



FY21-25 Capital Investment Plan Overview, Sources and Programs

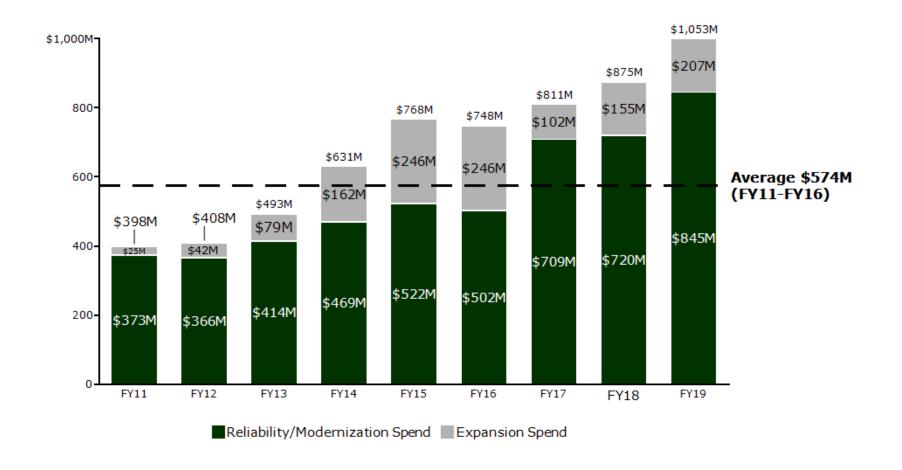
Fiscal and Management Control Board February 24, 2020



Lookback: FY19 Capital investments exceeded \$1 billion

 For the first time ever, total MBTA capital investment exceeded \$1 billion in FY19

