MBTA FY24-28 Capital Investment Plan Oversight Report

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MBTA Advisory Board Capital Investment Plan Oversight Committee

Adopted and accepted by the full MBTA Advisory Board
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THE MBTA ADVISORY BOARD

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The MBTA Advisory Board is a government body organized under Massachusetts General Law to oversee the finances, operations, and activities of the Massachusetts Bay Transportation Authority. The Advisory Board represents the interests of the 176 cities and towns in the MBTA service district. In FY24 these municipalities will contribute over $188 million in subsidies via municipal assessments to the MBTA.

THE MBTA ADVISORY BOARD

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EXECUTIVE SUMMARY

The 176 cities and towns in the MBTA service district broadly support the Massachusetts Bay Transportation Authority's (MBTA) Fiscal Year (FY) 2024-2028 Capital Investment Plan (CIP). While far from ideal, this CIP does offer major investments in safety and reliability. The MBTA is at a crossroads, and if it is going to attract riders to return the system must significantly improve. The public should have confidence that their public transportation system is operated reliably, frequently, and most importantly safely. This CIP budgets billions for safety and reliability, and hundreds of millions in new vehicles, and offers the potential for cleaner air, carbon reduction, and improved mobility for all MBTA riders and the broader public. But, budgeting money for projects in a plan is not enough. Delivery of new red and orange line cars, track repairs requiring slow zones, the lack of clarity regarding the implementation and cost of the fare transformation program, building the Quincy battery electric bus facility, and implementing regional rail are just some examples of major infrastructure programs that are delayed.[1] The Authority must get better at delivering completed programs. For instance, the MBTA has touted its billions in investments in recent years, but in May of 2023 slow zones are rampant, and pieces of equipment are falling from station ceilings.[2][3] Cities and towns and the public need to begin seeing results for the billions invested.

Looking forward, there are also questions about what the future MBTA will look

[1] https://www.bostonglobe.com/2023/05/05/metro/my-time-is-being-wasted-blue-line-riders-endure-shutdowns-mbta-promises-repairs/
[2] https://www.bostonglobe.com/2021/04/12/metro/mbta-plans-spend-2-billion-upgrades-repairs-next-year/
[3] https://www.wgbh.org/news/local-news/2023/05/03/no-one-saw-it-as-their-responsibility-recent-incidents-raise-questions-about-mbta-station-safety

like? Are the investments outlined here sufficient to ensure that the system of the future is safe, electrified, resilient and offering improved service? The Authority's leadership must assure its cities and towns, passengers, and all stakeholders that the investments outlined in this CIP will result in a better system. Looking forward, we wonder what the plan is for completing the Program for Mass Transportation (PMT) due in 2024?

INTRODUCTION

The CIP is required by M.G.L. chapter 161a, Section 5, part g, paragraph 4. This law requires that the CIP be prepared annually, and that it be structured to implement the Program for Mass Transportation (PMT). The last PMT was approved on March 18, 2019 by the Fiscal and Management Control Board for a period of 2020-2045. A new PMT is required in 2024 for the period 2025-2050. The current CIP is implementing the 2019 PMT. In addition, Massachusetts General Law Chapter 161a, section 5, part g, paragraph 8 states:

> "The authority shall conduct a series of public meetings within 30 days of issuance of an initial draft of the capital investment program and shall submit a final capital investment program to the advisory board, for its review, no later than January 15 of each year."

The MBTA Advisory Board did not officially receive the CIP from the Authority, but it was published publicly on March 23. This marks at least the 5th year that the Authority has contravened this section of the law.

The 2024-2028 CIP programs $9.2 billion across 600 discrete capital projects on all MBTA modes. Basic infrastructure such as tracks, signals, power, bridges, tunnels, and transit vehicles are the largest programmatic recipients of this CIP, while

expansion programs such as South Coast Rail, Green Line Extension, and the Red-Blue Connector are funded less.

