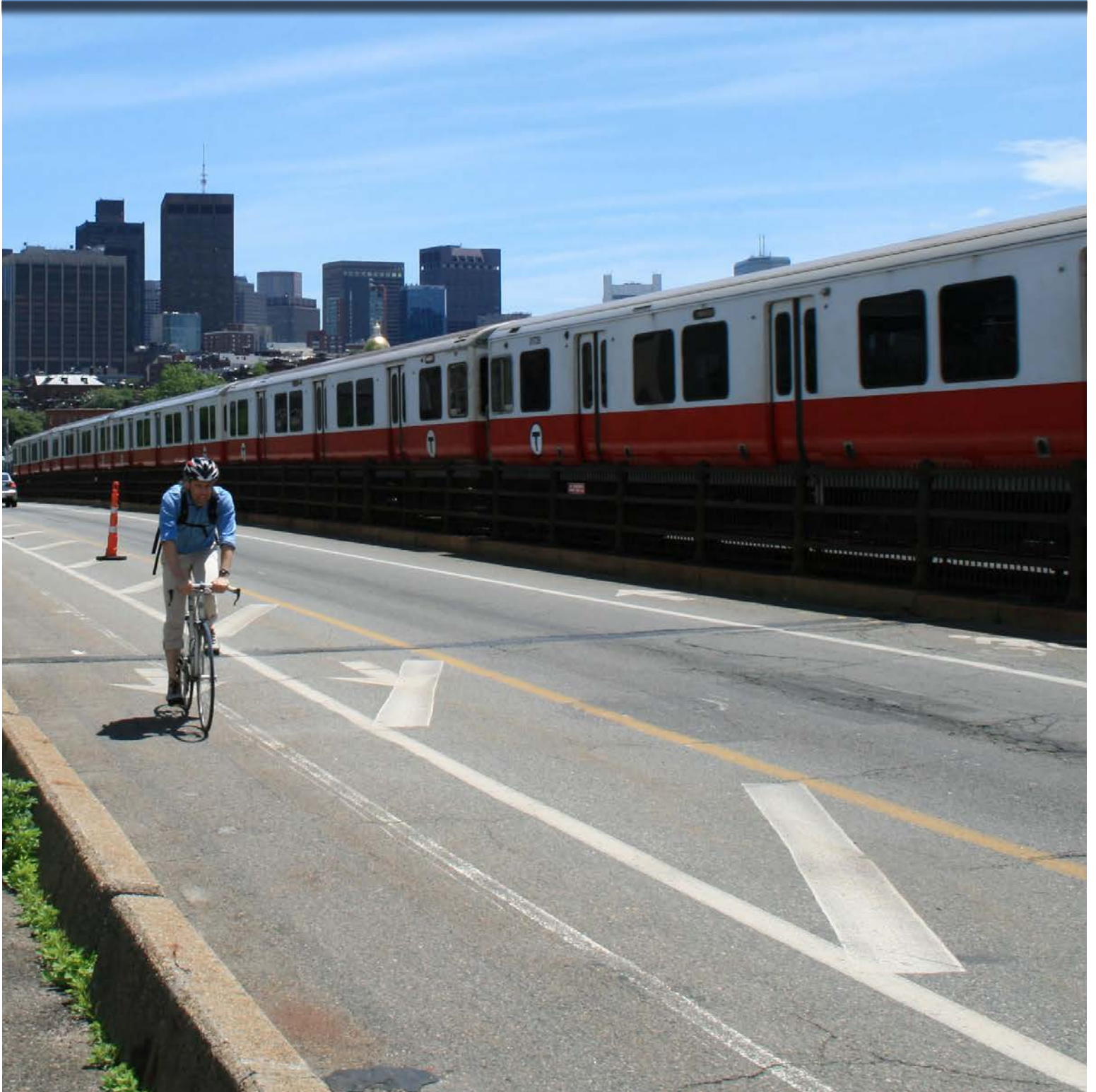


September 2018



# Boston Region Metropolitan Planning Organization: PERFORMANCE-BASED PLANNING AND PROGRAMMING





## WHAT IS PERFORMANCE-BASED PLANNING AND PROGRAMMING?

Performance-based planning and programming (PBPP) applies data to inform decisions aimed at helping to achieve desired outcomes for the region's multimodal transportation networks. The Boston Region Metropolitan Planning Organization (MPO) articulated its desired outcomes for the Boston region's transportation system in its current long-range transportation plan (LRTP), *Charting Progress to 2040*. The overall vision established in *Charting Progress to 2040* is to create

*a modern transportation system that is safe, uses new technologies, provides equitable access, excellent mobility, and varied transportation options—in support of a sustainable, healthy, livable, and economically vibrant region.*

*Charting Progress to 2040* also created a framework to guide the MPO in making investments through its planning and programming processes, namely, the LRTP, an investment plan covering more than 20 years; the Transportation Improvement Program (TIP), a five-year plan for funding capital infrastructure projects; and the Unified Planning Work Program (UPWP), which is produced annually to support conceptual plans and research. The LRTP, TIP, and UPWP processes become **PBPP processes** when the MPO takes the following actions:

- Sets **goals** and **objectives** for the transportation system
- Selects **performance measures** and sets **targets** for performance outcomes
- Gathers **data and information** to monitor and analyze trends
- Uses **performance measures** and **data** to make spending decisions
- Monitors, analyzes, and reports **decision outputs** and **performance outcomes**

The MPO currently applies PBPP principles when making investment decisions as part of the LRTP, TIP, and UPWP development processes. For example, the MPO established criteria based on its goals and objectives to use when evaluating LRTP and TIP projects. MPO staff applies data gathered from project proponents to conduct those evaluations, which help the MPO make spending decisions. Staff also reports on expected performance outcomes from these projects in LRTP and TIP documents. In addition, the MPO has started responding to new federal PBPP requirements, such as setting targets for specific measures. Over the next few years, the MPO will need to continue to respond to federal PBPP requirements.