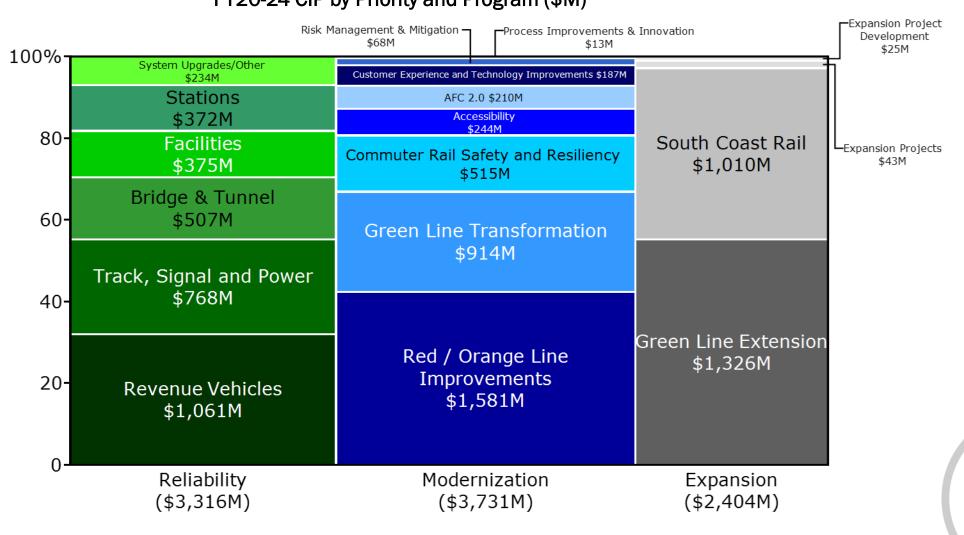
 Nearly double the FY11-16 average





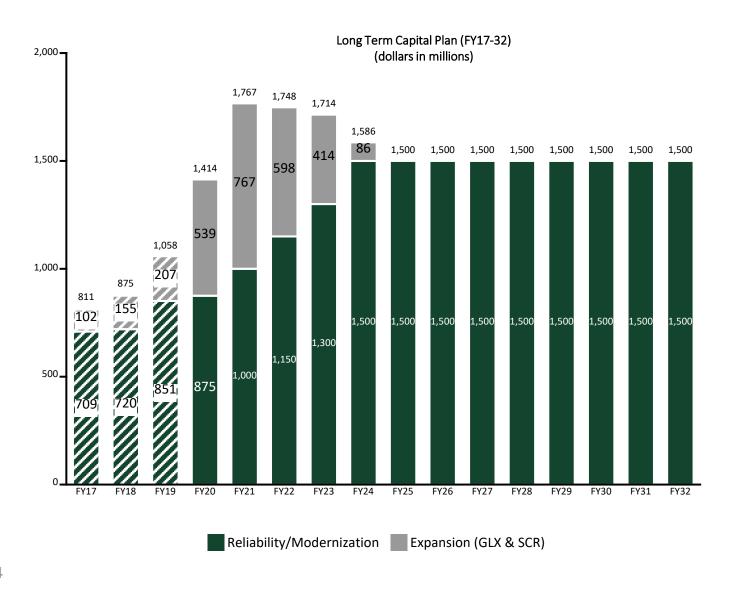
Lookback: FY20-24 CIP Invests over \$9 billion organized by Priority and Program

FY20-24 CIP by Priority and Program (\$M)





Lookback: FY20-24 Spending targets reflected the MBTA's plan to increase annual capital investment to more than \$1.5 billion per year



- Address current asset condition and modernization needs by 2032 - assumes \$10B capital needs estimate as baseline
- Include additive transformation, safety, and capacity investments
- Account for cost escalation/asset depreciation
- Reflect more modest ramp-up of spending, consistent with MBTA project delivery capacity

Spend targets will be updated to reflect accelerated project delivery via station closures, compressed project schedules, and increased staff capacity



What We Accomplished | 2019





Increased the speed of execution for critical infrastructure improvements and used weekend station closures to accelerate work, completing 12,617 feet (2.4 miles) of track. Compressed project schedules resulted in:

Direct Service & Safety Improvements Accelerated in 2019

Green Line



Added 8,480 feet of track replacement

Red Line

- Station brightening and wayfinding at Park Street and Downtown Crossing (DTX) stations through four weekend diversions. Park Street timeline condensed by four months, and DTX by twelve months
- Added 1,759 feet of track replacement
- Completed Harvard Station Elevator project

Orange Line

- **Station brightening and wayfinding** at DTX, Haymarket, and State Street stations through six weekend diversions, condensed the project timeline by eleven months
- Added 2,378 feet of track replacement, and cleaning & painting at Chinatown Station

Leveraged Access to Amplify Results

- Conducted inspections
- Made station and tunnel repairs
- Overhauled fare gates
- Repaired flooring
- Installed fiber optic signal cable

Enhanced Customer Communications

- Service impacts communicated with digital in-station displays, updates via email, text alerts and web site, robust social media, shuttle signage, and customer service agents in stations
- Shared details on planned weekend work with an inside look at work completed on weekends and overnight

2020 Plan | Overview

Our 2020 work will deliver improved **safety**, **reliability**, and **quality of service** to our riders even sooner

Services	Rider Benefits	Track Rehab & Construction	Safety & Infrastructure Upgrades	Delivering Results Sooner
Green G	Better walking, biking & driving over tracks Reduced delays & slow zones (speed restrictions)	10.8 miles (24%) 57,230 ft - 24% of Green Line	Upgrade 14 Intersections (26% of GL) Rehabilitate Lechmere Viaduct	760 days saved
Red Line	Improved access at Braintree & Quincy Stations Reduced delays & slow zones (speed restrictions)	6.1 miles (14%) 32,032 ft – 14% of Red Line	Revamp garages at Braintree, Quincy Track replacement in the tunnels Patch tunnel leaks at Alewife – Harvard	490 days saved
Orange Line	Improved access at Oak Grove Reduced delays from improved train yard	3.5 miles 18,400 ft of maintenance track	Modernize three escalators (Oak Grove) Rebuild Power Substation	180 o days saved
Blue Line	Reduced delays & slow zones (speed restrictions)	0.5 mile (5%) Up to 2,500 ft – 5% of Blue Line	Waterproof and clean tunnels Track replacement in the tunnels	760 days saved
Commuter C	Increased on-time performance (Franklin Line) Prep for future increase to train frequency	7.4 miles (25%) 39,000 ft added to Franklin Line	Accelerate buying 80 bi-level coaches Upgrade crossover in Melrose	180 • days saved
Silver Line	Better driving surface provides smoother ride	N/A	Waterproof tunnels to reduce future leaking	480 days saved
	Total	29 Miles 151,662 ft of Track	Infrastructure improvements across all MBTA surface transportation	~8 years saved

