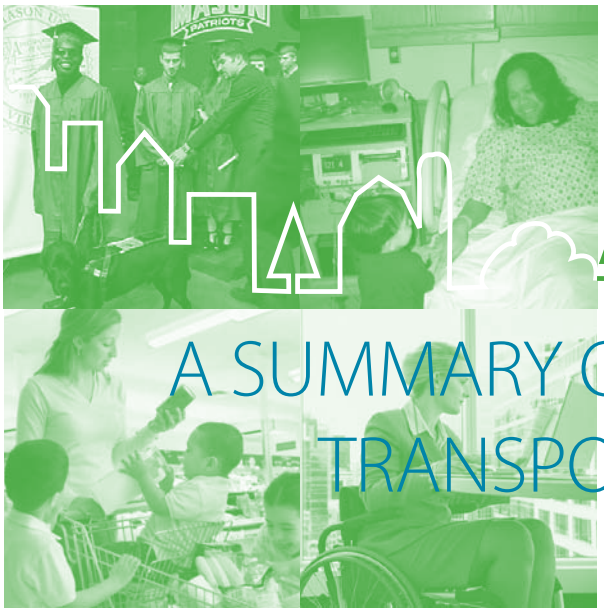


3

A SUMMARY OF THE REGION'S TRANSPORTATION NEEDS

INTRODUCTION

A critical first step in the development of *Paths to a Sustainable Region* was to gather, organize, and analyze available sources of data about the transportation system in order to understand the many needs that exist for all modes. This work resulted in the Needs Assessment, which is presented in Volume II of *Paths to a Sustainable Region*. It was developed with the Boston Region MPO's visions and policies for the region's transportation future in mind. The Needs Assessment guided the MPO's decision making about how to address the region's needs through the LRTP and will also guide future decision making about which projects to fund in the Transportation Improvement Program and which studies to conduct through the Unified Planning Work Program.

The Needs Assessment includes information about the existing condition of the various components of the transportation system, how they are used, and their projected use in the future. It also includes a description of the region's greatest needs and the needs in each transportation corridor, which are described in the next section. Some of the needs were identified in previous MPO, the Massachusetts Bay Transportation Authority (MBTA), and Massachusetts Department of Transportation (MassDOT) studies, while some were identified for the Needs Assessment through analysis of available data. In addition to issues related to the effective functioning of the transportation system, the Needs Assessment identifies issues related to how the transportation system interacts with the region's current and projected land use conditions, the environment, and the transportation needs of low-income and minority populations.

This chapter provides more information about the development of the Needs Assessment and a summary of the region's greatest transportation needs.

THE CORRIDORS

Corridors were established based on travel patterns and the existing transportation facilities in the region.

The first step in developing the Needs Assessment was to divide the region into radial and circumferential corridors, and a Central Area. This approach made the transportation needs of a very complex region easier to examine, depict, and understand. Corridors were established based on travel patterns and the existing transportation facilities in the region. The six radial corridors, which are the same as those used in the MBTA's Program for Mass Transportation (PMT), were established around major highway and rail facilities, with an orientation into and out of Boston Proper. The circumferential corridors were established around the region's two important circumferential highways: Interstates 495 and Route 128 (Interstate 95). The corridors, and some of the major facilities around which they were established, are described below.

Radial

- Northeast Corridor – Routes 1 and 128, Interstate 95, the Rockport/Newburyport Line of the commuter rail system, and the Blue Line of the rapid transit system
- North Corridor – Interstate 93, Route 3, the Lowell and Haverhill lines of the commuter rail system, Amtrak's Downeaster service, and the Orange Line of the rapid transit system
- Northwest Corridor – Route 2, the Fitchburg Line of the commuter rail system, and the Red Line of the rapid transit system
- West Corridor – Interstate 90, the Framingham/Worcester Line of the commuter rail system, the CSX Boston Line (freight), and the Green Line of the rapid transit system
- Southwest Corridor – Interstate 95, the Franklin and Providence/Stoughton lines of the commuter rail system, Amtrak's Northeast Corridor service, and the Orange Line of the rapid transit system
- Southeast Corridor – Interstate 93, Routes 3 and 24, the Middleborough/Lakeville, Kingston/Plymouth, and Greenbush lines of the commuter rail system, and the Red Line of the rapid transit system

Circumferential

- Route 128 Corridor
- Interstate 495 Corridor

Central Area

The Central Area includes Boston (excluding the neighborhoods of Hyde Park, Roslindale, West Roxbury, and Mattapan), Brookline, Cambridge, Somerville, Medford, Malden, Everett, Revere, Chelsea, and Winthrop. This area is the hub of the radial corridors and the central and major activity center of the region. The Central Area was chosen based on its proximity to Boston Proper and the ratio of employment to population (greater than or equal to 1:1) for each the municipalities. In addition to being a major destination and origin for radial travel in the region, the Central Area has important circumferential travel patterns.

