

Chapter 3 – Transportation Needs in the Boston Region

3.1 BACKGROUND

A critical early step in developing the LRTP was to gather, organize, and analyze available sources of data about the existing transportation system. This process resulted in the MPO's Needs Assessment, an interactive online database of transportation, population, and employment conditions. MPO staff used the Needs Assessment application to analyze various components of the transportation system, their capacity, serviceability, and current and projected use. The Needs Assessment also includes a report that summarizes the region's future transportation requirements based on staff's analysis.

Not only did the Needs Assessment analysis guide the MPO when deciding how to address the region's needs through the LRTP, it also will guide future decision making about which projects to fund in the TIP, and which studies to conduct through the UPWP. The Needs Assessment also establishes a baseline for the MPO's performance-measurement process, which will track progress over time to determine whether planned changes to the transportation system are moving the MPO toward its goals and objectives.

This chapter presents a summary of the region's needs (described in full in a separate Needs Assessment document). Both the Needs Assessment document and the interactive Needs Assessment application may be accessed through the MPO's website at http://www.ctps.org/Drupal/charting_2040_needs.

Information in this chapter—and the online Needs Assessment document—has been organized according to the LRTP's goals (Chapter 1), which staff used to evaluate projects for scenario planning and project selection for the recommended LRTP (Chapter 5), and are related to the topics of:

- Safety
- System Preservation
- Capacity Management and Mobility
- Clean Air and Clean Communities
- Transportation Equity
- Economic Vitality

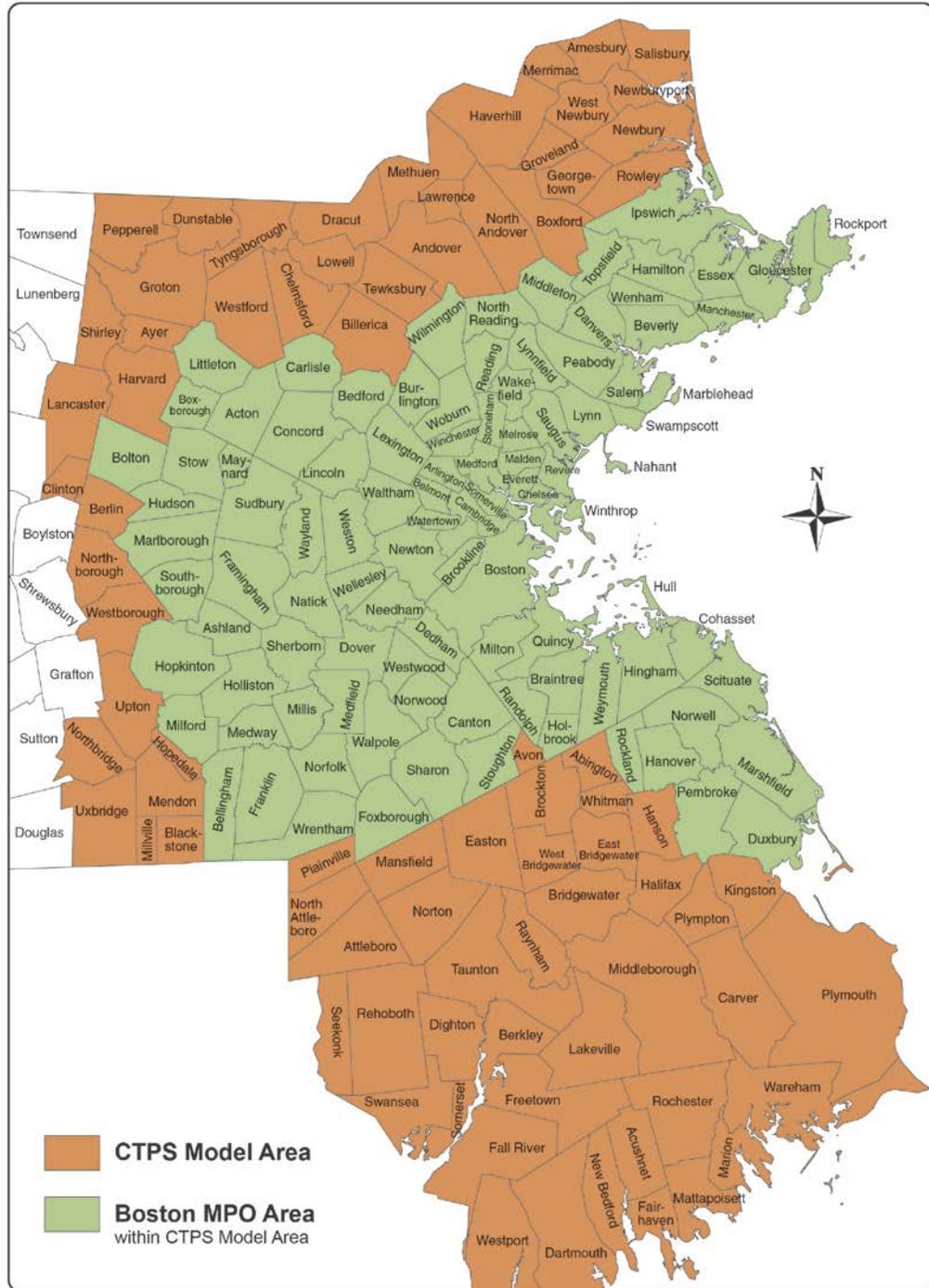
The online Needs Assessment document includes the following chapters, which contain details about the needs, as well as the conditions that create the needs:

