

## **THE BOSTON MPO'S VISION FOR IMPROVED MOBILITY WITHIN THE TRANSPORTATION SYSTEM**

A coordinated mix of transportation modes and services will give travelers the increased ability to travel to and from desired destinations via convenient, reliable, speedy, affordable, and accessible options. Existing roadway, transit, bicycle, pedestrian, and freight links will be maintained and their serviceability improved. New routes, lines, and connections will serve additional needs. The spectrum of options will serve travelers from different areas of the region with varying needs.

To implement this vision, the MPO has developed a set of policy statements to guide their decision-making:

- Put a priority on projects and programs that increase the availability of transportation options for people and freight by improving connections, access to and within the system, services, and infrastructure to meet needs.
- Support projects and programs that improve public transportation service by making it faster, more reliable, and more affordable.
- Consider how an improvement to a single mode can make the entire system work better.
- Fund projects that expand the existing transportation system's ability to move people and goods in areas identified in the Boston Region Congestion Management Process, the MBTA Program for Mass Transportation, the MPO's Regional Equity Program, and MPO and EOT freight studies, and through public comment. This includes encouraging options that manage demand. Adding highway capacity by building general-purpose lanes should be considered only

when no better solution can be found and should be accompanied by proponent commitments, developed in the environmental review process, to implement transportation demand management (TDM) measures.

- Maximize the implementation of multi-modal transportation approaches in both urban and suburban settings, including roadway, transit, bicycling, and pedestrian.
- Assist agencies and communities in planning and implementing projects that provide bicycle and pedestrian routes, networks, and facilities.
- Support programs that meet public transportation needs in suburban communities, including improving access to existing public transportation and partnering with others to initiate new intra-suburban services linking important destinations.
- Provide better access for all to transportation throughout the region, including for our youth, elderly and disabled users, and members of zero-vehicle households. This includes identifying and addressing structural and operational barriers to mobility.
- Develop a multimodal and comprehensive plan for freight movement that includes an evaluation of freight infrastructure needs and access to intermodal facilities (air, road, rail, and water).

## BACKGROUND

Roadway congestion is getting worse in the Boston region: As of the last monitoring period, 22 percent of the region's limited-access highway network operated at travel speeds of less than 50 miles per hour during the morning peak period, and 17 percent operated at travel speeds of less than 50 miles per hour during the evening peak period. These percentages are about 10 percent higher than those noted during the previous monitoring period, which was five years earlier.

Arterial roadways in the region are also experiencing significant congestion levels. Average

peak-period speeds are now below the posted speed limit on about 40 percent of the region's monitored arterial roadway network. In the evening peak period (which is worse than the morning peak period), 15 percent of monitored intersections have two or more approaches with unacceptable levels of service. Since the previous monitoring period, peak-period speeds have decreased and delay has increased.

