

**Statewide funded highway projects &
MBTA projects proposed for the
FFY 2017-2021 Boston Region Transportation Improvement Program**

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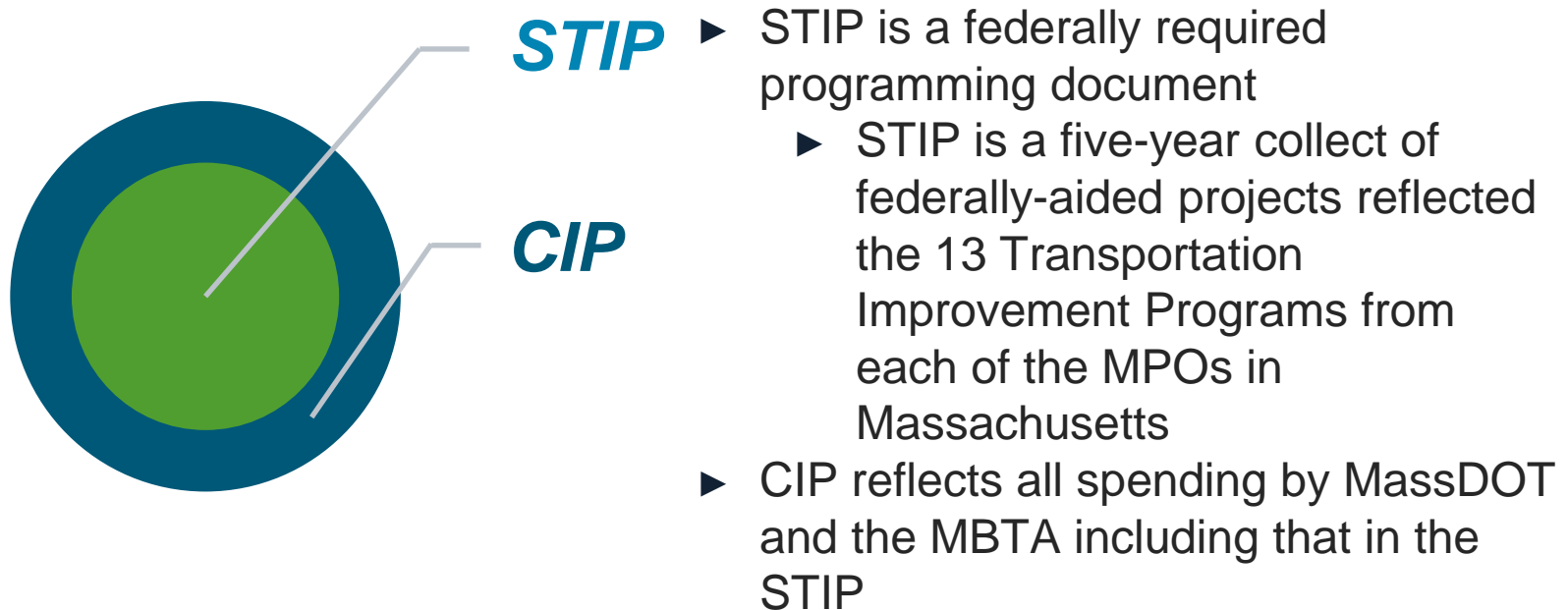
July 7, 2016



A new approach to investment planning

- ▶ One CIP for MassDOT and the MBTA
- ▶ CIP built on the idea of priorities, programs, and projects
- ▶ Focus on restoring reliability

Linking the CIP and the STIP



How the Capital Investment Plan is different

Identifies capital priorities:

1 *Reliability*

Maintain and improve the overall condition and reliability of the transportation system

- ▶ 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

2 *Modernization*

Modernize the transportation system to make it safer and more accessible and to accommodate growth

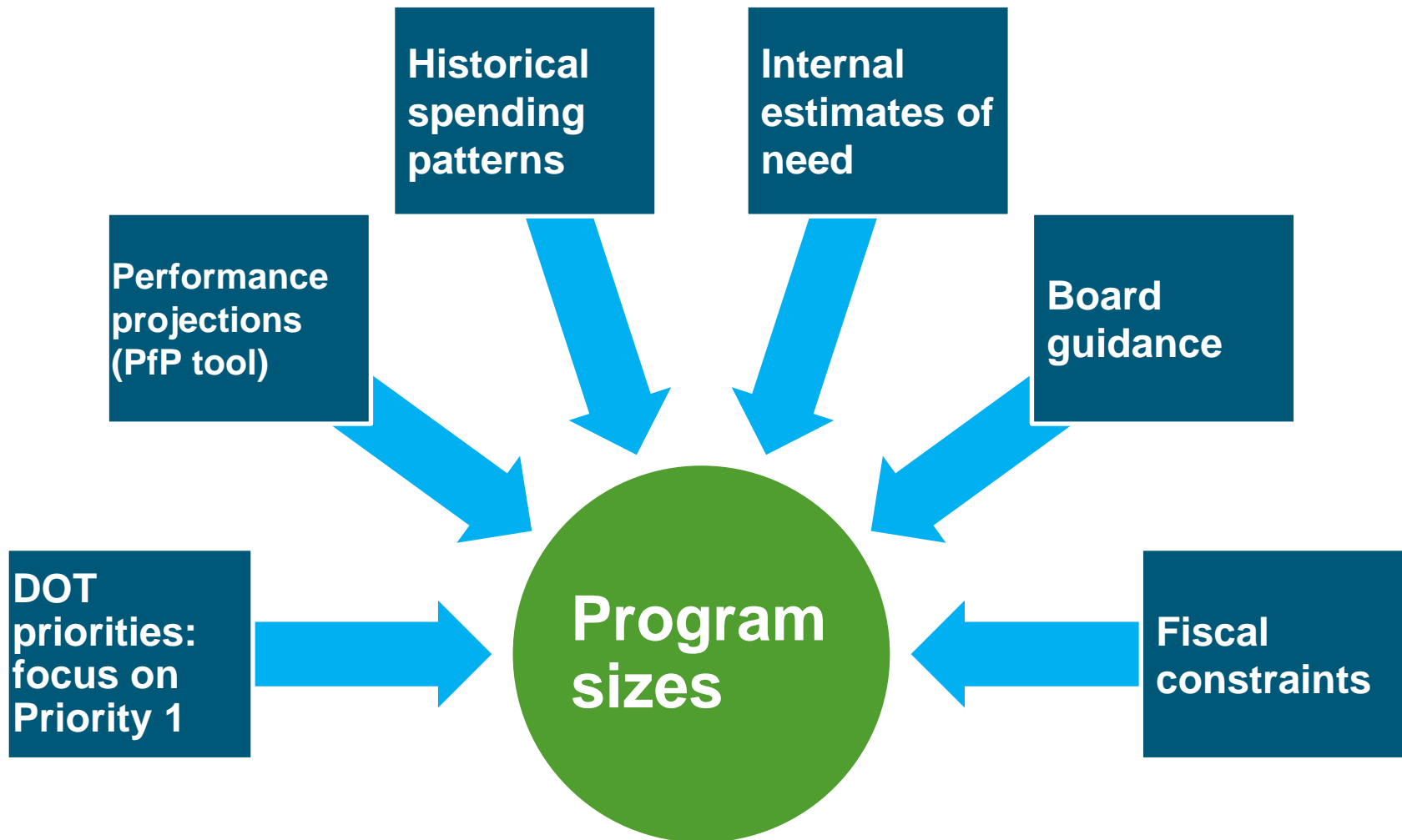
- ▶ Compliance with federal mandates or other statutory requirements for safety and/or accessibility improvements
- ▶ Projects that go beyond State of Good Repair and substantially modernize existing assets
- ▶ Projects that provide expanded capacity to accommodate current or anticipated demand on existing transportation systems