- Chapter 1 – Introduction: describes the study area and data resources used to inventory and assess the region’s transportation needs
- Chapter 2 – Land Use in the Boston Region MPO: provides an overview of the region’s current land use, and that which is projected to occur between now and 2040
- Chapter 3 – Travel Patterns in the Boston Region MPO: describes the region’s current travel patterns (under base-case 2012 conditions), and those which are projected to occur between now and 2040 if there are no improvements to the transportation system (no-build conditions)
- Chapter 4 – Regionwide Needs Assessment: reports on the regional high-priority needs for the next 25 years

3.2 DEFINITION OF THE STUDY AREA

For transportation planning purposes, the MPO maintains a travel demand model, which includes the 101 municipalities in the MPO region plus an additional 63 municipalities adjacent to the MPO area. While the Needs Assessment addresses only the needs of the municipalities in the MPO, it does take into consideration conditions and travel activity in other parts of the larger region that affect the MPO.

FIGURE 3.1
Model Areas



3.3 INFORMATION INCLUDED IN THE NEEDS ASSESSMENT

The Needs Assessment incorporates information from previous and ongoing transportation planning work—including the *Paths to a Sustainable Region* LRTP, the MBTA’s *Program for Mass Transportation*, the MPO’s Congestion Management Process (CMP), transportation equity outreach, MPO studies, and special studies—for data inputs.

Staff also used the MPO’s travel demand model and draft demographic projections in the Needs Assessment, as existing and projected socioeconomic information (population, housing, and employment data) and the existing and proposed transportation network were important factors in determining transportation needs. In the modeling process, the adopted LRTP used a base year of 2012 and a future year of 2040 for the transportation network and socioeconomic data.

3.4 PRIORITIZED REGIONAL NEEDS

The following sections offer an overview of transportation system’s needs for the next twenty-five years. Detailed information about each goal may be found in Chapter 4 of the Needs Assessment, which also includes:

- The goals and related objectives for each goal
- Background information for each goal
- The policy context that surrounds each goal, including:
 1. Related initiatives and directives
 2. Relevant studies, reports, and documents.
- Contributing resources
- Public input on transportation needs
- Potential programs that would help address each goal

3.4.1 Safety

Safety Problem Statement

Overall, safety in the region’s transportation system has been improving. However, at the same time certain types of crashes and resultant injuries have increased. Reducing the number of transportation-related accidents, injuries, and fatalities—as well as related property damage, pain, and suffering—is the MPO’s highest priority.

Safety Needs

Despite the overall reduction in the number of crashes, fatalities, and injuries between 2006 and 2012, the number of crashes and injuries involving pedestrians and bicyclists rose: Pedestrian crashes increased by 18 percent, and

injuries grew by 31 percent; bicycle crashes increased by 36 percent, and injuries jumped by 46 percent. Roughly two-thirds of pedestrian and bicycle crashes resulted in an injury.

Staff identified safety needs by analyzing data for high crash locations, intersections, and lane departures, as well as accidents involving pedestrians, bicyclists, and trucks. Tables 3.1–3.3 display summary information about the region’s safety needs.

**TABLE 3.1
Safety Needs in the Boston Region MPO**

Emphasis Area	Problem	Description of Needs
High Crash Locations	The number of all crashes should be reduced. Pedestrian and bicycle crashes and injuries are rising; 46% of these result in injury.	Top 25 Crash Locations (<i>see Table 3.2 for a list of locations</i>) Facilities to improve safety for bicycles and pedestrians are needed.
Intersections	More than one in five fatalities occurs at an intersection.	Seventy-nine of the state’s Top-200 Crash Locations are in the Boston Region. Roadway corridors with multiple Top-200 Crash Locations are: <ul style="list-style-type: none"> • Route 9, Natick and Framingham • Route 18, Weymouth • Route 107, Lynn • Route 16, Newton and Wellesley • Route 126, Bellingham • Route 16, Milford
Lane Departures	Lane departure crashes cause 55% of roadway fatalities and 24% of incapacitating injuries. Interstates make up 5% of lane miles, yet account for 15% of lane departure crashes. Arterials account for less than 25% of lane miles but more than 50% of lane departure crashes.	Roadways with significant numbers of lane departure crashes include: <ul style="list-style-type: none"> • I-93 between I-90 and I-95 Northbound and Southbound • I-495 between I-90 and I-95 • Route 3, Weymouth • Route 1, Chelsea and Revere • The Jamaica way, Boston • Soldiers Field Road, Boston
Pedestrians	One of the state’s nine strategic areas and an ongoing focus of the Boston Region MPO. In the Boston region, pedestrians comprise a growing	MassDOT Highway Safety Improvement Program (HSIP) Crash Cluster locations: <i>Downtown areas of:</i> Boston, Chelsea, Framingham, Lynn, Malden, Natick, Peabody, Salem, Waltham, and Wellesley <i>Corridors in:</i>