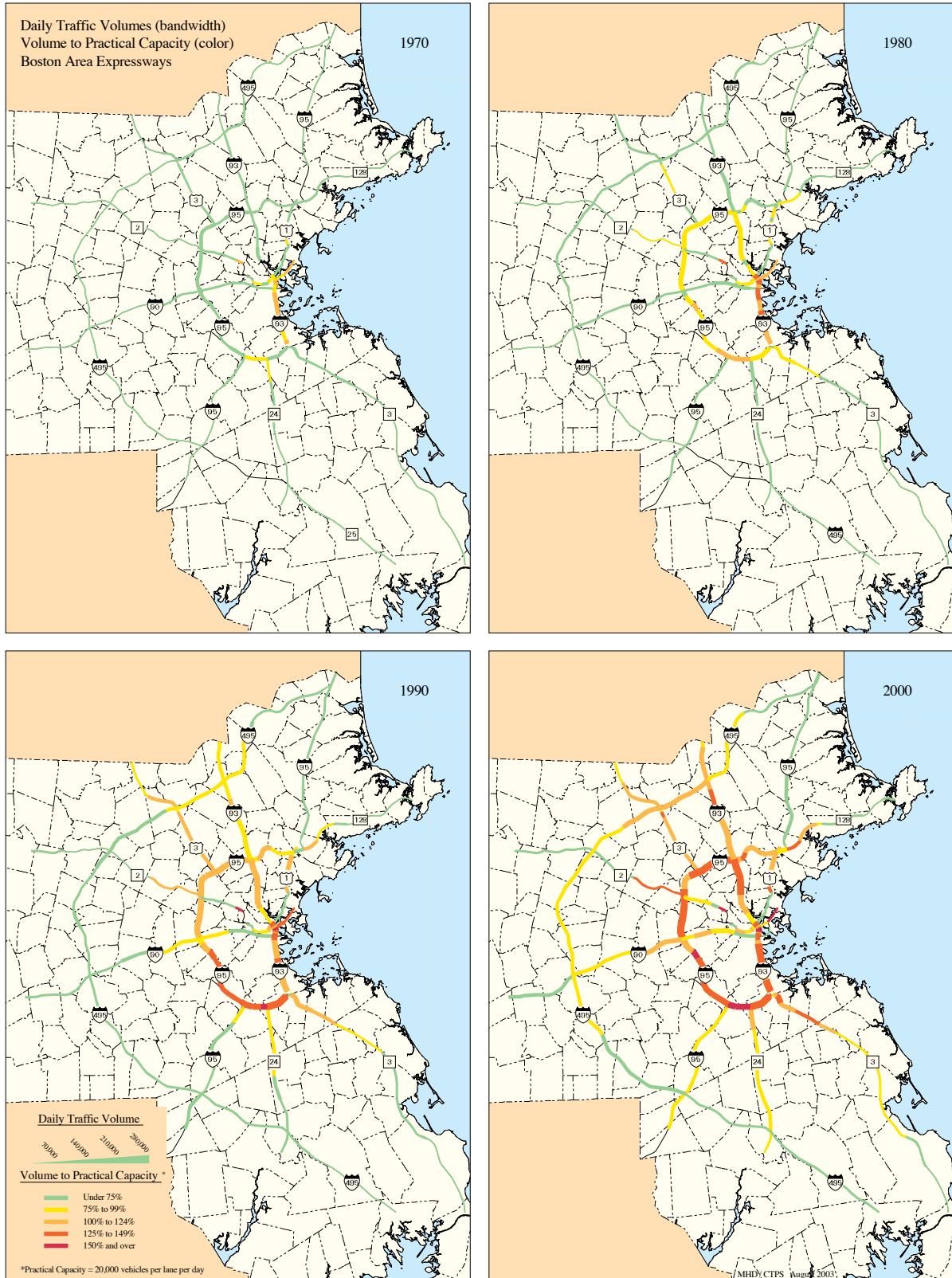


Figure 6-1 shows volume-to-capacity ratios on Boston area expressways from 1970 to 2000; these ratios illustrate a comparison of the amount of traffic on a highway segment to its available capacity. The maps reflect how congestion levels on limited-access highways have increased since 1970. Radial highways within Route 128, along with Route 128 itself, are currently the most congested in the region. However, portions of the radial highways outside of Route 128 are also becoming congested.

The Boston region is growing rather modestly compared with many other regions in the country. Population in the region is expected to grow to 3.46 million in 2030, a 12.8 percent increase

FIGURE 6-1

DAILY TRAFFIC VOLUMES (BANDWIDTH) AND VOLUME-TO-PRACTICAL-CAPACITY RATIOS (COLOR) ON BOSTON AREA EXPRESSWAYS





from 2000. Employment is projected to grow to 2.07 million employees in 2030, a 13.2 percent increase from 2000.

As population and employment increase in the Boston Region MPO area, the number of automobile trips and trip lengths are also expected to increase. Without adding additional capacity to the existing roadway or transit systems, vehicle-miles traveled (VMT) are projected to increase by 16.5 percent by 2030. Vehicle-hours traveled (VHT) are projected to increase more rapidly, by 25.7 percent, by 2030. These statistics reflect two trends that are expected to continue in the future: travel distances will be longer due, in part, to greater development occurring in the outer areas of the region; and increased congestion will cause most trips to take longer than they now do.

Roadway capacity can also affect the schedule adherence of buses and B and C Green Line trains, which share the roadway with other traffic. In some cases, schedule adherence can cause “bus bunching,” which results in passenger crowding. In addition to other service performance categories, the MBTA monitors schedule adherence and passenger crowding on all its services by compar-



ing performance to standards. Some of the MPO programs described later in this chapter aim to specifically address transit capacity on the MBTA.

Finally, adding capacity to the transportation system helps solve the region’s congestion problem. However, it is clear that the MPO and its member agencies will need to continue to fund and expand upon programs that make the transportation system operate more efficiently. New technologies will continue to be employed to manage and mitigate congestion, and alternatives to single-occupant vehicles will continue to be supported.

## CHAPTER OUTLINE

The MPO monitors congestion and mobility in the region through its Congestion Management Process (CMP), which is described in detail in the next section of this chapter. Information from the CMP was used in evaluating the projects and programs considered for inclusion in the Plan. CMP staff also develop conclusions about congestion and mobility, and recommend programs and strategies for improving mobility in the region.

The MPO and its member agencies have implemented numerous measures that help in relieving congestion or allow for a more efficient use of the roadway and transit network. Some of these measures fall under the broad categories of transportation systems management (TSM) and transportation demand management (TDM). TSM includes strategies for extracting additional capacity out of existing roadway and transit infrastructure by increasing efficiency. One of the main purposes of TDM measures is to reduce the number of single-occupant vehicles as a way to reduce congestion. Existing TSM and TDM programs and strategies are described in the next two sections of this chapter.

The efficient movement of freight into, out of, and within the Boston region is critical to its economy. The existing freight infrastructure is limited in its ability to move the larger volumes of freight that are expected in the future. This chapter includes

a section on freight mobility, which outlines the existing capacity constraints in the freight network and offers strategies for increasing capacity and improving the efficiency of freight movement in the region.

Providing access to the transportation system, especially for the elderly, disabled, and low-income populations, is critical to improving mobility throughout the region. The last section of this chapter describes infrastructure, programs, services, and planning efforts to improve mobility for these populations.



## CONGESTION MANAGEMENT PROCESS

The Boston Region MPO's Congestion Management Process, formerly known as the Mobility Management System (MMS), is an ongoing program for monitoring mobility in the region. It provides decision-makers (primarily the MPO) and transportation planners in the region with timely information about transportation system performance. It allows the MPO to focus improvements in the areas where congestion and

other mobility deficiencies are found. This information is also available to members of the public, who may choose to use the CMP information to provide input into the planning and programming of transportation improvements through the MPO's public participation process, as well as to make decisions about their own travel.

The CMP provides reports and recommendations for arterial roadways, limited-access highways, public transit, park-and-ride lots, high-occupancy-vehicle (HOV) lanes, travel demand management (TDM), and bicycle and pedestrian transportation. Information on these aspects of the region's transportation system is posted on the MPO's Web site, which is updated regularly.

CMP data and recommendations feed into the Boston Region MPO's 3C planning process. The CMP recommends planning studies to be undertaken through the MPO's Unified Planning Work Program (UPWP). CMP data are used in the process for rating projects that are evaluated in the development of the Transportation Improvement Program (TIP). The same data are used in rating and selecting the projects and programs considered for inclusion in the Transportation Plan.

