CHAPTER 3

The PMT Planning Process

THE PMT IN THE LARGER PLANNING CONTEXT

In setting the MBTA's long-term capital investment agenda, the PMT planning process lays out the system-level foundation, not only for MBTA project development, but also for the regional transit-planning efforts of the Boston Region Metropolitan Planning Organization (MPO). The PMT is also coordinated with the statewide planning efforts of the Executive Office of Transportation and Public Works (EOT).

Regional Transportation Planning

The two legislatively mandated MBTA capital planning and programming documents—the PMT and the Capital Investment Program (CIP)—are coordinated with the federally mandated metropolitan planning organization (MPO) planning process. As a prerequisite to receiving federal transportation funds, each MPO must prepare and approve a 25-year, fiscally constrained Regional Transportation Plan (RTP) at least every four years. In addition, MPOs must annually prepare a Transportation Improvement Program (TIP) that programs federal surface-transportation funds for implementation of projects and priorities consistent with the long-range plan.

MBTA projects included in the RTP or receiving federal funds as programmed in the TIP must also be referenced in the PMT and CIP.

The 175-municipality MBTA service area includes at least parts of the jurisdictions of the following MPOs and regional planning agencies:

- Boston Region Metropolitan Planning Organization and Metropolitan Area Planning Council

- Merrimack Valley Planning Commission
- Northern Middlesex Council of Governments
- Montachusett Regional Planning Commission
- Central Massachusetts Regional Planning Commission
- Southeastern Regional Planning and Economic Development District
- Old Colony Planning Council

Statewide Transportation Planning

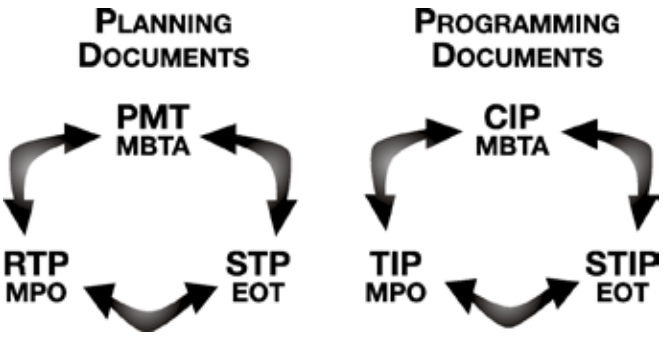
The MBTA, along with seven other transportation agencies/organizations and EOT, is a member of the Massachusetts Mobility Compact, established by Governor Patrick in July 2007. The purpose of the Compact is to improve communication, cooperation, and coordination in transportation planning, design, construction, operation, and maintenance, with the aim of:

- Increasing mobility for people and goods within and through the Commonwealth in a safe, secure, environmentally sustainable, and efficient manner
- Promoting and adopting administrative efficiency and program improvement initiatives between and among transportation agencies and authorities
- Sharing best-practice techniques for implementation across transportation modes

The MBTA is helping to further these goals by coordinating the PMT with EOT's long-range transportation-planning process, "You Move Massachusetts." Designed to be a bottom-up approach to transportation planning, this process began by asking the public to participate in priority setting. Based on the public comments received, a set of core themes was developed; it articulates the expressed concerns, needs, and aspirations of Massachusetts residents for their transportation network. These themes contribute to an overall vision of a transportation system and will guide the development of a multimodal Strategic Transportation Plan (STP) that can both serve and promote a prosperous and sustainable future for the Commonwealth.

As with the MBTA and the MPOs, the Commonwealth also produces a programming document, the State Transportation Improvement Program, or STIP. The STIP, which is prepared annually, is a compilation of the TIPs from the Commonwealth's 10 MPOs and three non-MPO regional planning agencies. As such, the STIP includes the priority transportation projects (highway and transit) for each region in the state by fiscal year.