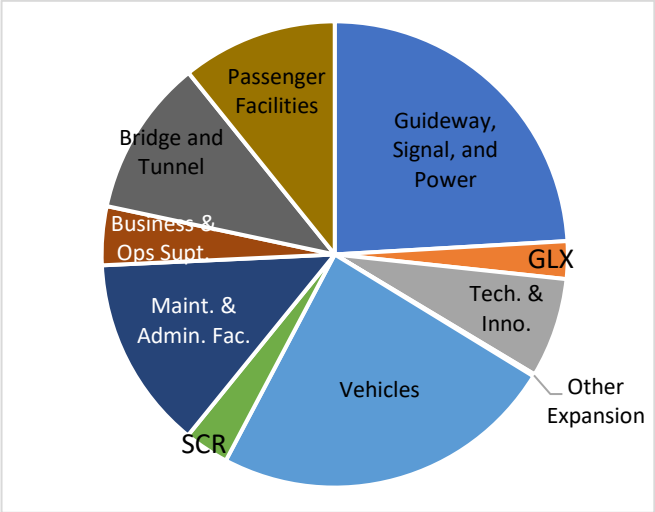

Figure 1: Relative size of CIP programmed spending

This oversight report examines the process by which the CIP was provided to the Advisory Board, and the steps the advisory board and its committees took to review it. As part of this review, this report also examines the funding sources that support the projects that comprise it, as well as a review of spending by mode. It ends with an analysis of the CIP in general. This report fulfills the charge to the Capital Improvement Program Oversight Committee by the MBTA advisory board at its April 7, 2023 meeting. It is submitted to the MBTA Board of Directors for their consideration.

PROCESS OVERVIEW

The full MBTA Advisory Board met on April 7, 2023 to receive a presentation on the CIP from the MBTA's Ms. Jillian Linnell, Senior Director of Capital Planning. Following this presentation, the Board voted to refer the plan to its Capital Investment Plan Oversight Committee with a charge to review the plan, write an oversight report, and make a recommendation to the full Advisory Board about the

plan. This document represents the completion of that charge. The Advisory Board's CIP Oversight Committee met on April 10, May 3, and May 11 to meet its charge, discuss an approach, and direct staff on the drafting of this document. In addition, the Advisory Board's Climate and Clean Energy, Regional/Commuter Rail, and Rapid Transit Committees were each invited to provide comments.

The Authority released the Proposed FY 2024-2028 CIP at its March 23, 2023 meeting. Prior to this, a draft of the plan was presented to the Authority's Finance & Audit Committee at its March 9 meeting. Additionally, the Authority hosted public meetings on the CIP on March 30, April 4, and April 12. The Authority's Finance & Audit Committee received the final draft of the CIP at its May 11 meeting, with the full MBTA Board of Directors expected to adopt the plan at its May 25 meeting. The CIP Oversight Committee presented this report and its recommendations to the full MBTA Advisory Board at its May 16 meeting, where it was adopted and approved. The plan takes effect on July 1, 2023.

FUNDING

The largest funding source of the $9.2 billion FY24-28 CIP is the MBTA itself (47%) followed by federal sources (40%), the funds from Commonwealth of Massachusetts (12%) and finally reimbursable programs (1%). It is critical to note that MBTA sources means debt, and borrowing. The MBTA plans to borrow around $600 million annually against future operating revenues in perpetuity. It should be noted again, that the MBTA is the only large public transportation system in the United States that does not have a dedicated source for its capital or infrastructure needs. Instead, it relies on its operating budget to support the borrowing used to fund its capital budget. Figure 2 below, shows the relative size of the MBTA's CIP

funding sources.