Generally stated, congestion and mobility are complex issues that require a multimodal and comprehensive program of strategies and policies to address them. The following conclusions, from the 2004 Congestion Management System report, provide support for the programs and initiatives that the MPO and its member agencies are undertaking to improve mobility in the region.

**Congestion and economic growth in the region have been closely related.** Employment in the Boston Region MPO area grew by about 53 percent between 1970 and 2000; suburban job growth outpaced that of the urban core during this period (see Chapter 2 for more information on employment in the region). Along with this economic growth came significant congestion growth: between 1982 and 2003, daily vehicle-miles

<sup>1</sup> David L. Schrank and Timothy J. Lomax, *The 2005 Urban Mobility Report*, Texas Transportation Institute (TTI), the Texas A&M University System, May 2005. Available at <http://mobility.tamu.edu/ums>.

traveled (VMT) grew by 157 percent, and annual person-hours of delay increased nearly fivefold.<sup>1</sup>

**Travel in the region will most likely continue to grow in the future as the region's economy grows.** As new jobs are added to the region's economy, VMT and traffic delay are also expected to grow. As building new capacity is not always possible or desirable, it is important to maximize the capacity of the existing infrastructure. Mitigating the effects of crashes and other roadway events (incident management) and improving the system's operational efficiency for all roadway users, including bus riders, are the two key areas where this strategy reduces congestion.

**Public transportation is already a very important contributor to congestion relief in this region, and it can continue to be one in the future.** Annual person-hour delay on the roadways of this region is 54 percent lower than what it would be without public transportation.<sup>2</sup> Annual passenger-miles and ridership on public transportation have increased over the last two decades, largely due to the expansion of commuter rail service and park-and-ride lots.

**Travel demand management can be part of the integrated solution to reduce congestion and improve mobility.** Though the impact on congestion of TDM measures, such as ridesharing, shifting the time of travel, and telecommuting, is limited, these measures can improve mobility for certain travel markets and help reduce VMT as part of the mix of solutions.

**Regulatory policies to manage urban growth and form can reduce congestion.** Development is occurring more quickly in outlying communities in the region than in the inner core (see Chapter 11 for more information on land use). This development pattern results in more dispersed trips, with fewer commuters traveling into a single central business district. "Smart growth" practices, transit-oriented development, and funding incentives help to reduce VMT and

delays by increasing development densities and promoting sustainable development.

**Addressing safety can have secondary beneficial effects on congestion.** Safety and congestion are interrelated: addressing safety can have beneficial effects on congestion, and, likewise, reducing congestion can reduce the number and severity of crashes. For more information on strategies for improving safety, see Chapter 7.

## TRANSPORTATION SYSTEMS MANAGEMENT

In many cases, both highway and transit strategies can be implemented without expanding physical capacity. The CMP recommendations included several operational efficiency strategies for extracting additional capacity out of existing



roadway and highway infrastructure. These strategies include intelligent transportation systems, incident management, traffic signal coordination and prioritization, bottleneck removal, and high-occupancy-vehicle (HOV) lanes. In addition, the MBTA continually evaluates its service plan to

<sup>2</sup> Schrank and Lomax, *The 2005 Urban Mobility Report*, May, 2005.



improve the efficiency of the transit system. The programs for improving roadway and transit efficiency are discussed below.

## Intelligent Transportation Systems

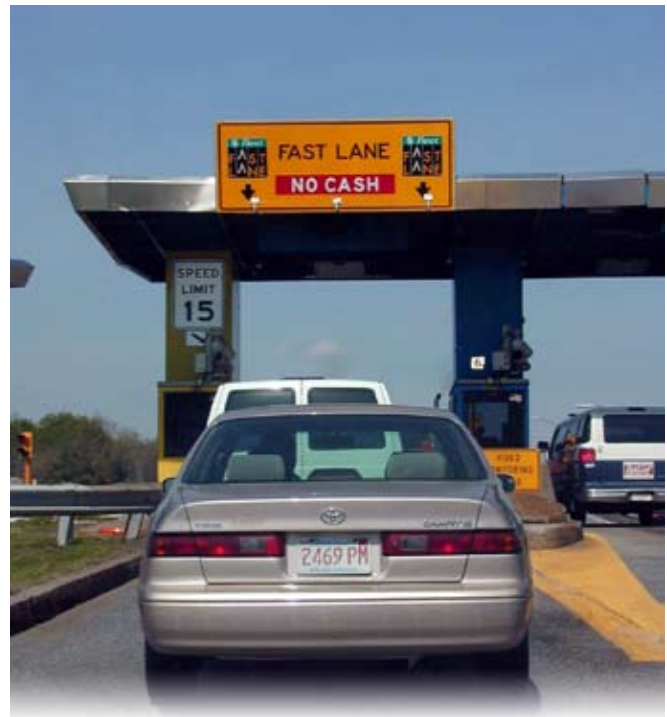
Intelligent transportation systems (ITS) involve the integration of technology into the management of the operation of transportation facilities, with the goals of increasing operational efficiency and capacity, improving safety, reducing environmental costs, and improving mobility. The MPO has participated in the development of ITS activities since 1992. Boston was one of the first cities to complete an FHWA-sponsored metropolitan area Early Deployment Planning Program for ITS, in 1993.

MassHighway developed a regional ITS architecture for metropolitan Boston in 2005, which conforms to the National ITS Architecture, as federally required. The architecture guides the coordination and integration of ITS projects in the region to help transportation agencies eliminate duplication, reduce design costs and project development time, facilitate efficient system expansion, improve safety and security, facilitate deployment of new technologies, and lower system life cycle costs.