FIGURE 3-1
PMT Planning and Programming Process



Given the MBTA's well-documented, severe financial constraints, policy makers recognize that the Authority is prevented from using its dedicated capital funding to take on an ambitious expansion project agenda that could divert resources from more immediate infrastructure priorities directly impacting system reliability and performance. The MBTA's first priority is, by necessity, to tackle the estimated $2.7 billion backlog in system infrastructure needs and bring the Boston area transit system into a state of good repair. Realities of the Authority's existing financial structure compel the MBTA to rely on discretionary federal grant funding and Commonwealth funding through EOT to support and advance implementation of major expansion projects.

THE PMT PLANNING PROCESS

The planning approach taken in this PMT reflects the MBTA's priority of fixing the existing system and the central role of EOT and the Commonwealth in prioritizing and paying for transit expan-

sions. Past versions of the PMT have placed particular emphasis on identification and evaluation of potential transit expansion projects. This PMT continues to include transit expansion and capacity improvement projects as important elements for achieving its long-range vision. No region can assume a static transportation system over the coming decades if it aims for sustained economic growth and seeks to make the movement of goods and people more efficient. At the same time, however, this PMT is grounded in twin realities.

First, it is critically important that the PMT process

Grand opening of the Greenbush Line

document the full scope of the regional transit system's existing infrastructure needs. Although the PMT is fiscally unconstrained, the MBTA must also be cognizant of the difficult real-world spending decisions that need to be made in the course of addressing those needs. The MBTA, as steward of the region's transit system, has an obligation to fully communicate the constraints, both fiscal and operational, under which it functions to customers, the transit advocacy community, and policy makers at the state and local levels.

Second, under its existing financing structure—and certainly over the next decade, even if its financing structure were to change—the MBTA will be dependent on non-MBTA funding sources to support transit system expansions. The Commonwealth has already committed to funding the expansion projects required as part of the mitigation for the Central Artery project and scheduled for completion by 2011 and 2014. Other major initiatives in project planning, such as the South Coast Rail extension to Fall River/New Bedford, rapid transit line extensions, and the Urban Ring, will all require state and/or federal funding to design, build, and operate. The planning approach taken in this PMT reflects the MBTA's priority of fixing the existing system and the central role of EOT and the Commonwealth in prioritizing and paying for transit expansions.

Identify Mobility Problems

The key organizing principal for this PMT is identification of mobility problems faced by MBTA customers. The inventory of identified mobility needs is organized geographically into six radial travel corridors: Northeast, North, Northwest, West, Southwest, and Southeast. Also discussed is the central area, which consists of the core and a set of three adjoining circumferential corridors, all of which overlay the radial corridors.

Staff held a series of regional corridor-based workshops in 2007 to engage the public in a dialogue on how the MBTA system works and how it can be improved. At the same time as the public engagement process, staff conducted an internal assessment process at the MBTA, documenting the operating and administrative departments' needs and priorities for bringing the Authority's assets into a state of good repair and maintaining the system in that condition.

Engage Communities and Customers

To focus public input, each PMT workshop dealt with one or two of the radial travel corridors and the mobility issues specific to the mix of services in that corridor and to those connecting that corridor with other corridors.

In addition to workshops, the MBTA used a wide variety of other communication tools to involve the public in the development and review of the PMT. With the assistance of the Boston Region

MPO, the MBTA established a project website that is linked to both the MBTA and the MPO websites. Through the website, interested parties can read general information on the PMT and can link to related documents, as well as those produced during the development of the PMT, such as the vision statement, goals and objectives, project screening criteria, and performance measures. The site also provides an electronic form for citizens to use to register ideas and comments or request more information.

The *PMT Reporter*, the project's newsletter, has also provided information on the development of the PMT. The newsletter is posted on the PMT website and has been mailed to chief elected officials, chief executive officers, and planning boards in the MBTA service area communities outside the MPO region. Individuals who attended public meetings and were interested in receiving the newsletter and other PMT updates

MBTA Program for Mass Transportation

PMT Reporter

APRIL 2007

Improving Mobility in the Boston Region 1
Solving Mobility Problems..... 2
Public Workshop Schedule 3
PMT Stakeholder Advisory Committee Formed 4

The 2008 PMT will focus on improving transit capacity and bringing the MBTA's extensive capital assets into a state of good repair, in order to make service more reliable, convenient, accessible, and safe/secure.

