



## ***TECHNICAL MEMORANDUM***

**DATE:** October 19, 2023  
**TO:** Boston Region MPO Members  
**FROM:** Ethan Lapointe, Transportation Improvement Program Manager,  
Central Transportation Planning Staff  
Logan Casey, Capital Programming Planner, Central  
Transportation Planning Staff  
**RE:** Development and Summary of the Transit Transformation  
Investment Program

The Transit Transformation Investment Program was established by the Boston Region Metropolitan Planning Organization's (MPO) Long-Range Transportation Plan (LRTP), *Destination 2050*. Transit Transformation expands beyond the state of good repair and transit infrastructure upgrades of the former Transit Modernization program to incorporate multimodal access and other goals. The Transit Transformation program will fund transit-related investments with higher costs than those included in the Community Connections program (typically less than \$500,000) but that do not meet the criteria for the Major Infrastructure Program (\$50 million or more). The Transit Transformation program will support projects that

- enhance amenities for transit customers;
- improve transit system accessibility;
- increase capacity of transit stations and improve multimodal connectivity;
- make state-of-good-repair improvements to transit assets, including tracks, signals, and power systems;
- modernize transit fleets through the purchase of vehicles and upgrades to maintenance facilities; and
- support the security and sustainability of transit infrastructure, including system electrification, to advance resilience and clean transportation goals.

MPO members informed the development of the program, encouraging investments in accessibility improvements for persons with disabilities, incorporating transformative investments in system expansion and electrification

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into general asset management and state-of-good-repair activities, and expanding bus infrastructure. These recommendations, and others, were echoed in discussions with transit operators, municipal staff, and other local stakeholders. This memo summarizes the activities undertaken to develop and deploy the first funding year for the Boston Region MPO's Transit Transformation Program.

## 1 MPO-DIRECTED TRANSIT INVESTMENTS TO DATE

During the development of the former LRTP, *Destination 2040*, in 2019, the MPO established a Transit Modernization investment program to use MPO discretionary funding for the augmentation of regional transit infrastructure. This program primarily focused on station and facility state of good repair and accessibility projects. The MPO identified eligibility for limited regional transit authority (RTA) and Massachusetts Bay Transportation Authority (MBTA) fleet conversions, bus maintenance facilities, and parking improvements, but no projects to date were awarded for those activities. The proposed target funding level for the investment program was five percent of MPO discretionary funding, or approximately \$6.5 million per year.

Since 2016, the Boston Region MPO has allocated significant investments in transit infrastructure above that \$6.5 million target threshold. The most significant contribution to date was the MPO's commitment to the MBTA's Green Line Extension project, which amounted to more than \$190 million between 2016 and 2021. A full list of projects classified as Transit Modernization when funded by the MPO is shown in Table 1.

**Table 1**  
**MPO-Funded Transit Modernization Projects between 2016 and 2025**

YEARS	PROJECT NAME	MPO ALLOCATION
2016–2021	Green Line Extension Project	\$190,079,465
2021–2024	Columbus Avenue MBTA Bus Lanes Phase II	\$26,550,000
2023–2024	Lynn Station Improvements Phase II	\$48,100,000
2024	MBTA Rail Transformation Early Action Items at Reading Station and Wilbur Interlocking (Woburn)	\$14,000,000

2024– 2025	Jackson Square Station Accessibility Improvements	\$26,250,000
<b>TOTAL FUNDING</b>		<b>\$304,979,465</b>

Note: In the FFYs 2023–27 TIP, the Boston Region MPO programmed \$6.4 million in FFY 2024 for the MBTA Forest Hills Improvement Project. This money was reallocated to other transit projects in the FFYs 2024–28 TIP due to a lack of funding from other contributors to the project to an extent beyond what the MPO had available to further commit. The Green Line Extension was initially funded before the Transit Modernization Program was established.

FFY = Federal Fiscal Year. MBTA = Massachusetts Bay Transportation Authority. TIP = Transportation Improvement Program.