DATA RESOURCES

The Needs Assessment brought together several data resources at the MPO's disposal to study the transportation needs of each corridor, and the region as a whole. Among the resources utilized were previous and ongoing transportation planning work, including the previous Long-Range Transportation Plan (JOURNEY TO 2030), the MBTA's Program for Mass Transportation (PMT), the MPO's Congestion Management Process (CMP), transportation equity outreach, MPO studies, and other special studies. The MPO's travel demand model and adopted demographic projections were also used extensively in the Needs Assessment. Existing and projected socioeconomic information (population and employment data) and the existing and proposed transportation network were important factors. A thorough description of the data resources and methods utilized can be found in the Needs Assessment.

THE REGION'S PRIORITIES

The development of the Needs Assessment revealed a tremendous number of transportation issues and needs that will vie for the scarce transportation funds available to address them. It is clear that the region's maintenance and modernization needs alone, for all modes, exceed the available financial resources. Therefore, the region's greatest needs are summarized by personal travel mode, freight, and equity considerations in the following sections. These needs are highlighted with the MPO's visions and policies in mind, and are based on available information.

The development of the Needs Assessment revealed a tremendous number of transportation issues and needs that will vie for the scarce transportation funds available to address them.

Highway

The Needs Assessment identifies the needs for maintaining the roadways and bridges and modernizing locations with high levels of congestion or safety problems. Addressing the needs and problems identified below will promote the realization of the MPO's vision for the highway network.

System Preservation and Modernization Needs

The Boston Region MPO's roadway network includes 3,463 centerline miles of roads and highways that are eligible to receive federal aid. Approximately 20 percent of these roads and highways are maintained by MassDOT, and the rest are maintained by the municipalities with state Chapter 90 funds. A recent MPO analysis estimated that of the federal-aid-eligible roadways in the MPO region, 20 percent are described as excellent, 29 percent good, 25 percent fair, and 26 percent poor. While the MPO has not discussed its recommended distribution of roadway conditions, and it is unlikely that a 100 of the roadways being in excellent condition is a reasonable or feasible goal, it is estimated that the cost of maintaining federal-aid-eligible roads in the MPO region in excellent condition would be between $170 and $324 million annually.

Unlike roadways, all bridges in the region are eligible to receive federal aid for maintenance and modernization projects. Of the 2,152 bridges in the Boston Region MPO area, 506 (24 percent) are considered functionally obsolete (does not meet current traffic demands or highway standards) and 156 (7 percent) are considered structurally deficient (deterioration has reduced the load-carrying capacity of the bridge). Improving bridges is a priority of MassDOT, which is making an investment of approximately $3 billion in the state's bridges over eight years, ending in 2016.

Mobility Needs

Bottlenecks were identified using speed index data, volume to capacity ratio data, and data from the Congestion Management Process.

While resurfacing and bridge reconstruction are necessary for maintaining the existing system, there are several problem locations on the region's highways that are better addressed through modernization projects or improvement of alternative modes or routes. Highway bottlenecks are prevalent in the region; they cause congestion and collisions and result in higher emissions of pollutants. Severe bottlenecks in each corridor were identified through at least two of the three methods used by the MPO to measure congestion. These methods are the speed index (the ratio of observed speed to posted speed limit), the volume-to-capacity ratio (a ratio of existing volumes to the roadway's capacity), and the MPO's Congestion Management Process analysis. The most severe bottlenecks for freeways and arterial roadways are listed in Table 3-1 below, in numerical and alphabetical order:

Table 3-1

Corridor Bottlenecks

CORRIDOR	FREEWAYS
Northeast/Central	Rte. 1 Tobin Bridge (Charlestown)
Northwest/Central	Rte. 2 (Concord, Lincoln, Acton)
North/Central	I-93 between I-95 and Leverett Circle
Southeast/Central	I-93/Southeast Expressway from Massachusetts Ave. to the Braintree Split (Quincy, Boston, Milton)
Southeast	I-93/Rte. 1 from Braintree Split to Rte. 24 (Braintree, Randolph)
Southwest	I-95 northbound from the Dedham St. overpass to the I-95/I-93 split (Canton)
CORRIDOR	**ARTERIALS**
Southwest/Central	Rte. 1/VFW Pkwy various segments (Dedham, Norwood, Boston)
Northeast/Central	Rte. 1A Oak Island Road to Bell Circle (Revere)
Northeast/Central	Rte. 1A southbound from the rotary to the first Bell Circle signal (Revere)
Southeast	Rte. 3A from the I-93 interchange to Hingham
North	Rte. 3/3A i(Burlington, Woburn)
West/Central	Rte. 9, various segments between Southborough and Boston
West	Rte. 16 from Wellesley to Newton
Southwest	Rte. 27/North Main Street in Sharon between Depot Street and Canton Street
Northwest/Central	Rte. 28 from the Assembly Sq. Mall to Highland Ave. (Somerville)
West	Rte. 30 in Framingham between I-90 and Rte. 9