By implementing performance management practices in its planning and programming activities, the MPO can

- better understand how spending decisions affect the performance of the transportation system as a whole;
- make better decisions, including difficult tradeoffs, by focusing on data and specific performance outcomes;
- increase accountability and transparency in MPO planning processes; and
- better integrate MPO planning and programming activities.

This document describes

- the PBPP process;
- federal requirements and activities related to PBPP;
- how the MPO uses PBPP practices today; and
- next steps for the MPO to build its PBPP practice, including key decisions the MPO will need to make.

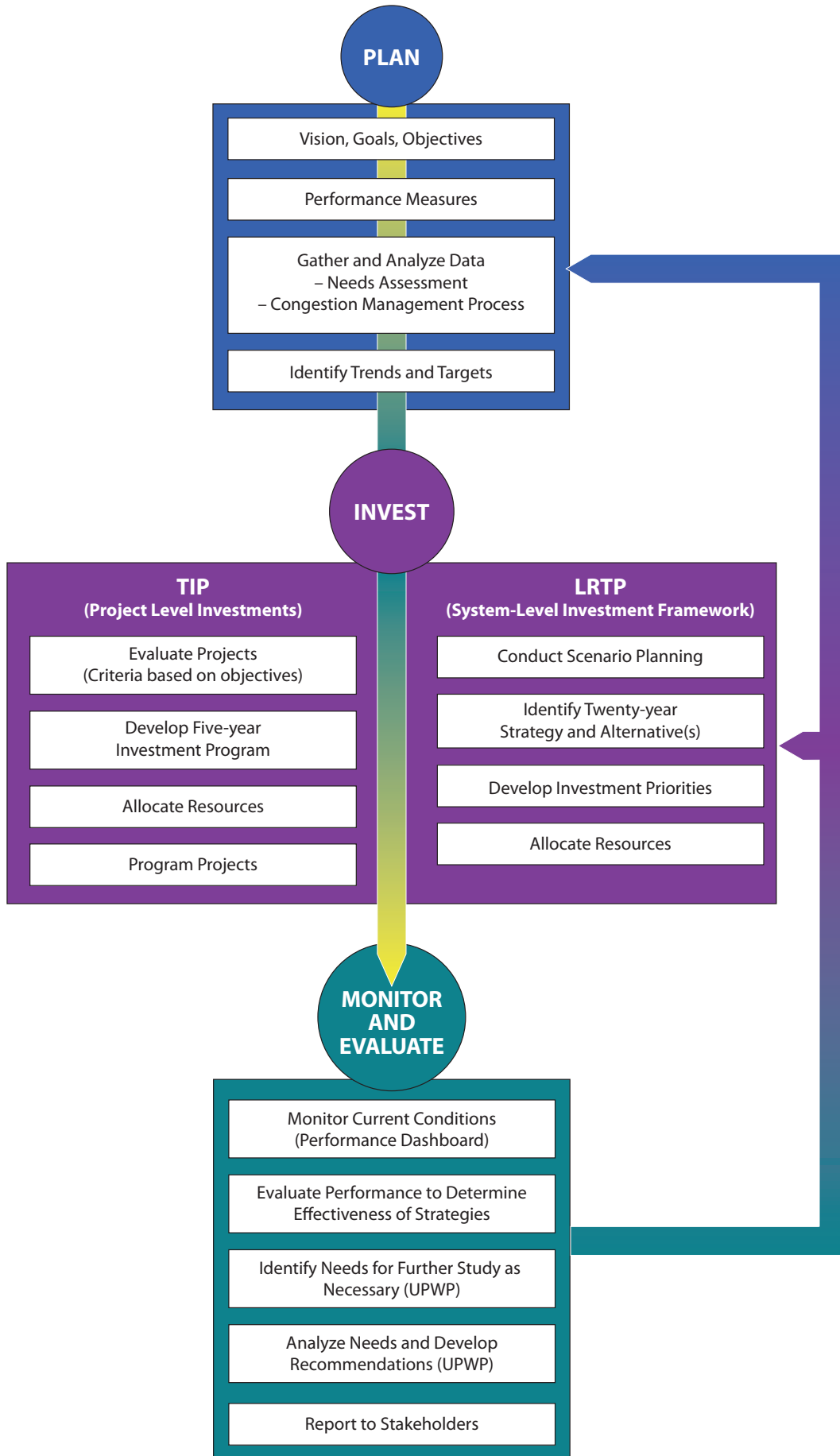
A glossary of PBPP terms and a list of key transportation performance-management rules and requirements are included at the end of this document.

The diagram on the next page illustrates the elements involved in PBPP, and how they relate to some of the MPO's existing plans and activities. The PBPP process, which is cyclical, includes three phases:

- **Plan:** Set the goals, objectives, performance measures, and targets that will guide MPO decision-making, and identify and acquire necessary data. This step involves multiple MPO documents and processes. Page 4 lists the MPO's goals and objectives established during the *Charting Progress to 2040* planning process. (Note: The MPO is developing its next LRTP, *Destination 2040*, in 2018 and 2019 and will be revisiting its vision, goals, and objectives as part of this process.)
- **Invest:** Use the PBPP framework established in the aforesaid planning phase to create a strategy for investing MPO discretionary funds, specifically in the LRTP and TIP.
- **Monitor and Evaluate:** Review and report on the outcomes of MPO investment decisions with respect to performance measures and targets, and determine what framework or strategy adjustments are needed. This monitoring and evaluation may also account for investments that MassDOT, the MBTA, and other agencies make in the Boston region's transportation system.

