



**Massachusetts Bay
Transportation Authority**

Green Line Transformation





Fiscal & Management Control Board (FMCB)

May 13, 2019



**GREEN LINE
TRANSFORMATION**
Massachusetts Bay Transportation Authority

GREEN LINE AT A GLANCE

	<i>Current</i>	<i>Extension (Dec 2021)</i>
	3 VEHICLE MAINTENANCE FACILITIES	+1
	46 MILES OF TRACK	+8
	66 GREEN LINE STATIONS	+6
	200,000 PASSENGER TRIPS EVERY WEEKDAY	+50K

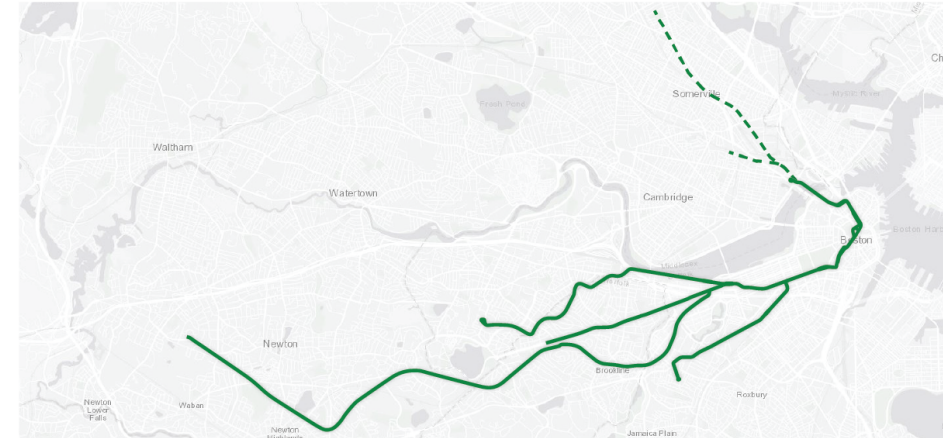


FIRST SUBWAY
IN AMERICA

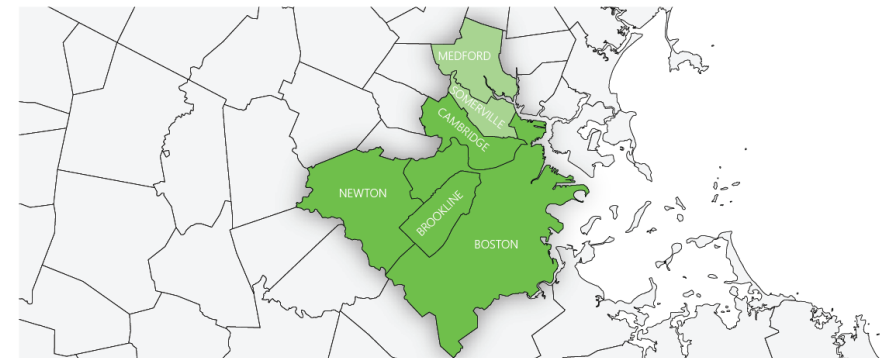
HIGHEST RIDERSHIP PER MILE
FOR A USA LIGHT RAIL SYSTEM

SOURCE: APTA 2018 Public Transportation Fact Book

LONGEST NETWORK
WITHIN MBTA'S TRANSIT SYSTEM (46 MILES OF TRACK)
+ Extension (8 miles)



SERVES BOSTON, NEWTON, CAMBRIDGE & BROOKLINE
+ Extension (Medford and Somerville in 2021)





OUR GOAL

Improve the Green Line **quality of service**, including **increased capacity** and **enhanced accessibility**, through fleet modernization, infrastructure/facility upgrades and **state-of-the-art technology**





