

# 2020–2024 Capital Investment Plan

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## 2020–2024 Capital Investment Plan Update


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This new format for the Capital Investment Plan (*CIP*) is more interactive and accessible than in previous years. The links in the Table of Contents above take you directly to the primary sections of the document, or you can read the document using keyboard navigation, by scrolling, or by swiping if using a touch-enabled screen.

If you prefer a more traditional web page experience and are on a traditional desktop, use the share button (  ) and select "Print."

# Letter from Secretary Pollack



*On behalf of the Massachusetts Department of Transportation (MassDOT) and the Massachusetts Bay Transportation Authority (MBTA), I am pleased to present the 2020–2024 Capital Investment Plan (CIP or Plan) update. This is our fourth update to this vision for the MassDOT/MBTA Plan, which was originally set in motion with the 2017–2021 CIP. This update reflects a continued focus on investments that improve the reliability, safety, and resiliency of the transportation system that serves residents and businesses across the Commonwealth. This document highlights the ongoing transformation of the CIP process as MassDOT and the MBTA continually seek to reinvent capital planning for the Commonwealth’s statewide, multi-modal transportation system.*

*This five-year CIP includes over \$18 billion in planned transportation investments for both*

*MassDOT and the MBTA—the largest amount to be spent on the Massachusetts transportation system over any recent five-year period. The Plan incorporates increased transportation funding from a number of different sources—federal, state, system-generated revenues (toll proceeds, MBTA fares and other revenue), MBTA revenue bonds, and private contributions. The allocation of all additional funding is consistent with MassDOT and the MBTA’s asset management plans.*

*Asset-based planning and performance management continue to drive investment decisions reflected in this CIP. A final Transportation Asset Management Plan (TAMP) for the Highway Division will be submitted to the Federal Highway Administration in June 2019, and final Transit Asset Management Plans (TAM) for the MBTA and the 15 Regional Transit Authorities (RTAs) were submitted to the Federal Transit Administration in October/December 2018. The allocation of funds shown in this CIP reflects an investment strategy that was developed following extensive planning work.*

*Approximately 44 percent of the \$18.3 billion in total investments (both MassDOT and MBTA) identified for the next five years will be focused on the reliability and resiliency of the core transportation system. Another 28 percent is devoted to modernizing the system in order to better accommodate current or anticipated growth and respond to new needs, such as increased accessibility and safety requirements that may not have existed when these assets were initially planned and constructed.*

*For MassDOT, three asset classes are targeted for additional investment in this CIP: improving the condition of pavement not on the Interstate system (facilities owned by both the Commonwealth and municipalities), improvements in our bridge deck condition throughout the Commonwealth and facilities on the Metropolitan Highway System (turnpike east of Route 128 and the Sumner, Callahan, Tip O'Neill and Ted Williams Tunnels).*

*For the MBTA, the additional funding will be invested in system reliability and modernization projects. Two new programs are also given priority in this update: Green Line Transformation (investments in fleet modernization and infrastructure and facilities upgrades) and Expansion Project Development (planning and design efforts to support the development of potential new system expansions for the “next priorities” investments identified in Focus40, the newly approved long-range plan for the MBTA).*

*This update also incorporates full funding for Phase 1 of the South Coast Rail program. This program will be funded entirely by the Commonwealth through a mix of general obligation and special obligation bonds.*

*This CIP and its implementation reflect the continued commitment of MassDOT and the MBTA to identify and complete projects that are of the highest benefit to residents and businesses across the Commonwealth. MassDOT and the MBTA will continue to monitor and benchmark progress toward meeting statewide transportation goals.*

*I look forward to continuing to work together toward these shared and important goals.*



*Stephanie Pollack*  
*Secretary of Transportation and Chief Executive Officer*  
*Massachusetts Department of Transportation*

## Non-Discrimination Protections



### Federal Title VI Rights & Protections

### State Nondiscrimination Protections

MassDOT complies with the Massachusetts Public Accommodation Law, M.G.L. c 272 §§ 92a, 98, 98a, prohibiting making any distinction, discrimination, or restriction in admission to or treatment in a place of public accommodation based on **race, color, religious creed, national origin, sex, sexual orientation, disability, or ancestry**. Likewise, MassDOT complies with the Governor's Executive Order 526, section 4 requiring all programs, activities, and services provided, performed, licensed, chartered, funded, regulated, or contracted for by the state shall be conducted without unlawful discrimination based on **race, color, age, gender, ethnicity, sexual origination, gender identity or expression, religion, creed, ancestry, national origin, disability, veteran's status** (including Vietnam-era veterans), or **background**.

## Complaint Filing

To file a complaint alleging a violation of Title VI or related federal nondiscrimination law, contact the Title VI Specialist within 180 days of the alleged discriminatory conduct at:

*MassDOT, Title VI Specialist  
Office of Diversity and Civil Rights  
10 Park Plaza  
Boston, MA 02118*

*Phone: 857-368-8580  
TTY: 857-368-0603  
Email: [MASSDOT.CivilRights@state.ma.us](mailto:MASSDOT.CivilRights@state.ma.us)*

To file a complaint alleging a violation of the state's Public Accommodation Law, contact the Massachusetts Commission Against Discrimination within 300 days of the alleged discriminatory conduct at:

*Massachusetts Commission Against Discrimination (MCAD)  
One Ashburton Place, 6th Floor  
Boston, MA 02109*

*Phone: 617-994-6000  
TTY: 617-994-6196*

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This notice is provided as required by Title II of the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973. Questions, complaints, or requests for additional information regarding ADA and Section 504 may be forwarded to:

*Office of Diversity and Civil Rights  
Massachusetts Department of Transportation  
10 Park Plaza, 3rd floor  
Boston, MA 02116-3969*

*Phone: 857-368-8580  
TTY: 857-368-0603*

*Fax: 857-368-0602*

*Email: [MASSDOT.CivilRights@state.ma.us](mailto:MASSDOT.CivilRights@state.ma.us)*

*Office hours: 9:00am to 5:00pm*

This notice is available from the Office of Diversity and Civil Rights in large print, on audio tape, and in Braille upon request.

## Translation Availability

English: If this information is needed in another language, please contact the MassDOT Title VI Specialist at 857-368-8580.

Portuguese: Caso esta informação seja necessária em outro idioma, favor contar o Especialista em Título VI do MassDOT pelo telefone 857-368-8580.

Spanish: Si necesita esta información en otro idioma, por favor contacte al especialista de MassDOT del Título VI al 857-368-8580.

Chinese Simplified: (mainland & Singapore): 如果需要使用其它语言了解信息，请联系马萨诸塞州交通部（MassDOT）《民权法案》第六章专员，电话857-368-8580。

Chinese Traditional: (Hong Kong & Taiwan): 如果需要使用其它語言了解信息，請聯繫馬薩諸塞州交通部（MassDOT）《民權法案》第六章專員，電話857-368-8580。

Russian: Если Вам необходима данная информация на любом другом языке, пожалуйста, свяжитесь со специалистом по Титулу VI Департамента Транспорта штата Массачусетс (MassDOT) по тел: 857-368-8580.

Haitian Creole: Si yon moun vle genyen enfòmasyon sa yo nan yon lòt lang, tanpri kontakte Espesyalis MassDOT Title VI la nan nimewo 857-368-8580.

Vietnamese: Nếu quý vị cần thông tin này bằng tiếng khác, vui lòng liên hệ Chuyên viên Luật VI của MassDOT theo số điện thoại 857-368-8580.

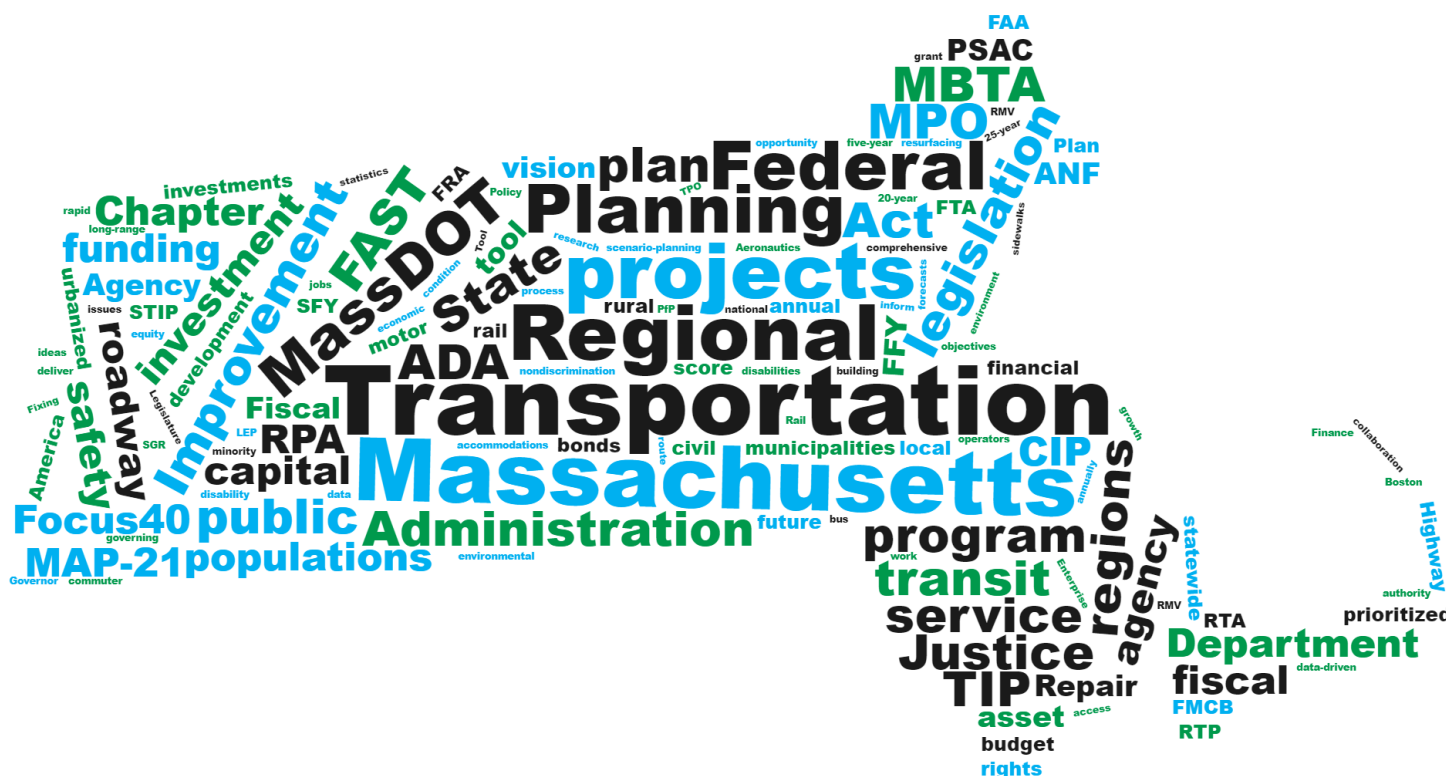
French: Si vous avez besoin d'obtenir une copie de la présente dans une autre langue, veuillez contacter le spécialiste du Titre VI de MassDOT en composant le 857-368-8580.

Italian: Se ha bisogno di ricevere queste informazioni in un'altra lingua si prega di contattare lo Specialista MassDOT del Titolo VI al numero 857-368-8580.

Khmer: ប្រសិនបើលោក-អ្នកត្រូវការបកប្រែព័ត៌មាននេះ សូមទាក់ទងអ្នកឯកទេសលើជំពូកទី របស់ តាមរយៈលេខទូរស័ព្ទ 857-368-8580

إن كنت بحاجة إلى هذه المعلومات بلغة أخرى، يُرجى الاتصال بأخصائي الفقرة السادسة على الهاتف Arabic: 8580-368-857

## Glossary of Terms



## Americans with Disabilities Act of 1990 (*ADA*)

The ADA is a federal civil rights law mandating equity of opportunity for individuals with disabilities. The ADA prohibits discrimination in access to jobs, public accommodations, government services, public transportation, and telecommunications.

MassDOT ADA Website

US Department of Justice ADA Website

## American Recovery and Reinvestment Act of 2009

The American Recovery and Reinvestment Act (ARRA) was a fiscal stimulus signed by President Obama on February 17, 2009. It ended the Great Recession in July 2009. ARRA created jobs by funding shovel-ready public works projects with \$46 billion dedicated to transportation and mass transit projects.

## Chapter 90

Chapter 90 refers to the Commonwealth's reimbursable municipal grant program that provides funding from general obligation bond issuances to municipalities for roadway projects, such as resurfacing and related work, rights-of-way acquisition, landscaping and tree plants, and building sidewalks among other eligible roadway projects.

**MassDOT Chapter 90 Program Website**

## Environmental Justice (EJ)



Established under Federal Executive Order 12898 and reflected in MA state policy, Environmental Justice requires federal funding recipients to identify and address disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority populations and low-income populations.

[Massachusetts Environmental Justice Policy](#)

[Executive Order 12898](#)

### **Executive Office for Administration and Finance (ANF)**

ANF is the budget and planning office for the Commonwealth that administers state transportation capital funding in the form of bonds.

[ANF Website](#)

### **Federal Transportation Partners**

MassDOT's federal transportation partners on the CIP include the Federal Highway Administration (*FHWA*), Federal Transit Administration (*FTA*), Federal Railroad Administration (*FRA*), and Federal Aviation Administration (*FAA*).

[FHWA Website](#)

[FTA Website](#)

[FRA Website](#)

[FAA Website](#)

### **Focus40**

Focus40 is the MBTA's 25-year investment plan. Focus40 was recently released and provides the framework for the MBTA's long-term investment strategy that will inform future CIPs.

[Focus40 Website](#)

### **Fiscal Year (FY)**

"Fiscal year" refers to a specific budgetary year. The United States federal fiscal year (*FFY*) begins on October 1 of the previous calendar year and ends on September 30. For example, the 2020 FFY is October 1, 2019 to September 30, 2020. The Massachusetts state fiscal year (*SFY*) begins on July 1 of the previous calendar year and ends on June 30. The 2020 SFY is July 1, 2019 to June 30, 2020. MassDOT also operates on the calendar year for some projects and programs.

### **Fixing America's Surface Transportation Act (FAST Act)**

The FAST Act (Pub. L. No. 114-94) was signed into federal law on December 4, 2015. The FAST Act authorizes \$305 billion over fiscal years 2016 through 2020 for highway improvements, motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail improvements, and research, technology, and statistics programs.

[FAST Act Website](#)

### **Massachusetts Bay Transportation Authority (MBTA)**

The MBTA provides public transit services to the Greater Boston region, including bus transit, commuter rail, and rapid transit. The agency is overseen by a five-member Fiscal and Management Control Board (*FMCB*).

[MBTA FMCB Website](#)

**Massachusetts Department of Transportation (*MassDOT*)**

MassDOT is made up of four divisions: Highway, Rail & Transit, Registry of Motor Vehicles (*RMV*), and Aeronautics, as well as the Office of Transportation Planning and Enterprise Services that supports all the divisions. As the umbrella transportation agency for the Commonwealth, MassDOT also oversees the MBTA. The agency has a Board of Directors, comprised of eleven members who are all appointed by the Governor with one designated as Chair. The MassDOT Board serves as the governing authority for the Massachusetts Department of Transportation

[MassDOT Board of Directors Website](#)

**Metropolitan Planning Organization (*MPO*)**

An MPO is a regional transportation policy-making organization consisting of representatives from local government, regional transit operators, and state transportation agencies. Federal legislation passed in the early 1970s requires the formation of an MPO for any urbanized area with a population greater than 50,000. The Commonwealth of Massachusetts has 10 urbanized regions designated as MPOs and 3 rural regions that function like MPOs. Each of the MPOs has coterminous boundaries with state-created Regional Planning Agencies (*RPAs*).

[MassDOT Regional Planning Website](#)

**Moving Ahead for Progress in the 21st Century (*MAP-21*)**

MAP-21 (Pub. L. No. 112-141) was signed into law on July 6, 2012. MAP-21 authorized over \$105 billion for FFYs 2013–2014 and created a streamlined and performance-based surface transportation program, of which many elements were carried over into the current FAST Act.

[MAP-21 Website](#)

**Planning for Performance Tool (*PfP*)**

The Planning for Performance tool is a scenario-planning tool custom-built for MassDOT that forecasts asset conditions and allows capital planners within the Divisions to consider the trade-offs between investment strategies. The tool reports future conditions compared against the desired performance target.

**Project Selection Advisory Council (*PSAC*)**

The Project Selection Advisory Council was established by the Massachusetts Legislature in Section 11 of Chapter 46 of the Acts of 2013 and was charged with developing recommendations for a more data-driven, transparent, and uniform process for the selection of projects that would be included in MassDOT's capital plans. The evaluation criteria established by PSAC are used to score CIP projects. However, state of good repair investments are not currently scored through the evaluation system recommended by PSAC, and are instead prioritized using existing asset management systems where applicable.

**Public-Private Partnership (*P3*)**

Public-private partnerships are contractual agreements formed between a public agency and a private sector entity that allow for greater private sector participation in the delivery and financing of transportation projects.

[FHWA Public-Private Partnerships Website](#)

**Regional Planning Agency (RPA)**

A Regional Planning Agency serves as a forum for state and local officials to address issues of regional importance, including the development of comprehensive plans and recommendations in areas of population and employment, transportation, economic development, land use, regional growth, and the environment.

[Massachusetts Association of RPAs \(MARPA\) Website](#)

[APA-MA RPA Website](#)

**Regional Transit Authority (RTA)**

Regional Transit Authorities provide fixed route and paratransit service in communities across Massachusetts. There are 15 RTAs in Massachusetts in addition to the MBTA.

[Public Transportation in Massachusetts Website](#)

**Regional Transportation Plan (RTP)**

The RTP is the policy and vision document of a regional MPO. This document results from regional and statewide collaboration to plan a region's transportation system. The document contains a financial plan or budget which guides and shapes the actions an MPO undertakes as they fulfill the region's visions and objectives. This document includes a 20-year vision for transportation in the region, and is updated every four years by each MPO. It serves as an important source of data for the statewide CIP.

**State of Good Repair (SGR)**

A state of good repair condition is achieved when an entity is managing an existing asset functionally, reliably, and safely within its expected life cycle to a predefined level of performance.

**State Transportation Improvement Program (STIP)**

The State Transportation Improvement Program is a compilation of the thirteen regional Transportation Improvement Programs (TIPs) prepared annually by the state's ten MPOs and three rural Transportation Planning Organizations (TPOs). It is a list of priority transportation projects (roadway and transit) organized by region and fiscal year.

**Title VI**

Title VI of the Civil Rights Act of 1964 is a federal civil rights law which prohibits discrimination against members of the public on the basis of race, color, and national origin in programs and activities receiving financial assistance. Additional federal nondiscrimination categories are contemplated under Title VI and reached by MassDOT's Title VI Program, including age, sex, disability, and limited English proficiency (LEP).

[MassDOT Title VI Website](#)

[US Department of Justice Title VI Website](#)

**Transportation Improvement Program (TIP)**

A Transportation Improvement Program is a phased five-year program of capital investments that reflects the needs of the regional transportation system, prepared by each MPO in the Commonwealth on an annual basis. Under federal regulations, a TIP must be constrained to

available funding, be consistent with the relevant long-range Regional Transportation Plan, and include an annual element or list of projects to be advertised in the first year of the TIP. Like the STIP, the regional TIP has a roadway component and a transit component.

## Universe of Projects

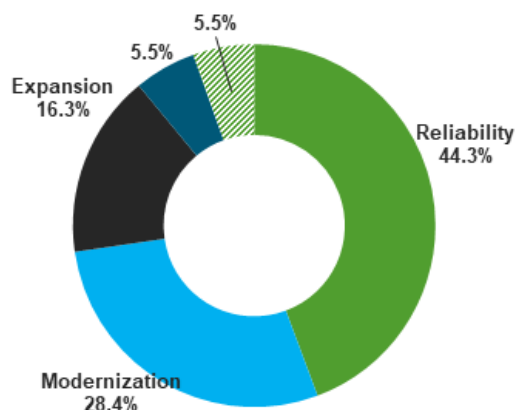
"Universe of projects" refers to the full catalog of all project ideas and concepts to be considered for investment.

# Introduction

## Program investments\* by Division

Reliability	Aeronautics	Highway	IT	MBTA	Rail	RMV	Transit	OTP	Total SFY20-24
	\$233.3 (millions)	\$4,631.8	\$52.7	\$2,804.3	\$255.5	\$1.2	\$129.7	\$2.6	\$8,111.0
Modernization	Aeronautics	Highway	IT	MBTA	Rail	RMV	Transit	OTP	Total SFY20-24
	\$20.8 (millions)	\$1,886.7	\$49.3	\$3,018.7	\$63.7	\$41.4	\$111.8	\$0	\$5,192.4
Expansion	Aeronautics	Highway	IT	MBTA	Rail	RMV	Transit	OTP	Total SFY20-24
	\$0.0 (millions)	\$537.9	\$0.0	\$2,384.0	\$7.5	\$0.0	\$0.0	\$59.0	2,988.4

Overall program spending breakdown



millions	SFY 2019-23	SFY 2020-24	Differences
Reliability	\$8,376.6	\$8,111.0	-\$265.6
Modernization	\$5,122.9	\$5,192.4	+\$69.5
Expansion	\$1,926.5	\$2,988.4	+\$1,061.9
Chapter 90	\$1,000.0	\$1,000.0	-
Planning, Enterprise Services, & Other	\$848.1	\$1,009.3	+\$161.2
<i>Five-year total</i>	\$17,274.1	\$18,301.1	+\$1,027.0

1

\*Totals may not add due to rounding



One of MassDOT's key roles is to develop and implement the Commonwealth's transportation investment strategy—the Capital Investment Plan (CIP)—in coordination with the federal government, the state legislature, municipalities, regional planning authorities (RPAs), other state agencies, and the public. The CIP includes investments that vary significantly in scale and in purpose—from small-scale maintenance projects to large-scale multimodal modernization projects. The CIP identifies and includes long-term investments and funding obligations to maintain, modernize, and expand the Commonwealth's transportation system, and is updated every year.

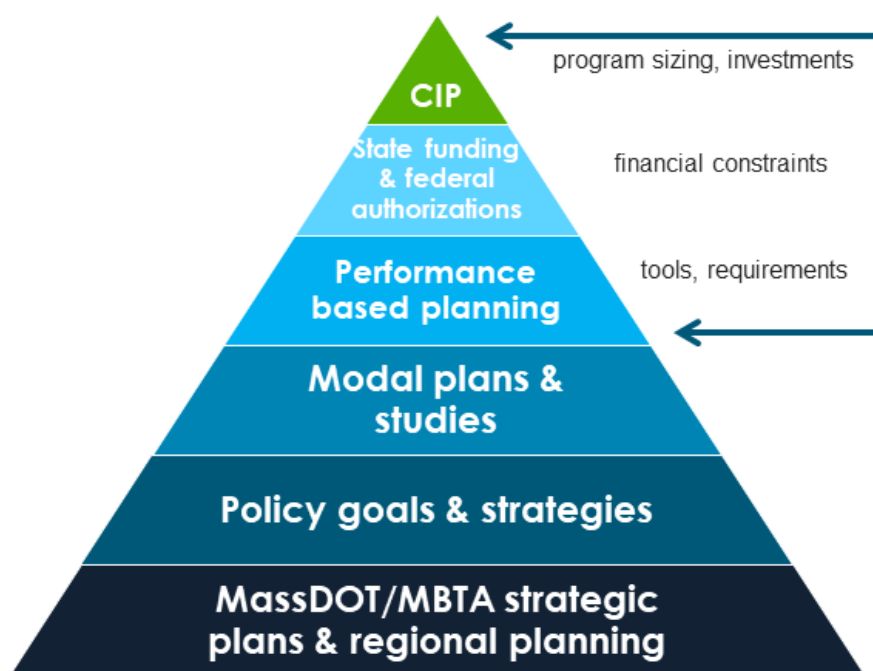


*The 2020–2024 CIP has 69 programs which guide specific types of investment.*

MassDOT and the MBTA are committed to making investments that are of the highest benefit to the residents and businesses across the Commonwealth. As the charts in this section show, the majority of investments are focused on improving and modernizing the conditions and resiliency of our existing assets with targeted investments in new transportation modes and new capacity.

## Role of Planning

### Role of Planning and the CIP

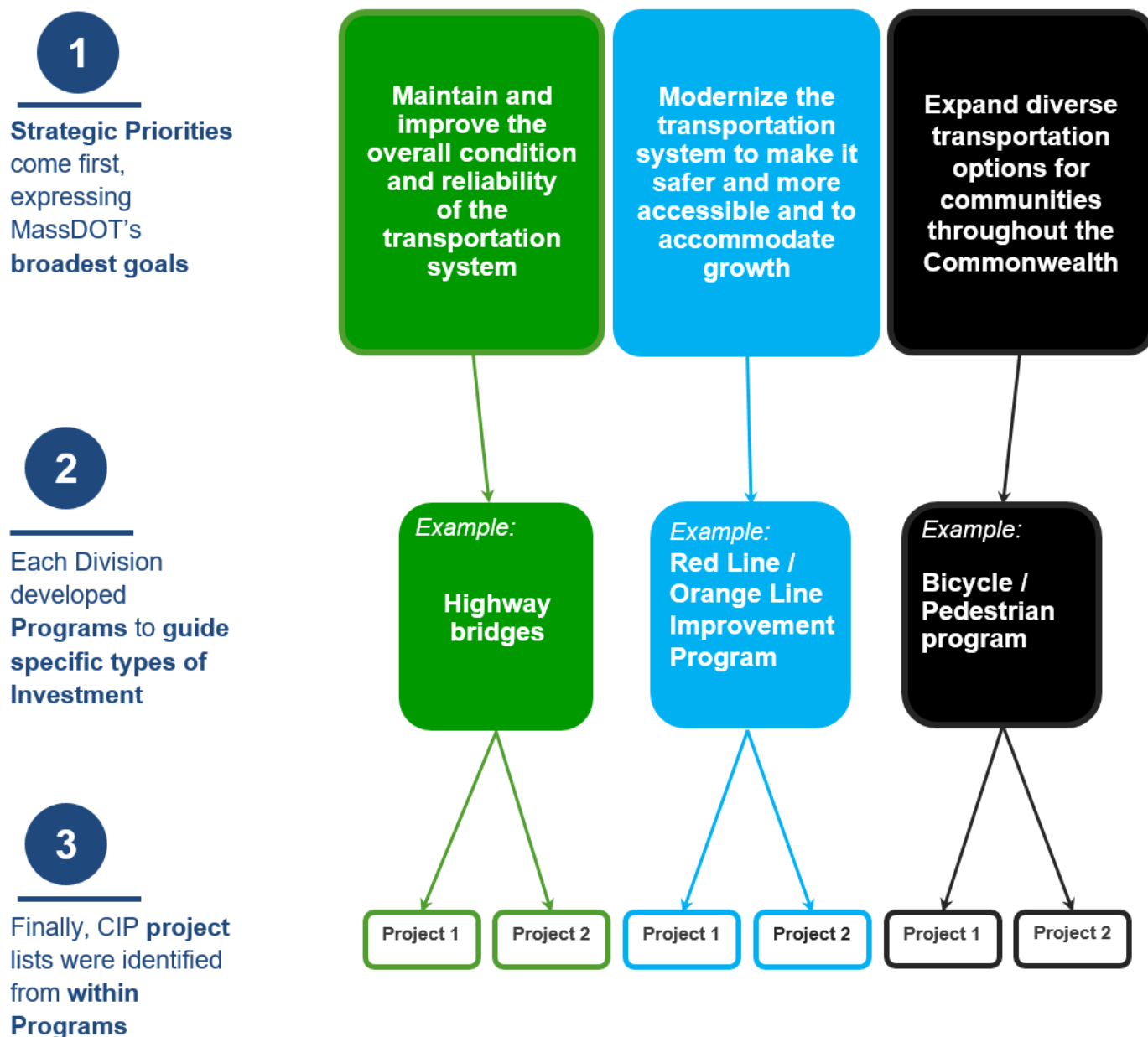


MassDOT and the MBTA are engaged in a number of planning efforts throughout the course of a year or on a multi-year basis. The planning processes typically involve a series of efforts that include other agencies and stakeholder groups. Some efforts may be focused on strategic plan development, corridor studies, regional planning, specific project studies, and/or modal planning. Whether it is a project specific study, corridor study or a regional planning effort, planning helps identify transportation needs and priorities through the participation of the public, asset management review, and best practices used elsewhere, among other criteria. Plans may advance

capital investments and/or policy and operational strategies that address identified needs or a broader set of policy goals.

The planning effort informs not only the multitude of CIP investment programs that have been already been identified but may also lead to the establishment of new investment programs.

## Investment Priorities



The three priorities for CIP investment are, in order of importance: **Reliability**, **Modernization**, and **Expansion**. These priorities express the broadest goals for MassDOT and MBTA investments.