The sections that follow explain how these PBPP concepts relate to federal requirements for the MPO planning process—including requirements to monitor and set targets for performance measures—and to ways that the MPO can use PBPP to help achieve its transportation goals.

# Creating a Framework for the Boston Region MPO Performance-Based Planning Process





## CENTRAL VISION STATEMENT

The Boston Region Metropolitan Planning Organization envisions a modern transportation system that is safe, uses new technologies, provides equitable access, excellent mobility, and varied transportation options—in support of a sustainable, healthy, livable, and economically vibrant region.

### GOALS

### OBJECTIVES

#### SAFETY

Transportation by all modes will be safe

- Reduce number and severity of crashes, all modes
- Reduce serious injuries and fatalities from transportation
- Protect transportation customers and employees from safety and security threats (Note: The MPO action will be to incorporate security investments into capital planning.)

#### SYSTEM PRESERVATION

Maintain the transportation system

- Improve condition of on- and off-system bridges
- Improve pavement conditions on MassDOT-monitored roadway system
- Maintain and modernize capital assets, including transit assets, throughout the system
- Prioritize projects that support planned response capability to existing or future extreme conditions (sea level rise, flooding, and other natural and security-related man-made hazards)
- Protect freight network elements, such as port facilities, that are vulnerable to climate-change impacts

#### CAPACITY MANAGEMENT/MOBILITY

Use existing facility capacity more efficiently and increase healthy transportation capacity

- Improve reliability of transit
- Implement roadway management and operations strategies, constructing improvements to the bicycle and pedestrian network, and supporting community-based transportation
- Create connected network of bicycle and accessible sidewalk facilities (at both regional and neighborhood scale) by expanding existing facilities and closing gaps
- Increase automobile and bicycle parking capacity and usage at transit stations
- Increase percentage of population and places of employment within one-quarter mile of transit stations and stops
- Increase percentage of population and places of employment with access to bicycle facilities
- Improve access to and accessibility of transit and active modes
- Support community-based and private-initiative services and programs to meet last mile, reverse commute and other non-traditional transit/transportation needs, including those of the elderly and persons with disabilities
- Eliminate bottlenecks on the freight network
- Enhance intermodal connections
- Emphasize capacity management through low-cost investments; give priority to projects that focus on lower-cost O&M-type improvements such as intersection improvements and Complete Streets solutions

#### CLEAN AIR/CLEAN COMMUNITIES

Create an environmentally friendly transportation system

- Reduce greenhouse gases generated in the Boston region by all transportation modes as outlined in the Global Warming Solutions Act
- Reduce other transportation-related pollutants
- Minimize negative environmental impacts of the transportation system
- Support land use policies consistent with smart and healthy growth

#### TRANSPORTATION EQUITY

Provide comparable transportation access and service quality among communities, regardless of income level or minority population

- Target investments to areas that benefit a high percentage of low-income and minority populations
- Minimize any burdens associated with MPO-funded projects in low-income and minority areas
- Break down barriers to participation in MPO-decision making

#### ECO VITALITY

Ensure our transportation network provides a strong foundation for economic vitality

- Respond to the mobility needs of the 25–34-year-old workforce
- Minimize the burden of housing and transportation costs for residents in the region
- Prioritize transportation investments that serve targeted development sites
- Prioritize transportation investments consistent with the compact-growth strategies of MetroFuture

The MPO’s goals relate to transportation goals set at the federal level. The Moving Ahead for Progress in the 21st Century Act (MAP-21) identifies seven national goals for the nation’s highway system, which have been continued under the Fixing America’s Surface Transportation Act (FAST Act), the current transportation funding law. The table below lists these goals and shows how they align with the MPO’s goal areas, as outlined in *Charting Progress to 2040*. The US Department of Transportation will be monitoring progress towards these transportation goals using performance measures discussed in the next section.

### NATIONAL AND MPO GOALS

| National Goal                                                                                                                                                                                                                             | Boston Region MPO Goal Area                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>Safety</b> —To achieve a significant reduction in traffic fatalities and serious injuries on all public roads                                                                                                                          | <b>Safety</b>                                                   |
| <b>Infrastructure condition</b> —To maintain the highway infrastructure asset system in a state of good repair                                                                                                                            | <b>System Preservation</b>                                      |
| <b>System reliability</b> —To improve the efficiency of the surface transportation system                                                                                                                                                 | <b>Capacity Management/Mobility</b>                             |
| <b>Congestion reduction</b> —To achieve a significant reduction in congestion on the National Highway System                                                                                                                              | <b>Capacity Management/Mobility</b>                             |
| <b>Freight movement and economic vitality</b> —To improve the National Highway Freight Network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development | <b>Capacity Management/Mobility</b><br><b>Economic Vitality</b> |
| <b>Environmental sustainability</b> —To enhance the performance of the transportation system while protecting and enhancing the natural environment                                                                                       | <b>Clean Air/Clean Communities</b>                              |
| <b>Reduced project delivery delays</b>                                                                                                                                                                                                    | Not applicable                                                  |
| Not applicable                                                                                                                                                                                                                            | <b>Transportation Equity</b>                                    |

## WHAT ARE FEDERAL REQUIREMENTS FOR PERFORMANCE-BASED PLANNING AND PROGRAMMING?

MAP-21 and the FAST Act direct MPOs to develop LRTPs and TIPs “through a performance-driven, outcome-based approach to planning.”<sup>1</sup> States, MPOs, and operators of public transportation are required to establish targets for performance measures in key performance areas, and to coordinate with each other when setting these targets. Through the federal rulemaking process, the **Federal Highway Administration (FHWA)** and the **Federal Transit Administration (FTA)** have required states, MPOs, and transit operators to monitor the transportation system using specific performance measures.