MassHighway, Massport, and the City of Boston currently monitor road conditions and traffic flow on major highways and intersections using fixed equipment such as loop detectors and wireless communications. The Central Artery/Tunnel Operations Control Center is the largest of its kind, featuring over 400 cameras for monitoring roads, 1,200 road sensors for detecting stopped traffic, 120 carbon monoxide sensors, computer-controlled ventilation buildings, and a radio frequency able to interrupt radio broadcasts and dispatch emergency information. MassHighway operates numerous variable-message signs. MassHighway's Regional Operations Center dispatches emergency locator HELP patrol vans. Automatic vehicle location (AVL) capability is planned. The City of Boston's Traffic Management Center al-

lows for real-time monitoring of traffic and incident management, and coordination of emergency-response providers.

FAST LANE is an electronic toll-collection system instituted along the Massachusetts Turnpike in October 1998. Vehicles in the FAST LANE system are equipped with transponders that



signal that a vehicle is going through a toll plaza without the vehicle having to stop. The toll cost is automatically deducted from a preestablished account. FAST LANE is in operation not only along the Turnpike, but also at the Ted Williams Tunnel, the Sumner Tunnel, and the Tobin Bridge, and it is interoperable with EZ-Pass, the electronic toll system used in New York, New Jersey, New Hampshire, Delaware, Pennsylvania, West Virginia, and Maryland. The technology increases the capacity of toll facilities and reduces delays.

SmartTraveler, a service sponsored by MassHighway and operated by SmartRoute Systems, delivers real-time, location-specific traffic and transit information for metropolitan Boston via a toll-free phone number. Travel information is also disseminated through online services, television,

radio, and print media. SmarTraveler traffic and transit surveillance is conducted via cameras at strategic locations, “mobile probes” (travelers) reporting to the operations center by mobile phone or two-way radio, monitoring of 350 publicly available radio frequencies for emergency vehicles, and direct lines to the State Police, Amtrak, MassHighway, and the MBTA.

The MBTA employs several ITS strategies. An advanced bus operations center was added to the MBTA’s existing rapid-transit operations facility in 2004 to integrate global positioning systems (GPS) and automatic vehicle location (AVL) technology on its buses to better schedule and direct its fleet through the use of real-time operational information. The real-time use of this technology is currently being used on the Silver Line Washington Street, and the MBTA plans to use it for all of its buses in the future.

The MBTA provides travel information services in a variety of ways. On the MBTA’s Web site, customers can access schedules; maps; and fare, station, parking, and service interruption information for all bus, rail, and boat services.



Service interruption information includes the operational status of elevators and escalators in MBTA stations. Kiosks at bus stops on Washington Street in Boston inform passengers about Silver Line bus arrivals, and an automated, prerecorded message plays in all rapid-transit stations when a train is about to arrive. Interactive travel-information kiosks at the South Station Transportation Center provide a direct link to the MBTA’s Web site, where customers can access schedule information for all services. Information is also provided through electronic boards on commuter-rail platforms. Some rapid-transit trains now have LED screens with scrolling information on upcoming stops, in addition to audible information.

The MBTA recently enhanced its customer-service information system by tying it directly to the software used by the scheduling department. This system now allows customers to access next-trip information for all routes over the phone or on the MBTA’s Web site. As part of this system, a trip-planning tool available to customers on the Web generates origin-destination routing suggestions without the aid of a customer-service agent.

## Incident Management

Crashes and other incidents on roadways can create instant and far-reaching congestion. It has been documented that in some urban areas, non-recurring congestion accounts for up to 60 percent of total congestion. The Commonwealth of Massachusetts outlines an incident management program in its Regional ITS Architecture for Metropolitan Boston report. The program, which includes MassHighway’s HELP patrol vans and numerous surveillance and detection equipment installed along highways, promotes the sharing of information and data about emergencies between agencies in order to facilitate the access of emergency vehicles, as well as reduce congestion resulting from an incident.



## Traffic Signal Coordination

Traffic signals that are not coordinated can significantly reduce mobility, even when the roadways are not at capacity. Traffic signal coordination allows for the smooth flow of traffic through consecutive, closely spaced traffic signals. It is a relatively inexpensive way to increase capacity for vehicles on roadways without lane additions. MassHighway, the City of Boston, and various municipalities already operate signal-coordination and closed-loop traffic signal systems. The MPO supports monitoring existing coordination plans and studying the region's roadways to determine which additional locations could benefit from signal coordination, as recommended in the CMP.

## MBTA Traffic Signal Priority

Traffic signal prioritization for transit vehicles has the potential to improve the speed and reliability of the MBTA bus system while maximizing the number of people passing through an intersection. The strategy would utilize hardware and software technologies to enable buses to invoke the green signal phase ("green light"), or to extend the duration of the green phase in order to pass through the intersection without delay. MPO staff are currently conducting a transit signal-priority study for a portion of MBTA bus Route 39. This study could be used as a pilot project to illustrate the benefits of traffic signal prioritization for transit. The MBTA's Silver Line Washington Street service has the capability of directly requesting signal priority through short-range communication with roadside traffic-control equipment, but that capability is not currently utilized.

## Bottleneck Removal and Travel Lane Continuity

Congestion and bottlenecks caused by lane drops can create significant congestion and decrease roadway safety on arterial roadways and limited-access highways. Arterial roadways experience delays mostly at signalized intersections, and on local roadways at the minor approach of unsignalized intersections. Limited-access highways

tend to have delays at locations where traffic merges, diverges, or weaves, as well as where there are reductions in the number of lanes. The Boston Region MPO recognizes that removing bottlenecks and improving lane continuity on arterial roadways and limited-access highways have the potential to significantly increase mobility. In some cases, minor design improvements at a lane drop can remedy the situation; in other cases, more extensive measures may have to be taken.



