MBTA: Moving Forward with Sustainability

John Markowitz

Director of Treasury Services

MBTA
MBTA – Moving Forward With Sustainability

April 13, 2018
Discussion Topics

1. MBTA Overview and Capital Spending .......................................................... 3
2. First Ever Tax-Exempt Sustainability Issuance ........................................ 9
3. Sustainability Going Forward ........................................................................ 15

John Markowitz
Director of Treasury Services
1. MBTA Overview and Capital Spending
Overview

The MBTA is the oldest and fifth largest transit system in the country providing extensive and integrated mass transit services along with parking facilities for the greater Boston metropolitan region.

• Territorial area throughout eastern Massachusetts consists of
  - 175 cities and towns
  - 4.8 million population

• MBTA Transit System consists of
  - Rapid transit rail, streetcars and light rail and more than 1,000 buses
  - Commuter rail service operates over 421 units of passenger rail equipment providing service between Boston and 131 outlying rail stations
  - Other passenger services, including commuter boats, “The Ride” paratransit service, and express buses

• 1.3 million passenger trips on average per business day; 55% of all trips to Boston are provided by public transportation

  - Approximately 5,800 employees; $1.6 billion operating budget
The MBTA’s Capital Investment Program (CIP) is a rolling five-year plan, which outlines our current infrastructure needs and details our planned investments. Improvements are focused on three core areas:

1. **Reliability**
   - Maintain and improve the overall condition and reliability of the transportation system
   - Necessary routine and capital maintenance
   - State of Good Repair projects designed primarily to bring asset condition up to an acceptable level
   - Asset management and system preservation projects

2. **Modernization**
   - Modernize the transportation system to make it safer and more accessible and to accommodate growth
   - Compliance with federal mandates or other statutory requirements for safety and/or accessibility improvements
   - Projects that go beyond State of Good Repair and substantially modernize existing assets
   - Projects that provide expanded capacity to accommodate current or anticipated demand on existing transportation systems

3. **Expansion**
   - Expand diverse transportation options for communities throughout the Commonwealth
   - Projects that expand highway, transit and rail networks and/or services
   - Projects that expand bicycle and pedestrian networks to provide more transportation options and address health and sustainability objectives
CIP Spending

MBTA is focused on improving the reliability of its existing system, meeting federal mandates, modernizing existing assets, and expanding transportation in the Commonwealth.
CIP Funding Sources

Projected funding sources for five-year Capital Investment Program.

- MBTA focus on capital delivery produced a 5-year CIP that is 13.9% larger than the CIP from a year prior

- An ambitious capital program is required to address the MBTA’s state-of-good-repair backlog

- Despite the increase in expected revenue bond issuance, the MBTA is scheduled to pay down approximately $1.3 billion in existing principal over the next five years
Fiscal Year 2018 Capital Spending

FY18 total capital spending goal represents a 16% increase from FY17 and a 64% increase over the FY11-FY16 average total spending.
2. First Ever Tax-Exempt Sustainability Issuance
Sustainability Bonds

MBTA sold the first ever tax-exempt Sustainability Bonds in October 2017. The innovative offering set precedents for both municipal and ESG markets.

• Deal was recognized as The Bond Buyer’s 2017 Northeast Region Deal of the Year and is a finalist for the national Deal of the Year, which will be announced in December.

• Proceeds from Sustainability Bonds fund projects which have distinct social and/or environmental benefits.

• Sustainability Bond Framework incorporates feedback from MBTA departments as well as guidance from investor groups and the academic community.

• $100 million of the Sales Tax Bonds and the full $233 million of Sales Tax Bond Anticipation Notes have been identified as supporting sustainable projects.

• Bond Anticipation Notes priced at 1.37% TIC. Longer term bonds priced at an average of 3.61% TIC.

• Sustainability Bonds met the strongest investor demand.
  • 9 banks participated in the sustainable offering
  • 8 banks participated in the traditional offering
  • Of the 8 banks that participated in both offerings, 6 offered stronger bids on the sustainable series than the traditional series.
Charlestown Seawall - Climate Resiliency

The Charlestown Seawall project protects a critical bus facility from increasingly worse storms, prevents scour and erosion, and minimizes runoff. Estimated Project Cost: $50 million.