Emphasis Area	Problem	Description of Needs
	share of crashes and a disproportionately high share of injuries.	<ul style="list-style-type: none"> • Cambridge (Massachusetts Avenue) • Quincy (Hancock Street) • Newton (Newton Centre) • Watertown (Watertown Square) • Somerville (Davis Square) <p><i>Suburban Areas:</i> many arterials and local roadways where sidewalk coverage is inadequate</p>
Bicyclists	In the Boston region, bicyclists comprise a growing share of crashes and a disproportionately high share of injuries.	<p>MassDOT HSIP Bicycle Cluster locations:</p> <p><i>Downtown areas of:</i> Beverly, Chelsea, Framingham, Lexington, Lynn, Natick, and Salem</p> <p><i>Corridors in:</i></p> <ul style="list-style-type: none"> • Boston (Commonwealth Avenue) • Brookline (Harvard Street) • Arlington (Massachusetts Avenue) • Cambridge, (Massachusetts Avenue) • Waltham (Main Street) • Somerville (Beacon Street and Somerville Avenue) <p>Regionwide: bicycle infrastructure is limited; bike paths and other infrastructure are needed in all areas of the region.</p>
Trucks	One of the state's four proactive emphasis areas; trucks account for a greater proportion of crash severity than other modes—approximately five percent of crashes and nine percent of fatalities between 2006 and 2012	<p>MPO Compiled High Crash locations are at older interchanges with obsolete designs:</p> <ul style="list-style-type: none"> • I-95 interchanges at I-93 in Woburn • I-90 in Weston • I-93 in Canton • I-95 interchanges at Route 1 in Dedham • I-95 and Middlesex Turnpike in Burlington • I-95 and Route 138 in Canton

Source: Central Transportation Planning Staff.

TABLE 3.2
Top-25 Highway Crash Locations in the Boston Region MPO

Location	Municipalities	EPDO	Top 200	HSIP Crash Cluster	Truck Crash Cluster	Pedestrian Crash Cluster	Bicycle Crash Cluster
Interstate 93 at Columbia Rd	Boston	464	X	X	X		X
Middlesex Turnpike at Interstate 95	Burlington	388		X	X		
Route 3 at Route 18 (Main Street)	Weymouth	339		X	X		
Interstate 93 (Near Ramps for Furnace Brook Parkway)	Quincy	330		X	X		
East St Rotary at Rte 1 and Rte 128	Westwood	328		X	X		
Interstate 95 at Interstate 93	Reading	326	X	X	X		
I-93 at Granite Ave (Exit 11)	Milton	325		X	X		
Interstate 95 at Route 2	Lexington	324		X	X		
Route 9 at Interstate 95	Wellesley	320		X	X		
I-93 at North Washington St	Boston	319		X		X	
I-93 at Rte 138 (Washington St)	Canton	316		X	X		
I-93 at Route 3A (Gallivan Blvd/Neponset Ave)	Boston	271		X	X		
Interstate 95 at Rte 4 (Bedford St)	Lexington	270		X	X		
Route 18 (Main Street) at West St	Weymouth	247	X	X	X		
Interstate 93 at Rte 37 (Granite St)	Braintree	245	X	X	X		
Route 139 (Lindelof Ave) at Rte 24	Stoughton	240		X			
Interstate 93 at Leverett Connector	Boston	236		X			
Interstate 93 at Route 28	Medford	233	X	X	X		
Rte 128 at Route 114 (Andover St)	Peabody	219		X	X		
I-93 at Rte 28 and Mystic Ave	Somerville	214	X	X	X		
Storrow Dr at David G. Mugar Way	Boston	212		X			
Rte 28 (Randolph Ave) at Chickatawbut Rd	Milton	203	X	X			
Route 2 – Crosby’s Corner	Concord/Lincoln	200	X	X			
Route 1 at Route 129	Lynnfield	194		X	X		
Route 1 at Route 129 (Walnut St)	Saugus	193		X			

EPDO = Equivalent Property Damage Only. HSIP = Highway Safety Improvement Program.