## MBTA Service Evaluation Process

The MBTA Operations Department is constantly monitoring service and considering changes or adjustments in response to customer demand. In evaluating potential changes, the MBTA examines a number of factors, including the projected number of new transit riders, the rationale for the change, and the net cost per new passenger. Requests for new or changed services can be made by anyone—private citizens, elected officials, MBTA employees, and those representing neighborhood groups or business organizations.

## TRANSPORTATION DEMAND MANAGEMENT

Transportation demand management (TDM) includes programs and strategies that provide alternatives to single-occupant-vehicle travel on roadways. These include shuttle services in areas underserved by transit, ridesharing, and high-occupancy-vehicle (HOV) lanes to encourage carpooling. In providing alternate modes of travel, these programs and strategies aim to reduce congestion without adding physical capacity to the existing roadway and highway system.

### Transportation Management Associations

Transportation Management Associations (TMAs) are nonprofit coalitions of local businesses dedicated to reducing traffic congestion and pollution and improving commuting options for their employees. There are nine TMAs that serve communities in the Boston region, and several support shuttle services that connect employment locations with MBTA rapid-transit or commuter-rail stations. While some of these services are only available to employees of the member companies, others are open to the general public.

### MassRIDES and Ridesharing

MassRIDES, EOT's travel options program, offers free statewide services that mitigate traffic congestion and help people living and working in Massachusetts expand their travel options. A statewide outreach partnership program invites private businesses and public agencies to join in the effort to help reduce traffic congestion. The program staff works closely with other community groups to improve mobility and expand travel choices. MassRIDES provides developers and employers with resources to create work-site commuter initiatives. MassRIDES' services include:

- Training and technical support for corporate transportation coordinators

- Ridematching for carpools and vanpools in a statewide database
- Personalized commuter trip-planning assistance
- Transit route and schedule information
- Vanpool administration
- Parking management strategies
- Work-site access analysis
- Work-site transportation events
- Commuter service-program design



MassRIDES provides comprehensive statewide information about transportation alternatives through its toll-free, bilingual telephone line and its information center on the Web. Massachusetts commuters can access the statewide computerized ridematching database to obtain information on carpools, vanpools, and transit alternatives that match their commute.

## Suburban Transit Opportunities

The MPO has implemented a program to fund suburban mobility projects in suburban areas of the region that are either not served or are underserved by existing transit. The program funds equipment and other capital-related expenses associated with services that aim to improve mobility in suburban areas. This program helps fund services such as:

- Fixed-route transit services operating in suburban-to-suburban and reverse-commute markets
- Employer-based vanpools and carpools
- Flexible-route and demand-responsive transit services

Eligible applicants include local and regional public entities and other appropriate nonprofit organizations capable of implementing transit services. Applicants may partner with TMAs to help implement suburban transit projects. Current suburban transit services being financially supported by the MPO's suburban mobility program include the Ipswich-Essex Explorer, Framingham LIFT 9,



The Local Connection (TLC) in Marlborough and Southborough, and the Neponset Valley TMA RailLink 1 shuttle bus.

In addition to the funding program, the MPO has conducted several studies on suburban transit opportunities in the region. The *Suburban Transit Opportunities Study, Phase 1* identifies characteristics of successful suburban transit services and includes case studies of four suburban transit services operating in the region. The report describes methods, techniques, and lessons learned by transit agencies about operating sustainable suburban transit services.

The report, *Regionwide Suburban Transit Opportunities Phase 2* identifies seven neighborhoods in the region that have either no direct mass transportation service or very limited service, and that appear to have the best potential for supporting new suburban transit service. The report includes suggested routes for new suburban transit services to connect the identified neighborhoods with activity centers, including commuter-rail stations.

The *Regionwide Suburban Transit Opportunities Study, Phase 3* investigated the potential for demand-responsive service as a way to improve suburban mobility and accessibility. As part of this program, MPO staff will continue to assist organizations with their applications for financial support for new suburban transit services under the Suburban Mobility Improvement Program.

## Safe Routes to School

The Safe Routes to School program in Massachusetts aims to increase physical activity and safety for children, and to decrease traffic congestion and air pollution. The program focuses on educating elementary school students, parents, and community members on the value of walking, bicycling, carpooling, using public transit, and taking school buses for traveling to and from school. Additionally, schools can partner with the program to directly implement programs and engineer solutions to accomplish the



program's objectives. The Safe Routes to School program in Massachusetts is administered by MassRIDES and is funded through the Federal Highway Administration in accordance with the provisions of SAFETEA-LU, the federal surface transportation legislation.

### High-Occupancy-Vehicle Lanes

The Boston Region MPO considers high-occupancy-vehicle (HOV) lanes to be an alternative to building additional general-purpose lanes on congested highways. Vehicles with two or more passengers and motorcycles are allowed to use HOV lanes in the Boston region. There are three HOV lanes operating in the Boston region: a reversible, barrier-separated lane on I-93/Southeast Expressway between downtown Boston and the Braintree Split interchange; a southbound, buffer-separated lane on I-93 North that approaches Boston from the north; and a lane linking I-93 in downtown Boston to the Ted Williams Tunnel. These lanes are meant to encourage ridesharing and to improve the flow of general-purpose traffic along the I-93 corridor, as well as to and from Logan Airport.