Improving Mobility in the Boston Region

Over the next 15 to 18 months, the MBTA will be seeking input from the public as it develops its long-range planning document, the Program for Mass Transportation (PMT). The PMT outlines a 25-year vision for the Boston region's public transit system, the fifth-largest transit system in the United States, serving 175 municipalities. In the process of developing this document, the MBTA—with your help—aims to identify and prioritize capital investments that will improve the performance of the transit system and keep it in a state of good repair.

Under its enabling legislation, the MBTA is required to update the PMT every five years. This requirement provides the MBTA with the opportunity to revisit the long-range vision and goals for the transit system, as well as the specific projects that are selected to achieve them. It also provides you, as an MBTA customer, with an important opportunity to provide your input.

As a fiscally unconstrained plan, the PMT is the foundation for transit planning in the region. The PMT identifies the universe of transit projects that the Boston Region Metropolitan Planning Organization considers for inclusion in its long-range Regional Transportation Plan (RTP), a 25-year plan for highway and transit projects in the region, and its Transportation Improvement Program, a shorter-term document for implementing RTP projects. The PMT also defines the pipeline of projects that feed into the MBTA's Capital Investment Program (CIP), which is prepared annually and sets the timeline for implementing transit projects.

Historically, the PMT has focused primarily on the identification and evaluation of potential transit expansion projects. However, the MBTA is currently facing a $2.7 billion backlog of maintenance projects that must be addressed to bring the system into a state of good repair and to provide users with reliable, convenient, accessible, and safe/secure transit services. The 2008 PMT will, therefore, also strongly emphasize system preservation projects.

A transit system that provides quality transportation options is crucial for its users and for economic growth and development in the Boston metropolitan area. The MBTA looks forward to hearing your ideas and suggestions for improving mobility in the region.

MBTA Capital Assets

HEAVY RAIL
Red, Orange, and Blue Lines
408 cars, 53 stations,
79 miles of track

LIGHT RAIL
Green Line and Mattapan High Speed Line
209 cars, 78 stations/stops,
46 miles of track

COMMUTER RAIL
13 lines (north and south),
410 coaches, 80 locomotives,
131 stations, 600+ miles of track

WATER TRANSPORTATION
3 privately operated routes, 2 MBTA-owned boats, 2 MBTA-owned docks

BUS AND TRACKLESS TROLLEY
180+ routes, 7,800+ signed stops,
942 vehicles, 8 stations

BUS RAPID TRANSIT
Silver Line Washington Street and Waterfront
12 new stations, dedicated bus lane,
49 articulated vehicles

MAINTENANCE FACILITIES
4 heavy rail, 4 light rail, 3 commuter rail, 9 bus, 17 general service

BRIDGES
285 commuter rail, 58 rapid transit,
86 highway, 44 pedestrian;
610 commuter rail culverts

POWER
165+ substations, 3 million feet of cable, 54 low-voltage switchgears, 390 switch heaters, overhead contact systems, etc.

SIGNALS
419 switches, 1,060 signals, 134 train approach lights, 480 miles of signalized track, 190 miles of aerial pole line, 200 grade crossings with automatic protection equipment, etc.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY 1

THE PMT REPORTER

via email could also join the PMT listserve, which included over 1,700 email addresses.