OUTLINE





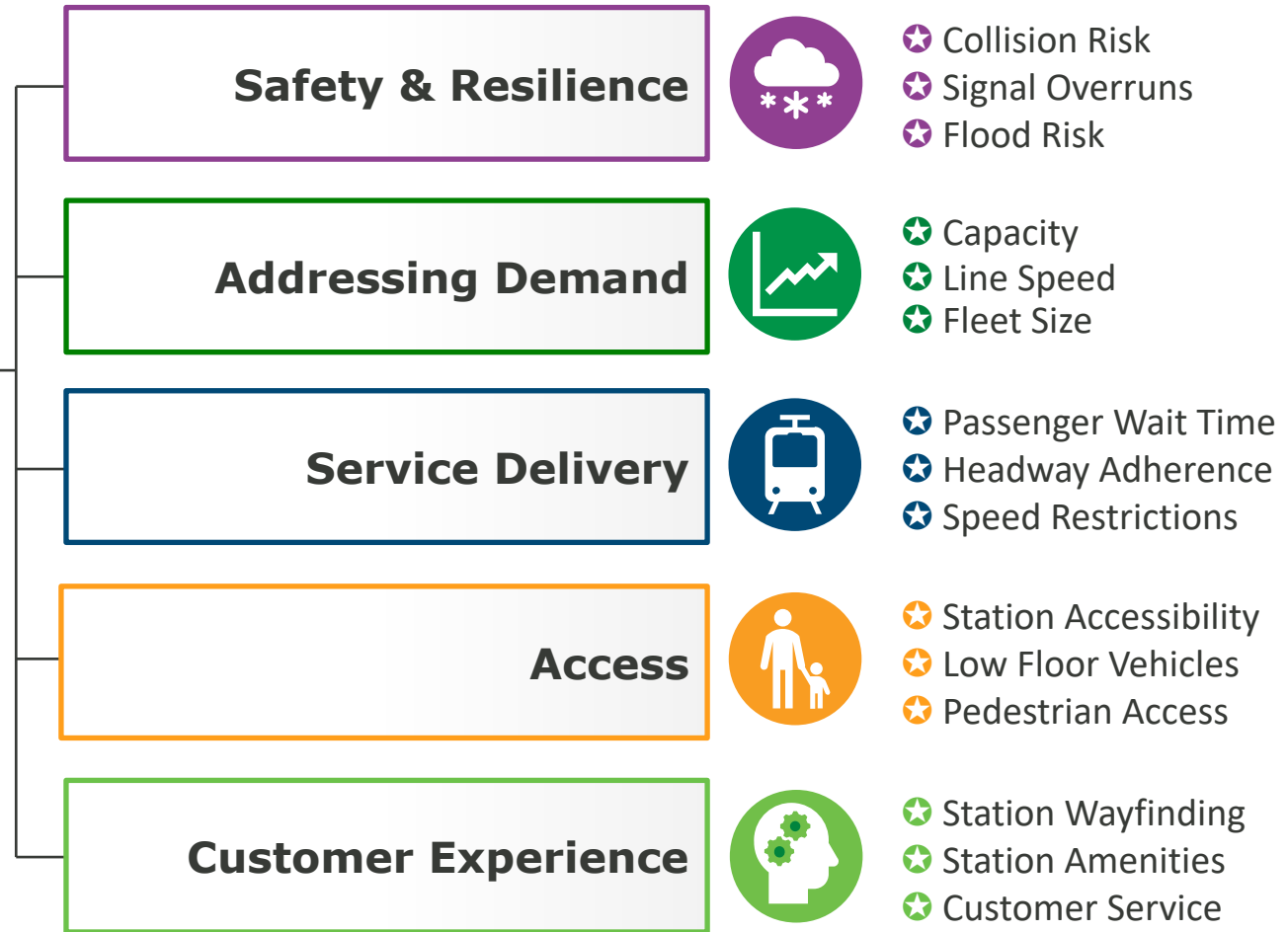
1 PROGRAM PHASES

PHASE I	Current repair, renewal, and modernization investments to increase system lifespan	
PHASE II	New Supercar (Type 10) fleet deployment and infrastructure upgrades to operate single supercars and legacy trains	15% <i>Peak Capacity Increase</i>
PHASE III	Infrastructure upgrades to operate 2-Supercar trains on D & E branches	50% <i>Peak Capacity Increase</i>
PHASE IV <i>(optional)</i>	Infrastructure upgrades to operate 2-Supercar trains on entire system with raised platforms	Double <i>Capacity</i>



2 **DEFINING MEASURABLE OUTCOMES** (QUALITY OF SERVICE)

Quality of Service:
Transit service performance from the point of view of the customer.