### Reliability

Maintain and improve the overall condition and reliability of the transportation system. *(44% of all investments)*

- Necessary routine and capital maintenance
- State of good repair projects designed primarily to bring asset condition up to an acceptable level
- Asset management and system preservation projects

## Modernization

Modernize the transportation system to make it safer and more accessible and to accommodate growth. *(28% of all investments)*

- Compliance with federal mandates or other statutory requirements for safety and/or accessibility improvements
- Projects that go beyond state of good repair and substantially modernize existing assets
- Projects that provide expanded capacity to accommodate current or anticipate demand on existing transportation systems.

## Expansion

Expand diverse transportation options for communities throughout the Commonwealth. *(16% of all investments)*

- Projects that expand highway, transit, and rail networks and/or services
- Projects that expand bicycle and pedestrian networks to provide more transportation options and address health and sustainability objectives.

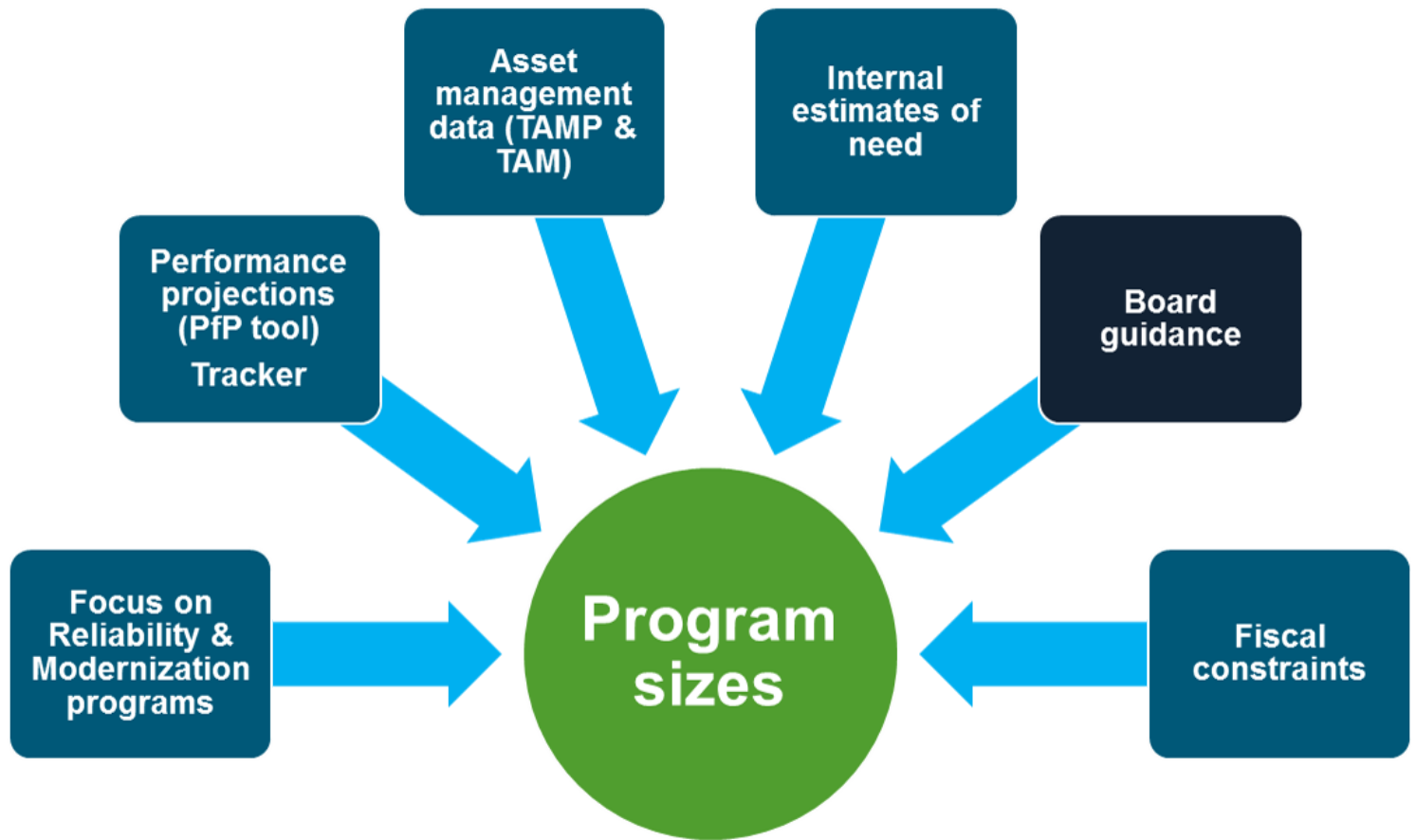
The remaining investments support our municipal partners' transportation needs through the Chapter 90 reimbursement program and the agency's Planning and Enterprise services.

## Priorities → Programs → Projects

This MassDOT/MBTA CIP update for fiscal years 2020–2024 sustains the shift in the capital budgeting process at MassDOT and the MBTA. Prior to the 2017–2021 CIP, transportation capital plans consisted almost entirely of long lists of funded projects. Previous plans did not effectively provide strategic context or demonstrable evidence that selected investments, chosen out of thousands of possible projects, would best accomplish the overall goals of the agency and of the Commonwealth.

This CIP continues to be informed by a strategic vision influenced by public and stakeholder input collected throughout the process. The vision is built around funding programs within which projects are selected based on an objective and comparative evaluation.

# Programs



Investment programs fall under each of the three priorities (reliability, modernization and expansion). These programs encompass the most important capital responsibilities and goals of the agency, including repairing pavement and bridges, purchasing new subway cars, upgrading runways at municipal airports, track, signal, and facility improvements, many other activities.

This CIP update continues to improve on the connection between investment programs and asset management through the TAMP, the TAM, the annual Tracker report (published by the Office of Performance Management and Innovation) and the PfP tool.

Some programs are refined to more concretely account for the assets within the program, while others are replaced or newly created.



Each division of MassDOT requests initial funding allocations for each program, based on a variety of inputs, including existing multi-modal asset management systems, output from the PfP tool, public input, and staff recommendations. Program budgets are set to ensure that they are sufficient to cover projects already underway. Program budgets are finalized taking all available information on asset conditions, performance goals, existing projects and new proposed investments along with fiscal constraints and Joint MassDOT/FMCMCB Boards guidance into consideration.

## Project Selection

Evaluation criteria	Description	Highway	Rail	Transit	Aeronautics	IT/RMV
<b>System preservation</b>	<i>Projects should contribute to a state of good repair on the transportation system</i>	<b>15</b>	<b>10</b>	<b>15</b>	<b>20</b>	Employ IT criteria that focuses on business value and operations impact, but also takes into account ability to support these goals
<b>Mobility</b>	<i>Projects should provide modal options efficiently and effectively</i>	<b>20</b>	<b>20</b>	<b>25</b>	<b>15</b>	
<b>Cost effectiveness</b>	<i>Projects should result in benefits commensurate with costs and should be aimed at maximizing the return on the public's investment</i>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	
<b>Economic impact</b>	<i>Projects should support strategic economic growth in the Commonwealth</i>	<b>10</b>	<b>20</b>	<b>15</b>	<b>10</b>	
<b>Safety</b>	<i>Projects should contribute to the safety and security of people and goods in transit</i>	<b>15</b>	<b>20</b>	<b>10</b>	<b>25</b>	
<b>Social equity &amp; fairness</b>	<i>Projects should equitably distribute both benefits and burdens of investments among all communities</i>	<b>10</b>	<b>10</b>	<b>10</b>	<b>5</b>	
<b>Environmental and health impacts</b>	<i>Projects should maximize the potential positive health and environmental aspects of the transportation system</i>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	
<b>Policy support</b>	<i>Projects should get credit if they support local or regional policies or plans; or state policies not addressed through other criteria</i>	<b>10</b>	<b>5</b>	<b>5</b>	<b>5</b>	

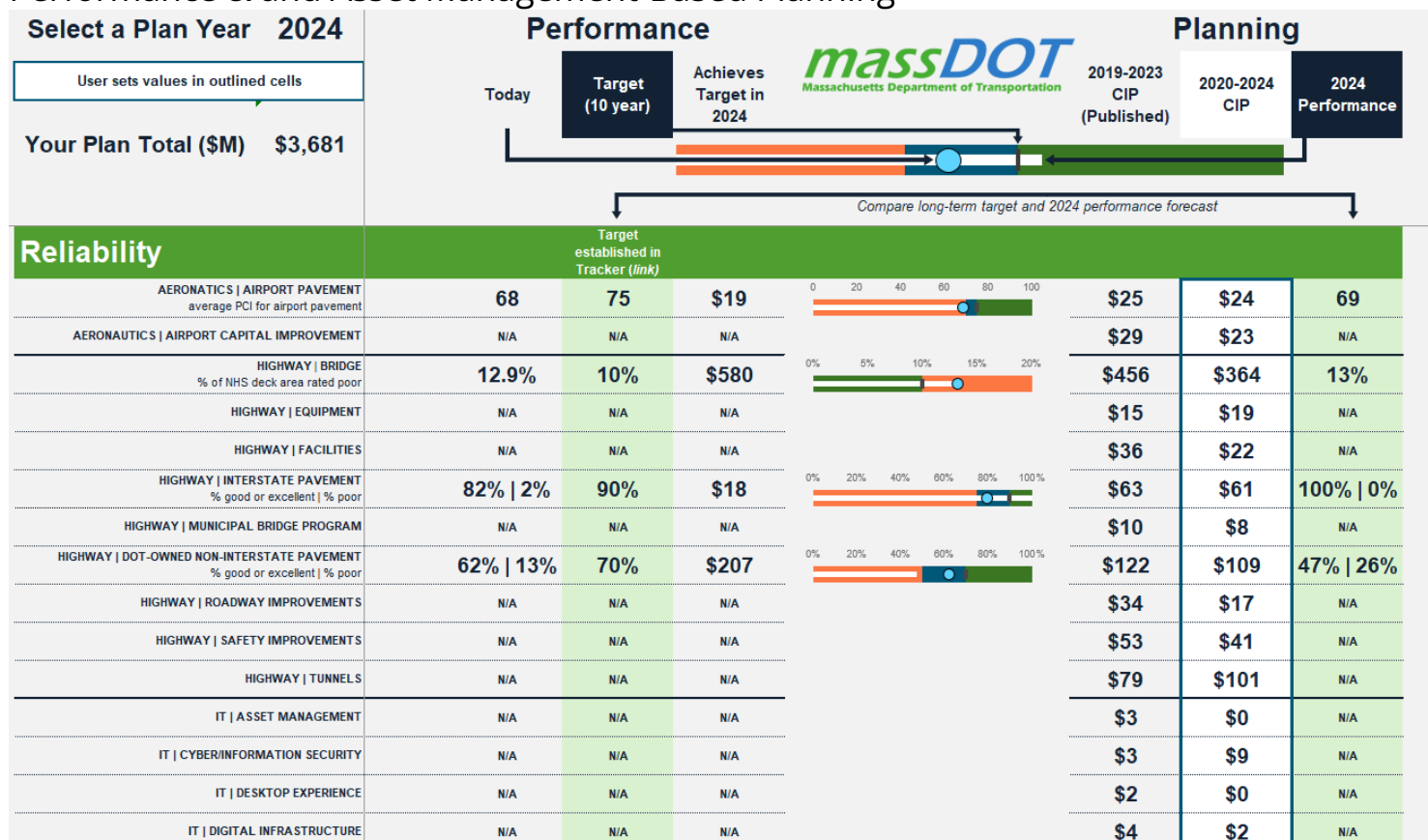
Programs are defined and budgets are sized based on the priority of the program, the types of funding available for it, and the ability of the program to move the agency towards its strategic goals. From these programs, individual investments are considered for funding.

Projects are selected from a “universe of projects,” which was initially developed for the 2017–2021 CIP by MassDOT staff based on all known project ideas, and first shared with the public in 2016. The universe of projects is continually updated as new ideas/projects are identified. Projects are scored using either the evaluation process recommended by the independent Project Selection Advisory Council (PSAC), or by one of several asset management systems utilized by the MassDOT Divisions.

For this CIP update, the scoring criteria related to economic impact have been refined for the Highway Division, Rail and Transit Division, and the MBTA. Projects are scored based on their anticipated benefits and are selected for funding based in part on their scores as well as other criteria.

Reliability investments are not scored through the evaluation system recommended by PSAC. Rather, reliability investments are prioritized using performance and asset-management-based planning, as detailed in the following section.

## Performance & and Asset Management-Based Planning



Performance criteria and goals—along with asset management data—are used to establish appropriate levels of investments in each of the CIP programs, whether it be the bridge program for the Highway Division or the track and signals program for the MBTA.

Projects are prioritized based on readiness to proceed, performance goals, and available funding within the appropriate CIP investment program.

Public input collected during the program development and project selection also informs MassDOT's and the MBTA's investment decisions and prioritization of projects to be funded in the CIP.

### Planning for Performance (PfP) Tool

The PfP continues to evolve over time as MassDOT works to improve and expand its asset management data across the agency's divisions. MassDOT is developing performance goals and targets for each program, to measure actual performance against the predictions of the PfP tool. The latest update to the PfP tool includes available target information from MassDOT's 2018 annual performance management report, [Tracker](#).

As part of the CIP effort, MassDOT is finalizing the Transportation Asset Management Plan (*TAMP*) for the Highway Division, and has completed the Transit Asset Management Plan (*TAM*) for the MBTA and the RTAs both of which reflect a ten year timeframe. These plans will inform future investment decisions across the Commonwealth, along with PfP and Tracker. This will result in more refined program sizing in future CIPs.

The Highway TAMP, prioritizes bridge and pavement condition for the National Highway System (*NHS*). Bridge investment levels are based on the condition of bridge area (as opposed to the number of bridges)—specifically the square footage of bridge deck area in good versus poor condition over time. For pavement (interstate and non-interstate) projects, annual investment levels on the NHS (14% of lane miles in the Commonwealth) are determined according to indicators reflecting long term pavement condition (percent lane miles in good or excellent condition). The final TAMP will be submitted to FHWA in June 2019.

With respect to the TAM, the MBTA prepared a transit asset management plan that covers all assets owned and/or managed by the MBTA that are used to provide public transportation services. The TAM includes performance targets and life cycle management needs. The TAM was submitted to the Federal Transit Administration in October 2018.

#### ***Asset Management***

Existing asset management systems help each MassDOT Division and the MBTA monitor system conditions and prioritize investments based on, among other factors, condition, usage, asset criticality, and maintenance and life-cycle cost impacts. Over time, MassDOT plans to increase both the rigor and the transparency of these asset management systems so that state of good repair programs and other projects can be more easily prioritized and compared to one another.

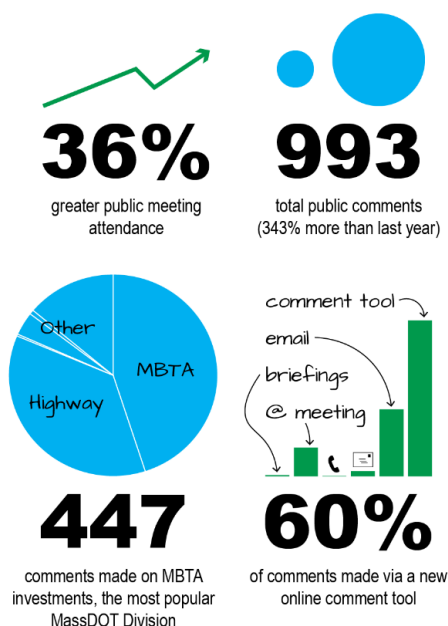
# Opportunities for Public Engagement

## Capital Investment Plan Public Comment Summary

All public comments will be responded to by appropriate MassDOT or MBTA staff.

Responses will be available at [mass.gov/cip](https://mass.gov/cip) when available.

## By the Numbers



## Public Meeting Locations



## What We Heard

- AFC 2.0
- Bus Vehicle Improvements
- Chapter 90 Funding Levels
- Commuter Rail Electrification
- Daylight Quequechan River
- East-West Rail
- First/Last Mile Transit Access
- French King Bridge Safety
- GLX Path Width
- Key Bus Route Improvements
- Mattapan Line Improvements
- MBTA Station Accessibility
- McGrath Boulevard
- More Bus Lanes
- New Canal Bridges
- North-South Rail Link
- Pre-Apprenticeship
- Red-Blue Connector
- Route 47 at Route 116, Sunderland
- RMV at Hyannis Transp. Center
- Shared Use Path Expansions
- South Coast Rail
- Worcester Line Third Track

➤ Public Support   ➤ Public Issue   ➤ Mixed Comments

MassDOT works to engage members of the public, alongside local and regional stakeholders, in its planning, project development, and project delivery through its Public Participation Plan. This plan is based on federal and state requirements and guidance for encouraging and ensuring community participation, and aims for early, continuous, and meaningful opportunities for engagement.

Investments within the CIP are planned and programmed through varying processes depending upon MassDOT Division, investment priority, and funding source, as outlined in the previous sections. To engage with these processes, frequently the best place to start is at your MPO. The public has opportunities to provide feedback on selected projects, regional priorities, and performance and asset management targets that drive investment.

As investments in the CIP are designed—typically through MassDOT, MBTA, or the RTAs—project managers reach out to affected members of the public for more direct, nuanced feedback. Through MassDOT and the MBTA, this process also follows the Public Participation Plan.



*For calendars of project-specific public hearings, follow these links!*

***Highway Division Public Hearings Calendar***

***MBTA Events Calendar***

## Engagement in the CIP document

The 2020–2024 CIP document underwent a three phase public participation process.

**Phase 1** focused on engagement with established stakeholders and advocacy groups, including the identification of new groups to fill gaps in representation from previous years. During this phase, MassDOT staff met with multiple statewide advocacy groups and presented on the CIP process to internal and external stakeholders.

**Phase 2** consisted of the public comment period, which occurred from May 21st, 2019 to June 10th, 2019. The comment period included a series of 13 public hearings (link available only in online story) across the Commonwealth. MassDOT also received comments via legislative briefings, over the phone, via email and regular mail, and through a new online interactive tool showing the investments.

For the 2020–2024 CIP, MassDOT saw a marked increase in public feedback during the public comment period, as illustrated in the related graphic. By the numbers, MassDOT saw 36% greater public meeting attendance, and 343% more comments (resulting in 993 comments in total) compared to the 2019–2023 CIP. The majority of the comments were for investments in the MBTA (447 or 45%) and in the Highway Division (361 or 36%). Most comments received (60%) were made via the new online comment tool. Below is a list of topics we received a large number of comments.

### Public Support

- bus vehicle improvements
- commuter rail electrification
- daylighting the Quequechan River
- East-West Rail
- Key Bus Route improvements
- more bus lanes
- new Cape Cod Canal bridges
- North-South Rail Link
- pre-apprenticeship program
- Red-Blue Connector
- RMV at the Hyannis Transportation Center
- shared use path network expansion
- South Coast Rail

- Worcester Line third track

#### Public Issue

- Chapter 90 funding levels
- first and last mile transit access
- French King Bridge suicide barriers
- GLX shared use path width
- MBTA station accessibility
- McGrath Boulevard
- route 47 at route 116 in Sunderland

#### Mixed Comments

- AFC 2.0
- Mattapan Line improvements

**Phase 3** required analysis of and response to all received comments. During this phase, public comments are distributed to relevant project managers, program managers, administrators, and others across all MassDOT Divisions for review and a formal response. These responses will be aggregated into a response document and shared via this document, directly on the CIP website, and via email and/or mail to individual commentors. This process is currently underway.

All public feedback and comment received through the CIP's public engagement process is also shared directly with project managers within MassDOT and the MBTA, and with partner agencies such as the MPOs and the RTAs, to inform future project selection and regional priorities, and to inform design and project development.

After the public process is complete, MassDOT will review every aspect of the public engagement process for potential improvements for the following year's CIP.

## What's New



For the past three years MassDOT and the MBTA have updated the CIP to respond to the latest funding estimates, investment programs, project cash flows revisions, new investments and programs, and made procedural improvements.

This is the fourth update to the CIP, adding SFY 2024. The majority of the current CIP was set in motion with SFY 2017–2021 plan. **Over one-third of the CIP is dedicated to projects with our municipal partners.**

### Priorities

This CIP update maintains the strategy to first invest in the reliability of the transportation system, followed by modernization and then expansion. For the 2020–2024 CIP emphasis has shifted to modernization of our assets with the creation of a new modernization program, Green Line Transformation, and the reallocation of investments associated with that program that were previously reliability investments. Combined, however, Reliability and Modernization account for approximately 73% of our investments, consistent with the 2019–2023 CIP.

### Programs

This CIP update has changed some programs to better reflect the needs of modal divisions and asset management priorities. There are 69 investment programs for this CIP that incorporate four new programs, such as Green Line Transformation. (See details on the program changes.) Major

multi-faceted projects—such as the Green Line Extension and South Coast Rail—were shifted into their own programs in the 2019–2023 CIP.

### Project Selection

This CIP update reflects changes in the methodology for scoring economic impact used in the evaluation of modernization and expansion investments. The revised methodology is based on recommendations from a consultant team that performed rigorous stakeholder and public engagement across the Commonwealth to determine which components of economic development were most meaningful to not only economic development stakeholders, but also to the business community and the public at large. The results of this stakeholder and public engagement indicated that the most meaningful economic development factor that had not been a part of the existing methodology was access to jobs. As such, each modal division across MassDOT has incorporated ways to measure job access as part of their capital project scoring.

Other notable scoring updates scoring for access to housing (to reflect the [Governor's Housing Choice Initiative](#)), connections to freight corridors (in alignment with the [Massachusetts Freight Plan](#)), and location in Priority Development Areas.

### Planning for Performance Tool

The PfP tool was revamped to more clearly reflect the programs contained in this CIP update. The tool also provided updated data and analysis for some programs. The tool will continue to be updated in the future to forecast the performance of as many programs as possible.

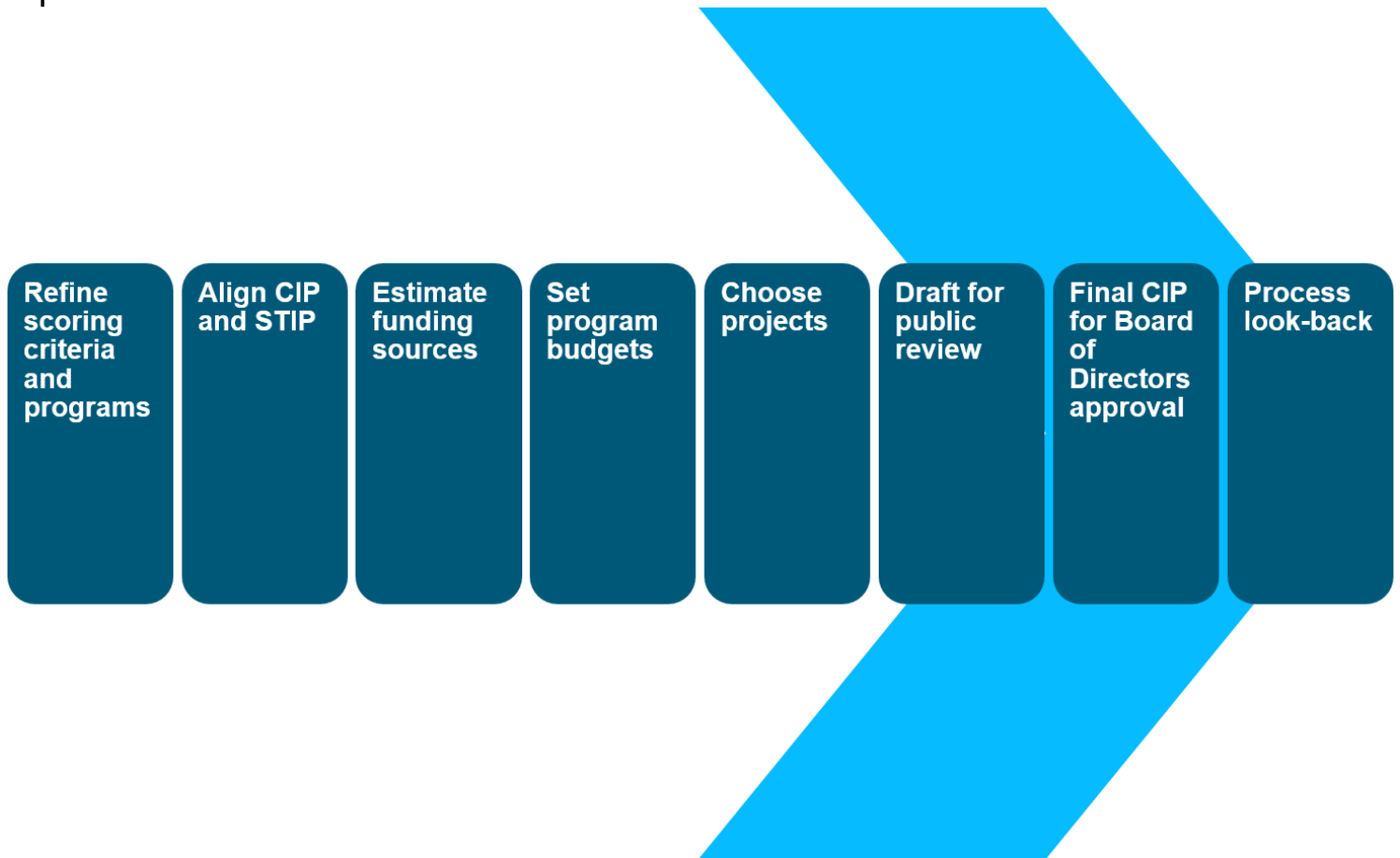
### Project Intake

The Massachusetts Project Intake Tool (*MaPIT*) was launched in 2017 to help our municipal partners initiate Highway Division projects to be considered for investment by MassDOT or their respective MPO. This tool streamlines and improves what used to be a paper-driven process, which required substantial manual entry of data. The tool will continue to be improved and will be expanded to other divisions, including the Rail and Transit Division and the MBTA.

### CIP and STIP Alignment

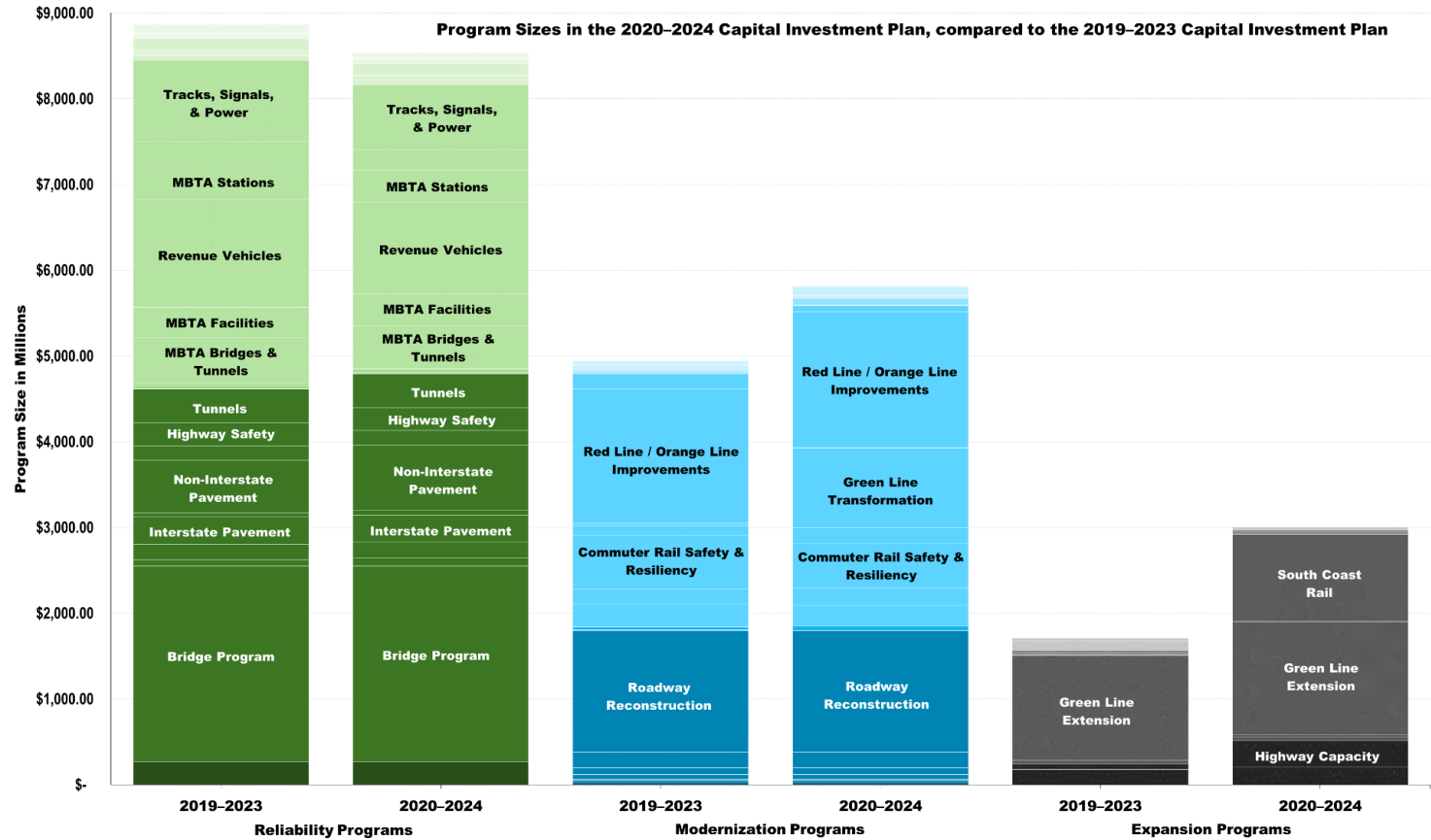
The development timelines of the CIP and STIP were aligned so that all applicable investments are identified in each document. This is important for the CIP to more accurately reflect regional priority projects identified by our MPO partners. The development of an electronic STIP (*e-STIP*) is underway which may be available for use in developing the 2021–2025 CIP.