To advise the MBTA as it developed the 2008 PMT, the Authority established a PMT Stakeholder Advisory Committee (SAC), which represented key agencies/organizations, local governments, transportation advocacy groups, businesses, community development interests, and academia. This committee has served as the MBTA's principal public advisory body in developing the PMT, and has generally met once a month during development of the PMT. Meeting times and locations have been posted on the MBTA's website. The SAC is chaired by the MBTA and includes representatives of the following organizations:

- A Better City
- Access Advisory Committee to the MBTA
- Blue Cross Blue Shield of Massachusetts
- Boston Transportation Department
- Central Transportation Planning Staff
- Chelsea Collaborative
- City of Medford
- Codman Square Neighborhood Development Corporation
- Department of Housing and Community Development
- Executive Office of Environmental Affairs
- Executive Office of Transportation and Public Works
- Livable Streets Alliance
- Massachusetts Institute of Technology
- Mass*RIDES*
- MBTA Advisory Board
- MBTA Rider Oversight Committee
- Medical Academic and Scientific Community Organization, Inc.
- Metropolitan Area Planning Council
- Regional Transportation Advisory Committee
- Town of Acton

- Town of Needham
- University of Massachusetts Boston

Develop Vision, Goals, and Objectives

The vision, goals, and objectives for the PMT incorporate input received through the public process and guidance from the SAC. Although the MBTA solicited information about needed capital expenditures during the public process, many of the comments received dealt with operational or policy issues that affect the quality of service. As a capital planning document, the PMT has not historically included a discussion of these; however, because of the magnitude of the comments, this PMT attempts to incorporate the principles of improving MBTA policies and operations in addition to upgrading the Authority's physical assets.

The PMT *vision* is very broad and articulates the MBTA's role in the Commonwealth's transportation network and its contributions to economic and community vitality. The PMT *goals* provide a concise set of customer-oriented measures that could be taken to achieve this vision, and were the primary driving force behind the formulation of potential mobility solutions. Finally, the PMT *objectives* (which are listed as bullet points below each goal) describe more specific actions that can be taken to achieve the identified goals. Together the vision, goals, and objectives define the desired state of the MBTA's capital facilities at a 25-year horizon.

Utilizing automated fare gates at Blue Line station

Vision

The MBTA will provide safe, reliable, accessible, efficient, and cost-effective services that:

- Meet the evolving mobility needs of the region, the communities, and the individuals it serves
- Reduce environmental impacts
- Support environmental justice
- Strengthen regional economic vitality and competitiveness

Goals and Objectives

The MBTA established the following goals, which, if met, will lead to achievement of the PMT vision. These goals are divided into two types: planning goals and outcome goals. The planning goals address the planning process itself, including steps that the MBTA should take, both internally and externally, to improve its long-range capital planning process.

Planning Goals and Objectives

1. *Strengthen the MBTA's long-range planning process by:*
   - Formalizing coordination of planning efforts among project development, capital programming, operations management, and other areas within the MBTA
   - Standardizing the ongoing process for identifying, prioritizing, and addressing asset maintenance and replacement needs
   - Coordinating with the Commonwealth regarding the implementation of currently planned expansion projects, as well as those identified as future needs, to help solve mobility challenges

2. *Identify mobility strategies for identifiable customer markets within the MBTA's service area by:*
    - Engaging in coordinated land use and transportation planning with local, regional, and state agencies; community organizations; and other key stakeholders
    - Supporting local, regional, and state economic development plans
    - Supporting sustainable, transit-oriented-development plans
    - Conducting a meaningful public process
    - Analyzing existing data to identify and forecast travel patterns

Outcome Goals and Objectives

The projects evaluated in the PMT planning process are selected for their potential to achieve the PMT's long-range vision by meeting the following goals:

1. *Take customers where they need to go*
    - Improve transit connections (geographically as well as within and between modes) and reduce transfers
    - Coordinate MBTA services and fare collection systems with other (non-MBTA) services, including inter-suburban service provided by regional transit authorities (RTAs)
    - Expand options for customers to conveniently access MBTA stations and services
    - Add stops and stations where necessary to meet regional mobility demand and consolidate stops where doing so would increase ridership and improve travel time
2. *Take customers when they need to travel*
    - Improve service frequency
    - Decrease travel times
    - Increase the hours of service, particularly in the evening and late at night
    - Increase off-peak and weekend service
3. *Give customers safe, comfortable service they can rely on*
    - Improve operational safety and security
    - Improve schedule adherence (through right-of-way improvements, signal coordination, intelligent transportation systems technologies, etc.)
    - Provide sufficient service to meet customer demand and reduce passenger crowding.
    - Provide customer amenities such as shelters, heated waiting areas, benches, and bike racks