3 *Expansion*

Expand diverse transportation options for communities throughout the Commonwealth

- ▶ 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

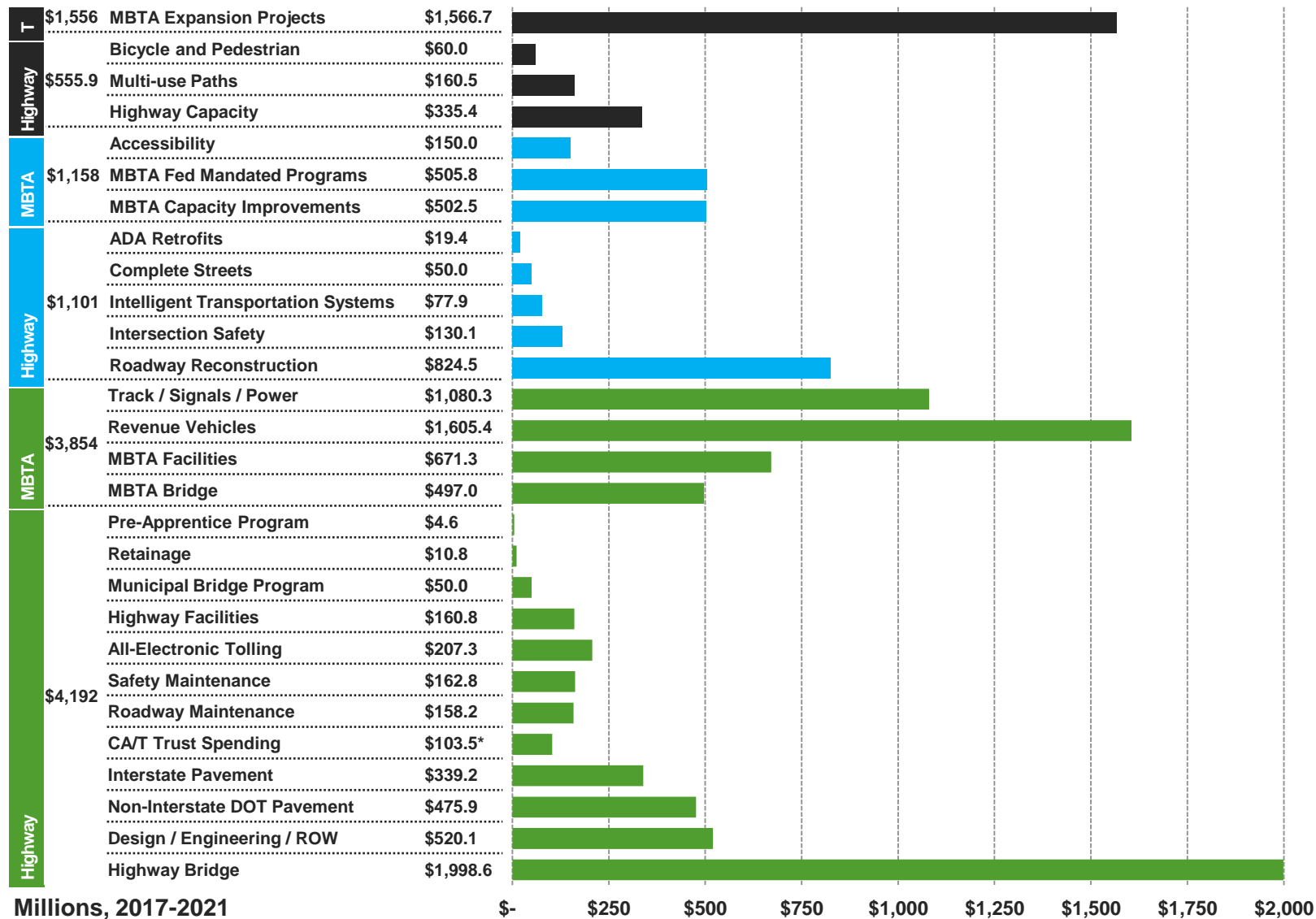
Program sizing



1 **2** **3**

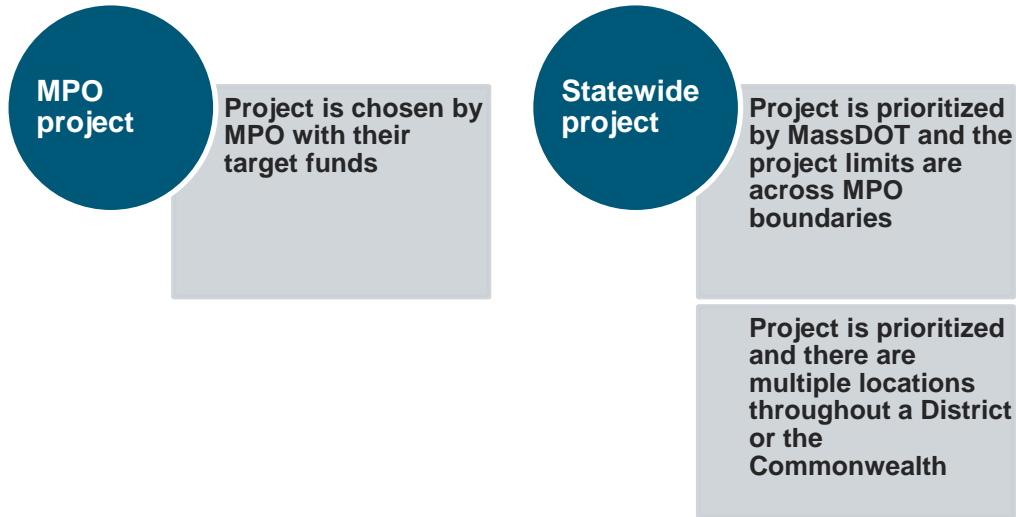
Highway and MBTA programs overview

FY 2017-2021



What does statewide mean?