### FEDERALLY REQUIRED HIGHWAY PERFORMANCE MEASURES

#### HIGHWAY SAFETY PERFORMANCE MEASURES

| Federally Required Performance Measures                             | Applicable Geographic Areas and Transportation Networks |
|---------------------------------------------------------------------|---------------------------------------------------------|
| Number of fatalities                                                | All public roads in a state or MPO area                 |
| Fatality rate (per 100 million vehicle miles traveled)              |                                                         |
| Number of serious injuries                                          |                                                         |
| Serious injury rate (per 100 million vehicle miles traveled)        |                                                         |
| Number of nonmotorized fatalities and nonmotorized serious injuries |                                                         |

Sources: Highway Safety Improvement Program Rule (23 CFR 924), National Performance Management Measures Rule (23 CFR 490)

These highway safety performance measures relate to the national goal for **safety**. Values for these performance measures are expressed in five-year annual rolling averages. States and MPOs must set these highway safety targets annually, and they have a time horizon of one year. MPOs may establish targets by electing to support state targets or by setting separate targets for the MPO area. The Massachusetts Strategic Highway Safety Plan (SHSP) will inform the development of these targets and outline strategies to improve highway safety.

<sup>1</sup>See 23 USC §134(c)(1) and 49 US.C. §5303(c)(1).

## HIGHWAY INFRASTRUCTURE CONDITION PERFORMANCE MEASURES

| Federally Required Performance Measures                                | Applicable Geographic Areas and Transportation Networks |
|------------------------------------------------------------------------|---------------------------------------------------------|
| Percentage of pavements on the Interstate System in Good condition     | Interstate roadways in a state or MPO area              |
| Percentage of pavements on the Interstate System in Poor condition     |                                                         |
| Percentage of pavements on the non-Interstate NHS in Good condition    | Non-Interstate NHS roadways in a state or MPO area      |
| Percentage of pavements on the non-Interstate NHS in Poor condition    |                                                         |
| Percentage of NHS bridges by deck area classified as in Good condition | NHS bridges in a state or MPO area                      |
| Percentage of NHS bridges by deck area classified as in Poor condition |                                                         |

NHS= National Highway System

Source: National Performance Management Measures Rule (23 CFR 490)

These performance measures relate to the national goal for **infrastructure condition**. FHWA establishes thresholds for Good and Poor bridge and pavement condition. States are currently required to set four-year targets for Interstate pavement condition and to set two-year and four-year targets for non-Interstate NHS pavement condition and NHS bridge condition. MPOs are required to set four-year targets for each of these measures, and they may establish targets by electing to support state targets or by setting separate targets for the MPO area. State Transportation Asset Management Plans (TAMPs) for bridges and pavements inform these target-setting processes and identify strategies for managing and addressing the conditions of these facilities.



## HIGHWAY SYSTEM RELIABILITY PERFORMANCE MEASURES

| Federally Required Performance Measures                                      | Applicable Geographic Areas and Transportation Networks |
|------------------------------------------------------------------------------|---------------------------------------------------------|
| Percent of person-miles traveled on the Interstate System that are reliable  | Interstate roadways in a state or MPO area              |
| Percent of person-miles traveled on the non-Interstate NHS that are reliable | Non-Interstate NHS roadways in a state or MPO area      |

Source: National Performance Management Measures Rule (23 CFR 490)

These measures relate to the national goal for **system reliability**. They describe travel time reliability by using a ratio to compare longer than usual (80th percentile) travel times to normal (50th percentile) travel times on NHS segments. FHWA sets a threshold ratio value to identify travel times on an NHS segment as reliable. These measures also consider travel volumes and vehicle occupancy for NHS segments to account for the impacts of travel time reliability on roadway users.

States are currently required to set two-year and four-year targets for the Interstate travel time reliability measure and four-year targets for the non-Interstate NHS travel time reliability measure. MPOs are required to set four-year targets for each of these measures, and they may establish targets by electing to support state targets or by setting separate targets for the MPO area.

## HIGHWAY SYSTEM FREIGHT RELIABILITY PERFORMANCE MEASURES

| Federally Required Performance Measures | Applicable Geographic Areas and Transportation Networks |
|-----------------------------------------|---------------------------------------------------------|
| Truck Travel Time Reliability Index     | Interstate roadways in a state or MPO area              |

Source: National Performance Management Measures Rule (23 CFR 490)

This measure relates to national goals for **system reliability** and for **freight movement and economic vitality**. It describes truck travel time reliability on the Interstate by comparing long (95th percentile) truck travel times to normal (50th percentile) truck travel times. States are currently required to set two-year and four-year targets for this measure. MPOs are required to set a four-year target for this measure, and they may establish this target by electing to support the state four-year target or by setting a separate target for the MPO area.

## CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT (CMAQ) PROGRAM TRAFFIC CONGESTION PERFORMANCE MEASURES

| Federally Required Performance Measures                                           | Applicable Geographic Areas and Transportation Networks |
|-----------------------------------------------------------------------------------|---------------------------------------------------------|
| Annual hours of peak-hour excessive delay per capita (for travel on NHS roadways) | NHS roadways in applicable urbanized areas              |
| Percent of non-SOV travel                                                         | Applicable urbanized areas                              |

NHS = National Highway System. SOV = single-occupancy vehicle.  
 Source: National Performance Management Measures Rule (23 CFR 490)

These CMAQ traffic congestion measures relate to the national goal for **congestion reduction**. Urbanized areas are defined by the US Census and represent the urban cores of metropolitan areas. These CMAQ traffic congestion measures apply to urbanized areas that contain geographic areas designated as not attaining US Environmental Protection Agency (EPA) standards for criteria air pollutants and precursors from mobile sources (also known as nonattainment areas), or geographic areas that have a history of being in nonattainment of these standards and need to maintain air quality monitoring and standard conformity processes (also known as maintenance areas).<sup>2</sup>

State DOTs and MPOs participate in processes to set targets for these measures to the extent that their state or region contains parts of the NHS network and overlaps particular urbanized areas that contain non-attainment or maintenance areas. At this time, the Boston region includes an area (Waltham) designated as being in maintenance for carbon monoxide standards and also contains part of the NHS network in the Boston Urbanized Area, which includes portions of neighboring MPOs in Massachusetts, New Hampshire, and Rhode Island.<sup>3</sup> Because the Boston Region MPO meets these criteria, it is currently required to participate in a coordinated process to set a four-year target for the annual hours of peak hour excessive delay (PHED) per capita measure and two-year and four-year targets for the percent of non-single-occupancy-vehicle (SOV) travel measure.

The PHED per capita measure describes the amount of excessive delay that travelers experience from traveling on NHS roadways. FHWA defines thresholds for conditions during which roadway users are considered to be experiencing excessive delay. This excessive delay metric is then weighted by travel volumes and vehicle occupancy, and then divided by the urbanized area population to create a per-capita value. The percent of non-SOV travel measure describes the extent to which people are using alternatives to SOVs, which may help reduce congestion and air pollution from mobile sources.

<sup>2</sup> A precursor is a chemical compound that reacts with other chemical compounds in the presence of solar radiation to form pollutants.

<sup>3</sup> This Boston region's status with respect to EPA air quality standards is as of October 1, 2017.

## CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT (CMAQ) PROGRAM EMISSIONS PERFORMANCE MEASURES

| Federally Required Performance Measures                                                                                                       | Applicable Geographic Areas and Transportation Networks       |
|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| Total emissions reduction for applicable pollutants and precursors for CMAQ-funded projects in designated nonattainment and maintenance areas | Nonattainment or maintenance areas within states or MPO areas |

Source: National Performance Management Measures Rule (23 CFR 490)

This CMAQ performance measure relates to the national goal for **environmental sustainability**. As mentioned previously, the Boston region includes an area designated as being in maintenance for attaining EPA standards for carbon monoxide from mobile sources. As a result, the MPO must monitor and set targets for carbon monoxide emissions reductions from CMAQ-funded transportation improvement projects in that maintenance area (Waltham). The MPO must set two-year and four-year targets for this measure.<sup>4</sup> States must set two-year and four-year targets for emissions reductions from CMAQ-funded projects in nonattainment and maintenance areas within state boundaries.



<sup>4</sup> MPOs without nonattainment or maintenance areas only need to set four-year targets.

## FEDERALLY REQUIRED TRANSIT PERFORMANCE MEASURES

Recipients of public transit funds, which can include states, local authorities, and public transportation operators, are required to establish performance targets for safety and state of good repair; to develop transit asset management (TAM) and transit safety plans; and to report on their progress toward achieving targets. Public transportation operators are directed to share information with MPOs and states so that all plans and performance reports are coordinated.

The sections below describe performance measures outlined in the National Public Transportation Safety Plan and in the final rule for TAM.

### TAM PERFORMANCE MEASURES

| Transit Asset Category | Federally Required Performance Measures                                                                                       |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Equipment              | Percentage of vehicles that have met or exceeded their Useful Life Benchmark (ULB)                                            |
| Rolling stock          | Percentage of revenue vehicles within a particular asset class that have met or exceeded their ULB                            |
| Infrastructure         | Percentage of track segments with performance restrictions                                                                    |
| Facilities             | Percentage of facilities within an asset class rated below condition 3.0 on the FTA Transit Economic Requirements Model scale |

Source: Transit Asset Management Rule (49 CFR Part 625)

These transit asset performance measures reflect a subset of the various types of transit assets that support transit systems. Transit agencies—and states that sponsor groups of transportation agencies—are responsible for developing TAM plans that describe the inventory and condition of the agency’s transit assets and strategies for keeping those assets in a state of good repair. These TAM plans will inform transit agency TAM targets, which are one-year targets set annually. MPOs coordinate with transit agencies and state DOTs to set TAM targets for their regions. While MPOs are not required to adjust these targets annually, they must revisit these targets when updating their LRTPs or TIPs.

## TRANSIT SAFETY PERFORMANCE MEASURES

| Transit Performance Area | Federally Required Performance Measures                                                 |
|--------------------------|-----------------------------------------------------------------------------------------|
| Fatalities               | Total number of reportable fatalities and rate per total vehicle revenue miles by mode  |
| Injuries                 | Total number of reportable injuries and rate per total unlinked passenger trips by mode |
| Safety events            | Total number of reportable events and rate per total vehicle revenue miles by mode      |
| System reliability       | Mean distance between major mechanical failures by mode                                 |

Sources: National Public Transportation Safety Plan (January 2017) and the Public Transportation Agency Safety Plan Rule (49 Code of Federal Regulations Part 673)

Transit agencies will be responsible for developing Public Transportation Agency Safety plans, in compliance with the Public Transportation Agency Safety Plan Rule. These agencies will be required to review and update these plans annually. These plans will include targets for the transit safety performance measures, which transit agencies may choose to amend when conducting annual reviews of their safety plans. Transit agencies must share these safety plans and targets with state DOTs and MPOs, which will set targets for their states and MPO regions.