(cont.)

Table 3-1 (cont.)

Corridor Bottlenecks

CORRIDOR	ARTERIALS
Southeast	Rte. 37 from the interchange with I-93 in Braintree to the intersection with Rte. 139 in Holbrook
Northwest	Rte. 60 (Waltham)
Northwest	Rte. 62, 225, and 4 corridor (Bedford, Lexington)
North	Rte. 99 (Everett)
Northeast/Central	Rte. 107 Broadway in Revere south of Albert J. Brown Circle
Southwest	Rte. 109 in Milford from I-495 to Birch Street
Northeast	Rte. 114 (Peabody, Salem)
Northeast	Rte. 127 (Rockport, Gloucester)
Northeast	Rte. 129 in Marblehead and Swampscott to 1A in Lynn
Southwest	Rte. 138 from Stoughton Center to the I-93 interchange in Canton
Southwest	Rte. 140 between Wrentham and Franklin
Central	Rte. 145 (Boston to Winthrop)
Southwest/Central	Rte. 203/Jamaicaway between Willow Pond Rd. and the Forest Hills Rotary (Boston)
Northwest/Central	Alewife Brook Pkwy/Fresh Pond Pkwy from Soldiers' Field on-ramp to Rte. 2 (Cambridge)
North	Mystic Valley Parkway in Medford from Auburn Street to Main Street
Central	Storrow Drive (Boston)
Central	Memorial Drive (Cambridge)

Safety Needs

The MPO reviewed safety problems on the highway network and identified the top crash locations in the Boston region using the weighted Equivalent Property Damage Only (EPDO) index. This weighted index takes into consideration fatalities, injuries, and property damage. A crash involving a fatality receives the most points (10), followed by a crash involving injuries (5), and a crash involving only property damage (1). Using the EPDO reveals that many of the severe crash locations are on the express highway system. The top 25 crash locations between 2006 and 2008, in order of descending severity, were:

1. Interstate 93 at Granite St., Braintree (795)
2. Interstate 95 at Interstate 93, Reading (755)
3. Interstate 93 at Columbia Rd., Boston (697)
4. Interstate 93 at Granite Ave., Milton (615)
5. Interstate 93 at Montvale Ave., Woburn (533)
6. Route 3 at Route 18 (Main St.), Weymouth (489)
7. Interstate 93 (near ramps for Furnace Brook Parkway), Quincy (460)

The MPO reviewed safety problems on the highway network and identified the top crash locations in the Boston region using the weighted Equivalent Property Damage Only (EPDO) index.

8. Interstate 93 at Route 3A (Neponset Ave.), Boston (450)
9. Route 1 at Route 129 (Walnut St.), Saugus (449)
10. Interstate 95 at Route 3 (Cambridge St.), Burlington (418)
11. Route 128 at Route 114 (Andover St.), Peabody (404)
12. Route 3 at Derby St., Hingham (396)
13. Interstate 93 (near ramp to Route 3A/ Gallivan Boulevard/Neponset Ave.), Boston (388)
14. Interstate 95 at Route 4 (Bedford St.), Lexington (364)
15. Middlesex Turnpike at Interstate 95, Burlington (359)
16. North Washington St. at Interstate 93, Boston (357)
17. Route 9 at Route 27, Natick (346)
18. Interstate 93 at Route 28 (Fellsway), Somerville (335)
19. Interstate 93 at Route 129 (Lowell St.), Wilmington (319)
20. Interstate 93 at Route 138 (Washington St.), Canton (309)
21. Route 16 (near intersection with Route 28/Fellsway), Medford (304)
22. Interstate 95 at Route 2, Lexington (304)
23. Interstate 95 at Route 20 (the ramp for Route 20 WB to Interstate 95 SB), Waltham (294)
24. Route 1 at Essex St., Saugus (289)
25. Route 114 at Route 1, Danvers (283)

Unlike the vision for the highway system, the vision for transit calls for more use in order to reduce auto dependency and emissions that cause climate change.