Source: MassDOT Registry of Motor Vehicles.

**TABLE 3.3
Locations with Multiple Safety Needs**

Location	Municipalities	Top 200	HSIP Crash Cluster	Truck Crash Cluster	Pedestrian Crash Cluster	Bicycle Crash Cluster
Downtown Framingham	Framingham	X	X	X	X	X
Route 20 (Main Street) and Moody St	Waltham	X	X	X	X	X
Watertown Square	Watertown	X	X	X	X	X
Washington Street	Salem	X	X	X	X	X
Everett Avenue	Chelsea	X	X	X	X	X
Essex Street	Lynn	X	X		X	X
Route 107 (Western Avenue)	Lynn	X	X	X	X	
Massachusetts Avenue	Arlington	X	X	X	X	
Route 16 (Alewife Brook Parkway)	Arlington, Somerville, Cambridge	X	X	X		X
Broadway	Chelsea		X	X	X	X
Newtonville	Newton		X	X	X	X
Route 16 (East Main Street)	Milford	X	X	X		
I-495 at Route 126 (Hartford Ave)	Bellingham	X	X	X		
Downtown Quincy	Quincy	X	X		X	
I-95 at Route 16 (Washington St)	Newton	X	X	X		
Route 16 (Revere Beach Parkway)	Revere, Everett, Medford	X	X	X		
I-495 at Route 1A (South Street)	Wrentham	X	X	X		
Route 20 (East Main Street)	Marlborough	X	X	X		
Route 9	Framingham, Natick	X	X	X		
Downtown Natick	Natick		X		X	X
Downtown Lynn	Lynn		X		X	X
Route 1A	Lynn		X	X	X	
Rte 28 (McGrath Hwy) at Washington St	Somerville		X		X	X
Newton Center	Newton		X		X	X
Cambridge Street	Cambridge		X		X	X
Route 16 (Mystic Valley Parkway)	Medford		X	X	X	

HSIP = Highway Safety Improvement Program.

Source: MassDOT Registry of Motor Vehicles.

3.4.2 System Preservation

System Preservation Problem Statement

The region's transportation infrastructure is aging and heavily used, and there is a significant backlog of maintenance and state-of-good repair (SGR) work to be done on both the highway and transit systems. In addition, parts of the transportation system may be compromised if climate-change trends continue as projected. The system needs to be brought into an SGR, maintained at that level, and enhanced to ensure personal mobility, efficient movement of goods, and protection from potential sea-level rising and storm-induced flooding.

System Preservation Needs

Demands on roadway and transit facilities have stressed them to the point that routine maintenance is insufficient to keep up with necessary repairs. The result is a significant backlog of maintenance and SGR projects on all parts of the transportation system, including bridges, roadway pavement, transit rolling stock, and traffic and transit control equipment.

The region's financial constraints require the MPO to set priorities, considering the most crucial maintenance needs and the most effective ways to deploy funding. At the same time, the MPO must improve the resiliency of infrastructure that could be affected by climate change.

The MPO's uses its TIP evaluation criteria, to determine whether a project improves substandard pavement, signal operations, intermodal accommodations and connections to transit; it implements intelligent operations system strategies to assess and prioritize the system's preservation and maintenance needs for projects it considers for funding (see Table 3.4).

**TABLE 3.4
System Preservation Needs in the Boston MPO Region**

Emphasis Area	Problem	Description of Needs
Bridges	<p>Of the 2,866 bridges in the region:</p> <ul style="list-style-type: none"> • 559 (19%) are functionally obsolete • 154 (5%) are structurally deficient <p>Bridge Health Index:</p> <ul style="list-style-type: none"> • 33% are in good condition (a score of 85 or higher) • 36% are in less-than-good condition (1.5% are in the worst condition – 0) • 31% do not have recorded core element data to calculate a rating 	<p>Meet the MassDOT performance measure to prevent the number of structurally deficient bridges from exceeding 463 statewide</p> <p>Meet the MassDOT performance measure to maintain a systemwide bridge health index of at least 81.98</p>
Pavement Management	<p>MassDOT-maintained roadways:</p> <ul style="list-style-type: none"> • 70% in good condition • 25% in fair condition • 5% in poor condition 	<p>MassDOT-maintained arterial roadways make up 62% of monitored roadways, however 90% of the arterial roadways are in poor condition; larger expanses of arterials in poor condition are located in: Boston, Cambridge, Chelsea, Everett, Lynn, Malden, Medford, Newton, Revere, and Somerville</p>
Transit Infrastructure and Rolling Stock	<p>Transit system needs to be brought into SGR</p> <p>Maintaining existing capital assets must be the highest priority</p>	<p>SGR and Maintenance Needs:</p> <ul style="list-style-type: none"> • Green Line signals • Commuter rail bridges (44 structurally deficient) • Commuter rail coaches and locomotives • Rapid transit cars (Red and Orange Lines) • Presidential Conference Cars (PCC) for Mattapan High Speed Line • Station Accessibility (33 commuter rail and 38 rapid transit)
Freight Network	<p>Many express highways are built to outdated design standards for trucks</p>	<p>Needs include:</p> <ul style="list-style-type: none"> • Maintaining and modernizing the roadway network • Improved connections