^{*}Time saved can be reinvested into the system to amplify acceleration impact

Key milestones for the CIP development process

December • Call for projects announced and CIP Information Sessions held to detail the process and requirements Develop initial estimates of capital funding sources January Collect project proposals from MBTA Departments and begin evaluation process Continue scoring and evaluation process **February** Update cash flow forecasts for existing projects Set initial program sizes based on capital and asset needs Prioritize new projects based on scoring and evaluation March Develop initial project list – combine existing and new projects Refine sources and sequencing for draft project list April Present updated funding sources and revised program sizes to FMCB Finalize draft CIP and present to the FMCB, CPC and Joint Board May Post draft CIP for comment; engage public through multiple avenues Public meetings and comment period; incorporate public comment into CIP June Joint Board vote to approve final CIP



Next evolution of the MBTA CIP: Continuous improvement

FY17-21 CIP

- Introduced a new strategic approach to produce a balanced portfolio of projects
- Represented the first fully integrated MassDOT-MBTA CIP
- After years of underinvestment, challenged the agency to spend \$6.6 billion over the five year window

FY18-22 CIP

- Continued the structure and process introduced the prior year
- Focused on fully funding prior commitments, project readiness, acceleration, and targeted updates
- Expanded ambitious capital spending goals to \$7.4 billion over five years

FY19-23 CIP

- Aligned priorities
 with strategic goals
 and plans
- Issued agency-wide call for projects to identify needs and build pipeline
- Incorporated
 Transit Asset
 Management
 (TAM) data
- Scored all project proposals using PSAC methodology
- Produced \$8 billion plan

FY20-24 CIP

- Incorporate Transit
 Asset Management
 (TAM) Plan data
 and findings
- Use CIP process to implement first set of Focus 40 "next priorities"
- Leverage PMIS for project intake, evaluation and prioritization
- Focus on execution and optimization of capital program

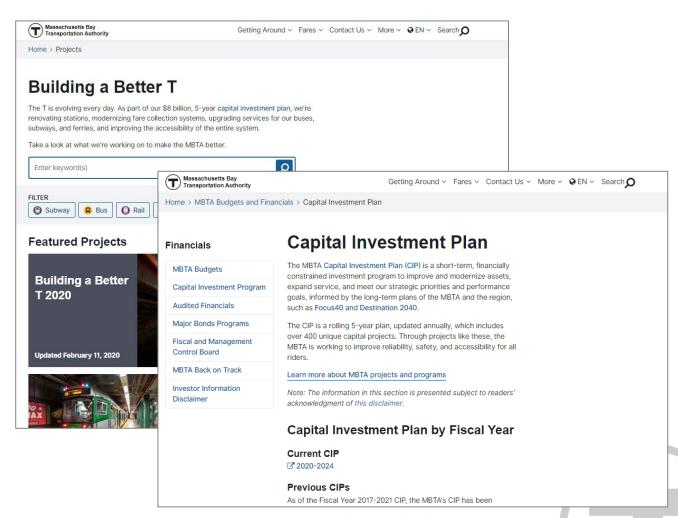
FY21-25 CIP

- 5th update of rolling CIP
- Incorporate Capital Needs
 Assessment findings
- Adopt lessons learned from acceleration initiatives
- Implement a consistent and nimble process for incorporating in-year changes
- Integrated project mapping into decision-making process
- Integrated debt assumptions with the Pro Forma



Enhancing communication and outreach on the CIP and capital program

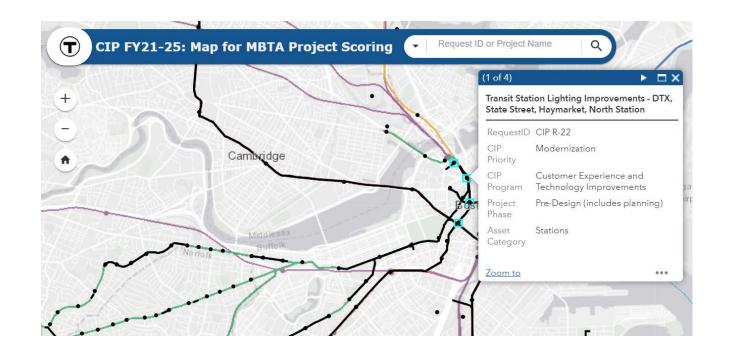
- MassDOT is enhancing public outreach for overall MassDOT/MBTA CIP, per feedback
- The approved CIP is now available on the MBTA website, including previously approved CIPs
- The MBTA continues to utilize the Building a Better T page on the website to highlight and update the public on the status of ongoing capital projects





