Integrated Fleet and Facilities Plan (IFFP)

Part Five: Light Rail

December 18, 2017
Goals of the Presentation

• General update on the state of the light rail fleets and facilities
  • Mattapan High Speed Line
  • Green Line
• Provide FMCB Board an update on fleet and facilities investment needs
• Generate discussion regarding possible future impacts to these modes
*The MBTA plans to execute the commitments made in the **FMCB Strategic Plan**

**Aligned with MBTA Strategic Vision - Focus40 Planning**

**Focus40**: Meeting the Needs of the Region in 2040

- **Blue Line Resiliency Planning**
- **Green Line Capacity Study**
- **Orange Line Capacity Study**
- **Mattapan High Speed Line Study**
- **Commuter Rail Vision**
- **Bus Service Plan**

**Project Development**

**5-Year Capital Investment Plan**

**20-Year Capital Investment Plan**

**IMPLEMENTATION**
Integrated Fleet and Facilities Plan Overview

The Integrated Fleet and Facilities Plan is an early step in a larger organizational effort, and is not intended to address all aspects of MBTA operations.

The IFFP is:

- Revenue fleets & maintenance facilities
- Currently fiscally unconstrained
- Designed to be implemented over 15 years
- Consistent with MBTA strategic plan
- Being aligned with Focus40 projections for ridership growth
- Focused initially on current MBTA service
- An evolving document, subject to annual updates
- A starting point for strategic fleet maintenance

The IFFP is not:

- A plan for stations, non-revenue vehicles, track, signals, and other infrastructure
- Fiscally constrained and therefore is not reconciled with the 5-year CIP
- Solely SGR – it assumes both modernization and capacity investments
- A plan for one-for-one replacement of existing vehicles
- Inclusive of operating costs
- Phased to ensure MBTA has sufficient bandwidth to execute simultaneous fleet procurement
Inventory and Condition Approach

- Fleet and facilities inventory and condition assessment activities performed between January and March 2017
- Consistent with MBTA asset management plan and strategy (MAP-21)
- Physical assessments utilized the FTA 1-5 condition rating scale
- Report cards were prepared summarizing key findings for fleets and facilities
Mattapan High Speed Line Fleets and Facilities
Inventory and Condition – Mattapan High Speed Line (MHSL)

Mattapan High Speed Line Fleet

<table>
<thead>
<tr>
<th>Fleet</th>
<th>Age (yrs)</th>
<th>Total Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCC Fleet</td>
<td>70</td>
<td>10*</td>
</tr>
</tbody>
</table>

* 2 cars out of service long term

Mattapan Maintenance Facility

- The MHSL fleet is maintained in a dedicated open air shed at Mattapan Yard, with support from Everett Shops for truck maintenance.
- The maintenance area was originally constructed in 1929 and partially enclosed with a roof and two sidewalls in 2007.
- Recommendations for this maintenance area will be part of the ongoing study on the MHSL anticipated early 2018.
Inventory and Condition – Green Line Fleet

<table>
<thead>
<tr>
<th>Fleet</th>
<th>Age (yrs)</th>
<th>Total Qty</th>
<th>Condition Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 7</td>
<td>32</td>
<td>86</td>
<td>3.2</td>
</tr>
<tr>
<td>Type 7 Option</td>
<td>20</td>
<td>17</td>
<td>3.2</td>
</tr>
<tr>
<td>Type 8</td>
<td>19</td>
<td>94</td>
<td>3.2</td>
</tr>
<tr>
<td>Fleet</td>
<td>24.8</td>
<td>197</td>
<td>3.2</td>
</tr>
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</table>

- Green Line Type 7 fleets are currently undergoing Selective Systems Overhaul to increase reliability and maintain a SGR to extended useful life.
- Green Line Type 8 fleet currently undergoing systems reliability maintenance program which has significantly increased reliability.
- New Type 9 fleet (24 cars) will be delivered in 2018 to support overall operations and provide additional capacity for GLX.
# Inventory and Condition – Green Line Facilities

<table>
<thead>
<tr>
<th>Facility</th>
<th>Age</th>
<th>Condition Rating</th>
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</thead>
<tbody>
<tr>
<td>Lake Street</td>
<td>38</td>
<td>2.5</td>
</tr>
<tr>
<td>Reservoir</td>
<td>32</td>
<td>2.7</td>
</tr>
<tr>
<td>Riverside</td>
<td>41</td>
<td>2.7</td>
</tr>
<tr>
<td>Facilities</td>
<td>37</td>
<td>2.6</td>
</tr>
</tbody>
</table>