## Update Process



The accompanying graphic outlines the process for the development of this CIP. The process begins with the refinement of scoring criteria and program descriptions. Next, the program budgets are set based on need and overall available funding, and the size of various funding sources are estimated based on the most current federal and state guidance. The STIP process then concludes, identifying the regional priorities and project readiness for federally-funded projects. State-funded projects are then selected for inclusion in funding programs, and a draft of the final CIP is developed. The resulting draft circulates for public review, is finalized for approval by the Joint MassDOT/FMCB Board of Directors. Once adopted, the process is reviewed for potential improvements for next cycle.

Program Changes



Program	Program Budgets (millions)	
Highway Division	FY19–23	FY20–24
Equipment		
Program size based on identified needs in the Districts	\$75.0	\$96.4
Non-Interstate Pavement		
Program includes additional state funds to improve the condition of non-interstate pavement	\$611.9	\$766.9
IT	FY19–23	FY20–24
Asset Management		
Program previously contained Division-specific asset management projects driven by the business. The projects and funding have been moved into a more appropriate program: Enterprise, BPR (Business Process Reengineering), and Automation	\$15.5	\$3.8
Cyber/Information Security		
Increase due to Executive Office of Technology Services and Security (EOTSS) mandates and directly correlates to improvement in security-oriented foundational infrastructure, firewalls, web gateways, and other cloud investments	\$15.0	\$20.5



**Desktop Experience**

Program increased to allow for institution of best practices, state of good repair policies for end user hardware and software replacement and integration	\$9.1	\$10.5
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**Digital Infrastructure**

Decrease in program to shift focus to Cyber/Information Security investments	\$19.9	\$18.2
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**MBTA**

FY19–23

FY20–24

**Bridge and Tunnels**

Program size reflects costs reallocated to Green Line Transformation (GLT) program	\$544.7	\$506.9
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**Facilities**

Program size reflects carryover from FY19 and reallocation to GLT	\$343.0	\$370.6
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**Revenue Vehicles**

Program size reflects costs reallocated to GLT	\$1,267.0	\$1,068.8
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**Stations**

Program size reflects costs reallocated to GLT	\$428.0	\$372.7
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**Systems Upgrades**

Program size reflects costs reallocated to GLT	\$245.0	\$234.0
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**Track, Signals, and Power**

Program size reflects costs reallocated to GLT	\$938.0	\$759.8
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**Rail Division**

FY19–23

FY20–24

**Bridge Reliability**

Program sized to address identified needs	\$56.2	\$55.4
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**Facility Reliability**

Program sized to address identified needs	\$16.7	\$15.7
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**Grade Crossings**

Program sized to consider available federal funding	\$36.5	\$34.4
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**Track and Right-of-Way Reliability**

Program sized to address number of right of way projects that require maintenance or significant investment to maintain class of service	\$138.3	\$137.2
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**Vehicle Reliability**

Program size maintains the similar funding level as last plan to address SGR issues to maintain or restore usage of the facilities	\$4.7	\$6.6
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Transit Division	FY19–23	FY20–24
<b>RTA Facility and Vehicle Maintenance</b>		
Program sized to address other needs identified by the RTAs	\$17.5	\$8.3
<b>RTA Vehicle Replacement</b>		
Program includes funds purchase of additional electric vehicles for RTAs fleet as well as identified needs	\$92.3	\$53.7
<b>Workforce Transportation Options <i>new</i></b>		
New competitive grant program that provides funds for workforce transportation options and leverages private sector resources. This replaces the MassRides program	\$ -	\$9.9

Program	Program Budgets <i>(millions)</i>	
IT	FY19–23	FY20–24
<b>Customer Digital Experience</b>		
Program costs decreased due to lower costs than anticipated with move to the Mass.gov platform and increased investment needs in other IT modernization programs	\$10.0	\$4.7
<b>Enterprise/BPR/Automation</b>		
Program reflects specific application and business process improvement needs as identified by MassDOT Divisions and needs for our critical enterprise systems	\$19.5	\$25.1
<b>Workforce Productivity</b>		
Program reflects specific needs related to providing better tools to shared services, e.g. Human Resources, Finance, Legal, Planning, etc.	\$14.2	\$19.3
MBTA	FY19–23	FY20–24
<b>Accessibility</b>		
Program size reflects costs reallocated to GLT	\$265.0	\$243.9
<b>AFC 2.0</b>		
Program size reflects updated AFC 2.0 cash flows	\$169.0	\$209.8
<b>Commuter Rail Safety and Resiliency</b>		
Program size reflects completion of PTC	\$630.0	\$510.7
<b>Customer Experience and Technology</b>		
Program size reflects costs reallocated to GLT	\$116.0	\$184.4
<b>Green Line Transformation (GLT) <i>new</i></b>		
Program will improve the Green Line quality of service, including	\$ -	\$925.0

enhanced reliability, capacity, and accessibility, through fleet modernization, infrastructure / facilities updates, and state-of-the-art technology

### Process Improvement and Innovation

Program size reflects updated program needs. \$ 25.0 \$13.2

### Red Line / Orange Line Improvements

Program size reflects updated RL/OL cash flows \$1,565.7 \$1,580.7

### Risk Management and Mitigation

Program size reflects costs reallocated to GLT \$178.0 \$68.5

## Rail

### Facility Modernization

Program size reflects completion of one-time MassDOT commitments for Springfield Union Station \$13.3 \$8.2

### Track and Right-of-Way Modernization

Program size reflects completion of one time MassDOT commitments for Springfield Union Station \$ 31.1 \$61.1

## Registry of Motor Vehicles

### ATLAS

Program reflects completion of project and includes implementation of International Registration program \$61.5 \$35.1

### Customer Service Modernization

Program sized to include additional service needs for Cape Cod region \$3.8 \$4.8

## Transit

### RTA Facility and System Modernization

Program adjusted to accommodate electrification, AFC 2.0, and RTA facility needs \$26.3 \$97.2

### RTA Replacement Facilities

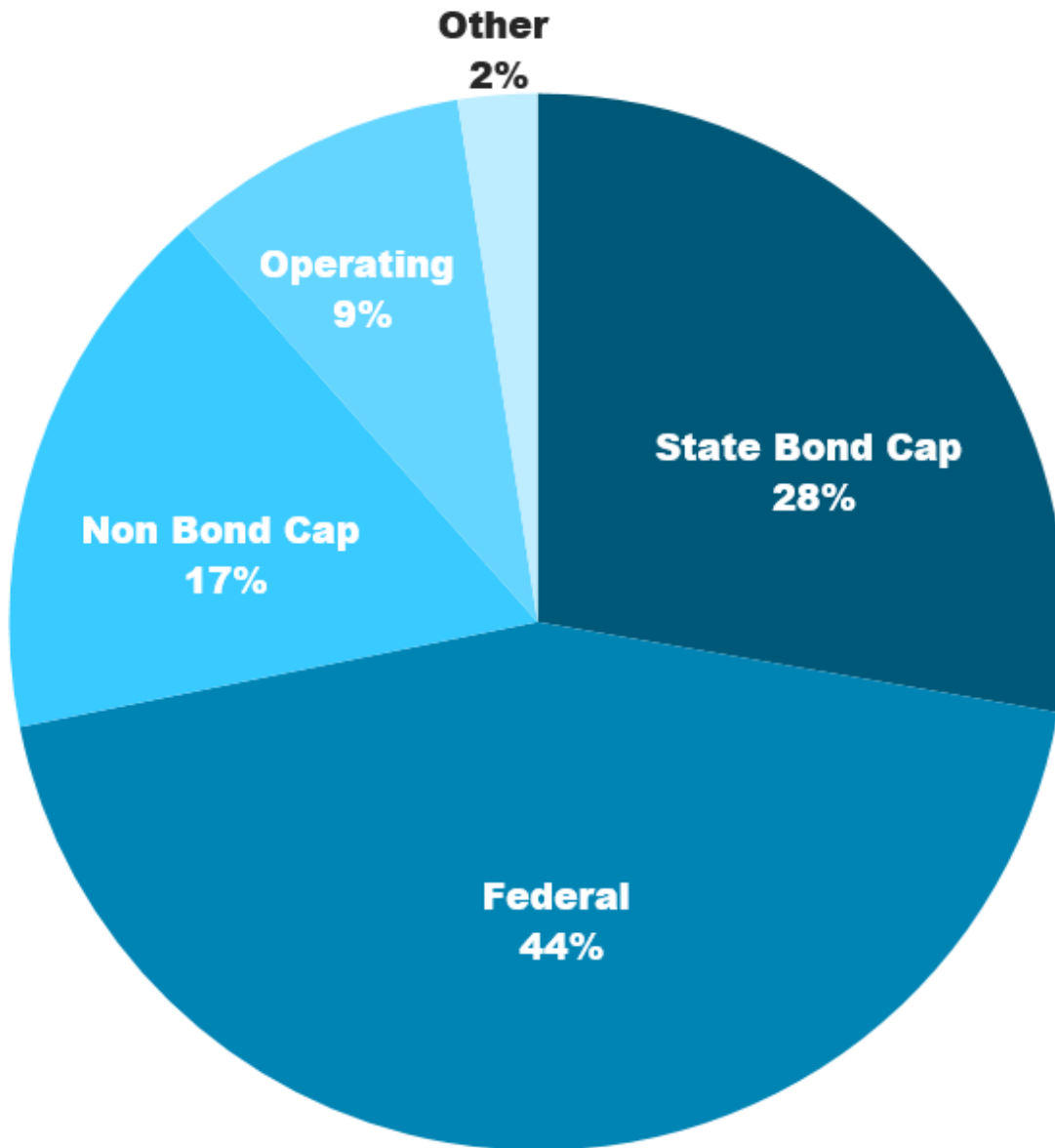
With completion of the PVRTA and FRTA facilities, program sized to address routine modernization efforts for RTA replacement facilities and facility upgrades, and charging infrastructure to accommodate fleet electrification \$16.4 \$8.1

Program	Program Budgets (millions)	
Highway Division	FY19–23	FY20–24
Shared Use Paths		

Size based on current portfolio of projects within the SFY 2019 CIP and FFY 2019 STIP, and includes allocation for program management / development costs. Program is consistent with Bicycle and Pedestrian Plans	\$180.6	\$203.2
MBTA	FY19-23	FY20-24
<b>Expansion Projects, non-GLX</b>		
Reflects current projects' cash flows	\$59.0	\$43.0
<b>Expansion Project Development <i>new</i></b>		
Program will advance initial planning for projects identified as "next priorities" in Focus40	\$ -	\$25.0
<b>Green Line Extension</b>		
Reflects updated program cash flows	\$1,227.0	\$1,326.4
<b>South Coast Rail</b>		
Reflects full funding for Phase 1 of the South Coast Rail program; program management transferred to MBTA (from Rail Division) for 2020–2024 CIP	\$ 108.01	\$1,009.6

## Funding

## MassDOT and MBTA Spending by Source SFY 2020–2024



The CIP is funded from a mix of federal, state and local sources, each of which varies with respect to its flexibility in use for different elements of the transportation system. Some funding sources must be spent on specific policy goals or modes, while others may be applied across the transportation system.

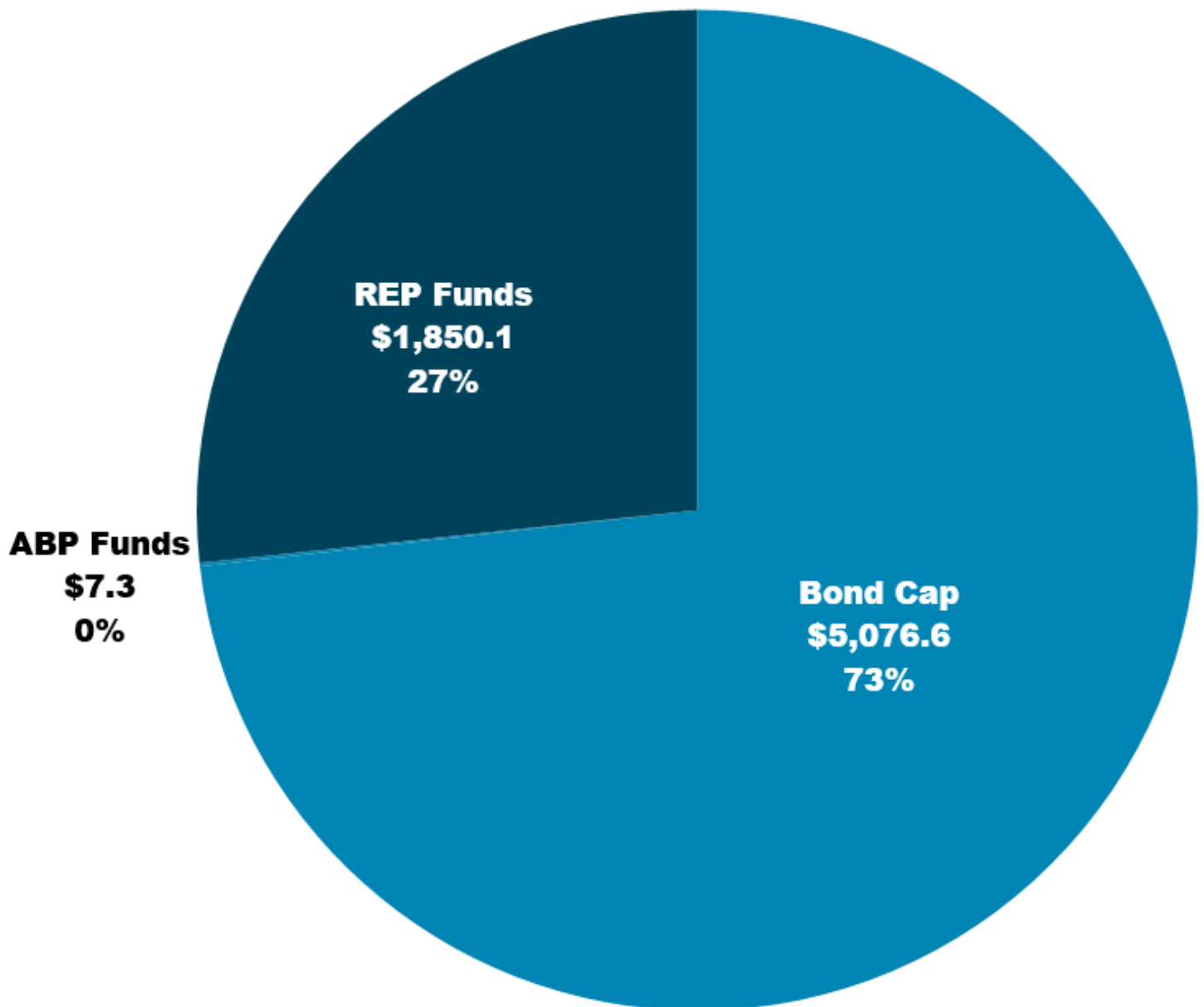
The 2020–2024 CIP reflects substantial additional federal and state funding (approximately \$1.7 billion) over the 2019–2023 plan. Additional federal funds include new federal formula funds, Federal Railroad Administration grants and Federal Transit Administration grants. New state sources include additional bond cap, special obligation bonds (REP funds), pay-go capital funds (net toll revenue)s, MBTA revenue bonds, and private contributions.

For MassDOT, the priority for the additional federal and state funds is on three asset classes in need of additional investment: non-interstate pavement, bridge condition, and the Metropolitan Highway System (I-90 east of Route 128, and the Sumner, Callahan, Tip O'Neill and Ted Williams Tunnels) along with investments in our bicycle and pedestrian infrastructure.

For the MBTA, additional funds are dedicated to state of good repair and modernization investments (capital needs), the Green Line Transformation program, Phase 1 of the South Coast Program, and the Expansion Project Development program (which advances the initial planning and design for projects identified as "next priorities" in the Focus40 plan).



## State Funding

**SFY2020–2024 State Funding  
(\$ millions)**

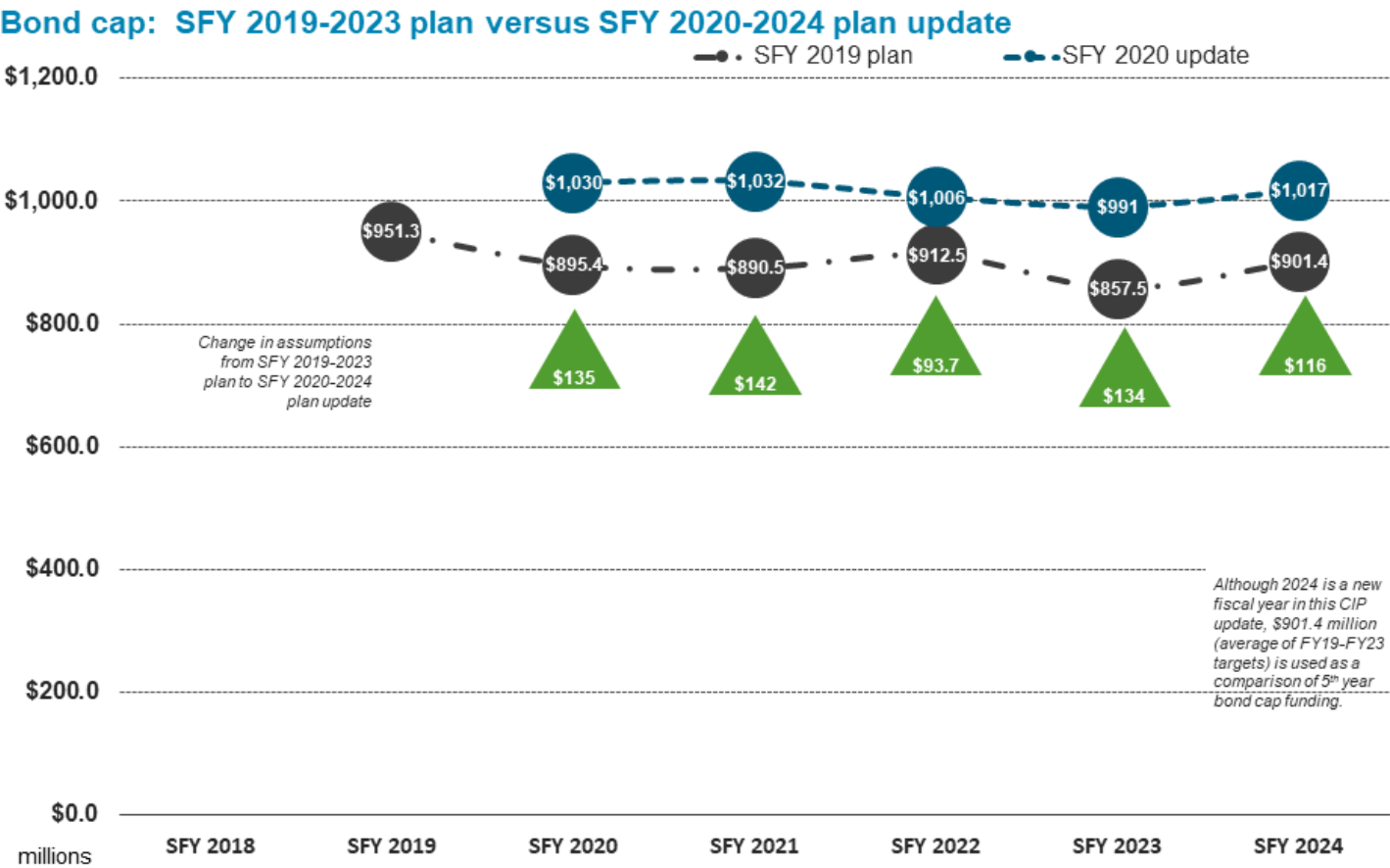
The primary source of state transportation capital funding is bonds issued by the Commonwealth. Debt is issued to investors and paid back with interest over the course of the bond's life, similar to a mortgage for the purchase of a house.

The two main types of bonds issued for infrastructure spending are General Obligation bonds (backed by the full taxing authority of the Commonwealth) and Special Obligation Bonds (backed primarily by gas taxes and Registry fees), both of which are administered by the Executive Office of Administration and Finance. Special Obligation Bonds have primarily been dedicated to support significant MBTA investments such as the Green Line Extension program and the Red Line/Orange Line Improvements program.

For the 2020–2024 CIP additional Special Obligation bonds (REP funds) along with the additional bond cap, are the funding sources for Phase 1 of the South Coast Rail program.

Bond Cap Comparisons

# Plan update: bond cap comparisons



This chart compares the bond cap targets estimated for SFY 2020–2024 CIP. Because SFY 2024 is a new fiscal year, for comparison purposes, the SFY2019–2023 bond cap is averaged and that average amount is used for the comparison of the bond cap target to amount available in SFY 2024.

The 2020–2024 CIP reflects an increase in the bond cap allotted to MassDOT. A portion of the increase is targeted to projects that will improve the asset condition of the Commonwealth's non-

interstate pavement on the National Highway System (NHS), and the balance (\$460.7 million) will fund the construction of Phase 1 of the South Coast Rail Program.

MassDOT has three tolled facilities—Western Turnpike, Metropolitan Highway System, and Tobin Bridge. The projected annual net revenues on each of the toll facilities (after operating expenses and debt service payments (MHS only)) are available for capital projects as pay-go capital funds. The estimated pay-go capital funds (net toll revenues excluding reserves) for 2020–2024 are approximately \$290 million greater (30%) than included in the 2019–2023 CIP. The increase in available funding reflects stabilization of traffic revenues and transaction volumes following the implementation of all-electronic tolling.

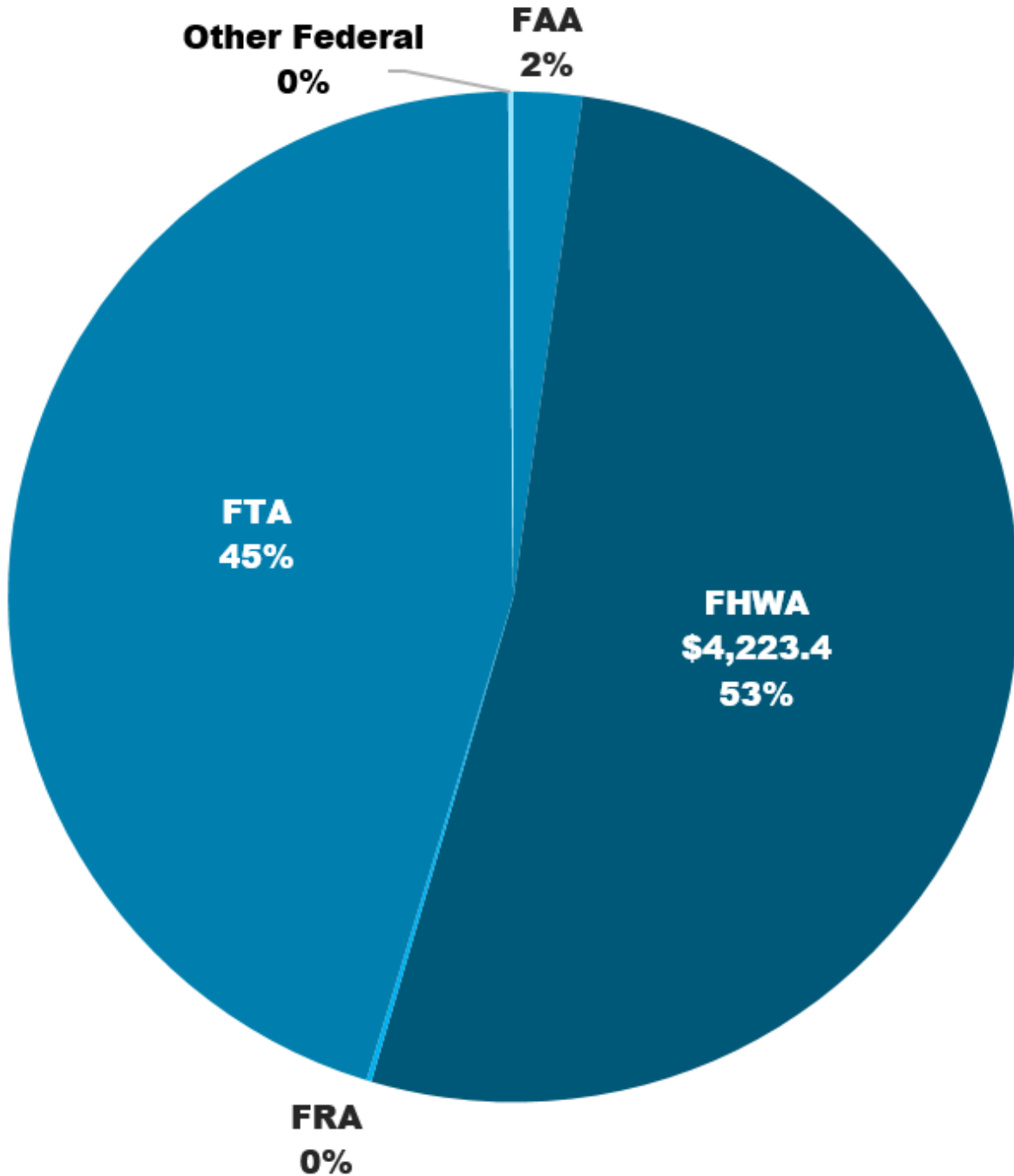
For the 2020–2024 CIP, there is approximately \$350 million in additional MBTA revenue bond capacity available to support the MBTA's capital program. The MBTA's capacity to issue more revenue bonds is contingent on the operating budget's ability to support the increased debt service. Market variables such as interest rates, and credit spreads, among other variables will impact the cost of any new debt and will drive the amount of bond proceeds available to support the capital program from future debt issuance.

New funding for the 2020–2024 CIP includes new private contributions (\$27.1 million):

- \$9.6 million related to the project and FRA grant received to improve the New England Central Railroad corridor; and

- \$17.5 million in development funds that will be used to undertake the rehabilitation of the ventilation system for the Prudential Tunnel, a critical component of the MHS.

## Federal Funding

**SFY 2020–2024 Federal Funding  
(\$ millions)**

Massachusetts receives federal funding to improve our transportation system from several U.S. Department of Transportation agencies, including Federal Aviation Administration (FAA), FHWA, FTA, and Federal Railroad Administration (FRA). FAA provides funding to the Commonwealth's regional, public use airports through MassDOT's Aeronautics Division. Funding is provided in the form of grants for capital investments. FHWA provides multi-modal funding to MassDOT, which is divided

between "regional funding" allocated to MPOs for municipal investments, and statewide funding for MassDOT-owned assets. Some FHWA funds may also be "flexed" to transit and other surface transportation investments. FTA provides funding to MassDOT, the MBTA, and the Commonwealth's RTAs in the form of grants for capital investments. FRA provides funding to MassDOT and the MBTA in the form of grants for capital investments for railroad improvements.

The 2020–2024 CIP and STIP includes approximately \$154 million in additional federal highway infrastructure program funds. Of the additional federal highway funds, approximately \$46.4 million are to be used for projects on the National Highway System (NHS); \$72.5 million can be used on any federal-aid eligible project (a portion can be used on projects anywhere in the Commonwealth and the balance distributed among defined areas;) and \$34.1 million can be used on any federal-aid eligible bridge project.