Consolidated GIS Map for Project Scoring

- For the first time, all MBTA project requests have been located on a interactive GIS map
- Consolidated GeoDOT map, integrates data related to multiple scoring criteria:
 - System preservation: Flood risk;
 - Social equity: Title VI, Environmental Justice, and other protected populations;
 - Economic impact: Housing Choice communities and access to jobs data
- Support our on-going effort to integrate project location information into the CIP decision-making and sequencing process
- Project location data will be incorporated into MassDOT's CIP online public comment tool



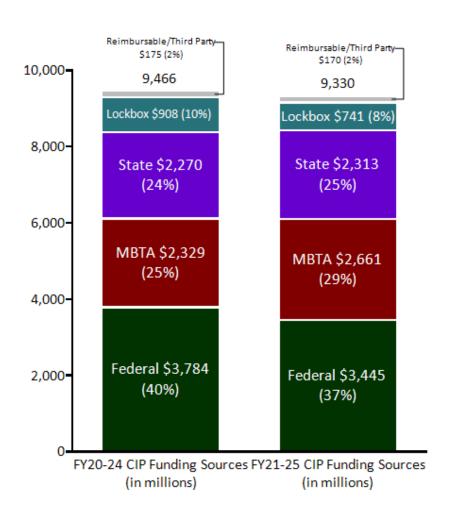


FY21-25 CIP Funding Sources: Assumptions and Risks

Funding Type	Assumptions	Risks
Federal	 Federal formula funds are assumed to continue at a similar growth rate as prior years Includes new grant for South Station Tower 1 Sources assume Congress will take action to reauthorize transit formula programs and replenish Highway Trust Fund 	 Current surface transportation authorization ("FAST Act") expires on September 30, 2020 Congressional Budget Office estimates transit account within the Highway Trust Fund (HTF) will be exhausted by 2021
State	 Reflects current ISAs for GLX, RL/OL, SCR and similar programs. Annual amounts match anticipated spending. Includes additional state funds for expedited bilevel coach procurement 	 Transportation Bond Bill authorizations required for state funding beyond current ISAs
MBTA Debt	 Assumes substantial revenue bond issuance, in addition to existing MBTA debt, to support the capital program 	 Market variables (interest rates, credit spreads, etc.) will impact the cost of new debt Contingent on operating budget ability to support debt service, which H2 will allow
Lockbox	 Reflects policy commitment to reinvest \$90M of contract assistance in capital program, including capital salaries 	 Expansion in operating budget to support capital, safety and other priorities creates challenges for maintaining ability to reinvest \$90M of contract assistance into capital annually



Initial estimate: FY21-25 CIP Funding Sources



Sources highlights:

- Federal funds continue to be the single largest source of capital for the MBTA
 - Reduction from \$3.8B in FY20-24 to \$3.5B in FY21-25 driven by progress on Green Line Extension and drawdown of substantial balance of carry over funds
- MBTA Bonds support the 20% match for Federal projects, as well as MBTA-only funded projects
- State funds include Bond Cap and Rail Enhancement Program special obligation bonds for GLX, Red Line/Orange Line improvements, South Coast Rail, and other projects
- Pay-Go/Lockbox reflects an assumption of \$150M/year, plus prior year carryover. Includes state assistance via bond cap and operating funds
- Other funding sources include municipal contributions and other reimbursements



FY21-25 CIP Priorities and Programs

- Reliability: Maintain and improve the overall condition and reliability of the transportation system
- 2. Modernization: Modernize the transportation system to make it safer and more accessible and to accommodate growth
- 3. Expansion: Expand diverse transportation options for communities throughout the Commonwealth