In addition to the Transit Modernization program, the Boston Region MPO has invested in transit-supportive activities since establishing its Community Connections investment program in the FFYs 2021–25 Transportation Improvement Program (TIP). A list of transit-supportive Community Connections projects, excluding MPO investments in microtransit pilot projects, is shown in Table 2.

**Table 2**  
**Transit-Supportive MPO Community Connections Projects to Date**

YEAR	PROJECT NAME	MPO ALLOCATION
2021	Cambridge - Concord Avenue Transit Signal Priority	\$160,000
2021	Somerville - Davis Square Signal Improvements	\$220,000
2022	Brookline - Transit App Education Program	\$43,620
2022	Everett/Malden - Main Street Transit Signal Priority	\$225,000
2022	MBTA Systemwide Bicycle Racks	\$275,740
2022	Route 128 Business Council - Alewife Wayfinding	\$292,280
2024	Acton - Parking Management System	\$15,000
2024	Lynn - Broad Street Corridor Transit Signal Priority	\$297,800
<b>TOTAL FUNDING</b>		<b>\$1,529,440</b>

MBTA = Massachusetts Bay Transportation Authority.

## 2 LITERATURE REVIEW AND STAKEHOLDER ENGAGEMENT

MPO staff conducted a literature review of recent transit best-practices research and engaged multiple stakeholders to develop the Transit Transformation Program. The following section details this effort.

### 2.1 Literature Review

In August 2023, MPO staff conducted a literature review to assess nationwide best practices for investing in a modern, efficient, and equitable transit system. Staff reviewed eight documents, which can be broadly categorized into three areas of overlapping focus.

The first area prescribes best practices for transit providers or funders of transit projects to pursue in the development of Bus Rapid Transit infrastructure within a given region. These best practices, outlined by authors Nikitas and Karlsson in 2015, were adopted into a scorecard for the evaluation of Bus Rapid Transit systems by the Institute for Transportation and Development Policy. This scorecard establishes baseline criteria and key performance indicators that should be pursued when investing in a rapid bus system.

The second area of study analyzes investment outcomes through the lens of equity and accessibility. Research by Acton, Lee, and Miller (2022) compared 11 United States bus rapid transit (BRT) systems, including the MBTA's Silver Line SL4 and SL5 routes, to identify key determinants not only in what causes property value increases near transit use, but also how effective implementation of these routes can be realized. The authors note that the development of intermodal facilities for improved pedestrian accessibility is key to gain the most land value capture from the implementation of BRT. Two reviews of transit accessibility in Toronto, conducted by Allen and Farber (2020) and later joined by Barri, Kramer, Beyazit, and Jahanshahi (2021), more closely examined specific neighborhood demographics, such as rates of household car ownership, in promoting mode shift towards transit service. The later paper found that many low-income households may opt for travel with a more expensive single-occupancy vehicle at greater frequencies the further they are located from accessible transit. Low-income, car-owning households tend to have greater demand elasticity based on distance from transit than higher-income, car-owning households and lower-income, non-car households. In other words, low-income, car-owning households have the greatest shown sensitivity to changes in transit accessibility. A 2022 comparative analysis between Soweto, South Africa's BRT system and Boston's Fairmount Indigo Line corridor found that both systems garnered success through a targeted approach that carried strong community engagement and support prior to implementation. In 2000, Greater Four Corners Action Coalition began campaigning for transit-oriented development

improvements to be implemented in the Fairmount corridor. In 2012, the Boston Planning and Development Agency began a feasibility study in the corridor, which ultimately resulted in the addition of five stations within the corridor. Partnering with community organizations fosters the potential for increased collaboration, mobility, and economic well-being in areas historically divided by government policy or underinvestment.