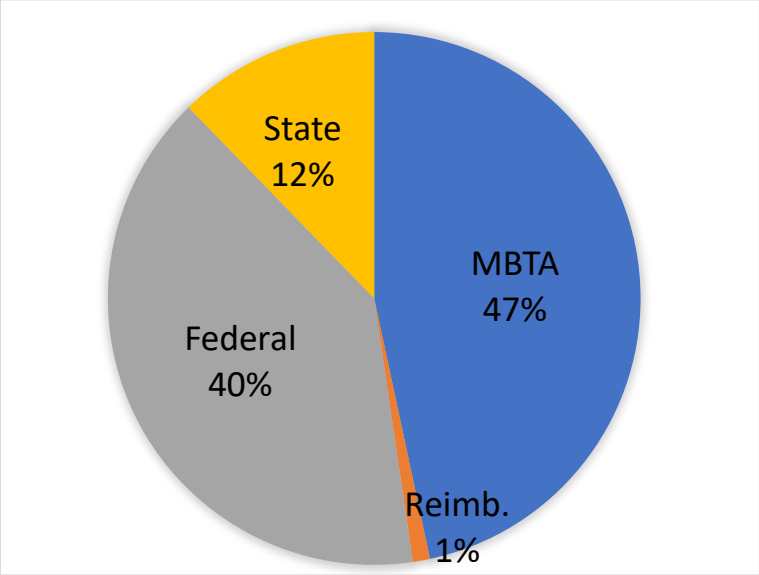

Figure 2: FY24-28 funding sources by relative size

MBTA Funding:

47% of the funding in the CIP is money borrowed by the Authority itself and repaid by future operating budgets. Borrowing against future operating revenue, via selling bonds, is the only source of funding the MBTA has. The Authority issues three types of debt: taxable bonds, tax-exempt bonds, and Build America loans. Furthermore, there are two different types of Build America loans- the Transportation Infrastructure Finance and Innovation Act (TIFIA) provides credit for public transit bus, heavy rail, and light rail initiatives while the Railroad Rehabilitation and Improvement Financing (RRIF) program offers loans for commuter rail initiatives. The Authority borrowed $850 million from the U.S. Department of Transportation in 2017 under TIFIA, and millions more under RRIF. These TIFFIA and RRIF loans were consolidated in 2020, and the total loan increased to over $850 million at an interest rate of 1.15% to 1.45%; with anticipated pay-off

in 2054.[4] All bonds, credit, and loans must be paid back with interest. The only source for the Authority to make such payments is from its operating budget. Additionally, the Authority plans to shift $60 million from its operating budget to the capital budget annually. These funds are in addition to debt service payments made in the operating budget. Figure 3, below shows planned MBTA borrowing over the next decade.

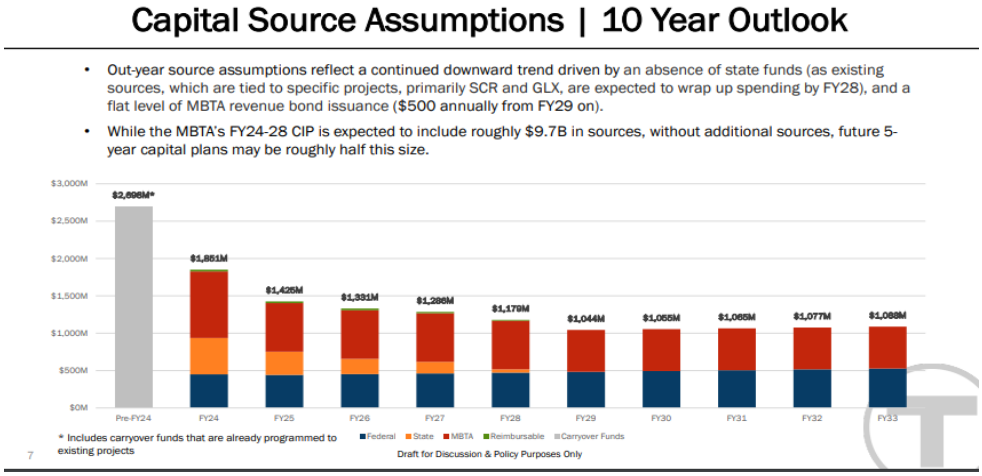

Figure 3: MBTA planned future borrowing. Note that after FY28 State support ends for MBTA Infrastructure.

Federal Funding:

Money from the federal government is the second-largest source of funding, accounting for over $3.9 billion over 5 years. Federal funds include money from the Federal Transit Administration (FTA), Federal Railroad Administration (FRA), Transit Security Grant Program, the Bipartisan Infrastructure Law (BIL) and other grant programs. FTA funds flow to the MBTA under numerous programs generally authorized under a 5-year federal transportation bill. The Transit Security Grant Program is a discretionary grant appropriation providing capital dollars to strengthen the safety and security of the nation's transit systems. The T also holds

[4] MBTA Financial Statements and Required Supplementary Information, June 30, 2021. p. 31

$420 million in Build America Bonds (BABs), which were issued in 2009 under the American Recovery and Reinvestment Act (ARRA) to create jobs and stimulate the economy. Federal grants are the Authority's most predictable source of annual grant funding.