Reliability Programs				
Bridge and TuFacilitiesRevenue Vehi	•	Stations System Upgrades Track, Signals, and Power		
	Modernization	Programs		
Commuter Ra	ofrastructure Partnership ail Safety and Resiliency perience and Technology s	Process Improvements and Innovation Rail Transformation Red / Orange Line Improvements		
	Expansion P	Programs		
Green Line Expansion Pro		Expansion Project Development South Coast Rail		



FY21-25 CIP Programs: Reliability

Priority 1/Reliability				
FY21-25 CIP Programs	Purpose and Need Statement	Measure		
Bridge and Tunnel	This program repairs, reconstructs and replaces MBTA commuter rail and transit bridges and tunnels system-wide	Asset condition: structural deficiency and load rating		
Facilities	This program rehabilitates and upgrades maintenance and administrative facilities that support MBTA operations.	Asset condition: FTA TERM Scale (1-5)		
Revenue Vehicles	This program rehabilitates and replaces the MBTA revenue fleet, which includes commuter rail, heavy rail, light rail, bus and ferry units.	Asset age: Useful life benchmark		
Stations	This program rehabilitates and upgrades MBTA stations and parking facilities (e.g., commuter rail, commuter boat, subway and bus stations)	Asset condition: FTA TERM Scale (1-5)		
System Upgrades	This program upgrades a wide range of MBTA systems including communications, security, computer technology, fare collection, asset management and environmental remediation systems. It also rehabilitates non-revenue vehicles and equipment.	Asset age: Useful life benchmark (for non-revenue vehicles)		
Track, Signal and Power	This program rehabilitates, replaces and upgrades track, signal and power assets across the commuter rail and transit system.	Asset condition, age, and performance restrictions		



FY21-25 CIP Programs: Modernization

Priority 2/Modernization				
FY21-25 CIP Programs Purpose and Need Statement		Measure		
Accessibility	This program improves accessibility at MBTA commuter rail, subway and bus stations. This program is necessary to meet the goals of the Authority's Plan for Accessible Transit Infrastructure ("PATI").	PATI Implementation; increased number of accessible stations		
Bus Transformation	This program aims to support a range of investments that strive to achieve better, faster, lower-emission but service that is more aligned with where riders live, work and travel.	TBD		
Bus Transit Infrastructure Partnership	Through partnerships and grants to municipalities, implement transit-supportive infrastructure to improve and facilitate more efficient delivery of transit operations, improve the passenger experience, and enhance transit rider and pedestrian service and safety. <i>[Pending Transportation Bond Bill]</i>	Completion of bus lanes; installation of TSP		
Commuter Rail Safety and Resiliency	This program includes projects that improve the safety and resiliency of the Commuter Rail network, including the implementation of Positive Train Control.	PTC/ATC Project Milestones		
Customer Experience and Technology Improvements	This program includes improvement projects that modernize the system and enhance customers' experience.	Improved customer experience; survey results		
Fare Transformation	The Fare Transformation program will implement a new reliable and convenient fare payment and collection system, integrated across all modes, to replace CharlieCards/Tickets and their supporting hardware and software.	Fare Transformation Project Milestones		



FY21-25 CIP Programs: Modernization continued

Priority 2/Modernization				
FY21-25 CIP Programs	Purpose and Need Statement	Measure		
Green Line Transformation	Green Line Transformation (GLT) improves the quality of service on the Green Line through fleet modernization and infrastructure/facilities upgrades, as well as improved capacity, accessibility and state-of-the-art technology.	Safety and Resiliency; Addressing Demand; Service Delivery; Accessibility; Cust. Experience		
Process Improvements & This program includes investments in innovations that enhance productivity or quality of MBTA services and capital programs.		Project milestones		
Rail Transformation	This program reflects investments to modernize the Commuter Rail network, including foundational investments in vehicles, facilities, and infrastructure to implement the Commuter Rail Vision	TBD		
Red / Orange Line Improvements	The Red Line and Orange Line Improvements program includes the set of vehicle and infrastructure investments needed to fully modernize the fleet and achieve the service goal of three minute headways on the Red Line and three and a half minute headways on the Orange Line.	Project milestones; Three min headways on the RL and four min headways on the OL		
Risk Management	Implements risk management initiatives as well as proactive efforts to improve workplace safety and system security.	OHSA implementation and SMS implementation		