Transit

Paths to a Sustainable Region envisions a transit system that, like the highway system, is safe and maintained in a state of good repair. However, unlike the vision for the highway system, the vision for transit calls for more use in order to reduce auto dependency and emissions that cause climate change. Addressing the needs and problems identified in the following sections will promote the realization of the vision.

System Preservation and Modernization Needs

The most pressing need that the MBTA currently faces is bringing the system into a state of good repair. Attention to the existing capital assets must be the highest priority for future investments or the quality of services will degrade. Once the system

has been brought into a state of good repair, ongoing maintenance, replacement, and modernization of assets and infrastructure will be necessary to meet current and future demands for services. Examples of some urgent system preservation and modernization needs include, but are not limited to, the following.

- On the Orange Line, 120 cars built in 1979–1981 need to be replaced.
- On the Red Line, 74 cars built in 1969 need to be replaced.
- New vehicles are needed on the Mattapan High-Speed Line to replace the President's Conference Committee cars that were originally built in the 1940s.
- On the commuter rail system, 34 bridges are rated as structurally deficient and need to be rehabilitated (some are currently under renovation).
- The 1920-era signals in the Green Line's central tunnel need to be replaced.
- On the commuter rail system, 53 stations (27 percent) need to be made accessible.
- On the rapid transit system, 22 stations (26 percent) need to be made accessible, most notably Government Center Station on the Blue and Green Lines (which is currently in the design phase) and Boylston Station on the Green Line, and Hynes Convention Center on the Green Line.

These maintenance projects are costly with, for example, the replacement cars for the Orange Line alone expected to cost approximately $1 billion. However, all of these projects will improve the reliability of the system and the quality of service, which will encourage more people to use transit, which is a more sustainable transportation option than driving.

Mobility Needs

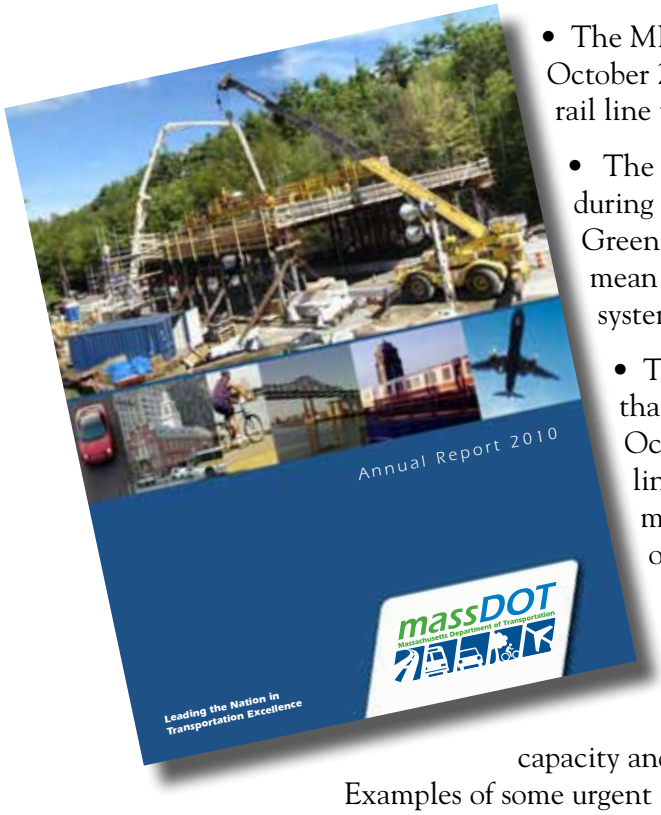
The maintenance projects described in the preceding section will also improve mobility in the region. Achieving and maintaining a state of good repair will ensure that functional vehicles and infrastructure are available when and where they are needed to provide safe and reliable service that meets demand. However, also of critical importance to transit mobility are alleviating system constraints, filling gaps in the existing system, and expanding the system to meet demand.

The mobility of people using the transit system is affected greatly by reliability of the service. Reliability is a function of several factors, including traffic congestion (for buses), the size of the vehicle fleet, and the condition of vehicles and infrastructure. Transit service needs to be more reliable in order to improve transit customers' satisfaction with the service, and to encourage more people to use this sustainable transportation option.

The mobility of people using the transit system is affected greatly by reliability of the service. Reliability is a function of several factors, including traffic congestion (for buses), the size of the vehicle fleet, and the condition of vehicles and infrastructure.

Examples of some urgent mobility needs and issues related to reliability include, but are not limited to, the following.