State Funding:

The Commonwealth of Massachusetts has committed nearly $1.2 billion to this CIP. The State is directly funding South Coast Rail, the manufacture of new Red and Orange Line cars, procuring 64 bi-level commuter rail coaches, and GLX. These funds flow to the MBTA from Massachusetts General Obligation bonds (also known as Bond Cap). 12% of this CIP is funded by the Commonwealth in this manner. Figure 3, above, shows that under current plans, State funding declines to zero over the course of this CIP.

Reimbursable:

$101 million are programmed as reimbursable funds. This refers to funding the MBTA receives to mitigate transportation impacts of development projects or as part of a joint development agreement with public or private entities. Reimbursable sources represent less than 1% of total CIP programming.

SPENDING BY MODE

The FY24-28 CIP consists of 600 discrete capital projects totaling $9.2 billion over 5 years. Figure 3 below breaks out the number of projects, and total programmed spending by mode. Spending is also spread out across 7 broad reliability and modernization and 3 expansion programs. The reliability and modernization program categories are: Bridge and Tunnel; Guideway, Signal and Power; Maintenance and Administration Facilities; Passenger Facilities; Vehicles; Business

and Operational Support; and Technology and Innovation. The 3 Expansion Project categories are Green Line Extension (GLX); South Coast Rail (SCR); and other expansion projects.

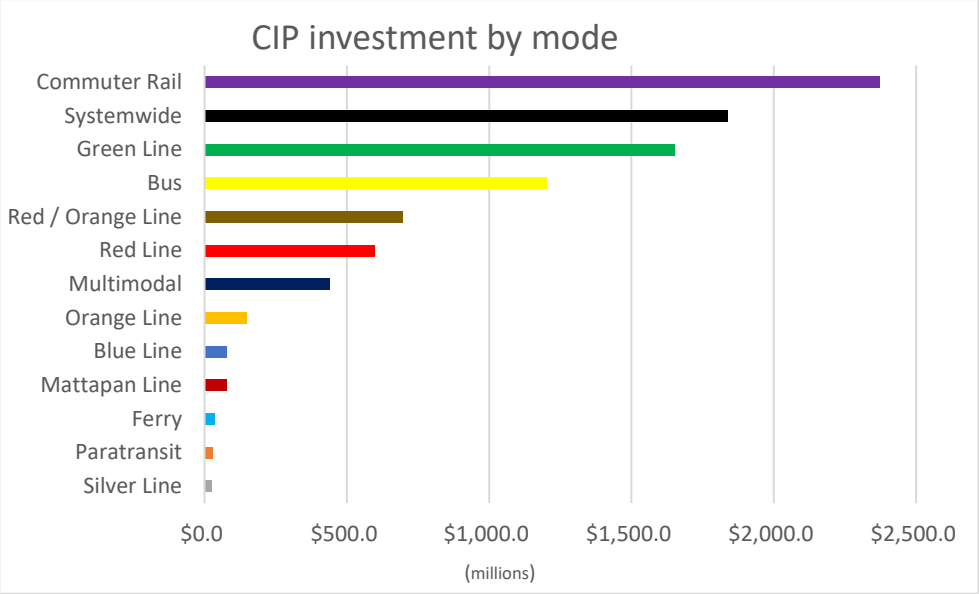

Figure 4: CIP Investment by mode

By mode, the CIP programs funding for each MBTA mode: heavy rail, light rail, bus, commuter rail, ferry, and paratransit as well as for systemwide and multimodal initiatives. Within modes, each line also is scheduled for funding. For instance, light rail consists of the Green and Mattapan High Speed Lines. Heavy Rail consists of the Red, Orange, and Blue Lines. Within heavy rail there are also funds programmed for the procurement of new red and orange line vehicles and associated infrastructure.