FY21-25 CIP Programs: Expansion

Priority 3/Expansion				
FY21-25 CIP Programs	Purpose and Need Statement	Measure		
Green Line Extension	The Green Line Extension program includes the vehicles, stations and infrastructure to extend the Green Line from a relocated Lechmere Station in East Cambridge to Union Square in Somerville and College Avenue in Medford.	GLX Project Milestones		
Expansion Projects	This program makes targeted expansions in order to improve access to transit, including the Silver Line to Chelsea, Blue Hill Avenue Station on the Fairmount Line and MBTA support for early action South Coast Rail items.	Project Milestones		
Expansion Project Development	Support planning and design for expansion projects identified as "Next Priorities" within Focus40, including Red-Blue Connector, Silver Line to Everett, and Green Line Extension to Route 16, <i>as well as planning studies for expanded Commuter Rail service associated with Rail Vision</i>	Project Milestones		
South Coast Rail	The South Coast Rail project will restore commuter rail service between Boston and southeastern Massachusetts.	SCR Project Milestones		



Next Steps

Board Engagement

- Capital Programs Committee (subcommittee of MassDOT Board) is the forum for monthly MassDOT CIP updates and decisions; FMCB will be updated concurrently and upon request
- Next Capital Programs Committee meeting scheduled for March 18
 - MassDOT and MBTA will present proposed sources and uses, readiness and engagement update

Internal Engagement

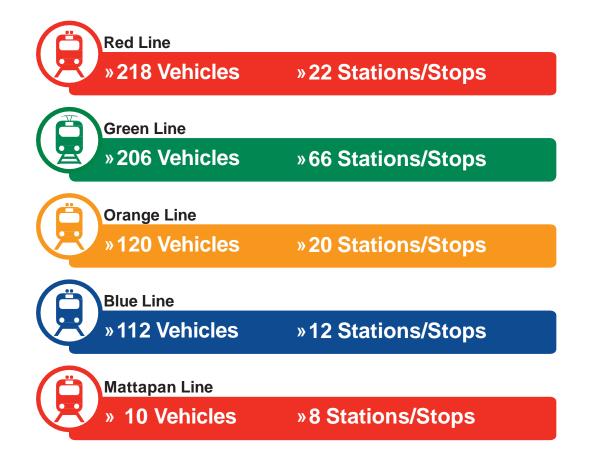
- Scoring: Conclude project scoring and evaluation process, consistent with Project Selection Advisory Committee guidance
- Cash Flows: Finalize budgets and cash flow projections for existing projects to form baseline of updated CIP
- Project Selection: Facilitate senior leadership meetings to prioritize projects based on scoring results, project readiness, and other factors in early March

APPENDIX





The System | MBTA by the Numbers





Bus

- »1,055 Vehicles »7,690 Bus Stops
- » 9 Garages » 175 Bus Routes
- »3,244 Bus Route Miles



Commuter Rail

- » 90 Locomotives » 420 Coaches
- »137 Stations

- »394 Track Miles
- »5 North Side Lines
- »7 South Side Lines
- »Operated by Keolis



Ferry

- »12 Boats (3 owned by the MBTA)
- »7 Terminals
- »3 Routes
- » Operated by Boston Harbor Cruises

The System | Overview of MBTA Infrastructure

MBTA transit & commuter rail systems require upgrades to track, signals, vehicles, and stations to improve safety and quality of service for riders

Sw Systemwide	 2 Light Rail Transit Lines (GL, Mattapan) 3 Heavy Rail Transit Lines (RL, OL, BL) 13 Commuter Rail Lines 	~4,889,280 Feet of Track (926 miles)	30+ Years Average Age of Track	267 Transit Stations (including Silver Line)	1.23M Trips Each Day (All modes, October 2019)
GL Green Line B © D B	Light Rail (2-car trains)	242,600 Feet of Track (46 miles)	30 Years	66 Stations 53 at surface level	150k Trips Each Day
RL Red Line	Rapid Transit (6-car trains) Light Rail (Mattapan trolley)	257,600 Feet of Track (50 miles, +Mattapan)	31 Years	22 Stations +8 on Mattapan	240k Trips Each Day
OL Orange Line	Rapid Transit (6-car trains)	121,400 Feet of Track (23 miles)	38 Years	20 Stations	210k Trips Each Day
BL Blue Line	Rapid Transit (6-car trains)	63,360 Feet of Track (12 miles)	23 Years	12 Stations	80k Trips Each Day
CR Commuter Rail	Commuter Rail Coaches (varying lengths)	4,202,880 Feet of Track (796 miles)	30+ <i>Years</i>	139 Commuter Rail Stations	120k Trips Each Day