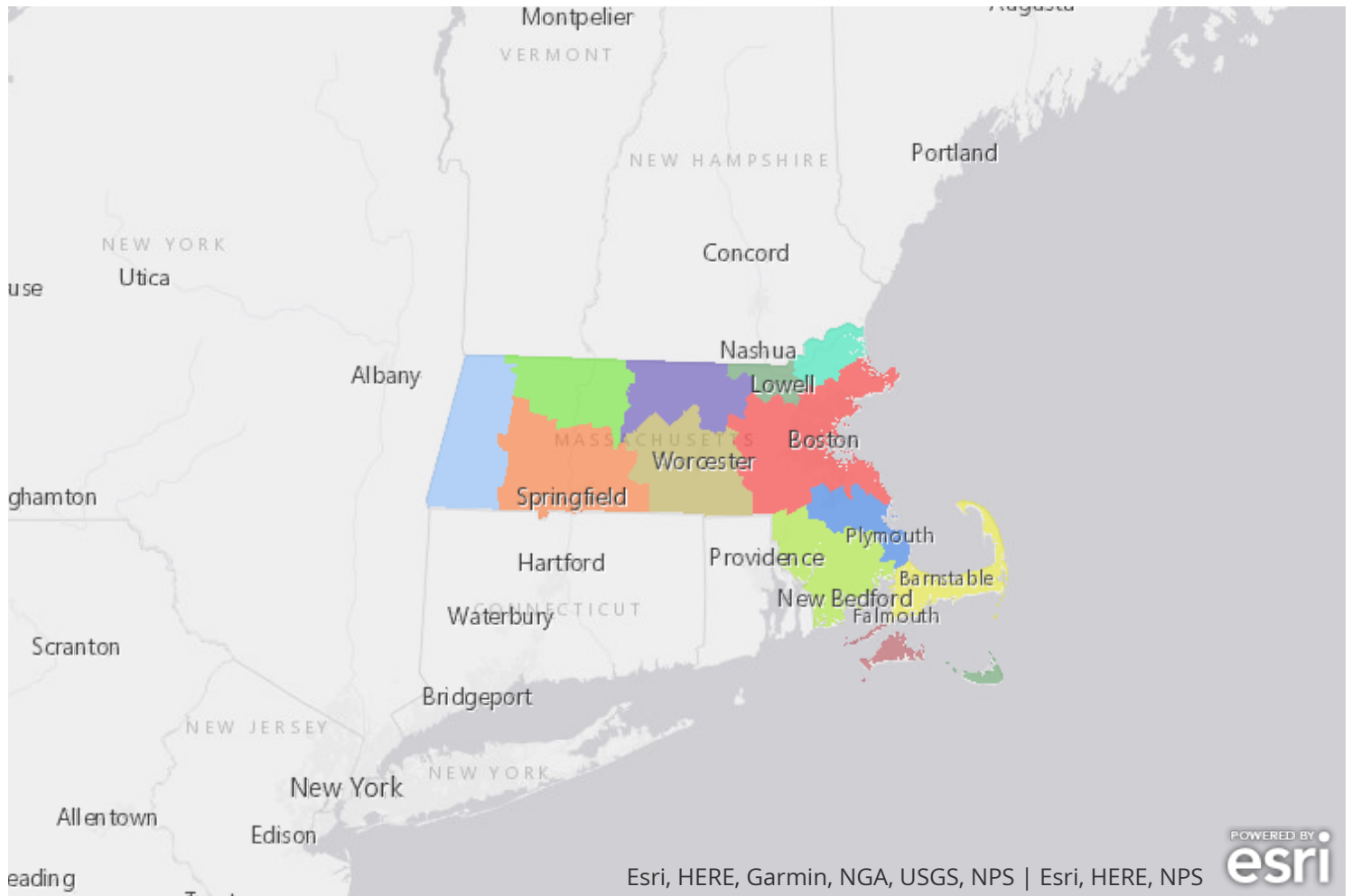
This new federal funding has been programmed (obligated or committed) for projects included in the 2020–2024 State Transportation Improvement Program (*STIP*), and is reflected in the CIP as FHWA reimbursements (*i.e.* spending). The STIP is a federally-required planning document that lists all federally funded transportation projects, both highway and transit, by region of the Commonwealth and by federal fiscal year.

The Rail and Transit Division was awarded a \$10.8 million BUILD (*Better Utilizing Investment to Leverage Development*) grant to upgrade the New England Central Railroad corridor in Massachusetts to address state of good repair and improve load carrying capacity of the rail corridor. The improved load carrying capacity will provide long term local, regional, and national benefits. New England Central Railroad is providing matching funds to the state funds in the amount of \$9.6 million to support the corridor improvements.

Federal Transit Administration/Federal Railroad Administration recently awarded the MBTA two Positive Train Control (*PTC*) grants to assist with the deployment of PTC systems. The funds are awarded by FRA but were flexed to FTA. A total of \$27.5 million is associated with this grant program:

- August 2018 – Awarded \$20 million in federal funds; and
- December 2018 – Awarded \$7.5 million in federal funds.

## CIP and the STIP



## MPO Boundaries

- Berkshire
- Boston Region
- Cape Cod
- Central Massachusetts
- Franklin
- Martha's Vineyard
- Merrimack Valley
- Montachusett
- Nantucket
- Northern Middlesex
- Old Colony
- Pioneer Valley
- Southeastern Massachusetts



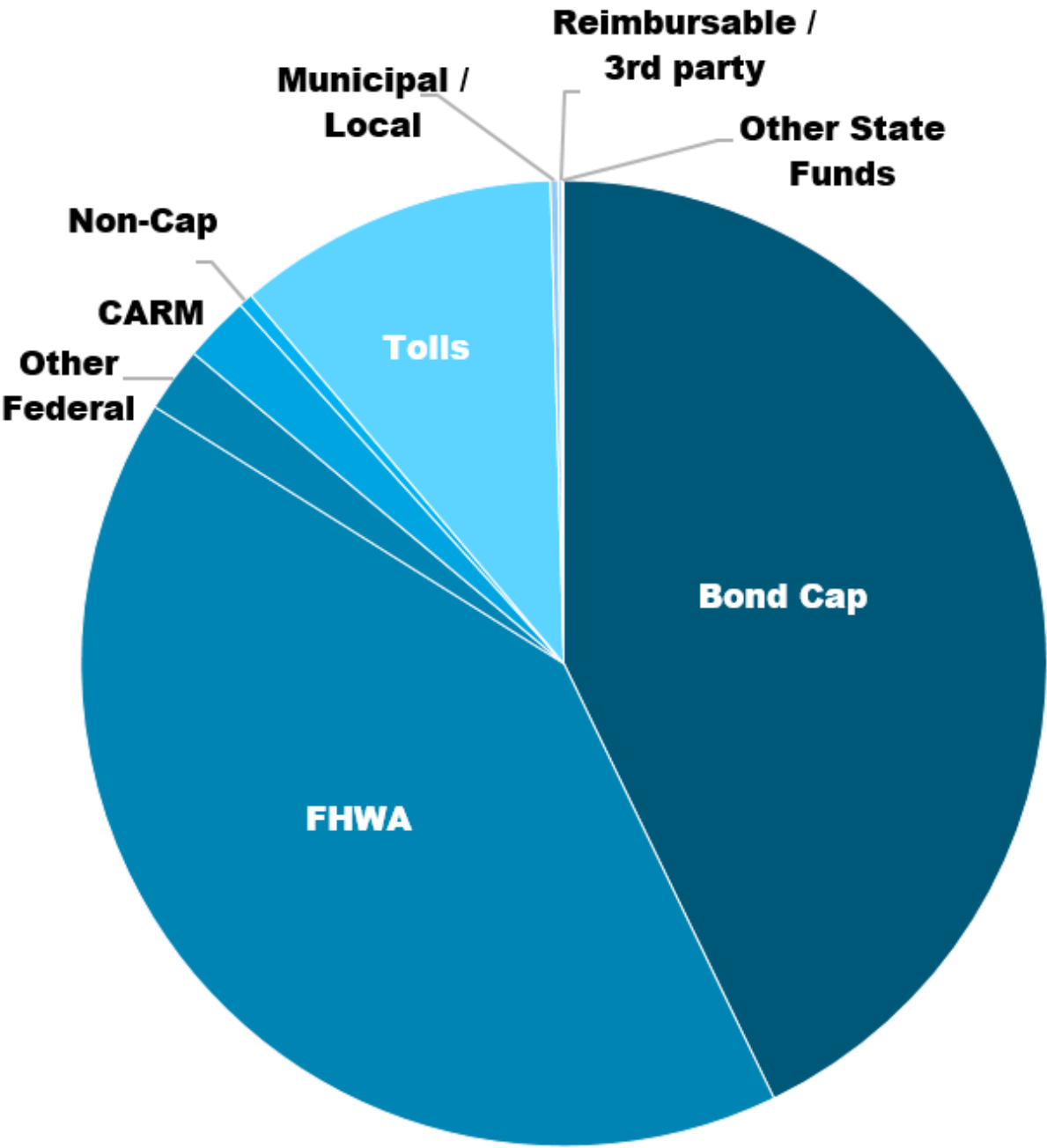
MassDOT annually produces another multi-year capital planning document called the State Transportation Improvement Program (*STIP*). While similar, the STIP and CIP are not the same. The STIP is a federally-required planning document that lists all federally funded transportation projects, both highway and transit, by region of the Commonwealth and by federal fiscal year. The STIP is subject to approval by the U.S. Department of Transportation and the U.S. Environmental Protection Agency, as well as by the Massachusetts Department of Environmental Protection. The STIP is developed in part by compiling the individual Transportation Improvements Programs (*TIPs*) from the 13 federally-recognized transportation planning regions of the Commonwealth.

While the CIP identifies all of the sources and uses of transportation funding available to Massachusetts, the STIP is dedicated to federal funding and federally funded transportation projects. The CIP also includes state capital funding for projects advanced by the Rail and Transit Division, the Aeronautics Division, and the Registry of Motor Vehicles, which do not generally receive funding through the STIP (which is comprised almost exclusively of roadway and public transit projects). The CIP is also not subject to federal approval.

The STIP now makes use of the priorities/programs/projects framework around which the MassDOT divisions have built the 2020–2024 CIP. This effort was initiated with the 2018–2022 CIP. See the [STIP Website](#) for more information.

MassDOT Spending by Source

MassDOT Spending by Source  
SFY2020–2024



Federal Sources of Funds

Federal Highway ( <i>FHWA</i> ) reimbursements	\$771.4	\$4,139.0
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Federal Transit ( <i>FTA</i> ) reimbursements	\$6.0	\$30.2
Federal Aviation ( <i>FAA</i> ) reimbursements and grant draws	\$36.2	\$176.1
Federal Rail ( <i>FRA</i> ) reimbursements and grant draws	\$5.9	\$13.1
<b>Subtotal of federal spending</b>	<b>\$819.5</b>	<b>\$4,358.4</b>
Bond cap	\$854.8	\$4,315.0
Accelerated Bridge bonds	\$7.2	\$7.2
Rail enhancement bonds	\$16.9	\$40.4
Central Artery Project Repair and Maintenance Trust Fund ( <i>CARM</i> )	\$23.8	\$223.4
Metropolitan Highway system ( <i>MHS</i> ) pay-go	\$72.6	\$423.4
Western Turnpike ( <i>WT</i> ) pay-go	\$59.7	\$558.6
Tobin Bridge ( <i>Tobin</i> ) pay-go	\$24.3	\$103.0
Municipal and local funds	\$6.3	\$25.4
Reimbursable and 3rd parties	\$ -	\$ 14.3
Public private partnerships	\$ -	\$ -
Other State Funds	\$ -	\$ 4.6
<b>Subtotal of non-federal spending</b>	<b>\$1,065.6</b>	<b>\$5,715.4</b>

\*Totals may not add due to rounding.

MassDOT obligates available FHWA funds every federal fiscal year. This funding category involves MassDOT requesting FHWA to reimburse the Commonwealth for programmed (obligated) funds for actual federally eligible expenditures on Highway and Rail Division projects .

MassDOT obligates available FTA funds every federal fiscal year. This funding category involves MassDOT drawing down obligated amounts to reimburse the Commonwealth for Rail & Transit Division project spending. The spending by source tables do not include FTA funds available to Regional Transit Authority partners.

MassDOT applies for FAA funds every federal fiscal year. This funding category involves MassDOT drawing down those approved grant amounts to pay for Aeronautics Division project spending.

**Federal Railroad (*FRA*) reimbursements**

MassDOT from time to time applies for FRA funds. This funding category has MassDOT draw down approved grant amounts to pay for Rail & Transit Division and Office of Transportation Planning project spending.

**State bond cap**

Commonwealth General Obligation bond proceeds allocated to specific projects; primarily for project design, management, operations, and other construction support provided to the Aeronautics, Highway, and Rail and Transit Divisions and the MBTA (*see MBTA sources*).

**Accelerated Bridge bonds**

Commonwealth Special Obligation bond proceeds allocated to specific bridge projects; primarily for project operations and construction.

**Rail enhancement bonds**

The Commonwealth Rail Enhancement Program; a dedicated \$2.1 billion program for reliability, modernization, and expansion initiatives at the MBTA, including the State's share of the Green Line Extension project.

**Central Artery Project Repair and Maintenance Trust Fund (*CARM*)**

For eligible MHS projects; subject to FHWA approval.

**Metropolitan Highway System (*MHS*) pay-go**

Projected annual revenues available for capital for the toll facilities and tunnels east of I-95 plus any existing projected reserve balances.

**Western Turnpike (*WT*) pay-go**

Projected annual revenues available for capital for the toll facilities west of I-95 plus any existing projected reserve balances.

**Tobin Bridge (Tobin) pay-go**

Projected annual revenues available for capital for this toll facility plus any existing projected reserve balances.

**Municipal and local funds**

Funds provided by municipalities to match federal-aid sources or to pay for construction bid items.

**Reimbursable and 3rd party funds**

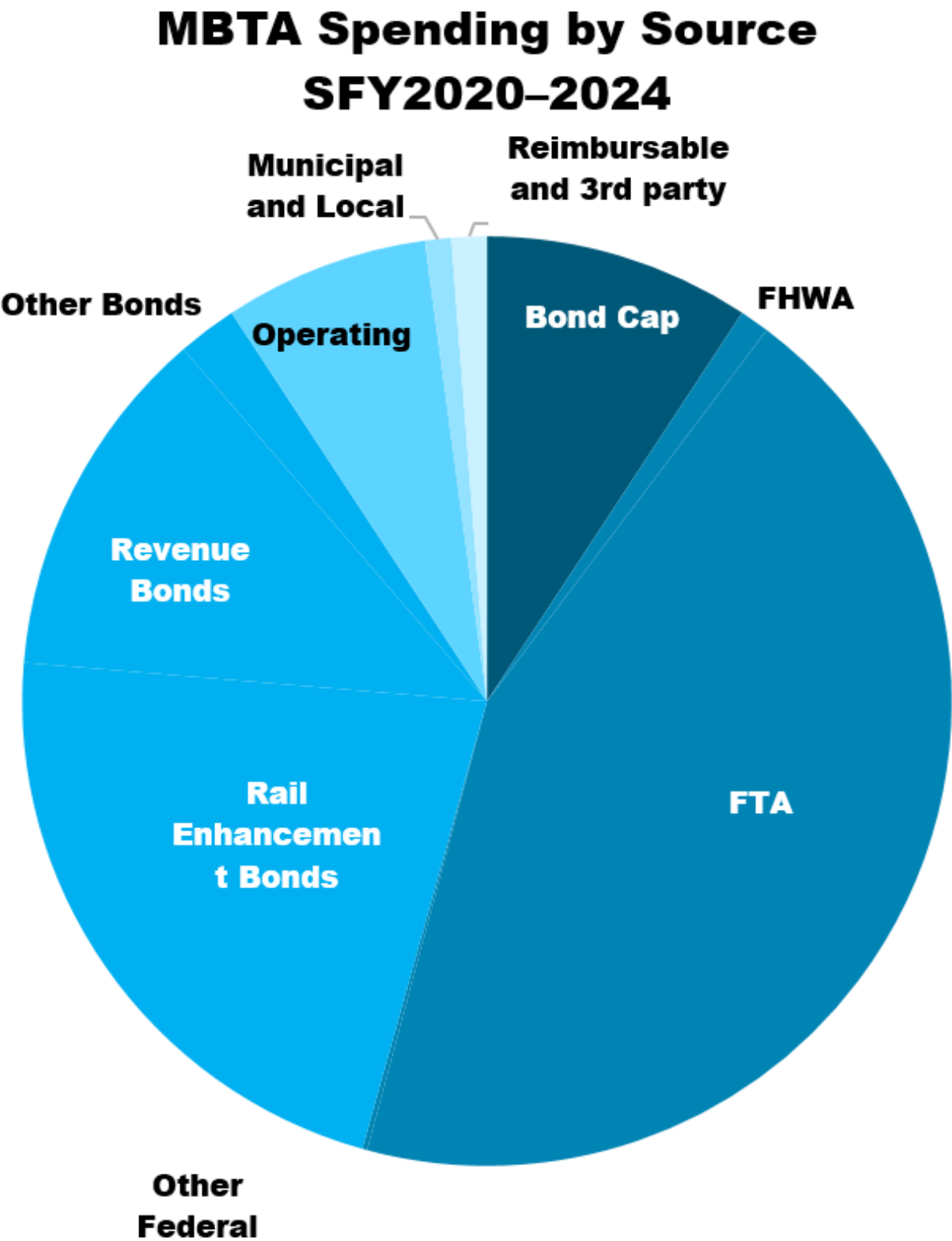
Third party funding for specific initiatives.

**Public private partnerships**

Project financing mechanism that includes private sector resources. MassDOT is exploring the use of this financing mechanism.

Additional funds for MassDOT to be used for clean transit vehicles and transportation improvements in the Seaport District.

MBTA Spending by Source



Federal Sources of Funds

Federal Highway ( <i>FHWA</i> ) reimbursements	\$61.1	\$84.5
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Federal Transit ( <i>FTA</i> ) reimbursements and grant draws	\$338.5	\$2,847.7
FTA Full funding grant agreement ( <i>GLX FFGA</i> )	\$320.5	\$761.6
Other federal funds	\$10.6	\$14.0
<b>Subtotal of federal spending</b>	<b>\$730.8</b>	<b>\$3,707.9</b>
Bond cap	\$115.2	\$461.5
Accelerated Bridge bonds	\$0.1	\$0.1
Rail enhancement bonds	\$233.2	\$1,809.7
MBTA Revenue bonds	\$107.6	\$1,016.6
Positive/Automatic Train Control ( <i>PTC/ATC</i> ) financing	\$99.9	\$169.9
Pay-Go Lockbox (Bond Cap)	\$60.0	\$300.0
Metropolitan Highway system ( <i>MHS</i> ) pay-go	\$0.0	\$0.0
Municipal and local funds ( <i>GLX</i> )	\$15.0	\$75.0
Reimbursable and 3rd parties	\$14.5	\$101.0
Pay-Go Lockbox ( <i>MBTA</i> )	\$90.0	\$579.7
Capital maintenance fund	\$4.1	\$5.9
Other State Funds	\$0.0	\$0.0
<b>Subtotal of non-federal spending</b>	<b>\$739.6</b>	<b>\$4,519.6</b>

\*Totals may not add due to rounding; MBTA's projected spending does not fully reflect total available sources and program budgets.

For the 2020-2024 CIP, the MBTA investment programs reflect \$9.4 billion of funding sources but estimated spending totals \$8.2 billion over the five year plan. Full funding is available to execute the priority programs and projects identified through the CIP process, but the overall spending targets reflect a more gradual ramp up as the T builds up internal and external capacity to deliver this ambitious capital program. Although the MBTA has made significant progress in accelerating capital investment by increasing its non-expansion spending by 50 percent since the creation of the FMCB, a recent review by MBTA leadership identified outstanding barriers. To address these barriers, the MBTA hired a Chief of Capital Programs to be the single point of accountability for all capital projects across 23 MBTA Departments, is adding 80 additional employees to deliver capital projects, and is addressing capacity bottlenecks by hiring more flaggers, signal maintainers, power linemen, and other critical support personnel. If the T is successful in addressing these barriers and exceeds its spending goals, funds are available to execute the full \$9.4 billion program.

**Federal Highway (FHWA) reimbursements**

FHWA reimbursements reflect CMAQ Flex Funds available for GLX program.

**Federal Transit (FTA) reimbursements and grant draws**

FTA reimbursements reflect Section 5207 Urbanized Area Formula funds, Section 5337 State of Good Repair/Fixed Guideway funds, and Section 5339 Bus and Bus Facilities funds. Assumes reauthorization beyond FAST Act, with a 1.7% annual growth. FTA grant draws are the estimated balance of funds available in existing non-GLX FTA grants as of 7/1/19.

**FTA Full Funding Grant Agreement (FFGA)**

Funding includes on-hand FFGA funds less anticipated expenditures through 7/1/19. Future amounts reflect year in which additional CIG funds will be appropriated per GLX FFGA.

**Other federal funds**

Funding comprised mostly of Transit Security Grant Program funds which is a discretionary appropriation and not assumed in future years.

**State bond cap**

Commonwealth general obligation bond proceeds provided as \$60 million in annual assistance to MBTA and a portion of the funding (\$460.7 million) for Phase 1 of South Coast Rail (SCR).

**Accelerated bridge bonds**

Commonwealth Special Obligation bond proceeds allocated to specific bridge projects; reflects current cash flow for projects.

**Rail enhancement bonds**

The Commonwealth Rail Enhancement Program; a dedicated \$2.1 billion program for reliability, modernization, and expansion initiatives at the MBTA, including the State's share of the Green Line Extension program, Red Line/Orange Line Improvements program and \$548.9 million for SCR Phase 1.

**Positive/Automatic Train Control (PTC/ATC) bonds**

Bonds on-hand reflect current balance of proceeds from revenue bonds raised for PTC/ATC project; does not necessarily reflect the planned amount of new issuances each year.

**Municipal and local funds (GLX)**

Funds reflect the contributions from the cities of Cambridge and Somerville for the GLX program.

**Reimbursable and 3rd party funds**

Funding reflects funds received via reimbursable agreements with Rhode Island Department of Transportation (RIDOT), Amtrak, and other parties. .

**Pay-Go Lockbox MBTA**

Lockbox funding assumes continuation of \$90 million deposit resulting from operating budget savings.

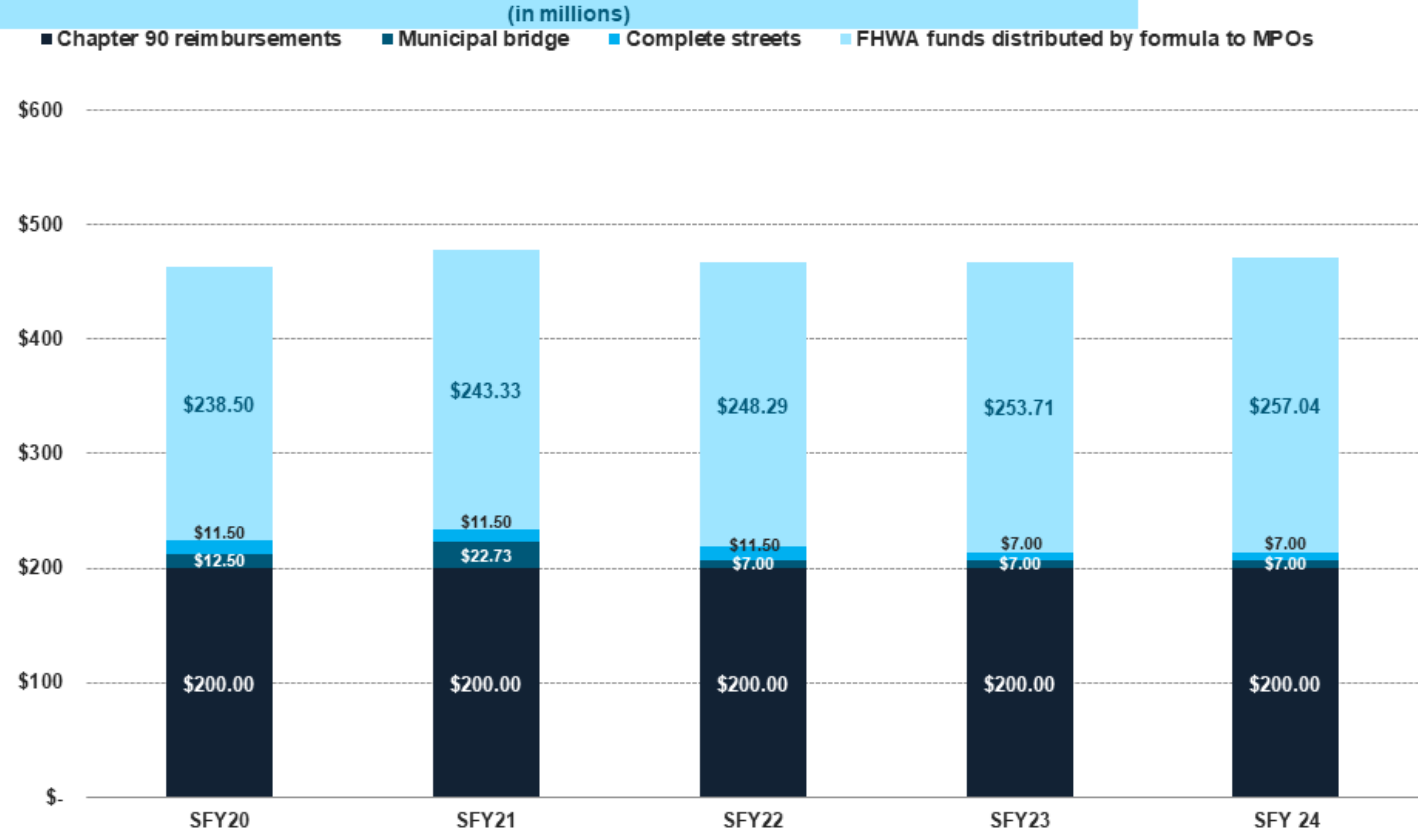
Funding reflect project cash flows.

# Municipal Partnerships / Regranting Programs

## Funding for municipalities

► The CIP includes state and federal funding for municipal assets that goes well beyond Chapter 90

Annual funding available for municipal roadway and bridge investments



The 2020–2024 CIP includes several different programs that provide state and federal funds either through direct grants or reimbursements to cities and towns, and/or by leveraging private investment to support economic development:

- Highway / Chapter 90
- Highway / Complete Streets
- Highway / Small Municipal Bridge Program
- Rail / Industrial Rail Access Program
- Transit / Mobility Assistance Program

## Transit / Workforce Transportation Options

As the chart to the right illustrates, over one-third of Highway Division federal funds (including the state match) in this plan go to support investments in municipal roadways and bridges; total funding dedicated to our municipal partners is over \$2.3 billion invested over five years.

Investments that directly benefit municipalities (through annual allotment of funds or direct grants) are captured under several programs, including Chapter 90 program, the Small Municipal Bridge Program, and the Complete Streets program.

**Chapter 90** reflects the Administration's commitment to local transportation infrastructure for all 351 cities and towns across the Commonwealth. Chapter 90 funding is established by the Legislature on an annual basis and allocated by a legislatively established formula. The funding program reimburses cities and towns for costs incurred for eligible transportation infrastructure projects.

The **Complete Streets Program** provides funding and technical assistance to communities that demonstrate a commitment to providing safe and accessible options for all modes of travel. There have been 198 approved Complete Streets policies approved, 146 technical assistance grants awarded and 95 municipal projects approved as part of the program since its launch in 2016. The 2020-2024 CIP estimates \$40.5 million in spending for this program over the five years.

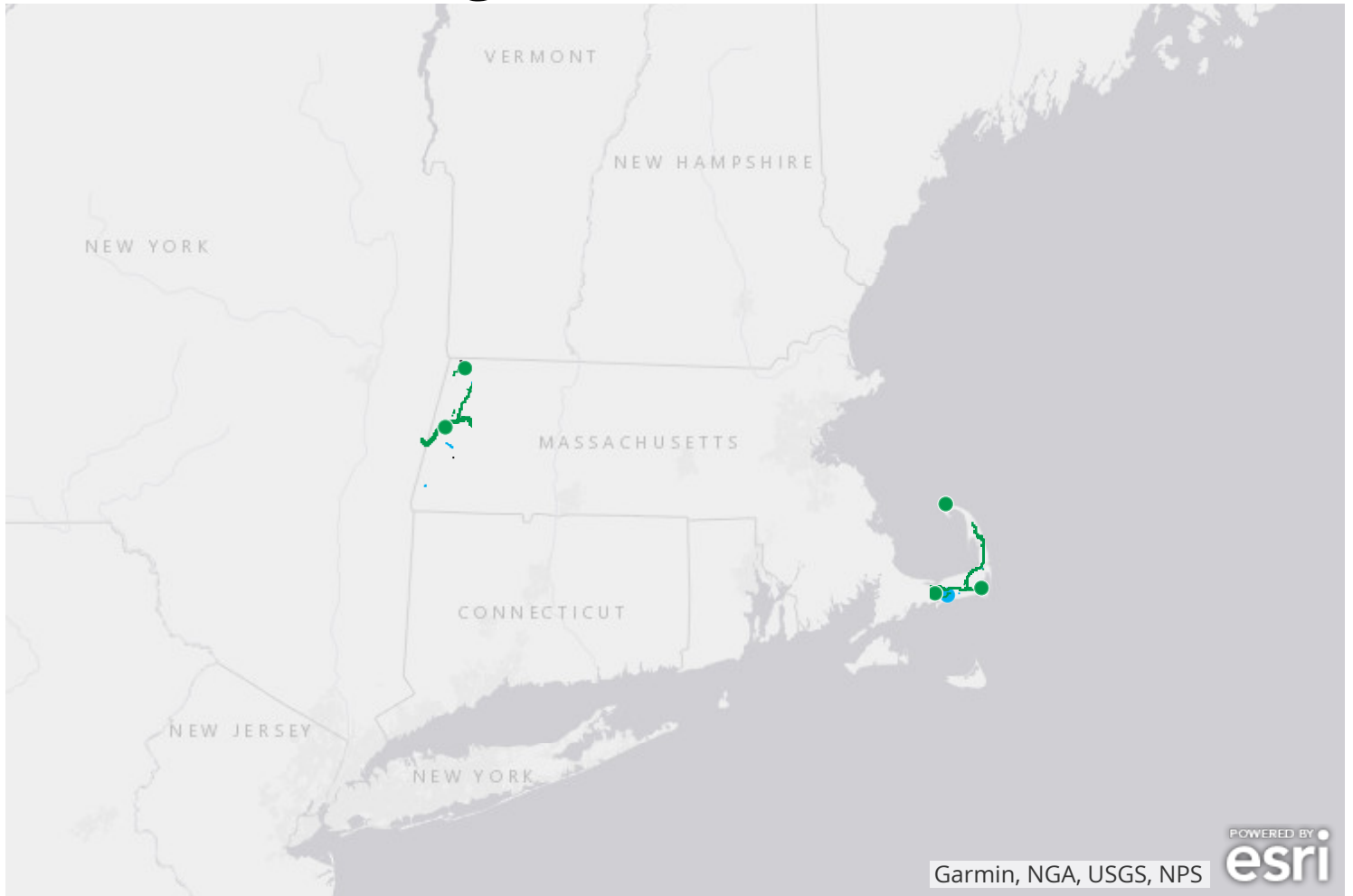
The **Municipal Small Bridge Program**, begun by the Baker-Polito Administration in SFY2017, assists municipalities in replacing and repairing town-owned bridges that are less than 20 feet long and are not eligible for federal funding. A total of \$42.5 million has been awarded for 91 municipal small bridge projects to date. The current CIP assumes \$56.2 million in spending over the next five years.