Commuter Rail:

Commuter Rail is programmed for the largest investment in this CIP, with over $2.3 billion across 117 discrete projects. The largest project in this CIP is the replacement of the draw bridge over the Charles River at North Station. This $573.8

million project ($352.1 million in this CIP) will see this bridge which carries all northside commuter rail lines replaced and expanded from 4 to 6 tracks. South Coast Rail (SCR) was the largest single project in the 2023-2027 CIP last year. This year SCR is the second largest single project, with $270.6 programmed as this project's construction winds down as the start of revenue service approaches in 2023 or 2024. In addition, $84.1 million of Regional Rail/Rail Transformation projects are programmed, as are over $516 million for the procurement or overhaul of existing diesel locomotives and coaches for the legacy commuter rail system. The Regional Rail/Rail Transformation program promises to move the MBTA's passenger railroad network from a system propelled by diesel locomotives pushing and pulling long trains infrequently, to a more modern, electrically powered network of smaller, self-propelled vehicles operating at frequent intervals.

Systemwide:

The second largest category of projects are systemwide projects. These are projects that span all the MBTA system or multiple lines and/or modes. 202 discrete projects are programmed in this category, valued at over $1.8 billion over 5 years. The largest such project in this category is a systemwide bridge and load rating of the Authority's hundreds of bridges in order to prioritize future bridge rehabilitation, repair, and replacements. Over $800 million is programmed for bridge inspection, repair, and replacements in this CIP. Bridges scheduled to be replaced include: Intervale Road in Weston; Bacon Street in Wellesley; the High Line Bridge in Somerville; the Lynn Fells Parkway in Melrose; Parker Street in Lawrence; and Commercial Street in Lynn. $78.6 million is programmed for power projects. $44 million for tunnel projects, $20.8 million for retaining walls, and $3.5

million for culverts. The single largest project programmed in the systemwide category is $411.2 million over 5 years for systemwide fare technology.

Green Line:

There are 55 individual Green Line projects in the CIP, valued at over $1.65 billion. The single largest Green Line project is the design of new Green Line Type 10 vehicles. This $426.7 million project will allow the design of these new vehicles to continue apace. Funds are also programmed across all 4 branches and all Green Line communities, including accessibility improvements at 14 street level stops in Boston and Brookline. There are also funds programmed for accessibility improvements to Symphony Station, Newton Highlands, and Hynes Station. There are also millions programmed for power, signal, track, maintenance facilities, roadway grade crossings, work both along the surface and in the Green Line's central tunnel.

Bus:

$1.2 billion for 65 discrete projects are included in the CIP for bus. $511.7 million is included for the replacement and/or renovation of the Quincy, North Cambridge, Arborway and other bus facilities to support the introduction of battery electric buses (BEB). Of the current fleet of about 1000 buses, this new procurement will bring the number of BEBs to 85, or 8.5% of the fleet. Additionally, $97.1 million is programmed to procure 80 - 40-foot battery electric buses for the new Quincy facility and the renovated North Cambridge garage. Additional investments programmed include over $427.6 million to procure, and overhaul 40-foot and 60-foot diesel-electric-hybrid, diesel, and compressed natural gas (CNG) buses. Additional investments include improvements to numerous bus stops, bus-only

lane design and construction, transit signal priority implementation, and other service-improvement infrastructure initiatives.

Red/Orange Lines:

7 discrete projects in this category are related to either the ongoing procurement, testing, and commissioning of 252 new Red Line and 152 new Orange Line cars, or projects at Downtown Crossing Station (DTX), a joint Red and Orange Line station. Funds in this category will continue to support the construction of new heavy rail vehicles, and certain new elevators at DTX. Member communities have concerns about the viability of this initiative and the manufacture's ability to deliver what has been promised.[5]

Red Line:

The plan also includes $589.1 million for 34 individual projects in upgrades to the Red Line and its associated infrastructure. This CIP continues the design of the multi-year rehabilitation efforts on the approach track from the Charles/MGH Station onto the Longfellow (West Boston) bridge. Over $200 million is also programmed for the overhaul and expansion of the Codman Yard in Dorchester as a terminal and yard for the system's busiest line. There is also a new project in this CIP for a selective systems overhaul initiative on the Red Line type 3 vehicles. These cars are the newest Red Line cars in the fleet that are not brand new. A second selective systems overhaul on the Type 3s will see upgrades to HVAC, door, and other components. It is likely that these selective system overhauls are needed because of delays in the delivery of the new Type 4 Red Line cars from CCRR.