► What is a “statewide” project?



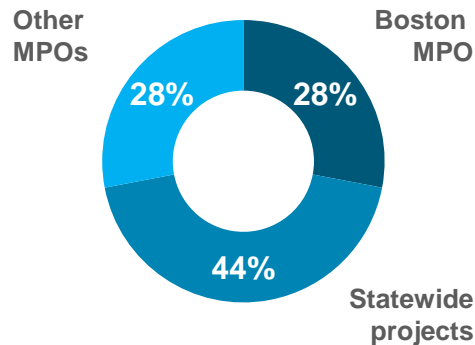
► What is “statewide” funding?



Highlighted statewide funding sources for this MPO

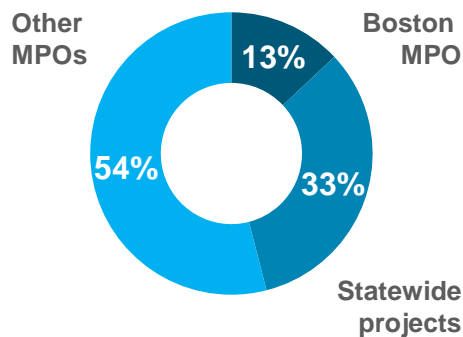
NHPP ▶ 65% of *statewide* funding - \$1,752,416,001

- ▶ National Highway Performance Program
 - ▶ Interstates
 - ▶ National Highway System roadways
 - ▶ On-system bridges



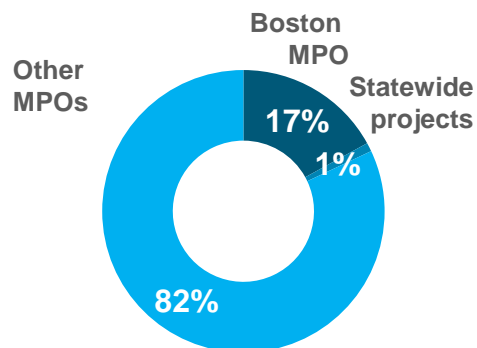
CMAQ ▶ 9% of *statewide* funding - \$245,137,768

- ▶ Congestion Mitigation Air Quality
 - ▶ Intersection improvements
 - ▶ Transit service pilots
 - ▶ Bicycle / pedestrian improvements



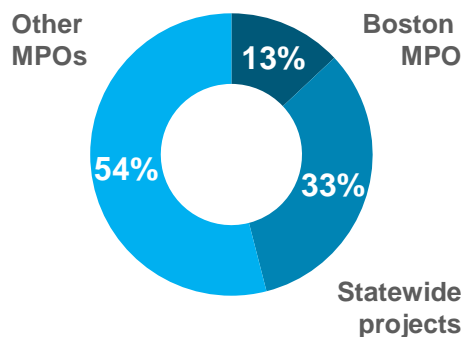
Funding sources and the Boston MPO

BR-OFF



- ▶ 5% of *statewide* funding - **\$146,366,420**
- ▶ Bridges off the federal-aid system of roadways

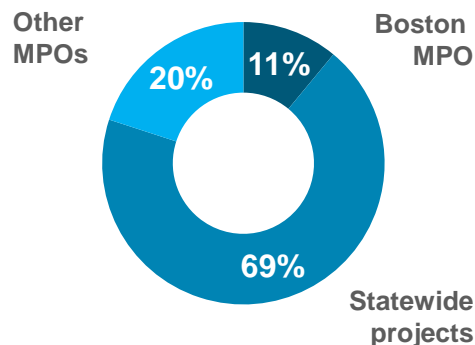
STP-TE



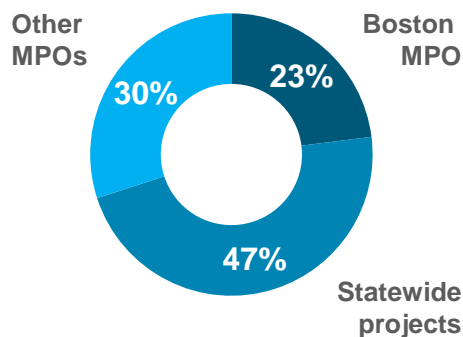
- ▶ 1% of *statewide* funding - **\$37,484,532**
- ▶ “Transportation Enhancements”
- ▶ Eliminated by MAP-21
- ▶ Mostly spent on storm water mitigation projects
- ▶ Remaining balances will be spent to zero

Funding sources and the Boston MPO

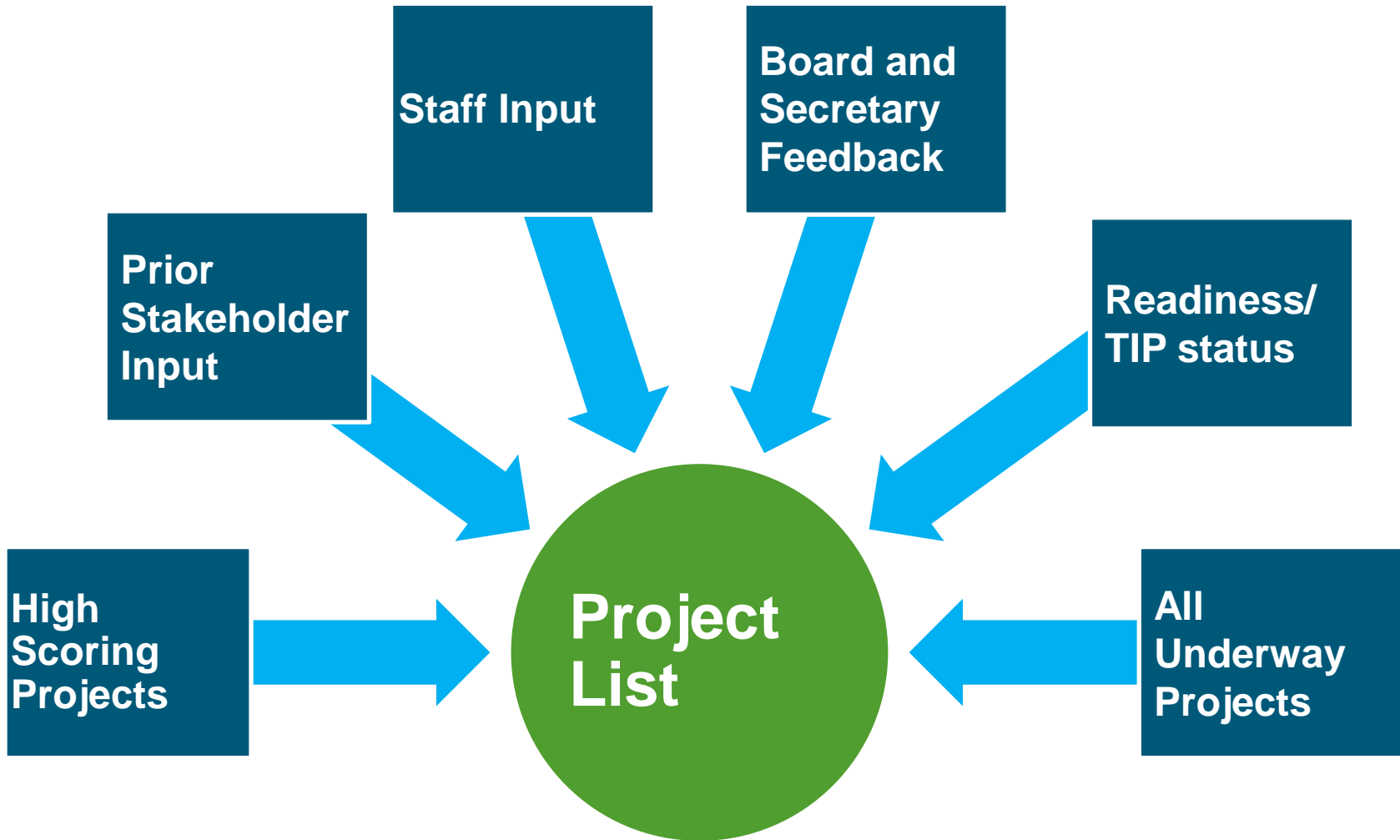
- HSIP** ▶ 6% of *statewide* funding - \$148,075,000
 ▶ Highway Safety Improvement Program