- Approximately 8% of publicly owned seawalls in Massachusetts are in need of moderate to immediate repair. The assessed cost of repairs is in excess of $600 million. The MBTA is pleased to make a contribution to the effort.

The Program

- Rebuild a dilapidated retaining wall, beyond its useful lifespan, with modern drainage and additional utility specifications

The Objective

- Prevent erosion at the MBTA’s largest bus-maintenance facility and ensure that the site remains stable and completely functional, while also protecting habitat and water quality along the Mystic River

What’s Next

- Ensure that MBTA assets are climate ready and incorporate climate-change resiliency standards into all MBTA capital projects

Source: Massachusetts Coastal Infrastructure Inventory and Assessment Project
Positive Train Control - Safety

The Positive Train Control (PTC) project uses a GPS-based safety technology capable of preventing train-to-train collisions, over-speed derailments, and other potential safety issues. Estimated Project Cost: $492 million.

- Implementation of MBTA’s PTC System will bring all 394 route miles, 922 employees, and 187 signal towers into compliance with the federally mandated PTC requirements by the December 31, 2018 deadline with extension(s) to meet the final deadline of December 31, 2020.

- Safety for riders and employees is improved by significantly reducing the probability of:
  - Collisions between trains
  - Casualties to passengers and roadway workers
  - Damage to equipment
  - Over speed derailments and accidents

Wood Pole Installation  Overhead F.O. Installation  Antenna Base Installation  Site Preparation
Government Center – Accessibility and Climate Resiliency

Work continues to renovate Government Center Station. 2016 marked the first time the 118 year old station was accessible to people with disabilities. Estimated Project Cost: $99 million.

- Modernization created an efficient, attractive, functional station accessible to all customers
- Exterior glass, treated to increase insulation, provides natural light throughout the station. Glass-block flooring allows the light to pass through to subterranean levels
- Water drainage from roof is used to water landscaping
- Entirely new electrical system is more efficient, including a ventilation system that requires 60% less electricity
- Minimum 25% recycled materials used for all structural concrete
- Hazardous materials used during original construction, such as lead and asbestos, were systematically removed at beginning of project
**Fleet Modernization – Pollution Prevention**

MBTA is assembling a modern bus fleet, with old busses being replaced with fuel-efficient hybrid vehicles that consume 44% less fuel. Estimated Project Cost: $332 million.

- First hybrid buses entered service in 2010, with 25 60-foot articulated hybrids used on the Silver Line.
- 60 diesel buses were replaced with hybrids during 2014
- Also during 2014, an order was placed for 150 new hybrid buses
  - Buses are currently being integrated into revenue service
  - Remainder of fleet in service by the end of 2017
  - Option to purchase 200 additional buses

### Hybrid Buses by the Numbers

<table>
<thead>
<tr>
<th>Hybrid Units in Service by EOY 2017</th>
<th>Annual Diesel Reduction</th>
<th>Annual Greenhouse Gas Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>235 Buses</td>
<td>830k Gallons</td>
<td>3.7M Pounds</td>
</tr>
</tbody>
</table>
3. Sustainability Going Forward
MBTA is currently developing its next five-year capital plan, and uses a consistent, transparent, and outcome-based framework of project selection criteria to evaluate and prioritize new investments.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System Preservation</strong></td>
<td>The extent to which the project contributes to a state of good repair on the transportation system and aligns with asset management goals and strategies.</td>
<td>Asset Condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impact to Other Assets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operations Criticality (Service Disruption)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Climate Change Resiliency</td>
</tr>
<tr>
<td><strong>Mobility</strong></td>
<td>The extent to which the project is intended to provide modal options efficiently and effectively for all users through benefits to reliability, accessibility, and other measures of service quality.</td>
<td>Impact on Reliability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impact on Accessibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impact on Customer Experience</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of Riders Affected</td>
</tr>
<tr>
<td><strong>Cost Effectiveness</strong></td>
<td>The extent to which the project impacts operating costs and revenues and maximizes the return on the public's investment</td>
<td>Impact on Operating Costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impact on Operating Revenues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Estimated Cost per Rider</td>
</tr>
<tr>
<td><strong>Safety</strong></td>
<td>The extent to which the project addresses safety issues and hazards.</td>
<td>Impact on Safety of Customers and Employees</td>
</tr>
<tr>
<td><strong>Environmental and Health Effects</strong></td>
<td>The extent to which the project: 1) meets State goals of improving Air Quality and reducing Greenhouse Gases and 2) results in a reduction of pollution and/or consumption of natural resources</td>
<td>Air Quality and GHG Reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduce Pollution and/or Consumption of Natural Resources</td>
</tr>
</tbody>
</table>
FY19-23 Capital Investment Plan Project Selection