A new grant program initiated this year, the **Workforce Transportation Options Program** that will be administered by the Rail and Transit Division. The program uses federal Congestion Mitigation Air Quality (CMAQ) funds to leverage private and other non-state funds to improve options for workforce transportation. This program replaces the Commonwealth's MassRides program, which will end on June 30, 2018. Approximately \$1.975 million is anticipated to be spent (annually).

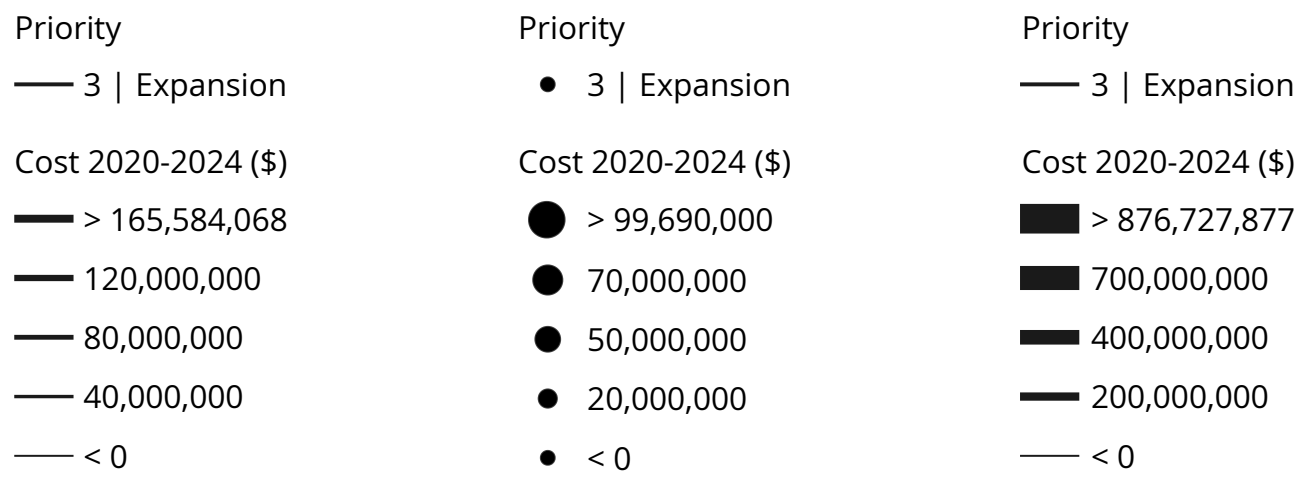
Under the **Mobility Assistance Program** state and federal funds are provided for the purchase of vans and related equipment to provide transportation services for elderly persons and individuals with disabilities of all ages. The program is administered by the Rail and Transit Division and uses funds provided through the regional Councils on Aging, the Regional Transit Authorities, and non-profit organizations. The CIP has assumed \$50.2 million in state and federal funds will be available to support this program.

The **Industrial Rail Access Program** uses state funds to leverage private investment in private sector rail lines that will increase freight rail usage or that will modernize an active line to increase the utility of that line to customers. The Rail and Transit Division annually programs \$3 million (\$15 million over five years) to leverage private investment funds.

# Investment Programs



<div><div>Reliability - Aeronautics</div><div>Priority<ul style="list-style-type: none"><li>1   Reliability</li></ul></div></div>	<div><div>Reliability - MBTA (Lines)</div><div>Priority<ul style="list-style-type: none"><li>1   Reliability</li></ul></div><div><div>Cost 2020-2024 (\$)</div><div><div>&gt; 159,000,000</div><div>120,000,000</div><div>80,000,000</div><div>40,000,000</div><div>&lt; 0</div></div></div></div>	<div><div>Modernization - MBTA (Points)</div><div>Priority<ul style="list-style-type: none"><li>2   Modernization</li></ul></div><div><div>Cost 2020-2024 (\$)</div><div><div>&gt; 99,690,000</div><div>70,000,000</div><div>50,000,000</div><div>20,000,000</div><div>&lt; 0</div></div></div></div>
<div><div>Reliability - Highway</div><div>Priority<ul style="list-style-type: none"><li>1   Reliability</li></ul></div><div><div>Cost 2020-2024 (\$)</div><div><div>&gt; 165,584,068</div><div>120,000,000</div><div>80,000,000</div><div>40,000,000</div><div>&lt; 0</div></div></div></div>	<div><div>Reliability - Rail</div><div>Priority<ul style="list-style-type: none"><li>1   Reliability</li></ul></div></div>	<div><div>Modernization - MBTA (Lines)</div><div>Priority<ul style="list-style-type: none"><li>2   Modernization</li></ul></div><div><div>Cost 2020-2024 (\$)</div><div><div>&gt; 417,938,895</div><div>300,000,000</div><div>200,000,000</div><div>100,000,000</div><div>&lt; 0</div></div></div></div>
<div><div>Reliability - MBTA (Points)</div><div>Priority<ul style="list-style-type: none"><li>1   Reliability</li></ul></div><div><div>Cost 2020-2024 (\$)</div><div><div>&gt; 99,690,000</div><div>70,000,000</div><div>50,000,000</div><div>20,000,000</div><div>&lt; 0</div></div></div></div>	<div><div>Reliability - RMV</div><div>Priority<ul style="list-style-type: none"><li>1   Reliability</li></ul></div><div><div>Modernization - Aeronautics</div><div>Priority<ul style="list-style-type: none"><li>2   Modernization</li></ul></div></div></div>	<div><div>Modernization - Rail</div><div>Priority<ul style="list-style-type: none"><li>2   Modernization</li></ul></div><div><div>Modernization - RMV</div><div>Priority<ul style="list-style-type: none"><li>2   Modernization</li></ul></div></div></div>
	<div><div>Modernization - Highway</div><div>Priority<ul style="list-style-type: none"><li>2   Modernization</li></ul></div><div><div>Cost 2020-2024 (\$)</div><div><div>&gt; 165,584,068</div><div>120,000,000</div><div>80,000,000</div><div>40,000,000</div><div>&lt; 0</div></div></div></div>	



This section discusses major investments and provides details on the 669 CIP programs, sorted by investment priority. Accompanying maps show the geographic location of particular investments, and links to relevant websites or additional information are provided.

- Major Investments (link available only in online story)
- Reliability (link available only in online story)
- Modernization (link available only in online story)
- Expansion (link available only in online story)



# Major Investments



The Commuter Rail Safety and Resiliency program includes investments to improve the safety and resiliency of the Commuter Rail system, including the implementation of Positive Train Control (PTC).

PTC is a strategic initiative of the MBTA aimed at meeting the Federal mandate to have an operable PTC system in place throughout the MBTA's entire commuter rail system by no later than December 31, 2020. The Rail Safety Improvement Act of 2008 mandated that certain freight and commuter rail lines—including the MBTA's Commuter Rail system—install PTC by December 31, 2015. In October 2015, the deadline was extended by Congress to December 31, 2018, with the ability to receive additional extensions through December 31, 2020 by meeting key milestones. PTC is defined as a safety system designed to prevent train-to-train collisions, over-speed derailments, incursions into established work zone limits, and movement of trains through track switches that may have been left in the incorrect position. The MBTA PTC System includes the following elements:



Wayside – Additions to the existing signal system that include transponders on the tracks (transmitting data to the train as it passes over), radio antennas, and new hardware and software at each of the signal locations along the lines

Back Office – Additions of hardware and software within the MBTA's Dispatch and Control Centers

On-Board – Upgraded radios and hardware on all locomotives and control cars

Communications – Reliably connecting the On-Board, Back Office, and Wayside segments via wireless (220 MHz radios) and a ground based network (fiber optics)

The MBTA's PTC Implementation Plan that has been approved by the Federal Railroad Administration requires the installation of hardware on all MBTA Commuter Rail lines and Revenue Service Demonstration on a pilot line (Stoughton Line) by the Fall of 2018, with full PTC implementation in line with mandate requirements (December 31, 2020). The Fall 2018 milestone has been achieved and the program is working toward completion of the program by the 2020 deadline.

### Commuter Rail PTC Project Website

The Green Line Transformation (*GLT*) is a portfolio of over 90 projects aimed at holistically revitalizing the Green Line. It unifies all existing projects and new initiatives to form a cohesive investment strategy and unified Green Line capital program. To meet the needs of today and the future, the MBTA is making significant investments to carry out existing state of good repair improvements, modernize the system, increase capacity, and procure the Type 10 Supercar.

The Green Line fleet of Type 7 and 8 vehicles will be retired and replaced with larger new Type 10 Supercar vehicles (100% low floor light rail vehicles) to allow level boarding and increased capacity. This initiative requires an extensive modernization of key elements of the Green Line including the Lechmere Viaduct, the Central Tunnel, vehicle maintenance facilities, track rehabilitation, power systems, and station modernization or reconstructions that could include platform extensions and accessibility improvements.

**GLT Interactive Map (link available only in online story)**

**GLT Website**

The purpose of the I-495/I-90 Interchange Improvements project is to improve safety and operational efficiency at the system interchange of these two nationally and regionally significant interstate highways. This project will increase safety for all movements within the project area and address chronically deficient traffic conditions for the movement of people and goods. Additionally, this project will support planned growth in the region and accommodate future traffic demand at acceptable levels of service (*LOS*) and travel time through the Interchange. The I-495/I-90 Interchange Improvements Project is currently in the design and environmental review phases.

## I-495/I-90 Interchange Improvements Project Website

The I-90 interchange in Allston is both structurally deficient and functionally obsolete, prompting MassDOT to replace the interchange and implement all-electronic tolling at the site. The new program established in the 2019–2023 CIP recognizes the complexity and interrelationship of the program's various project components. The program will improve multi-modal connectivity in the neighborhood and preserve and enhance regional mobility. Among other items, the program will include bicycle and pedestrian improvements to Cambridge Street and connections to the Charles River; a replaced viaduct to safely and efficiently carry traffic to and from Boston; the construction of a new MBTA commuter rail station; and a restored layover yard for commuter rail trains. The I-90 Allston multi-modal program is currently in the planning, design, and environmental review phases. The 2020–2024 CIP includes funding for design and permitting through procurement phase only. A finance plan is under development to fund the construction phase of the program.

### Allston Multimodal Project Website

This program includes all investments related to replacing and expanding the Red Line and Orange Line fleets and upgrading the facilities and infrastructure needed to support the new vehicles. When fully implemented, these investments are expected to allow three minute headways on the Red Line and four and a half minute headways on the Orange Line.

The 120-car Orange Line fleet and 218-car Red Line fleet will be completely retired and replaced with larger fleets of 152 and 252 new vehicles, respectively. This initiative requires an extensive update and modernization of the existing Orange Line Carhouse at Wellington Yard in Medford and the Red Line Carhouse at Cabot Yard in South Boston. Additionally, the Wellington and Cabot Yards will be upgraded to include associated track, signal, and power improvements. The Signals Systems Upgrade Program will deliver the Design-Build project implementing upgrades to the signaling systems for both the Red Line and Orange Line, the Columbia Junction signal replacement project (Phase 2); and the Southwest Corridor wayside appurtenance work. Also, signal enhancements on both the Orange and Red Lines are underway in order to reduce Electromagnetic Interference (EMI).

For testing and commissioning purposes, the existing Orange Line Test Track has been brought up to a state of good repair to allow for the continuous testing and commissioning of the new Orange Line fleet. Additionally, a new Red Line Test Track is being constructed to allow for the testing and commissioning of the Red Line fleet.

Final completion for infrastructure improvements is scheduled for Spring 2022 and final delivery of vehicles for the fleet replacement is scheduled for September 2023.

## Red Line / Orange Line Vehicles Website      Red Line / Orange Line Signal Upgrades Website

The MBTA GLX project is a 4.7-mile light rail line, which will extend the current Green Line service, from a relocated Lechmere Station in East Cambridge, Massachusetts, to a terminus at College Avenue in Medford, Massachusetts and a spur to Union Square in Somerville, Massachusetts. This project is moving forward with a new cost estimate of \$2.28 billion, and is funded with federal and state support of \$1.99 billion along with pledged contributions for the project totaling approximately \$296 million from the cities of Cambridge and Somerville (\$75.0M), the Boston MPO (\$157.1M) and MassDOT (\$64.3M through Special Obligation Bonds).

In early 2017, the MBTA initiated a procurement process for a Design-Build (*DB*) entity to design and construct the project. In November 2017, Board approval was received to execute a Design-Build contract with GLX Constructors. The notice to proceed under the contract was issued in December 2017. The FTA obligated an initial tranche (\$100.0M) of the Capital Investment Grant funds for the project in December, under the 2015 Full Funding Grant Agreement.

The primary goals of the project are to improve corridor mobility, boost transit ridership, improve regional air quality, ensure equitable distribution of transit services, and support opportunities for smart growth initiatives and sustainable development in Cambridge, Somerville, and Medford. This Design-Build project comprises light rail service on two new branches extending from Lechmere Station in Cambridge to Union Square Station in Somerville and College Avenue Station in Medford, together with a Vehicle Maintenance Facility (*VMF*). The tracks for the new extensions are located along the existing MBTA Lowell and Fitchburg Lines, which are currently used by commuter rail services operated by Keolis under a contract with the MBTA. The VMF is located solely in Somerville, in the Inner Belt Road area.

GLX includes the following elements:

- Relocation of 3.4 miles of New Hampshire Main Line double track and construction of new Medford Branch Green Line tracks;

- Relocation of 0.9 miles of Fitchburg Commuter Rail double track and construction of new Union Square branch Green Line tracks;

- Six new stations and one relocated station in the following locations:

- East Somerville (formerly Washington Street);

- Gilman Square;

- Magoun Square (formerly Lowell Street);

- Ball Square;

- College Avenue;

- Union Square; and

- Lechmere Station (Relocation)

- Replacement or rehabilitation of several bridges;

- VMF, including a transportation building, storage track, and surface parking;

- Replacement or rehabilitation of several bridges;

New drainage, utilities, retaining walls, and noise barriers in the rail corridors;  
Approximately one mile of viaduct;  
Systems for light rail (traction power, overhead contact system, signal, and communications) and commuter rail (signal and communications);  
Roadway and intersection improvements; and additional use of non-automobile travel through coordination of transit and bicycle/pedestrian facilities between the Project and the planned Somerville Community Path; and  
Community Path (scope) from the existing path at Lowell Street to the East Somerville Station

**GLX Interactive Map (link available only in online story)**

**GLX Website**

The Commonwealth is committed to moving forward with the South Coast Rail project to serve the existing and future demand for public transportation between Fall River/New Bedford and Boston, enhance regional mobility and support smart growth planning and development strategies in Southeastern Massachusetts.

The project takes a phased approach to delivering service while proceeding with the design and permitting of the Stoughton Electric Full Build alternative. Phasing will shorten the time by at least 10 years to implement service; minimize wetlands impacts; and reduce the overall project costs by starting construction sooner. Phase 1 is projected to result in approximately 1,600 new daily inbound boardings at new stations along the route.

The 2020–2024 CIP includes full funding for Phase 1 construction and service via the Middleborough route. A finance plan for Phase 1 of the program has been developed in concert with the Commonwealth's Executive Office of Administration and Finance.

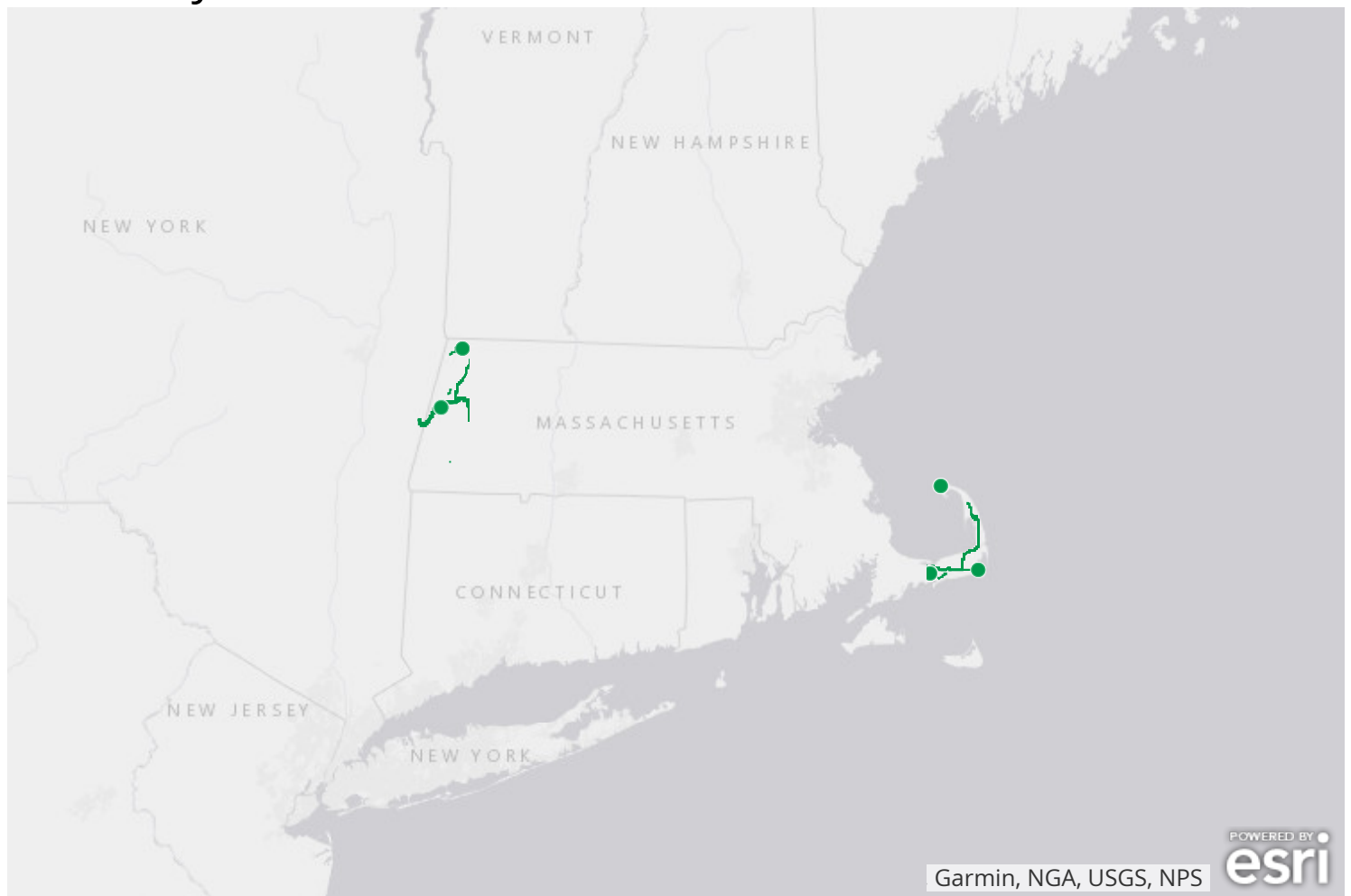
**South Coast Rail Project Map (link available only in online story)**

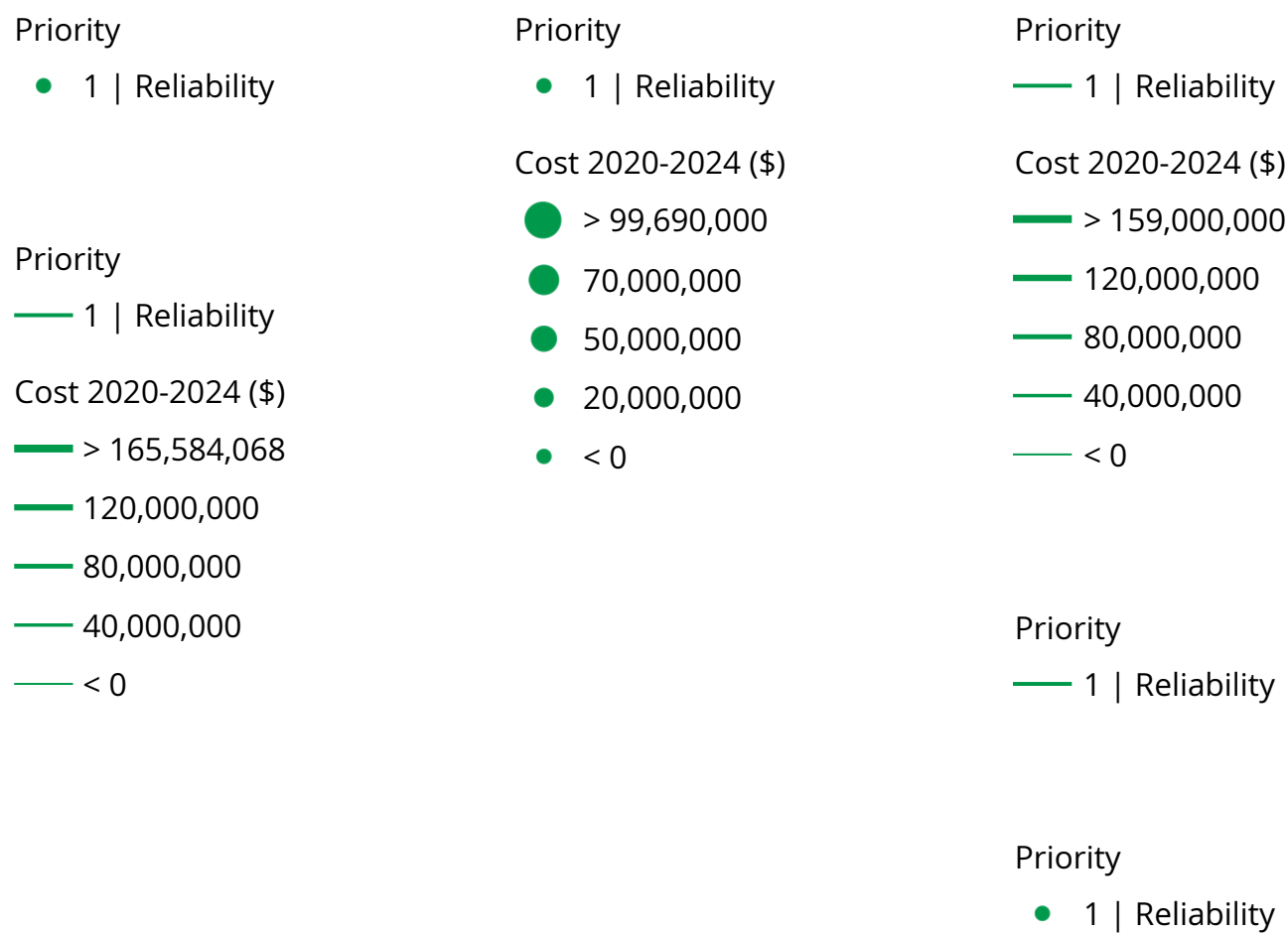
**South Coast Rail Website**

In cooperation with the Federal Railroad Administration and Amtrak, MassDOT and the MBTA are studying and designing the expansion of South Station. The project will increase the rail service into and passenger capacity at South Station, including additional tracks and platforms and improved signal systems and passenger facilities. This project will enhance the station and streetscape environments for pedestrians, bicycles, and rail passengers, and includes reopening of a section of Dorchester Avenue along the waterfront that has been closed to the public for decades. MassDOT has completed Massachusetts Environmental Policy Act (*MEPA*) review and received the Secretary's Certificate of Compliance and has completed a federal Environmental Assessment and Section 4(f). With completion of the initial study and its major deliverable, the remaining grant funding available are being used by MassDOT and the MBTA to evaluate potential short-term and lower cost infrastructure improvements, specifically, those that could be made to the systems of tracks and supporting infrastructure, Tower 1.

## South Station Expansion Website

# Reliability Investments





About 44% of the \$18.3 billion total in proposed capital spending over the next five years is targeted on "priority one" investments meaning those that improve the reliability of the current transportation system. The goal of reliability investments is to maintain and improve the overall condition of the transportation system. Reliability investments include:

- Necessary routine and capital maintenance
- State of good repair projects designed primarily to bring asset conditions up to an acceptable level
- Asset management and system preservation projects

<i>in millions</i>	Aeronautics / Airport Pavement Management System
\$123.3	
	Aeronautics / Airport Capital Improvement
\$146.0	
	Highway / Bridge
\$2,281.7	

Highway / Equipment	\$96.4
Highway / Facilities	\$181.7
Highway / Interstate Pavement	\$316.9
Highway / Municipal Bridge	\$50.0
Highway / Non-Interstate Pavement	\$766.9
Highway / Roadway Improvements	\$168.8
Highway / Safety Improvements	\$265.3
Highway / Tunnels	\$393.8
IT / Asset Management	\$3.8
IT / Cyber/information Security	\$20.5
IT / Desktop Experience	\$10.5
IT / Digital Infrastructure	\$18.2
MBTA / Bridges and Tunnels	\$506.9
MBTA / Facilities	\$370.6



MBTA / Revenue Vehicles	\$1,068.8
MBTA / Stations	\$372.7
MBTA / Systems Upgrades	\$234.0
MBTA / Track, Signals, And power	\$759.8
OTP / Pre-apprenticeship	\$4.6
Rail / Bridges	\$55.4
Rail / Facility Reliability	\$15.7
Rail / Grade Crossings	\$34.4
Rail / Vehicle Reliability	\$6.6
Rail / Track and Right-of-Way Reliability	\$137.2
RMV / Operations Management	\$1.1
Transit / Mobility Assistance Program	\$50.2
Transit / RTA Facility and Vehicle maintenance	\$8.3
Transit / RTA Vehicle Replacement	\$53.7

## Transit / Technical Assistance

\$10.0

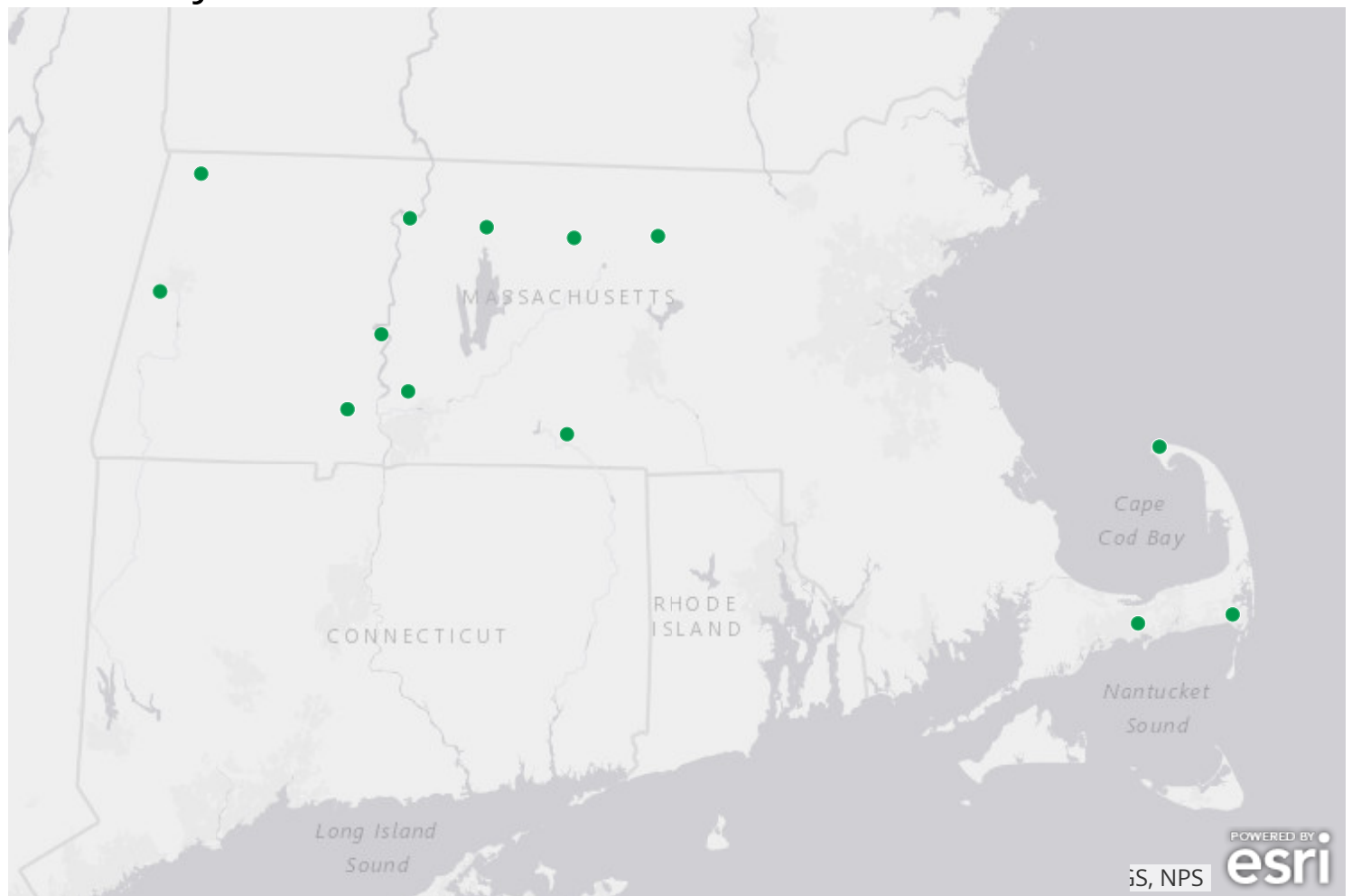
## Transit / Workforce Transportation Options

\$9.9

Aeronautics:	\$233.3
Highway:	\$4,631.8
IT:	\$52.7
MBTA:	\$2,804.3*
OTP:	\$2.6
Rail:	\$255.5
RMV:	\$1.2
Transit:	\$129.7

\*Reflects targeted spending; programmed sources available for MBTA reliability investments total \$3,312.8 million.

