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## **MBTA Crisis – Part II**

### **The Capital Budget: Critical Demands; Insufficient Funds**

This is the second of three Massachusetts Taxpayers Foundation (MTF) reports on the current state of the MBTA and its looming fiscal crisis. The first piece analyzed the operating budget, concluding that the MBTA governing board faces “a financial outlook even bleaker than that of 2015, with limited capacity to act without impacting current or planned MBTA services.”

This report, which examines the MBTA’s sources and planned uses of capital funding, finds “an impending chasm” between the costs to maintain and modernize the Authority’s existing infrastructure and available sources to pay for these investments. At the same time, the MBTA must address two additional capital needs linked to climate change – decarbonization and climate resiliency adaptation – for which the MBTA currently has neither accurate costs nor funding to pay for these critical investments.

These looming capital shortfalls require the MBTA Fiscal and Management Control Board to rethink its capital investment priorities this fall. Concurrently, the MBTA should develop contingency plans for its capital investments based on permanently altered travel and transit demand resulting from the pandemic. Given the size and scope of these challenges against a backdrop of uncertainty, the FMCB must turn its attention to these issues immediately.

#### THE MBTA CAPITAL BUDGET – INTRODUCTION

In its June report, MTF demonstrated<sup>1</sup> that stresses on the T’s operating budget pose an existential threat to the system’s ability to operate at pre-pandemic service levels. MTF’s analysis further demonstrated the pandemic’s ongoing impacts on state and municipal budgets and the limited options for additional operational assistance available to the Authority. It will be difficult for the T to close a \$400 million operating budget gap in FY 2022 without hindering capital spending.

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<sup>1</sup> See [The MBTA Operating Budget: It’s Déjà vu All Over Again](#), MTF, June 15, 2020.

While the short-term diversion of capital funds to the operating budget is a concern, more problematic is the MBTA's inability to preserve and modernize its infrastructure due to a decline of billions of dollars of available capital investment sources within the next few years. This steep drop off in capital resources poses a potentially devastating outcome for public transit.

#### PAST CAPITAL PLANS – PROMISES AND FAILINGS

The MBTA's capital troubles are longstanding and well-documented.<sup>2</sup> For years, the MBTA spent less than it publicly acknowledged was necessary to maintain its capital assets. This intentional underinvestment was driven by the need to balance its operating budget. While the MBTA succeeded in closing the operating gaps, as it is legally required to do, it did so at the expense of capital spending on the system's infrastructure, causing a significant failing of its assets over a relatively short period.

An egregious example of this practice relates to the sale of revenue bonds for capital spending. In order to minimize debt service costs, the MBTA limited the sale of such revenue bonds to an annual average of \$100 million for six years following the financial crisis (FY 2010 – FY 2015). During this period, the MBTA also dedicated more than \$500 million, representing 20 percent of its capital budget, to pay debt service costs rather than spending that money on needed infrastructure improvements.

As a result of these and other decisions, the MBTA acknowledged that its state of good repair (SGR) backlog has mushroomed. The Authority estimated its SGR backlog grew from \$2.7 billion in 2010 to \$7.3 billion in 2015, before the T eventually settled in 2018 on its current backlog estimate of more than \$10 billion<sup>3</sup>. That figure is four times greater than the T's 2010 estimate, demonstrating the degree to which the Authority's assets have deteriorated.

In addition to a steep decline in the requisite investments to maintain its infrastructure, the MBTA lacked the capacity to manage capital projects efficiently, further adding to the cost of maintenance. The most dramatic case of this may be the Green Line Extension (GLX). At the time the FMCB began its oversight, costs had swollen to \$3.4 billion from an earlier \$900 million estimate, jeopardizing the project. But the focus on the inadequacy of the MBTA's capital program began with the MBTA Special Panel, an entity created by Governor Baker to assess and report on the extent of the agency's fiscal woes<sup>4</sup>. Of its nine recommendations, three were related to capital.

- **Chronic Capital Underinvestment:** The MBTA has not spent the capital funds already available to it, resulting in chronic underinvestment in its aging fleet and infrastructure.
- **Bottleneck Project Delivery:** The MBTA struggles to get projects completed.

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<sup>2</sup> See for example: [Transportation In an Era of Transition: Re-Thinking Resources](#), September 2017; [The Future of Transportation: Paving a Path To Progress](#), June 2016; and [The T: The End of Its Line](#), March 2015.