Emphasis Area	Problem	Description of Needs
		between intermodal facilities and regional road network <ul style="list-style-type: none"> • Maintaining truck access on complete streets-designed roadways
Climate Change Adaptation	Some transportation infrastructure, including tunnels, is in hazard areas and locations that are vulnerable to inundation, among other hazards.	The Central Artery and other infrastructure may need retrofitting or other adaptations to protect them from the impacts of hazards and climate change

Source: Central Transportation Planning Staff.

3.4.3 Capacity Management and Mobility

Capacity Management and Mobility Problem Statement

Reducing congestion and managing the capacity of all transportation infrastructure and services is essential to increase mobility, decrease vehicle emissions, promote healthy travel options, and ease disruption and economic losses caused by travel delay.

Capacity Management and Mobility Needs

Although increasing capacity has long been a strategy to reduce congestion, its effects have not proved long lasting. The MPO now is adopting capacity and mobility strategies that enhance the system through operations and management (O&M) type projects, such as improving access and connectivity to transit services, closing gaps and reducing bottlenecks for all modes, completing the bicycle and pedestrian networks, and providing for first- and last-mile connections.

The MPO identified capacity and mobility needs by analyzing the reliability and capacity of roadway and transit infrastructure and services, and the connectivity of transit, pedestrian, and bicycle infrastructure (see Table 3.5).

**TABLE 3.5
Capacity Management and Mobility Needs in the Boston Region MPO**

Emphasis Area	Problem	Description of Needs
Roadway Reliability Needs	The Needs Assessment identified a priority set of expressway and arterial congested locations using speed- and travel-time indices, volume-to-capacity ratios, and crashes as factors. Addressing these locations will also address truck freight concerns.	<p>Priority congested locations – Expressways:</p> <ul style="list-style-type: none"> • I-93 between I-95 in Woburn and the Leverett Connector • I-93 between the Braintree Split and the Massachusetts Ave Interchange • US 1 between Route 60 in Revere and Route 99 in Saugus • Route 128 at Lowell Street, Exit 26, in Peabody • I-90 between Interchanges 16 and 17 in Newton • I-95 between I-93 in Woburn and US 1 in Lynnfield <p>Priority congested locations – Arterial Corridors 24 locations (see Figure 3.2):</p> <ul style="list-style-type: none"> • Northeast (3) • Northeast/Central (1) • North (1) • North/Central (2) • Northwest (4) • Northwest/Central (2) • West (5) • Southwest (2) • Southeast (4)
Transit Reliability Needs	Maintain the MBTA performance measures for transit reliability	<p>Needs include service standards adherence:</p> <ul style="list-style-type: none"> • Only 7.6 percent of all bus routes passed the MBTA service-adherence standard • On-time performance goals (95%) were not met by the Orange Line or the commuter rail system • The commuter rail system did not meet the locomotive mean miles between failures goal
Transit Capacity Needs	A number of major infrastructure constraints on the MBTA system limit capacity and hinder expansion	<p>Infrastructure constraints include:</p> <ul style="list-style-type: none"> • South Station – additional tracks, terminal expansion, and related layover capacity (for current and future high-speed, intercity, and commuter rail service) • Single track sections of the Haverhill, Fitchburg, Franklin, Stoughton, Needham, and Old Colony Lines • The Green Line's central subway tunnel (currently operating at capacity) • Orange Line peak hours capacity between Downtown Crossing and North Station • Park-and-Ride lots at transit stations; 20 percent