## FEDERAL REQUIREMENTS FOR PBPP PROCESSES

The transportation legislation and federal rules that identify performance measures also describe how states and MPOs will need to incorporate these measures into their planning processes. States, MPOs, and public transportation operators continue to receive federal guidance on how to implement performance-based planning and programming.

### TARGET SETTING

- MPOs are required to establish performance targets for federally required performance measures no later than 180 days after the state or public transportation operator sets performance targets for those measures.<sup>5</sup>
- States, MPOs, and public transit operators must coordinate with one another to the maximum extent practicable when they are establishing their respective targets for performance measures, in order to ensure consistency.

### REPORTING

- States report highway performance measure information baselines and targets to FHWA on a bi-annual basis (except for safety target information, which is reported annually). Transit providers report transit asset management targets on an annual basis to the National Transit Database, and they will need to report transit safety performance measure targets through their agency safety plans.
- States and MPOs' LRTPs must describe the performance measures and targets used to assess system performance, evaluate the performance of the transportation system with respect to the federally required performance targets, and report on progress made.
- State Transportation Improvement Programs (STIPs) and MPOs' TIPs must link investment priorities to the targets in their respective LRTPs and describe, to the maximum extent practicable, the anticipated effect of TIP investments toward achieving established targets.

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<sup>5</sup> Specific deadlines for when states and/or public transportation operators need to define their targets vary by measure.

## FEDERAL ASSESSMENTS

- FHWA will determine whether states have met or have made significant progress towards meeting targets for highway system safety, infrastructure condition, reliability, and freight reliability performance measures. Progress at the state level would be considered significant if an actual outcome for a performance measure is either equal to or better than the established target, or better than the baseline condition. States that have not attained significant progress will need to identify actions they will take to make progress towards their targets, and they may have less flexibility in their ability to spend federal transportation dollars.
- FHWA and FTA will *not* directly assess MPO progress towards meeting targets for required performance measures. Instead, these agencies will review MPO performance as part of ongoing transportation planning process reviews, including Transportation Management Area certification reviews (required for the Boston Region MPO) and the Federal Planning Finding associated with approval of the STIP.<sup>6</sup>



<sup>6</sup> See FHWA, Metropolitan Planning Organization Safety Performance Measures Fact Sheet, [http://safety.fhwa.dot.gov/hsip/spm/docs/mpo\\_factsheet.pdf](http://safety.fhwa.dot.gov/hsip/spm/docs/mpo_factsheet.pdf), p. 1

## HOW CAN THE MPO BUILD A UNIQUE PERFORMANCE-BASED PLANNING AND PROGRAMMING PROCESS?

The MPO is already engaging in activities that support PBPP. The table below lists the steps of the MPO’s proposed PBPP process and indicates whether the LRTP and TIP processes are relevant to each step. For each area, the table notes whether the MPO has yet to begin an activity (symbolized by an open circle), is making progress on an activity (half-filled circle), or has completed an activity or established a process for completing that activity on an ongoing basis (filled circle). Where applicable, the table notes other MPO activities that may support each step.

### STEPS IN THE BOSTON REGION MPO’S PBPP PROCESS

| Phase | Activity                                                                                                                 | Progress Made through LRTP and/or TIP | Supporting or Related MPO Activities                                             |
|-------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------|----------------------------------------------------------------------------------|
| Plan  | Follow a collaborative process to set goals and objectives, which align with national goals                              | ●                                     |                                                                                  |
|       | Integrate goals and objectives into planning and programming activities                                                  | ●                                     | UPWP development and studies; CMP development                                    |
|       | Use performance measures for planning and analysis                                                                       | ●                                     | UPWP development and studies; CMP development                                    |
|       | Select standard performance measures for monitoring outputs and outcomes of MPO processes                                | ◐                                     | UPWP and CMP development                                                         |
|       | Display baseline information through LRTP Needs Assessment, CMP Roadway Performance Dashboards, and related applications | ◐                                     | CMP monitoring; MPO data collection and management                               |
|       | Collaborate with other stakeholders (for example, MassDOT and other MPOs) on setting targets and other PBPP topics       | ◐                                     | CMP development and monitoring; UPWP studies; MPO data collection and management |

| Phase                | Activity                                                                                                                              | Progress Made through L RTP and/or TIP | Supporting or Related MPO Activities                                              |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------|
| Plan                 | Track trends for performance measures                                                                                                 | ◐                                      | CMP monitoring                                                                    |
|                      | Set targets for a designated set of performance measures                                                                              | ◐                                      |                                                                                   |
|                      | Collect, organize, and analyze data to support performance monitoring                                                                 | ◐                                      | UPWP metropolitan planning funding allocation; MPO data collection and management |
| Invest               | Create and analyze scenarios to explore potential performance measure outputs and outcomes                                            | ◐                                      | UPWP studies; travel demand modeling                                              |
|                      | Identify strategies and policies for allocating funding to address goals and objectives                                               | ◐                                      | UPWP development and studies                                                      |
|                      | Use a performance- and criteria-driven process to support the MPO in selecting transportation projects or study locations for funding | ◐                                      | UPWP studies                                                                      |
| Monitor and Evaluate | Report baseline data, trends, and MPO performance outputs and outcomes                                                                | ◐                                      | CMP monitoring; MPO data collection and management; travel demand modeling        |
|                      | Determine the effectiveness of MPO strategies and policies on performance outcomes                                                    | ○                                      | UPWP studies                                                                      |
|                      | Identify transportation needs and issue areas for further study                                                                       | ○                                      | UPWP studies                                                                      |
|                      | Review and adjust the MPO's PBPP framework as needed                                                                                  | ○                                      | UPWP and CMP development                                                          |

CMP = Congestion Management Process. MPO = Metropolitan Planning Organization. PBPP = Performance-based Planning and Programming. UPWP = Unified Planning Work Program.