The third and final area of analysis reviews ongoing challenges to the regional transit system in Greater Boston after the COVID-19 pandemic and emerging hazards resulting from climate change. A 2021 brief from Riley Sullivan of the Federal Reserve's Boston branch identified key shortfalls in fixed-route ridership post-COVID. Given that fares and parking fees accounted for 47 percent of MBTA operating expenses in 2019 and shifting employment trends have impacted commutes, there is a major fiscal gap to be filled until ridership rebounds. Compounding this risk is the looming conclusion of temporary federal stimulus appropriations through policies such as the CARES act that have backstopped fiscal challenges. Basu and Ferreira found in 2021 that COVID altered public perceptions of transit services and made individuals more skeptical of using them, with unreliable service frequencies and emerging safety concerns compounding this trend. These perceptions may temper the rate of return for pre-pandemic ridership levels. On the climate front, Martello establishes a framework for evaluating the resilience of greater Boston's rapid transit network in the face of sea level rise. The importance of a facility can be determined by its connection to the broader transit system and nearby communities. Seven of the 10 most vulnerable sites are on the MBTA's Blue Line, with Cabot Yard depot and the Red Line from JFK/UMass to Andrew stations being major Red Line vulnerabilities.

## 2.2 Transit Authority Meetings

### *MBTA*

MPO staff met with various units within the MBTA throughout the development of the Transit Transformation Program to assess eligibility not only for MBTA project applications, but also the potential for using the MBTA's own municipal engagement and framework to support applications from municipalities in later program years. These discussions culminated in a workshop on October 13, 2023, with each involved unit of the MBTA, with continued investments in bus-supportive infrastructure such as transit signal priority, improved signage, and dedicated bus lanes being key points of discussion for consistency with the MBTA's Bus Network Redesign. Given the MPO's previous allocations of funding to significant MBTA projects with costs above the \$6.5M set-aside indicated in *Destination 2050*, discussions between MPO staff and the MBTA also reviewed opportunities to continue incorporating large-scale projects such as those

previously funded, for example, Lynn Station or the Columbus Avenue Bus Lanes, into the Transit Transformation, Complete Streets, or Major Infrastructure programs.

#### *MetroWest Regional Transit Authority (MWRTA)*

MPO staff met with the MWRTA on several occasions in developing the Transit Transformation Program, with formal workshops held on August 9 and September 6, 2023. These discussions were key to identifying specific projects that may be incorporated into the TIP Universe of Projects in advance of the FFYs 2025–29 TIP Application period, and in turn framing discussions around what projects should be eligible for funding through the program. Discussions with the MWRTA also highlighted possibilities for additional coordination on implementing federal discretionary grant awards, such as constructing a project to be designed with a federal Strengthening Mobility and Revolutionizing Transportation grant.

#### *Cape Ann Transportation Authority (CATA)*

MPO staff contacted personnel at CATA to gauge interest in the Transit Transformation program but have yet to receive a response. Staff will continue to try and hold a workshop with CATA in the coming weeks.

### **2.3 MPO Member Workshop**

On August 24, 2023, MPO staff held a workshop with MPO members to discuss the development of the Transit Transformation program and to solicit feedback for program administration. Feedback largely focused on the types of projects that may be eligible for funding through the program, and in turn how project scoring criteria should reflect and prioritize those project types. The discussion briefly touched on the potential for future modifications to the program to incorporate transit projects from municipal proponents, including street furniture procurement for improvements to shelters and stops.

### **2.4 Other Stakeholders**

Throughout the development of the Transit Transformation Program, MPO Staff sought project ideas, priorities, and feedback from members of the public and municipal contacts to shape the program. On September 13, 2023, staff hosted a public workshop with the Regional Transportation Advisory Council to identify priorities on types of projects to fund and areas of emphasis in scoring and evaluating projects. The program was also core to early outreach conducted for the FFYs 2025–29 TIP development cycle in the form of one-on-one meetings with municipalities. These discussions led to the identification of additional investment opportunities for municipalities to pursue in future program years.

### 3 Transit Transformation Program

MPO staff leveraged the findings of the Literature Review and feedback from stakeholder engagement to identify eligible project types and areas of emphasis for project evaluation and funding. The following section discusses the resulting eligible project types and the project scoring criteria.