### Reverse Commuting

Most of the reverse-commute destinations for Boston residents are, and will likely continue to be, those within about 15 miles of downtown Boston. In 2001, MPO staff conducted a reverse-commute study for the MBTA. The study examined the feasibility of providing additional commuter rail and connecting bus transportation services to facilitate reverse commuting. Most employment centers along Route 128 and I-495 are not served directly by commuter rail, and few have feeder buses to existing commuter-rail and rapid-transit stations. However, the study identifies opportunities for pilot programs that warrant further exploration.

### FREIGHT MOBILITY

The efficient movement of freight is critical for the economic health of the Boston region. Trucks experience the same congestion that passenger vehicles face, slowing the movement of freight throughout the region. However, the freight industry has unique needs and challenges, since it operates in several modes: truck, train, plane, and boat. The MPO is observing the continuing reduction in capacity on the freight rail system. This may have impacts on the future movement of freight and on roadway congestion. Moving a larger percentage of freight by rail seems to have the potential for improving air quality, but it would have to be coordinated with passenger rail operations in the region so as not to diminish passenger service that may use the same tracks. The MPO has recently completed a freight study for the region. Subsequent to the completion of the MPO's study, EOT has initiated a statewide freight plan with a stand-alone rail plan. The statewide plan will provide a comprehensive evaluation of the Commonwealth's freight transportation system, its operations and its effect on economic development and quality of life.



## Improving Landside Access to Ports and Transfer Facilities

### “The Last Mile”

Trucks traveling to the ports of Boston, Salem, and Gloucester from the highway system must traverse “the last mile” between the highway and the port, which consists of collector and local roads. Trucks on these roads can be a burden for the local communities, and these local routes slow the movement of freight. Access to the highways from the Port of Boston has improved with the opening of the Central Artery/Ted Williams Tunnel, but it needs to improve further. Although two separate overweight-truck routes have been designated, mostly to accommodate the seafood business, there is a need for additional overweight-truck routes in the area.

### Double-Stack Initiative

Double-stack rail cars, which have a container stacked on top of another container, move freight more efficiently than single-stack cars. However, many bridges over rails in the Boston region are

too low to accommodate double-stack rail cars. There are approximately 56 bridges with a vertical clearance of less than 21 feet, which is insufficient for double-stack cars. Currently, the two major freight operators, CSX and Pan Am, can only operate single-stack trains within the Boston region, limiting the efficiency of freight movement. It is Massachusetts policy that new bridges over rail lines, and bridges over rail lines that are scheduled for reconstruction, are built with a vertical clearance of 21 feet in order to accommodate double-stack rail cars.

## Improving Waterside Access to Ports

One of the most important issues for the Port of Boston is dredging the channels to deeper depths in order to accommodate ships of deeper draft. The channel into the Port of Boston was dredged from 35 to 40 feet at low tide, with 45 feet at the berth in the late 1990s. Massport has requested a permit from the Army Corps of Engineers to dredge the channel to 45 feet. It will probably take until the year 2010 to obtain the necessary permits and funding for this additional dredging. Even once this has been completed, the port will not be able to accommodate larger, post-Panamax vessels (ships too large to pass through the Panama Canal). The channel leading to the Port of Gloucester is currently dredged to 24 feet, and further dredging is planned for the future.

## Freight Restrictions

### Weight-Restricted Rail Bridges

There are two rail bridges in the region, both along Pan Am rights-of-way, which are limited to 263,000 pounds per train carload, limiting the movement of freight to and from the region's ports. Upgrading these bridges would allow for more efficient freight movement in the Boston region.

### Weight-Restricted Roadway Bridges

There are approximately 155 “posted” bridges in the region. Posted bridges have signs at both ends informing drivers of the bridge's vehicle

weight restrictions. A bridge is posted if it is either designated as “functionally obsolete” because it has not been designed to support modern trucks, or it is designated as “structurally deficient” due to significant deterioration of the bridge deck, supports, or other major components. Some posted bridges can be repaired or rehabilitated to meet such standards; others must undergo costly replacement. Very old historic bridges that cannot be made to carry heavy vehicles may nevertheless be kept for aesthetic reasons or as a community or cultural resource. Trucks exceeding a bridge’s weight restrictions must find alternate routes, increasing the trip distance and travel time.

### Overweight-Truck Routes

Two overweight-truck routes, allowing trucks up to 99,000 pounds, are designated in the Boston Port area. These were designated as overweight-truck routes primarily for the seafood business, going to Gloucester (Route 1A to Route 128) and to New Bedford (I-93 to Route 24). However, permits are still required when using these routes. Additional overweight-truck routes in the Port area would improve the efficiency of freight operations, as shippers would be able to use fewer trucks to move the same amount of freight.

### Hazardous Cargo

The movement of hazardous materials is restricted in highway tunnels. This affects many of the express highways in downtown Boston, including:

- I-90 – Ted Williams Tunnel under Boston Harbor
- I-93 – Central Artery in downtown Boston
- I-90 – Massachusetts Turnpike Extension under the Prudential Building and Copley Square
- Route 1 – Tobin Bridge approach under City Square in Charlestown
- Route 1A – Sumner Tunnel under Boston Harbor

- Route 1A – Callahan Tunnel under Boston Harbor

This restriction, rigorously enforced by the Massachusetts State Police, causes increases in delivery costs because of increased travel times and fuel costs.

### ACCESSIBILITY

While increasing the efficiency of limited-access highways and expanding transit service contribute to congestion relief and increase mobility in the region, these improvements may not reach all residents in the region. Improving access to transit and other alternative modes of transportation, especially for the elderly, disabled, and low-income populations, increases personal mobility and opportunities by allowing more of the region’s residents to walk, drive, and bicycle to access the transit system.