- All statewide** ▶ 100% of *statewide* funding - \$2,679,796,514
 ▶ All statewide funding sources from 2017-2021



Filling project lists for each program



Prioritizing bridge projects

Bridge health 40%

- Forecast change in bridge health index

“Condition loss” 30%

- Measure of current loss in condition

Other factors 30%

- ADT
- Detour length
- Functional classification
- Weight restrictions
- Deck geometry deficiency

- ▶ Fiscal constraint
- ▶ Regional equity

Bridge projects

2017 – On-system bridges

604173	BOSTON	BOSTON- BRIDGE REHABILITATION, B-16-016, NORTH WASHINGTON STREET OVER THE BOSTON INNER HARBOR	6	NHPP	\$ 24,237,956
606553	HANOVER	HANOVER- NORWELL- SUPERSTRUCTURE REPLACEMENT, H-06-010, ST 3 OVER ST 123 (WEBSTER STREET) & N-24-003, ST 3 OVER ST 123 (HIGH STREET)	5	NHPP	\$ 12,955,600
607507	WAKEFIELD	WAKEFIELD- BRIDGE DECK REPLACEMENT, W-01-021 (2MF), HOPKINS STREET OVER I-95/ST 128	4	NHPP	\$ 2,646,360
607954	DANVERS	DANVERS- BRIDGE REPLACEMENT, D-03-018, ST 128 OVER WATERS RIVER	4	NHPP	\$ 8,625,000

2018 – Systemic maintenance

607915	MULTIPLE	NEWTON- WELLESLEY- WESTON- BRIDGE MAINTENANCE OF N-12-063, N-12-054, N-12-055 & N-12-056 ON I-95/ROUTE 128	6	NHPP	\$ 1,660,534
608521	SALEM	SALEM - STRUCTURAL STEEL REPAIRS, BRIDGE NO. S-01-018	4	NHPP	\$ 2,400,000

2018 – On-system bridges

604173	BOSTON	BOSTON- BRIDGE REHABILITATION, B-16-016, NORTH WASHINGTON STREET OVER THE BOSTON INNER HARBOR	6	NHPP	\$ 24,900,000
604952	MULTIPLE	LYNN- SAUGUS- BRIDGE REPLACEMENT, L-18-016=S-05-008, ROUTE 107 OVER THE SAUGUS RIVER (AKA - BELDEN G. BLY BRIDGE)	4	NHPP	\$ 25,764,000
608149	BURLINGTON	BURLINGTON- BRIDGE REPLACEMENT, B-29-010, I-95/ST 128 (NB) & I-95/ST128 (SB) OVER ROUTE 3A (CAMBRIDGE STREET)	4	NHPP	\$ 23,920,000
608522	MIDDLETON	MIDDLETON- BRIDGE REPLACEMENT- M-20-003, RT 62/MAPLE STREET OVER Ipswich RIVER	4	NHPP	\$ 4,160,000

2018 – Off-system bridges

604655	MARSHFIELD	MARSHFIELD- BRIDGE REPLACEMENT, M-07-007, BEACH STREET OVER THE CUT RIVER	5	STP-BR-OFF	\$ 3,023,938
606632	HOPKINTON	HOPKINTON- WESTBOROUGH- BRIDGE REPLACEMENT, H-23-006=W-24-016, FRUIT STREET OVER CSX & SUDBURY RIVER	3	STP-BR-OFF	\$ 7,964,164
607133	QUINCY	QUINCY- SUPERSTRUCTURE REPLACEMENT, Q-01-039, ROBERTSON STREET OVER I-93/US 1/SR 3	6	STP-BR-OFF	\$ 3,260,452
607533	WALTHAM	WALTHAM- BRIDGE REPLACEMENT, W-04-006, WOERD AVENUE OVER CHARLES RIVER	4	STP-BR-OFF	\$ 2,344,742

Bridge projects continued

2019 – Systemic maintenance

608234	MULTIPLE	BOSTON- RANDOLPH- BRIDGE PRESERVATION OF 3 BRIDGES: B-16-165, R-01-005 & R-01-007	6	NHPP	\$ 2,487,857
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2019 – On-system bridges

604173	BOSTON	BOSTON- BRIDGE REHABILITATION, B-16-016, NORTH WASHINGTON STREET OVER THE BOSTON INNER HARBOR	6	NHPP	\$ 24,900,000
604952	MULTIPLE	LYNN- SAUGUS- BRIDGE REPLACEMENT, L-18-016=S-05-008, ROUTE 107 OVER THE SAUGUS RIVER (AKA - BELDEN G. BLY BRIDGE)	4	NHPP	\$ 25,764,000

2019 – Off-system bridges

608079	SHARON	SHARON- BRIDGE REPLACEMENT, S-09-003 (40N), MASKWONICUT STREET OVER AMTRAK/MBTA	5	STP-BR-OFF	\$ 5,637,492
608255	STOW	STOW- BRIDGE REPLACEMENT, S-29-011, BOX MILL ROAD OVER ELIZABETH BROOK	3	STP-BR-OFF	\$ 1,600,560