## Green Line Maintenance Facilities

- Maintenance facilities are in marginal condition, items identified include:
  - Inadequate lifts
  - Hoists in need of overhaul
  - Overhead doors
  - Core building systems require upgrade
- Facility upgrades will be required at the time of the next major vehicle procurement
- Future of Lake Street facility should be considered, as part of future Green line fleet investments
Green Line Future Capacity

MassDOT/MBTA is taking a multi-faceted approach to addressing Green Line demand through 2040:

- Developing better projections for demand along the corridor with a sensitivity analysis.
- Assessing infrastructure needs to fully transition the fleet to potentially larger (Type 10) vehicles that can accommodate greater capacity.
- Identifying a range of strategies to improve operations and better match supply with demand.
- Coordinating with partners along the corridor.

Green Line Studies to be completed in 2018
Light Rail Projects: Ongoing and Near-Term
# Ongoing Light Rail Programs

## Type 7 Selective System Overhaul
- **$169M (Programmed)**
  - Type 7 fleet is undergoing selective system overhaul at Alstom in Hornell, NY
  - HVAC Units
  - Car bodies overhaul
  - Complete truck overhaul
  - 9 additional major systems overhauled

## Type 8 Targeted System Overhaul
- **$66M (Programmed)**
  - Systems reliability program – 2 phase program expected to be competed in 36 months
  - Complete truck overhaul
  - Car overhaul
  - Coupler overhaul
  - Air compressor replacement

## Type 9 Procurement
- **$183M (Programmed)**
  - 24 new cars will provide support to overall operations
  - Will also add capacity to support GLX
  - Delivery expected in 2018

## Mattapan PCC System Overhaul
- **$8.7M (Programmed)**
  - Trucks, propulsion, and power upgrades
  - Work being performed at Everett Shops and Mattapan maintenance facility
  - Goal is to extend useful life beyond 2020
Future Fleet Alternative Evaluations

Green Line Capacity Study

- Evaluating impact of vehicle performance characteristics
- Baseline model established
- Route profiles and simulation models
- Facility and storage analysis for conceptual Type 10 cars
- Evaluation of conceptual Type 10 cars
- Roadmap for implementation

**Update will be provided in late January 2018**
Green Line Base Line Operational Model Built and Being Calibrated
Future Fleet Alternative Evaluations

Mattapan HSL Due Diligence Evaluation

• Outside firm has been contracted to evaluate the future of the HSL

• Effort underway since early 2017

• Final report is expected in early 2018
Fleet Investment Plan – Light Rail

- Type 7 Selective System Overhaul Through 2018
- Mattapan PCC System Overhaul Through 2019
- Type 8 Targeted System Overhaul Through 2021
- Type 9 Procurement Through 2018
- Align future fleet and facility investment plan with Green Line Capacity study 2018-2019
IFFP Light Rail Investment Impact

Ongoing Light Rail Programs
$243.7M (ongoing)

- Increase fleet reliability
- Improve service
- Improve customer experience
- Reduce maintenance costs

New Green Line Type 10 Procurement
(Scope under review)

- Improve headways
- Increase fleet reliability
- Improve customer experience
- Reduced lifecycle maintenance costs
- RCM maintenance

GLX Facility
$143M (Programmed)

- Support GLX operations & maintenance
- Additional GL maintenance capability
- Reduced maintenance costs
- Improve operational efficiency
- Improve effectiveness of future RCM program

Green Line Facility Upgrades
(Scope under review)

- Improve facility capability to better support revenue fleet
- Increase fleet reliability
- Reduce maintenance cost
- Improve effectiveness of future RCM program
Key Takeaways

Mattapan HSL

- Due diligence report expected in early 2018
- Complete PCC overhauls to extend life of existing fleet
- Align future editions of the IFFP with HSL long term vision

Green Line

- Complete on-going overhaul programs on Type 7 & 8 Cars
- Complete studies underway regarding future Green Line fleet, infrastructure, and capacity needs
- Update on Green Line Capacity Study by AGM late January 2018
- Align Green Line Type 10 pre-procurement / specification development after completion of capacity study and in-service evaluation of Type 9 fleet
- Align future Green Line maintenance facility modernization programs with new fleet requirements
Next Steps to Finalize IFFP in 2018

- Compiling feedback from FMCB
- Conducting the analysis on recommendations provided by FMCB
- Provide summary presentation to the FMCB
- Revise IFFP to incorporate final FMCB direction & relevant studies
  - Foucus40
  - Green Line Capacity
- Future editions of the IFFP will incorporate outcomes of key studies;
  - Commuter Rail vision
  - BEB Feasibility Study