Emphasis Area	Problem	Description of Needs
	Future demand for transit will increase needs for transit investments	<p>are utilized at 85 percent of their capacity, or greater</p> <p>Future Needs Include:</p> <ul style="list-style-type: none"> • More service to: <ul style="list-style-type: none"> ▪ Peabody, Beverly, Salem ▪ Acton, Concord, and Westford ▪ Framingham, Marlborough, and Natick (communities served by MetroWest Regional Transit Authority (MWRTA)) ▪ Needham and Wellesley (MWRTA provides some service to Wellesley) ▪ Stoughton, Canton, Norwood, Walpole ▪ Lynn ▪ Malden ▪ Weymouth • More service on MBTA bus routes to address overcrowding; potential operations improvements (bus prioritization and bus lanes) • Suburban transit • Faster crosstown service to better access locations along radial corridors • Service to Everett
Transit Connectivity	<p>Congested transit- or bicycle-parking facility</p> <p>General Access Needs</p>	<ul style="list-style-type: none"> • Park-and-Ride lots at more than 85% utilization: (see Figure 3.3, Map of Stations at or more than 85% utilization) • Bicycle parking facilities at more than 85% utilization: (see Figure 3.4, Map of Bicycle Parking Facilities at or more than 85% utilization) • Numerous other access improvements for transit, including: <ul style="list-style-type: none"> ▪ Bicycle station access, rapid transit system wide ▪ Bicycle and pedestrian access to north-side Orange Line stations, the Blue Line, and southern parts of the Red Line ▪ Pedestrian and bicycle access to commuter rail stations • Areas for Access Improvements include: <ul style="list-style-type: none"> ▪ Alewife Station ▪ Crosstown bus routes ▪ Improved suburban links to existing transit service (Park-and-Rides, transit station parking, shuttle services, and other facilities and services that support last-mile connections)

Emphasis Area	Problem	Description of Needs
		<ul style="list-style-type: none"> ▪ Improved connections between the regional transit authorities
Bicycle and Pedestrian Network Connectivity	<p>Eleven top priority bicycle gaps to be addressed</p> <p>Baystate Greenway (BSG) Priority 100 corridor projects in the Boston Region</p> <p>General Bicycle and Pedestrian Improvements</p> <p>Only 52 percent of the region's non-limited-access roadways have a sidewalk on at least one side of the street.</p> <p>Inadequate snow removal reduces mobility</p>	<p>Top priority bicycle gaps are shown in Figure 3.5</p> <p>BSG 100 priority corridor projects are shown in Figure 3.5</p> <p>Bike trails to Boston from the northeast, north, and southeast</p> <p>Sidewalks on at least one side of all streets</p>

Source: Central Transportation Planning Staff.

FIGURE 3.2
Bottleneck Locations



FIGURE 3.4
Bicycle Parking Facilities with a Utilization Rate of More than 85%



3.4.5 Clean Air and Clean Communities

Clean Air and Clean Communities Problem Statement

The MPO has made significant progress toward improving air quality in the region, which is now in attainment for ozone and particulate matter and remains in maintenance for carbon monoxide.¹ Continued vigilance is needed to keep emissions of these pollutants at acceptable levels.

The largest environmental threat the MPO now faces is the need to reduce greenhouse gas emissions that contribute to climate change, which if unchecked, could impair our transportation system and way of life. In addition, transportation can negatively affect environmental resources and land use patterns if they induce sprawl or development in or near priority preservation areas (see section 3.4.7 and Figure 3.7).

Clean Air and Clean Communities Needs

To comply with federal and state requirements, as well as MPO policy, the MPO tracks air quality by continuously monitoring estimated or projected levels of pollutants, including volatile organic compounds (VOC), nitrogen oxides (NOx), carbon monoxide (CO), particulate matter (PM), and carbon dioxide (CO₂). In the LRTP and TIP project-selection processes, the MPO reviews and rates individual projects on how well they meet criteria established to protect the environment.

Addressing some of the needs identified under the Capacity Management and Mobility goal also will help the MPO achieve the Clean Air and Clean Communities goal, as programs that reduce vehicle-miles traveled (VMT) contribute to lower emissions of VOC, NOx, CO, CO₂, and PM.

**TABLE 3.6
Clean Air and Clean Communities Needs in the Boston Region MPO**

Problem	Description of Needs
The MPO must continue monitoring levels of carbon monoxide (CO) and carbon dioxide (CO ₂) and should continue monitoring the pollutants volatile organic compounds (VOC), nitrogen oxides (NOx), and particulate matter (PM)	Identify projects and programs that can meet criteria established to protect the environment Reducing vehicle-miles of travel (VMT) will help reduce emissions of VOC, NOx, CO, CO ₂ , and PM.

Source: Central Transportation Planning Staff.

¹ A maintenance area is one that has been reclassified as being in attainment, but on which the MPO is still required to report.

3.4.6 Transportation Equity

Transportation Equity Problem Statement

Historically, some minority and economically disadvantaged areas have endured the negative effects of the transportation system disproportionately—for example, via placement of infrastructure from which they do not benefit; poor access to, or maintenance of, necessary services; and by not being included in the transportation-planning process. In addition, youth, the elderly, and people with disabilities of various kinds face special challenges when using the transportation system. Although progress has been made to remedy these problems, much remains to be done to identify affected populations and ensure equal treatment and access to transportation services, mobility, and decision making.