2020 – Systemic maintenance

608609	MULTIPLE	NEWTON - WESTWOOD, BRIDGE NO. N-12-0056 AND W-31-006: CLEA AND PAIT STRUCTURAL STEEL	6	NHPP	\$ 2,400,000
608596	ESSEX	ESSEX- BRIDGE PRESERVATION, E-11-001, ROUTE 133/MAIN STREET OVER ESSEX RIVER	4	NHPP	\$ 2,688,000

2020 – On-system bridges

604173	BOSTON	BOSTON- BRIDGE REHABILITATION, B-16-016, NORTH WASHINGTON STREET OVER THE BOSTON INNER HARBOR	6	NHPP	\$ 24,900,000
608009	BOXBOROUGH	BOXBOROUGH- BRIDGE REPLACEMENT, B-18-002, ROUTE 111 OVER I-495	3	NHPP	\$ 8,000,000
608097	WOBURN	WOBURN- BRIDGE REPLACEMENT & RELATED WORK, W-43-028, WASHINGTON STREET OVER I-95	4	NHPP	\$ 14,000,000
605342	STOW	STOW- BRIDGE REPLACEMENT, S-29-001, (ST 62) GLEASONDALE ROAD OVER THE ASSABET RIVER	3	NHPP	\$ 6,706,560
608613	STONEHAM	STONEHAM - BRIDGE REPLACEMENT, S-27-008, MARBLE STREET OVER I-93	4	NHPP	\$ 15,523,120
608614	BOSTON	BOSTON - SUPERSTRUCTURE REPLACEMENT, B-16-179, AUSTIN STREET OVER I-93 RAMPS, MBTA COMMUTER RAIL AND ORANGE LINE	6	NHPP	\$ 19,673,600

Bridge projects continued

2021 – Systemic maintenance

608610	NEWTON	NEWTON, BRIDGE NUMBER N-12-055: CLEAN AND PAINT STRUCTURAL STEEL	6	NHPP	\$	2,308,000
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2021 – On-system bridges

604173	BOSTON	BOSTON- BRIDGE REHABILITATION, B-16-016, NORTH WASHINGTON STREET OVER THE BOSTON INNER HARBOR	6	NHPP	\$	13,462,044
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608009	BOXBOROUGH	BOXBOROUGH- BRIDGE REPLACEMENT, B-18-002, ROUTE 111 OVER I-495	3	NHPP	\$	6,295,000
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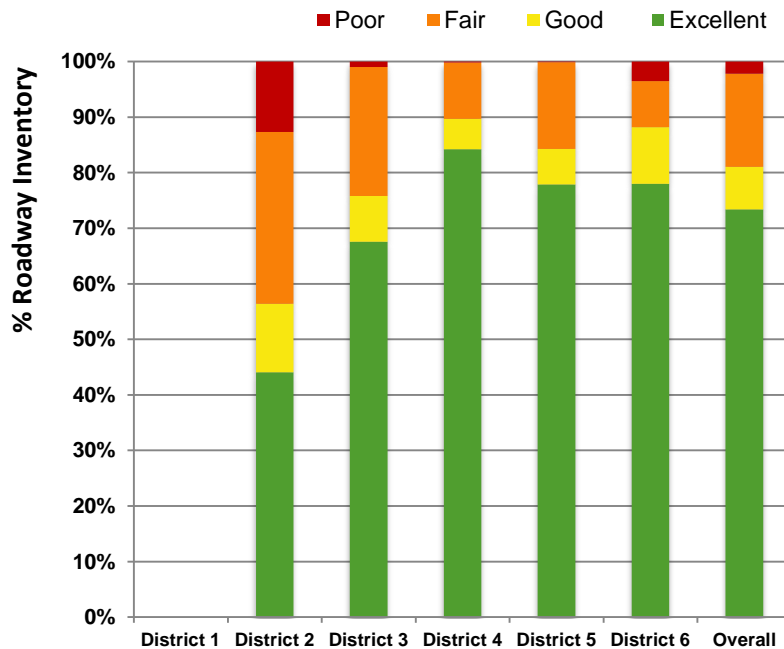
2021 – Off-system bridges

608637	MAYNARD	MAYNARD - BRIDGE REPLACEMENT, M-10-006, FLORIDA ROAD OVER ASSABET RIVER	3	STP-BR-OFF	\$	1,646,620
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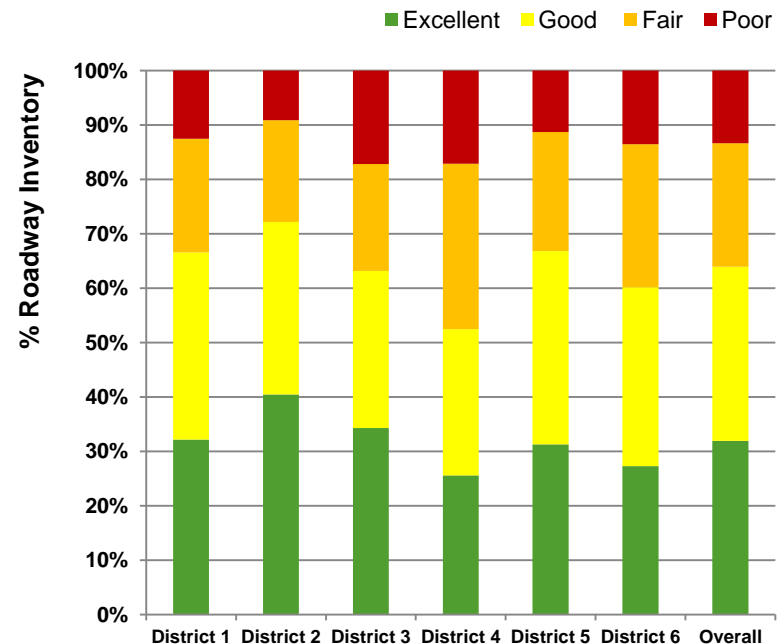
Prioritizing pavement projects

- ▶ Pavement management asset managers run forecast pavement condition scenarios at different funding levels
- ▶ Potential projects are identified to provide the greatest benefit per dollar at the most advantageous time to make the improvement
- ▶ Districts are consulted and regional equity is sought

Interstate pavement



Non-interstate pavement



Pavement projects

2017 – Interstate Maintenance

607481	MULTIPLE	RANDOLPH- QUINCY- BRAINTREE- INTERSTATE MAINTENANCE & RELATED WORK ON I-93 (SB)	6	NHPP	\$ 4,773,000
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2017 – National Highway System

607477	LYNNFIELD	LYNNFIELD- PEABODY- RESURFACING & RELATED WORK ON ROUTE 1	4	NHPP	\$ 7,235,800
607488	SOUTHBOROUGH	SOUTHBOROUGH- RESURFACING & RELATED WORK ON ROUTE 9, FROM THE FRAMINGHAM T.L TO WHITE BAGLEY ROAD	3	NHPP	\$ 4,760,219