3 SHORT TERM IMPROVEMENTS 2019-2021 (2 Years)



24
New Type 9
Light Rail Vehicles



Tools for Riders & Operations

- Re-enabling GPS & Real-Time Data
- e-Ink Signs
- GLIDES
- Transit Signal Priority (TSP)

- Intersection Upgrade Under Construction
- Systemwide Wayfinding Upgrade



December 2021

- Safety & Resilience
- Addressing Demand
- Service Delivery
- Access
- Customer Experience



3 SELECTED SHORT TERM IMPROVEMENTS



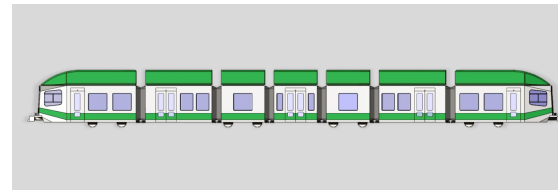
Track, Power & Signals



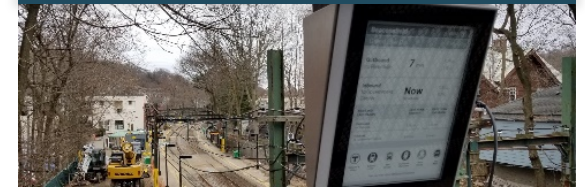
Stations, Structures & Accessibility



Rolling Stock, Specialty Equipment & Facilities



Technology for Riders & Operations







TRACK, POWER & SIGNAL

D Branch Track & Signal Replacement (Beaconsfield to Riverside)



In Construction (Complete December 2020)

Benefits:

-  Reduce delays and eliminate speed restrictions
-  Improve ride quality




- ✓ Replace 25,000 feet of track
- ✓ Modernize signal system
- ✓ Install backup power supply system
- ✓ Upgrade special trackwork
- ✓ Reconstruct pedestrian crossings

Green Line Central Tunnel Track & Signal Replacement



Design Procurement (Consultant NTP Summer 2019)

Benefits:

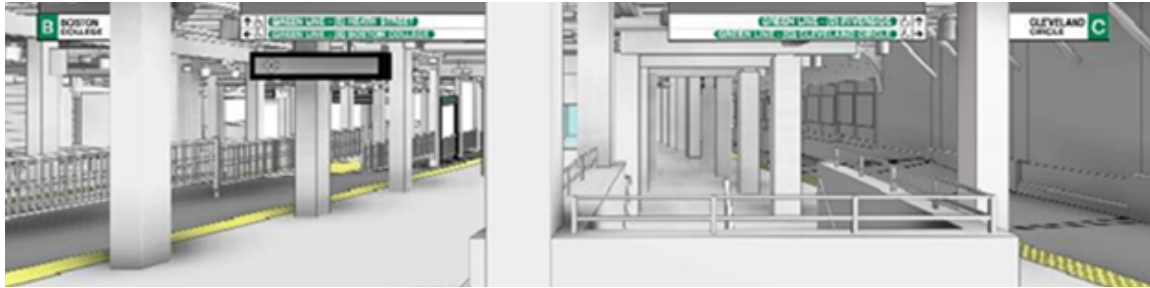
-  Reduce delays and eliminate speed restrictions
-  Improve ride quality
-  Improve operational efficiency

- ✓ Renew track
- ✓ Improve drainage
- ✓ Upgrade switches, signals, and cable
- ✓ Optimize track reconfigurations at Park St. and Boylston



STATIONS, STRUCTURES & ACCESSIBILITY

Park Street Wayfinding & Station Improvements



Construction Procurement (NTP April 2019)

Benefits:

- Improve signage and lighting
- Restore station appearance
- Improve egress/repair stairs

- ✓ Upgrade and standardize station signage
- ✓ Enhance lighting and reduce maintenance
- ✓ Clean station surfaces
- ✓ Re-open stairs for additional egress

Lechmere Viaduct Rehabilitation



In Design (Advertise for Construction Fall 2019)

Benefits:

- Remove operational restrictions
- Improve travel time
- Improve operational efficiency

- ✓ Strengthen concrete arches
- ✓ Extend service life
- ✓ Upgrade to handle heavier vehicles
- ✓ Preserve historic landmark



STATIONS, STRUCTURES & ACCESSIBILITY

Systemwide Wayfinding



In Construction (Installation began April 2019)

Benefits:

- Improve signage and wayfinding
- Restore station appearance

- ✓ Improves riders' ability to identify station locations
- ✓ Compliant with MBTA Graphic Standards
- ✓ Replaces damaged & deteriorated signs
- ✓ Add surface station signs where none exist today

B Branch Station Consolidation (St. Paul & BU West) (Babcock & Pleasant St.)