### Access to Transit

#### Park-and-Ride Facilities

The MPO is committed to increasing the available parking capacity at various commuter-rail and transit stations throughout the region. Additional parking facilities will be constructed at





**TABLE 6-1**  
**PARK AND RIDE FACILITIES IN THE BOSTON REGION**

PARK-AND-RIDE FACILITIES				
TYPE OF FACILITY		FACILITIES	SPACES	% OF LOTS FULL
TRANSIT <sup>3</sup>	COMMUTER RAIL	76	20,251	61%
	RAPID TRANSIT	29	19,799	59%
	COMMUTER BOAT	3	2,688	33%
	EXPRESS BUS	2	172	50%
COMMUTER BUS <sup>4</sup>		9	3,070	33%
RIDESHARING <sup>5</sup>		2	190	0%
<b>TOTAL</b>		<b>121</b>	<b>46,170</b>	<b>56%</b>

transit stations over the lifetime of this Plan based on prioritization in the *Program for Mass Transportation*. The MBTA anticipates using a variety of funding sources for these projects, including federal funds allocated to the MBTA; federal funds allocated to other regional transit authorities for use on the commuter rail system; federally earmarked, MBTA, local, and private funds; and state bonds.

There are 124 park-and-ride facilities in the MPO region (see Table 6-1). These facilities play an important role in reducing congestion in Boston's urban core by enabling individuals to drive short distances from their homes and gain access to rapid transit, commuter rail, commuter buses, commuter boats, carpools, and vanpools. Most of the lots are conveniently located in downtown centers or along major highways (see Chapter 2 for a map of park-and-ride facilities in Massachusetts). There are three categories of park-and-ride facilities in the Boston region: those that provide access to transit stations, those served by commuter bus service, and those used for ridesharing (carpools and vanpools).

Some of the park-and-ride lots that are at capacity fill very early in the morning, especially those lots located in communities that do not have competing transit options. Some commuters shift their travel schedules and work hours to arrive at these facilities early enough to secure a parking space. When lots reach capacity, commuters often park along local roadways or drive to their final destination, contributing to congestion.

#### *Transit Station Park-and-Ride Facilities*

There are park-and-ride lots at 110 MBTA facilities in the MPO region. They provide 42,910 parking spaces. There are 76 commuter rail stations with park-and-ride facilities, 61 percent of which are considered to be at capacity. There are 29 rapid transit stations with park-and-ride lots; 59 percent are considered to be at capacity. There are also three park-and-ride lots at commuter boat facilities and two at MBTA express bus facilities.

#### *Commuter Bus Park-and-Ride Facilities*

Commuter bus service is provided at five park-and-ride facilities in the region, which provide a

<sup>3</sup> Source: 2005–2006 CMP Inventory of MBTA Park-and-Ride Facilities (The number of transit park-and-ride facilities is the same as the number of stations that have parking, even though several stations have more than one parking facility, some of which are municipally or privately owned. This table includes private parking spaces near transit stations in its total count of parking spaces.)

<sup>4</sup> Source: Utilization of MassHighway and Massachusetts Turnpike Authority Park-and-Ride Lots. (a Mobility Management System report)

<sup>5</sup> Ibid.

total of 994 parking spaces. Logan Express, providing service to and from Logan Airport, serves Massport-owned park-and-ride facilities in Braintree, Framingham, Peabody, and Woburn. Three of these four lots fill to capacity during the day. Private bus service is provided at five park-and-ride facilities, in Canton, Framingham, Milton, and Rockland, which are operated by MassHighway. None of those lots fill to capacity during peak hours.

### **Ridesharing Park-and-Ride Facilities**

There are two park-and-ride facilities that have no bus or rail service and are used exclusively for ridesharing (carpools and vanpools). MassHighway operates a small facility in Pembroke and one in Weston. Neither of these lots fill to capacity during peak hours.

### **Bicycle Access on the MBTA**

Rapid transit customers are allowed to take bicycles aboard Orange, Red, and Blue Line trains during all hours except peak hours, which are 7:00 AM to 10:00 AM and 4:00 PM to 7:00 PM. Bicycles are not allowed on the Green Line, Mattapan Trolley, or Silver Line.



<sup>6</sup> MAPC population and employment projections, January 2006

Riders are allowed to take bicycles aboard only off-peak commuter rail trains (outbound morning trains, inbound evening trains, all off-peak weekday trains, and all weekend trains). In the summer of 2006, the MBTA introduced a commuter rail coach with 39 bicycle racks installed on one side of the coach. The coach was put into service on the Rockport Line on weekends and holidays during the summer months. A coach was added on the Greenbush Line in the summer of 2008, also on weekends and holidays during the summer months.

Eighty-five percent of MBTA rapid transit and commuter rail stations have bicycle parking. There are a total of 3,750 bicycle parking spaces systemwide. Plans are being implemented to expand bicycle parking capacity within the system to 5,100 spaces by the end of 2009.

The MBTA is in the process of installing bicycle racks on some of the buses in its bus fleet. By the end of 2008, with the delivery of 155 rack-equipped New Flyer buses, over 50% of the MBTA bus fleet was outfitted with front-mounted bike racks. The MBTA's goal is to equip all of the buses with bike racks where feasible.

### **Key Station Plan**

The federal Americans with Disabilities Act (ADA) mandates improvements to facilities and infrastructure to ensure that they are accessible. The MBTA developed the Key Station Plan, which designated 80 stations in the MBTA system as facilities to be brought into compliance with ADA. This program has resulted in station improvements that significantly increase the mobility of the elderly and persons with disabilities, as well as improved access for all customers. For more information on the Key Station Plan, see Chapter 5.

### **Access for Elderly, Disabled, and Low-Income Populations**

Residents who are elderly, disabled, or in low-income households often have fewer transportation options than others in the region. The over-55

population is projected to increase by nearly 75 percent by 2030,<sup>6</sup> and the transportation needs of these populations continue to increase. The following sections describe programs and services to address the mobility needs of these populations.