MBTA is currently developing its next five-year capital plan, and uses a consistent, transparent, and outcome-based framework of project selection criteria to evaluate and prioritize new investments.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Support</td>
<td>The extent to which the project is aligned with the MBTA Strategic Playbook (e.g., Focus40, MBTA Strategic Plan, Integrated Fleet and Facilities Plan)</td>
<td>Alignment with MBTA Strategic Playbook</td>
</tr>
<tr>
<td>Economic Impact</td>
<td>The extent to which the project is intended to provide modal options efficiently and effectively for all users through benefits to reliability, accessibility, and other measures of service quality.</td>
<td>Impact on Connectivity to Employment Centers identified in Focus40 Impact on Corridors at or Near Capacity Impact on Communities with Transit-Supportive Land Use</td>
</tr>
<tr>
<td>Social Equity</td>
<td>The extent to which the project equitably distributes economic, social, and health benefits to residents and local businesses.</td>
<td>Benefits to Environmental Justice Communities Benefits to Title VI Communities</td>
</tr>
</tbody>
</table>

- Small cross-functional teams evaluated and scored all project proposals using this rubric.

- Raw scores for each criteria were averaged across team members and weighted using agreed-upon factors depending on the CIP program.

- These scores are being used as a decision support tool to help MBTA leadership develop a balanced portfolio of investments – the draft FY19-23 CIP will be made public in May.
FY19-23 CIP Projects: Strong Sustainability Scores

While the MBTA CIP process is ongoing, the following represents the types of projects that received strong scores for social or environmental benefits

- **Revenue vehicle procurements and overhauls:**
  - Additional hybrid buses to replace the oldest buses in the fleet will improve emissions and provide more reliable service and a more comfortable customer experience
  - New Dual-Mode Articulated buses for the Silver Line will provide upgraded technology as well as added capacity for new service routes
  - Battery-electric buses are being considered for service following the results of an ongoing pilot and study
  - Mid-life overhauls improve reliability and extend service life of vehicles. Some also replace or upgrade power systems, resulting in environmental benefits.

- **Station improvements:**
  - Accessibility improvements like high-level platforms benefit customers with limited mobility, and also reduce dwell time at stations, reducing overall travel time and emissions
  - Wayfinding and station brightening initiatives provide updated signage and lighting to improve customer experience as well as energy consumption

- **Facility improvements**
  - Investments in storage tanks, wastewater systems, fueling systems, and other infrastructure at MBTA facilities allow for safer and more efficient maintenance operations
The MBTA’s first annual Sustainability Progress report will be published September 2018.

• Consistent with Sustainability Bond Principles established by the International Capital Market Association
• Distinct accounting - Use of Proceeds via capital management and treasury information systems
• Environmental Benefits – Built environment, capacity, carbon, energy and climate resilience, natural environment, pollution prevention, resource management
• Social Benefits – Affordability, accessibility, availability, equity, safety, workplace environment
• Tracking funds allocated to each project, construction updates, qualitative and quantitative performance measures, methods and assumptions backing performance indicators and metrics
• MBTA Treasury Department prepares Report and Sustainability Bond Committee reviews and approves
• Each Report will be published on MBTA Financials website - www.mbta.com
• Investor feedback and input welcome!