direct: 447
  – Indirect: 813

• Parking
  – 10 locations
  – 8,600 spaces
  – $14 m annual income

• Concessions / Leases
  – 35+ active
  – $1.1 m annual income
Key Connections: Red Line

Direct connections to:

- 97 bus routes
  - 9 key bus routes
  - 5 Silver Line
- Orange Line
- Green Line
- Silver line
- South side commuter rail
- Fitchburg Line at Porter Square

- Mattapan Line
- Harvard underground bus way
- Rt. 128 Business Council Shuttles
- Brockton Area Transit
- EZ Ride Cambridge

Financial District
Seaport
Major tourist destinations
Major universities
Logan Airport
Kendall Square
Mass General Hospital
Current trend is overall growth, especially in off-peak times.

Average growth: Weekdays 2.0%  Saturdays 2.5%  Sundays 2.8%
## Ridership Volume: Red Line

<table>
<thead>
<tr>
<th>Station</th>
<th>Station Entries (FY15)</th>
<th>Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Station</td>
<td>25,138</td>
<td>Red / Silver</td>
</tr>
<tr>
<td>Park Street</td>
<td>22,951</td>
<td>Red / Green</td>
</tr>
<tr>
<td>Downtown Crossing</td>
<td>21,875</td>
<td>Red / Orange</td>
</tr>
<tr>
<td>Harvard</td>
<td>21,336</td>
<td>Red</td>
</tr>
<tr>
<td>State</td>
<td>16,714</td>
<td>Orange / Blue</td>
</tr>
<tr>
<td>Back Bay</td>
<td>16,663</td>
<td>Orange</td>
</tr>
<tr>
<td>North Station</td>
<td>16,262</td>
<td>Orange / Green</td>
</tr>
<tr>
<td>Kendall</td>
<td>16,202</td>
<td>Red</td>
</tr>
<tr>
<td>Central</td>
<td>15,914</td>
<td>Red</td>
</tr>
<tr>
<td>Forest Hills</td>
<td>14,248</td>
<td>Orange</td>
</tr>
</tbody>
</table>

6 of top 10 weekday rapid transit stations are along Red Line.
<table>
<thead>
<tr>
<th>Station</th>
<th>Growth in Station Entries FY08-FY15</th>
<th>% Growth FY08-FY15</th>
<th>Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>4,678</td>
<td>39%</td>
<td>Orange / Blue</td>
</tr>
<tr>
<td>Ashmont</td>
<td>4,442</td>
<td>93%</td>
<td>Red</td>
</tr>
<tr>
<td>Park Street</td>
<td>4,041</td>
<td>21%</td>
<td>Red / Green</td>
</tr>
<tr>
<td>Kendall</td>
<td>3,421</td>
<td>27%</td>
<td>Red</td>
</tr>
<tr>
<td>South Station</td>
<td>3,276</td>
<td>15%</td>
<td>Red / Silver</td>
</tr>
<tr>
<td>Ruggles</td>
<td>2,945</td>
<td>40%</td>
<td>Orange</td>
</tr>
<tr>
<td>Haymarket</td>
<td>2,528</td>
<td>24%</td>
<td>Orange / Green</td>
</tr>
<tr>
<td>Broadway</td>
<td>2,479</td>
<td>63%</td>
<td>Red</td>
</tr>
<tr>
<td>Central</td>
<td>2,347</td>
<td>17%</td>
<td>Red</td>
</tr>
<tr>
<td>Assembly</td>
<td>1,864</td>
<td>n/a (new)</td>
<td>Orange</td>
</tr>
</tbody>
</table>

6 of top 10 highest growth weekday rapid transit stations are along Red Line
The dashed line shows planned capacity, assuming 6.5 trains per half-hour, even distribution of passengers and even headways.
Performance: Red Line

Weekday Headway Adherence

% of trains operating within 60 seconds of scheduled headway

% of Trips Run Within 1 min of Scheduled Headway

Jul 15  Aug 15  Sep 15  Oct 15  Nov 15
Fleet Performance: Red Line

Red Line: Mean Miles Between Failures (MMBF)

Average Jul 2014 – Nov 2015

#1 Fleet: 55,970
#2 Fleet: 25,773
#2 Fleet (Rebuilt): 72,828
#3 Fleet: 108,088

Goal: 47,000
Build Dates: Red Line
Assets Overview: Red Line

- 218 VEHICLES (3 types)
- 1 REPAIR FACILITY
- 3 STORAGE YARDS
- 50 VENTILATION SHAFTS
- 67 VENTILATION FANS
- 1,788,371 FT SIGNAL WIRES
- 92 SIGNALS
- 41.8 MILES MAINLINE TRACK AND 3RD RAIL
- 200 MILES POWER CABLE (DC)
- 143,669 TONS BALLAST, 104,677 RAIL TIES, AND 5 MILES CONCRETE TRACK BED
- 54 TRACK MILES

*Drawing not to scale*
Challenges: Red Line

• SGR Backlog
  – Vehicles
  – Signals, Power, Track
  – Facilities

• Passenger Boarding / Alighting Dwell Time

• System Bottlenecks
  – Alewife
  – Columbia Junction
  – Park Street

• Improvements / Maintenance
  – Track access points
  – Side tracks
  – Equipment Storage