- When calculated using all trips operated on all MBTA bus routes (including local, express, and bus rapid transit [BRT]) during October 2010, only 12 percent of the routes passed the schedule adherence standard. This means that the vast majority of buses are arriving later, or earlier, than the published schedule states.



- The MBTA's November 2010 ScoreCard showed that in October 2010, the Fairmount Line was the only commuter rail line that passed the schedule adherence standard.
- The MBTA's November 2010 ScoreCard showed that during the months of June through October of 2010, the Green Line consistently fell below its target level for mean miles between failures, as did the commuter rail system.
- The MBTA's November 2010 ScoreCard showed that, during most of the months of June through October of 2010, the Red and Orange rapid transit lines and the commuter rail system as a whole barely met their target levels for average daily availability of transit vehicles and commuter rail locomotives.

In addition to the maintenance needs already described, reliability problems can also be explained by several major infrastructure constraints. The constraints place limits on capacity and hinder the ability to expand the transit system. Examples of some urgent infrastructure needs related to mobility include, but are not limited to, the following.

- Additional tracks are needed at South Station to accommodate any growth in service on south-side commuter rail lines and intercity passenger rail. MassDOT has received $32.5 million from the Federal Railroad Administration for planning and environmental review of South Station expansion.
- The capacity of the Haverhill, Fitchburg, Franklin, Stoughton, Needham, and Old Colony lines are constrained by sections of single track.
- Many of the commuter rail trains that pass through Ruggles Station cannot stop there because one of the three tracks does not have a platform.
- The Green Line Central Subway is currently operating at capacity, and the Orange Line is currently overcrowded during peak hours between Downtown Crossing and North Station.
- Systemwide, 12 percent of rapid transit and 17 percent of commuter rail MBTA park-and-ride lots are utilized at 85 percent of their capacity or greater.

While maintenance and infrastructure improvements are effective in addressing mobility

needs, additional service should also be part of the mix of approaches used to achieve a more sustainable transportation future. Although the MBTA system is already extensive, some geographic areas could benefit from additional service. Examples of mobility needs and gaps in service include, but are not limited to, the following.

- Densely developed areas in Somerville currently generate high trip volumes to Cambridge and Boston. In addition, trip volumes between Somerville and Cambridge are projected to increase substantially.
- Very densely populated areas in Lynn, Chelsea, Everett, and Medford, which currently generate significant numbers of trips into the urban core, do not have frequent rapid transit access within a reasonable walking distance of one-half mile.
- Very densely populated areas in Roxbury and Dorchester served by MBTA bus Routes 23 and 28 do not have frequent rapid transit access within a reasonable walking distance. Travel times on these routes are long and the service is unreliable.
- Transit travel to the business districts in Cambridge—especially near Kendall Square and Harvard Square—is currently very long for East Boston and North Shore residents, and Cambridge residents do not have direct rapid transit access to the northern part of the financial district near State and Aquarium Stations on the Blue Line.
- Currently, travel by MBTA from the Back Bay, Roxbury, Fenway, Brookline, and Newton to Logan International Airport, the Boston Convention and Exhibition Center, and the developing South Boston Waterfront is a "three-seat ride."
- The lack of a direct connection between North and South stations makes many types of transit trips cumbersome.
- Although the MBTA currently operates some circumferential bus connections between rapid transit spokes, buses must compete with cars on increasingly congested urban streets, reducing the appeal of these services. More frequent, circumferential, rapid, and through-routed connections would greatly enhance mobility between Central Area activity centers, as well as in the Route 128 corridor and other important destinations.

The transit service gaps listed above represent the current status. In the future, additional service gaps may emerge as the population of the region grows and its characteristics change. Transportation modeling conducted by the MPO reveals that many more service gaps could emerge during the next 25 years as demand for transit service grows. Examples of mobility needs that may emerge include the following.

Higher transit demand resulting from the implementation of the MetroFuture land use plan will require investments to increase capacity.

- Systemwide, 30 bus routes are predicted to have crowding levels in 2030 that would require additional service or larger, articulated vehicles. In addition, bus Routes 39 and 57 are already heavily used routes in busy corridors.
- By 2030, ridership demand on the Green Line's surface branches, as well as in the Central Subway, is projected to exceed capacity if two-car trains are still in use.
- Higher transit demand resulting from the implementation of the MetroFuture land use plan will require investments to increase capacity. MetroFuture shows a large amount of growth in areas presently served by transit.
- By 2030, large growth in intracity and intratown trips is projected in a number of areas that currently have limited transit services. A number of planned major development projects would rely heavily on transit and would increase transit ridership and possibly demand for additional service.