2018 – National Highway System

605608	DEDHAM	DEDHAM- RESURFACING & RELATED WORK ON ROUTE 109	6	NHPP	\$ 234,407
608008	SAUGUS	SAUGUS - RESURFACING AND RELATED WORK ON ROUTE 1	4	NHPP	\$ 9,945,936
608069	MULTIPLE	MARSHFIELD- PEMBROKE- NORWELL- HANOVER- ROCKLAND- HINGHAM- RESURFACING & RELATED WORK ON ROUTE 3	5	NHPP	\$ 16,504,800
608220	CONCORD	CONCORD- RESURFACING & RELATED WORK ON ROUTE 2	4	NHPP	\$ 1,747,200
608379	MULTIPLE	LEXINGTON- BELMONT- ARLINGTON- CAMBRIDGE- PAVEMENT PRESERVATION ON ROUTE 2	4	NHPP	\$ 7,706,400

2019 – Interstate Maintenance

608219	MULTIPLE	READING- WAKEFIELD- INTERSTATE MAINTENANCE AND RELATED WORK ON I-95	4	NHPP	\$ 4,717,440
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2019 – National Highway System

608467	MULTIPLE	MARLBOROUGH- SUDBURY- RESURFACING AND RELATED WORK ON ROUTE 20	3	NHPP	\$ 10,681,200
608468	MULTIPLE	PEABODY- DANVERS- RESURFACING AND RELATED WORK ON ROUTE 1	4	NHPP	\$ 13,016,160

Pavement projects continued

2020 – Interstate Maintenance

608208	MULTIPLE	QUINCY- MILTON- BOSTON- INTERSTATE MAINTENANCE & RELATED WORK ON I-93	6	NHPP	\$	20,123,712
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2020 – National Highway System

608478	CONCORD	CONCORD- RESURFACING AND RELATED WORK ON ROUTE 2	4	NHPP	\$	5,241,600
608480	FOXBOROUGH	FOXBOROUGH- WALPOLE- RESURFACING AND RELATED WORK ON ROUTE 1	5	NHPP	\$	8,578,080
608482	MULTIPLE	CAMBRIDGE- SOMERVILLE- RESURFACING AND RELATED WORK ON ROUTE 28	6	NHPP	\$	7,843,920
608483	WEYMOUTH	WEYMOUTH- RESURFACING AND RELATED WORK ON ROUTE 3A	6	NHPP	\$	2,576,000

2021 – Interstate Maintenance

608210	MULTIPLE	FOXBOROUGH- PLAINVILLE- WRENTHAM- FRANKLIN- INTERSTATE MAINTENANCE & RELATED WORK ON I-495	5	NHPP	\$	26,680,000
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2021 – National Highway System

608484	MULTIPLE	CANTON- MILTON- RESURFACING AND RELATED WORK ON ROUTE 138	6	NHPP	\$	13,766,880
608476	SOUTHBOROUGH	SOUTHBOROUGH- RESURFACING AND RELATED WORK ON ROUTE 30	3	NHPP	\$	2,784,000

Prioritizing CMAQ projects

- ▶ Must show a quantitative air quality benefit
- ▶ Bicycle and pedestrian improvements are high priority
- ▶ Work with State Bicycle/Pedestrian Coordinator, Highway Districts and Highway Division project management to identify candidate projects
- ▶ Municipality must have consultant under design agreement
- ▶ Regional equity is sought

2017 – Statewide CMAQ

602165	STONEHAM	STONEHAM- SIGNAL & INTERSECTION IMPROVEMENTS AT ROUTE 28/NORTH STREET	4	CMAQ	\$	1,473,607
604761	BOSTON	BOSTON- MULTI-USE TRAIL CONSTRUCTION (SOUTH BAY HARBOR), FROM RUGGLES STATION TO FORT POINT CHANNEL	6	CMAQ	\$	2,229,018

2018 – Statewide CMAQ

606223	MULTIPLE	ACTON- CONCORD- BRUCE FREEMAN RAIL TRAIL CONSTRUCTION (PHASE II-B)	4	CMAQ	\$	5,990,400
606316	BROOKLINE	BROOKLINE- PEDESTRIAN BRIDGE REHABILITATION, B-27-016, OVER MBTA OFF CARLTON STREET	6	CMAQ	\$	2,960,568

2019 – Statewide CMAQ

607888	MULTIPLE	BOSTON- BROOKLINE- MULTI-USE PATH CONSTRUCTION ON NEW FENWAY	6	CMAQ	\$	1,838,827
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2020 – Statewide CMAQ

607329	MULTIPLE	WAKEFIELD- LYNNFIELD- RAIL TRAIL EXTENSION, FROM THE GALVIN MIDDLE SCHOOL TO LYNNFIELD/PEABODY T.L.	4	CMAQ	\$	7,084,000
607732	MULTIPLE	FRAMINGHAM- NATICK- COCHITUATE RAIL TRAIL CONSTRUCTION INCLUDING PEDESTRIAN BRIDGE, N-03-014, OVER ROUTE 9 & F-07-033=N-03-029 OVER ROUTE 30	3	CMAQ	\$	8,942,631

