Newton In Motion – February 5, 2016
What is the MBTA Program for Mass Transportation (PMT)?

- Develops the long-term capital investment plan for the MBTA
- Required by statute every 5 years and will fulfill requirement for Fiscal Management and Control Board 20 year capital plan
- Priorities to be implemented through the annual Capital Investment Program (CIP)
An overview of the MBTA’s capital assets, their age and condition, and how their condition impacts system capacity and performance.

Website: mass.gov/massdot/focus40
SYSTEM OVERVIEW

The MBTA’s five modes function as an integrated system, however they differ in terms of the types of service provided, the costs of the service, and the number of passengers served.

<table>
<thead>
<tr>
<th></th>
<th>Operating Expenses (%)</th>
<th>Fare Revenues (%)</th>
<th>Passenger Miles (%)</th>
<th>Passenger Trips (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus</td>
<td>29.8</td>
<td>17.8</td>
<td>15.4</td>
<td>29.8</td>
</tr>
<tr>
<td>Commuter Rail</td>
<td>26.4</td>
<td>29.9</td>
<td>40.4</td>
<td>8.9</td>
</tr>
<tr>
<td>Rapid Transit</td>
<td>35.1</td>
<td>49.9</td>
<td>42.8</td>
<td>60.4</td>
</tr>
<tr>
<td>Ferry</td>
<td>0.8</td>
<td>1.1</td>
<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Paratransit</td>
<td>7.9</td>
<td>1.3</td>
<td>0.8</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Source: 2013 NTD Transit Profile
Nearly 1,000 buses and a range of other infrastructure keep the system running.
Most bus service operates within Route 128.

Source: MBTA

BUS SERVICE MAP
The MBTA offers a range of bus services that carry 446,700 passengers per weekday constituting over one third of MBTA ridership.

However, a number of issues preclude higher ridership and high ridership satisfaction:

- Buses are often overcrowded during peak times.
- Less than two-thirds of bus trips operate on-time.
- Many Key Bus Routes and local routes do not meet minimum frequency standards.
AN AGING BUS FLEET

991 active buses:
- Typical lifespan = 12 years; most MBTA buses 7-12 years old
- Dual-mode articulated Silver Line fleet no longer manufactured

Older buses require more maintenance, break down more often, and degrade service reliability.

Upcoming purchase of 369 new buses will bring the average age below the desirable average age of 7 years.

Still, most buses will need to be replaced within the next six years.

<table>
<thead>
<tr>
<th>Bus Age (Years)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Buses</td>
<td>60</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td>523</td>
<td>124</td>
<td>155</td>
<td>8</td>
<td>24</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inactive Buses</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All 991 active buses within useful lifespan

75 Inactive buses beyond useful lifespan

Source: MBTA (2015)

Note: Bus overhauls assumed to reduce effective average age by 4 years
SUMMARY OF CONDITIONS AND NEEDS

- **Lynn** is of limited value and should be replaced.
- **Fellsway** was built in the 1960s and has significant deficiencies. Facility should likely be shut down.
- **North Cambridge** has only minor issues.
- **Charlestown** is in good condition, but has only 12 bays, which is not adequate for buses maintained at the site.
- **Albany** needs major refurbishment. There are clearance issues getting buses into the bus bays.
- **Arborway** was built as a temporary facility in 2003 and has outlived its useful life. Mostly due to design issues, it is nonfunctional, unproductive, and inefficient.
- **Cabot** Underwent upgrades and CNG compliance improvements in 2002 and is in best condition of all garages.
- **Southampton** is in good condition from a State of Good Repair standpoint.
- **Everett** was refurbished 5-6 years ago and is in relatively good condition.
- **Quincy** is the oldest facility and state of good repair is poor. Some of the 5 pit bays have been condemned. Cracks are occurring in brick walls, concrete flooring and supporting foundations. Quincy needs to be totally rebuilt or replaced.
- **Arborway** was built as a temporary facility in 2003 and has outlived its useful life. Mostly due to design issues, it is nonfunctional, unproductive, and inefficient.
STOPS AND STREETS

MBTA does not own or control most bus stops or local streets, which can limit ability to make improvements.

- 92% of the MBTA’s 8,500 bus stops do not have bus shelters, including more than 425 stops with over 100 daily boardings.
- Many bus stops do not comply with accessibility requirements.
- On time performance is negatively impacted by on street congestion
RAPID TRANSIT

*Rapid transit service is the MBTA’s high-capacity backbone, connecting downtown Boston with the rest of the urban core.*
Rapid transit service consists of 5 lines, 127 stations, and 64 route miles across 11 cities and towns.