<sup>3</sup> The \$10 billion estimate does not have complete commuter rail asset data and does not include costs to upgrade power distribution systems.

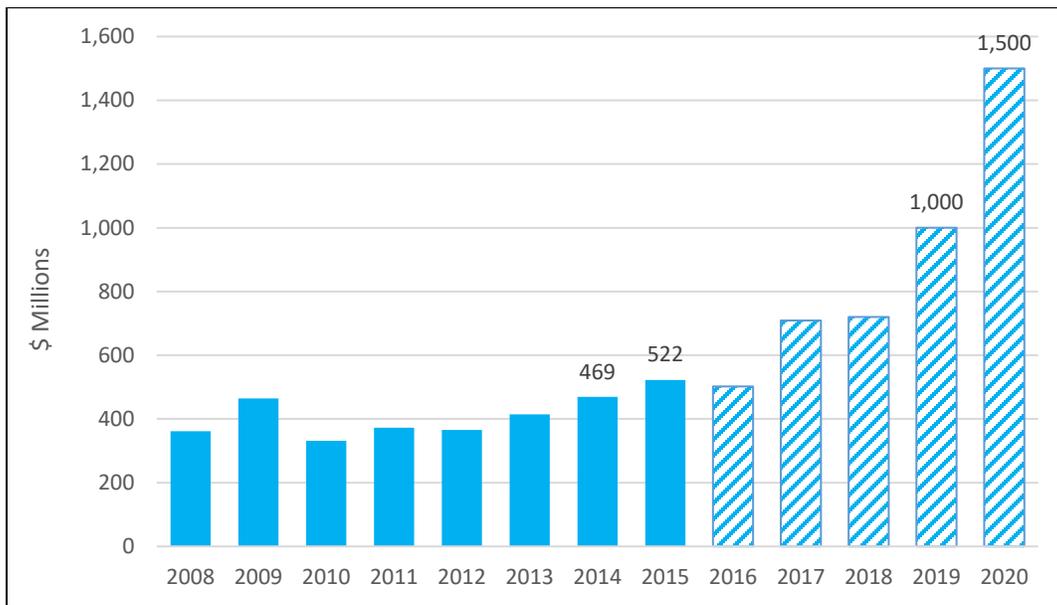
<sup>4</sup> [Back on Track: An Action Plan to Transform the MBTA](#), April 8, 2015.

- **Flawed Contracting Process:** The MBTA’s procurement and contract management are inefficient.

CLEAR PROGRESS

Under the FMCB, the MBTA has made steady progress in boosting and delivering capital investment. As shown in Figure 1, the Authority tripled capital investments from just over \$500 million in FY 2016 to \$1.5 billion in FY 2020. Due to streamlined processes, better data systems, more project managers and support personnel, and other improvements, the MBTA was on track to invest \$1.8 billion in FY 2020 before the pandemic struck.

**Figure 1 – MBTA Capital Spending 2008 - 2020**



The fact that the MBTA now has the capacity to deliver \$8.3 billion in capital spending over a five-year period (FY 2020 – FY 2024) could represent one of the FMCB’s greatest accomplishments. Because of this increased capacity, the Board and the General Manager were able to shorten by ten years their timeline for capital spending to eliminate the \$10+ billion backlog of maintenance and modernization projects. The time for completing this work was reduced from 25 years to 15 years.

In another sign of progress in the MBTA’s project management capabilities, the FMCB and MBTA, working with independent consultants, developed a scaled-back redesign of the Green Line Extension, lowering the cost to \$2.3 billion from the aforementioned \$3.4 billion. This reduction in price and scope was instrumental in securing \$1 billion in federal support to fund the project. GLX remains on schedule and on budget, demonstrating a significant improvement in contract management.

## AVAILABLE FUNDING SOURCES WILL PLUMMET

These positive and significant developments, however, are threatened by three troubling fiscal realities that the FY 2021 – FY 2025 Capital Improvement Plan (CIP) lays bare:

- Less than half of the \$8.3 billion in resources for the five-year CIP, or approximately \$4 billion, are from MBTA sources.<sup>5</sup> The remainder is from external sources for specific projects. State and federal funds will cover the costs of the GLX (\$2.3 billion) and the state will pay for South Coast Rail (\$1 billion), the purchase of new Red and Orange Line cars (\$1 billion), and improvements to Red and Orange Line track, power and signals. These non-repeating sources dry up when the projects are completed (FY 2024).
- In order to reach the requisite \$8.3 billion in sources, the MBTA plans to sell approximately \$1.8 billion of tax revenue bonds over the next four years. This action could drive up annual debt service costs by as much as \$80 million per year, placing even greater strains on already stressed future operating budgets.
- Depending on how much debt service the operating budget can support, the MBTA's sources for capital investment will decline to approximately \$800 million in FY 2025<sup>6</sup> and then fall to \$600 million in FY 2026, down 65 percent from \$1.7 billion in average annual spending in the latest CIP.