# Reliability Investments: Aeronautics



## Priority

- 1 | Reliability

This program maintains the quality of pavement "inside the airport fence" at an adequate level. This program is necessary to continue safety and maintenance programs at public-use airports.

2020—75 PCI  
2022—75 PCI  
Long Term—75 PCI  
2020 and Long Term—75 PCI

\$123.3 million over five years

**APMS Website    PCI Website**

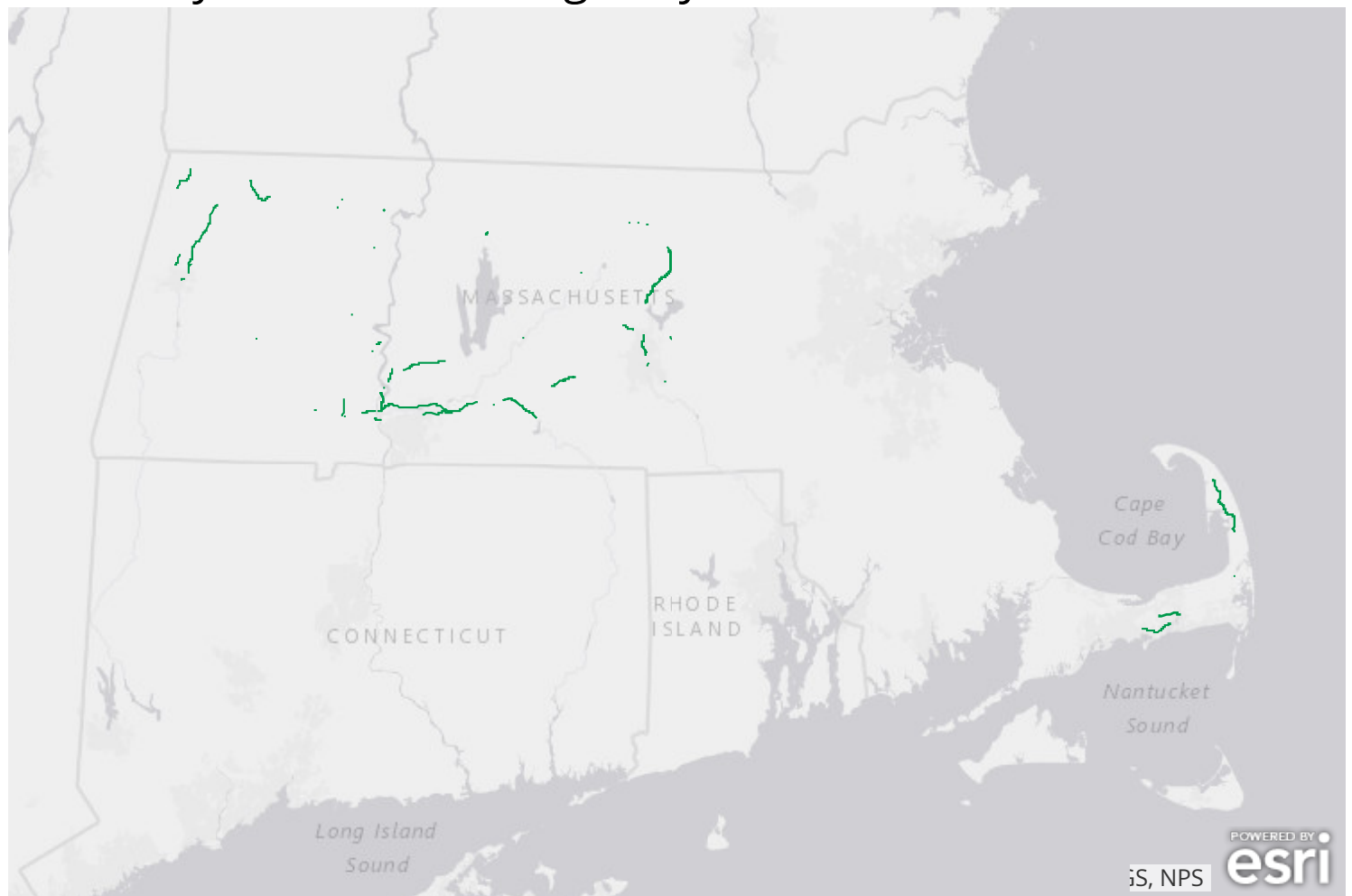
This program includes a full range of airport state of good repair projects. This program is necessary to continue safe and efficient airport operations and services.

Not established in Tracker

Not forecast in PfP

\$146.0 million over five years

# Reliability Investments: Highway



## Priority

— 1 | Reliability

## Cost 2020-2024 (\$)

— > 165,584,068

— 120,000,000

— 80,000,000

— 40,000,000

— < 0

This program maintains, reconstructs, and replaces state- and municipally-owned bridges across the Commonwealth.

2020—<13%

2022—<12%

Long Term—<10% NHS deck area rated poor

Long Term—<10% NHS deck area rated poor

2020—<13%

2022—<12%

\$2,281.7 million over five years

This program makes routine purchases of vehicles, equipment, and other capital assets. This program is necessary for the daily operation of the department.

Not established in Tracker

Not forecast in PfP Tool

\$96.4 million over five years

This program maintains, repairs, and replaces buildings, salt sheds, garages, vent buildings, telecommunications, and other systems owned by the Highway Division.

Not established in Tracker

Not forecast in PfP

\$181.7 million over five years

This program resurfaces and performs related work on the interstate system. This program is necessary to improve pavement conditions.

2020/2022—88%

Long Term—90% of pavement in good or excellent condition

Long Term—90% of pavement in good or excellent condition

2020/2022—88% in good or excellent condition

\$316.9 million over five years

This program assists municipalities in repairing and replacing town-owned bridges with a span length of less than 20 feet.

Not established in Tracker

Not forecast in PfP

\$50.0 million over five years

### **Municipal Bridge Program Website**

This program resurfaces and performs related work on non-interstate roads owned by MassDOT. This program is necessary to fulfill system-wide maintenance contracts to improve pavement condition and also includes site-specific projects.

2020—60%

2022—62%

Long Term—70% of pavement in good or excellent condition

Long Term—70% of pavement in good or excellent condition

2020—60%

2022—62% of pavement in good or excellent condition

\$766.9 million over five years

This program supports pot hole, fencing, guardrail, and sidewalk maintenance, repairs, and other related improvements on non-interstate, state-owned roadways. This program also includes federally-funded storm water retrofit projects. This program is preventative in nature, and is necessary to maximize the useful life and condition of roadways.

Not established in Tracker  
Not forecast in PfP

\$168.8 million over five years

This program repairs traffic signals, highway lighting systems, impact attenuators, traffic signs, and pavement markings. This program is necessary to provide a safe roadway network for Commonwealth residents and visitors.

2020—0.56 fatalities, 4.12 injuries  
2022—0.51 fatalities, 3.5 injuries  
Long Term—Move to zero  
*Tracker target per 100 million VMT*  
Not forecast in PfP  
Crash cluster; crash data

\$265.3 million over five years

This improves lighting, life safety systems, and tunnel infrastructure within the tunnel network.

Not established in Tracker  
Not forecast in PfP

\$393.8 million over five years



## Reliability Investments: Information Technology



This program delivers tools and process to document, report on and manage MassDOT assets. These tools provide data on the asset life cycle. This program is necessary to maintain the reliability of Commonwealth assets by supporting a consistent approach to asset review and remediation.

Not established in Tracker

Not forecast in PfP

All DOT assets recorded and monitored for state of good repair. Minimize incident reports.

\$3.75 million over five years

This program keeps IT infrastructure and software compliant with best practices and digital security standards to protect both agency and customer data and will comply with Article 87—EOTSS initiatives. This program is necessary to maintain customer confidence when making secure transactions.

Not established in Tracker

Not forecast in PfP

Security Awareness Training taken by all employees annually. Comprehensive policies and controls in place. 100% PCI compliance.

\$20.5 million over five years

This program delivers best in class, highly resilient technologies and services related to desktop and personal computing, conformance and mobile solutions/devices, and network and internet connectivity. This program is necessary to maintain best practices and state of good repair in desktop IT at MassDOT.

Not established in Tracker

Not forecast in PfP

Monitor level of state of good repair—age of equipment, engineering performance, latest software releases, help desk support requests.

\$10.5 million over five years

This program does a range of digital infrastructure work, including state of good repair hardware upgrades and support of operations in the Cloud. This program provides a modern, application-independent information architecture. This program is necessary to meet MBTA's and MassDOT's

technology goals by sustaining the core computer, storage, telecommunications, and network infrastructure.

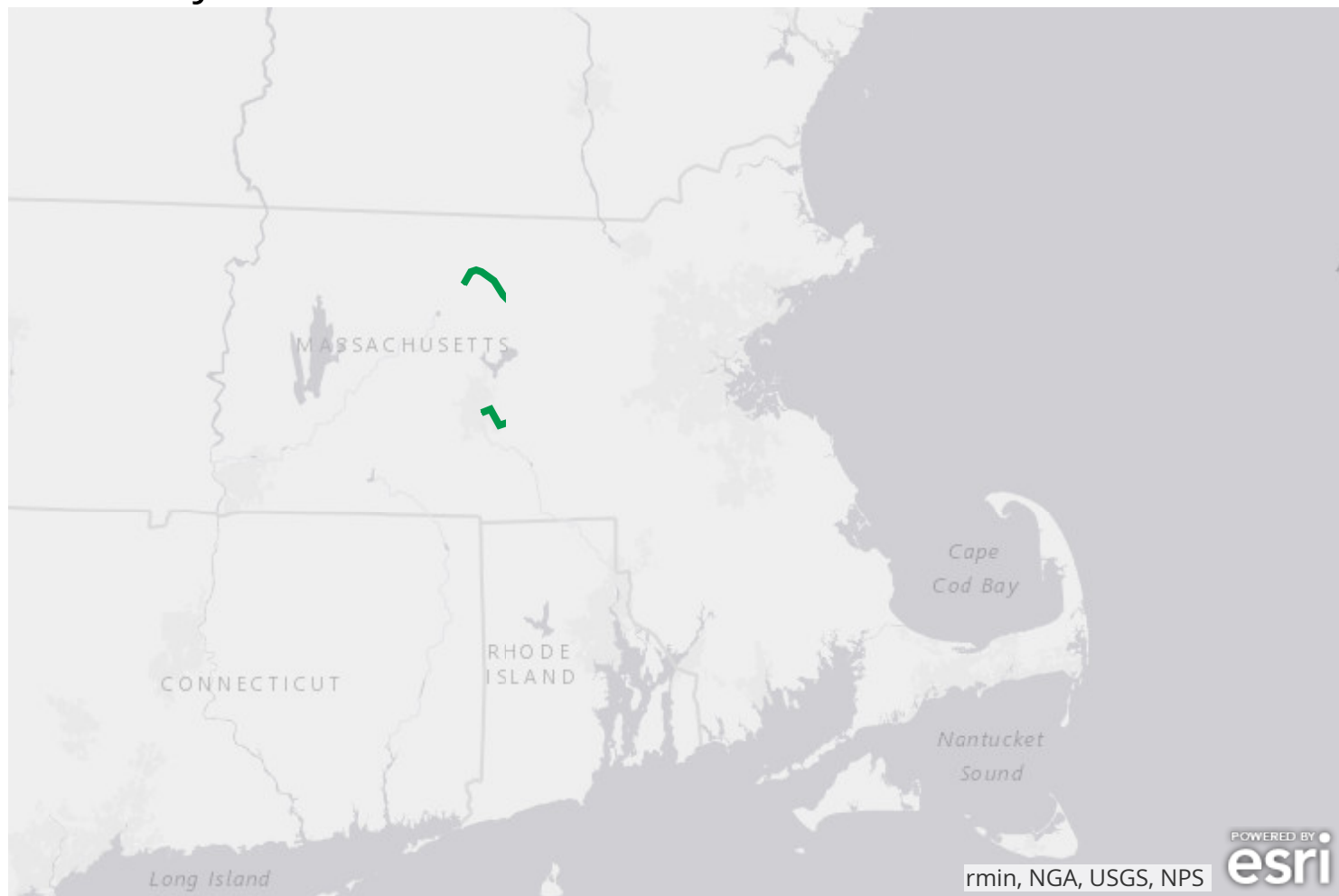
Not established in Tracker

Not forecast in PfP

Monitor level of state of good repair—age of equipment, engineering performance, latest software releases, equipment uptime statistics.

\$18.2 million over five years

# Reliability Investments: MBTA



## Priority

— 1 | Reliability

## Cost 2020-2024 (\$)

— > 159,000,000

— 120,000,000

— 80,000,000

— 40,000,000

— < 0

This program repairs, reconstructs, and replaces MBTA commuter rail and transit bridges and tunnels system wide.

Not established in Tracker

Not forecast in PfP

\$506.9 million over five years

This program rehabilitates and upgrades maintenance and administrative facilities that support transit operations.

% of facilities with condition rating <3.0 in TERM\* scale

\*FTA Transit Economic Requirements Model (*TERM*) condition assessment scale of 1–5, in which an asset in need of immediate repair or replacement is scored as 1 and an asset with no visible defects is scored as 5.

Not forecast in PfP

\$370.6 million over five years

This program rehabilitates and replaces the MBTA revenue fleet, which includes commuter rail, heavy rail, light rail, bus, and ferry units.

% of units beyond Useful Life Benchmark (*ULB*)

Not forecast in PfP

\$1,068.8 million over five years

This program rehabilitates and upgrades MBTA stations (e.g., commuter rail, commuter boat, subway and bus stations).

% of facilities with condition rating <3.0 in TERM scale

Not forecast in PfP

\$372.7 million over five years

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.

Non-revenue vehicles: % of vehicles beyond ULB

Not forecast in PfP

\$234.0 million over five years

This program rehabilitates, replaces, and upgrades track, signal, and power assets across the commuter rail and transit system.

% of revenue service miles with performance restrictions

Not forecast in PfP

\$759.8 million over five years



## Reliability Investments: OTP



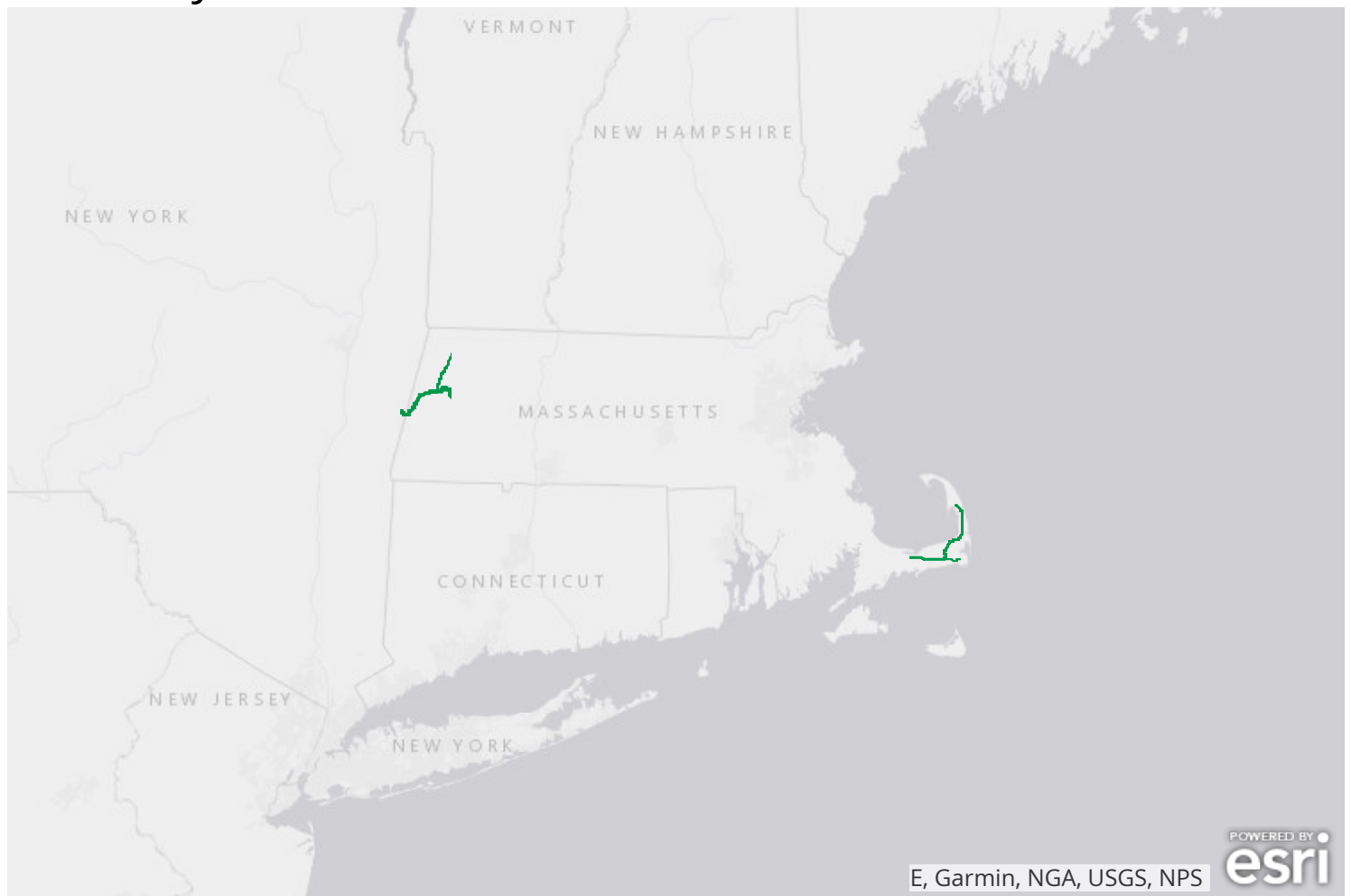
This program—for which MassDOT is partnering with a number of stakeholders—facilitates the introduction of additional pre-apprentices to skilled trades within our construction program. This program is necessary to provide low-income and other disadvantaged communities with access to training and employment opportunities within the construction trades. Program managed by MassDOT's Office of Discrimination and Civil Rights (ODCR).

Not established in Tracker

Not forecast in PfP

\$4.6 million over five years

# Reliability Investments: Rail



## Priority

— 1 | Reliability

This program repairs or replaces bridges to avoid deterioration, keep or restore class of line, or maintain utility. Prioritization of projects within this program reflect most recent inspections, type of usage (e.g. hazardous cargo), and any contractual or regulatory requirements for action.

Not established in Tracker

Not forecast in PfP

\$55.4 million over five years



This program repairs or replaces rail facilities, specifically rail yards and stations, to avoid deterioration or maintain the facility's utility. Prioritization of program projects will reflect condition reports, type of risk/usage, and any contractual or regulatory requirements for action. This program is necessary to maintain a safe and reliable rail system.

Not established in Tracker

Not forecast in PfP

\$15.7 million over five years

This program repairs or replaces grade crossings to avoid deterioration, keep or restore class of line, or maintain the crossing's utility. Prioritization of projects in this program will reflect federal guidelines, most recent inspections, type of usage (e.g. hazardous cargo), and any contractual or regulatory requirements for action. This program is necessary to maintain a safe and reliable rail system.

Not established in Tracker

42% of grade crossings in desired state

\$34.4 million over five years

This program repairs, replaces, or acquires rail equipment (locomotives, coaches, ballast cars, light duty vehicles, etc.) to facilitate reliable service, avoid deterioration, or support activities to maintain or restore class of line. This program is necessary to maintain the rail system in good condition.

Not established in Tracker

Not forecast in PfP

\$6.6 million over five years

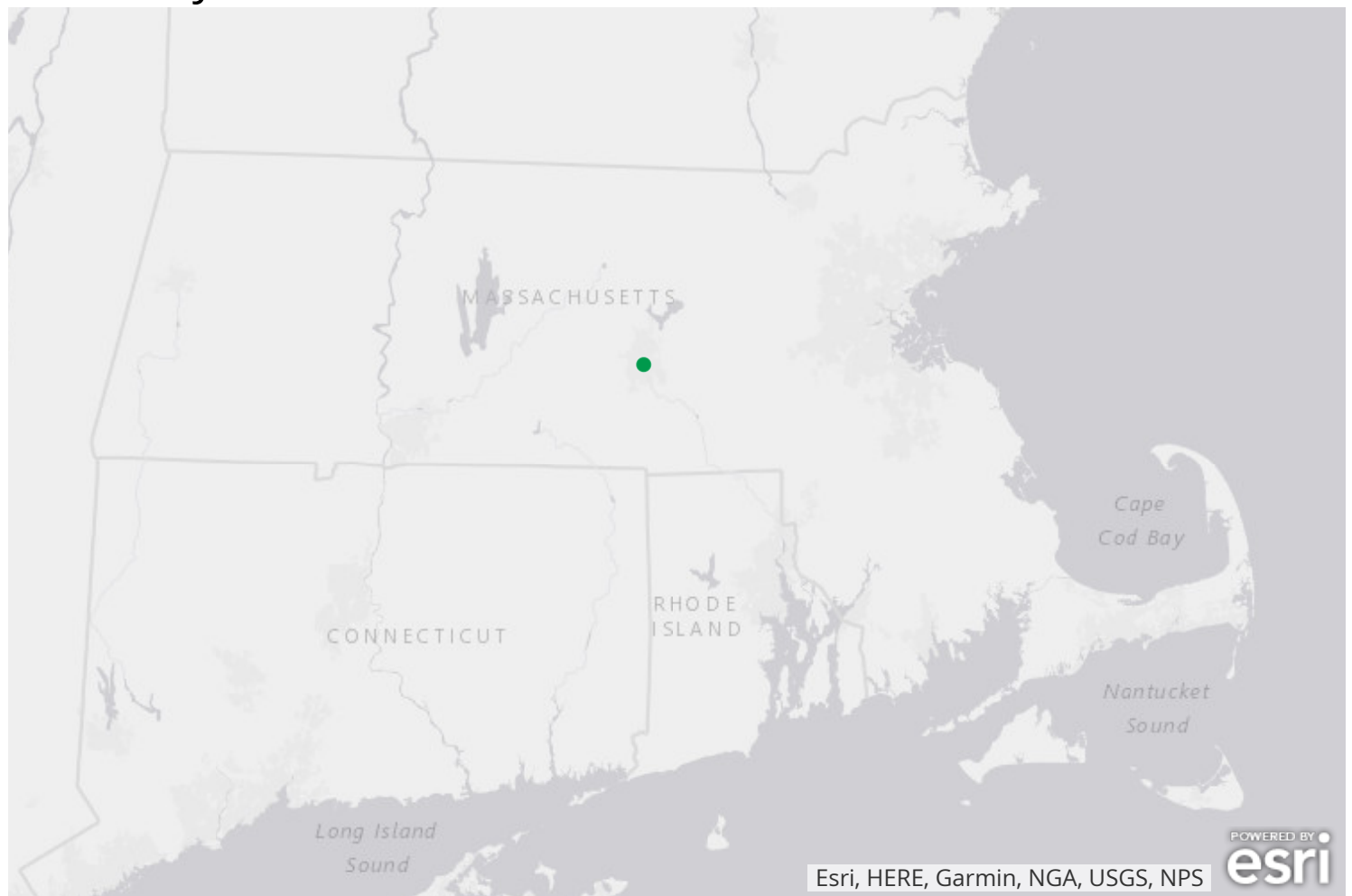
This program repairs or replaces assets within the rail right of way (typically ties, rail, ballast, culverts, switches, *etc.*) to avoid deterioration, keep or restore class of line, or maintain the line's utility. Prioritization will reflect most recent inspections, type of usage (*e.g.* hazardous cargo), and any contractual or regulatory requirements for action. This program is necessary to maintain a safe and reliable rail system.

6 derailments per 1,000 track miles

25,000 ties repaired per year

\$137.2 million over five years

# Reliability Investments: RMV



## Priority

- 1 | Reliability

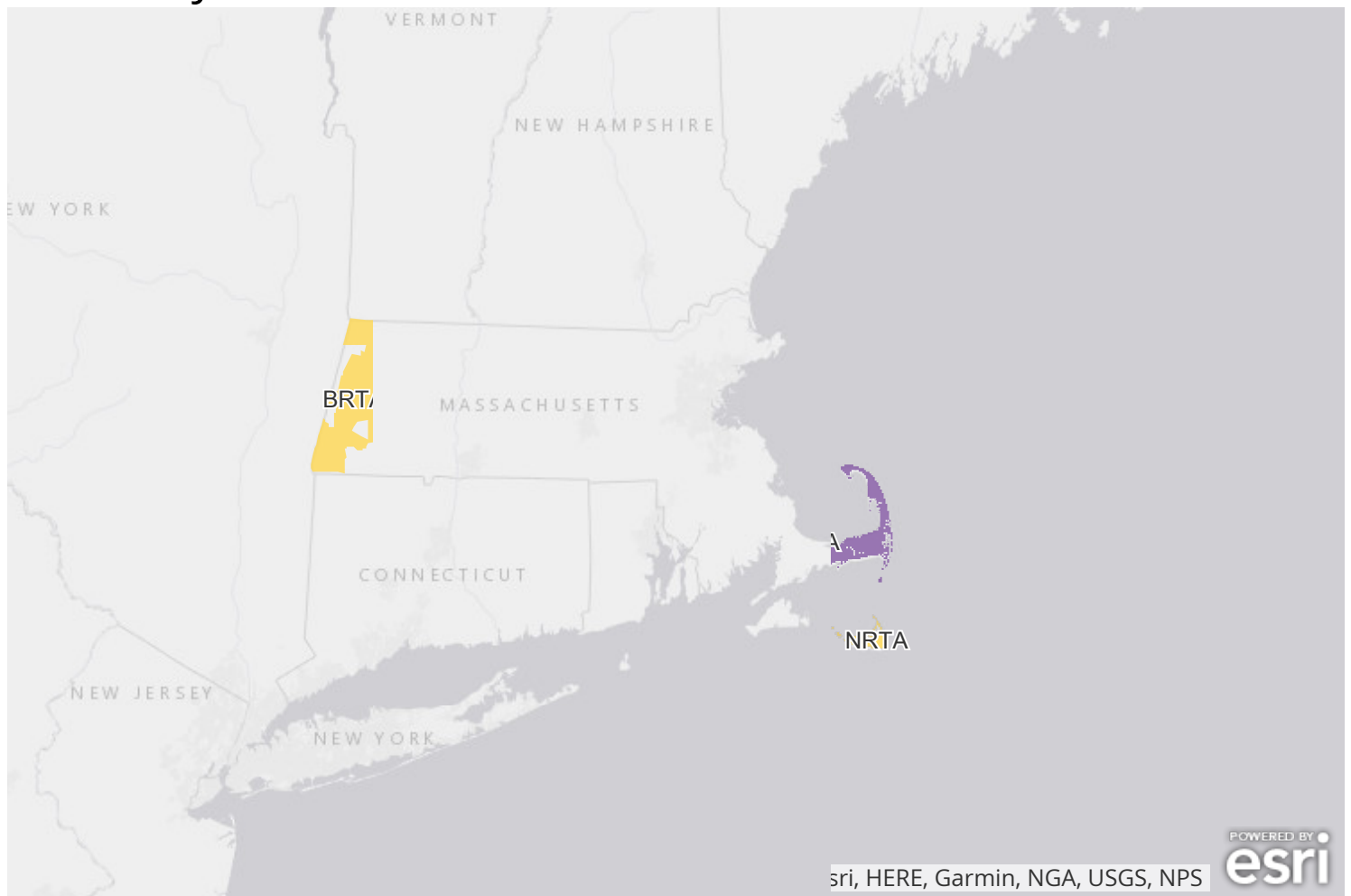
This program maintains and improves existing operating systems to support service delivery, application platforms, and electronic records retention systems.

