

Massachusetts Bay Transportation Authority

Transformation of the Mattapan High Speed Line The Path to Accessible, Reliable, and Modern Transportation

Spring 2019



The Mattapan Trolley Today

- Service along 2.6 miles of track in Milton and Dorchester from Ashmont Station to Mattapan Station (8 stations total)
- Connects to the Red Line, many local bus routes, and the Neponset Trail
- Served by a fleet of ten 1940s PCC trolleys; 4 trolleys for daily service requirements, 2 revenue spare, and 4 out of service
- In operation 7 days a week (suspended during major snow events)
- Approximately 6 minute trip one-way
- Approximately 6 minute headways during peak hours
- 6,600 average daily weekday boardings (3,200 inbound and 3,400 outbound)





Mattapan Transformation First Principles

1. Prioritize safety
2. Meet standards for accessibility
3. Improve the level of service
4. Minimize service interruptions during implementation of the Mattapan transformation
5. Incorporate community and stakeholder input
6. Invest to continue operation of the existing Mattapan PCC trolleys for another 8-10 years





Three Phases of the Mattapan Transformation Program

Phase 1 – Immediate Investments and Future Planning

- \$7.9 million in new equipment to extend PCC trolley life 8-10 years
- Assess existing investment and service needs
- Evaluate future vehicle options and continue community engagement

Phase 2 (FUTURE) – State of Good Repair and Modernization

- Infrastructure investments to support future service independent of vehicle type

Phase 3 (FUTURE) – Integration of Future Vehicle Fleet

- Additional investments to integrate the future vehicle fleet
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Phase 1 – Immediate Investments and Future Planning

PCC Car Fleet Upgrade Program

March 2018 – Present

MBTA and Brookville Equipment Corporation (BEC)

- Investment of \$7.9 million for upgraded propulsion, trucks, and air system equipment (from BEC) on 8 PCC cars to address major reliability issues
- Entire fleet of 10 cars are undergoing repairs by MBTA to car body structure, roof corrosion (pictured), and other selective systems
- Program schedule delayed by lead paint abatement - first car estimated to return to service in August 2019 with program completion in 2020





Phase 1 – Immediate Investments and Future Planning

Existing Conditions Study and Future Options Evaluation

- Reviewed existing conditions of the Mattapan High Speed Line (MHSL) and determined near-term investment needs to reach SGR for continued PCC service for the next 8-10 years
- Reviewed potential future vehicle options and evaluated associated infrastructure (stations and access, bridges, power systems, railway/roadway, drainage, maintenance facilities), operating, community, and cost impacts





Phase 1 – Immediate Investments and Future Planning

Prior Community Feedback

- Accessibility is a major issue (takes precedence over historic charm)
- Community is growing, trolley attracts residents
- Neponset River Trail is an asset and must be kept safe, peaceful, and environmentally friendly
- No buses





Phase 2 – State of Good Repair and Modernization

Infrastructure

- Rehabilitation and maintenance of bridges and track
- Power system resiliency efforts (e.g. renovation of Ashmont traction power substation and construction of new substation likely at Mattapan)
- Signal system installation at Central and Capen road crossings

Stations

- Accessibility and amenities improvements
- Platform/structure repairs and upgrades
- Improved access and paths of travel at Valley Road, Milton, and Ashmont





Phase 3 – Integration of Future Vehicle Fleet – Potential Options



Option 1: Continue Heavy Repair and Upgrade of MBTA's Existing PCC Fleet



Option 2: Procure New, Replica PCC Vehicles



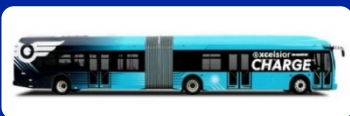
Option 3: Repurpose Existing MBTA Green Line Type 9 Light Rail Vehicles (LRVs)