[5] https://www.wbur.org/news/2023/01/31/red-orange-line-mbta-delay-crrc-healey

Multimodal:

Multimodal projects are ones that benefit more than one MBTA mode, or type of service. For instance, replacement of electrical substations benefits both heavy and light rail modes. $441.6 million is programmed in this category across 47 projects. One of the projects funded in this category is $119.6 million for the design of continued improvements to Ruggles Station in Boston. This multimodal station serves the Orange Line, Commuter Rail and is also a major bus station.

Orange Line:

$49.3 million is programmed for upgrades to Orange Line track, power, station elevators, technology, and overall station amenities. The largest single project in this category is $21.5 million for a major renovation of 4 aging Orange Line power substations including the total replacement of traction power equipment systems and other repairs. Repairs and renovations to infrastructure such as power substations are critically important to keeping the Orange Line operating.

Blue Line:

$79.4 million over 5 years is programmed in this CIP for the Blue Line. The largest single project is $19.6 million for initial planning for station improvements to all Blue Line Stations. The next largest project is $19.2 million to upgrade communications rooms across the Blue Line to bring them into a state of good repair and to support Fare Transformation.

Mattapan High Speed Line:

The Mattapan High Speed Line is a light rail line connecting Ashmont and Mattapan Stations in Boston and Milton. This CIP includes $74.3 million in pre-design efforts for state of good repair, accessibility improvements, power upgrades, and other

related infrastructure investments to the Mattapan High Speed Line. This is in addition to the ongoing overhaul of the line's President's Conference Commission (PCC) cars.

Ferry:

$37.6 million is programmed for the Ferry service. The largest project is $21.7 million for continued design efforts to replace the floating dock, gangway, walkways, and extended canopy at the Hingham Intermodal Ferry dock. improvements for the Hingham Ferry dock. An additional $15.6 million is programmed to overhaul two 149-passenger ferries.

Paratransit:

29.5 million is programmed for MBTA's paratransit program, The RIDE. Of this, $27.1 million will go towards the ongoing replacement of RIDE vans and sedans.

Silver Line:

5 projects totaling $27.9 million are programmed for the Silver Line. The largest single project is $13 million to construct 2 new headhouses at the Silver Line Courthouse Station including elevators and flood control barriers.

ANALYSIS

There are multiple ways to analyze a $9.2 billion spending program funding 600 discrete projects. This oversight report will examine this CIP via 4 lenses: safety, electrification, service, and resiliency.

Safety:

The MBTA's need to improve safety for employees and the riding public is well

known.[6][7] According to the draft CIP, "Funding requests categorized as having a 'critical' and 'very high' safety impact are related, but not limited to: state of good repair of our facilities, signal, and power assets; life and fire safety systems at our maintenance and passenger facilities; our vehicle assets." The CIP does budget $110.8 million in programs such as implementing an "Asset Management Program as required by recent FTA corrective action plans" ($53.2m); "urgent track and asset needs on an on-call basis systemwide" ($40.7m); and "Track reconstruction and rehabilitation to reduce the percentage of deficient track or track under a speed restriction following the FTA's findings on the Orange Line" ($17.7m). There is also a $24.7 million project called "Commuter Rail Improvements: Northside dispatch software, systemwide signal and power upgrades, upgrades on Old Colony lines, and grade crossing safety improvements" as well as $12.5 million for a project named "Support capital program safety assurance via proactive safety measures at construction worksites and develop analytical tools." The plan also seeks to spend $9 million on something called "costs associated with implementing the MBTA's Safety Management System (SMS), required in accordance with 49 CFR Part 673 and 220 CMR 151" (i.e., FTA directives to improve safety at the MBTA). While these particular investments and the increase in safety capital spending is welcome, when can the public expect to see results? A safe, reliable, and frequent mass transit system is one that attracts ridership. At what point can MBTA communities expect to see ridership by attraction increase?