COMMUTER BIKE CAGE AT MBTA STATION

    - Ensure consistent operation of vehicle air conditioning and heating systems, and station elevators and escalators
    - Improve vehicle design and configuration
    - Provide clean stations and vehicles
4. *Treat customers fairly and with respect*
    - Ensure that the benefits and burdens of the transportation system are equitably distributed
    - Make the system accessible to persons with disabilities

- Provide courteous and responsive customer service
- Provide training for drivers in how to be more courteous and responsive to customers
- Provide drivers with strategies to deal with difficult or dangerous situations
- Develop clear policies for drivers to follow and reward them for implementing them consistently
- Provide incentives and rewards for drivers who excel in customer service

5. *Keep customers well informed*
   - Improve and increase station signs and maps
   - Translate signage, etc., for limited-English-proficiency populations, including tourists
   - Ensure that stop announcements are accurate, audible, and consistently implemented
   - Make schedules readily available
   - Market MBTA services to make the public aware of their options
   - Provide real-time information on the MBTA's website

MBTA WEBSITE

   - Improve Web-based tools that assist customers in planning their trips

6. *Improve the MBTA's impact on regional transportation and environmental protection*
   - Increase transit ridership and the ratio of transit trips to auto trips in the region
   - Reduce emissions of air pollutants and greenhouse gases
   - Reduce other transportation-related pollution of the environment

Develop Problem Statements and Identify Potential Mobility Solutions

The mobility challenges identified during the public process or from other sources, including data analysis and review of existing studies and reports, are grouped by corridor. For each corridor, a problem statement was developed that includes background information such as demographic and travel trends, and the mobility challenges specific to the corridor. Potential solutions to the mobility challenges for each corridor are also found in the corridor problem statements. The mobility solutions include projects for system preservation, service enhancement, and system expansion.

Problem statements for the six radial corridors and the central area (which consists of the core and three surrounding circumferential corridors) are included in Appendices A–G of this document.

Evaluate Mobility Solutions Using Evaluation Criteria

Each of the potential service enhancement and system expansion solutions identified to address the problems in the problem statements was screened to ensure that it would be technologically feasible and consistent with MBTA operations service standards/goals. Solutions that met these screening criteria were advanced to a more detailed assessment. In addition, the Commonwealth's legal commitments were considered

at that stage to identify solutions that must be part of the PMT's final set of mobility strategies.

Most of the potential solutions advanced were measured according to applicable evaluation criteria linked to the PMT goals and objectives. Some projects were not evaluated individually within the context of the PMT. These include projects that are currently being evaluated by the state and for which the final alternative has not been determined, as well as projects that are still at a conceptual stage and have not yet entered the planning process.

The PMT evaluation criteria are presented below. They include both quantitative and qualitative measures that correspond to the PMT goals and objectives. The customer conveyance criteria are organized here to parallel the PMT objectives presented earlier in this chapter.

Service Enhancement and System Expansion Evaluation Criteria

Customer Conveyance

System Configuration

- Reduction in number of transfers/minimization of transfer time
- Improvements to Interconnectivity between modes (including fare collection)
- Improvements to station access
- Expansion of transit access to geographical areas underserved by transit

Expediency

- Improvements to service frequency
- Increase in travel speed
- Reduction in travel time
- Reduction in automobile travel time advantage
- Expansion of transit access during time periods poorly served by transit

Reliability and Comfort

- Improvements to reliability of service
- Expansion of capacity where and when crowding occurs
- Improvements to vehicle comfort and passenger circulation

Fairness

- Elimination of barriers to efficient travel between key destinations and neighborhoods with substantial minority or low-income population.
- Provision of benefits that outweigh burdens in neighborhoods with substantial minority or low-income population.