What We Accomplished | 2019







Beyond the work that was accelerated, the MBTA advanced other major projects in 2019

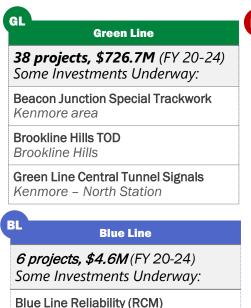
Investments spanned across all MBTA lines to improve **safety** and **quality of service** for riders

Creen Line	RL Red Line	OL Orange Line	CR Commuter Rail	Silver Line & Systemwide
Deployed first Type 9 light rail vehicles	Delivered Red Line pilot car	Deployed two production vehicles into service	Replaced East St. Bridge, Westwood	Improved 60 bus stops
Completed Type 7 vehicles overhaul	Restored Columbia Junction signal system	Constructed a new busway, canopy, and headhouse at Forest Hills Station	Replaced Guild St. Bridge, Norwood	Blue Line
Conducted pilot for solar-powered	Opened new Wollaston Station	Repaved Oak Grove Station parking lot	Opened new Blue Hill Ave. Station	Overhauled No. 5 rail vehicles
e-Ink real-time displays		and busway	(Fairmount Line)	Rehabilitated 4000 ft of track
Upgraded intersections on B and C Branches	Replaced elevators at Quincy Center (1), Andrew (3), Harvard (1), Downtown Crossing (2), & Alewife (1)	Rehabilitated track from Sullivan to Community College, and Oak Grove to	Overhauled Kawasaki Coaches	
		Wellington	Revamped North Station passageway	
		Replaced elevators at Tufts (3)	Knowledge Corridor Station Expansions	



Other Major Investments | Underway in 2020

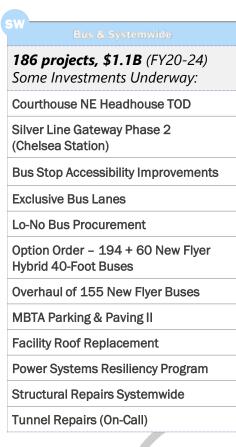
Beyond those projects with service impacts, the MBTA will deliver additional projects in 2020 to improve safety and quality of service for riders



Red Line
21 projects, \$295.1M (FY20-24) Some Investments Underway:
Alewife Elevators Alewife
Alewife Garage Improvements Alewife
Codman Yard Expansion Codman Yard
Kendall TOD Projects Kendall Square
Red Line Track Modernization Systemwide
Red Line Vehicles Systemwide



R Commuter Rail
98 projects, \$685M (FY20-24) Some Investments Underway:
Back Bay Station Ventilation Back Bay
Bridge Bundling Contract Multiple
East Cottage Street Bridge Boston
F40 Locomotive Overhaul Systemwide
Gloucester Drawbridge Gloucester
ron Horse Park OCC Billerica
Merrimack River Bridge Haverhill
Natick Center Station Accessibility Natick
North Station Terminal Signal North Station
Robert Street Bridge Roslindale
Ruggles Station Upgrade Ruggles
Winchester Center Station Winchester



Orient Heights



CIP Request - Process Overview

The **Project Request** process is for new projects proposed for inclusion in the CIP (no funding currently programmed) and existing projects in the CIP with significant budget increases needed in the coming fiscal year or beyond.