○= Work on PBPP activity has yet to begin

◐= Work on PBPP activity is underway

●= Work on PBPP activity is complete or a process has been established

## GOING BEYOND FEDERAL REQUIREMENTS

The requirements in MAP-21 and the FAST Act establish the backbone of the MPO's PBPP process. In response to the existing federal mandate, over the next several years, the MPO will continue to set targets for specific federally required performance measures and coordinate on PBPP activities with the Massachusetts Department of Transportation (MassDOT), the MBTA, other MPOs, and other stakeholders. However, the MPO can exceed these requirements to create a PBPP process that meets the MPO's specific needs and interests. The following options are available:

- The MPO can decide to select any number of performance measures for its six goal areas in addition to those required by federal legislation. Specific performance targets could be set for these measures to track performance. The table on the opposite page includes *examples* of performance measures that could be incorporated into the MPO's PBPP process. The MPO has already used some of these performance measures for the LRTP Needs Assessment, scenario planning, LRTP and TIP performance reports, and for air-quality related evaluations.
- The MPO can use scenario planning exercises during the development of the LRTP to explore different performance measures for use in planning and programming.
- The MPO could explore different approaches and tools to update the public on performance measurement and progress toward achieving goals.

Over the coming months, MPO staff will collect information for use in performance measurement, monitor updates in federal and state PBPP processes, explore tools and data, and recommend methods, performance measures, and performance targets to the MPO board. This work is designed to help the MPO make key decisions that will create an effective, integrated, and informative PBPP process for the Boston Region MPO.





## EXAMPLES OF POTENTIAL PERFORMANCE MEASURES FOR THE BOSTON REGION MPO

| Boston Region MPO Goal Area           | Selected Federally Required Performance Measure                                    | Example MPO Performance Measure                                                                         |
|---------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Safety</b>                         | Number of fatalities                                                               | Number of HSIP-eligible, high-crash cluster locations improved through programmed projects <sup>7</sup> |
| <b>System Preservation</b>            | Percentage of NHS bridges classified as in good condition                          | Number of sidewalk miles improved through programmed projects                                           |
| <b>Capacity Management / Mobility</b> | Annual hours of peak-hour excessive delay per capita                               | Percentage of population within a quarter mile of a transit stop or station                             |
| <b>Clean Air / Clean Communities</b>  | Total emissions reduction                                                          | Percentage of population with access to bicycle facilities                                              |
| <b>Transportation Equity</b>          | <i>Not applicable (no federally required measure)</i>                              | Percentage of equity populations within ¼ mile of transit service                                       |
| <b>Economic Vitality</b>              | Percent of the Interstate System mileage providing for reliable truck travel times | Number of projects that provide access to targeted development areas                                    |

HSIP = Highway Safety Improvement Program. MPO = Metropolitan Planning Organization. NHS = National Highway System

<sup>7</sup> MassDOT uses Equivalent Property Damage Only (EPDO) scoring to rank crash cluster locations in each regional planning area (RPA) in Massachusetts. EPDO scoring is a method for assessing the frequency and severity of crashes at a given location over a period of time. The method involves applying weighting factors to indicate the severity of a crash. Projects that address crash cluster locations ranked in the top 5 percent by EPDO value in a particular RPA are eligible for federal Highway Safety Improvement Program (HSIP) funds.

## PBPP RESOURCES

**MPO Performance-based Planning and Programming webpage:** This webpage ([bostonmpo.org/performance](http://bostonmpo.org/performance)) describes the MPO's recent PBPP activities, such as setting targets for specific performance measures. It provides information on federally required performance measures, related processes, and MPO targets, and it also hosts a link to the MPO's Performance Dashboard.

**MPO Performance Dashboard—Transportation in the Boston Region:** This interactive dashboard presents data on crashes, bridge and pavement condition, bicycle and pedestrian facilities, and traffic congestion, as well as on the characteristics of the people who use the system. The dashboard can be reached via the MPO's Performance-based Planning and Programming webpage ([bostonmpo.org/performance](http://bostonmpo.org/performance)).

**Performance Reporting:** The MPO's Federal Fiscal Years (FFY) 2019–23 TIP includes a performance report (Chapter 4: TIP Performance Monitoring). This report discusses the MPO's safety and TAM performance targets, as well as performance measures related to the MPO's FFYs 2019–23 Regional Target-funded projects. The FFYs 2019–23 TIP is available on the MPO's TIP webpage ([bostonmpo.org/tip](http://bostonmpo.org/tip)).

**MPO Staff Contact:** If you have questions about the MPO's PBPP process, please contact Michelle Scott at 857.702.3692 or at [mscott@ctps.org](mailto:mscott@ctps.org).



## GLOSSARY

The definitions below are adapted from FHWA's glossary, Transportation Performance Management Terms.

**Goal:** A broad statement of a desired end condition or outcome (e.g. "transportation by all modes will be safe").

**Metric:** An indicator of performance or condition (e.g. number of fatalities during a particular year).

**Objective:** A specific, measurable statement that supports achievement of a goal (e.g. increase the percentage of the Boston region's population and places of employment with access to bicycle facilities, which enhances capacity management and mobility).