[6] https://www.boston25news.com/news/local/federal-regulators-demand-mbta-make-changes-ensure-worker-safety/X32ZJ3NKRRBHDEBLTBFQKE4H3A/

[7] https://mass.streetsblog.org/2023/05/03/are-we-feeling-safe-yet-falling-utility-box-at-harvard-station-contained-forgotten-homeland-security-surveillance-equipment/

Electrification

In March 2023, the MBTA Advisory Board in partnership with the Conservation Law Foundation published "MBTA Electrification Requirements and Procurement Timeline" which examined the Authority's progress towards electrifying its bus fleet by a 2040 statutory deadline.[8] This report makes it clear that the MBTA will not meet its 2040 goal, nor other targets imposed in state and federal law unless it improves its project delivery performance, specifically around the building/refurbishing of bus maintenance facilities to support BEBs. Over the 5-year course of this CIP, hundreds of millions of dollars are designated for new bus facilities to support BEBs: $401 million for a new BEB facility in Quincy, $36 million to design a new Arborway BEB facility, $35.4 million for the renovation of the North Cambridge facility for BEBs, and $96.4 million for initial planning and design to replace or rehabilitate other bus facilities to support BEB service. These investments are crucial to creating bases of operation for cleaner, electrically-propelled buses. However, as we have seen with the Quincy facility, funding is not enough.[9]

The MBTA must improve its capital delivery performance to meet its legally required targets. As the region waits for these facilities to be built, it should be noted that over 5 years this CIP also dedicates funding to investments in fossil fuel technology: $258.89 million for 460 new 40-foot diesel-hybrid buses; $120.9 million to overhaul 156 existing 40-foot diesel-hybrid buses as well as 175 40-foot

[8] https://mbtaadvisoryboard.org/wp-content/uploads/2023/04/BusElectrificationReportDraft03-27-23.pdf
[9] https://www.bostonglobe.com/2023/02/14/metro/one-year-after-mbtas-quincy-bus-garage-groundbreaking-no-garage-construction-yet/

compressed natural gas (CNG) buses and 45 60-foot diesel hybrids. There is also $25.1 million to overhaul major systems of another 60 40-foot diesel-hybrid buses, and $14.2 million towards the procurement of 194 new 40-foot hybrid buses. This contrasts to $97.1 million for 80 new BEBs for Quincy and North Cambridge and another 0.6 million towards the procurement of pilot 60-foot electric buses.

The Advisory Board's Climate and Clean Energy Committee plans to discuss rail electrification in its next set of meetings, and issue a report like the bus electrification one from March. This CIP programs $49.8 million towards planning to purchase 25 new electrically-propelled, or decarbonized rolling stock. There is also $18.9 million for early action rail transformation actions on the Rockport/Newburyport, Fitchburg, Haverhill, and Lowell lines. In addition, it programs $10.2 million towards support services for rail transformation. This contrasts with $338.8 million programmed to procure new diesel locomotives and associated coaches, and $133.6 million for overhaul existing diesel locomotives and coaches.

Service Improvement

There are major investments in new vehicles designed to improve the passenger experience. For instance, $426.7 million is programmed to procure 102 new Type 10 Green Line vehicles to replace the current Type 7 and Type 8 vehicles. $389.5 million is programmed towards the continued procurement of new Red and Orange Line cars, plus $153.1 million in related signal and other infrastructure improvements to support these new Red and Orange Line cars to improve headways. On Commuter Rail, $142.9 million is programmed towards the completion of automatic train control (ATC) on the northside, and $114.9 towards

the upgrade of the Tower 1 interlocking just outside South Station over which most southside trains travel. These projects promise to improve reliability and support greater future frequency on both sides of the commuter rail system. In January 2023, the MBTA Board of Directors approved the Bus Network Redesign program, which seeks to offer greater bus service on new and different routes across the network. $10.7 million is programmed to support this initiative. There is also $15.6 million programmed for the design of the overhaul of the MBTA's 2 passenger ferries, and $27.1 million towards the ongoing replacement of RIDE paratransit vans and sedans. In terms of service, there are questions about the adequacy of this level of investment in paratransit given the ageing population of the Commonwealth, and proposed expansion of the bus system via the Bus Network Redesign program approved in January 2023.