FY21-25 CIP: Simplified Workflow for CIP Project Request and Approval Develop Submit Project Project proposal via Revise Sponsor Proposal CIP Request Manage Manage Manage Capital Prepare and Intake Prioritization Scoring **Planning** Present CIP Process Process Process **Evaluation** Evaluate and teams Score GM / Prioritize Leadership Projects Approve CIP Joint Board

The CIP request process is managed through eBuilder – from proposal intake to final approval



CIP Alignment with Strategic MBTA Priorities



• In line with the **Safety Review Plan** findings and the framework of the Safety Management System (SMS), the FY21-25 CIP will continue to invest in a range of safety initiatives



- Transit asset management supports smarter decision-making to address critical needs and improve service reliability through prioritized capital investments
- Asset inventory and condition data used to identify capital needs, assess program sizes, and prioritize projects



• Better Bus Project drives improvements in bus service, through priority bus lanes, upgraded garages, new technology, and more fuel-efficient and comfortable buses



- The FY21-25 update of the CIP will incorporate options for improving service on the Commuter Rail
- These will be the first steps identified in a larger Commuter Rail transformation as outlined in Rail Vision



- FY20-24 CIP began to implement next priorities identified in Focus40 "we're planning" tier
- CIP prioritization methodology considered project alignment with Focus40 programs and "priority places"
- Per Focus 40 expansion policy principles, the CIP now includes a new program for expansion project development



Projects Scored Using PSAC Criteria

 The legislatively-mandated Project Selection Advisory Council (PSAC) established uniform project selection criteria to be used across MassDOT divisions in preparing the CIP

System Preservation	 Projects should contribute to a state of good repair on the transportation system.
Mobility	Projects should provide modal options efficiently and effectively.
Cost Effectiveness	 Projects should result in benefits commensurate with costs and should be aimed at maximizing the return on the public's investment.
Economic Impact	Projects should support strategic economic growth in the Commonwealth.
Safety	 Projects should contribute to the safety and security of people and goods in transit.
Social Equity & Fairness	Projects should equitably distribute both benefits and burdens of investments among all communities.
Environmental & Health Effects	Projects should maximize the potential positive health and environmental aspects of the transportation system.
Policy Support	Projects should get credit if they support local or regional policies or plans; or state policies not addressed through the other criteria.



FY21-25 MBTA Project Selection Criteria (1 of 2)

Criteria	Description	Factors
System Preservation	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.	Asset Condition
		Impact to Other Assets
		Operations Criticality (Service Disruption)
		Climate Change and Severe Weather Resiliency
Mobility	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.	Impact on Reliability
		Impact on Accessibility
		Impact on Customer Experience
		Impact on Riders
Cost Effectiveness	The extent to which the project impacts operating costs and revenues and maximizes the return on the public's investment	Impact on Operating Costs
		Impact on Operating Revenues
Safety	The extent to which the project addresses safety issues and hazards and security vulnerabilities and risks.	Impact on System Safety
		Impact on System Security
Environmental and Health Effects	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	Air Quality and GHG Reduction
		Reduce Pollution and/or Consumption of Natural Resources



FY21-25 MBTA Project Selection Criteria (2 of 2)

Criteria	Description	Factors
Policy Support	The extent to which the project is aligned with the MBTA Strategic Playbook and utilizes an innovative strategy	Alignment with Focus40
		Utilizes an Innovative Strategy
Economic Impact	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.	Impact on Connectivity to Employment Centers, Destination Districts, Priority Places identified in Focus40
(Only required for		Impact on Corridors at or Near Capacity
expansion/new capacity projects)		Impact on Communities with Transit- Supportive Land Use
		Impact on Commuting Costs
Social Equity	The extent to which the project equitably distributes economic, social, and health benefits to residents and local businesses.	Benefits to Environmental Justice (EJ) and Title VI Communities
(Only required for expansion/new capacity projects)		Additional Equity Benefits to Protected Populations





FY21-25 CIP Process: Key Milestones

Key Milestones for FY 2021 - FY 2025 CIP Process		
December 18	Launch call for projects	
Mid January	Cash flow estimates due to Capital Program Oversight (for all	
Mid-January	existing projects)	
December-January	Project sponsors develop Project Charters for new CIP	
December-January	requests	
January 17	Project proposals due via CIP Request process	
January 20	Cashflow Request Distributed (for existing projects)	
January-February	Review and evaluate project proposals	
February-March	Prioritize project proposals	
March	Develop CIP within funding constraints	
March 31	Draft MBTA CIP due to MassDOT	
April	Update and refine CIP based on leadership guidance	
May	Prepare draft CIP for stakeholder review	
May 11	Joint Board vote to release draft CIP	
May-June	Public meetings and public comment period	
June 8	Joint Board vote to approve final CIP	