State and federal funding sources also have limitations. Though it is important that the Legislature pass the transportation bond bill (currently in conference committee) to authorize new capital projects, that bill provides no new revenue sources to support future MBTA capital spending. There are several sources of potential federal funding, two of which could provide significant revenues, but their likelihood of materializing is uncertain.

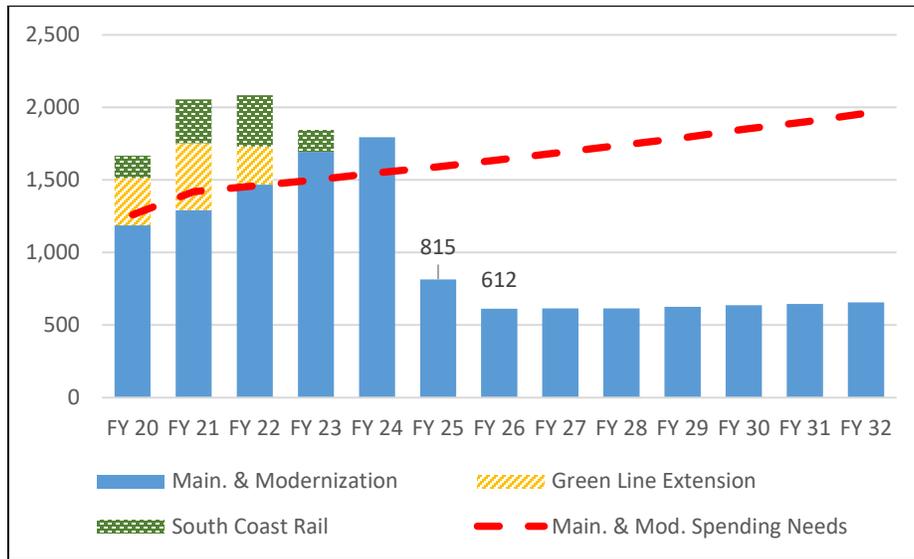
The Fixing America's Surface Transportation (FAST) Act, expires this month, but the bill could be extended or reauthorized. The FTA's Capital Investment Grant Program may provide funding for core capacity investments to pay for maintenance and modernization gaps beginning in FY 2025 (Figure 2 and Table 1) but the program is competitive and requires transit agencies to complete a number of steps over several years leaving future funding uncertain.

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<sup>5</sup> The \$4 billion estimate does not include the \$90 million pay go/lockbox annual contribution from state contract assistance, given the operating budget gaps confronting the MBTA in FY 2021 and beyond.

<sup>6</sup> The \$815 million projection for FY 2025 includes \$200 million of federal funds carried over from previous years.

**Figure 2 – MBTA Sources vs. Maintenance & Modernization Spending Needs**



CAPITAL PRIORITIES MUST BE UPDATED

Finding sufficient capital resources to backfill expiring resources is itself a formidable task for the FMCB. It becomes daunting when coupled with the climate-related necessary investments, changing commuting patterns and evolving transportation needs spawned by the pandemic. In order to meet this challenge head-on, the FMCB should divide all proposed capital projects into three groups in descending order of importance to the MBTA and its riders:

- First and foremost, the MBTA must preserve and upgrade the core transit system. The focus should be on delivering safer, faster, reliable, and more flexible bus and rail service for essential workers and transit-dependent communities.
- Second, the MBTA must incorporate investments that address the impact of climate change – decarbonization and infrastructure resiliency – into its next capital plan and publish a cost estimate and schedule for such essential investments.
- Finally, upon the completion of GLX and South Coast Rail, the FMCB should commit to no further expansion projects unless it is confident that sources and capital spending for such projects will not come at the expense of achieving the first two priorities.