Not established in Tracker

Not forecast in PfP

\$1.1 million over five years

# Reliability Investments: Transit



This program purchases vans and related equipment used to provide transportation for the elderly and individuals with disabilities of all ages. This program uses funds from Councils on Aging, the RTAs, and non-profit organizations.

Not established in Tracker

Not forecast in PfP

Number of organizations who attended a training to participate in MAP

\$50.2 million over five years

The program addresses the maintenance, rehabilitation, and upkeep of existing RTA facilities or

vehicles.

Facility condition (range)

Not forecast in PfP

\$8.3 million over five years

This program replaces existing RTA vehicles so that they meet state of good repair standards.

Fleet age & revenue vehicle condition (range) for fixed route bus and paratransit  
6% of fleet/revenue vehicles beyond ULB

\$53.7 million over five years

This program is used to provide technical assistance to support the transit program (grants management systems, vehicle inspections)

Not established in Tracker

Not forecast in PfP

\$10.0 million over five years

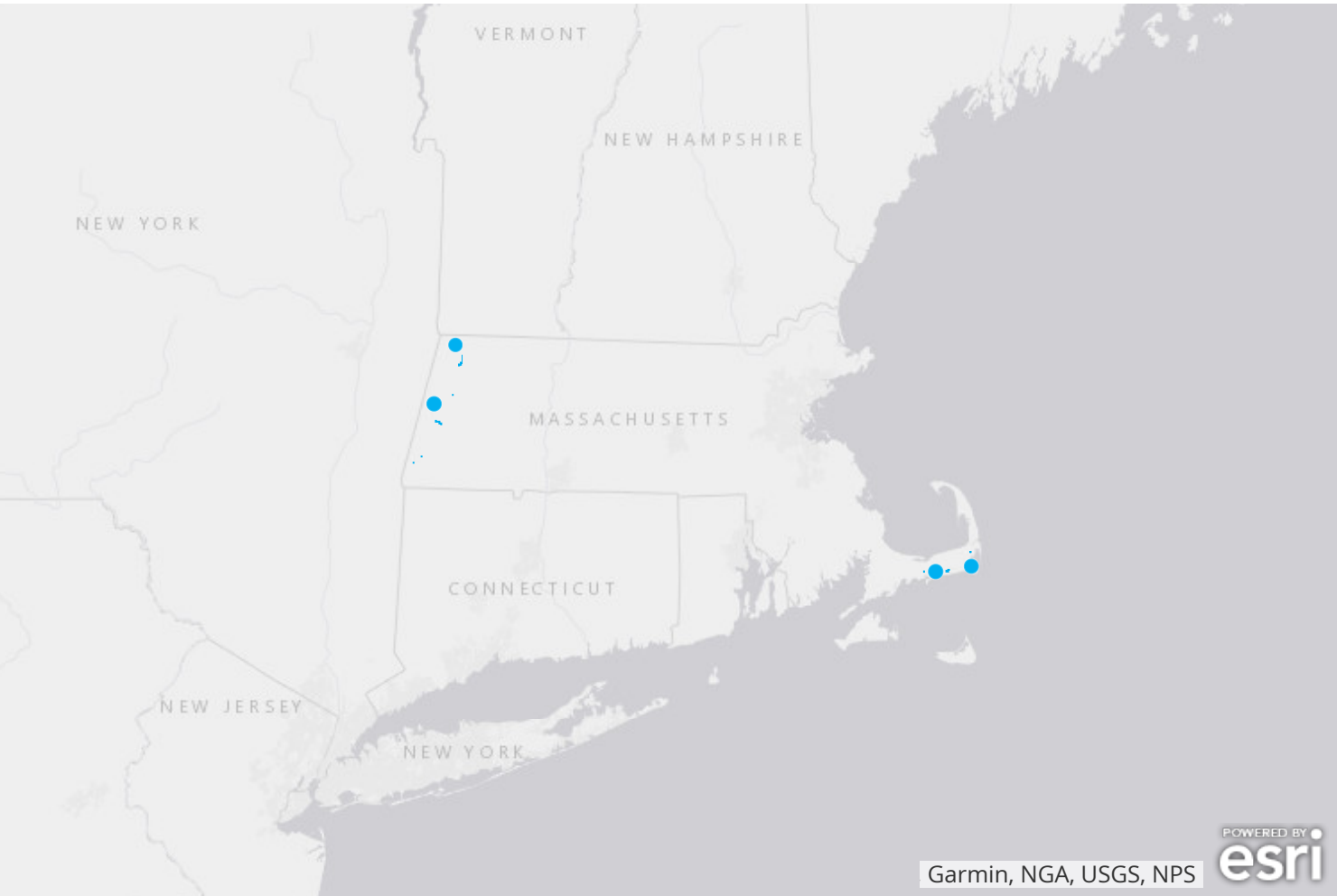
New competitive grant program that uses existing federal Congestion Mitigation Air Quality funds to leverage private and non-state funds to improve options for workforce transportation.

Not established in Tracker

Not forecast in PfP

\$9.9 million over five years

# Modernization Investments



Priority

- 2 | Modernization

Priority

- 2 | Modernization

Cost 2020-2024 (\$)

- > 417,938,895

- 300,000,000

- 200,000,000

- 100,000,000

- < 0

Priority

- 2 | Modernization

Cost 2020-2024 (\$)

- > 165,584,068

- 120,000,000

- 80,000,000

- 40,000,000

- < 0

Priority

- 2 | Modernization

Priority

- 2 | Modernization

About 28 percent of the \$18.3 billion total in proposed capital spending over the next five years is for "priority two" investments that help achieve the goal of modernizing the transportation system to make it safer and more accessible, and to accommodate growth. Modernization investments include:

Compliance with federal mandates or other statutory requirements for safety and/or accessibility improvements

Projects that go beyond routine maintenance and substantially modernize existing assets

Projects that provide expanded capacity to accommodate current or anticipated demand on existing transportation systems

<i>in millions</i>	Aeronautics / Airport Administration Buildings
\$25.0	
	Highway / ADA Retrofits
\$21.8	
	Highway / Allston Multimodal
\$21.0	
	Highway / Complete Streets
\$50.0	
	Highway / Intelligent Transportation Systems
\$81.6	
	Highway / Intersection Improvements
\$180.8	
	Highway / Roadway Reconstruction
\$1,418.6	
	Information Technology / Customer Digital Experience
\$4.7	
	Information Technology / Enterprise/BPR/Automation
\$25.1	
	Information Technology / Workforce Productivity
\$19.3	
	MBTA / Accessibility



\$243.9

MBTA / AFC 2.0

\$209.8

MBTA / Commuter Rail Safety and Resiliency

\$510.7

MBTA / Customer Experience and Technology

\$184.4

MBTA / Green Line Transformation

\$925.0

MBTA / Process Improvements and Innovation

\$13.2

MBTA / Red Line/Orange Line Improvements

\$1,580.7

MBTA / Risk Management and Mitigation

\$68.5

Rail / Facility Modernization

\$8.2

Rail / Industrial Rail Access Program

\$15.0

Rail / Track and Right-of-Way Modernization

\$61.1

RMV / ATLAS

\$35.1

RMV / Customer Service Modernization

\$4.8

RMV / Alternate Service Channels/Kiosks

\$2.25

Transit / RTA Facility and System Modernization

\$97.2

## Transit / RTA Replacement Facilities

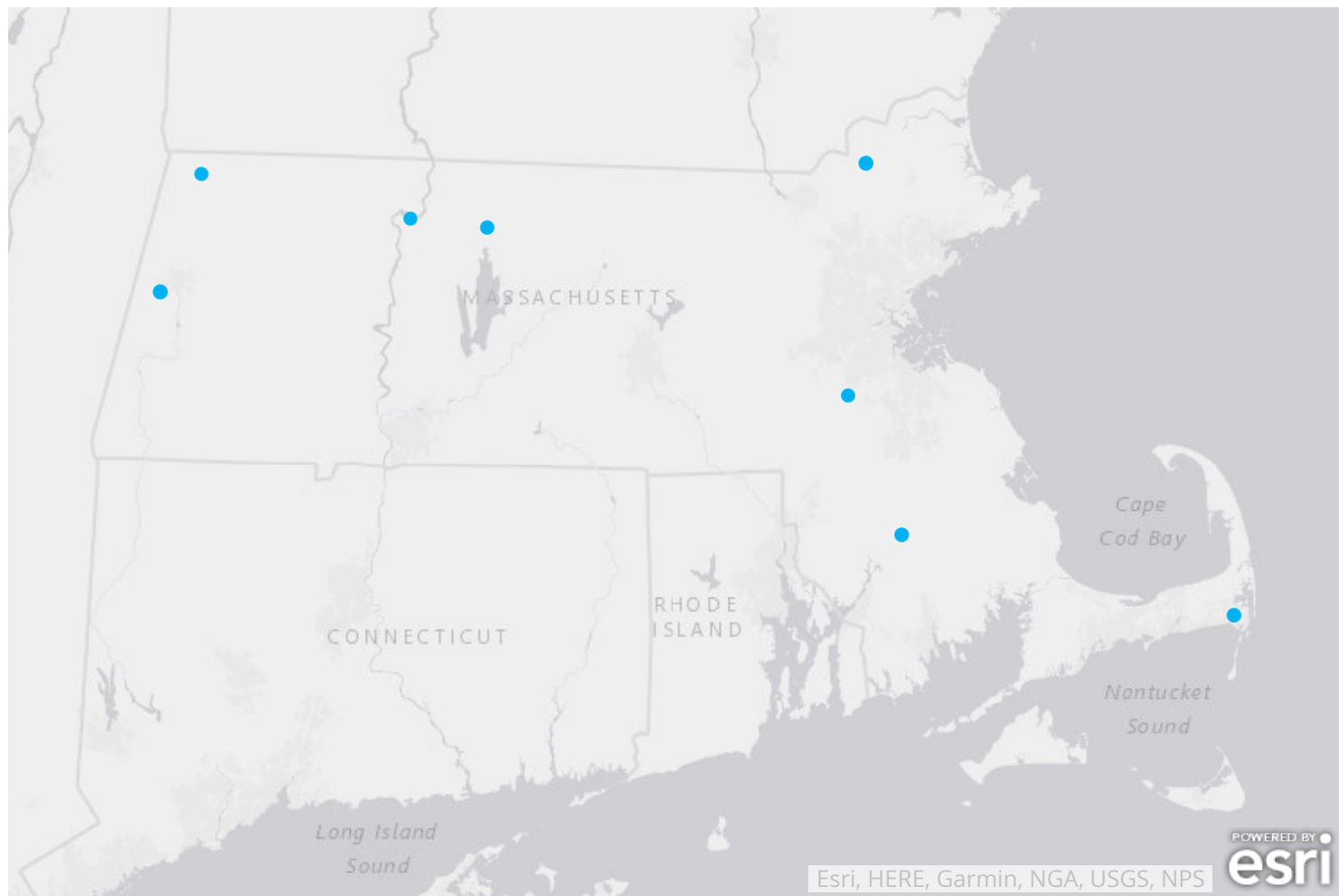
\$8.1

Aeronautics:	\$20.8
Highway:	\$1,886.7
IT:	\$49.3
MBTA:	\$3,018.7*
Rail:	\$63.7
Registry:	\$41.4
Transit:	\$111.8
<b>Total:</b>	<b>\$5,192.4</b>

\*Reflects targeted spending; programmed sources available for MBTA modernization investments total \$3,736.2 million.

The following sections detail Modernization Investments within the CIP by Division.

## Modernization Investments: Aeronautics



### Priority

- 2 | Modernization

### Program Purpose & Need

This program builds or renovates airport administration buildings as recommended by the 2010 Statewide Airport System Plan, which identified 17 airports that did not have existing or adequate administration buildings. This program is necessary to provide sufficient administrative spaces in airports, which is integral to improving safety, efficiency, and business growth.

### Program Performance

Not established in Tracker

Not forecast in PfP

### FY2020–2024 Program Budget

\$25.0 million over five years

# Modernization Investments: Highway



No legend

## Program Purpose & Need

This program improves the condition and accessibility of state owned sidewalks. This program is necessary to meet obligations identified under the MassDOT ADA Transition Plan.

## Program Performance

Under development

Long term—0 failed or missing curb ramps

Number of failed or missing curb ramps on statewide inventory

## FY2020–2024 Program Budget

\$21.8 million over five years

## ADA Transition Plan Website

### Program Purpose & Need

This program reconstructs and realigns the Allston interchange to improve safety for all transportation modes: walking, cycling, driving, transit and to create a vibrant Allston neighborhood reconnecting sections to each other and to the Charles River.

### Program Performance

Not established in Tracker

Not forecast in PfP

### FY2020–2024 Program Budget

\$21.0 million over five years

## Allston Multimodal Project Website

### Program Purpose & Need

This program rewards communities that demonstrate a commitment to embedding Complete Streets in their policies and practices by providing them with technical assistance and funding.

### Program Performance

2020—200

2022—250

Long term—275 Municipalities with approved Complete Streets policies

Not forecast in PfP

Number of Complete Streets policies enacted

### FY2020–2024 Program Budget

\$50.0 million over five years

### Program Purpose & Need

This program supports innovative and new communication equipment and information technology systems (signs, cameras, sensors, etc.) designed to provide real time traffic information to residents and visitors. This program is necessary to improve our network of communication tools to allow drivers to make better informed decisions regarding travel options.

### Program Performance

Not established in Tracker

Not forecast in PfP

Travel time from Real Time Traffic Management (*RTTM*)

### FY2020–2024 Program Budget

\$81.6 million over five years

#### Program Purpose & Need

This program upgrades and improves traffic signals and intersections. This program is necessary to meet safety improvement targets.

#### Program Performance

2020—0.62 fatalities, 6 injuries

Long term—Move to zero

Under development

#### FY2020–2024 Program Budget

\$180.8 million over five years

#### Program Purpose & Need

This program improves the overall condition of roads, by supporting both large and small state and municipal investments. Nearly all of the projects in this program include improvements to bicycle and pedestrian user spaces.

#### Program Performance

Not established in Tracker

Not forecast in PfP

Pavement condition and crash data

#### FY2020–2024 Program Budget

\$1,418.6 million over five years

# Modernization Investments: Information Technology



## Program Purpose & Need

This program ensures that MassDOT and MBTA websites present clear, concise, and timely information to the public at all times. This program is necessary to ensure that transportation system users have successful interactions with MassDOT or MBTA public facing websites.

## Program Performance

Not established in Tracker

Not forecast in PfP

Monitor budgets and scheduled deliverables.

## Help Desk and Incident Report activity

100% of websites updated and aligned with Commonwealth standards.

### FY2020–2024 Program Budget

\$4.7 million over five years

#### Program Purpose & Need

This program improves the ways that MassDOT manages and optimizes core functionality (such as document management, file shares, workflows, etc.) through business needs analysis and the implementation of enterprise solutions that are scalable, resilient and have an extensive ecosystem.

#### Program Performance

Not established in Tracker

Not forecast in PfP

Monitor budgets & scheduled deliverables.

Full implementation of critical finance, HR, and legal systems.

### FY2020–2024 Program Budget

\$25.1 million over five years

#### Program Purpose & Need

This program improves business processes through automated workflows and other electronic means at the department level. This program also may include investments that improve process timelines, reduce paperwork, and contribute to efficiency.

#### Program Performance

Not established in Tracker

Not forecast in PfP

Monitor budgets & scheduled deliverables.

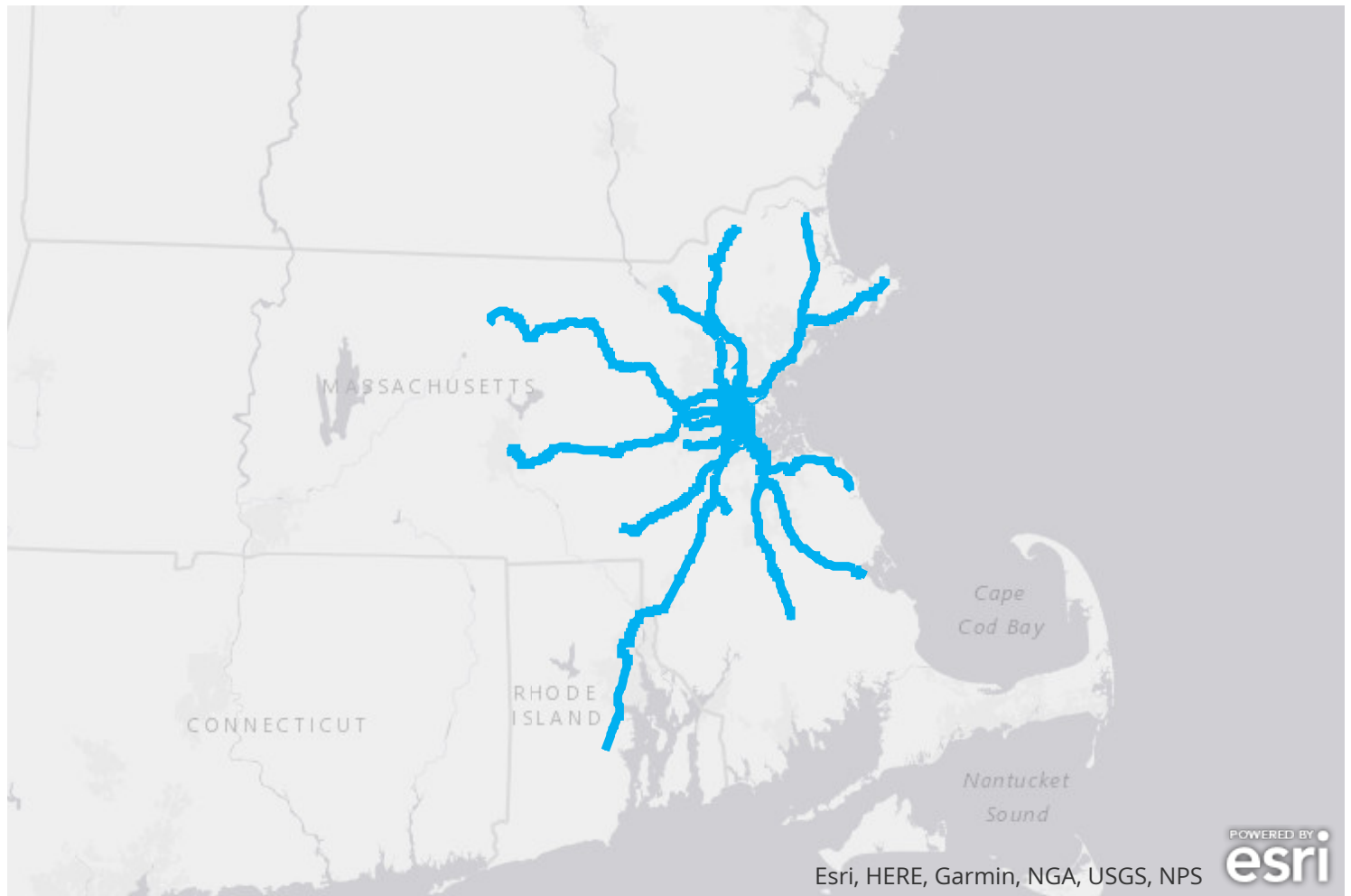
Full implementation of departmental business process and workflows.

### FY2020–2024 Program Budget

\$19.3 million over five years



# Modernization Investments: MBTA



## Priority

— 2 | Modernization

## Cost 2020-2024 (\$)

— > 417,938,895

— 300,000,000

— 200,000,000

— 100,000,000

— < 0

## Program Purpose & Need

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 (*PAT*).

Program Performance

Not established—platform accessibility

87% of the stations ADA compliant by 2022

Reduce barriers to accessibility

FY2020–2024 Program Budget

\$243.9 million over five years

### Accessibility on the T

Program Purpose & Need

The AFC 2.0 program will implement a new reliable and convenient fare payment and collection system, integrated across all modes, to replace CharlieCards/Tickets and supporting hardware and software

Program Performance

Not established in Tracker

Not forecast in PfP

Project-specific milestones

FY2020–2024 Program Budget

\$209.8 million over five years

### AFC 2.0 Website

Program Purpose & Need

This program includes projects that improve the safety and resiliency of the Commuter Rail network, including the implementation of Positive Train Control and Automatic Train Control.

Program Performance

Not established in Tracker

Not forecast in PfP

Project-specific milestones

FY2020–2024 Program Budget

\$510.7 million over five years

### Program Purpose & Need

This program includes improvement projects that modernize the system and enhance customer experience.

### Program Performance

Not established in Tracker

Not forecast in PfP

Under development

### FY2020–2024 Program Budget

\$184.4 million over five years

### Program Purpose & Need

This program will improve the quality of service (enhanced capacity and accessibility), through fleet modernization, infrastructure and facilities upgrades utilizing state-of-the art technology.

### Program Performance

Not established in Tracker

Not forecast in PfP

### FY2020–2024 Program Budget

\$925.0 million over five years

### Program Purpose & Need

This program includes investments in innovations that enhance productivity or quality of MBTA services and capital programs.

### Program Performance

Not established in Tracker

Not forecast in PfP

### FY2020–2024 Program Budget

\$13.2 million over five years

### Program Purpose & Need

This program includes the set of vehicle and infrastructure investments needed to fully

modernize the Red Line and Orange Line fleets and achieve the service goal of three minute headways on the Red Line and three and a half minute headways on the Orange Line.

#### Program Performance

Not established in Tracker

Not forecast in PfP

Project-specific milestones

#### FY2020–2024 Program Budget

\$1,580.7 million over five years

### Red Line/Orange Line Improvements Website

#### Program Purpose & Need

This program implements risk management initiatives as well as supports efforts to improve workplace safety and system security.

#### Program Performance

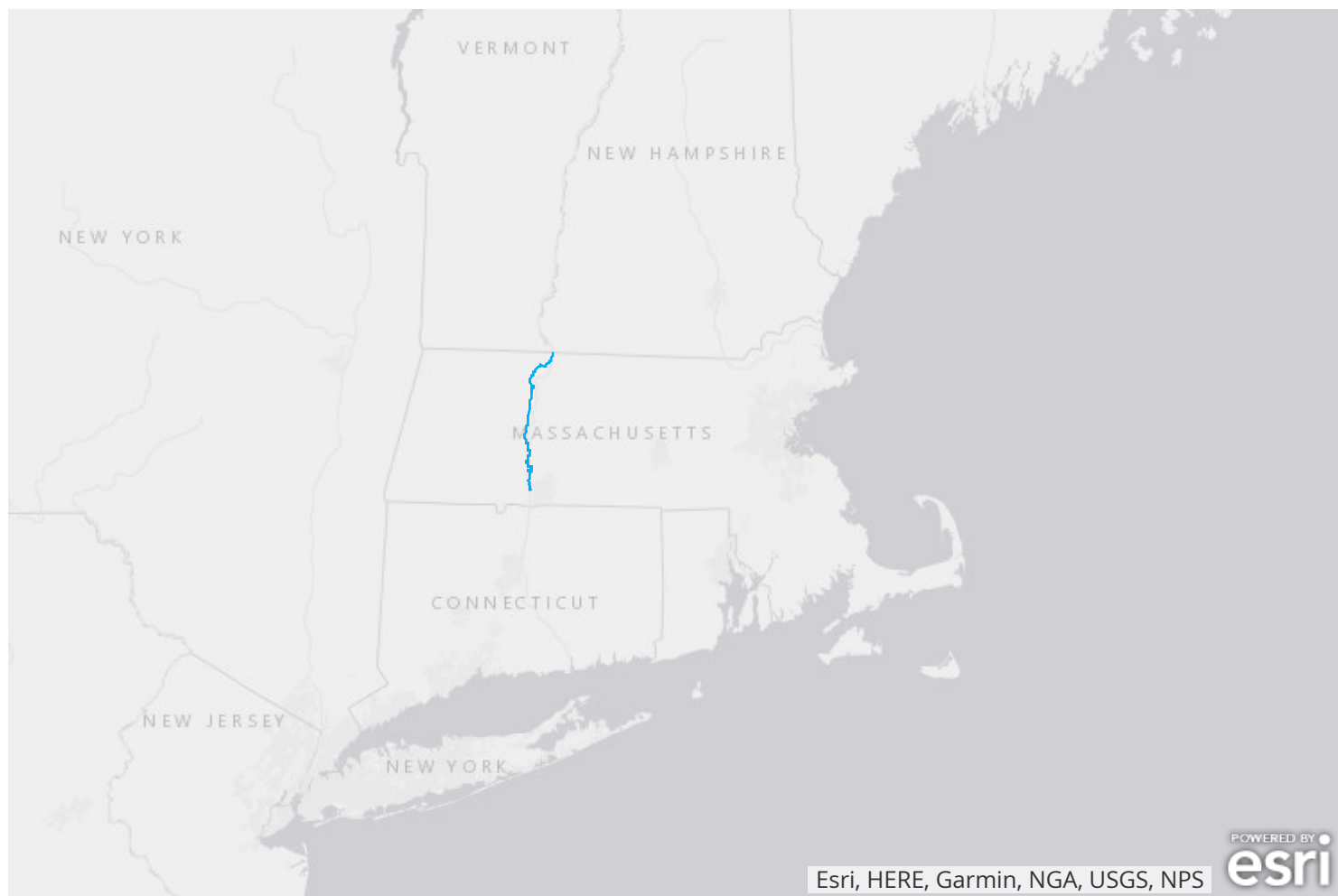
Not established in Tracker

Not forecast in PfP

#### FY2020–2024 Program Budget

\$68.5 million over five years

# Modernization Investments: Rail



## Priority

— 2 | Modernization

## Program Purpose & Need

This program repairs or replaces rail facilities, specifically rail yards and stations, to upgrade them to current industry standards or maintain the facility's utility. Prioritization of projects in this program will reflect economic opportunities for the line served, condition reports, type of risk/usage, and any contractual or regulatory requirements for action and consistency with the Statewide Rail Plan. This program is necessary to maintain a safe, reliable, cost effective, and modern rail system.

## Program Performance

Not established in Tracker

Not forecast in PfP

## FY2020–2024 Program Budget

\$8.2 million over five years

## Program Purpose &amp; Need

This program makes investments in private sector rail lines to leverage private investment that will increase freight rail usage or will modernize an active line to increase the utility to customers.

## Program Performance

Not established in Tracker

Not forecast in PfP

## FY2020–2024 Program Budget

\$15.0 million over five years

## Program Purpose &amp; Need

This program repairs or replaces assets within the rail right of way (typically ties, rail, ballast, switches, *etc.*) to upgrade their capacity to reflect current industry standards (weight capacity to 286,000 lbs) for the line and maintain the line's utility. Prioritization of projects in this program will reflect economic opportunities for the line, most recent inspections, type of usage (e.g. hazardous cargo), any contractual or regulatory requirements for action, and consistency with the Statewide Rail Plan. This program is necessary to maintain a safe, reliable, cost effective, and modern rail system.