Customer Information

- Improvements to reliability and quality of stop announcements
- Improvements to availability of real-time service performance data

Regional Transportation Impacts

- Number of transit riders served
- Number of new transit riders served
- Change in transit mode share for the regional network
- Reduction in regional emissions

Land Use Impacts

- Consistency with local plans that promote coordinated, transit-oriented development and support sustainable land use patterns
- Contribution to attainment of MPO land use goals
- Contribution to brownfield and infill development

Customer Support and Safety

- Enhancements to customers' personal safety
- Provision of amenities where customers access service
- Enhancements to vehicle and station cleanliness
- Improvements to responsiveness and courtesy of employees

MBTA EMPLOYEE CLEANING STATION ELEVATOR

- Improvements to safety and security training for operators
- Improvements to navigational tools
- Expansion of schedule availability
- Provision of customer information in languages other than English

Accessibility

- Number of transit riders served
- Improvements to ease of transfers between rail lines
- Improvements to ease of transfers between rail lines and other transit modes
- Expansion of access to major activity centers

State-of-Good-Repair Evaluation Criteria

- Replacement of an asset that has reached or exceeded its useful life
- Correction of an existing deficiency for passengers and/or employees in safety, health, and/or the environment
- Improvement of an operationally critical asset

Establish Evaluation Targets

For each of the quantitative PMT objectives for which progress towards meeting them can be measured, an attempt was made to set a specific performance target for the year 2030. The targets are to be used for two purposes: first, to gauge the effectiveness of proposed projects in relation to PMT expectations during the evaluation process; and, second, to provide benchmarks against which progress can be measured in the future. For some objectives, it was much more difficult than for others to assign a realistic target.

The primary objectives for which targets were established are ridership, travel time, and environmental impacts. The following are the ridership and travel time targets:

- Increase ridership systemwide by 1% per year, or at least 250,000 new unlinked trips/day, between now and 2030
- Reduce average trip travel time by 2% by 2030

Massachusetts is a party to the New England Governors/Eastern Canadian Premiers Climate Change Action Plan that was adopted in August 2001. This plan set the following greenhouse gas (GHG) emission reduction targets, which were incorporated into the Massachusetts Climate Protection Plan in 2004:

- Short-term: Reduce GHG emissions to 1990 levels by the year 2010
- Medium-term: Reduce GHG emissions to 10% below 1990 levels by the year 2020
- Long-term: Reduce GHG emissions sufficiently to eliminate any dangerous threat to the climate; current science suggests this will require reductions to as much as 75%–85% below current levels

Making transit more convenient and reliable is critical to GHG emission reductions in the region. Yet, transit improvements alone, in isolation from the regional transportation network, cannot achieve these very ambitious targets.

Transit must be a component of an overall land use–transportation strategy that fosters changes in travel behaviors, improves intermodal connections, increases system capacity, and puts in place incentives for energy conservation and green technology.

The MBTA is committed to being a full partner with all agencies in Massachusetts state government in working toward meaningful emission reductions and achieving the Commonwealth's climate change goals.

Evaluate Illustrative Scenarios

Using the regional travel demand model, three scenarios were evaluated to illustrate varying levels of future systemwide capital investment and the progress toward achieving the evaluation targets attributable to each. These scenarios are discussed in detail in Chapter 7.

State-of-Good-Repair (SGR) Scenario

The state-of-good-repair (SGR) scenario assumes that all capital investment funds are dedicated to fixing the existing infrastructure. The MBTA system is brought into SGR under this program, which fully addresses deferred and ongoing system preservation needs over the next 25 years. This SGR scenario does not include enhancements or expansion of the system, but provides the baseline against which the enhancement and expansion scenarios are compared.

Enhancement Scenario

The enhancement scenario assumes that the system has been brought to SGR. Beyond achieving SGR, this scenario includes a package of infrastructure investments that would improve the efficiency and effectiveness of the existing system without major expansions of service or capacity.

Expansion Scenario

The expansion scenario assumes that the system has been brought to SGR and that projects in the enhancement scenario have been implemented. Additionally, a group of investments that enlarge system services and capacity would be implemented.