Option 4: Procure New, Modern LRVs



Option 5: Procure New 60-foot Diesel-Electric Hybrid Bus Fleet



Option 6: Procure New 60-foot Battery-Electric Bus Fleet



Option 1: Continue Heavy Repair, Upgrade of MBTA's Existing PCC Fleet

Benefits

- Historic and unique to the community



Existing MBTA PCC trolley

Concerns

- Major accessibility issues (high step/floor, no vehicle ramp or lift, no automated stop announcements)
- Costly maintenance, difficult to find or engineer parts
- Poor reliability
- Inoperable during snow events
- Vehicles far beyond expected useful life with deteriorating structures
- No room for growth



Option 2: Procure New, Replica PCC Vehicles

Benefits

- Retains public preferred historic look and feel, but with modernized systems



Example of replica heritage trolley

Concerns

- Accessibility issues accomplished through on-vehicle lift
- Not a service proven vehicle
- Not an actual historic vehicle



Option 3: Repurpose Existing MBTA Type 9 LRVs

Benefits

- Highly accessible (70% low floor, level/faster boarding)
- Low expected vehicle capital cost
- Vehicles will have been accepted and integrated into MBTA operations
- MBTA-specific design likely to fit MHS� clearance envelope
- Increased/improved passenger area; room for ridership and fleet growth
- Less than half the fleet needed for Mattapan; remainder could be sold, continue in use on GL, or remain as spares
- Built by established manufacturer

Concerns

- Dependent on Type 10 procurement plan and schedule
- Slightly increased track maintenance due to heavier vehicle



MBTA Type 9 in testing



Option 4: Procure New, Modern LRVs

Benefits

- Highly accessible (up to 100% low floor)
- Possibility for future modern propulsion (e.g. battery-powered, off-wire technology)

Concerns

- Completely custom vehicle with unknown reliability and performance
- Highest vehicle cost of Mattapan future options



Example modern LRV



Option 5: Procure New 60-foot Diesel-Electric Hybrid Bus Fleet

Benefits

- Partial low floor vehicles, level boarding
- Increased operational flexibility (e.g. breakdowns)
- Improved snow operation
- Easier accommodation of growth
- Could allow for through flow at terminals, providing one-seat rides beyond the existing corridor

Concerns

- Not favored by the community
- Longest expected corridor shutdown for construction
- Ramp, kneeling, and securement system results in slower accessible boarding than modern LRV





Option 6: Procure New 60-foot Battery-Electric Bus Fleet

Benefits

- Same as Option 5 diesel-electric hybrid bus



Example 60-foot battery-electric bus

Concerns

- Same as Option 5
- All-electric buses and charging infrastructure new to MBTA fleet
- Electric buses are new to industry overall (limited service proven record)



Evaluation of Vehicle Options Against First Principles

	1. MBTA PCC	2. Replica PCC	3. MBTA Type 9	4. New LRV	5. Hybrid Bus	6. Battery Bus
Prioritize safety	—	✓	✓	✓	✓	✓
Meet accessibility standards	✗	✗	✓	✓	✓	✓
Improve level of service	✗	✗	✓	✓	✓	✓
Minimize service interruption	✓	✓	✓	✓	✗	✗
Incorporate community input	✓	✓	✓	✓	✗	✗



Evaluation of Vehicle Options By Estimated Capital Cost

	1. MBTA PCC	2. Replica PCC	3. MBTA Type 9	4. New LRV	5. Hybrid Bus	6. Battery Bus
Phase 1	\$8 m	\$0	\$0	\$0	\$0	\$0
Phase 2	\$90-115 m (all options)					
Phase 3 Vehicle	\$5 m	\$40 m	\$0	\$65 m	\$20 m	\$20 m
Phase 3 Infrastr.	\$70 m	\$70 m	\$75 m	\$80 m	\$100 m	\$95 m
Phase 3 Total	\$75 m	\$110 m	\$75 m	\$145 m	\$120 m	\$115 m
TOTAL	\$190 m	\$220 m	\$190 m	\$260 m	\$215 m	\$215 m



Next Steps

- **Request funding for Phase 2 in next CIP cycle**
- **Public Meetings:**
 - March 27, 2019 ABCD Mattapan
 - April 2, 2019 Milton Council on Aging
 - April 4, 2019 Lower Mills Branch Public Library



Thank you

Questions and Comments: trolley@mbta.com