Freight

Paths to a Sustainable Region envisions a transportation system where freight moves efficiently by all modes. The Massachusetts Department of Transportation released a State Rail Plan and a State Freight Plan in September 2010. Findings from these two reports, and the findings of the 2007 Boston Region Freight Study, identified several freight needs and issues to watch. The movement of goods and supplies in, to, and from the Boston region is very complex, and their travel transcends regional, state, and often international borders. The issues that affect the transportation of freight are also often international in scale. For instance, the Panama Canal is being widened to accommodate much larger container ships, which will affect ports in the Boston region and other East Coast regions. The needs and issues identified in the following text are those that occur largely within the MPO region. Some can be addressed by MPO policies and decisions, while others may require private investment.

Freight Land Use Issues

A major issue in the distribution of freight is siting facilities for warehousing and distribution. This is especially true in the MPO region, where large parcels of land on which to locate such facilities are scarce. That residential and commercial development has crowded out some of the traditional areas devoted to industrial and freight-intensive uses, and many local communities have a negative view of freight activity, which compounds the problem. This issue causes concern because, as the State Freight Plan stated, the loss of land for freight-intensive uses increases shipping costs and can harm economic competitiveness.

The facilities and land that are available for freight-intensive uses often are served only by trucks. While trucks are often the preferred mode of transportation, sometimes they are also the only viable option. First of all, rail freight is not the best transport mode for many commodities and products. It is typically most cost-effective for shipping heavy, bulk materials with delivery requirements that are not time-sensitive. Access to freight rail service requires businesses along rail lines to build or upgrade rail sidings. Because construction of this infrastructure is generally much more expensive than highway connections, it is less likely to be funded than highway connections, thus limiting the opportunities to ship by rail. Development pressure on land adjacent to rail has reduced the potential pool of rail-served businesses. The State Rail Plan recommended an Industrial Rail Access Program (IRAP) to address this issue. An IRAP utilizes public, private, and railroad funds to facilitate rail use. It would provide funding assistance for the construction or improvement of railroad tracks and facilities to serve industrial or commercial sites where freight rail service is currently needed or anticipated to be needed in the future.

More than 90% of freight (by tonnage) is moved by trucks. Land that could be served by rail is being developed for non-industrial uses, increasing dependence on trucks.

Rail Mobility Issues

In addition to the land use issues that affect the movement of freight by rail, there are several infrastructure and policy issues. One of the more significant policy issues is how rail lines are shared between users. Many rail corridors in Massachusetts are subject to complex ownership and operational agreements between private freight railroads and public passenger rail services. This presents scheduling and other challenges, but also presents an opportunity for public-private partnerships to fund rail improvements. Freight and passenger transportation modes also compete for the use of highways and airports.

Another issue that is affected by policy and infrastructure is weight limits on rail lines. Many of the tracks carrying freight in the Boston region need to be upgraded to accommodate the industry standard of 286,000 pounds per rail car. Currently, the capacity on most lines in the region is 263,000 pounds. This restriction increases costs for shippers because they need more rail cars to move freight than they would need in areas where higher weight limits are in place.

Among the major infrastructure issues affecting rail mobility are bridge clearances and bottlenecks. A couple of bottleneck locations were identified by the State Freight Plan. One is located in Mansfield, where freight moving from CSX's Boston Line to the South Coast must cross the busy Northeast Rail Corridor. Another bottleneck location is near South Station, where a reconfiguration of tracks, and increased passenger service, restrict access to South Boston freight facilities on Massport's Track 61. Bridge clearances also affect freight mobility. In the MPO region, 331 of the 401 bridges over railroads (83

percent) do not meet the desired double-stack vertical clearance standard of 20 feet and 8 inches.

Another issue that will affect some regional trucking patterns is the plan of freight railroad company CSX Transportation to move its terminal facility from Allston to Worcester. However, this project will improve commuter rail connections between Worcester and Boston.

Trucking Mobility Issues

Many of the issues affecting freight rail mobility – such as bottlenecks, weight restrictions, and insufficient vertical clearances – also create mobility issues for trucks. Eight highway freight bottlenecks in the Boston region were identified in the State Freight Plan. They are:

- Interstate 93 southbound at Route 3 (the Braintree Split) in Braintree (this location has been identified as a bottleneck in the highway section)
- Route 24 at Interstate 93 in Randolph
- Interstate 95 at Route 9 in Wellesley
- Route 3 at Interstate 95 in Burlington
- Interstate 93 at Interstate 95 in Woburn, Stoneham, and Reading (this location has a high number of truck rollover crashes)
- Route 1 at Route 60 (Mahoney/Bell Circle) in Revere (this location has been identified as a bottleneck in the Highway section of this chapter)
- Interstate 90 at Interstate 495 in Hopkinton
- Interstate 290 at Interstate 495 in Marlborough (this location also has a high number of truck rollover crashes)

The MPO region contains part of a large gap in truck rest stops, along Interstate 495 from Westford to Interstate 90 in Sturbridge.