**Outcome:** Intended results or consequences of carrying out a particular program or activity, which are often of most interest to system users (e.g. number of serious injuries reduced).


**Output:** Goods, services, or activities produced by a program or project that are delivered to the public (e.g. miles of pavement improved). Outputs can be process oriented, and they help agencies track a program's progress toward reaching desired outcomes.

**Performance Measure:** A metric used to monitor and report on a [transportation] characteristic. These measures are used on an ongoing basis to track progress toward goals, objectives, and achievement of targets (e.g. number of fatalities, tracked over time to assess progress in improving transportation safety).

**Performance-based Planning and Programming:** A strategic process, or series of processes, that apply data to inform decisions aimed at helping to achieve desired outcomes for the region's multimodal transportation systems.

**Strategy:** A plan of action for achieving a target, goal, or objective (e.g. programming more Complete Streets projects to support more nonmotorized travel).

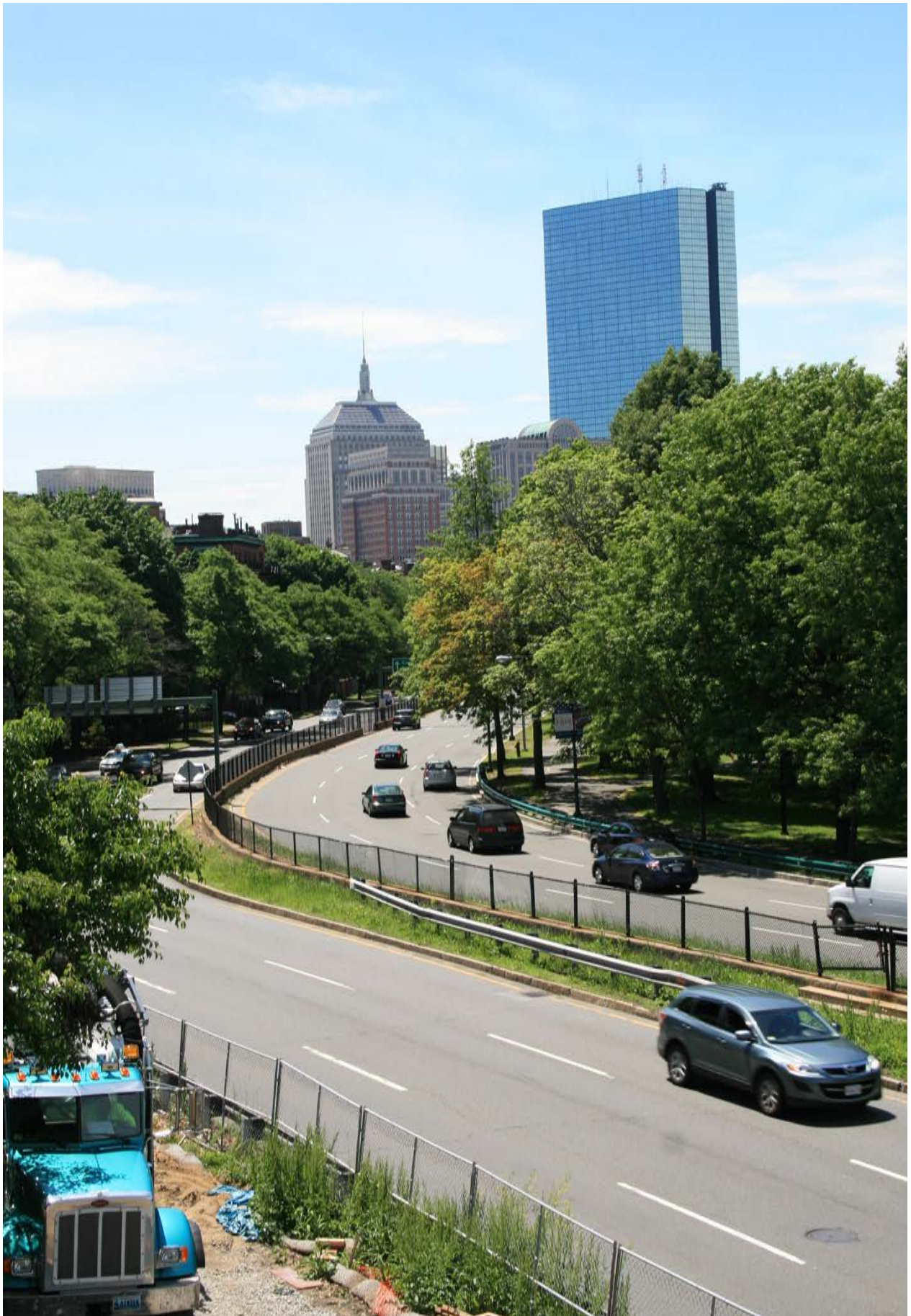
**Target:** A level of performance that an entity seeks to achieve within a specific time frame (e.g. a five percent reduction within two years of crashes that result in serious injuries to bicyclists and pedestrians).



## KEY RULES AND REQUIREMENTS (as of September 4, 2018)

- 23 US Code §134 – Metropolitan transportation planning
- 23 US Code §135 – Statewide and nonmetropolitan transportation planning
- 23 US Code §150 – National goals and performance management measures
- 23 Code of Federal Regulations Part 450 – Planning assistance and standards
- 23 Code of Federal Regulations Part 490 – National Performance Management Measures
- 49 US Code §5303 – Metropolitan transportation planning
- 49 US Code §5326 – Transit asset management
- 49 Code of Federal Regulations Part 625 – Transit asset management
- 49 US Code §5329 – Public transportation safety program
- FTA, National Public Transportation Safety Plan (2017)









performance-based  
planning and programming

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