*1. MAINTENANCE, MODERNIZATION AND SAFETY MEASURES*

In order to eliminate the \$10+ billion backlog within the 15-year goal, and update and replace existing infrastructure, the MBTA estimates that it must spend \$1.5 billion per year starting in FY 2024.<sup>7</sup> That estimate is not adjusted for inflation. Factoring in construction inflation costs of

<sup>7</sup> Maintenance and modernization spending needs (the red dotted line) are based on a May 13, 2019 presentation to the FMCB – [Capital Needs Assessment](#), slide 23. The estimate is adjusted for inflation.

3 percent increases annual capital investments to approximately \$2 billion by FY 2032. However, starting in FY 2025, the Authority’s available capital sources plummet leaving an ever-widening gap.

Closing the gap between spending needs to maintain, modernize, and address safety measures for the MBTA’s infrastructure and sources available to fund them will require an additional \$780 million FY 2025 jumping to \$1 billion in FY 2026. This amount widens to \$1.3 billion in FY 2032 (Table 1).

**Table 1 – Costs to Maintain and Modernize MBTA Assets Vastly Exceed Available Sources**

<b>MBTA Capital</b>	<b>FY 25</b>	<b>FY 26</b>	<b>FY 27</b>	<b>FY 28</b>	<b>FY 29</b>	<b>FY 30</b>	<b>FY 31</b>	<b>FY 32</b>
Sources	810	610	610	610	620	630	640	650
Main. & Modernization	1,590	1,640	1,690	1,740	1,790	1,850	1,900	1,960
<b>Funding Gap</b>	<b>(780)</b>	<b>(1,030)</b>	<b>(1,080)</b>	<b>(1,130)</b>	<b>(1,170)</b>	<b>(1,220)</b>	<b>(1,260)</b>	<b>(1,310)</b>

The major projects listed below, all of which provide safety, maintenance and modernization to the core system, will cost approximately \$9 billion to complete (Appendix B). Nearly \$2 billion of the \$9 billion total are expected to come from sales of tax revenue bonds and federal matching funds beginning in FY 2026. More funds will be required to make commuter rail investments and fleet upgrades because the \$9 billion estimate does not include these costs.

- Buses: \$1.7 billion
  - Electrification of fleet
  - 20% expansion of fleet
  - Yards, maintenance shops, charging stations
  - Dedicated bus lanes & traffic signals
- Green Line transformation: \$2.5 billion
  - Vehicles<sup>8</sup>
  - Yards and maintenance shops
  - Track and signal
  - Test track
- Red and Orange Line reliability: \$3.3 billion, including \$1.36 billion to achieve three-minute headways on the Red Line and 4.5-minute headways on the Orange Line.<sup>9</sup>
- Bridges / tunnels and stations.<sup>10</sup>
- Signals and power system wide: \$560 million.
- Fare transformation: \$780 million.

<sup>8</sup> The House and Senate transportation bond bills each stipulate that new vehicles must be assembled in Massachusetts. This policy requires the state to pay full costs because federal rules prevent the use of federal funds for such mandates.

<sup>9</sup> This is an example of potential scenario planning for a post-pandemic economy. Are these shortened headways on the Red and Orange Lines a high-priority investment if travel demand does not recover?

<sup>10</sup> The MBTA owns and maintains approximately 230 crossovers, 974 turnouts, 46.2 miles of tunnels, 459 bridges, 1.81 miles of retaining walls and 1,303 Culverts. Performance and Asset Management Advisory Council Annual Report, 2018.

## 2. CLIMATE CHANGE

The impacts of climate change on MBTA infrastructure are already evident. The risks are mounting. Yet the MBTA has still not presented a robust analysis of what classes of assets are at greatest risk. Nor has it provided estimates of resiliency spending to keep its infrastructure and services operational. The latest CIP does not include funding for infrastructure resiliency or service redundancy, both of which are likely to require considerable investment.

Infrastructure resiliency and service redundancy must be a priority in the Authority's next CIP to address problems that have already manifested:

- Sea-level rise and storm surges have already impacted MBTA stations, tunnels, track, power, and signals and damages will worsen.
- Projects and costs to manage retrofits, redundancy (such as when the Blue Line or stations flood), operation centers and rail yards that are in flood plains are not in the current CIP.
- Increased precipitation and warmer climates further increase the costs of making infrastructure resilient.