Vertical clearances for bridges also pose a problem for trucks. In the MPO region, 709 of 870 highway bridges (81 percent) do not meet the desired vertical clearance of 16 feet and 6 inches.

Trucking mobility is also affected by policies at the state and federal level. A truck driver is restricted in the number of hours he or she can operate a vehicle during a shift. Therefore, truck drivers need parking spaces where they can rest. The MPO region contains part of a large gap in truck rest stops, along Interstate 495 from Westford to Interstate 90 in Sturbridge.

Another trucking mobility constraint is the long-standing prohibition against trucks carrying hazardous cargoes traveling in tunnels. The expressway segments

impacted by this prohibition include Interstate 90 from the Prudential Center to Logan Airport, Interstate 93 through the Thomas P. "Tip" O'Neill Jr. Tunnel, including the Leonard P. Zakim Bunker Hill Bridge, and the section of Route 1 under City Square in Charlestown and over the Tobin Bridge. The process of establishing alternate routes involves federal, state, and municipal regulations, and the alternate-route system is undergoing review as of this writing. The route designation that emerges from this process can have a material impact on the costs and efficiencies of regional fuel transportation and regional trucking patterns.

Marine Mobility Issues

The major port mobility needs in the Boston region involve access to and from the port area for trucks, trains, and the larger ships that will arrive in the near future. The entrance channel to the Port of Boston needs to be dredged to a depth of 50 feet, and the Conley Terminal access channel to 48 feet. Dredging is also needed in Gloucester and in Chelsea Creek. The Ports of Boston, Salem, and Gloucester lack efficient connection to the limited-access highway system and freight rail lines. Additionally, identifying overweight-truck routes to serve the Port of Boston will improve the efficiency of freight operations. Without overweight-truck routes, some loads must be reconfigured upon arrival at the port.

Air Freight Mobility Issues

Air freight service at Logan Airport is critical to the movement of high-value, low-weight goods manufactured in Massachusetts. The mode is projected by the State Freight Plan to grow more quickly than any other shipping mode. Major issues that could restrict the mobility of air freight are congestion on roadways to Logan Airport and a lack of land for warehousing and distribution. Preserving sites and developable space for air cargo warehousing and freight forwarding facilities in South Boston and along Routes 1 and 1A in East Boston and Chelsea is a top priority for the air cargo industry.

Pedestrian/Bicycle

Paths to a Sustainable Region calls for linking bicycle, pedestrian, and transit facilities in a network; increasing the use of sustainable modes; and improving transportation options and accessibility for all modes of transportation. Improving the quantity and quality of walking and bicycling options in the region will improve the quality of life for residents and promote the MPO's vision of a future in which more people select sustainable transportation modes. Improving the pedestrian and bicycle network also has benefits for the transit system, since it will allow more people to easily access stations. Addressing the needs and problems identified in the following sections will promote the realization of the vision.

- Less than 2 percent of the region's non-interstate roadways provide bicycle accommodations, and the Northeast, North, West, Southwest, and Southeast corridors each has fewer than three centerline miles of bicycle lanes.
- Half of the region's non-interstate roadways do not have a sidewalk on at least one side, and the Northwest, West, Southwest, and Southeast corridors all have less than 50 percent sidewalk coverage.
- Gaps in the bicycle network limit many users from safely connecting to their destinations, including transit stations, schools, recreation areas, and commercial areas.
- There are no bicycle accommodations connecting to stations along the northern portion of the Orange Line, and there are few bicycle accommodations connecting to stations along the Blue Line and the southbound section of the Red Line.

Of the region's non-interstate roadways, half do not have a sidewalk on at least one side and less than 2% provide bicycle accomodations.

- There is poor pedestrian access to some stations along the Blue Line, the northern portion of the Orange Line, and the southbound section of the Red Line.
- There is poor bicycle access and limited pedestrian access to most commuter rail stations in the Northeast, North, Northwest, West, Southwest, and Southeast corridors.
- There are no bicycle corridors into Boston from the Northeast, North, and Southeast corridors.
- There are very few bicycle accommodations that facilitate circumferential travel within and between radial corridors.
- Of the MassDOT's Bay State Greenway corridors that travel through the MPO region, 124 of the 415 miles (30 percent) have been constructed. Within the region, none of the portions located in the North Shore Corridor of the Bay State Greenway have been constructed, and there are large gaps in the Merrimack River, Mass Central, and Boston–Cape Cod corridors.