## Program Performance

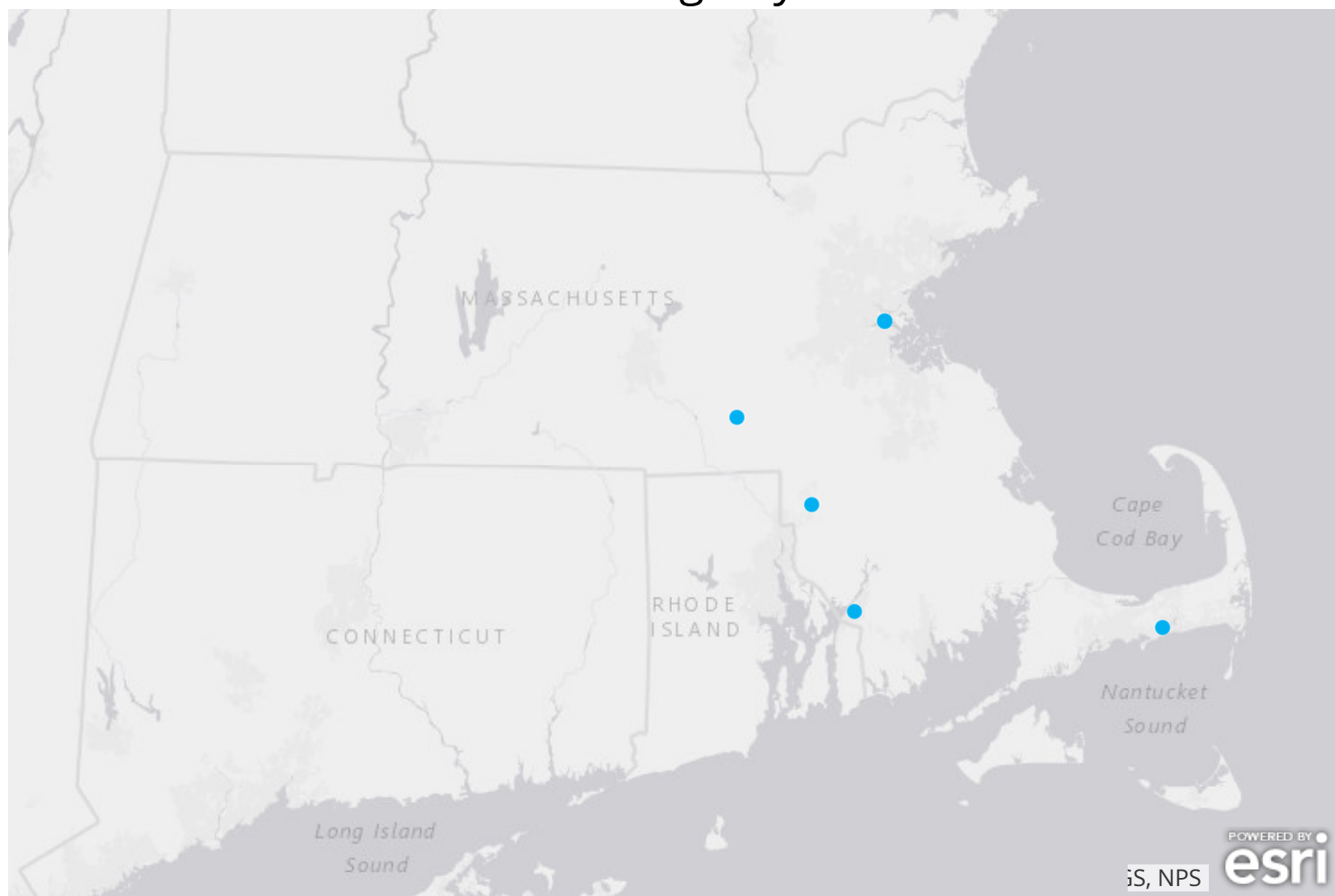
Not established in Tracker

Not forecast in PfP

## FY2020–2024 Program Budget

\$61.1 million over five years

# Modernization Investments: Registry of Motor Vehicles



## Priority

- 2 | Modernization

## Program Purpose & Need

This program improves RMV service delivery options by replacing the ALARS system. This program is necessary to increase business process efficiency through reduced wait times, increase the number of transactions done via alternative customer service channels, and increase the capacity of third parties dependent on RMV data.

## Program Performance

Not established in Tracker

Not forecast in PfP

## FY2020–2024 Program Budget

\$35.1 million over five years

**ATLAS-based myRMV Web Page****Program Purpose & Need**

This program includes updating and upgrading leased branch locations to accommodate the new dual line queuing model, signage, furniture and fixtures.

**Program Performance**

80% of Service Center customers served in 30 minutes or less

Not forecast in PfP

**FY2020–2024 Program Budget**

\$4.8 million over five years

**Program Purpose & Need**

This program funds customer service improvements through third party service channels including AAA locations and through installation of self service kiosks. This program is necessary to improve customer experience.

**Program Performance**

2020—65%

2022—70%

Long Term—75% of transactions conducted outside Service Centers

Not forecast in PfP

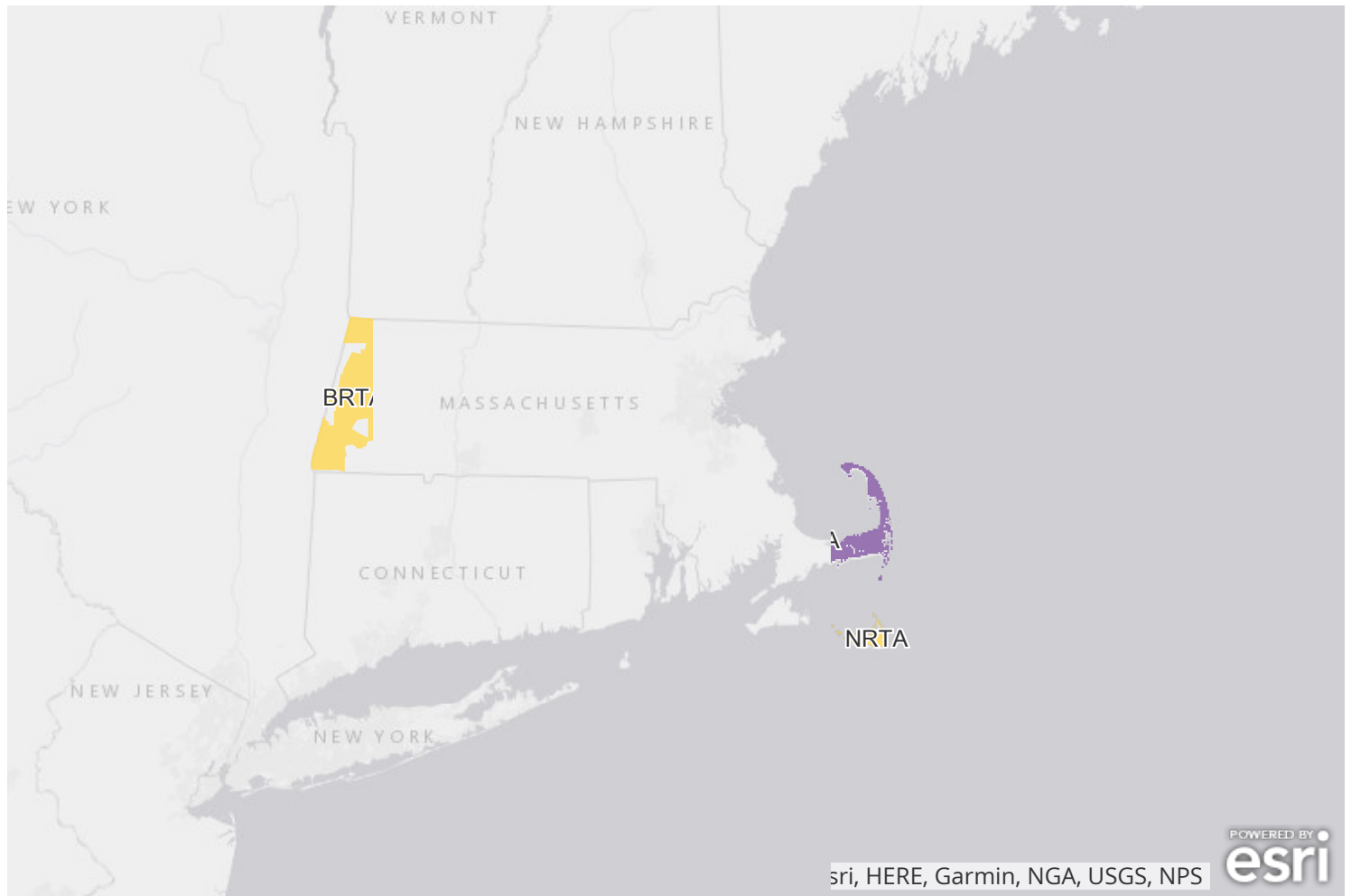
**FY2020–2024 Program Budget**

\$2.25 million over five years

**RMV Services at AAA Web Page**



# Modernization Investments: Transit



## Program Purpose & Need

This program improves or modernizes existing RTA facilities, systems, or equipment.

## Program Performance

Not established in Tracker

Not forecast in PfP

## FY2020–2024 Program Budget

\$97.2 million over five years

## Program Purpose & Need

This program constructs modernized RTA maintenance, administrative, operations or intermodal facilities.

## Program Performance

Not established in Tracker  
Not forecast in PfP

FY2020–2024 Program Budget  
\$8.1 million over five years

Expansion Investments



About 16 percent of the \$18.3 billion total in proposed capital spending over the next five years is targeted on "priority three" investments that expand the diverse transportation options for communities throughout the Commonwealth. Expansion investments include:

- Projects that expand highway, transit and rail networks and/or services
- Projects that expand bicycle and pedestrian networks to provide more transportation options and address health and sustainability objectives

<i>in millions</i>	Highway / Capacity
\$308.1	
	Highway / Shared Use Paths

\$203.2

MBTA / Expansion project development

\$25.0

MBTA / Green Line Extension

\$1,326.4

MBTA / Non-GLX Expansion projects

\$43.0

MBTA / South Coast Rail

\$1,009.6

OTP / Bicycle &amp; Pedestrian Modal Implementation

\$60.0

Rail / Vehicle expansion

\$31.0

Highway:	\$537.9
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MBTA:	\$2,384.0
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OTP:	\$59.0
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Rail:	\$7.5
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The following sections detail Expansion Investments within the CIP by Division.

## Expansion Investments: Highway Division



This program adds new connections or expands the existing transportation network. Examples include the provision of additional lanes, new highway connections, or new roadways.

Not established in Tracker  
Not forecast in PfP

\$308.1 million over five years

This program constructs shared use paths (also known as multi-use paths and trails) that are independent from a roadway. Investments under this program are eligible for federal funding and programmed in the STIP.

Not established in Tracker

Not forecast in PfP

\$203.2 million over five years

## Expansion Investments: MBTA



This program provides initial funding for project development efforts (including planning and design) to advance the “next priorities” expansion investments identified in Focus40, the newly approved strategic capital plan for the MBTA.

Not established in Tracker

Not forecast in PfP

\$25.0 million over five years

### Focus40 Website

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.

Not established in Tracker  
Not forecast in PfP  
Project-specific Milestones

\$1,326.4 million over five years

### Green Line Extension Web Page

This program makes targeted capital investments to expand the existing transit or commuter rail system.

Not established in Tracker  
Not forecast in PfP

\$43.0 million over five years

This program funds the Commonwealth's commitment to move forward with Phase 1 of the South Coast Rail (*SCR*) project to more fully meet the existing and future demand for public transportation between Fall River / New Bedford and Boston, and to enhance regional mobility while supporting smart growth planning and development strategies in the affected communities.

Not established in Tracker

Not forecast in PfP

\$1,009.6 million over five years

**South Coast Rail Project Map (link available only in online story)**

**South Coast Rail Website**

## Expansion Investments: Planning and Enterprise Services



This program will meet needs identified through the statewide bicycle and statewide pedestrian planning updates. The plans address critical needs around safety, accessibility, network connectivity, and maintenance.

Not established in Tracker

Not forecast in PfP



\$60.0 million over five years

MassDOT Pedestrian Plan    MassDOT Bicycle Plan

## Expansion Investments: Rail Division



This program repairs, replaces, or acquires rail equipment (locomotives, coaches, ballast cars, light duty vehicles, *etc.*) to expand existing rail services, including the addition of passenger rail or freight rail. Prioritization will reflect economic opportunities for the new service, consistency with the Statewide Rail Plan, and any contractual or regulatory requirements for cation.

Not established in Tracker

Not forecast in PfP

\$31.0 million over five years

Massachusetts State Rail Plan Website



# Equity Analysis



## Overview

The investments included in the CIP update are determined through a collaborative process among many stakeholders (cities and town, private sector, public agencies, advocates, etc.), representing diverse constituencies with an array of perspectives and goals for the future of public transportation. As part of our commitment to civil rights and non-discrimination, MassDOT evaluates proposed investments and projects to assure that they are equitable with respect to, both geography and to the population groups that benefit.

The analysis evaluated investments per capita at the census tract level. Equitable investment was evaluated using a number of different variables and indicators, such as transportation mode (Highway, MBTA, Rail & Transit, and Aeronautics) and investment priority (Reliability, Modernization, and Expansion).

The analysis was conducted on several levels –

- In the aggregate across all modes and all investment categories to understand the total impact of the CIP

- Individually for each mode and investment category to understand if there were particular areas of concern that the aggregate level analysis would not have identified

separately

Variable buffering was used to analyze impacts of the proposed CIP investments based on location (rural, suburban, urban) and mode (Transit – RTA/MBTA, Highway, Rail, Aeronautics)

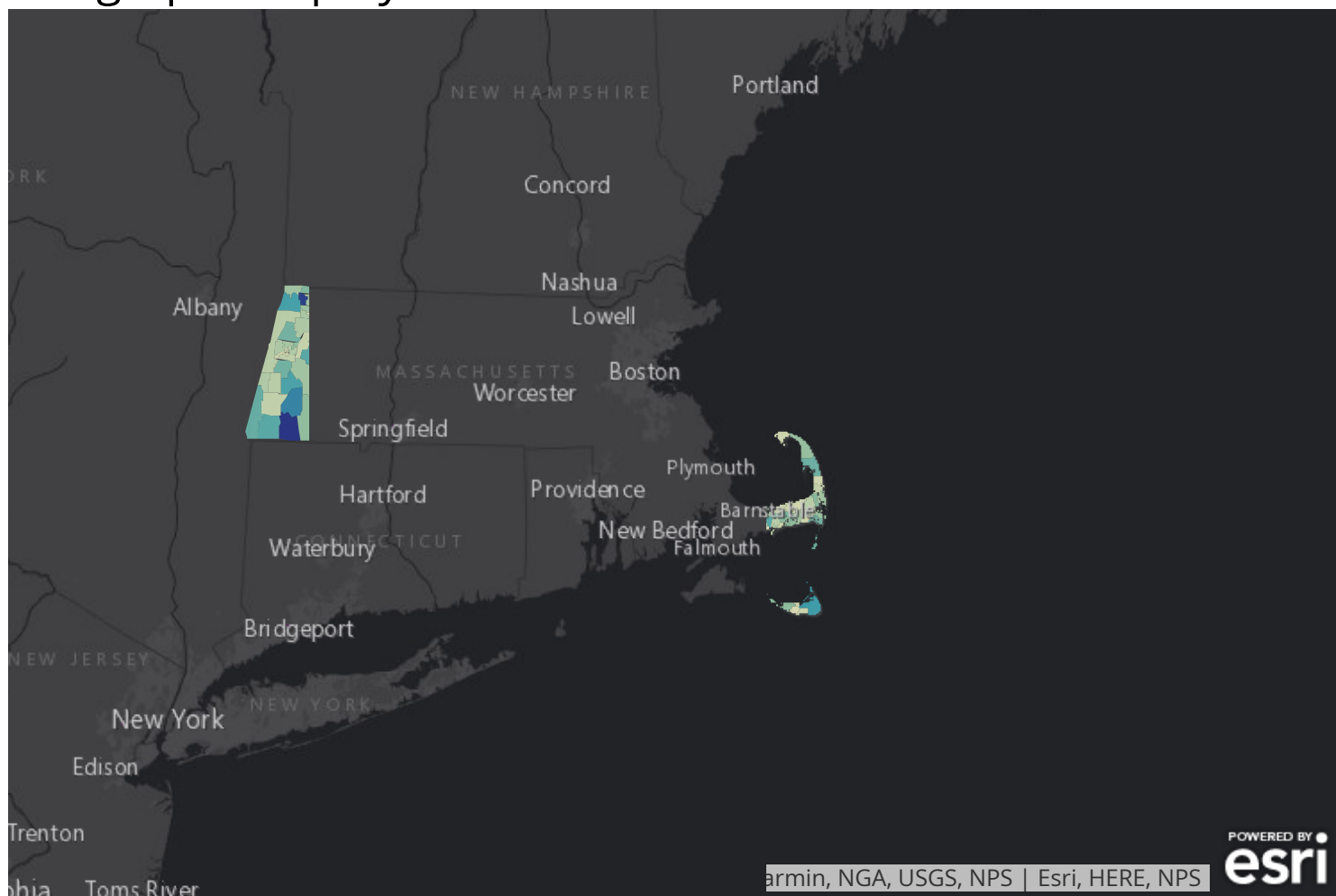
Investments were measured per capita to account for population density. Overall, this analysis determined that the CIP equitably distributes investments among minority, low-income, limited English proficient (LEP), and disability communities. It also shows an equitable distribution of investments geographically across the Commonwealth.

MassDOT and the MBTA continue to develop and refine the analysis used to determine equity of capital investments. While geographic funding distribution and allocation of funding across diverse communities remains a core component of this analysis, MassDOT and the MBTA continue to work to innovate finer-grain analysis methodologies to identify and quantify the equity of the impacts of projects at the community level and statewide.

This tab contains the results of the equity analysis conducted on the draft FY2020–2024 CIP update, which indicates an equitable plan. There is a narrative describing the results and methodology used along with illustrative maps. For additional information about MassDOT's Civil Rights work, web links are available in the [Glossary of Terms](#) (link available only in online story).

More information about the current state of this practice and future goals is available by contacting the Civil Rights team at [massdot.civilrights@state.ma.us](mailto:massdot.civilrights@state.ma.us).

# Geographic Equity



As a state agency, MassDOT seeks to fund transportation infrastructure equitably across the state. However, because of the data that is available and the nature of transportation infrastructure, there is no clear consensus on what exactly is an equitable distribution of resources, given the variation between needs, demand, and contributed tax dollars. As a result, MassDOT assessed the data in a variety of ways for this equity analysis. The maps included in this section illustrate a few different ways that MassDOT assessed the data. While no single method is perfect, these approaches, taken together, provide useful information to better understand the regional distribution of resources. Only projects programmed within SFY 2020-2024 in the CIP are considered.

Some of the variables considered in analyzing the geographic equity of the plan include population, lane miles, and Chapter 90 ratio. Population is considered to evaluate investment per capita and lane miles is considered as a proxy to evaluate demand for roadway maintenance and improvements.

The Chapter 90 Program is a formula program distributed to municipalities for roadway improvements based on population (20.83%), employment (20.83%), and lane miles (58.33%). This formula can serve as a benchmark against which MassDOT Highway funding should be distributed and as a proxy for an appropriation distribution for all non-transit MassDOT projects. Because of concerns with just looking at population or at lane miles, this formula is an opportunity to consider

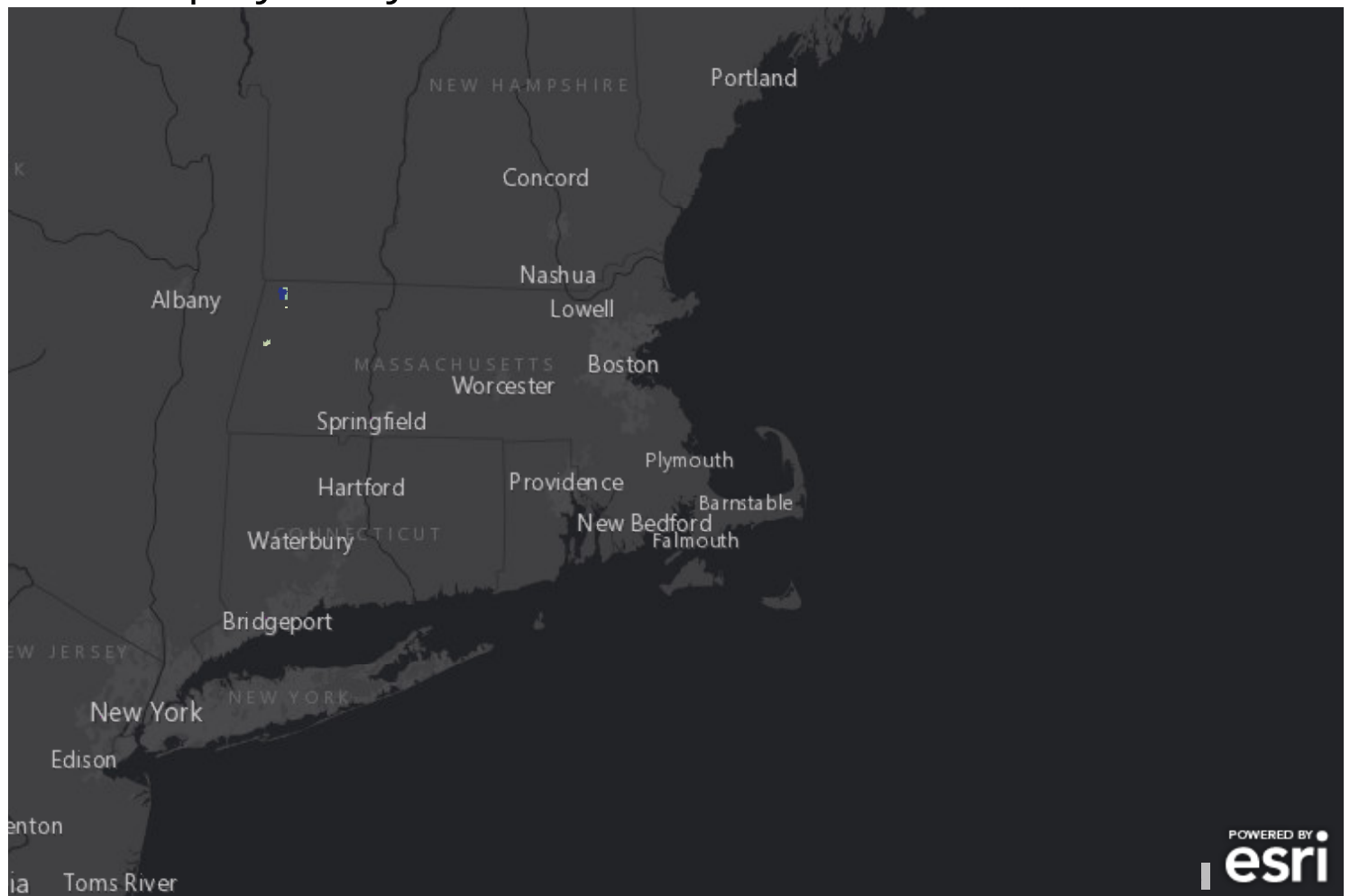
both variables. As the formula is already in use throughout the Commonwealth, MassDOT opted to use the given percentages as an acceptable measure for an equitable distribution of investments.

If the ratio of CIP funding allocated to a municipality is the same as the ratio of Chapter 90 funding it receives – meaning a ratio of one – this would indicate that the CIP distribution is equitable. Greater than one would indicate more CIP funding than would be expected if funding were distributed according to the Chapter 90 formula, less than one would mean that the CIP distribution provides less than would have been received if the Chapter 90 formula were in use.

The map shows a different story about the geographic distribution of funding. The ratios presented in the map illustrate what the expected investments would be in each community were the plan perfectly equitable across municipalities. The shading indicates the variations in investments from that expected investment. Generally, urban areas receive a disproportionately high share of investment based on lane miles, while rural areas receive a disproportionately high share on a per capita basis. Using the Chapter 90 formula as a benchmark for equity, which includes both lane miles and population, results in less stark contrasts, though urban areas still perform better. Because more roads are eligible for state and federal funding and projects are generally more expensive in urban areas, this finding does not mean there is clear bias.

Overall, there are no major geographic equity concerns within the Plan. MassDOT and MBTA will continue to analyze the Capital Investment Plan year over year to assure that inequitable patterns do not emerge. For any analysis, MassDOT would not expect perfect equity for a five year plan, as variations are bound to happen given that one-time large projects can skew outcomes.

# Social Equity Analysis



The social equity analysis was conducted to establish compliance with federal and state nondiscrimination laws and regulations, including Title VI of the Civil Rights Act of 1964 (Title VI), the Civil Rights Restoration Act of 1987, and the 1994 Presidential Executive Order 12898 on Environmental Justice. The social equity analysis considered the distribution of investments across all census tracts, and across different demographic indicators, such as minority, low-income, limited English proficiency (LEP), and disability.

Minority census tracts are defined as those with populations that are at least 23.87 percent minority, as defined by the US Census, which is the statewide average. Consistent with state policy, low-income census tracts are defined as those with a median household income at or below 65 percent of the statewide median household income. The statewide median household income is currently \$70,954. Therefore, low-income census tracts are defined as those with median household incomes of \$44,100 or less, regardless of household size. Census tracts with at least 6.25% of their population considered limited English proficient (LEP) (individuals who do not speak English as their primary language and who have a limited ability to read, write, speak, or understanding English) were also considered for social equity implications, as were those tracts where 11% or more of the population identified as individuals with disabilities.



Equity analyses in this context seek to identify discrepancies in the allocation of funding across the identified demographic groups. While there is no single threshold that serves as a dispositive indication of funding allocation differences that suggest clear equity concerns, the state of the practice indicates that differences on the order of 20% can be observed without implicating equity. Furthermore, in instances where differences exceed 20%, there may be legitimate nondiscriminatory justifications that, again, do not indicate equity concerns.

Analyzing the entire CIP, investments are approximately 12% lower in minority than non-minority communities. Transit only investments (MBTA) investments are higher in minority communities on a per capita basis. This is attributed to the fact that many of these census tracts are located within the MBTA service area, and thus benefit from MBTA investments. It is important to note that the CIP only captures capital projects, and thus does not reflect **capital and operating** investments on the MBTA system as a whole. Therefore, this social equity analysis cannot effectively capture equity implications as they may relate to transit operations.

Considering all modes, LEP (Limited English Proficiency) census tracts receive 7% more funding per capita than non-LEP census tracts. When considering just MBTA investments, LEP tracts receive 34% more funding per capita than non-LEP tracts. This is attributed to the fact that many municipalities within the MBTA service area are considered LEP under the definition used for this analysis.

Overall, the equity analysis of the SFY 2020-2024 CIP does not seem to indicate social equity concerns. MassDOT and MBTA will continue to analyze the Capital Investment Plan year over year to assure that inequitable patterns do not emerge. For any analysis, MassDOT would not expect perfect equity for a five year plan, as variations are bound to happen given that one-time large projects can skew outcomes.

# Investment Details



This section provides the lists of investments contained within this CIP. The associated map includes all mapped investments in the CIP. The links in the table below open the full lists of investments. The Download links will open the lists in a PDF format for easier use. "All Divisions" includes all investments across all MassDOT Divisions, whereas all other links are to Division-specific lists.

<a href="#">All Divisions (link available only in online story)</a>	<a href="#">Download All Divisions</a>
<a href="#">Aeronautics Division (link available only in online story)</a>	<a href="#">Download Aeronautics</a>
<a href="#">Highway Division (link available only in online story)</a>	<a href="#">Download Highway</a>
<a href="#">Information Technology (IT) (link available only in online story)</a>	<a href="#">Download IT</a>
<a href="#">MBTA (link available only in online story)</a>	<a href="#">Download MBTA</a>
<a href="#">Planning and Enterprise Services (OTP) (link available only in online story)</a>	<a href="#">Download OTP</a>

Rail Division (link available only in online story)

Download Rail

Registry of Motor Vehicles (RMV) (link available only in online story)

Download RMV

Transit Division (link available only in online story)

Download Transit

The information within each column is described below:

**Location** – where the investment is located

**Project ID** – the Division specific ID that uniquely identifies each investment

**Project name** – the name of the investment and a brief description

**Priority** – the capital priority that the investment addresses

**Program** – the program from which the investment is made

**Score** – the score of the investment (reliability investments are not scored)

**Total cost** – the total cost of the investment

**Prior years** – the spending on the investment that pre-dates the plan update

**FY 2020** – the spending estimated to occur in fiscal year 2020

**FY 2021–2024** – the spending estimated to occur in the out years of the plan

## Public Comment Tool:

2020-2024 CIP Public Comment period ended June 10, 2019

### Capital Investment Plan (CIP) Comment Tool

Select Language ▼ ?

2019 Highway Division Projects

Highway Division Projects >

#### Welcome to the Capital Investment Plan (CIP) Comment Tool

The Capital Investment Plan (CIP) for MassDOT and the MBTA funds, over a five-year period, approximately \$17 billion of investments for capital transportation assets across Massachusetts. The plan funds projects in urban, rural, and suburban areas across the Commonwealth and across all modes of transportation.

#### How to Use

This feedback tool allows you to give input directly to MassDOT and the MBTA on the projects included in the current CIP, which spans from 2019–2023, as well as to learn more about these projects. Select a Division to see all projects programmed for that Division. You may comment on shown projects, or show your support via the 'Support' button. Use the 'Back' button to return to the list of Divisions.

1 ♥ | <

Supporters Back to Division List

#### Map Navigation



Your feedback is important to the development and support of the Capital Investment Planning process. This interactive tool provides an opportunity for members of the public to directly comment on individual investments in the CIP. Follow the directions in the pop-up window to show support or to provide comment on individual investments.

In the event that you would prefer more space to navigate the map, or if the tool is not loading for you in this interface, please **open the tool in a new window**, or use the traditional methods of submitting comments below:

*Capital Investment Plan*  
*10 Park Plaza, Suite 4150*  
*Boston, MA 02116*  
*masscip@state.ma.us*

Alternatively, you may visit us at one of our **public meetings across the state**. (link available only in online story)

The Capital Planning team at MassDOT will review all comments provided on the CIP, and will provide response in the form of a single document addressing all comment topics. The summary will be posted to the CIP website [www.mass.gov/massdot/cip](http://www.mass.gov/massdot/cip) in the near future. **Please include your email address on any public comment you submit to be included in future CIP outreach.**