- **Blue Line** – Heavy rail operates between Bowdoin and Wonderland
- **Green Line** – Light rail between Lechmere and BC/Cleveland Circle/Riverside/Heath
- **Orange Line** – Heavy rail between Forest Hills and Oak Grove
- **Red Line** – Heavy rail between Alewife and Ashmont/Braintree
- **Mattapan Trolley** – Light rail between Ashmont and Mattapan
RAPID TRANSIT FLEET

651 total fleet:
– Average Age: 32 years (design lifespan: 25 years)
– 55% are beyond useful life

**New Orange and Red Line vehicles will reduce average age and improve reliability, but:**
– Mattapan cars are almost 70 years old and replacement parts no longer available.
– Reliability of Type 8 Green Line cars is poor, resulting in frequent breakdowns.

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>7</th>
<th>18</th>
<th>21</th>
<th>27</th>
<th>35</th>
<th>46</th>
<th>69</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green</td>
<td>95</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange</td>
<td></td>
<td></td>
<td></td>
<td>95</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td></td>
<td></td>
<td>86</td>
<td></td>
<td>58</td>
<td></td>
<td>74</td>
</tr>
<tr>
<td>Mattapan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

**Quantity of Revenue Vehicles**

*294 Vehicles Within Useful Life*  
*357 Vehicles Beyond Useful Life*
RAPID TRANSIT ACCESSIBILITY

38 rapid transit stations are still non-accessible:

– 31 surface Green Line stations
– 4 subway stations on Green Line
– Wollaston Station (Red Line)
– Bowdoin Station (Blue Line)
– Valley Road Station on Mattapan Line

More than half of all Green Line vehicles and all Mattapan trolleys are inaccessible.

Plan for Accessible Transit Infrastructure (PATI) under way – aimed at prioritizing barriers to access and developing long-term plan
MAJOR CHALLENGES TO MEET CURRENT AND FUTURE RAPID TRANSIT DEMAND

Providing additional capacity means systemwide upgrades to many asset classes:

- Platform lengths prevent move to longer trains (even 3-car trains on Green Line)
- Station designs result in uneven passenger loads by car, exacerbating capacity issues
- Signals, fleet size and associated maintenance capacity prevent more frequent service
- Track conditions and geometry limit speed in some locations
- Power upgrades necessary for consistent use of 3-car trains on Green Line

Development near transit has been on the rise and is expected to continue, necessitating additional capacity and modernization in the system.
With the largest geographic coverage of all modes, the asset base is broad and capital intensive.
The MBTA operates commuter rail service in 74 cities and towns across two geographic districts:

**North Side** – 4 lines, 57 stations, and 160 route miles.

**South Side** – 9 lines, 81 stations, and 233 route miles.

**Framingham/Worcester Line** is the second highest ridership line – 14,617 daily inbound boardings.
Winter of 2015 is cause for Severe Weather type of delays being largest as measured in total minutes.

Excluding weather, the top two types of delays were Track and Signal, and Fleet.
COMMUTER RAIL STATION ACCESSIBILITY

A significant portion of the commuter rail system is either semi-accessible or entirely inaccessible to customers with disabilities.

- Although less than 20% of system ridership occurs at inaccessible stations, several high ridership stations on the Franklin and Worcester Line are inaccessible.
- The high cost associated with making stations fully-accessible could delay some needed SGR investments.

<table>
<thead>
<tr>
<th>Type of Platform</th>
<th># of Stations</th>
<th>% of Stations</th>
<th>% of Ridership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessible Full High-Level Platforms</td>
<td>49</td>
<td>36%</td>
<td>29%</td>
</tr>
<tr>
<td>Semi-Accessible Mini High-Level Platforms</td>
<td>50</td>
<td>38%</td>
<td>52%</td>
</tr>
<tr>
<td>Inaccessible Low-Level Platforms</td>
<td>34</td>
<td>26%</td>
<td>19%</td>
</tr>
</tbody>
</table>
The current size and location of layover facilities inhibits future growth in commuter rail service, particularly on the southside—a problem that would be addressed through the South Station Expansion project

- Southside layover capacity currently exists for 25 trainsets, below the 28 needed to meet today’s demand, not including future growth.
- The commuter rail maintenance facility’s location on the northside in Somerville creates logistical challenges for maintaining rolling stock, the majority of which operates on the southside.
- Layovers at Rockport, Bradford, Worcester, Needham, Pawtucket and Franklin are too small for their current activity. Facility is lacking at Lowell.
The role of the MBTA may need to change to meet the evolving needs of Greater Boston in 2040
2040 Challenges and Opportunities

- Urbanization
- Aging population
- Gentrification
- Housing and land use
- Millennials
- Technology
- Work habits
- Energy
- Climate change
- Modal preferences
- Aging population
What trends do YOU think are most important for the MBTA to plan for?

How do YOU think the MBTA should invest its resources to plan for that trend?
Focus40 Process – Next Steps

– Develop civic engagement program with partners and hold major launch event in Spring 2016

– Propose alternate scenarios for the Greater Boston region in 2040 (population, mode choice, vulnerability to climate change, etc.)

– Build and evaluate the universe of potential investment strategies

– Final Focus40 long-term capital investment plan in early 2017

Check out our website:  www.mass.gov/massdot/Focus40

Email us:  focus40@dot.state.ma.us