In Design (Advertise for Construction Summer 2019)

Benefits:

- Improve travel time
- Improve egress
- Improve operational efficiency

- ✓ Consolidate four stations into two
- ✓ Separate platforms from roadways
- ✓ Raise platforms for level boarding
- ✓ Add improved amenities



ROLLING STOCK, SPECIALTY EQUIPMENT & FACILITIES

Type 9 Light Rail Vehicle



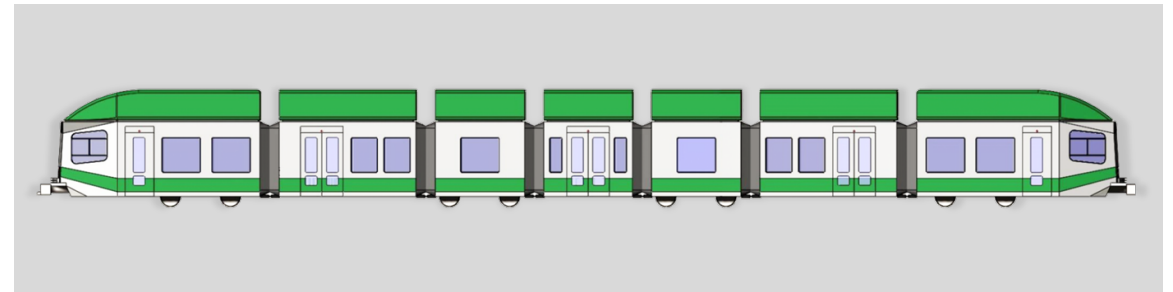
Delivery Underway

Benefits:

- Increase accessibility of fleet
- Address new demand from GLX

- ✓ New low-floor vehicles with latest technology
- ✓ First Type 9 in service December 2018
- ✓ Deliver 24 vehicles by the end of the year

Supercar (Type 10) Light Rail Vehicle



In Development

Benefits:

- Significantly increase capacity
- Reduce crowding
- Improve accessibility

- ✓ Transition fleet to longer, accessible cars
- ✓ Request for Information released to the industry (April 2019)
- ✓ Upcoming: Technical Specification (end of 2019)






TOOLS FOR RIDERS

Upgrading Global Positioning System (GPS) Train Trackers



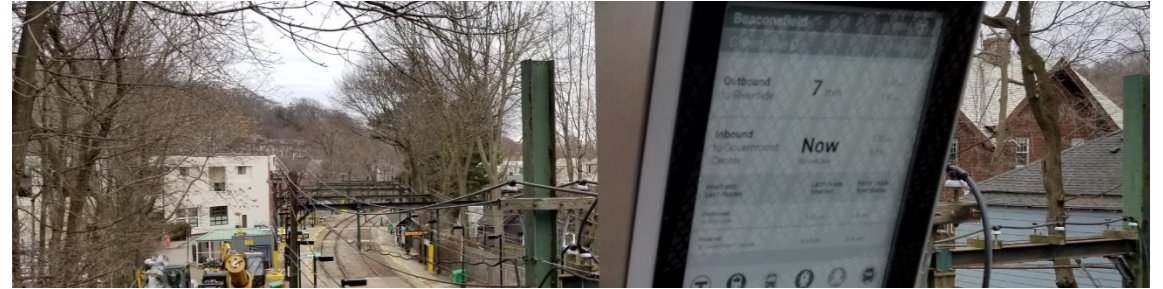
In Progress

Benefits:

-  *Improve Headway Adherence*
-  *Enhance Arrival Predication Accuracy*
-  *Increase Operational Readiness*

- ✓ Upgrading from 3G to 4G on all vehicles
- ✓ Restoring real-time information at affected D-branch stations for Google Maps, website, countdown clocks—and the Operations Control Center (OCC)

e-Ink Station Signs



Pilot (B,C,E Branch September 2019 – April 2020)

Benefits:

-  *Improve Station Amenities*
-  *Improve Communication of Delays*

- ✓ Provide real-time service information at stations without countdown clocks
- ✓ Display delays and service adjustments
- ✓ Uses low-power design (solar)