Transportation Equity Needs

The MPO determines the transportation needs of people in environmental-justice (EJ) areas—those with higher concentrations of minority and/or low-income residents (see Figures 3.6 and 3.7 and Chapter 6)—in a number of ways. Staff post a needs survey on the MPO’s website; the MPO conducts forums and meetings to solicit input; staff attend various meetings where needs and transportation gaps are discussed; and staff keep current on reports and studies that identify these needs, which generally fall into several categories, including:

- Transit service improvements
- Transit and roadway infrastructure improvements
- Improved intermodal connections
- Coordination of various services

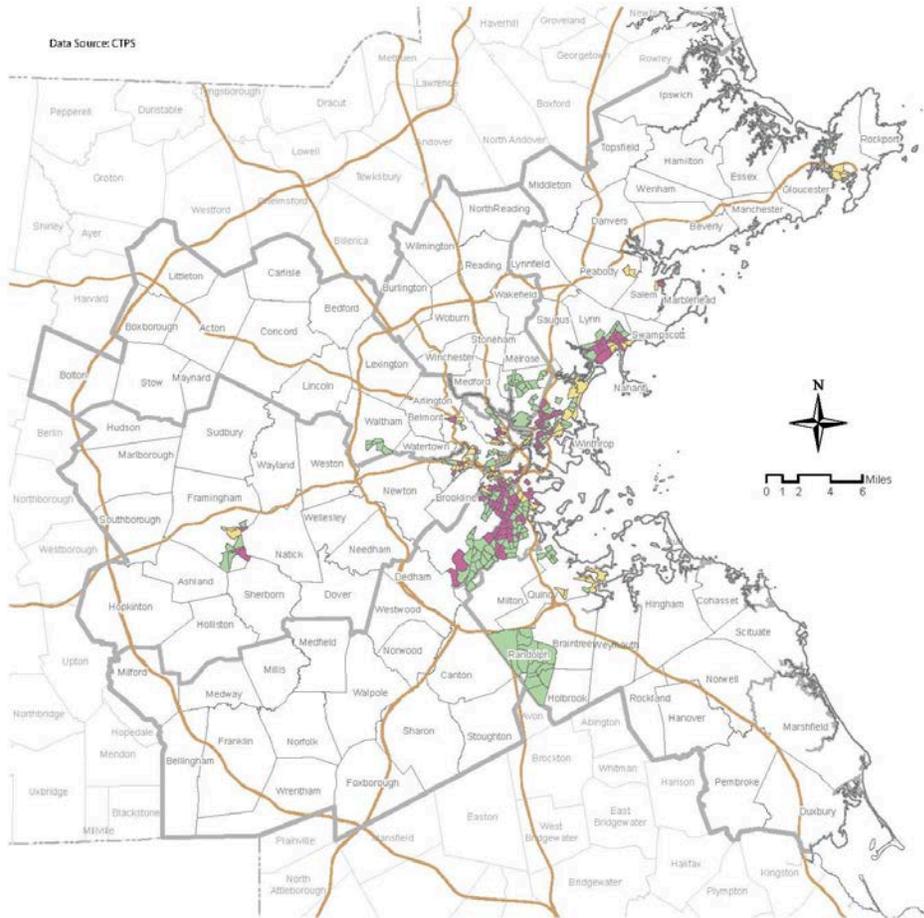
The MPO addresses regional transportation equity through TIP evaluation criteria, where projects that address a transportation issue in an EJ neighborhood can score points. MPO staff give positive ratings to projects that could benefit EJ areas, and negative ratings to projects that might burden these areas. This scoring system gives projects that address transportation equity issues an advantage, as the MPO considers these ratings when deciding which projects should be funded in the LRTP or TIP.

**TABLE 3.7
Transportation Equity Needs in the Boston Region MPO**

Problem	Description of Needs
<p>Lack of adequate transit service to environmental-justice communities</p> <p>Some transportation needs are addressed system wide and some are location specific</p>	<p>Identified needs:</p> <ul style="list-style-type: none"> • Transit service improvements • Transit and roadway infrastructure improvements • Improved intermodal connections • Coordination of various services

Source: Central Transportation Planning Staff.

FIGURE 3.6
Environmental-Justice Areas in the Boston Region MPO Regionwide



Transportation Analysis Zones (TAZs) That Meet Environmental Justice Population Zone Criteria*

- Meets income criterion
- Meets minority criterion
- Meets both criteria

***Criteria for Environmental Justice Population Zones**

A TAZ in which the median household income in 2010 was equal to or less than 60% of the MPO median of \$70,827 (\$42,497) or in which the 2010 population was more than 50% minority.