Similarly, for the Commonwealth to achieve its interim GHG emission reduction targets for 2030, 2040, and its ultimate goal of 100 percent reduction by 2050,<sup>11</sup> the MBTA will need to make sizable and timely investments in electrification. But the MBTA does not know the costs of decarbonization investments needed to reduce CO2 emissions. While the T has yet to provide a comprehensive list of necessary investments to make and when they must be made to hit stated targets, they include:

- Investments in the power grid to support the current commuter rail system and potential expansions.
- Electrification of certain commuter rail lines
  - Convert locomotives / EMUs
  - Supporting infrastructure – overhead wires, signaling, facilities.

## 3. EXPANDED AND IMPROVED SERVICE

Despite the numerous hurdles, maintaining and upgrading the existing system and addressing climate change must remain the top MBTA priorities. Only then can consideration be given to the plethora of projects under consideration to expand public transit service. Some proposals reflect a chance to resolve years of geographic and other inequities, others propose more environmentally friendly methods to upgrade service. Most are expensive undertakings and some may lose support if the pandemic permanently alters transportation assumptions and patterns.

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<sup>11</sup> Carbon dioxide (CO2) emissions account for approximately 80 percent of all GHG emissions with methane, nitrous oxide, and fluorinated gas making up the remaining 20 percent. [Inventory of U.S. Greenhouse Gas Emissions and Sinks](#), US EPA.

These would-be projects have one major thing in common: they all lack identified sources to pay for their development and operation. The list of such projects includes, but is certainly not limited to:

- Rail Vision Alternatives – [Alternative 1](#) approved by FMCB.
- South Coast Rail – Phase 2.
- Expanded service to Worcester, Springfield, Greenfield, the Berkshires, Cape Cod
- Expanded capacity and service at South Station.
- West Station.
- Red/Blue Line Connector.

All of these projects may be laudable. All of these projects also lack funds.

#### NEXT STEPS – GRAPPLING WITH AN ENORMOUS SHORTFALL FOR CRITICAL CAPITAL INVESTMENTS

As is the case with its operating budget, the MBTA confronts an impending chasm between its vision for the future of public transit and available resources to achieve that vision. For the past several years, the MBTA had more funds available than it was able to spend. Its challenge was to ramp up capital delivery. Now, just as the T has achieved that greater capital spending capacity, funding sources will plummet for FY 2025 and beyond.

As sources become scarce and reduced ridership levels only slowly recover, the FMCB should review the current capital plan to determine what flexibility may exist to shift investments to projects with a greater need. The Board should consider, for example, whether spending \$1.4 billion to achieve 3-minute headways on the Red Line and 4.5-minute headways on the Orange Line is still the best use of resources in the short-term. Might the Board produce better returns for riders were it to delay upgrades to commuter rail stations in order to shift resources to accelerate the purchase of electric or hybrid buses, expand bus service, and increase dedicated bus lanes on key routes?

Fresh strategic thinking is especially important as the T develops its FY 2022 – FY 2026 CIP, a process that will begin later this year. The FMCB should require the MBTA to develop several scenarios for capital investments tied to MBTA ridership trends and longer term economic transitions that are likely to drive travel patterns. What drove the demand for travel before the pandemic – real estate usage, health care services, education, business conferences and tourism – may not drive future transportation needs.