Resiliency

As this report was being drafted, a story entitled "It is not just faulty lines and failing cars. The MBTA has a climate problem" based on a new report from MIT. This suggests that the MBTA's prevalence of rail and bus facilities and stations on or near the ocean and/or rivers makes them vulnerable to flooding and damage from a major storm. For instance, flood maps suggest that the MBTA's Orient Heights, Wellington, and Cabot yards are at risk for flooding and could potentially cripple the Authority's main facilities to support the Blue, Orange, and Red Lines respectively. Flood risks imperil portal entrances to all subway tunnels which could overwhelm existing pumps and potential damage tracks, signals, stations, and other infrastructure. The report does suggest that the MBTA is taking steps to harden its infrastructure. For instance, this CIP programs $50.3 million for flood mitigation in transit tunnels, and $21.1 million for a new headhouse with flood

control barriers at Courthouse Station. There is also $2.3 million to upgrade 50+ dewatering pumps in tunnels, $5 million for a systemwide drain map and repair program, and $1.5 million to plan a resiliency program systemwide.

CONCLUSION

Budgets and spending plans are an expression of priorities and values. This 2024-2028 CIP expresses the MBTA's commitment to passenger and employee safety, and reliability improvements. Of the 600 projects, over 475 are safety-related, and of the $9.2 billion in programmed spending, $7.6 billion are related to safety and reliability improvements. In June 2022, the Federal Transit Administration (FTA) issued 5 special directives to the Authority and its state safety oversight body, the Department of Public Utilities, requiring safety improvements.[10] This CIP includes billions in investments to improve safety at the MBTA including millions for maintenance of way for tracks and tunnels, the purchase of new, non-revenue equipment that is more modern, and less likely to failures, and a capital program safety assurance initiative that will use technology and staffing to improve safety training and compliance for MBTA employees and contractors.

While the focus on safety and reliability is laudable, there are several initiatives in CIP that are troubling. Hundreds of millions of dollars are programmed to purchase diesel commuter rail coaches and locomotives, as well as to overhaul existing such rolling stock. Clearly better planning was needed years ago to advance electrified regional rail such that the procurement of diesel equipment for the future was not needed. However, since this did not happen, the region will be stuck with diesel

[10]https://www.transit.dot.gov/regulations-and-programs/safety/special-directives-massachusetts-bay-transportation-authority-and

locomotives pulling or pushing rail coaches for the long term, instead of an electrically propelled solution.

Similarly, the timeline of the conversion to electrically propelled buses is also troubling. In March 2023 the MBTA Advisory Board in conjunction with the Conservation Law Foundation published "MBTA Electrification Requirements and Procurement Timeline." This report spells out the legal requirements the MBTA is under to fully electrify its fleet by 2040, and outlines a procurement timeline that it could follow to meet this goal feasibly and within existing, but manageable constraints. This CIP, however, includes the procurement of 460 40-foot diesel-hybrid buses, as well as mid-life overhauls to extend the life of numerous buses purchased earlier in this century. It is important to note that this CIP does include the first major purchase of 80 40-foot battery electric buses for use at a renovated North Cambridge facility and a newly constructed Quincy facility.

The CIP, however, also includes significant investments for the future of the system. In addition to the continued investment in new Red and Orange Line cars from CRRC, millions are also programmed to build or rebuild facilities for these new vehicles to be maintained and operated from. The CIP also includes funds to introduce Reliability Centered Maintenance (RCM) for the new Red and Orange Line cars. RCM is an approach to maintenance pioneered by the airline industry to replace components and parts before they fail. $426.7 million is also programmed to support the design of new Green Line type 10 vehicles to replace existing Type 7 and 8 cars from the 1990s and early 2000s.

These investments in new vehicles coupled with related investments in this CIP in

infrastructure improvements and resiliency suggest a better MBTA for the future. However, there are concerns about the current state of the system. In August 2022 this region witnessed what can only be described as a failed line shut-down. The Orange Line did not operate for one month, and passengers were bused throughout Malden, Medford, Somerville, and Boston. At the time, communities were told that this surge would result in a better, more reliable Orange Line. However, at the time of writing this report, the Orange Line is operating with multiple slow-zones which force trains to proceed much slower than usual, and certainly slower than before the surge in August 2022. Communities and the public deserve reassurances that future disruptions and shut downs will result in actual improvements for the long term. While this CIP cannot influence short-term maintenance efforts and infrastructure improvements, the MBTA must do better.