TOOLS FOR OPERATIONS

Green Line Intelligent Decision Execution System (GLIDES)



Pilot (August 2019)

Benefits:

-  *Improve Headway Adherence*
-  *Decrease Passenger Wait Time*
-  *Increase Operational Readiness*





- ✓ Mobile application to support Green Line Operations
- ✓ Easily view spacing, destination, driver
- ✓ Free up radio channel chatter

Transit Signal Priority (TSP)



In Progress

Benefits:

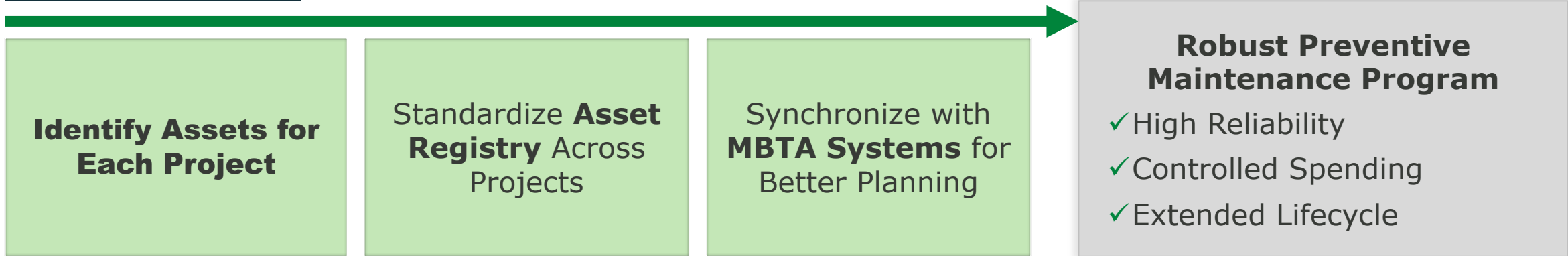
-  *Improve Headway Adherence*
-  *Increase Line Speed*
-  *Decrease Dwell Time*
-  *Enhance Intersection Safety*

- ✓ Can support more TSP intersections
- ✓ Adding intersections in collaboration with municipalities
- ✓ Rebuilding TSP software
- ✓ Will generate data on TSP efficacy



4 PRESERVING & SUSTAINING THE QUALITY OF SERVICE

PHASE I



PHASE II

PHASE III

PHASE IV

Ensure long-term sustainability and performance of the Green Line through:

- ✓ Improved tracking of assets
- ✓ Proactive vehicle and infrastructure maintenance



5 STAKEHOLDER OUTREACH & ENGAGEMENT

2019 Outreach Activities

<p>Community Information Sessions Gather input from neighborhood organizations, businesses and stakeholders on each branch</p>	<p>Frontline Employee Meeting June 2019 at the Maintenance Facilities/Yards</p>
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Community Information Sessions: September 2019

Date/Time	Branch	Location
Week of Sept. 9 6:00 – 7:30 PM	Central Subway	MBTA 10 Park Plaza, Boston
Week of Sept. 16 6:00 – 7:30 PM	B	Boston University, Boston (<i>Fenway–Kenmore</i>)
Week of Sept. 16 6:00 – 7:30 PM	C	Coolidge Corner School, Brookline
Week of Sept. 23 6:00 – 7:30 PM	D	Newton Public Library/City Hall, Newton
Week of Sept. 23 6:00 – 7:30 PM	E	Tobin Community Center, Boston (<i>Mission Hill</i>)

GLT Program Website



Contact us at:
GLT@mbta.com



THE GLT PROGRAM PLAN



Key Elements

Program Information	Quality of Service	Maintainability
<ul style="list-style-type: none"> ✓ Four Phases ✓ Portfolio of Projects ✓ Priority Projects ✓ Sequence of Work ✓ Developed Budgets 	<ul style="list-style-type: none"> ✓ Defined Metrics ✓ Outcomes by Phase ✓ Progress Updates 	<ul style="list-style-type: none"> ✓ Maintenance Strategy ✓ Asset Management

- **Draft Report for Review (June 2019)**
- **Final Report (December 2019)**

The GLT Program Plan will be revised each year to align with MBTA goals



NEXT STEPS

- **Draft** GLT Program Plan
- **Conduct** necessary studies to meet future needs
- **Initiate** community outreach and engagement
- **Provide** quarterly progress update



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