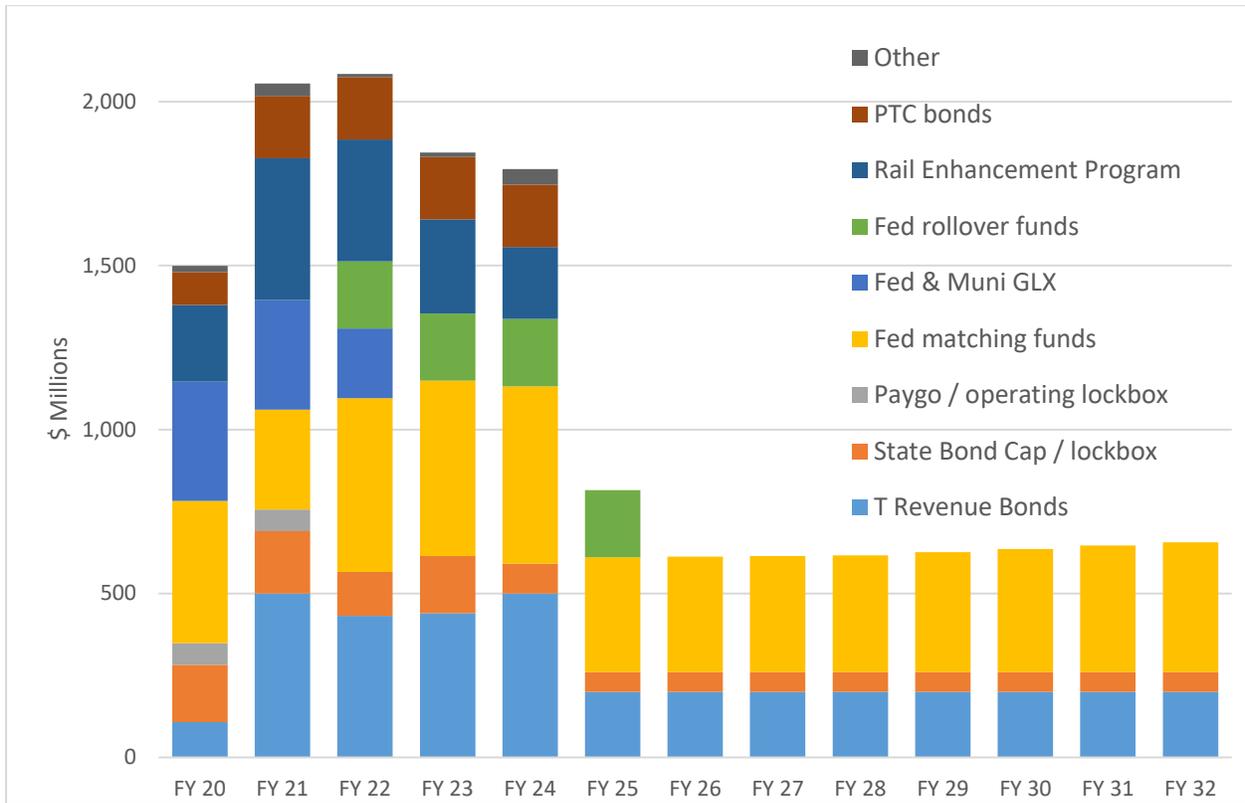
A recent survey corroborates this. Nearly half of the employees of firms in the Greater Boston area plan to continue working remotely even after COVID-19 concerns wane and 60 percent of employers expressed an openness to moving or allowing more work to be done from out-of-state.<sup>12</sup>

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<sup>12</sup> <https://www.masscompetes.org/survey-results>

It is up to the FMCB to ensure that the MBTA can adjust its capital spending plans and scarce resources to address such changed realities and to respond to the needs of its riders in a 'new normal' that is only beginning to emerge.

## Appendix A – Sources: Breakdown of the MBTA’s Available Capital



## Appendix B – Uses: Maintenance, Modernization and Safety Measure Spending

Need	Pre-FY21 Spending	FY21-25 CIP Funding	Post-FY25 Funding	Total
<b>Bus</b>	<b>647.8</b>	<b>815.4</b>	<b>231.8</b>	<b>1,695.0</b>
Yards and maintenance shops	58.9	267.8	-	
20% expansion of fleet	558.9	465.5	231.7	
Electrification of fleet				
Dedicated lanes and traffic signals	15.9	62.1	0.0	
Other	14.1	20.0	-	
<b>Green Line Transformation</b>	<b>391.7</b>	<b>947.2</b>	<b>1,171.2</b>	<b>2,510.1</b>
Yards and maintenance shops	4.1	27.4	-	
Vehicles	184.4	264.9	1,124.6	
Track and signal	145.0	264.3	24.6	
Other	58.1	390.5	22.0	
<b>Red/Orange Line</b>	<b>1,083.0</b>	<b>2,070.0</b>	<b>184.2</b>	<b>3,337.2</b>
Yards and maintenance shops	16.7	291.9	-	
Vehicles	333.8	707.8	112.0	
Track and signal	386.0	645.0	61.6	
Other	347.1	425.7	10.6	
<b>Ferry</b>	<b>24.9</b>	<b>23.5</b>	<b>0.0</b>	<b>48.4</b>
<b>Other Tracks and Signals</b>	<b>289.7</b>	<b>267.1</b>	<b>5.2</b>	<b>562.0</b>
<b>Fare Transformation</b>	<b>59.1</b>	<b>415.6</b>	<b>308.7</b>	<b>783.4</b>
<b>Total</b>	<b>2,496.2</b>	<b>4,538.8</b>	<b>1,901.1</b>	<b>8,936.1</b>