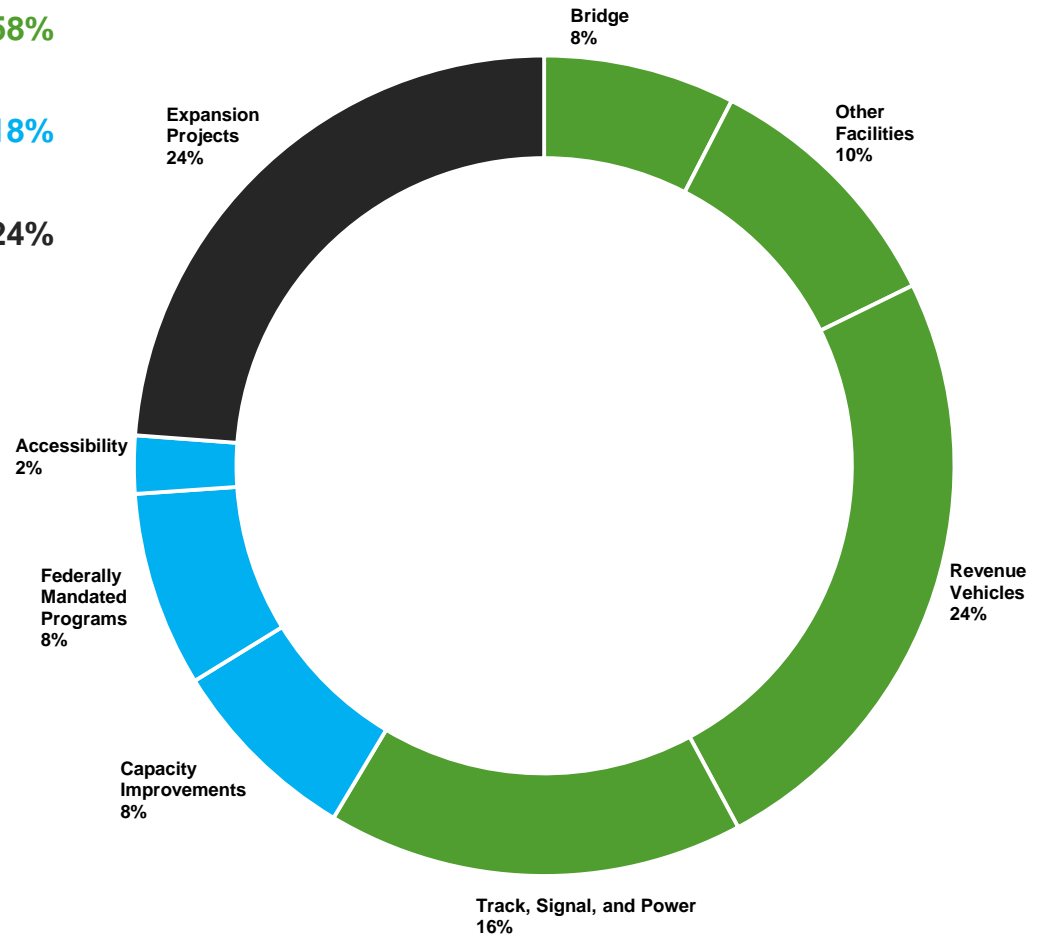
2021 – Statewide CMAQ

607901	DEDHAM	DEDHAM- PEDESTRIAN IMPROVEMENTS ALONG ELM STREET & RUSTCRAFT ROAD CORRIDORS	6	CMAQ	\$	2,581,113
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MBTA programs overview

Spending by priority and program

- 1** Reliability **58%**
\$3.9 billion
- 2** Modernization **18%**
\$1.2 billion
- 3** Expansion **24%**
\$1.6 billion



Transit TIP development

▶ Multiple sources fund the CIP, including:

- ▶ Federal Formula Funds
- ▶ Executed Federal Grants
- ▶ Revenue bonds issued by the MBTA
- ▶ Federal Loans (TIFIA, RRIF)
- ▶ Rail Enhancement Program (State)
- ▶ Pay-As-You Go (operating funds)

▶ Issues impacting the TIP:

- ▶ A comprehensive “scrub” of the CIP to test project readiness, schedules and cost estimates is underway
- ▶ A new project reporting and development process that will allow greater transparency on project costs, schedule and funding sources, including prior advance funding
- ▶ Cross walking old TIP categories to match the new CIP programs
- ▶ These efforts may lead to additional adjustments in the draft TIP as project budgets and schedules are updated

Estimated federal targets for the TIP¹ include:

- ▶ Bridge:
 - ▶ \$496M total program
 - ▶ \$256M in formula funds
- ▶ Revenue Vehicles
 - ▶ \$1.605B total program
 - ▶ \$561.6M in formula funds
- ▶ Track, signals and power
 - ▶ \$1.080B total program
 - ▶ \$200M in formula funds
- ▶ Stations and other facilities
 - ▶ \$659.3M total program
 - ▶ \$462M in formula funds
- ▶ Federally mandated programs
 - ▶ \$625.9M total program
 - ▶ \$60M in formula funds
 - ▶ \$309M in federal loans (PTC)

Footnote: amounts likely to change

1 MBTA / Revenue Vehicles program

Highlighted list of projects:

- ▶ Red Line #3 fleet mid-life overhaul
- ▶ Commuter Rail coach procurement
- ▶ Commuter Rail locomotive reliability
- ▶ Purchase of 60 forty (40) foot buses
- ▶ New Flyer bus overhaul
- ▶ Green Line #8 reliability program
- ▶ Design and reliability of PCC fleet
- ▶ Design of new Green Line Light Rail fleet
- ▶ Design of replacement DMA/Silver Line fleet



Source: DOT and MBTA internal estimates of available sources and applicable uses; Division initial estimates of program sizes

1 MBTA / Bridge program

Highlighted list of projects:

- ▶ Draw 1/Tower A at North Station
- ▶ East Street Bridge
- ▶ High Line Bridge
- ▶ Bacon Street Bridge
- ▶ Lynn Fells Parkway Bridge
- ▶ Commercial Street Bridge
- ▶ Emergency Bridge Repairs program
- ▶ Red Line Bridge Repairs
- ▶ Shawsheen River Bridge
- ▶ Neponset River Lower Mills Bridge



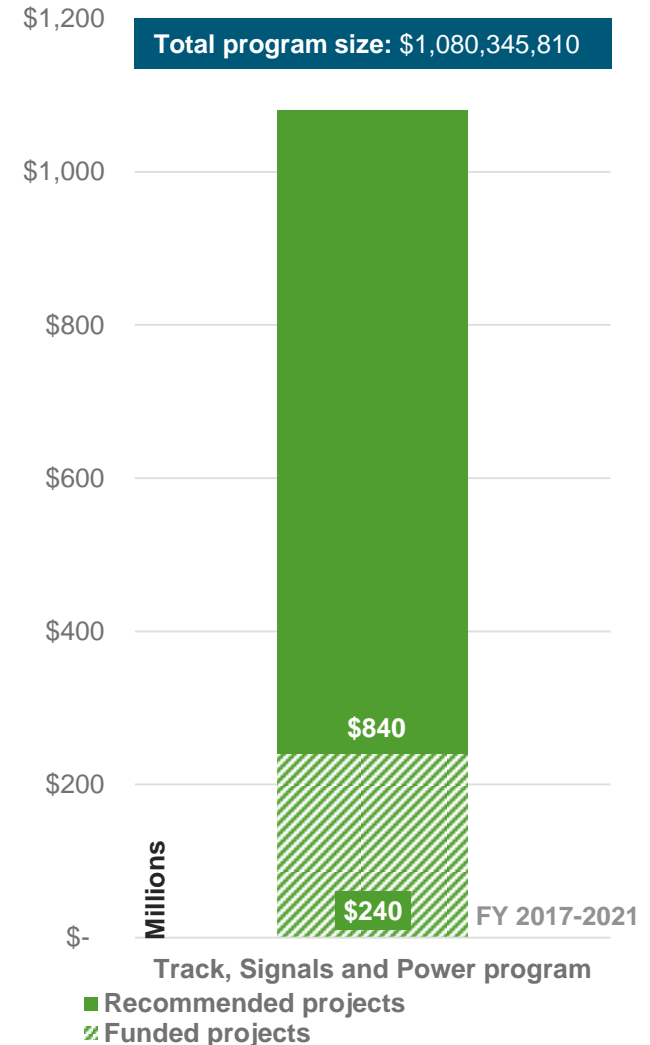
Source: DOT and MBTA internal estimates of available sources and applicable uses; Division initial estimates of program sizes

1 MBTA / Track, Signal and Power program

Highlighted list of projects:

- ▶ Red, Orange and Green Line strategic plan for signal improvements
- ▶ Commuter Rail track and signal improvements
- ▶ Red and Orange Line track reliability

Red, Orange, Green and Commuter Rail signal improvements are recommended for Pay-Go funding.