Economic Vitality Needs

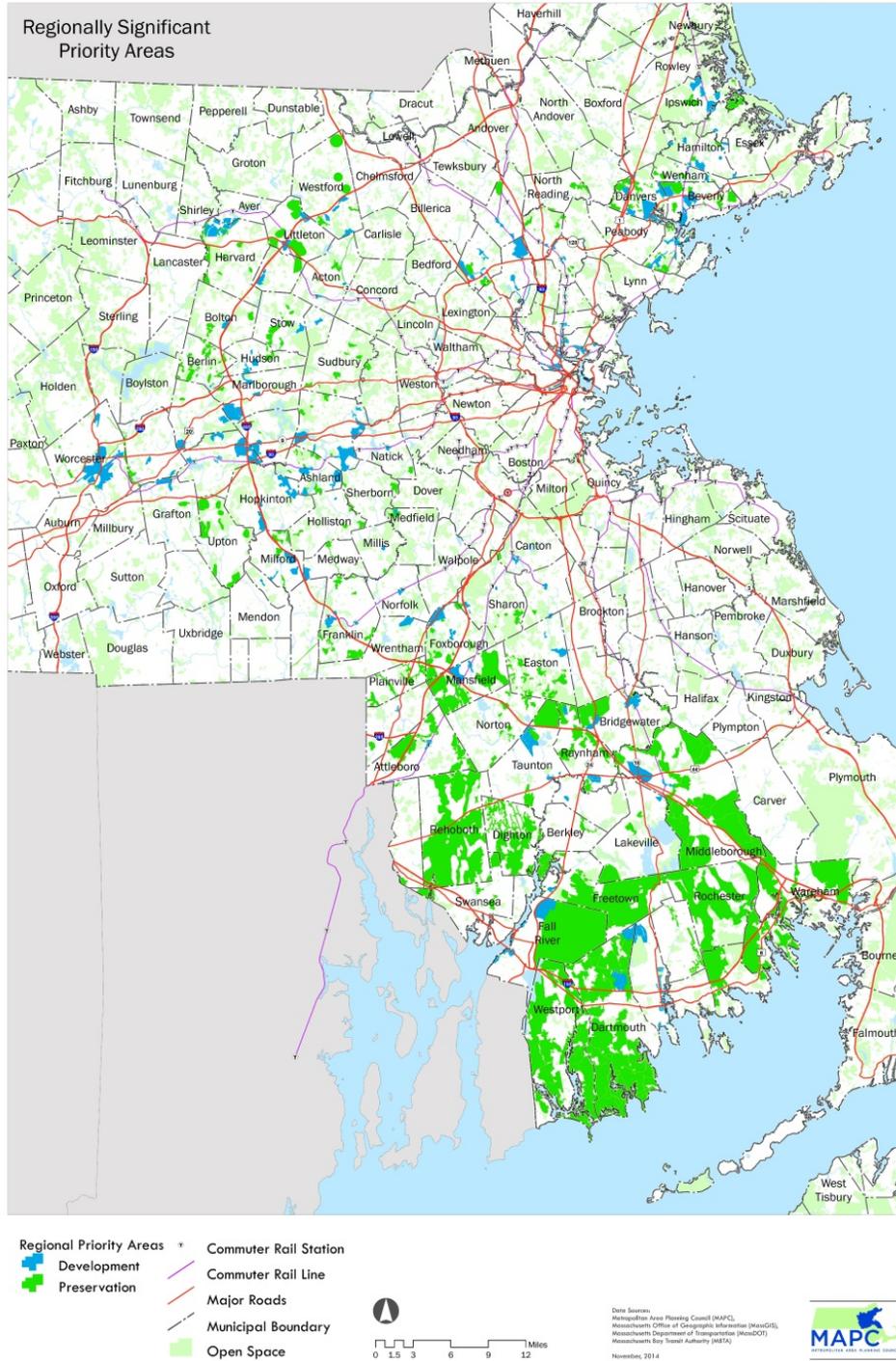
The Massachusetts Executive Office of Housing and Economic Development (EOHED), the Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA), and MAPC collaborated on a process to identify local, regional, and state-level priority development and preservation areas in municipalities within the MPO area. These areas can support additional housing, employment growth, creation and preservation of open space, and the type of continued economic vitality and future growth that the market demands, and which communities desire. The MPO has worked with MAPC and state agencies to understand the infrastructure needs of these areas and to identify transportation projects that could address them.

TABLE 3.8
Economic Vitality Needs in the Boston Region MPO

Problem	Description of Needs
The region's economic vitality depends on a high-performing, multi-modal transportation system	Infrastructure improvements are needed to support growth in the priority development areas

Source: Central Transportation Planning Staff.

FIGURE 3.8
Regionally Significant Priority Development and Preservation Areas



3.4 CONCLUSION

Clearly, the Boston region has extensive transportation maintenance and modernization requirements, and must continue to address safety and mobility for all modes. In fact, all of the MPO's goal areas contain certain inadequacies that the MPO should confront in its multimodal approach to meeting the region's needs through 2040. However, MPO staff estimate that attending to these needs likely would exceed anticipated financial resources between now and 2040. Therefore, the MPO will face difficult decisions as it prioritizes when and how to allocate resources to guide transportation investment decisions throughout this LRTP's time span.