#### 3.1 Model for Program Administration

The Transit Transformation Investment Program supports a broad array of investments for transit facilities and rolling stock. As with the former Transit Modernization Program, Transit Transformation will support larger scale station modernization projects that improve the accessibility and state of good repair of the transit system. Given the vision, goals, and objectives set forth by *Destination 2050*, these investments will now further emphasize the resilience of the transit network to ensure operational cadence and security when faced with hazards. To promote intermodal connections, the program will also support projects that improve direct linkages between transit facilities and routes to other transportation network assets, such as pedestrian and bicycle trails and facilities, sidewalks, or other transit operators. For RTAs, the program will also support the modernization and electrification of the transit fleet, including through limited vehicle procurement opportunities.

In addition to the projects above, transit-supportive investments previously included under the Community Connections investment program will now be classified under the Transit Transformation program. These include Transit Signal Priority, Bus Lane, and Wayfinding/Interpretive Signage projects. Additional project types where municipalities may serve as project proponents, such as street furniture or parking systems, may be incorporated in future years of the program.

The Transit Transformation Program is divided into two types of project funding. The first type supports larger scale capital projects from RTAs and the MBTA, consistent with projects already funded by the MPO through the Transit Modernization Program. The second provides access for municipalities into the program by coordinating with their RTAs or the MBTA for bus lanes and transit signal priority projects. As with the Community Connections program, where these investments previously resided, municipally prioritized bus lane and signal projects that are selected for funding will be administered by the transit operator that serves the municipality. Opportunities for funding more types of projects through the municipally prioritized component of the program will continue to be evaluated and possibly expanded in future program years. MPO staff intend to review the results of the first year of project solicitation through the program to identify more opportunities for partnerships between municipalities and transit

operators to support larger-scale, municipal-priority capital projects, set design standards, and advance regionally significant transit investments.

As with other MPO investment programs, staff will develop the Transit Transformation Universe of Projects by engaging potential project proponents and identifying mature projects likely to seek funding through the TIP. This engagement will not only consist of traditional avenues through municipal one-on-one discussions, conversations with the Massachusetts Department of Transportation's Highway Districts, and subregional outreach conducted by the Metropolitan Area Planning Council, but will also incorporate information from transit operators at an earlier date for board consideration. Transit Transformation projects will be included as part of the TIP Universe of Projects typically presented to the MPO Board in November.

Applications for the Transit Transformation Program will be solicited from November 1, 2023, through December 31, 2023. Applications will be submitted through an online Qualtrics survey, with questions framed to specifically address each scoring category. The digital survey format will allow applicants to attach additional documents, such as GIS shapefiles and letters of support, to the application package. To help proponents navigate the application process, staff are holding How-To Presentations on November 2 and November 9, 2023, and will continue to support applicants through one-on-one meetings. Just as with other MPO investment programs, applications will be subject to a scoring and evaluation period in January and February to inform the project selection process that occurs in March and April of a given TIP cycle.

### 3.2 Project Evaluation Criteria and Process

Staff developed criteria for use in the evaluation of projects seeking funding in the Transit Transformation Investment Program during the development of the FFYs 2025–29 TIP. These criteria were developed using the existing Transit Modernization Scorecard as a foundation, and updated to incorporate and reflect the feedback received from stakeholder engagement. The project evaluation criteria were also adjusted to address the changes in the scope of eligible projects, activities, and priorities between the Transit Modernization and Transit Transformation programs.

The Transit Transformation Program Criteria are aligned to the same 100-point scale of criteria for other MPO investment programs. The Transit Transformation criteria were developed to reflect the new goal and objective areas of *Destination 2050*. This includes goal areas for transportation equity, safety, mobility and reliability, access and connectivity, climate resilience, and clean air and healthy communities.



Applicants seeking funding through the Transit Transformation Program in the FFYs 2025–29 TIP will be subject to the same process as all other TIP Investment Programs. This will include a formal application process and questionnaire solicited during the period from November 1 to December 31, 2023, with project evaluation undertaken in subsequent months. Scored projects will be subject to the same programming process as other investment programs, and will be reflected with their scores in the scenario development process that takes place in the Spring. Applicants are eligible and encouraged to submit multiple projects for consideration in a single period, so long as their priority projects are indicated. The proposed program evaluation criteria are attached as Appendix A.

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## Appendix A Transit Transformation Program Evaluation Criteria

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