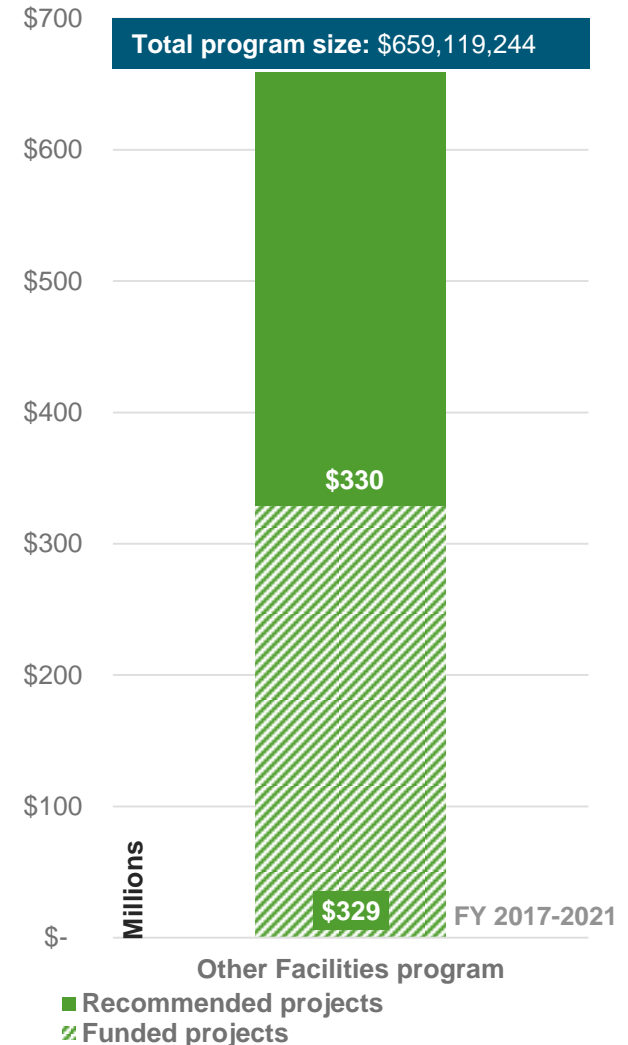


Source: DOT and MBTA internal estimates of available sources and applicable uses; Division initial estimates of program sizes

1 MBTA / Other Facilities program

Highlighted list of projects:

- ▶ System wide radio network upgrades
- ▶ Wollaston Station improvements
- ▶ South Shore garages improvements
- ▶ Winchester Station improvements
- ▶ Hynes Station
- ▶ Hingham Ferry dock repairs
- ▶ 45 High Street fire protection project



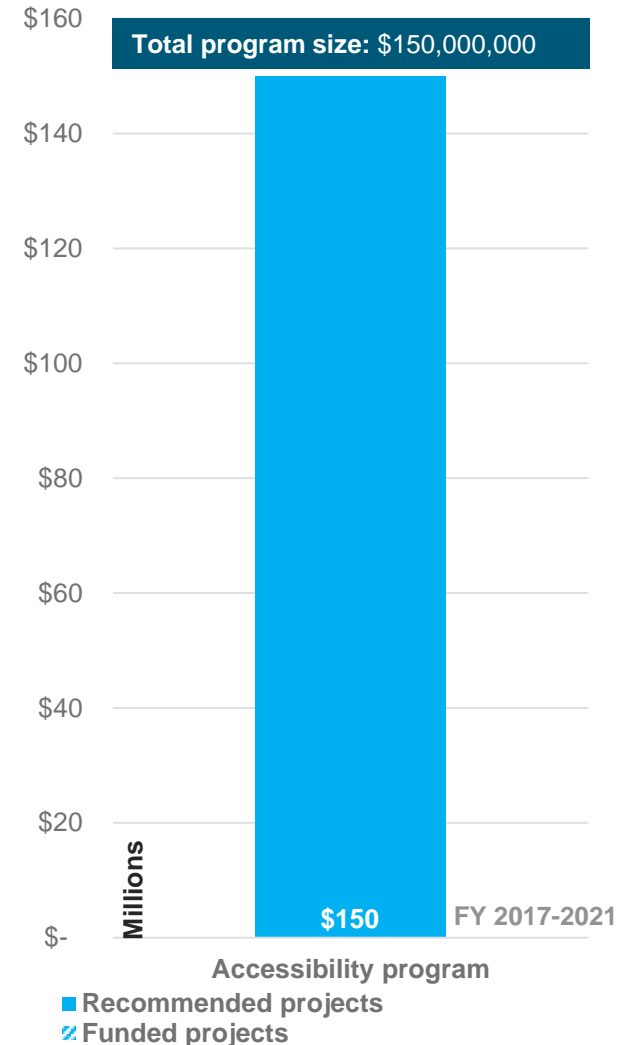
Source: DOT and MBTA internal estimates of available sources and applicable uses; Division initial estimates of program sizes

2 MBTA / Accessibility program

Highlighted list of projects:

- ▶ Green Line street level / path of travel program
- ▶ Ruggles Station phase II
- ▶ Oak Grove elevators and path of travel
- ▶ Study of remaining inaccessible stations
- ▶ Comm Ave access Improvements
- ▶ Elevator accessibility improvements
- ▶ Symphony Station comprehensive design
- ▶ Downtown Crossing comprehensive design
- ▶ Mansfield accessibility improvements
- ▶ Auburndale Station improvements
- ▶ Bus route accessibility improvements
- ▶ Forest Hills accessibility improvements
- ▶ Natick Center comprehensive design
- ▶ South Attleboro comprehensive design

Wollaston Station improvements are included within the Facilities program



Source: DOT and MBTA internal estimates of available sources and applicable uses; Division initial estimates of program sizes

3 MBTA / Expansion program

Highlighted list of projects:

- ▶ Green Line Extension
- ▶ South Coast Rail design and permitting
- ▶ Fairmount Corridor stations
- ▶ Chelsea Silver Line Gateway
- ▶ Knowledge Corridor



Source: DOT and MBTA internal estimates of available sources and applicable uses; Division initial estimates of program sizes