### **Demand Responsive Transit Services**

THE RIDE, the MBTA's paratransit service, which operates in compliance with ADA, provides door-to-door transportation to people who are unable to use general public transportation (subways, buses, and trains), all or some of the time, because of a physical, mental, or cognitive disability. THE RIDE operates 365 days a year from 6:00 AM to 1:00 AM in 62 cities and towns in the Boston region.

In addition, services are also provided through a number of community senior transportation resources in the region, including:

- Boston Senior Transportation Services (senior shuttle, taxi discount program, and the Kit Clark Program, which provides lift-equipped vans from seniors' homes and program sites)
- Brookline Elder Bus and Brookline Elder Taxi System
- Cambridge Taxi Discount Program
- Newton Department of Senior Services (Shopper's Bus and transportation to medical services)
- SCM Community Transportation for residents of Somerville, Cambridge, and Medford

### **Coordinated Public Transit–Human Services Transportation Program**

The Federal Transit Administration manages three funding programs to improve the mobility of elderly individuals, individuals with disabilities, and low-income individuals: Elderly Individuals and Individuals with Disabilities, Job Access and Reverse Commute, and New Freedom. SAFETEA-LU, the current federal surface transportation legislation, requires that projects selected for these programs be included in a coordinated, public

transit–human services transportation program. The Executive Office of Transportation and Public Works administers this initiative. The MPO has developed a Coordinated, Public Transit–Human Services Transportation Program and solicits proposals for the Job Access and Reverse Commute and New Freedom programs for the Boston Region MPO area.

### ***Elderly Individuals and Individuals with Disabilities Program***

The Elderly Individuals and Individuals with Disabilities program is a federal funding program that provides funding to states for capital projects to assist in meeting the transportation needs of older adults and persons with disabilities. The states administer this program.



### ***Job Access and Reverse Commute Program***

Job Access Reverse Commute (JARC) is a federal funding program that provides funding to support the development and maintenance of job access projects designed to transport welfare recipients and eligible low-income individuals



to and from jobs and activities related to their employment. The JARC program also supports reverse-commute projects designed to transport residents of urbanized areas to employment opportunities in the suburbs.

### ***New Freedom Program***

The New Freedom program provides new public transportation services and public transportation alternatives beyond those required by the ADA. Initiatives funded through this program provide individuals with disabilities with transportation, including transportation to and from jobs and employment support services.

## **Bicycle and Pedestrian Accessibility**

### **Regional Bike Parking Program**

The Regional Bike Parking Program provides municipalities in the Boston region, the Department of Conservation and Recreation, and the MBTA with the opportunity to purchase bicycle racks at a discount. Municipalities that purchase

bicycle racks are eligible for full reimbursement of the purchase price. The program is funded by the Boston Region MPO, EOT, and FHWA, and it is administered by MAPC. There are three participating vendors that provide a variety of styles of bicycle racks and other related products.

To participate in the program, a municipality or agency must pay up front for their purchases, and municipalities may be reimbursed for the purchase price if certain criteria are met. The costs of shipping and installation are the responsibility of the municipality or agency and are not reimbursable.

### **Regional Bicycle Plan**

The Regional Bicycle Plan, funded by the MPO and prepared by MAPC, proposes six general goals and strategies for the region in terms of bicycling, based on previous plans, current planning guidelines, and the MPO's policies:

1. Encourage more trips by bicycle in each community
2. Make bicycling and bicycle accommodations a part of "standard operating procedure" in transportation planning
3. Improve education and prioritization of bicycle project proposals
4. Assist and encourage local initiatives
5. Work with state and federal agencies to simplify and coordinate funding programs
6. Increase regional knowledge about bicycling

In addition to setting goals, the plan also describes the current bicycling network, suggests criteria specific to bicycle projects to be used in the TIP development process, and prioritizes projects and programs to guide state, regional, and local action.



## Statewide Bicycle Plan

The Executive Office of Transportation and Public Works updated the Statewide Bicycle Plan in 2008, which builds upon the 1998 Massachusetts Bicycle Transportation Plan. The plan update focuses on developing a prioritized plan of on- and off-road bicycling improvements in order to implement a statewide bicycle network.

## Walkable Community Workshops

In August 2002, the Boston MPO applied for a grant from the National Center for Bicycling & Walking to hold Walkable Community workshops. National experts came in and hosted a series of eight workshops in March 2003 held in Boston, Burlington, Everett, Marlborough, Norwood, Quincy, Salem, and Somerville. The eight workshops provided half-day courses to promote health, sensible land use, the local economy, and the environment. Each workshop included a presentation that indicated common difficulties pedestrians encounter in navigating their way around the specific community, and a host of possible solutions. Following the presentation, attendees went out to view the local area and returned to discuss problems encountered, possible solutions, and implementation strategies.

The purpose of the national program was not only to generate more interest in walking in the target communities but also to encourage local MPO staffs to follow up with their own workshops. These workshops have become an ongoing program for the Boston Region MPO. In 2004, the Boston MPO staff held three Walkable Community Workshops, in Franklin, Rockport, and Saugus. Staff conducted four in 2005, in Arlington, Belmont, Maynard, and Scituate, and four in 2006, in Bellingham, Beverly, Hull, and Reading. Eight workshops were held in 2007 in Acton, Ipswich, East Somerville, Malden, Hudson, Lexington, Framingham, and Norwell. In 2008, workshops were held in Stoneham, Bolton, Brookline, Franklin, and Westwood. In 2009, workshops were held in Chelsea and Stow.