Transportation Equity

Paths to a Sustainable Region envisions a transportation system that provides affordable transportation options and accessibility to people of all incomes, ages, races, and language backgrounds and does not inequitably burden or benefit any particular group. Addressing the needs and problems identified through public outreach as part of the MPO's transportation equity program, will promote the realization of the vision:

- Traffic speeds in many low-income and minority neighborhoods are too fast, and streets are dangerous for pedestrians and bicyclists. Traffic calming and "complete streets" design principles will create a safer environment.
- Better circumferential transit service and a connection between the Red and Blue lines are needed.
- Densely populated areas such as Roxbury, Jamaica Plain, Somerville, Chelsea, Medford, Everett, and Lynn lack access to rapid transit within a reasonable walking distance.

- Transit service is focused on travel to or from Boston, and can be inadequate for travel within communities outside of the Central Area.
- Several bus routes in the Central Area operate at slow speeds.
- There are negative community impacts from the MBTA's bus maintenance facilities.
- The airport generates traffic congestion in East Boston.
- Late-evening and early-morning transit service are needed by many low-income workers.
- The transit system is difficult to navigate for people who speak languages other than English.

- Transit service is limited in Randolph, Milford, and the Hyde Park neighborhood of Boston.
- Commuter rail fares and overnight idling of locomotives are a burden on Hyde Park.

A final critical equity issue that concerns the MPO is the large expected growth of the elderly population between now and 2035. The expected growth is a concern for the MPO because transportation needs, and abilities, of people typically change dramatically as they age.

The MPO expects a large growth in the elderly population between now and 2035.

Land Use

Paths to a Sustainable Region shares the MetroFuture vision of a region in which new development is focused in developed areas rather than greenfields. The realization of this vision will protect critical open space. However, it also will increase demand on the region's transit system and roadways. Much of the growth between now and 2035 is expected to occur along transit lines. When this vision is realized, transit capacity may need to expand in order to handle service demands. While much of the expected growth will occur over time through smaller projects, there are several large developments proposed for the Boston region that must be considered during the transportation-planning process. These include the following.

Much of the growth between now and 2035 is expected to occur along transit lines.

- **Northeast Corridor:** Redevelopment of the Lynn Waterfront (3,500 housing units and 2 million square feet of retail, office, and hotel space) and transit-oriented development around Wonderland Station in Revere (750 housing units, 175,000 square feet of commercial and retail space, and a hotel)
- **North Corridor:** The Lowell Junction development at the confluence of three MPO areas (Wilmington in the Boston Region MPO area, Tewksbury in Northern Middlesex, and Andover in Merrimack Valley)

- **Northwest Corridor:** Assembly Square in Somerville (2,100 housing units and more than 2.5 million square feet of commercial and office space) and North Point in Cambridge
- **West Corridor:** Redevelopment of the Weston Nurseries (1,000 housing units), the Jefferson at Ashland development near Ashland Station (500 units), a high rise in Natick (407 units), the Hopping Brook Business Park in Holliston, the development of a new EMC campus in Southborough and Westborough, and the Framingham Tech Park
- **Southwest Corridor:** Westwood Station in Westwood (1,000 housing units, 1 million square feet of retail space, 1.5 million square feet of office space, and two hotels)
- **Southeast Corridor:** SouthField oriented around the South Weymouth commuter rail station (3,800 housing units and 2 million square feet of commercial, office, and industrial space), the Quincy Center redevelopment (800 housing units and 1.3 million square feet of retail, office, and hotel space), a 1,000-unit mixed-use development at the Fore River Shipyard, and build-out of Enterprise Park in Marshfield
- **Central Area:** Development in the South Boston seaport area (2,376 housing units and 2.8 million square feet of office and retail space) and Assembly Square and North Point, which were mentioned above

CONCLUSION

This chapter presented an overview of some of the major transportation, equity, and land use challenges facing the region. It is clearly not an exhaustive list, but it identifies those needs that stand out. The MPO recognizes that the region's needs will change and expects that the Needs Assessment will be updated on an ongoing basis.

The needs outlined in this chapter were a major consideration in the set of regionally significant and major infrastructure projects the MPO decided to include in *Paths to a Sustainable Region*. Only those projects that met an identified need were evaluated against the MPO's policies and included in the various investment strategies that were considered during the development of the LRTP. The set of projects selected for *Paths to a Sustainable Region* can be reviewed in Chapter 8, The Recommended Plan.